Item number	MERITEK FvDesigner Manual	Date	3/22/2024	Version	1.6
				Total number of pages	838

MERITEK FvDesigner Manual

MERITEK

The manual's contents will change when the software updates. To find the newest version of the manual, go to http://www.meritek.com/en/download.php?act=list&cid=13. The download is located under the support section.

Table of Contents

Table of Contents 1

List of Tables 24

List of Figures 33

1. MERITEK FvDesigner Manual 49

1.1 System Installation 49

1.2 Startup Screen 51

1.3 Create New Project 52

2. Window Configuration 55

2.1 File Tags 55

2.1.1 File 55

2.2 Ribbon 57

2.2.1 Design(D) 57

2.2.2 Project(P) 60

2.2.2.1 Compile 60
2.2.2.2 Font Replace Manager 61
2.2.2.3 Decompile 62
2.2.2.4 Upload & Download 62
2.2.2.5 Make USB Flash Drive Update File 63
2.2.2.6 IGU Setting 63
2.2.2.7 HMI detects USB Flash Drive plugged in 63
2.2.2.8 Simulation 64

2.2.3 Insert(I) 65

2.2.4 View(V) 65

2.2.5 Tools(T) 66

2.3 Shortcuts 67

2.4 Interface Appearance Options 67

2.5 Status Bar 68

2.6 Quicklaunch Toolbar 70

2.7 System/Project Windows 72

2.7.1 Screen List 72
2.7.2 Screen Properties 76
2.7.3 Project Explorer 80
2.7.4 Memory Address 83
2.7.5 Output Message 84
2.8 Object/Library Windows 85
2.8.1 Object List 85
2.8.2 Toolbox 85
2.8.3 User Toolbox 86
2.9 Object/Library Windows 87
2.9.1 Screen Edit Window 87
2.9.2 Function Settings Window 88
3. System 89
3.1 Project Information 89
3.1.1 Project File 89
3.1.2 HMI Model 89
3.1.3 Memory 90
3.1.4 Project Security 91
3.2 Unit Setting 92
3.2.1 Basic 92
3.2.2 PLC Sync 96
3.2.3 Custom 97
3.2.4 Control Address 99
3.2.5 IoT Service 102
3.2.6 Status Bar 104
3.2.7 Index Register 108
3.3 Link 109

3.3.1 PLC Device 109
3.3.1.1 PLC Address Setting..... 116
3.3.2 Printer..... 119
3.3.2.1 Argox PPLB tutorial 120
3.3.3 Video Input..... 123
3.3.4 USB Barcode Scanner 128
4. Servers..... 129
4.1 【FTP Server】..... 129
4.1.1 Deploying FTP Server using System Settings of HMI..... 129
4.1.2 Deploying FTP Server using Project Settings..... 130
4.1.3 FTP Server Example 131
4.2 【VNC Server】..... 131
4.2.1 Deploying VNC Server using System Settings of HMI..... 132
4.2.2 Deploying VNC Server using Project Settings..... 133
4.2.3 VNC Server Example..... 133
4.3 【SMTP】..... 135
4.3.1 【SMTP】setting..... 135
4.3.2 【SMTP】setting example..... 139
4.4 【4G】..... 142
4.5 【FTP Client】..... 143
4.5.1 【FTP Client】setting..... 143
4.5.2 【FTP Client】Task setting..... 144

4.5.3 Example – Upload the data log to PC 146

4.6 【Wi-Fi】 149

5. Security 150

5.1 【Security】Settings 150

5.1.1 【Security】Basic Settings 150

5.1.2 【Security】Advanced Settings 155

5.2 Security Settings of Objects 161

5.3 Exporting/Importing CSV Files 163

5.4 Security Features of the Function Switch 164

5.4.1 【Log In】and【Log Out】Function Switch 164

5.4.2 【Password Manager】Function Switch 165

5.4.3 【Import User Accounts】Function Switch 166

5.5 Security Features in Screen Properties 166

5.5.1 Screen Properties Security Level 166

5.5.2 Change Screen Button Change User Level 167

5.6 Installment 168

5.6.1 Installment Basic Settings 169

5.6.2 Installment Advanced Setting 171

5.6.3 Installment Related Function Switch 175

5.6.3.1 【Installment: Enter Installment Password】Function 175

5.6.3.2 【Installment: Modify Installment】 176

5.7 USB Security Key 177

5.7.1 Enable USB Security Key 177

5.7.2 Create USB Security Key 179
5.7.3 Notice for Using USB Security Key 180
6. System Message 181
6.1 【System Message】Settings 181
6.2 【System Message】Applications 185
6.2.1 Single Language Project and Using the System Messages 185
6.2.2 Single Language Project and Using Custom System Messages 186
6.2.3 Single Language Project and Using Only Custom System Messages 186
6.2.4 Multiple Language Project and Using the Default System Messages 187
7. Data Log 190
7.1 Data Log List 190
7.2 Data Log Group Settings 190
7.2.1 【Setting】 191
7.2.2 【Logging Address List】 194
7.2.3 【Export Data】 195
7.2.4 【Print Data】 203
7.2.4.1 【Print Data】Header and Footer【Setting】 206
7.2.5 【Sync Data】 209
8. Alarm 211
8.1 Alarm List 211
8.1.1 【Global Alarm Scrolling Text】 212
8.1.2 【Serial Number】 212

8.2 Alarm Setting 212
8.2.1 【Setting】 212
8.2.2 【Advanced Setting】 215
8.2.3 【Send Email/Message Setting】 221
8.2.4 【Export Data】 223
8.3 Alarm Application Example 227
8.3.1 Send Email when Alarm Occurs 227
8.4 【Sync Data】 232
9. Recipe 234
9.1 Recipe Data Flow 234
9.2 Recipe Group Properties 236
9.2.1 【General】 236
9.2.2 【Parameter】 239
9.2.3 【Advanced】 242
9.2.4 【Recipe File List】 246
9.3 【Recipe Memory】 247
9.4 【Recipe Editor】 248
9.5 【Recipe Table】 250
9.6 【Recipe Selector】 252

9.7 【Function Switch】 254
9.8 Example 256
10. Operation Log 263
10.1 【Basic】 263
10.2 【Sync Data】 266
10.3 【Operation Log】Settings of Objects 268
11. Schedule 269
11.1 Schedule List 269
11.2 Schedule Settings 269
11.3 Examples 277
12. Data Transfer 280
12.1 Data Transfer List (Data to Data Mode) 280
12.2 Data Transfer Settings (Data to Data Mode) 280
12.3 Data Transfer List (CSV to Data Mode) 282
12.4 Data Transfer Settings (CSV to Data Mode) 283
13. Script 286
13.1 Using Scripts 286
13.1.1 Script List 286
13.1.2 Script Editor 287
13.2 When to execute scripts 292
13.3 Script Syntax 292
13.3.1 Basic 292
13.3.1.1 Assignment 293
13.3.1.2 Logical Judgement 295
13.3.1.3 Iterative 297
13.3.2 Built-in Functions 299

13.3.3 Custom Functions 302
13.3.4 Comments 304
13.4 Examples - Scrolling Lamp 304
14. MQTT 308
14.1 Server Settings 308
14.2 Topic Settings 311
14.2.1 【Topic Publish】 312
14.2.2 【Topic Subscribe】 315
14.3 Address Setting 317
14.4 Tool 320
14.4.1 Select server (Broker) 320
14.4.2 Client-Side Application 320
15. Database 321
15.1 【Database Server】 321
15.1.1 【General】 321
15.1.2 【Advanced】 322
15.2 【SQL Query】 324
15.2.1 【General】 324
15.2.2 【Command】 326
15.3 Database Related Object 328
16. OPC UA 329
16.1 OPC UA Server 330

16.1.1 Setting 330
16.1.1.1 Server 330
16.1.1.2 Tag 331
16.1.1.3 Address 334
16.1.2 Server setting steps 335
16.1.2.1 Adding a new project 335
16.1.2.2 Setting up PLC Connection 335
16.1.2.3 Setting up Server and Tags 336
16.1.2.4 Compilation and Simulation 337
16.1.2.5 Running the OPC UA Server 338
16.2 OPC UA Client 339
16.2.1 Tag 339
16.2.2 Security and Authentication 341
17. Web Service 344
17.1 【Enable REST API】 344
17.1.1 REST API Setting 345
17.1.2 REST API Example 347
18. Resource 348
18.1 【Image Library】 348
18.1.1 Image Library Settings 348
18.1.2 Image Library Usage Method 349
18.1.2.1 Image Selector 350
18.1.2.2 Image Library Selection Window 350
18.2 【Audio Library】 350
18.2.1 Audio Library Settings 351
18.2.2 Audio Library Usage Method 352
18.2.2.1 Audio Selector 352
18.2.2.2 Audio Library Selection Window 352
18.3 【Tag Library】 353
18.3.1 Tag Library Settings 353

18.3.2 Introduction of Tag Library Import Mode 356
18.3.2.1 Delete all existing tags 357
18.3.2.2 Not delete all existing tags 357
18.3.2.3 Custom Import Tags and Delete All Existing Tags 358
18.3.2.4 Import custom tags and not delete all existing tags ..360
18.3.3 Tag Library Usage 361
18.4 【Text Library】 361
18.4.1 Text Library Settings 362
18.4.2 Text Library Usage Method 363
18.5 【Font Library】 365
18.5.1 Font Library Settings 365
19. Objects 367
19.1 Object Planning and Properties Modification 367
19.2 Object Operation Page Setting 372
19.3 Draw Object Properties Dialog 375
19.3.1 【Dot】 375
19.3.1.1 【Setting】 375
19.3.2 【Line】 376
19.3.2.1 【Setting】 376
19.3.3 【Polyline】 377
19.3.3.1 【Setting】 377
19.3.4 【Rectangle】 379
19.3.4.1 【Setting】 379
19.3.5 【Polygon】 380
19.3.5.1 【Setting】 380

19.3.6 【Ellipse】 381
19.3.6.1 【Setting】 382
19.3.7 【Arc】 383
19.3.7.1 【Setting】 383
19.3.8 【Pie】 384
19.3.8.1 【Setting】 384
19.3.9 【Table】 385
19.3.9.1 【Setting】 385
19.3.10 【Text】 387
19.3.10.1 【Setting】 387
19.3.11 【Image】 389
19.3.11.1 【Setting】 389
19.3.11.2 Dynamic Image Setting 392
19.3.12 【Scale】 393
19.3.12.1 【Setting】 393
19.3.13 【Pipeline】 396
19.3.13.1 【General】 396
19.3.13.2 【Pipe Item】 399
19.3.13.3 Pipeline Pipe Add or Delete 401
19.4 Base Object Properties Dialog 403
19.4.1 【Lamp】 403
19.4.1.1 【Setting】 403
19.4.1.2 【Display】 407
19.4.1.3 【External Lable】 410

19.4.2 【Switch】 412

19.4.2.1 【Bit Switch】 412
19.4.2.2 【Word Switch】 417
19.4.2.3 【Change Screen】 424
19.4.2.4 【Function Switch】 427
19.4.2.5 【Display】 439
19.4.2.6 【External Lable】 442

19.4.3 【Numeric Input/Display】 444

19.4.3.1 【Setting】 444
19.4.3.2 【Display】 450
19.4.3.3 【Alarm】 453
19.4.3.4 【External Lable】 454

19.4.4 【Text Input/Display】 456

19.4.4.1 【Setting】 456
19.4.4.2 【Display】 461
19.4.4.3 【External Lable】 464

19.4.5 【QR code Input/Display】 466

19.4.5.1 【Setting】 466
19.4.5.2 【External Lable】 469

19.4.6 【Date/Time Display】 470

19.4.6.1 【Setting】 470
19.4.6.2 【Display】 471

19.4.7 【Window Screen Display】 474

19.4.7.1 【Setting】 474

19.4.8 【Meter】 475

19.4.8.1 【General】 476

19.4.8.2 【Display】 478
19.4.8.3 【Scale】 479
19.4.8.4 【Range】 481
19.4.9 【Linear Meter】 482
19.4.9.1 【General】 482
19.4.9.2 【Display】 485
19.4.9.3 【Scale】 486
19.4.9.4 【Range】 488
19.4.10 【Circular Graph】 489
19.4.10.1 【General】 489
19.4.10.2 【Display】 490
19.4.10.3 【Scale】 491
19.4.10.4 【Range】 493
19.4.11 【Pie Chart】 494
19.4.11.1 【General】 494
19.4.11.2 【Display】 495
19.4.11.3 【Slice Display】 497
19.4.12 【Data Block Graph】 498
19.4.12.1 【General】 498
19.4.12.2 【Curve】 499
19.4.12.3 【Advanced Curve】 503
19.4.12.4 【Display】 504
19.4.12.5 【Axis】 506
19.4.12.6 【Advanced】 507
19.4.12.7 【Sub Switch】 511
19.4.13 【Data Block XY Scatter】 515
19.4.13.1 【General】 515
19.4.13.2 【Curve】 516

19.4.13.3 【Display】 519
19.4.13.4 【Axis】 521
19.4.13.5 【Advanced】 523
19.4.13.6 【Sub Switch】 526
19.4.14 【Multistate Switch】 530
19.4.14.1 【Setting】 530
19.4.14.2 【Display】 532
19.4.14.3 【External Lable】 536
19.4.15 【Slide Switch】 538
19.4.15.1 【Setting】 538
19.4.15.2 【Display】 539
19.4.15.3 【External Lable】 540
19.4.16 【Selector List】 542
19.4.16.1 【Setting】 542
19.4.16.2 【Display】 545
19.4.16.3 【External Lable】 548
19.4.17 【Radio Button】 549
19.4.17.1 【Setting】 549
19.4.17.2 【Display】 551
19.4.17.3 【External Lable】 554
19.4.18 【Input Display】 556
19.4.19 【Key】 558
19.4.19.1 【Setting】 558
19.4.19.2 【Display】 560
19.4.20 【Limit Value Display】 562
19.4.21 【Animated Graphic】 565

19.4.21.1 【Setting】 565
19.4.21.2 【Display】 569
19.4.22 【Rotation Indicator】 572
19.4.22.1 【Setting】 572
19.4.23 【Gif Display】 576
19.4.23.1 【Setting】 576
19.4.24 【Historic Trend】 577
19.4.24.1 【General】 578
19.4.24.2 【Curve】 580
19.4.24.3 【Advanced Curve】 583
19.4.24.4 【Display】 584
19.4.24.5 【Axis】 586
19.4.24.6 【Advanced】 588
19.4.24.7 【Sub Switch】 592
19.4.25 【Historic XY Scatter】 596
19.4.25.1 【General】 596
19.4.25.2 【Curve】 597
19.4.25.3 【Display】 599
19.4.25.4 【Axis】 601
19.4.25.5 【Advanced】 603
19.4.25.6 【Sub Switch】 606
19.4.26 【Historic Data Table】 610
19.4.26.1 【General】 610
19.4.26.2 【Data Items】 614
19.4.26.3 【Sub Switch】 616
19.4.27 【Historic Data Selector】 621
19.4.27.1 【Setting】 621

19.4.27.2 【Display】 623

19.4.28 【Alarm Display】 624

19.4.28.1 【Setting】 624
19.4.28.2 【Header】 628
19.4.28.3 【Display】 629
19.4.28.4 【Sub Switch】 632

19.4.29 【Alarm Scrolling Text】 636

19.4.29.1 【Setting】 636
19.4.29.2 【Display】 639

19.4.30 【Alarm Data Selector】 640

19.4.30.1 【Setting】 640
19.4.30.2 【Display】 642

19.4.31 【Recipe Selector】 643

19.4.31.1 【General】 643
19.4.31.2 【Advanced】 644

19.4.32 【Recipe Table】 645

19.4.32.1 【General】 645
19.4.32.2 【Data Item】 649
19.4.32.3 【Advanced】 650
19.4.32.4 【Sub Switch】 651

19.4.33 【Operation Viewer】 655

19.4.33.1 【General】 655
19.4.33.2 【Content】 657
19.4.33.3 【Sub Switch】 660

19.4.34 【Schedule Setting Table】 663

19.4.34.1 【General】 663

19.4.34.2 【Header】 665
19.4.35 【Video Input Display】 667
19.4.35.1 【Setting】 667
19.4.36 【SQL Query Table】 668
19.4.36.1 【General】 668
19.4.36.2 【Data Item】 670
19.4.36.3 【Sub Switch】 670
20. User Toolbox 672
20.1 Basic Operations 672
20.1.1 Adding objects to the User Toolbox 673
20.1.2 Adding the objects in User Toolbox to the Work Space 674
20.1.3 Menu Introduction 675
20.2 Import and Export 677
20.2.1 Import 677
20.2.2 Export 678
20.3 Name Conflicts 679
20.3.1 Category Name Conflict 679
20.3.2 Object Name Conflict 680
21. Build Running Package and Simulation 682
21.1 【Download Current Project】 682
21.1.1 Download the running package and operating system from a PC 682
21.1.2 Write System Setting 687
21.1.2.1 【Basic】 687
21.1.2.2 【System】 688
21.1.2.3 【Ethernet】 689
21.1.2.4 【Sever】 690
21.1.2.5 【Display】 692

21.1.2.6 【Time】 693
21.1.2.7 【MISC】 694
21.1.3 Download Security 695
21.1.4 Download Project by USB Flash Drive 695
21.2 【Upload】 700
21.2.1 Uploading running package to a computer from the HMI 700
21.2.2 Upload Step 702
21.2.3 Upload Security 703
21.2.4 Upload Project by USB Flash Drive 703
21.3 【Compile】 704
21.3.1 Compile Introduction 704
21.3.2 Start compiling running packages 704
21.3.3 Ending compile and error check 704
21.3.4 Decompile 706
21.4 【Simulation】 707
21.4.1 Simulation Introduction 707
21.4.2 Starting Simulation 708
21.4.3 Offline Simulation 708
21.4.4 Online Simulation 709
22. Tool 710
22.1 【File Transfer】 710
22.2 【Pass Through】 714
22.2.1 Setting Pass Through 715
22.2.2 Pass Through Example 718

22.2.3 Virtual COM Passthrough Setting 721
22.3 【PLC Resource Review】 722
22.3.1 Usage Methods 722
22.4 【Remote System Setting】 724
22.4.1 Usage Method 724
22.5 【MERITEK PLC Transfer Encrypt Tool】 725
22.6 【MBF Reader】 725
22.7 【Install USB Driver】 728
22.8 【Download】 728
22.9 【iAccess insight】 729
23. Address Registers 730
23.1 Internal Address Register Range 730
23.2 Index Register 733
23.2.1 Usage 733
23.3 Special System Tags 735
23.3.1 Operations 735
23.3.2 Save File 736
23.3.3 Time 736
23.3.4 Touch Control Positions 736
23.3.5 Network Information 737
23.3.6 Index Registers (16Bit) 737
23.3.7 Index Registers (32Bit) 739
23.3.8 Communication Parameter Settings 741

23.3.9 VNC Information 745
24. HMI System Settings 747
24.1 How To Enter System Setting 747
24.2 【System Setting】Options 747
24.2.1 Run Project 747
24.2.2 【COM Port】 747
24.2.3 【Network】 748
24.2.3.1 【Ethernet】 749
24.2.3.2 【DNS】 749
24.2.3.3 【Access Control】 750
24.2.3.4 【Wi-Fi】 751
24.2.3.5 【4G Dongle】 752
24.2.4 【Servers/IoT】 752
24.2.4.1 【FTP】 752
24.2.4.2 【VNC】 753
24.2.4.3 【Pass Through】 753
24.2.4.4 【IoT】 754
24.2.5 【Link】 755
24.2.6 【Display】 756
24.2.7 【Calibration】 757
24.2.8 【Time】 757
24.2.9 【System Info】 758
24.2.10 【MISC】 759

24.2.10.1 【General】 759
24.2.10.2 【Security】 760
24.2.10.3 【Copy Project】 761
24.2.10.4 【Update Project】 763
24.2.10.5 【Backup】 764
24.2.10.6 【Reboot】 765
24.3 System Booting Sequence 765
25. HotKeys 767
25.1 Project and File 767
25.2 Screen List 768
26. Modbus Gateway Server 770
26.1 Modbus Gateway Server Settings 770
26.2 Modbus Gateway Server Applications 772
27. PLC Integration 775
27.1 Show Ladder Viewer 775
27.1.1 【Show Ladder Viewer】Applications and Settings 776
27.1.2 HMI display the interface of PLC ladder diagram program 777
27.2 Update MERITEK PLC Project From HMI or USB Flash Drive 781
27.3 【MERITEK PLC Transfer Encrypt Tool】 783
27.3.1 【MERITEK PLC Transfer Project Generator】 783
27.3.2 【Single Pass Password Generator】 786
27.4 Show Ethernet Module Configuration 788
27.4.1 【Ethernet Module Configuration】Application and Settings 789
27.4.2 General Settings of Ethernet Module 790
27.4.3 Password Setting Page of Ethernet Module 791

27.4.4 Access Control Setting Page of Ethernet Module 792
27.4.5 External Severs Setting Page of Ethernet Module 793
27.4.6 Service Port Setting Page of Ethernet Module..... 794
27.5 Control PLC run/stop from HMI 794
27.5.1 Setting the PLC run/stop function..... 795
27.5.2 PLC run/stop operation steps..... 795
27.6 Enable and Disable PLC from HMI..... 797
28. User-defined Protocol 798
28.1 【User-defined Protocol】Interface Description 798
28.1.1 Protocol Setting..... 800
28.1.2 Instruction 802
28.1.3 Send Data 803
28.1.4 Return Data 805
28.1.5 Checksum 807
28.2 【User-defined Protocol】Application examples..... 810
28.3 【User-defined Protocol】use Script Application Example 818
28.3.1 Communication Instructions in Script..... 818
28.3.2 Communication Instruction in Script Application Example..... 819
29. Multi-Link 821
29.1 【Multi-Link】 Setting 822
29.1.1 Serial..... 822
29.1.1.1 Multi-Link Master(Serial) setting 822
29.1.1.2 Multi-Link Slave(Serial) Setting 823
29.1.2 Ethernet..... 824
29.1.2.1 Multi-Link Master(Ethernet) setting 825
29.1.2.2 Multi-Link Slave(Ethernet) setting 826

29.2 Operation Lock 827
29.2.1 Operation Lock Description 827
29.3 Multi-Link Eaxmple 828
30. Search/Replace 831
30.1 The Use of Search/Replace 831
30.2 The Result of Search/Replace 833
31. Communication Error Codes 834
32. Elimination of HMI Abnormal Conditions 836
32.1 System Consistency Protection is Enabled 836
32.1.1 Repairing File by Using Mini-USB Cable 836
32.1.2 Repairing File by Using USB Flash Disk 837

List of Tables

Table 1 Startup Screen Functions....51
Table 2 Create New Project Steps....52
Table 3 Create New Project....53
Table 4 File Options....56
Table 5 Introduction to Ribbon User Interface Functions....58
Table 6 Compilation Output Window Related Information....61
Table 7 Interface Appearance Options....67
Table 8 Status bar....68
Table 9 Quicklaunch Toolbar....70
Table 10 Screen List Management Settings....73
Table 11 Screen Properties Items....78
Table 12 Project Explorer Items....80
Table 13 Object List Functions....85
Table 14 Project Security....91
Table 15 Unit Setting-Basic....93
Table 16 Unit Setting-PLC Sync....96
Table 17 Unit Setting-Custom....98
Table 18 Unit Setting-Control Address....100
Table 19 Unit Setting-IoT Service....102
Table 20 Unit Setting- Status Bar....104
Table 21 Unit Setting- Index Register....109
Table 22 Device Connection....109
Table 23 Link Property Settings....110
Table 24 Access Address Settings....117
Table 25【Printer】Settings....119
Table 26【Video Input】property settings....124
Table 27【USB Barcode Scanner】property settings....128
Table 28 FTP Server Settings....130
Table 29 VNC Server Settings....132
Table 30【Sever】【SMTP】setting property....135
Table 31【4G】properties setting....142
Table 32【FTP Client】properties setting....143
Table 33【FTP Client】task list properties setting....145
Table 34【Wi-Fi】properties setting page....149
Table 35 Basic Setting Properties of【Security】....151
Table 36 Advanced Setting Properties of【Security】....156
Table 37 The relevant control address required in the【Level】mode....160
Table 38 The relevant control address required in the【User】mode....160
Table 39 Security Setting Properties of Objects....161
Table 40 Installment Attributes....169

Table 41 【Installment】properties setting 172
Table 42【Operation Address】relevant control address required in【Static】mode 175
Table 43【Modify Installment】 177
Table 44 USB Security Key setting properties 178
Table 45 USB Security Key Generator setting properties 179
Table 46【System Message】Settings 181
Table 47【Setting】Properties of【Data Log Group】 191
Table 48【Logging Address List】Setting Properties of【Data Log Group】 194
Table 49【Export Data】Setting Properties of【Data Log Group】 196
Table 50【Print Data】Setting Properties of【Data Log Group】 203
Table 51【Export Data】Setting Properties of【Data Log Group】 207
Table 52【Data Log Group】【Sync Data】Property Setting Page 209
Table 53【Setting】Properties of【Alarm】 213
Table 54【Advanced Setting】Properties of【Alarm】 216
Table 55【Advanced Setting/Message】【Send Email】Properties of【Alarm】 ... 221
Table 56【Export Data】Setting Properties of【Alarm】 223
Table 57【Alarm】【Sync Data】Property Setting Page 232
Table 58【General】Properties of【Recipe】 236
Table 59【Parameter】【Recipe】properties settings 239
Table 60【Advanced】General Settings 242
Table 61【General】Properties of【Recipe】 247
Table 62 Recipe Memory 248
Table 63【Recipe Editor】Functions 249
Table 64【Recipe Table】Functions 251
Table 65【Recipe Selector】Functions 253
Table 66【Function Switch】Recipe Functions 254
Table 67 Setting Properties of【Operation Log】 263
Table 68【Operation Log】【Sync Data】Property Setting Page 267
Table 69 Object Setting Properties of【Operation Log】 268
Table 70【Schedule】Setting Properties 270
Table 71 Setting Properties of【Data Transfer】 281
Table 72【CSV to Data Transfer Mode】Setting Properties 283
Table 73【Script List】- Descriptions 286
Table 74 Script List–Descriptions of the buttons on the right side 287

Table 75 Script Editor–Function Block Description 288
Table 76 Script Editor–Script Properties Descriptions 291
Table 77 Script–Assignment 293
Table 78 Script–Arithmetic 294
Table 79 Script–Logical 294
Table 80 Script–Operator precedence 295
Table 81 Logical Statement Syntaxes 295
Table 82 Iterative Statement Syntax 297
Table 83 Script Built–in Functions 299
Table 84 Script–Custom function-related statements 303
Table 85 Script–Comments 304
Table 86【MQTT】【Broker】setting properties 309
Table 87【MQTT】【Topic Publish】properties setting 313
Table 88【MQTT】【Topic Subscribe】properties setting 315
Table 89【MQTT】【Address】properties setting 318
Table 90【Database Server Properties】【General】properties setting page 322
Table 91【Database Server Properties】【Advanced】properties setting page 323
Table 92【SQL Query】【General】properties setting page 325
Table 93【SQL Query】【Command】properties setting page 327
Table 94【OPC UA Server】【Server】properties setting 330
Table 95【OPC UA Server】【Tag】properties setting 332
Table 96【OPC UA Server】【Address】properties setting 334
Table 97【OPC UA Client】【Tag Import】properties setting 340
Table 98【OPC UA Client】【Security and Authentication】properties setting 342
Table 99 Edit Window Setting Properties of the 【REST Request】 345
Table 100 Edit Window Setting Properties of the Image Library 348
Table 101 Edit Window Setting Properties of Audio Library 351
Table 102 Edit Window Setting Properties of Tag Library 354
Table 103 Edit Window Setting Properties of Text Library 362
Table 104【Font Library】Edit Properties 365
Table 105 Image Objects and Basic Object Library Categories 368
Table 106 Property settings for【Operation】 373
Table 107 Property settings for【Dot】 375
Table 108 Property settings for【Line】 376
Table 109 Property setting for【Polyline】 377
Table 110 Property setting for【Rectangular】 379
Table 111 Property settings for【Polygon】 381
Table 112 Property settings for【Ellipse】 382

Table 113 Property settings for【Arc】.....383
Table 114 Property settings for【Pie】.....384
Table 115 Property settings for【Table】.....385
Table 116 Property settings for【Text】.....387
Table 117 Property settings for【Image】.....390
Table 118 Property settings for Dynamic Image.....392
Table 119 Property Settings for【Scale】.....394
Table 120【General】Properties of【Pipeline】.....397
Table 121【Pipe Item】Properties of【Pipeline】.....399
Table 122【Setting】Properties of【Lamp】.....403
Table 123【Display】Setting Properties of【Lamp】.....407
Table 124【Lamp】【External Lable】setting properties.....410
Table 125【Setting】Properties of【Bit Switch】.....412
Table 126【Setting】Properties of【Word Switch】.....418
Table 127【Setting】Properties of【Change Screen】.....424
Table 128【Setting】Properties of【Function Switch】.....428
Table 129【Display】Setting Properties of【Switch】.....439
Table 130【Switch】【External Lable】setting properties.....443
Table 131【Setting】Properties of【Numeric Input/Display】.....445
Table 132【Display】Setting Properties of【Numeric Input/Display】.....450
Table 133【Alarm】Setting Properties of【Numeric Input/Display】.....453
Table 134【Numeric Input/Display】【External Lable】setting properties.....455
Table 135【Setting】Properties of【Text Input/Display】.....457
Table 136【Display】Setting Properties of【Text Input/Display】.....462
Table 137【Text Input/Display】【External Lable】setting properties.....464
Table 138【Setting】Properties of【QR code Input/Display】.....466
Table 139【External Lable】Properties of【QR code Input/Display】.....469
Table 140【Setting】Properties of【Date/Time Display】.....471
Table 141【Display】Setting Properties of【Date/Time Display】.....472
Table 142【Setting】Properties of【Window Screen Display】.....474
Table 143【General】Setting Properties of【Meter】.....476
Table 144【Display】Setting Properties of【Meter】.....478
Table 145【Scale】Setting Properties of【Meter】.....480

Table 146【Range】Setting Properties of【Meter】.....481
Table 147【General】Setting Properties of【Linear Meter】.....483
Table 148【Display】Setting Properties of【Linear Meter】.....486
Table 149【Scale】Setting Screen of【Linear Meter】.....487
Table 150【Range】Setting Properties of【Linear Meter】.....488
Table 151【General】Setting Properties of【Circular Graph】.....489
Table 152【Display】Setting Properties of【Circular Graph】.....491
Table 153【Scale】Setting Properties of【Circular Graph】.....492
Table 154【Range】Setting Properties of【Circular Graph】.....493
Table 155【General】Setting Properties of【Pie Chart】.....494
Table 156【Display】Setting Properties of【Pie Chart】.....496
Table 157【Slice Display】Setting Properties of【Pie Chart】.....497
Table 158【General】Setting Properties of【Data Block Graph】.....498
Table 159【Curve】Setting Properties of【Data Block Graph】.....500
Table 160【Advanced Curve】Setting Properties of【Data Block Graph】.....503
Table 161【Display】Setting Properties of【Data Block Graph】.....504
Table 162【Axis】Setting Properties of【Data Block Graph】.....506
Table 163【Advanced】Setting Properties of【Data Block Graph】.....508
Table 164【Sub Switch】Setting Properties of【Data Block Graph】.....511
Table 165【General】 Setting Properties of【Data Block XY Scatter】.....515
Table 166【Curve】Setting Properties of【Data Block XY Scatter】.....517
Table 167【Display】Setting Properties of【Data Block XY Scatter】.....520
Table 168【Axis】Setting Properties of【Data Block XY Scatter】.....521
Table 169【Advanced】Setting Properties of【Data Block XY Scatter】.....523
Table 170【Sub Switch】Setting Properties of【Data Block XY Scatter】.....527
Table 171【Setting】Properties of【Multistate Switch】.....531
Table 172【Display】Setting Properties of【Multistate Switch】.....533
Table 173【Multistate Switch】【External Lable】setting properties.....536
Table 174【Setting】Properties of【Slide Switch】.....538
Table 175【Display】Setting Properties of【Slide Switch】.....539
Table 176【Slide Switch】【External Lable】setting properties.....541
Table 177【Setting】Properties of【Selector List】.....543
Table 178【Display】Setting Properties of【Selector List】.....546

Table 179【Selector List】【External Lable】setting properties.....548
Table 180【Radio Button】【Setting】setting properties.....550
Table 181【Radio Button】【Display】setting properties 552
Table 182【Radio Button】【External Lable】setting properties 554
Table 183 Setting Properties of【Input Display】.....556
Table 184【Setting】Properties of【Key】.....558
Table 185【Display】Setting Properties of【Key】.....561
Table 186 Setting Properties of【Limit Value Display】.....563
Table 187【Setting】Properties of【Animated Graphic】.....565
Table 188【Display】Setting Properties of【Animated Graphic】.....569
Table 189【Setting】Properties of【Rotation Indicator】.....572
Table 190【Setting】Properties of【GIF Display】.....576
Table 191【General】Setting Properties of【Historic Trend】.....578
Table 192【Curve】Setting Properties of【Historic Trend】.....580
Table 193【Advanced Curve】Setting Properties of【Historic Trend】.....583
Table 194【Display】Setting Properties of【Historic Trend】.....585
Table 195【Axis】Setting Properties of【Historic Trend】.....586
Table 196【Advanced】Setting Properties of【Historic Trend】.....588
Table 197【Sub Switch】Setting Properties of【Historic Trend】.....592
Table 198【General】Setting Properties of【Historic XY Scatter】.....596
Table 199【Curve】 Setting Properties of【Historic XY Scatter】.....597
Table 200【Display】Setting Properties of【Historic XY Scatter】.....600
Table 201【Axis】Setting Properties of【Historic XY Scatter】.....602
Table 202【Advanced】Setting Properties of【Historic XY Scatter】.....603
Table 203【Sub Switch】Setting Properties of【Historic XY Scatter】.....607
Table 204【General】Setting Properties of【Historic Data Table】.....611
Table 205【Data Items】Setting Properties of【Historic Data Table】.....614
Table 206【Sub Switch】Setting Properties of【Historic Data Table】.....616
Table 207【General】Setting Properties of【Historic Data Selector】.....621
Table 208【Display】Setting Properties of【Historic Data Selector】.....623
Table 209【Setting】Properties of【Alarm Display】.....624
Table 210【Header】Setting Properties of【Alarm Display】.....629
Table 211【Display】Setting Properties of【Alarm Display】.....630

Table 212【Sub Switch】Setting Properties of【Alarm Display】.....632
Table 213【Setting】Properties of【Alarm Scrolling Text】.....636
Table 214【Display】Setting Properties of【Alarm Scrolling Text】.....639
Table 215【General】Setting Properties of【Alarm Data Table】.....640
Table 216【Display】Setting Properties of【Alarm Data Table】.....642
Table 217【General】Setting Properties of【Recipe Selector】.....643
Table 218【General】Setting Properties of【Recipe Selector】.....644
Table 219【General】Setting Properties of【Recipe Table】.....646
Table 220【Data Item】Setting Properties of【Recipe Table】.....650
Table 221【Advanced】Setting Properties of【Recipe Table】.....651
Table 222【Sub Switch】Setting Properties of【Recipe Table】.....652
Table 223【General】Setting Properties of【Operation Viewer】.....656
Table 224【Content】Setting Properties of【Operation Viewer】.....658
Table 225【Sub Switch】Setting Properties of【Operation Viewer】.....660
Table 226【Schedule Setting Table】【General】property setting.....664
Table 227【Schedule Setting Table】【Header】property setting.....666
Table 228【Video Input Display】【Setting】setting property.....667
Table 229【SQL Query Table】【General】property setting.....668
Table 230【SQL Query Table】【Data Item】Properties Setting.....670
Table 231【SQL Query Table】【Sub Switch】Properties Setting.....671
Table 232 Options within the menu.....676
Table 233 Category Name Conflict options.....680
Table 234 Object Name Conflict options.....681
Table 235 Download Manager–related parameters.....683
Table 236 【System Setting Configure】【Basic】properties setting.....688
Table 237 【System Setting Configure】【System】properties setting.....689
Table 238 【System Setting Configure】【Ethernet】properties setting.....690
Table 239 【System Setting Configure】【Sever】properties setting.....691
Table 240 【System Setting Configure】【Display】properties setting.....693
Table 241 【System Setting Configure】【Time】properties setting.....694
Table 242 【System Setting Configure】【MISC】properties setting.....694
Table 243 Make USB Flash Drive Update File.....696
Table 244 properties of making USB drive upgrade file.....697
Table 245 Upload Manager-related parameters.....701
Table 246 Decompile dialog window settings.....707

Tabel 247【File Transfer】Button descriptions 710
Table 248【File Transfer】After Connecting 711
Table 249 Pass Through related parameters 716
Table 250 Introduction to internal single point and register information 724
Tabel 251【MBF Reader】menu descriptions 726
Tabel 252【MBF Reader】tool bar descriptions 727
Table 253 Internal Registers Address Range 731
Table 254【Network】【Ethernet】paging options 749
Table 255【Network】【DNS】paging options 749
Table 256【Network】【Access Control】paging options 750
Table 257【Network】【Wi-Fi】paging options 751
Table 258 Options of【Servers/IoT Setting】【FTP】to Enable FTP Server in the Server page 752
Table 259 Options of【Servers/IoT Setting】【VNC】to Enable VNC Server in the Server page 753
Table 260【Servers/IoT Setting】【Pass Through】paging 754
Table 261【Servers/IoT Setting】【IoT】paging 754
Table 262【Link】setting page options 755
Table 263【Display】setting page options 756
Table 264【Time】setting page options 758
Table 265【System Info】setting page options 759
Table 266【MISC】【General】settings page options 760
Table 267【MISC】【Security】settings page options 761
Table 268【MISC】【Copy Project】settings page options 763
Table 269【MISC】【Copy Project】settings page options 763
Table 270【MISC】【Backup】settings page options 764
Table 271【HotKeys】related to Project and File 767
Table 272【HotKeys】related to【Screen List】 768
Table 273【Address Mapping Table】Settings and Related Files and Shortcuts 771
Table 274 shows the attributes of the PLC ladder diagram interface on the HMI 777
Table 275【MERITEK PLC Transfer Project Generator】properties setting 784
Table 276【Single Pass Password Generator】properties setting 786
Table 277 properties of MERITEK PLC ethernet configuration dialog 790
Table 278 properties of ethernet module settings 791
Table 279 properties of password setting page of ethernet module 792
Table 280 properties of Access Setting Control page of ethernet module 792

Table 281 properties of External Severs setting page of ethernet module 793
Table 282 properties of service port setting page of ethernet module 794
Table 283 properties of【User-defined Protocol】instruction list settings.....800
Table 284 properties of【User-defined Protocol】main operation interface settings 801
Table 285 properties of【User-defined Protocol Setting】instruction paging setting 802
Table 286 properties of【User-defined Protocol Setting】send data paging setting 803
Table 287 properties of【User-defined Protocol Setting】return data paging setting 805
Table 288 properties of【User-defined Protocol Setting】checksum paging setting 807
Table 289 properties of communication instruction in script settings 818
Table 290 multi-link support number od slaves.....821
Table 291 properties of【Multi-Link Master(Serial)】.....822
Table 292 properties of【Multi-Link Slave(Serial)】.....824
Table 293 properties of【Multi-Link Master(Ethernet)】setting 825
Table 294 properties of【Multi-Link Slave(Ethernet)】setting.....826
Table 295 properties of【Operation Lock】setting 828
Table 296【Search/Replace】function properties setting.....831
Table 297【Search/Replace】function properties setting.....833
Table 298 description of the communication error code 835

List of Figures

Figure 1 Installation Welcoming Screen....49
Figure 2 User Information....50
Figure 3 Select Software Installation Path....50
Figure 4 Confirmation Before Installation....50
Figure 5 Installation Complete....51
Figure 6 Startup Screen....52
Figure 7 Create New Project: Select Product Type....53
Figure 8 Create New Project: Select Controller....53
Figure 9 Create New Project: Link Properties Setting....54
Figure 10 MERITEK FvDesigner Window Configuration....55
Figure 11 Toolbar–File....56
Figure 12 Design(D)....58
Figure 13 Project....60
Figure 14 Font Replace Manager....62
Figure 15 IGU Setting List....63
Figure 16 HMI detects USB flash drive is plugged in....64
Figure 17 HMI detects USB flash drive is removed....64
Figure 18 Offline Simulation....64
Figure 19 Online Simulation....65
Figure 20 Insert....65
Figure 21 Window....65
Figure 22 Configure Operating Window Position....66
Figure 23 Tools....67
Figure 24 Shortcuts....67
Figure 25 Interface Appearance Options....67
Figure 26 Status Bar....68
Figure 27 Quicklaunch Toolbar....70
Figure 28 Screen List Interface....72
Figure 29 Management Menu....73
Figure 30 Base Screen Properties....77
Figure 31 Window Screen Properties....77
Figure 32 Keypad Screen Properties....78
Figure 33 Normal mode memory address operation interface....83
Figure 34 Tag mode memory address operation interface....84
Figure 35 Memory address operation interface including tags....84
Figure 36 Output window....84
Figure 37 Object List....85
Figure 38 Toolbox Illustration....86
Figure 39 User Toolbox Illustration....87
Figure 40 Work Space–Screen Edit....88
Figure 41 Work Space–Function Settings....88
Figure 42 System....89
Figure 43 Project File....89
Figure 44 HMI Model....90
Figure 45 Memory....90

Figure 46 Project Security 91
Figure 47 Unit Setting-Basic 93
Figure 48 Unit Setting-PLC Sync 96
Figure 49 Unit Setting-Custom 98
Figure 50 Unit Setting-Control Address 100
Figure 51 Unit Setting-IoT Service 102
Figure 52 Unit Setting-Status Bar 104
Figure 53 Unit Setting-Index Register 109
Figure 54 Device Connection Setting–PLC Device 109
Figure 55 Link Properties 110
Figure 56 PLC address setting field 116
Figure 57 PLC Input Address Setting Dialog 117
Figure 58【Printer】Settings Screen 119
Figure 59【Video Input】Setting Window 124
Figure 60【USB Barcode Scanner】Setting Window 128
Figure 61 FTP Application Diagram 129
Figure 62 FTP Servers Setting–HMI 129
Figure 63 FTP Server Setting–Project 130
Figure 64 Using FTP to view files stored in internal memory, SD, or USB 131
Figure 65 VNC application illustration 132
Figure 66 VNC Server Setting-HMI 132
Figure 67 VNC Server Setting-Project 133
Figure 68 VNC Viewer Connection Screen 134
Figure 69 VNC Viewer Password Confirmation Screen 134
Figure 70 VNC Viewer remote monitor screen 134
Figure 71【Sever】【SMTP】setting paging 135
Figure 72 SMTP setting window 139
Figure 73 SMTP sever setting window 140
Figure 74 SMTP sender information setting window 140
Figure 75 SMTP contacts setting window 140
Figure 76 SMTP group setting window 140
Figure 77 SMTP test successfully window 141
Figure 78 SMTP test letter send by FvDesigner 141
Figure 79【4G】setting page 142
Figure 80【FTP Client】setting page 143
Figure 81【FTP Client】task list setting page 145
Figure 82 Set the server 147
Figure 83 Data Log setting 147
Figure 84 Ftp Setting 148
Figure 85 HMI execution screen 148
Figure 86 PC get the file 149
Figure 87【Wi-Fi】setting page 149
Figure 88 Basic Setting Screen for【Security】 151

Figure 89 Advanced Setting Screen for【Security】【Level】 156
Figure 90 Security Settings for Objects 161
Figure 91 CSV File for【Level】 163
Figure 92 CSV File for【User】 164
Figure 93【User】Mode Login Window 164
Figure 94【User】Mode Login Window 165
Figure 95【Level】Mode Password Manager Window 165
Figure 96【User】Mode Password Manager Window 166
Figure 97 Import User Account Window 166
Figure 98 Import User Confirmation Window 166
Figure 99 Security Settings in Screen Properties 167
Figure 100 Security Settings in Change Screen Button 168
Figure 101 Installment application illustration 168
Figure 102 Installment Settings 169
Figure 103【Static】setting window of【Installment】【Advanced】 172
Figure 104【Dynamic】setting window of【Installment】【Advanced】 172
Figure 105 Static【Installment】password input window 176
Figure 106 Dynamic【Installment】mode password input window 176
Figure 107【Modify Installment】Window 176
Figure 108 Enable USB Security Key 178
Figure 109 USB Security Key tool 179
Figure 110 USB Security Key Generator 179
Figure 111【System Message】Settings Screen 181
Figure 112 System Messages for Project Using a Single Language 185
Figure 113 Confirmation Window 185
Figure 114 Customizing the System Message 186
Figure 115 Modified Confirmation Window 186
Figure 116 The【Default Message Language】is set to English 187
Figure 117 Modified Confirmation Window 187
Figure 118 Exporting into Language0 188
Figure 119 Exporting into Language1 188
Figure 120 Export Confirmation Window 188
Figure 121 Exporting into Language2 189
Figure 122 Confirmation Windows for Each Language 189
Figure 123【Data Log List】Screen 190
Figure 124【Setting】of【Data Log Group】 191
Figure 125【Logging Address List】Setting Screen of【Data Log Group】 194
Figure 126【Export Data】Setting Screen of【Data Log Group】 196
Figure 127 export specified time data example 202

Figure 128【Print Data】Setting Screen of【Data Log Group】 203
Figure 129【Print Data】【Header/Footer】Setting Screen of【Data Log Group】 (Static mode) 206
Figure 130【Print Data】【Header/Footer】Setting Screen of【Data Log Group】 (Dynamic mode) 207
Figure 131【Data Log Group】【Sync Data】Setting Page 209
Figure 132【Alarm List】Screen 211
Figure 133 Global Alarm Scrolling Text setting page 212
Figure 134【Setting】Screen of【Alarm】 213
Figure 135【Advanced Setting】Property Setting Dialog of【Alarm】 216
Figure 136【Advanced Setting】【Send Email/Message】Property Setting Dialog of 【Alarm】 221
Figure 137【Export Data】Setting Screen of【Alarm】 223
Figure 138【SMTP】Setting window 227
Figure 139 Server Setting Window in SMTP Setting 228
Figure 140 Sender Information setting in SMTP Setting 228
Figure 141 SMTP contacts setting window 228
Figure 142 SMTP group setting window 229
Figure 143【Video Input】setting window 229
Figure 144【Alarm】message editing 230
Figure 145 Alarm【Advanced Setting】setting window 230
Figure 146【Email Setting】window 231
Figure 147【System Setting】window 231
Figure 148【Ethernet】setting window 231
Figure 149 Recipient received mail when the alert occurred 232
Figure 150【Alarm】【Sync Data】Setting Page 232
Figure 151 Recipe Data Flow 235
Figure 152 Recipe Settings Screen 235
Figure 153 Insert Recipe Screen 236
Figure 154【General】Screen of【Recipe】 236
Figure 155【Parameter】【Recipe】settings 239
Figure 156【Advanced】【Recipe】Settings 242
Figure 157【Recipe File List】Screen of【Recipe】 247
Figure 158 Recipe Memory 247
Figure 159 Recipe Memory Usage 248
Figure 160 Open【Recipe Editor】from software 249
Figure 161 Open【Recipe Editor】from folder 249

Figure 162【Recipe Table】Property Setting Screen 250
Figure 163【Recipe Selector】Property Setting Screen 253
Figure 164【Function Switch】Property Setting Screen 254
Figure 165 Recipe Settings Example 1 257
Figure 166 Recipe Settings Example 2 257
Figure 167【Recipe Editor】Example 257
Figure 168 Example Screen 259
Figure 169 Simulation Screen 1 259
Figure 170 Simulation Screen 2 260
Figure 171 Simulation Screen 3 260
Figure 172 Simulation Screen 4 261
Figure 173 Simulation Screen 5 261
Figure 174 Simulation Screen 6 262
Figure 175 Simulation Screen 7 262
Figure 176 Setting Screen of【Operation Log】 263
Figure 177【Operation Log】【Sync Data】Setting Page 267
Figure 178 Setting Screen of Objects with Operation Behaviors 268
Figure 179【Schedule】List Screen 269
Figure 180【Schedule】Setting Screen 270
Figure 181【Data Transfer】List Screen 280
Figure 182 Setting Dialog of【Data Transfer】 281
Figure 183 CSV Data Transfer List Screen 282
Figure 184【CSV to Data Transfer Mode】Settings Screen 283
Figure 185【Script List】 286
Figure 186 Script Editor Screen 287
Figure 187 Scrolling Lamp Example 305
Figure 188 Scrolling Lamp Example Screen Setting 305
Figure 189 Using Script Setting for the Screen 306
Figure 190 Script Setting Result 307
Figure 191 MQTT application schematic diagram 308
Figure 192【MQTT】【Broker】setting page 309
Figure 193【MQTT】【Topic】setting page 312
Figure 194【MQTT】【Topic Publish】setting page 312
Figure 195【MQTT】【Topic Subscribe】setting page 315
Figure 196【MQTT】【Address】setting page 318
Figure 197 Database 321
Figure 198【Database Server Properties】【General】setting page 322
Figure 199【Database Server Properties】【Advanced】setting page 323
Figure 200【SQL Query】page 324

Figure 201【SQL Query】【General】setting page.....325
Figure 202【SQL Query】【Command】setting page.....327
Figure 203【SQL Query Table】setting.....329
Figure 204 OPC UA Application architecture diagram.....329
Figure 205【OPC UA Server】【Server】setting page.....330
Figure 206【OPC UA Server】【Tag】setting page.....332
Figure 207 Reading Information with OPC UA Client.....333
Figure 208【OPC UA Server】【Address】setting page.....334
Figure 209 Choose product series of the project.....335
Figure 210 Choose external device connection.....335
Figure 211 Enable OPC UA Server.....336
Figure 212 Set OPC UA Tags.....337
Figure 213 Compile project.....337
Figure 214 Choose project to run.....338
Figure 215 OPC UA Server running screen.....338
Figure 216【OPC UA Client】setting page.....339
Figure 217【OPC UA Client】【Tag Import】setting page.....340
Figure 218【OPC UA Client】【Security and Authentication】setting page.....342
Figure 219 REST APIApplication architecture diagram.....344
Figure 220 【REST API】setting page.....344
Figure 221 【REST Request】Editing Window.....345
Figure 222 Image Library Editing Window.....348
Figure 223 Image Selection Window of Image Library.....350
Figure 224 Audio Library Edit Window.....351
Figure 225 Audio File Selection Window of Audio Library.....353
Figure 226 Tag Library Edit Window.....353
Figure 227【Tag library import mode】dialog.....356
Figure 228【Custom import example 1-1】edit window.....358
Figure 229【Custom import example 1-2】edit window.....358
Figure 230【Custom import example 1-3】edit window.....359
Figure 231【Custom import example 2-1】edit window.....360
Figure 232【Custom import example 2-2】edit window.....360
Figure 233 Inputting Address Tag in【Address Selector】Edit Field.....361
Figure 234 Selecting Address Tag in【Address Selector】Dialog.....361
Figure 235 Text Library Edit Window.....362
Figure 236 Text Selector.....364
Figure 237 Add/Edit Text Window.....364
Figure 238 Text Library Font Window.....365
Figure 239【Font Library】.....365

Figure 240 Object List【Overlapping Object List】.....367
Figure 241 【Theme】in【Ribbon workspace】【Design】paging.....368
Figure 242 Object Setting page for【Operation】.....372
Figure 243 Setting page for【Dot】.....375
Figure 244 Setting page for【Line】.....376
Figure 245 Setting page for【Polyline】.....377
Figure 246 Illustration diagram when users double-click on a【Polyline】.....378
Figure 247 Illustration diagram of adding a dot on a【Polyline】.....378
Figure 248 Illustration diagram of deleting a dot on a【Polyline】.....379
Figure 249 Setting page for【Rectangular】.....379
Figure 250 Setting page for【Polygon】.....381
Figure 251 Setting page for【Ellipse】.....382
Figure 252 Setting page for【Arc】.....383
Figure 253 Setting page for【Pie】.....384
Figure 254 Setting page for【Table】.....385
Figure 255 Settings page for【Text】.....387
Figure 256 Settings page for【Image】.....390
Figure 257 Dynamic Image Setting Page.....392
Figure 258 Settings Page for【Scale】.....394
Figure 259【Pipeline】in【Toolbox】.....396
Figure 260【Pipeline】in【Ribbon】.....396
Figure 261 Settings Page for【Pipeline】【General】.....397
Figure 262 Settings Page for【Pipeline】【Pipe Item】.....399
Figure 263【Pipeline】click the right mouse button to modify joint.....402
Figure 264【Pipeline】click the right mouse button to insert pipe.....402
Figure 265【Pipeline】click the right mouse button to remove pipe or joint.....403
Figure 266【Setting】Screen of【Lamp】.....403
Figure 267【Display】Setting Screen of【Lamp】.....407
Figure 268【External Lable】Setting Screen of【Lamp】.....410
Figure 269【Setting】Screen of【Bit Switch】.....412
Figure 270【Setting】Screen of【Word Switch】.....418
Figure 271【Setting】Screen of【Change Screen】.....424
Figure 272【Setting】Screen of【Function Switch】.....428

Figure 273【Display】Setting Screen of【Switch】.....439
Figure 274【External Lable】Setting Screen of【Switch】.....443
Figure 275【Setting】Screen of【Numeric Input/Display】.....445
Figure 276【Display】Setting Screen of【Numeric Input/Display】.....450
Figure 277【Alarm】Setting Screen of【Numeric Input/Display】.....453
Figure 278【External Lable】Screen of【Numeric Input/Display】.....455
Figure 279【Setting】Screen of【Text Input/Display】.....457
Figure 280【Display】Setting Screen of【Text Input/Display】.....462
Figure 281【External Lable】Setting Screen of【Text Input/Display】.....464
Figure 282【Setting】Screen of【QR code Input/Display】.....466
Figure 283【External Lable】Setting Screen of【QR code Input/Display】.....469
Figure 284【Setting】Screen of【Date/Time Display】.....471
Figure 285【Display】Setting Screen of【Date/Time Display】.....472
Figure 286【Setting】Screen of【Window Screen Display】.....474
Figure 287【General】Setting Screen of【Meter】.....476
Figure 288【Display】Setting Screen of【Meter】.....478
Figure 289【Scale】Setting Screen of【Meter】.....480
Figure 290【Range】Setting Screen of【Meter】.....481
Figure 291【General】Setting Screen of【Linear Meter】.....483
Figure 292【Display】Setting Screen of【Linear Meter】.....485
Figure 293【Scale】Setting Screen of【Linear Meter】.....487
Figure 294【Range】Setting Screen of【Linear Meter】.....488
Figure 295【General】Setting Screen on【Circular Graph】.....489
Figure 296【Display】Setting Screen on【Circular Graph】.....491
Figure 297【Scale】Setting Screen on【Circular Graph】.....492
Figure 298【Range】Setting Screen on【Circular Graph】.....493
Figure 299【General】Setting Screen on【Pie Chart】.....494
Figure 300【Display】Setting Screen on【Pie Chart】.....496
Figure 301【Slice Display】Setting Screen on【Pie Chart】.....497
Figure 302【General】Setting Screen on【Data Block Graph】.....498
Figure 303【Curve】Setting Screen on【Data Block Graph】.....500
Figure 304【Advanced Curve】Setting Screen of【Data Block Graph】.....503
Figure 305【Display】Setting Screen of【Data Block Graph】.....504

Figure 306【Axis】Setting Screen of【Data Block Graph】 506
Figure 307【Advanced】Setting Screen of【Data Block Graph】 508
Figure 308【Sub Switch】Setting Screen of【Data Block Graph】 511
Figure 309【General】 Setting Screen of 【Data Block XY Scatter】 515
Figure 310【Curve】Setting Screen of【Data Block XY Scatter】 517
Figure 311【Display】Setting Screen of【Data Block XY Scatter】 520
Figure 312【Axis】Setting Screen of【Data Block XY Scatter】 521
Figure 313【Advanced】Setting Screen of【Data Block XY Scatter】 523
Figure 314【Sub Switch】Setting Screen of【Data Block XY Scatter】 527
Figure 315【Setting】Screen of【Multistate Switch】 531
Figure 316【Display】Setting Screen of【Multistate Switch】 533
Figure 317【External Lable】Setting Screen of【Multistate Switch】 536
Figure 318【Setting】Screen of【Slide Switch】 538
Figure 319【Display】Setting Screen of【Slide Switch】 539
Figure 320【External Lable】Setting Screen of【Slide Switch】 541
Figure 321【Setting】Screen of【Selector List】 543
Figure 322【Display】Setting Screen of【Selector List】 546
Figure 323【External Lable】Setting Screen of【Selector List】 548
Figure 324【Radio Button】【Setting】setting paging 550
Figure 325【Radio Button】【Display】setting paging 552
Figure 326【Radio Button】【External Lable】setting paging 554
Figure 327 Setting Dialog of【Input Display】 556
Figure 328【Setting】Screen of【Key】 558
Figure 329【Display】Setting Screen of【Key】 560
Figure 330 Setting Dialog of【Limit Value Display】 563
Figure 331【Setting】Screen of【Animated Graphic】 565
Figure 332【Display】Setting Screen of【Animated Graphic】 569
Figure 333【Setting】Screen of【Rotation Indicator】 572
Figure 334 【Setting】Screen of【GIF Display】 576
Figure 335【General】Setting Screen of【Historic Trend】 578
Figure 336【Curve】Setting Screen of【Historic Trend】 580
Figure 337【Advanced Curve】Setting Screen of【Historic Trend】 583
Figure 338【Display】Setting Screen of【Historic Trend】 584

Figure 339【Axis】Setting Screen of【Historic Trend】 586
Figure 340【Advanced】Setting Screen of【Historic Trend】 588
Figure 341【Sub Switch】Setting Screen of【Historic Trend】 592
Figure 342【General】Setting Screen of【Historic XY Scatter】 596
Figure 343【Curve】Setting Screen of【Historic XY Scatter】 597
Figure 344【Display】Setting Screen of【Historic XY Scatter】 600
Figure 345【Axis】Setting Screen of【Historic XY Scatter】 601
Figure 346【Advanced】Setting Screen of【Historic XY Scatter】 603
Figure 347【Sub Switch】Setting Screen of【Historic XY Scatter】 607
Figure 348【General】Setting Screen of【Historic Data Table】 611
Figure 349【Data Items】Setting Screen of【Historic Data Table】 614
Figure 350【Sub Switch】Setting Screen of【Historic Data Table】 616
Figure 351【General】Setting Screen of【Historic Data Selector】 621
Figure 352【Display】Setting Screen of【Historic Data Selector】 623
Figure 353【Setting】Screen of【Alarm Display】 624
Figure 354【Display】Setting Screen of【Alarm Display】 629
Figure 355【Display】Setting Screen of【Alarm Display】 630
Figure 356【Sub Switch】Setting Screen of【Alarm Display】 632
Figure 357【Setting】Screen of【Alarm Scrolling Text】 636
Figure 358【Display】Setting Screen of【Alarm Scrolling Text】 639
Figure 359【General】Setting Screen of【Alarm Data Selector】 640
Figure 360【Display】Setting Screen of【Alarm Data Selector】 642
Figure 361【General】Setting Page of【Recipe Selector】 643
Figure 362【Advanced】Setting Page of【Recipe Selector】 644
Figure 363【General】Setting Page of【Recipe Table】 646
Figure 364【Data Item】Setting Page of【Recipe Table】 650
Figure 365【Advanced】Setting Page of【Recipe Table】 651
Figure 366【Sub Switch】Setting Page of【Recipe Table】 652
Figure 367【General】Setting Screen of【Operation Viewer】 656
Figure 368【Content】Setting Screen of【Operation Viewer】 658
Figure 369【Sub Switch】Setting Screen of【Operation Viewer】 660
Figure 370【Schedule Setting Table】【General】setting paging 664
Figure 371【Schedule Setting Table】【Header】setting paging 666

Figure 372【Video Input Display】【Setting】setting paging 667
Figure 373【SQL Query Table】【General】setting paging 668
Figure 374【SQL Query Table】【Data Item】Setting Page 670
Figure 375【SQL Query Table】【Sub Switch】Setting Page 671
Figure 376 View page of the Ribbon 672
Figure 377 User Toolbox 673
Figure 378 add object to【User Toolbox】 674
Figure 379 User Toolbox–Default name 674
Figure 380 drag object from【User Toolbox】to【Work Space】 675
Figure 381 Menu–Mouse over category (Left); Mouse over object (Middle); Mouse not over category or object (Right) 676
Figure 382 Menu–Import 677
Figure 383 Select file to import 678
Figure 384 Menu–Export 678
Figure 385 Select category to export 678
Figure 386 Select the name and location for the file export 679
Figure 387 Repeated category name warning 679
Figure 388 Category Name Conflict selection window 680
Figure 389 Repeated object name warning 680
Figure 390 Object Name Conflict selection window 681
Figure 391 Open download function 682
Figure 392 Download Manager function interface 683
Figure 393【System Setting Configure】【Basic】setting page 687
Figure 394【System Setting Configure】【System】setting page 688
Figure 395【System Setting Configure】【Ethernet】setting page 690
Figure 396【System Setting Configure】【Sever】setting page 691
Figure 397【System Setting Configure】【Display】setting page 693
Figure 398【System Setting Configure】【Time】setting page 693
Figure 399【System Setting Configure】【MISC】setting page 694
Figure 400 Make USB Update File Function 695
Figure 401 Make USB Update File 696
Figure 402 Project Update Question Dialog 700
Figure 403 USB Update List 700
Figure 404 Open the upload function 700
Figure 405 Upload Manager function interface 701
Figure 406 Upload Step 1 702
Figure 407 Upload Step 2 703
Figure 408 Upload Step 3 703
Figure 409 Add upload folder 704
Figure 410 HMI upload asking dialogue 704
Figure 411 Perform compile from the toolbar above 704
Figure 412 Compilation process illustration 705

Figure 413 Compilation results illustration 705
Figure 414 Single click on the compile failure message window to jump to the component 706
Figure 415 Double click on the compile failure message to open the screen setting 706
Figure 416 Decompile Function 707
Figure 417 Decompile dialog window 707
Figure 418 Simulation setting window 708
Figure 419 Starting simulation 708
Figure 420 Offline Simulation 708
Figure 421 Online simulation connection setting 709
Figure 422 Online simulation illustration 709
Figure 423【File Transfer】 710
Figure 424【File Transfer】Window 710
Figure 425【File Transfer】Password Prompt Window 711
Figure 426【File Transfer】Successful Connection Window 711
Figure 427【File Transfer】Download File Complete 714
Figure 428 Pass Through architecture 715
Figure 429【Pass Through】 715
Figure 430 Pass Through parameter setting page 716
Figure 431 Pass Through parameter setting interface 719
Figure 432 Successfully switched HMI to Pass Through mode 720
Figure 433 Open WinProLadder connection settings 720
Figure 434 Selecting the communication protocol 720
Figure 435 Setting the WinProLadder Ethernet communication parameters 721
Figure 436 Virtual COM 721
Figure 437 HMI Passthrough Port 722
Figure 438【PLC Resource Review】 722
Figure 439 PLC Resource Review 723
Figure 440 PLC Resource Review–Select PLC manufacturer and series model 723
Figure 441 Information of supported PLC driver versions 723
Figure 442 Information on internal PLC single point and registers available for access 723
Figure 443【Remote System Setting】 724
Figure 444【Remote System Setting】setting page 725
Figure 445【Remote System Setting】successfully connect to HMI 725
Figure 446【MERITEK PLC Transfer Encrypt Tool】 725
Figure 447【MBF Reader】 726
Figure 448【MBF Reader】function dialog 726
Figure 449【Install USB Driver】 728
Figure 450【Download】 729

Figure 451【Download】setting page 729
Figure 452【iAccess】 729
Figure 453【iAccess】login page 730
Figure 454【iAccess】operation page 730
Figure 455 Adjust the memory size 732
Figure 456 Use different backup memory types 732
Figure 457 Input Address Dialog-Device Register 733
Figure 458 Input Address Dialog-Use Index Register 0 733
Figure 459 Input Address Dialog-System Tags-Index Register 734
Figure 460 Index Register Example 734
Figure 461 Index Register Example $S:I0 = 0 734
Figure 462 Index Register Example $S:I0 = 1 735
Figure 463 Index Register Example $S:I0 = 2 735
Figure 464 System Setting home page for HMI 747
Figure 465 COM Port data page 748
Figure 466【Network】【Ethernet】paging 749
Figure 467【Network】【DNS】paging 749
Figure 468【Network】【Access Control】paging 750
Figure 469【Network】【Wi-Fi】paging 751
Figure 470【Wi-Fi】【Access Point】setting paging 751
Figure 471【Servers/IoT Setting】【FTP】paging 752
Figure 472【Servers/IoT Setting】【VNC】paging 753
Figure 473【Servers/IoT Setting】【Pass Through】paging 754
Figure 474【Servers/IoT Setting】【IoT】paging 754
Figure 475【Link】setting page 755
Figure 476【Display】setting page 756
Figure 477【Calibration】page 757
Figure 478【Time】setting page 758
Figure 479【System Info】setting page 758
Figure 480【MISC】【General】setting page 760
Figure 481【MISC】【Security】setting page 761
Figure 482【MISC】【Copy Project】schematic 762
Figure 483【MISC】【Copy Project】setting page 762
Figure 484【MISC】【Update Project】setting page 763
Figure 485【MISC】【Backup】setting page 764
Figure 486【MISC】【Reboot】setting page 765
Figure 487 project error detection 766

Figure 488 Gateway Server Application Diagram 770
Figure 489【Address Mapping Table】Settings Screen 771
Figure 490【Address Mapping Table】Settings Screen 771
Figure 491 HMI Connection Page 772
Figure 492 New Modbus Slave (TCP) Driver 773
Figure 493【Address Mapping Table】Configuration 774
Figure 494 Results of the Gateway Server 774
Figure 495 HMI show PLC Ladder Diagram Program illustration 775
Figure 496 drag a【Function Switch】to window 776
Figure 497 select【PLC: Show ladder viewer】dialog 776
Figure 498 The menu dialog of the linked device 776
Figure 499 show PLC ladder diagram program 777
Figure 500 The interface of the PLC ladder diagram is displayed on the HMI 777
Figure 501 drag a【Function Switch】to window 781
Figure 502 select【PLC: Update MERITEK PLC Project From HMI or USB Flash Drive】 dialog 782
Figure 503 Select the dialog window to update the project 782
Figure 504 The menu dialog of the linked device 782
Figure 505 ask whether to stop PLC running 782
Figure 506 download success than ask whether start the PLC dialog window 783
Figure 507【MERITEK PLC Transfer Project Generator】option 784
Figure 508【MERITEK PLC Transfer Project Generator】setting 784
Figure 509 select to update the PLC project 785
Figure 510 select the transfer password 785
Figure 511 select device 785
Figure 512 ask whether to stop the running PLC 785
Figure 513 download success and ask whether to start PLC immediately 786
Figure 514【Single Pass Password Generator】option 786
Figure 515【Single Pass Password Generator】setting window 786
Figure 516 select to update the PLC project 787
Figure 517 select single pass password 787
Figure 518【Single Pass Password Generator】window 788
Figure 519 enter single pass password window 788
Figure 520 select device 788
Figure 521 ask whether to stop the running PLC 788
Figure 522 download success and ask whether to start PLC immediately 788
Figure 523 drag a【Function Switch】to window 789
Figure 524 select【PLC: Show Ethernet Module Configuration】dialog 789
Figure 525 dialog of MERITEK PLC on ethernet 790
Figure 526 General properties of ethernet module 791
Figure 527 password setting page of ethernet module 792

Figure 528 Access Control setting page of ethernet module 792
Figure 529 External Severs setting page of ethernet module 793
Figure 530 service port setting page of ethernet module 794
Figure 531 drag a【Function Switch】to the screen 795
Figure 532 select run/stop PLC function 795
Figure 533 select the PLC device 795
Figure 534 select the target PLC 796
Figure 535 Disable illustration 797
Figure 536 Enable illustration 797
Figure 537 user-defined protocol illustration 798
Figure 538 choose【User-defined protocol】 799
Figure 539 choose【Protocol Setting】 799
Figure 540【User-defined Protocol】instruction list 800
Figure 541【User-defined Protocol】main operation interface 801
Figure 542【User-defined Protocol Setting】instruction paging 802
Figure 543【User-defined Protocol Setting】send data paging 803
Figure 544【User-defined Protocol Setting】returndata paging 805
Figure 545【User-defined Protocol Setting】checksum paging 807
Figure 546 HMI COM1 and COM4 connection page 811
Figure 547 set User-define protocol communication format 811
Figure 548【Instruction List】dialog 812
Figure 549【User-defined Protocol Setting】dialog 812
Figure 550【Checksum】paging dialog 813
Figure 551【Checksum Calculation】dialog 813
Figure 552 composite result dialog 814
Figure 553 return data dialog 815
Figure 554 planning Numeric Input/Display object 815
Figure 555【User-defined Protocol Setting】dialog 816
Figure 556 switch to【Data】paging dialog 816
Figure 557 switch to【Checksum】paging dialog 817
Figure 558 planning Numeric Input/Display object 817
Figure 559 HMI COM1 and COM4 connection page 818
Figure 560 communication instruction in script 818
Figure 561 communication instruction in script 819
Figure 562 Read the 40001 address data script for the Modbus device 820
Figure 563 Planning a new【Numeric Input/Display】object 820
Figure 564 multi-link application diagram 821
Figure 565 Multi-Link(Serial) connection diagram 822
Figure 566【Multi-Link Master(Serial)】setting page 822

Figure 567【Multi-Link Slave(Serial)】setting page.....823
Figure 568【Multi-Link Master(Ethernet)】setting page 825
Figure 569【Multi-Link Slave(Ethernet)】setting page 826
Figure 570 setting page【Operation Lock】 828
Figure 571 setting page of multi-link master 829
Figure 572 setting page of multi-link slave 829
Figure 573 status bar.....831
Figure 574【Search/Replace】function window.....831
Figure 575【Search/Replace】result function window.....833
Figure 576【Search/Replace】option in【View】 834
Figure 577 System Integrity Protection.....836
Figure 578 Using mini-USB cable download to repair system integrity protection...837
Figure 579 Using USB flash disk to download repair system integrity protection.....838

1. MERITEK FvDesigner Manual

Introduction to MERITEK FvDesigner

Foreword

The MERITEK FvDesigner is a software tool used to design and develop MERITEK HMI series product projects. The FvDesigner includes an easy to operate Windows interface, similar to the frequently used Microsoft Office Ribbon interface. It supports rich figure objects to design various Windows interfaces and applications, as well as multiple types of user defined databases, making the project easy to organize, manage and share. It includes recipe functions, data log, alarm processing and user operation logs, making HMI function planning more complete.

System Requirements

Supported Operating Systems: Windows XP
Windows 7 (32&64 bit)
Windows 8 (32&64 bit)
Windows 10 (32&64 bit)

1.1 System Installation

The installation instructions will appear once the installing package is executed; please follow and confirm the installation steps.

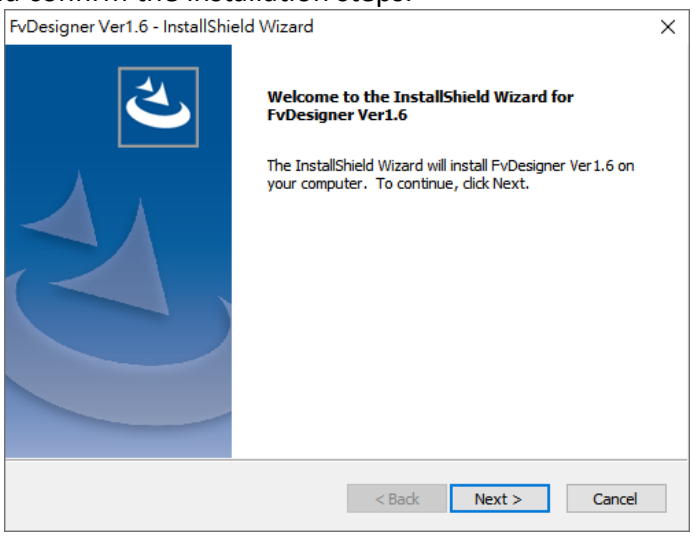


Figure 1 Installation Welcoming Screen

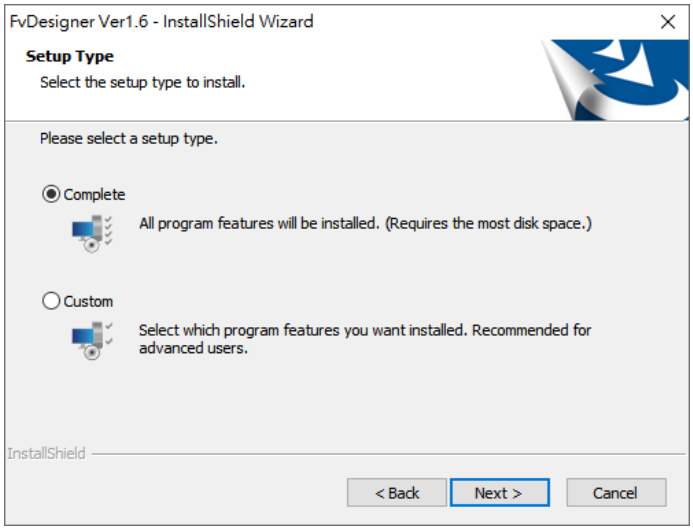


Figure 2 User Information

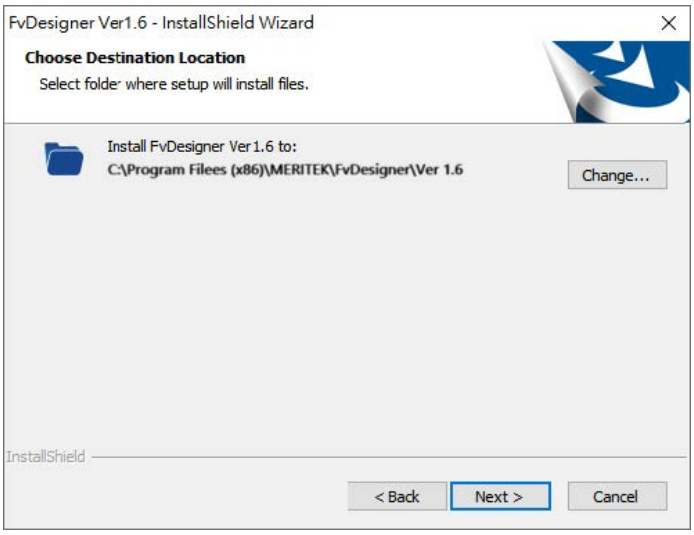


Figure 3 Select Software Installation Path

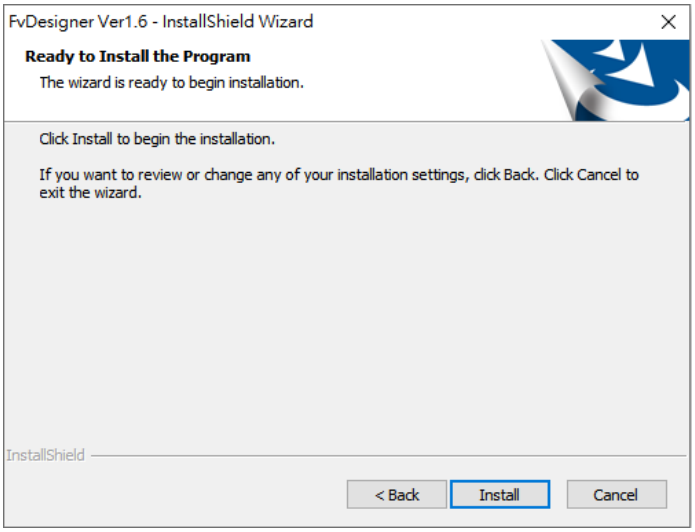


Figure 4 Confirmation Before Installation

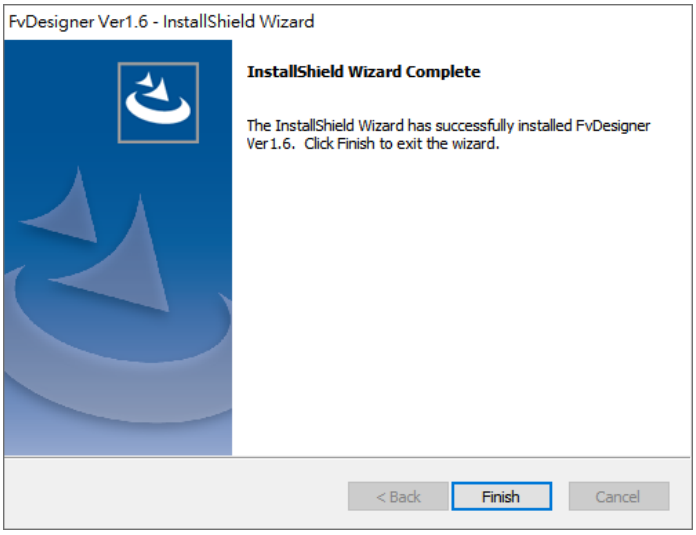


Figure 5 Installation Complete

Note:
If you choose a complete installation, the system will automatically install it in the default folder path C:\Program Files (x86)\MERITEK\FvDesigner\Ver1.6.

1.2 Startup Screen

After the installation is complete, you will see MeritekUtilityManager Ver1.6 and FvDesigner Ver1.6 two exe files on the desktop:
MERITEK Utility Manager is a portal software. If users want to transfer file with HMI without opening FvDesigner. At this time, they can use this portal software to directly open the file transfer interface.
FvDesigner is the software tool for our MERITEK HMI series product project.

Table 1 Startup Screen Functions

Function	Description
	Meritek Utility Manage icon, double click to start up software.
【Recent Access】	If a function is executed in the menu, it will be recorded in the recent use and can be quickly open.
	Switch the software interface to other languages including English, Traditional Chinese, Simplified Chinese, and Türkçe.

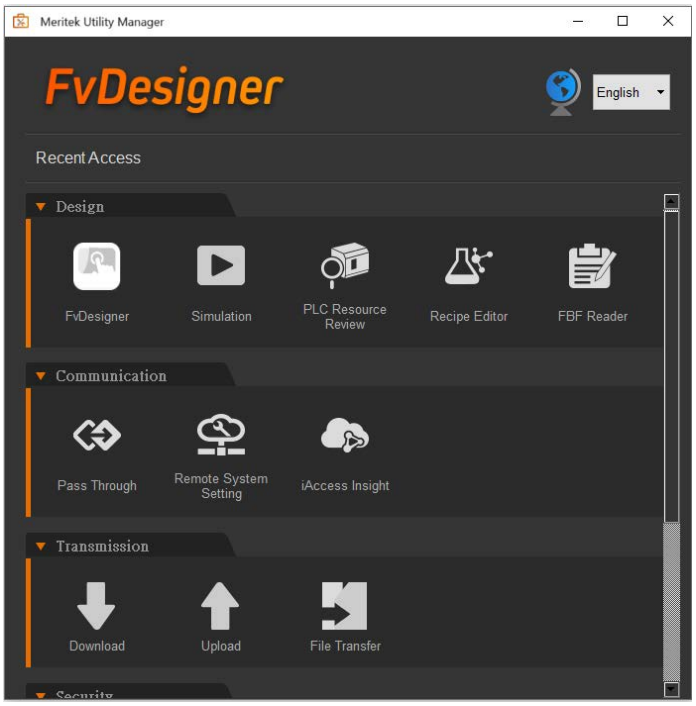


Figure 6 Startup Screen

1.3 Create New Project

After clicking the FvDesigner icon, the main interface of the software will open. You can choose to open an old file or create a new project.

When the screen is on the homepage, move the mouse to the right side of the newly added, the recently selected models will be displayed, and the project can be quickly created.

Table 2 Create New Project Steps

Function	Description
	The FvDesigner icon, double click to start up the software.
【Home】	Software start up home page, can choose old files or create a new project.
【New】	Create a new project.
【Recent Products】	Display the models that the project has been created recently.
【Browse】	When clicking this option, it will pop up a window to let users choose the project to open.
【Exit】	Close FvDesigner.
	Switch the software interface to other languages including English, Traditional Chinese, Simplified Chinese, and Türkçe.

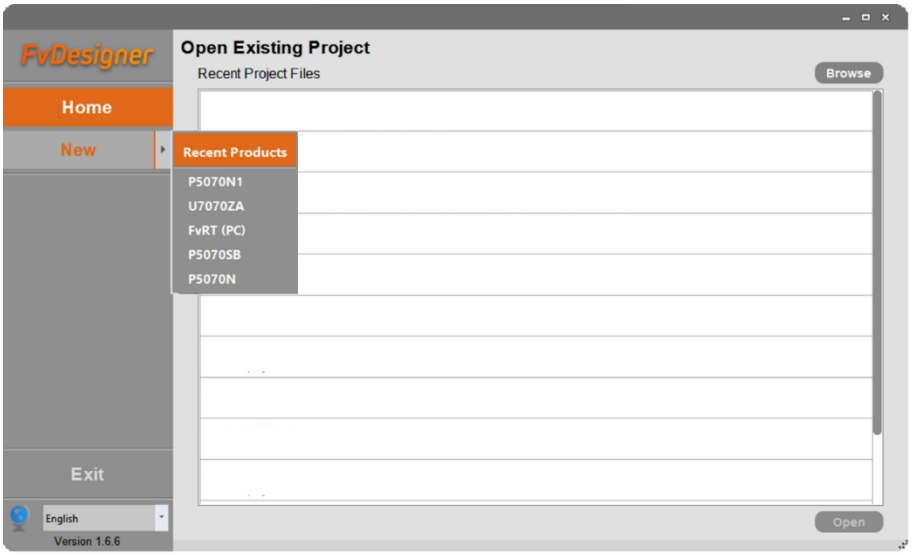


Figure 7 Create New Project: Select Product Type

To create a new project, click “New” -> “Finish”, then the project will seccessfully be created.

Table 3 Create New Project

Function	Description
【HMI】	Select the HMI model of the project.
【Controllers】	Select the controllers to connect and also set up the parameters.
【HMI Information】	After selecting the model, then will display the current model information on the right side.

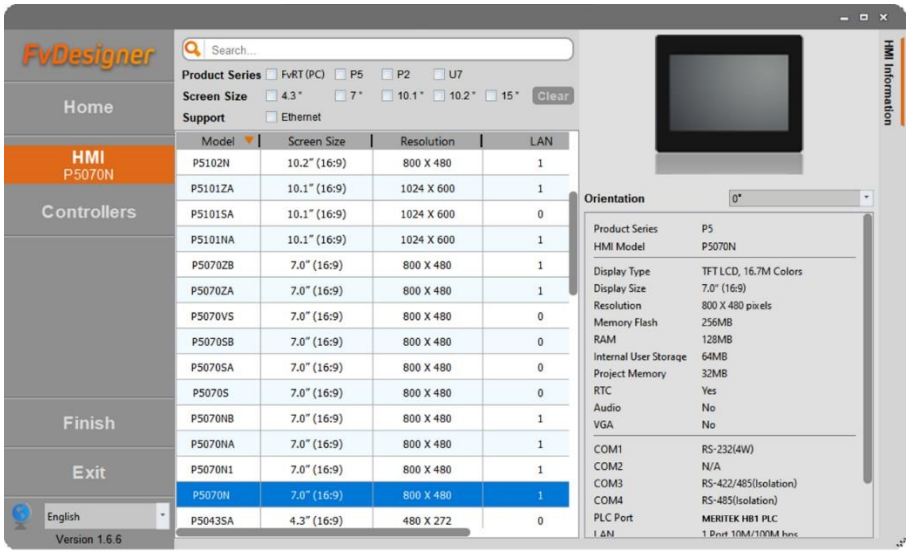


Figure 8 Create New Project: Select Controller

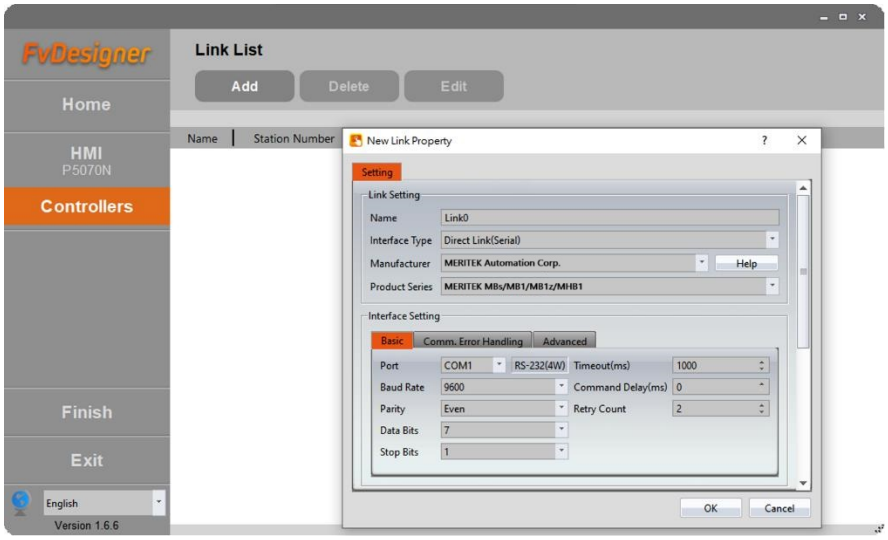


Figure 9 Create New Project: Link Properties Setting

Note: The Choose Controller tab is optional. The user can select only the HMI model and proceed to editing the project.

2. Window Configuration

The default Window Configuration of MERITEK FvDesigner is as shown below:

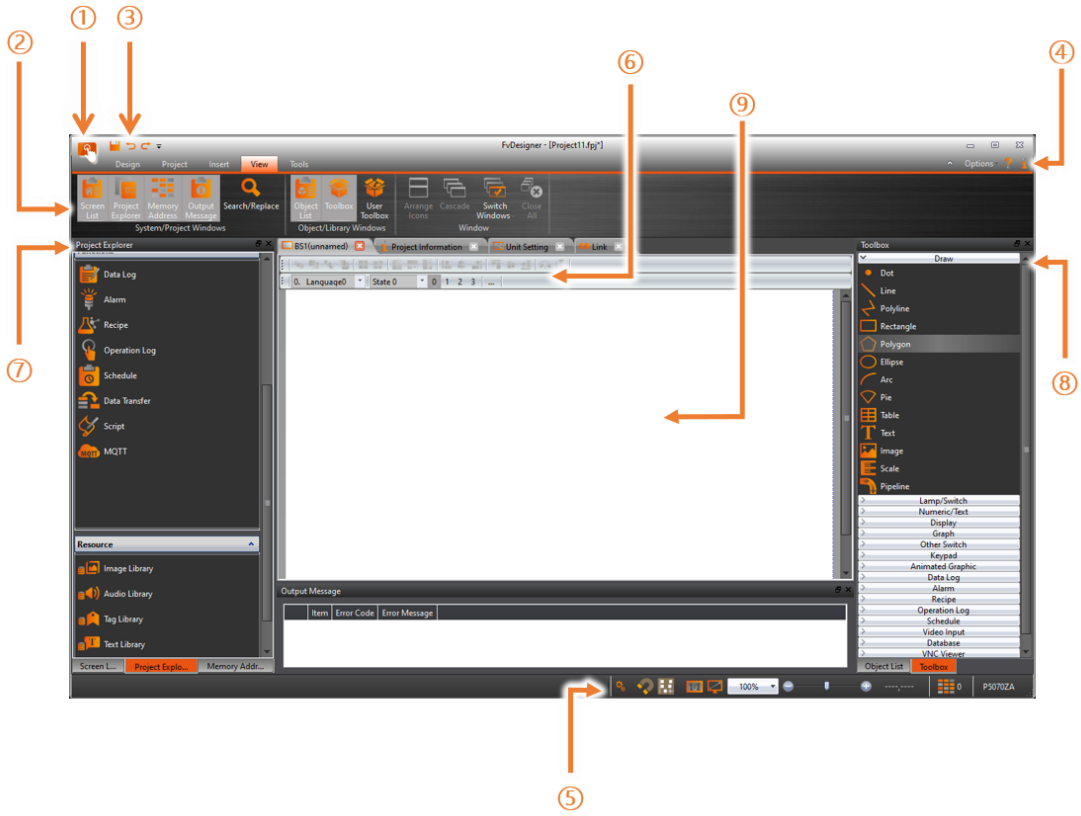


Figure 10 MERITEK FvDesigner Window Configuration

1. File
2. Project function area
3. File shortcut bar
4. Software interface appearance options and version information
5. Software status bar
6. Project shortcut toolbar
7. Project system window
8. Objects and toolboxes
9. Project screen window area

2.1 File Tags

2.1.1 File

The File Window will appear after pressing the  icon, as shown below.

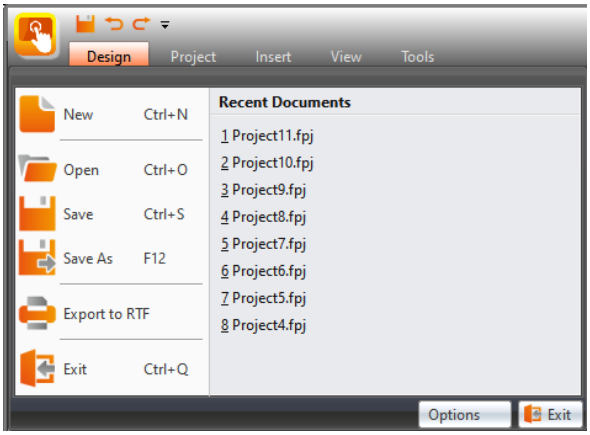
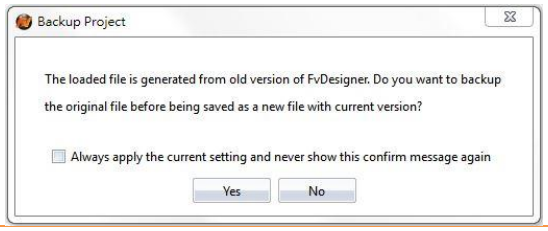


Figure 11 Toolbar–File

Table 4 File Options

Function	Description
【New(N)】	Close the current project and open the Project Wizard. A reminder window will appear to ask the developer to save the project if the current project was not yet saved.
【Open(O)】	Select the path and open a project. A reminder window will appear to ask the developer to save the project if the current project was not yet saved. If opening an existing project, a dialog will appear asking the user if a backup should be created. If “Yes” is selected, a backup file will be created. For example, if the file name is Project1.fpj, the backup will be created under a folder named “backup” created in the same path. The backup file will be named Project1.fpj.bak. If “No” is selected, no backup will be created. 
【Save(S)】	Save the currently editing project.
【Save as(A)】	Select a path and save the current project as a new file.
【Export to RTF】	Creates a document detailing project information in an RTF file that can be opened in text editors such as Microsoft Word. Information in the RTF file includes the HMI model used, memory usage, and screen information.
【Recent Documents】	Open recently used project. These project names will be displayed on the right of the window; if the cursor is moved on top of a file name, the file path will be displayed.
【Option(I)】	Open【Option】, to set software environment related settings. Function Description

	【General】	Allows switching between different languages. Include English, Traditional Chinese, Simplified Chinese, Türkçe, etc.
	【Backup】	【Auto backup project from old version of FvDesigner】 It will automatically backup the old version project when open it. 【Show original project backup confirm message when startup】 It will show up a backup project dialog when open an old project.
	【License】	This is for the use of advanced function, for the detail you can contact with the dealer you purchased.
	【AutoSave】	After checking it, the automatic storage function is enabled, and you can choose to save periodically or disable detection storage.
【Exit(X)】	Close the current project and the program. A reminder window will appear to ask the developer to save the current project if the current project was not yet saved.	

2.2 Ribbon

The Ribbon is a user interface that uses panels and tab pages as the architecture; functions will be displayed with icons in the Window below according to different options selected. There are five tabs in this section:【Design(D)】,【Project(P)】,【Insert(I)】,【View(V)】, and【Tools(T)】.

2.2.1 Design(D)

【Design(D)】allows developers to edit the object configurations within the work space. It provides general clipboard functions, object format settings and provides frequently used objects to insert into the work space. Theme is used to apply settings to specifically selected objects in the window and change their appearance. Detailed descriptions of each function are as follows:

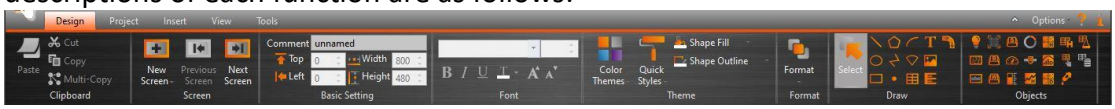


Figure 12 Design(D)

Table 5 Introduction to Ribbon User Interface Functions

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td>【Clipboard】</td><td>Basic functions related to designing objects.
<table>
<tr><th>Block</th><th>Description</th></tr>
<tr><td>【Cut】</td><td>Cut the object onto the clipboard.</td></tr>
<tr><td>【Paste】</td><td>Paste the cut or copied object.</td></tr>
<tr><td>【Copy】</td><td>Copy the object onto the clipboard.</td></tr>
<tr><td>【Multi-Copy】</td><td>Multi-Copy the object.</td></tr>
</table></td></tr>
<tr><td>【Screen】</td><td>A design screen can be quickly added and change screen.
<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td>【Base Screen】</td><td>General screen; its size is the same as the HMI resolution and cannot be changed.</td></tr>
<tr><td>【Window Screen】</td><td>This type of window screen is selected for both direct and indirect windows; the window screen size can be changed.</td></tr>
<tr><td>【Keypad Screen】</td><td>The required keypad screen can be customized here for use.</td></tr>
<tr><td>【Previous Screen】</td><td>Change to the pervious screen of the screen list.</td></tr>
<tr><td>【Next Screen】</td><td>Change to the next screen of the screen list.</td></tr>
</table></td></tr>
<tr><td>【Basic Setting】</td><td>Provides basic object settings for users to edit comments, location and size of the object.
<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td>【Comment】</td><td>The user can enter the comment associated with an object here.</td></tr>
<tr><td>【Top】【Left】</td><td>The coordinates for the top-left corner of the object:
Top: The y-coordinate for the top-most point of the object.
Left: The x-coordinate for the left-most point of the object.</td></tr>
<tr><td>【Width】
【Height】</td><td>The width and height of the object; uses pixel as units.</td></tr>
</table></td></tr>
<tr><td>【Font】</td><td>Provides basic settings for users to edit the font, size and color of text.</td></tr>
<tr><td>【Text Align】</td><td>Provides basic settings for users to edit the position of text in an object.</td></tr>
<tr><td>【Theme】</td><td>Users can use this function to apply settings to the specifically selected objects in the work space to change</td></tr>
</table>

<table>
<tr><td></td><td>their appearances.<table><tr><th>Function</th><th>Description</th></tr><tr><td>【Color Themes】</td><td>Select a color theme and apply it to an object; allows designers to change the color style of the object.</td></tr><tr><td>【Quick Styles】</td><td>Select Quick Styles to apply preset color configurations to each object; allows designers to quickly develop their own object color appearances.</td></tr><tr><td>【Shape Fill/Shape Outline】</td><td>Adjust the appearance and color effects of an object.
Note: Only the theme colors will change with the【Color Themes】; standard colors will not change with the【Color Themes】.</td></tr></table></td></tr>
<tr><td>【Format】</td><td>Provides object format functions to allow users to select multiple objects and organize the typesetting of the screen objects, including alignment, spacing, size adjustment functions etc.<table><tr><th>Function</th><th>Description</th></tr><tr><td>【Bring to Front】</td><td>Move object to front.</td></tr><tr><td>【Move Forward】</td><td>Move object forward a layer.</td></tr><tr><td>【Send to Back】</td><td>Move object to back.</td></tr><tr><td>【Move Forward】</td><td>Move object down a layer.</td></tr><tr><td>【Group】</td><td>Multiple objects can be grouped into a single object. Movement and properties are applied to the entire group.</td></tr><tr><td>【Ungroup】</td><td>Restores a group into single objects.</td></tr><tr><td>【Make Same Size】</td><td>Resize selected objects to be the same size as the object in the lowermost layer.</td></tr><tr><td>【Make Same Width】</td><td>Adjusts the width of the selected objects to be the same width as the object in the lowermost layer.</td></tr><tr><td>【Make Same Height】</td><td>Adjusts the height of the selected objects to be the same height as the object in the lowermost layer.</td></tr><tr><td>【Align】</td><td>Eight options will appear when this</td></tr></table></td></tr>
</table>

		button is pressed: Align Left Align Center Align Right Align Top Align Middle Align Bottom Distribute Horizontally Distribute Vertically
	【Recommended Model】	When FvDesigner model type choose PC will show up this option, and provide the IGU-FvRT level suggestion according to the amount of the used registers and links.
【Draw】	Select the object then you can draw it on the workspace.	
【Object】	Select the object then you can draw it on the workspace.	

2.2.2 Project(P)

This field provides project related function settings, and it is divided into the following three parts:

【Execute】Compiles the project file into a running package, or decompiles the running package into a project file.

【Transfer】is related to file transfer; It can download the compiled running package onto the HMI for running or acquire the running package from the HMI and upload it onto the computer. Users can also make an USB update file to replace the running project on HMI.

【Run】opens the simulation window to run the current project, include off-line simulation and on-line simulation.



Figure 13 Project

2.2.2.1 Compile

The compile function can generate the project running package used by the software download tool.

Before v1.6.34, xxx.cfrp will be generated. From v1.6.34, the compiled file will have two files: xxx.cfrplst & xxx_G01.cfrp. Both files must be in the same folder when downloading!

After compilation, the output window will display information such as compilation

results and memory configuration status. Before executing the simulation or download function, it will ask to save the project and then compile and generate the project runtime package.

Table 6 Compilation Output Window Related Information

Information	Content
【Project】	The compiled project file.
【Date】	Compiled date and time.
【Running Package】	The location to create the running package file (*.cfrp).
【Memory Usage】	Total memory size that has been used. The remaining space of the project file.
【Project Capacity】	The total used size of the project file. Space remaining for the running package.
【Compile Output】	Number of errors Number of warnings Compile Output: Success/ Failed.
【Recommended Model】	When the FvDesigner model chooses PC, this option will appear, and according to the number of registers and links used in the project, then recommended which level IGU-FvRT can be used.

2.2.2.2 Font Replace Manager

During compilation, when the system detects that the input text does not match the selected font, the【Font Replacement Manager】will pop up to prompt the user to change the font. If the correct font is not replaced, the project will be downloaded to the HMI. Afterwards, the text may not be displayed.

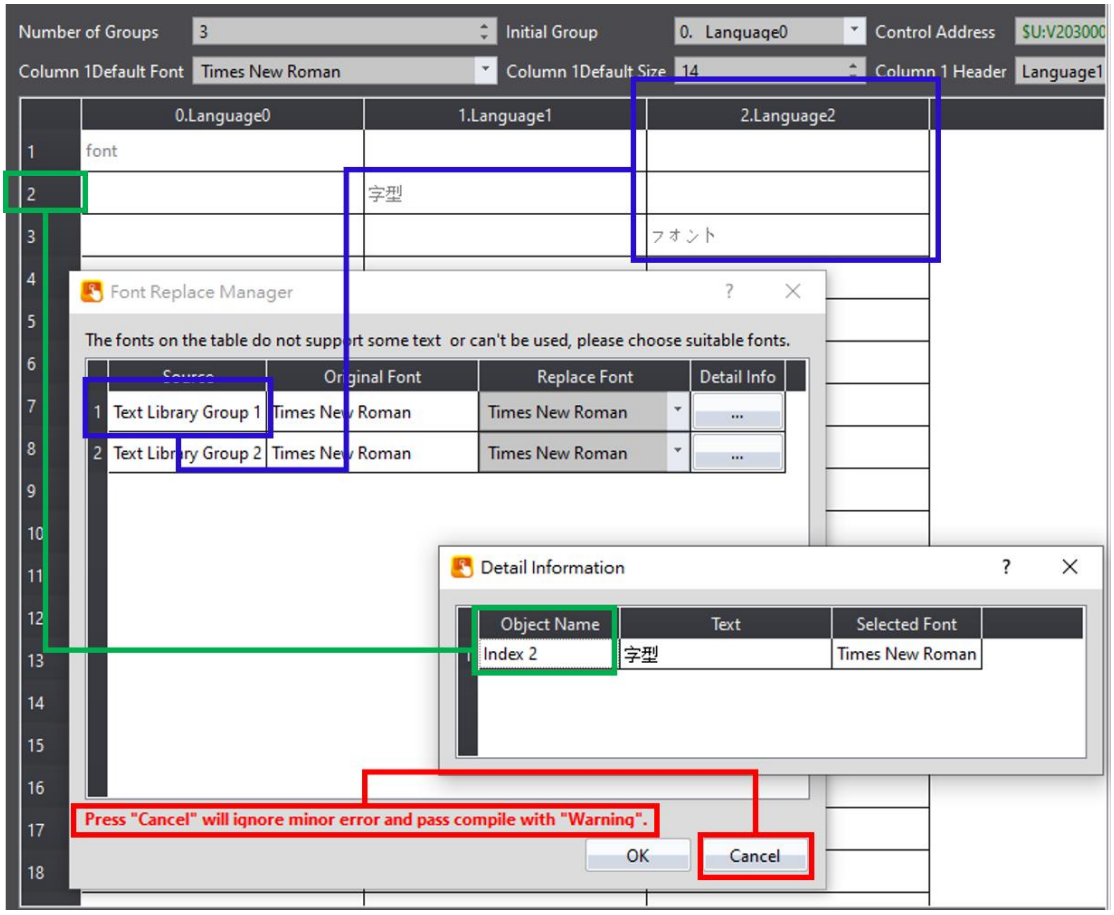


Figure 14 Font Replace Manager

As shown in the figure above, the font replacement manager pops up. We can know from the Detail information what text is detected as an error, and know its group and line number; after modifying it in【Font Replacement Manager】, press OK that the check project will need to be recompiled, and the user can also choose to cancel to skip the font check.

2.2.2.3 Decompile

The decompile process can be used on the running package (.cfrp) uploaded from the HMI to extract the project and attached recipes and fonts. The decompile function can be found in the【Project】function tab of the Ribbon task bar on top of the FvDesigner; click on【Decompile】to start. Please refer to the **Chapter 21–Build Running Package and Simulation** for more details.

2.2.2.4 Upload & Download

Data transfer can be performed for projects through USB or Internet/Serial cable connection. Clicking on the Download function will automatically compile and save the project to the HMI. Clicking the Upload function will upload the running package running on the HMI onto the computer. If users want to view the contents of the running package after upload is complete, the decompile function can be used to extract contents from the running package.

The HMI network IP information must be set when using Internet transfer. The auto-search function can be used if the user does not know the IP information; the software will search for MERITEK HMI devices on the local network and display the device IP information found in a table. Select the target device's IP to perform data transfer.

The transfer function is password protected; the upload or download password must be set before transferring and this password will be checked during connection. Communication will only be performed if the password is correct.

Please refer to the **【Upload】** and **【Download Current Project】** sections in **Chapter 21 Build Running Package and Simulation** for details.

2.2.2.5 Make USB Flash Drive Update File

This function allows the user to generate a dedicated USB update file in the specified path.

Before v1.6.34, xxx.uferp will be generated, put this file into the root directory of the USB, and then insert the USB into the HMI and it will ask whether to update the project.
Starting from version v1.6.34, the compiled files will appear xxx.uferplst & xxx_G01.uferp. Both files should be placed in the root directory of the USB. After inserting the USB into the HMI, the system will ask whether to update the project. Click Yes After selecting any file extension, the file will start to be updated.

Please refer to the **Chapter 21–Build Running Package and Simulation** for details.

2.2.2.6 IGU Setting

When FvDesigner choose PC model, will appear USB Dongle seeting option, figure as shown below, this option is mainly to set the customer ID of IGFU-FvRT(USB Dongle), insert IGU-FvRT(USB Dongle) into PC USB port, then set the customer ID through this option, the customer ID in the project and the customer ID of IGU-FvRT(USB Dongle) need to be the same, then the FvRT can excute correctly. For more detailed operation step please refer to FvRT manual.

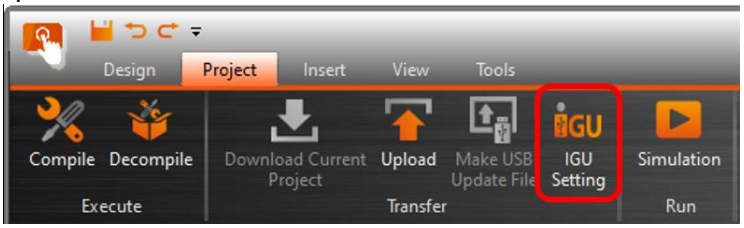


Figure 15 IGU Setting List

2.2.2.7 HMI detects USB Flash Drive plugged in

When HMI detects USB flash drive is plugged in, for operator to know clearly, the message will show on the screen of HMI as figure shown below, to remind operator.



Figure 16 HMI detects USB flash drive is plugged in

When HMI detects USB flash drive is removed, for operator to know clearly, the message will show on the screen of HMI as figure shown below, to remind operator.



Figure 17 HMI detects USB flash drive is removed

The USB flash drive formats that HMI can read and write include FAT32, NTFS, and support support most brands with a storage capacity of 2 ~ 32G. After the system version OS 2.0.22, it supports exFAT format and 64G.

2.2.2.8 Simulation

The project must first be compiled to generate the running package file before the simulation is run. Simulations are divided into Offline Simulation and Online Simulation; their descriptions are as follows:

Offline Simulation: Does not require connection of PLC and HMI equipment; the screens of the running package can be operated directly.

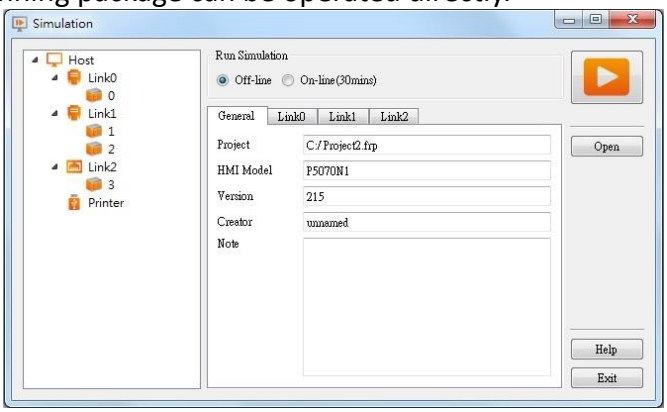


Figure 18 Offline Simulation

Online Simulation: PC and PLC connected; running package is executed on the PC and communicates with the PLC.

Port is the COM Port of PC

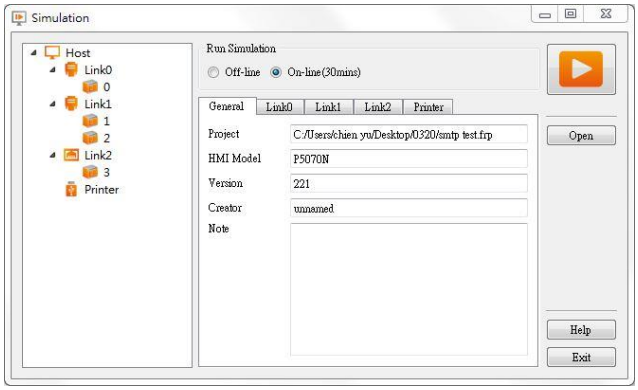


Figure 19 Online Simulation

Please refer to the simulation chapter in **Chapter 21–Build Running Package and Simulation** for details.

2.2.3 Insert(I)

This field allows users to quickly add screens or functions; they can be added by pressing this button, in which includes:

【Screen】,【Device】,【Data Log】,【Alarm】,【Recipe】,【Schedule】,【Data Transfer】and【Script】

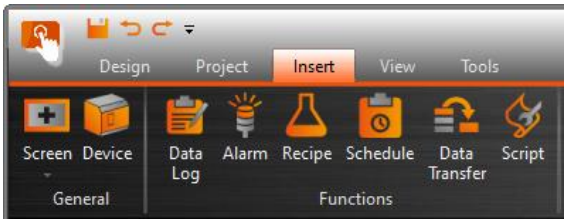


Figure 20 Insert

2.2.4 View(V)

The View tab of the Ribbon contains functions related to the appearance of the application; the【System/Project Windows】will be placed on the left except【Search/Replace】and the【Object/Library Windows】will be placed on the right.

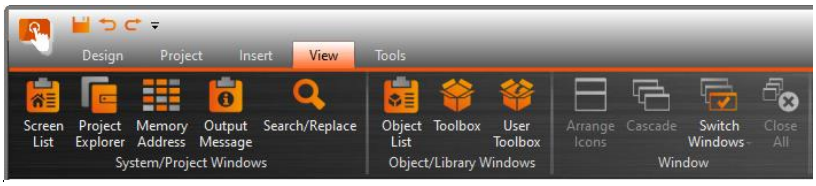


Figure 21 Window

Use the mouse to drag the working space and the FvDesigner will display the window configuration reminder; move the mouse to the configuration reminder and the workung space will be placed at the position clicked. The FvDesigner has a【User Habit Log】function that will record the developer's window configuration position

on the system so that the workung space configuration will be configured to the same positions as the previous development environment every time the project is opened for development.

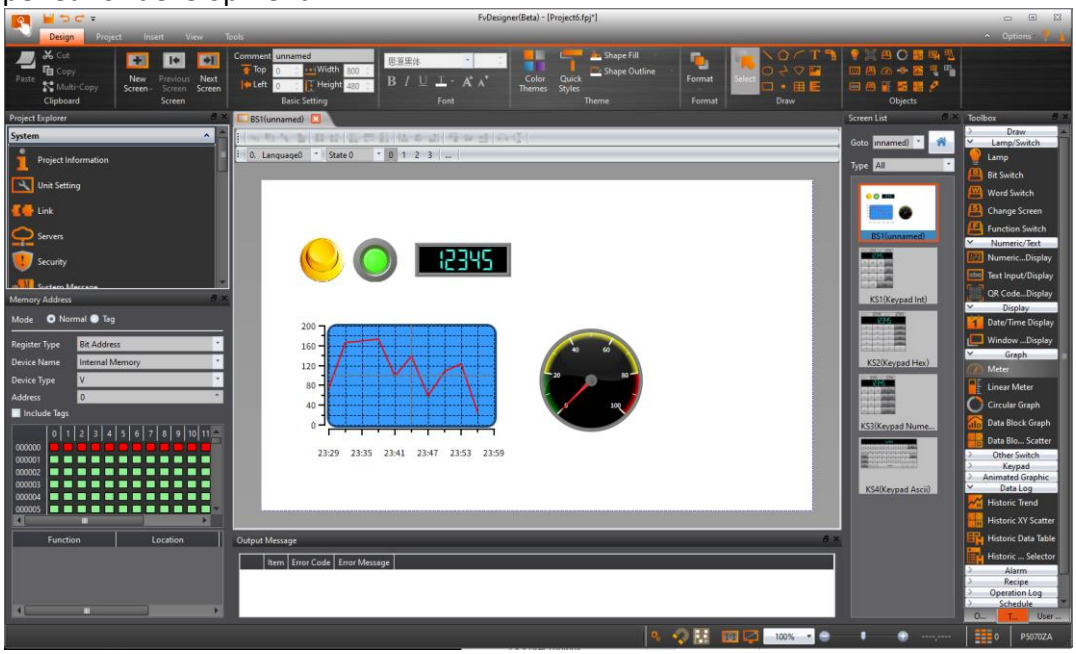


Figure 22 Configure Operating Window Position

2.2.5 Tools(T)

The Tools tab including built-in applications as follow:

【File Transfer】: allows users to connect with PC via USB drive upload/ download and transfer files from HMI to PC for viewing or backup

【Pass Through】: allows users to communicate and connect to the PLC through the HMI.

【PLC Resource Review】: helps users to find the supported PLC driver program version information, the internal single points of the PLC allowed for access, and register information.

【Remote System Setting】: allows users to enter the IP address of a HMI present in the local area network and control it remotely.

【MERITEK PLC Transfer Encrypt Tool】: When download MERITEK PLC project through HMI, can generate Meritek PLC Transfer Project or Singal Pass Password.

【MBF Reader】: Reader that can read MBF file.

【Install USB Driver】: automatically detects the system information and installs the appropriate USB drivers.

【Download】: Download the other running packages.

【iAccess】: Do upload, download, passthrough, and other services through cloud service.

【USB Security Key】: Can generate USB security key.



Figure 23 Tools

2.3 Shortcuts

Allows users to set frequently used functions to be displayed here, making it easier for users to operate.

【New】, 【Open】, 【Save】, 【Undo】 and 【Redo】



Figure 24 Shortcuts

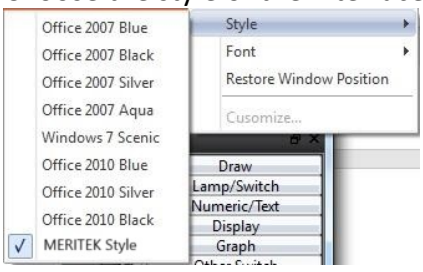
2.4 Interface Appearance Options

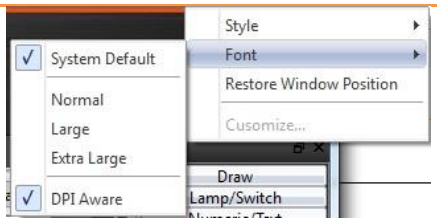
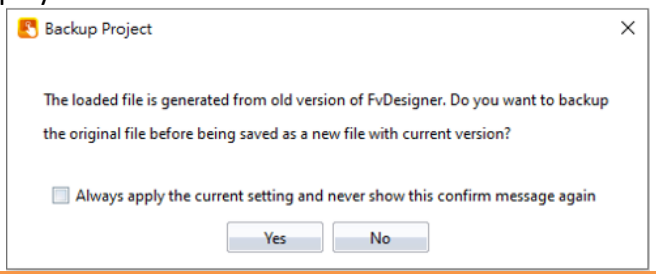
【Interface Appearance Options】(Top Left) provides customized interface appearance settings, allowing users to minimize or maximize the work space and change the color and text of the interface. There is also a help function and the program version information is also provided here.



Figure 25 Interface Appearance Options

Table 7 Interface Appearance Options

Display Item	Description
 【Maximize/Minimize ribbon】	Pressing this button will minimize the work space and pressing it again will maximize the work space.
【Options】	Choose the style and font of the interface. 【Style】 Choose the style of the interface.  【Font】 Choose the font size of the interface.

	 【Restore Window Position】can restore the workung space, you can click this option, the work window will be restored to the system default location. 【System/Project】except【Search/Replace】will on the left,【Objects/Resource Library】will on the right. 【Customize】provide customize option.
 【Help】	If you want to inquire about the related settings for the use of the software, you can press this help, press it will display the user manual for the query software related functions
 【About】	Displays software version information. 

2.5 Status Bar

The【Status Bar】displays information on the work space window, the window resolution, HMI product specifications and type, and other information.

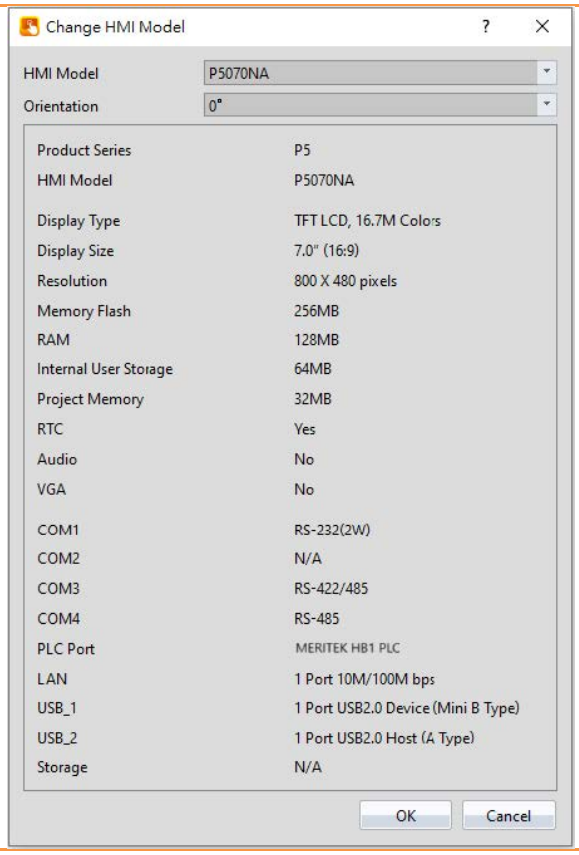


Figure 26 Status Bar

Table 8 Status bar

Display Item	Description
【Show Name and Address】	Pressing the gear brings up a window with the following options: 【Show Name and Address】 Overlays the name and register being controlled for each component in the project. 【Show Quicklaunch Toolbar】

	Shows/hides the quicklaunch toolbar present above the editing screen. 【Search/Replace】 Whether to displays Search/Replace setting window. Please refer **chapter30-Search/Replace** for more detail. 【Set Name and Address Display】 Properties for the Name and Address display. User can hide/show the name or address displayed and change text properties such as address color, background color, opacity, font and size.
【Snap Alignment】	While moving objects, this function assists the user to align nearby objects.
【Grid Alignment】	【Show Grid】 Can switch whether to display grid lines in the working space. 【Show Grid Display】 Set the grid type, color, and inteval. 【Add Grid Interval】 Add grid by 5 offset. 【Substract Grid Interval】 Substract grid by 5 offset.
【Actual Size】	Zoom the screen window ratio to 100%; this will only be displayed when the editing section of the screen is open.
【Fit Visible】	Adjustable to Zoom the screen window ratio to the same size as the visible range; this will only be displayed when the editing section of the screen is open.
【Screen Display Ratio】	Zoom the screen window ratio between the range of10%–550%; this will only be displayed when the editing section of the screen is open.
【Cursor Position】	Display the X and Y coordinates of the mouse in the editing section of the window; the point of origin is the top-left corner of the window. This will only be displayed when the editing section of the screen is open.
【Used External Registers】	Display the used of the external registers.
【HMI Model】	Product model information: Pressing this button will display the information of the current product model. Ex: P5070NA.



2.6 Quicklaunch Toolbar

The【Quicklaunch Toolbar】provides quick access to common tools including copy/paste, moving objects between layers, grouping objects, alignment options, and language and state switches. Can be displayed above or below the window edit area.



Figure 27 Quicklaunch Toolbar

Table 9 Quicklaunch Toolbar

Display Item	Description
【Cut】	Copies a selected object to the clipboard and then deletes the object from the work space.
【Copy】	Copies a selected object to the clipboard.
【Multi-Copy】	Copies a selected object and pastes a set of objects. The number of items in the set is determined by the user.
【Paste】	Inserts the object(s) currently in the clipboard into the work space at the selected location.
【Delete】	Removes the selected item from the work space.
【Bring to Front】	Moves the selected object to the topmost layer of the work space.

【Move Forward】	Moves the selected object up one layer.
【Send to Back】	Moves the selected object to the bottommost layer of the work space.
【Move Backward】	Moves the selected object down one layer.
【Group】	Select several objects and group them using this option. The group allows the objects to be moved simultaneously and settings are applied to the entire group.
【Ungroup】	Groups are restored to its independent objects.
【Make Same Size】	Select several objects and resize the set such that all the objects are the same size. The size of the set is based on the object in the lowermost layer.
【Make Same Width】	Select several objects and resize the set such that all the objects have the same width. The width of the set is based on the object in the lowermost layer.
【Make Same Height】	Select several objects and resize the set such that all the objects have the same height. The height of the set is based on the object in the lowermost layer.
【Align Left】	Select several objects and align the leftmost points of the objects. The alignment is based on the object in the lowermost layer.
【Align Center】	Select several objects and align the horizantal centers of the objects. The alignment is based on the object in the lowermost layer.
【Align Right】	Select several objects and align the rightmost points of the objects. The alignment is based on the object in the lowermost layer.
【Align Top】	Select several objects and align the topmost points of the objects. The alignment is based on the object in the lowermost layer.
【Align Middle】	Select several objects and align the vertical centers of the objects. The alignment is based on the object in the lowermost layer.
【Align Bottom】	Select several objects and align the bottommost points of the objects. The alignment is based on the object in the lowermost layer.
【Distribute Horizontally】	Position several objects such that the horizantal distance between the objects are equal.
【Distribute Vertically】	Position several objects such that the vertical distance between the objects are equal.
【Switch Language】	Select from the dropdown menu the displayed language of the project.

【Switch State】	Select from the dropdown menu the displayed state of the project.
【0, 1, 2, 3】	Switch the displayed state of the project for states 0, 1, 2, and 3.
【Show/Hide Toolbar Icons】	Select the icons that are shown on the toolbar. Items that are checked will be shown.

2.7 System/Project Windows

Descriptions of the System/Project Windows are as follows:

2.7.1 Screen List

The【Screen List】is used to manage the HMI screens created by the user. The created HMI screens can be browsed here; selecting the screen with the left mouse button will open the screen in the work space. Pressing the right mouse button will open the management menu to perform further settings.

Refer to **Chapter25.2-Screen List**

The following figure is a screen of the Screen List:

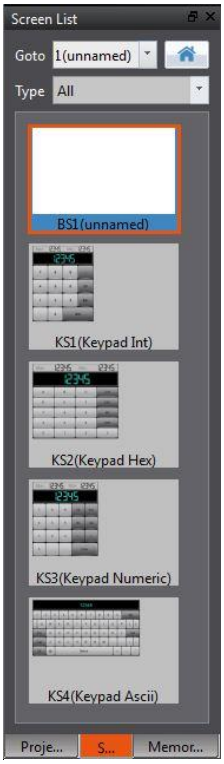


Figure 28 Screen List Interface

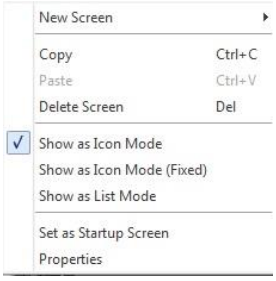
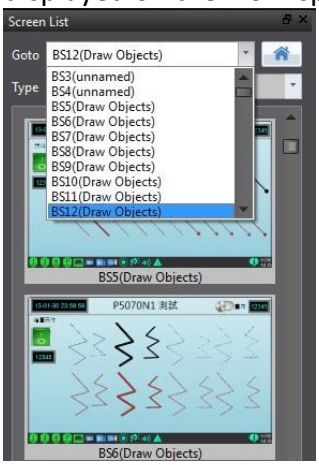
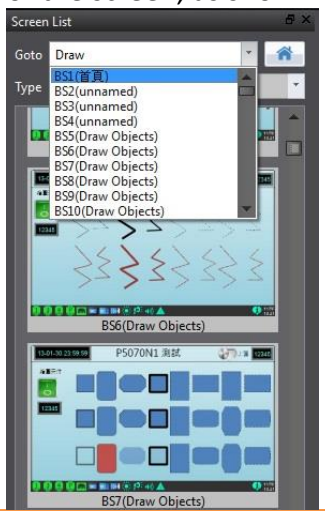
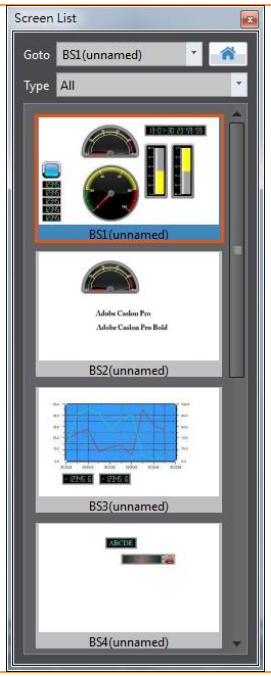
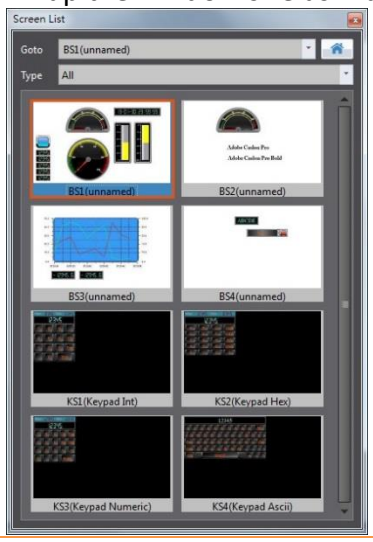


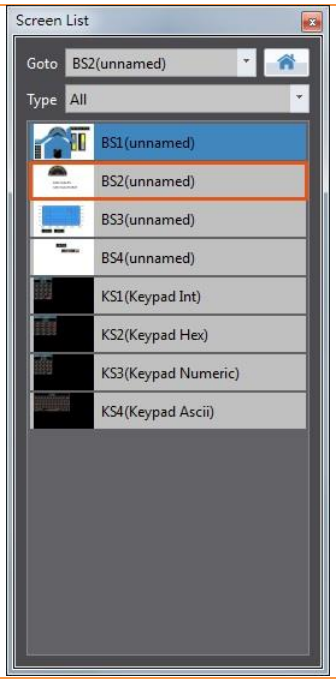
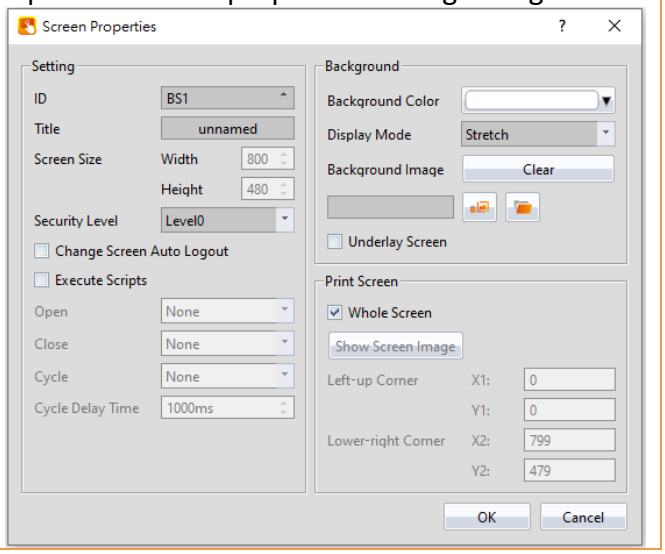
Figure 29 Management Menu

Table 10 Screen List Management Settings

Function	Description
【Goto】	【Goto】provides two methods to select a screen to view. The first is through the drop-down menus on the right, choose to jump directly to the screen which you want to view, pictured below, after a screen is clicked, it will be displayed on the work space.  The second is through the search ID or the title of the screen, as shown in the following figure 
【Startup screen】	Provided to find 【Startup Screen】quickly, when the Startup Screen icon () on the Screen List is pressed, it will move the current screen selection box to the 【Startup Screen】 and will display this 【Startup Screen】 on the Work Space. When the mouse is moved on the Screen List,

	the【Startup Screen】icon is displayed on the upper left corner of screen, this helps designers know which page is the【Startup Screen】. 
【Type】	Contains All, Base Screen, Window Screen, Keypad Screen. Designers are able to choose which type of screen is displayed in the【Screen List】.
【Current selection box】	The current selection box is an orange box in the list and displays the currently selected screen. See the following picture. 
【New Screen】	Opens the screen property setting dialog; press OK to add the new screen (Base Screen/Window Screen/Keypad Screen).
【Copy】	Copy the selected screen.
【Paste】	Paste the copied screen.
【Delete Screen】	Delete the selected screen, press the Ctrl button on the keyboard, choode multiple screens and delete them at one time on **【Screen List】**
【Show as Icon Mode】	The preview size will change according to the width of the window.

	
【Show as Icon Mode (Fixed)】	The preview size will not change according to the window width; the icons line up side by side to fill up the window size as much as possible. 
【Show as List Mode】	The preview will be displayed as a list.

	
【Set as Startup Screen】	Set the selected screen as the startup screen. The background color of this screen will be different from other screens once it is set as the startup screen.
【Properties】	Open the screen properties setting dialog. 

2.7.2 Screen Properties

Screen properties opens a window that includes screen settings, background color and print screen. This window is accessible by right clicking the work space and selecting “Properties”. It is accessible on any screen.

The following figures display Properties screens:

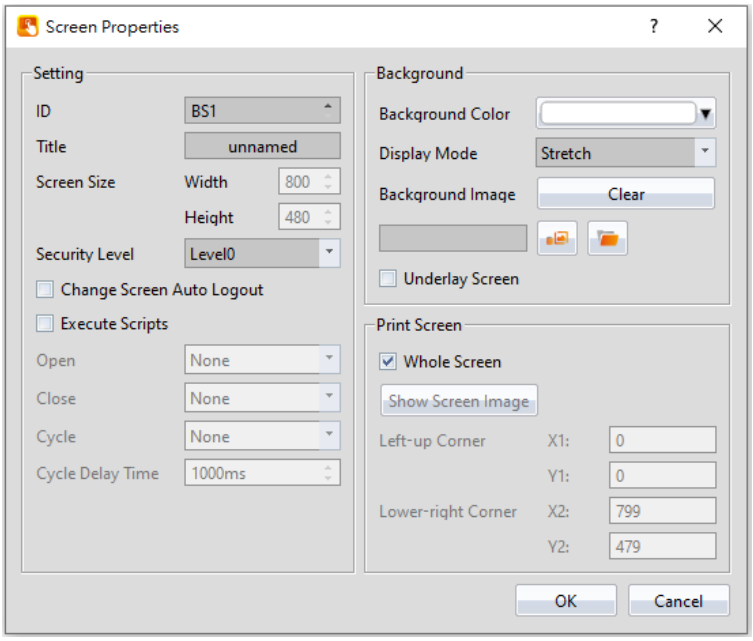


Figure 30 Base Screen Properties

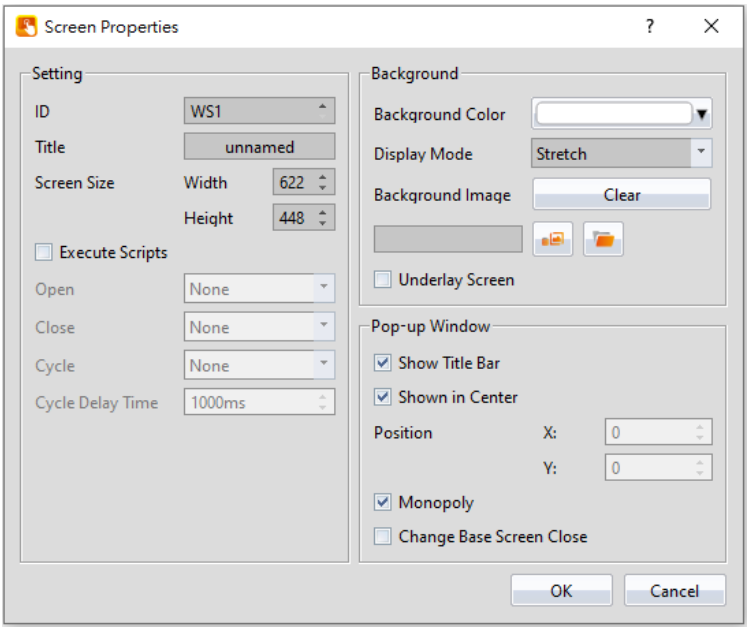


Figure 31 Window Screen Properties

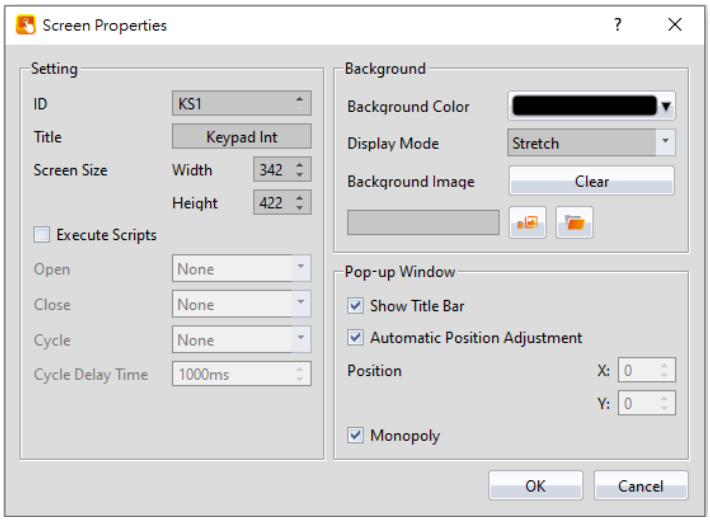


Figure 32 Keypad Screen Properties

Table 11 Screen Properties Items

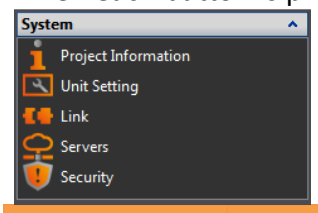
Display Item	Description
【ID】	Work space ID. For base screens, the ID will begin with "BS" followed with a number. For window screens, the ID will begin with "WS" followed with a number. For keypad screens, the ID will begin with "KS" followed by a number. The arrows next to the text box allows a user to increment or decrement the number associated with the screen ID.
【Title】	A screen caption for the current screen can be set.
【Screen Size】	The screen and keypad screen height and width (in pixels) can be set. **Note: the smallest width and height of window screen and keypad screen are 10.**
【Security Level】	A security level for the current screen can be set. The security level restricts users with a lower security level than the one set from accessing the current screen unless access is granted.
【Change Screen Auto Logout】	Logs out the current user upon switching screens.
【Execute Scripts】	Check the box to execute a script for the current screen.
【Open】	Executes the selected script when the screen is opened.
【Close】	Executes the selected script when the screen is closed.
【Cycle】	Continuously executes the selected script. Cycle is based on the【Cycle Delay Time】.
【Cycle Delay Time】	The delay in milliseconds between cycles of the script set in the【Cycle】option.

【Background Color】	Set the color of the workspace background.
【Display Mode】	Select the display mode, including strech, fixed percentage stretch, fill, or original size.
【Background Image】	Use an image as the background. The buttons allow the user to either select an image from the Image library or from the computer. Acceptable image formats are .jpg, .jpeg, .bmp, .png, .tif, .tiff etc.
【Underlay Screen】	Select the checkbox and select a screen to use as the underlaying screen from the dropdown menu. The underlay screen will reflect the selected screen. For example, if BS2 is selected as the underlay screen on BS1, all objects on BS2 will also be on BS1. However, those objects can only be changed on BS2.
【Whole Screen】	Sets the range for printing as the entire screen. For example, the the HMI used is the P5070N, the resolution will be 800x480.
【Show Screen Image】	Clicking this will open a window where the current screen will be shown. Adjusting X and Y coordinates will be reflected through the red rectangle on the screen image.
【Left-up Corner】	Manually select the X and Y coordinates relative to the upper left corner. The red rectangle will adjust accordingly.
【Lower-right Corner】	Manually select the X and Y coordinates relative to the bottom right corner. The red rectangle will adjust accordingly.
【Show Title Bar】	Window screen or keypad screen can set whether show title bar when pop up screen window
【Shown in Center】	Set to enable the window screen to show up in the center of the screen.
【Automatic Position Adjustment】	Keypad screen can set whether the pop-up position is automatically adjusted.
【Position】	Manually adjust the position of the window screen. This is enabled when the【Shown in Center】is not checked.
【Monopoly】	If checked, objects outside the window screen or keypad screen cannot be accessed while the window screen is active.
【Change Base Screen Close】	When the window screen switch to the basic screen, whether to retain the display of this window screen, if check this option window screen will automatically shut down. This option is only supported on Windows screen.

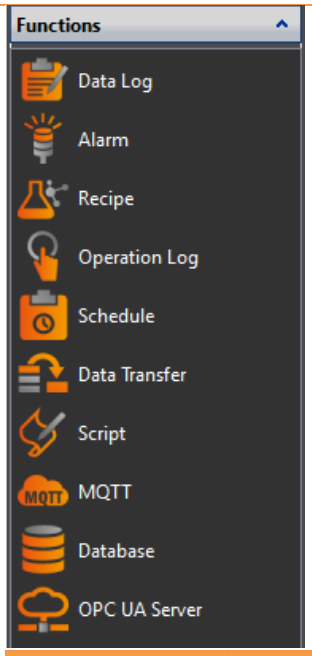
2.7.3 Project Explorer

Project Explorer is the window to manage the entire project.

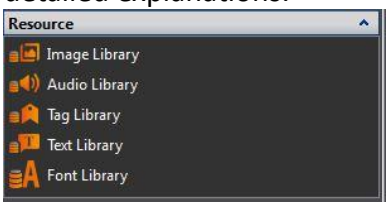
Table 12 Project Explorer Items

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td>【System】</td><td>Please refer to Chapter 3–System for detailed contents. Related setting windows will appear on the work space when each button is pressed.
 

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td>【Project Information】</td><td>View the project and HMI information, set the project password security and non-volatile memory configuration.</td></tr>
<tr><td>【Unit Setting】</td><td>The basic settings of the device can be set here.</td></tr>
<tr><td>【Link】</td><td>The configuration of the device/PLC connected to the HMI can be set here.</td></tr>
<tr><td>【Servers】</td><td>The settings of various types of servers, FTP , VNC and SMTP can be edited here.</td></tr>
<tr><td>【Security】</td><td>Security settings concerning the objects related to the project and user privileges can be set here.</td></tr>
<tr><td>【System Message】</td><td>View and edit the HMI system messages.</td></tr>
</table></td></tr>
<tr><td>【Functions】</td><td>Related setting windows will be displayed on the work space when this button is pressed.</td></tr>
</table>



Function	Description
【Data Log】	Data log settings can be edited here; please refer to **Chapter 7-Data Log** for detailed contents.
【Alarm】	Alarm settings can be edited here; please refer to **Chapter8–Alarm** for detailed contents.
【Recipe】	Recipe settings can be edited here; please refer to **Chapter 9–Recipe** for detailed contents.
【Operation Log】	Operation log settings can be edited here; please refer to **Chapter 10–Operation Log** for detailed contents.
【Schedule】	Scheduler settings can be edited here; please refer to **Chapter 11–Schedule** for detailed contents.
【Data Transfer】	Data transfer settings can be edited here; please refer to **Chapter 12–Data Transfer** for detailed contents.
【Script】	Script settings can be edited here; please refer to **Chapter 13–Script** for detailed contents.
【MQTT】	MQTT settings can be edited here; please refer to **Chapter 14-MQTT** for detailed contents.
【Database】	Database settings can be edited here; please refer to **Chapter15-Database** for detailed contents.
【OPC UA	OPC UA Server settings can be edited here; please refer to **Chapter 16-OPC UA**

<table>
<tr><td></td><td>【Server】</td><td>for detailed contents.</td></tr>
<tr><td>【Resource】</td><td colspan="2">Please refer to【Resource】for detailed contents. The setting window will be displayed in the work space when each button is pressed. Refer to Chapter 18-Resource for detailed explanations.
 

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td>【Image Library】</td><td>Required images should be made in advance and indexed into the【Image Library】so that they can easily be used when editing objects.</td></tr>
<tr><td>【Audio Library】</td><td>Required audio files should be made and advance and indexed into the【Audio Library】so that they can easily be used when editing projects.</td></tr>
<tr><td>【Tag Library】</td><td>Define the frequently used register addresses before designing a project to increase the system readability when designing.</td></tr>
<tr><td>【Text Library】</td><td>If there is the need to switch the text displayed in real-time in order to achieve multi-language functionality or other functions, prepare the necessary text, a table in the Text Library, and use the【Control Address】to switch the currently displayed text group when the HMI interface is running.</td></tr>
<tr><td>【Font Library】</td><td>Build the font and commonly used text in advance to avoid it can’t show correctly in the future.</td></tr>
</table></td></tr>
</table>

2.7.4 Memory Address

External devices, internal HMI devices or HMI system variables usually need to be specified for the objects and functions of the HMI. It is difficult for a user to remember which resources are used for which objects or functions when there are many objects in a project; this is when【Memory Address】can be used to display which resources are used. This way, the user will be able to effectively plan the settings of any object or function in a project.

As shown in the figure below, red represents the device registers that are occupied, green represents that registers that are not yet used; the user can arrange and set resources through this function. Left-click an item in the list to use and the corresponding screen or function list menu will open; double clicking the left mouse button on the item will open the setting dialog of that item.

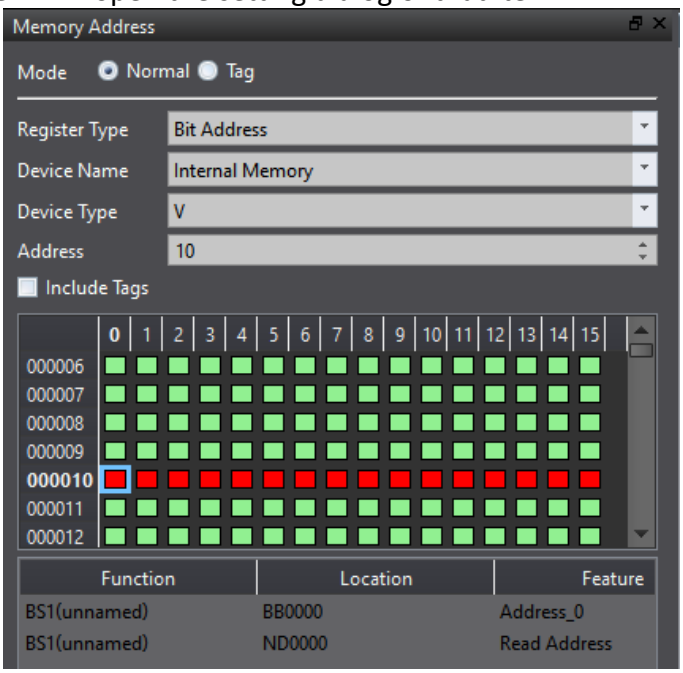


Figure 33 Normal mode memory address operation interface

In【Memory Address】, provides【Normal】and【Tag】two modes for searching.

In【Normal】mode, the grid map is used to indicate the memory usage of the current project. The grid map will be based on the currently selected【Register Type】,【Device Name】,【Device Type】and【Include Tag】.

In【Tag】mode, users can quickly find the usage of【Tag Library】tags.【Name】is the name of the tag created in the label library,【Location】displays the number of tags used, and【Address】is the address of the device register used by this tag.

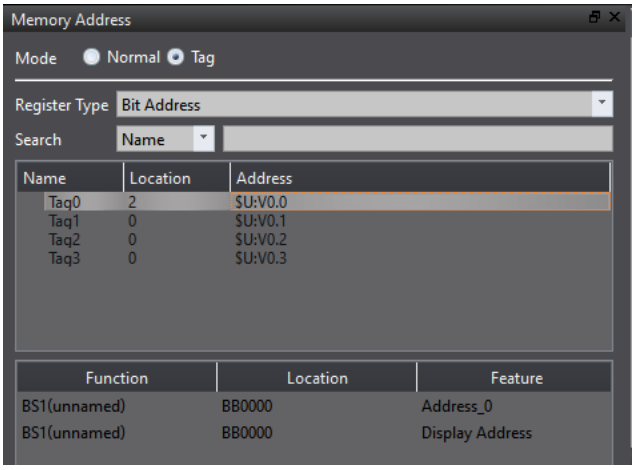


Figure 34 Tag mode memory address operation interface

After【Include Tag】is checked, the grid map will display the addresses used by tags in【Tag Library】.

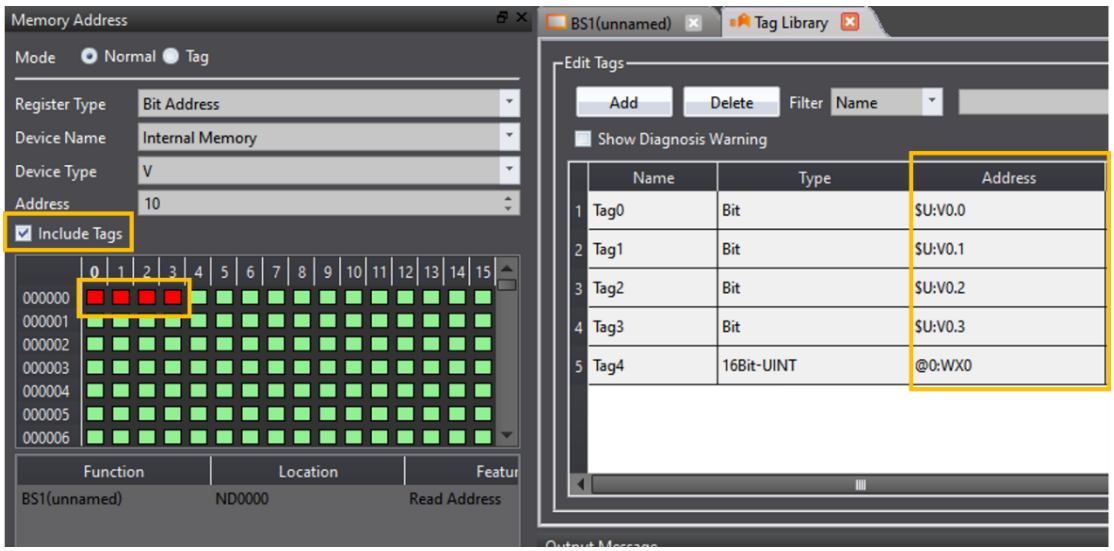


Figure 35 Memory address operation interface including tags

2.7.5 Output Message

When compiling, the output window will display the action status so that the developer can know about warnings, errors and other information after compilation is executed. Clicking the errors will open the related setting dialog directly for the user to debug.

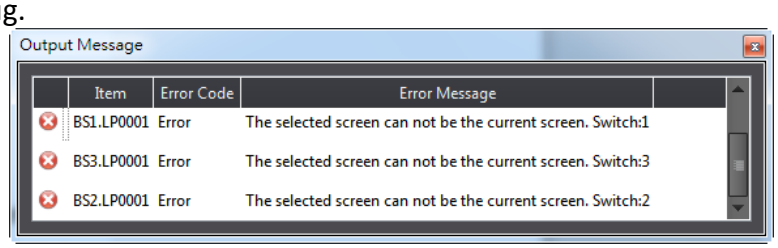


Figure 36 Output window

2.8 Object/Library Windows

2.8.1 Object List

This window lists all objects included on the screen; click the option in the window and the object in the【Work Space】will be highlighted (surrounded by a red frame), double clicking the mouse can display the editing window of the object directly.

There is a lock icon to the right of the【Object List】that can lock the function of the object; a locked object's position and properties can be changed but cannot move the position. The eye icon controls the visibility of the object; when the icon is clicked into a closed eye, the object will not be displayed in the【Work Space】.

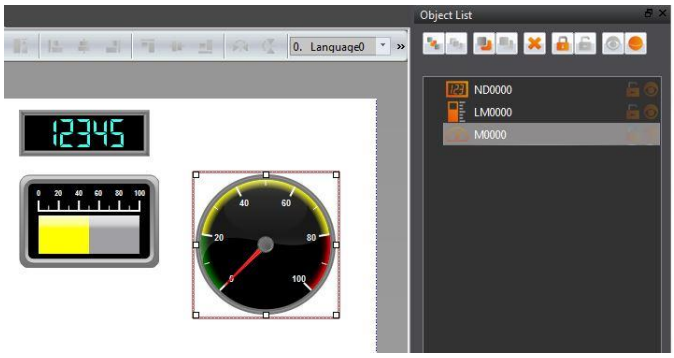


Figure 37 Object List

Table 13 Object List Functions

Function	Description
【Send to Back】	Send the selected object to the bottommost layer
【Bring to Front】	Bring the selected object to the topmost layer.
【Move Backward】	Move the selected object down a layer.
【Move Forward】	Move the selected object up a layer.
【Delete Item】	will delete the selected object, press Ctrl can select multiple objects, deleted at one time.
【Lock Item/ Unlock Item】	【Unlock】: Allow editing of the object properties or moving of the object. 【Lock】: Disables editing of the object properties or moving of the object.
【Show Item/ Hide Item】	【Visible】: Display object. 【Invisible】: Hide object.
【Object ID】	ID number of the object. Ex: LD_0001, LD is the model code, 0001 is the code number.

2.8.2 Toolbox

The FvDesigner provides a basic【Toolbox】; The developer can expand various

types of objects provided directly from the toolbox according to the different categories. Select an object and drag it over to the【Work Space】with the mouse to insert the object into the work space.

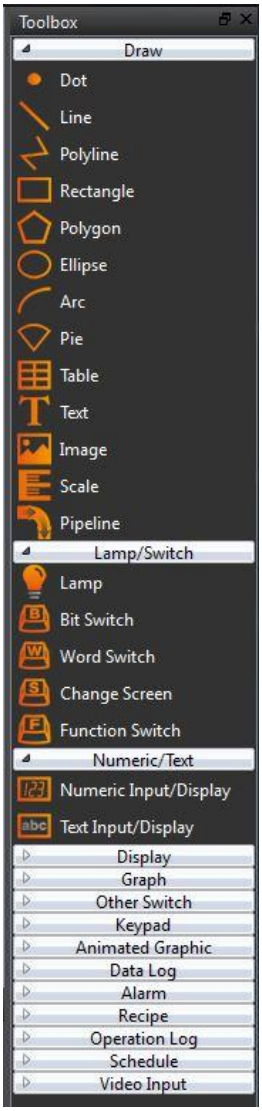


Figure 38 Toolbox Illustration

2.8.3 User Toolbox

Although the【Toolbox】provided by this software is able to meet the needs of most users, the objects provided in the【Toolbox】are all preset values and does not allow users to use custom objects. This is why this software also provides the【User Toolbox】function. In addition to allowing users to access objects that they have modified, it also provides【Import】and【Export】functions so that the objects in the 【User Toolbox】can be quickly transferred between different computers, speeding up project development.

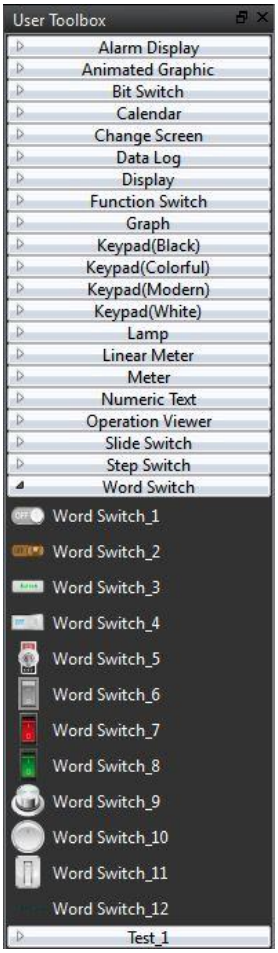


Figure 39 User Toolbox Illustration

2.9 Object/Library Windows

【Work Space】displays in two forms: The【Screen Edit Window】and【Function Settings Window】.

2.9.1 Screen Edit Window

Opening a window or adding a screen from the Screen List will display the Screen Edit Window in the work space. The【Status Bar】can be used to adjust the window display ratio and when an object is clicked,【Basic Setting】and【Status Bar】will display the position, size and other object alignment information. Use the functions on the design page to edit the objects in this window.【Toolbox】or objects in the【User Toolbox】can be added to the Screen Edit Window directly using drag-and-drop with the mouse.



Figure 40 Work Space–Screen Edit

2.9.2 Function Settings Window

When a function setting to the left of the Project Explorer is clicked, for example when the operation log function option is clicked, the【Work Space】will display the operation log setting window as shown in the figure below. To close this window after setting is complete, click on the “x” (close) on the top of the screen.

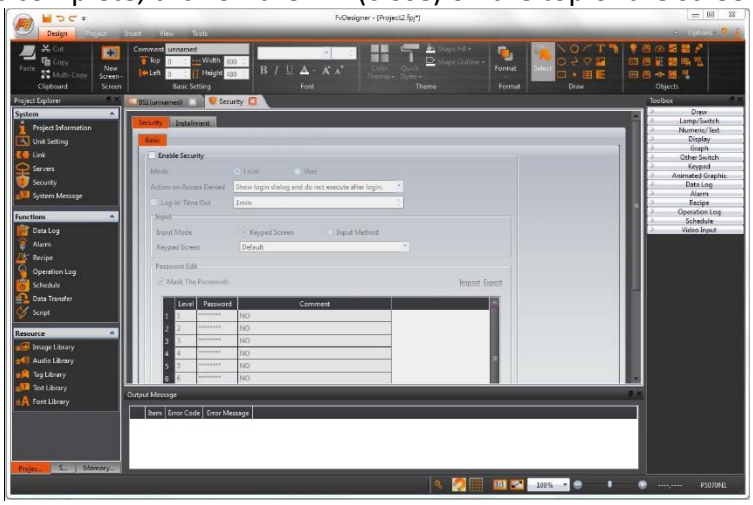


Figure 41 Work Space–Function Settings

3. System

Click on the setting option in【System】and the related setting window will be displayed at the work space of the window.

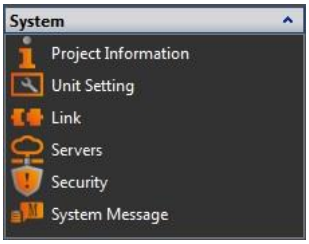


Figure 42 System

3.1 Project Information

3.1.1 Project File

Information on the project files including the name of the project, creator, and the last save time.

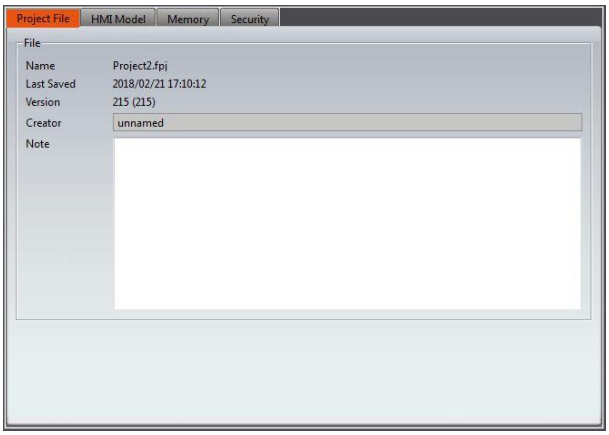


Figure 43 Project File

3.1.2 HMI Model

Detailed information on the HMI can be seen here, including the series, name, screen information and other information.

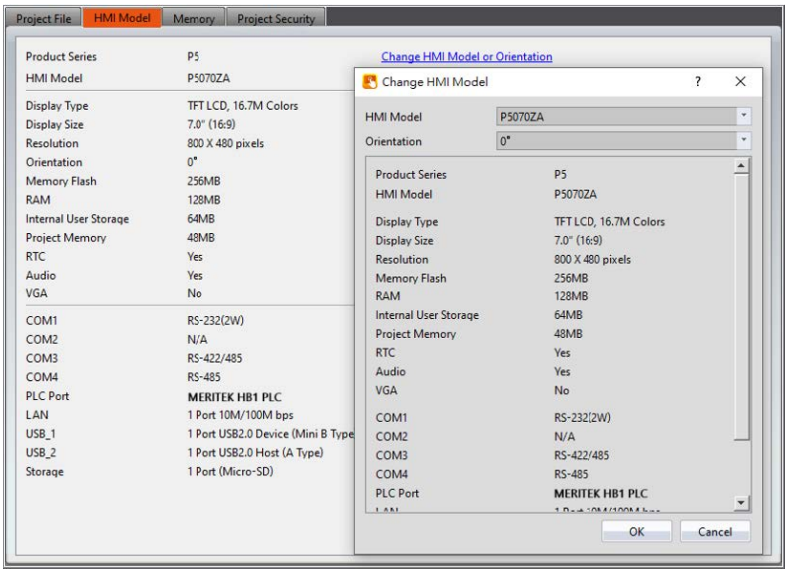


Figure 44 HMI Model

3.1.3 Memory

The information of the memory configuration, users can set the size of the register and the type of backup memory used in the project. (For more details , please refer to chapter23.1-Internal Address Register Range)

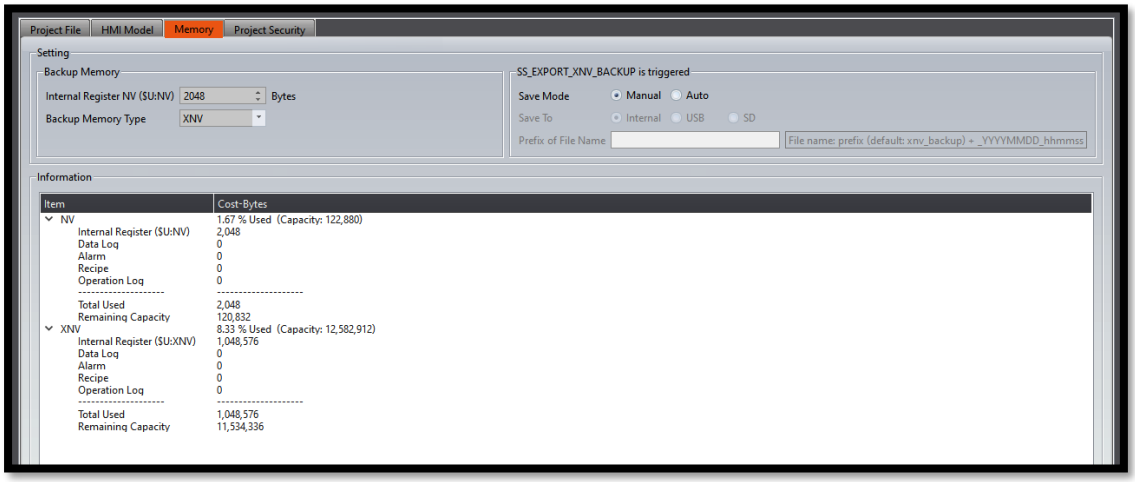


Figure 45 Memory

【SS_EXPORT_XNV_BACKUPis triggered】

When this System Tags is on, it will save XNV, XNVA and other Preservation Memory Registers UPS memory as files.

If user choose【Manual】, it will pop up a window to let users choose the project to open and check asks for the path and file name to be saved.

If user choose【Auto】, It will follow the settings of【Save To】and【File name prefix】generate files at the destination.

If you want to import the exported file into another HMI, you need to use【SS_IMPORT_XNV_BACKUP】in【System Tags】or【Import XNV Backup】in【Function Switch】. Human machine interface will restart after the import is successful.

3.1.4 Project Security

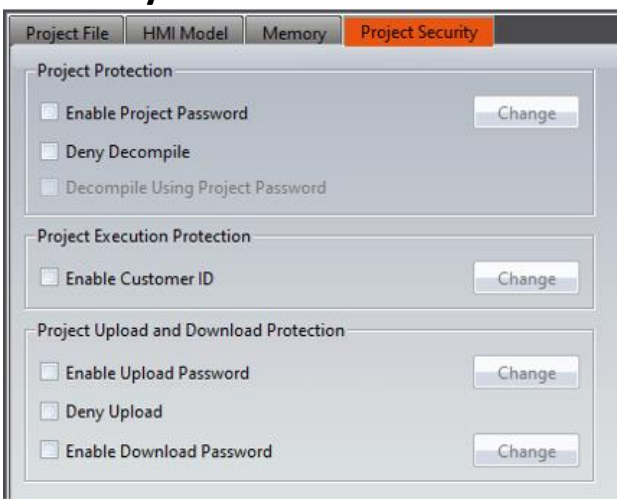


Figure 46 Project Security

Table 14 Project Security

Item	Description
【Project Protection】	【Enable Project Password】 After checking, the next time you open this project, you need to enter a password to open it. You can set the password of the project in the【Change】at the back. If this item is set, after the project is uploaded from HMI and decompiled, a password is required to open the project. 【Deny Decompile】 When checked, decompilation will be prohibited for this project. After uploading from the HMI, if you want to decompile, there will be a prompt message that you are not allowed. 【Decompile Use Project Password】 This option needs to be checked【Enter project password】to select. After checking, when the project is to be decompiled, it will be required to enter the password of【Project Protection】.
【Project Execution Protection】	When the project is executed, it will compare whether the password set here is the same as the password of the【Customer ID】in the【System Settings】of the HMI. The following are the rules for judging whether to enter the project. | | HMI without ID | HMI with ID |

<table>
<tr><td></td><td>
<table>
<tr><td>Project without ID</td><td>The project is running normally</td><td>The project is running normally</td></tr>
<tr><td>Project with ID</td><td>Can't enter project</td><td>Same password: normal operation
Different passwords: can't enter project</td></tr>
</table>

【Enable Customer ID】
After checking, you can set the password of the customer ID code in【Change】at the back.
</td></tr>
<tr><td>【Project Upload and Download Protection】</td><td>【Enable Upload Password】
After downloading to the HMI, you will need to enter the password the next time you want to upload it; if you make the project into a USB flash drive to update the file, and then update it to the HMI, you will need to enter the upload password when using the software to upload at this time.

【Deny Upload】
After enabling, the project will not be able to upload from the HMI to the computer.

【Enable Download Password】
If you choose to use the【Download】function in【Tools (T)】, you will need to enter the download password when you want to download to the HMI protected by the download password.

※If you use【Download Current Project】in【Project (P)】, you will not be asked to enter the download password.</td></tr>
</table>

3.2 Unit Setting

3.2.1 Basic

The basic setting includes the Startup, Idle State, and Object.

It is recommended to enable【Screen Saver】and【Backlight Saver】functions and set them within 60 minutes to avoid image afterimages caused by the HMI displaying the same

screen for a long time.

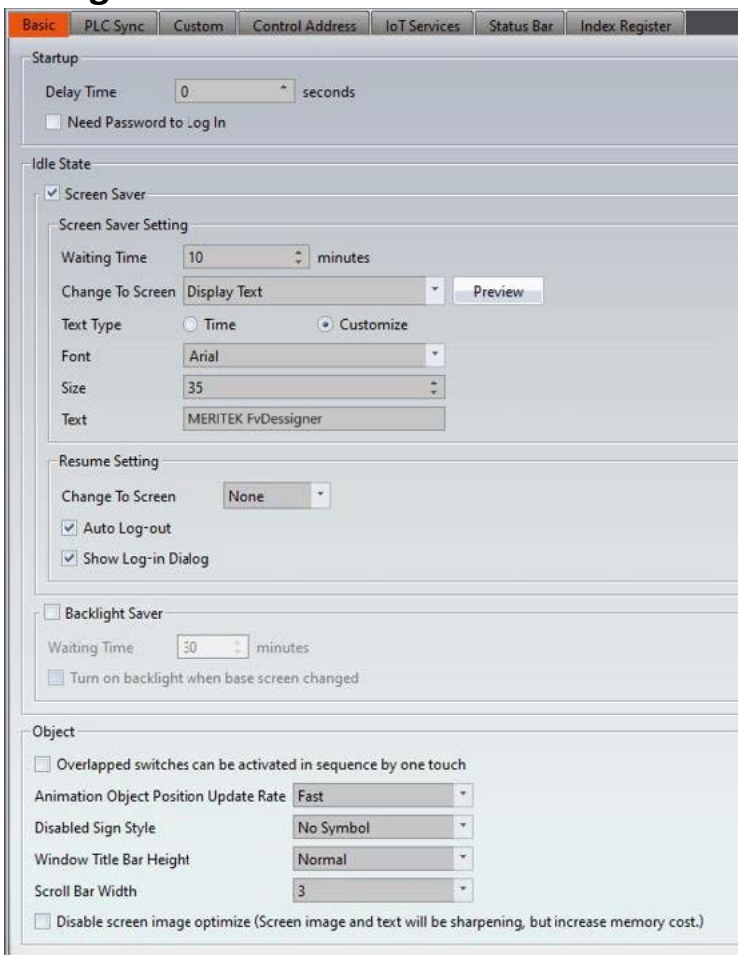


Figure 47 Unit Setting-Basic

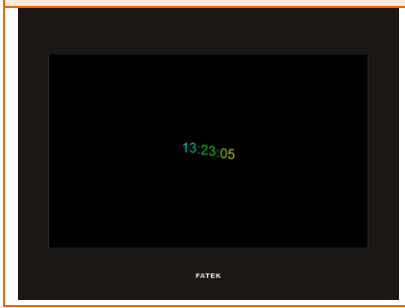
Table 15 Unit Setting-Basic

Item	Description
【Startup】	The startup delay time can be set up to 255 seconds, and the project will not enter until the end of the countdown. 【Need Password to Log In】 Power on the HMI before enter the project, you need to enter a valid password in【Security】to log in. Notice to the following points when using this function: ● If you close/cancel the login window, the login window will still pop up again ● If there is a【Delay Time】for booting up, the login window will pop up after the time counts down ● If【USB Security Key】is enabled, after the login window pops up, you can plug in the USB flash drive to log in directly to enter the project screen ● After entering the password to log in, entering the project will also be logged in the status of the level

<table>
<tr><td></td><td>

If the project start screen has set a【Security Level】, you need to enter a password that is greater than or equal to the screen security level to enter the project
If the screen saver is set, it will enter the screen saver after the waiting time, but the recovery setting of the screen saver becomes invalid

</td></tr>
<tr><td>【Idle State】</td><td>
In the idle state, the screen saver and backlight saver can be set. When the operation is idle for a period of time, the screen saver can be switched to the preset window or the backlight saver can be turned on to achieve the power saving effect.

【Screen Saver】
In addition to switching to the user-defined basic screen, the screen saver also provides a default screen saver screen, which has two modes of displaying【Time】and【Custom Text】, which is convenient for users to use without configuring any screen .
<table>
<tr><td>【Time】mode</td><td>【Custom Text】mode</td></tr>
<tr><td> 
</td><td> 
</td></tr>
</table>

【Font】
Set the screen saver time or customize text font.

【Size】
Set the screen saver time or customize text size.

【Text】
Set the screen saver time or customize text.
</td></tr>
<tr><td>【Resume Settings】</td><td>
Settings for actions the HMI takes when exiting the Idle State are set here.

【Change to Screen】
Allows the user to control which screen the HMI is at upon exiting from the screen saver.【None】means stay in the screen which was before entering the screen saver. For example, if choose【None】, if it is idle for more than the waiting time set
</td></tr>
</table>

	by the screen saver, then enter the screen saver. When the screen saver is restored, the HMI will display on screen 5. 【Auto Log-out】 When the【Security】function is used and the login level is greater than 0 before entering the screen saver, the HMI will log out the password to level 0 when this option is checked and the screen saver is restored. 【Show Log-in Dialog】 When the【Security】function is used and the login level is greater than 0 before entering the screen saver, the HMI will automatically display the login dialog when this option is checked and the screen saver is restored. This option is valid only if the【Auto Log-out】option is checked.
【Backlight Saver】	Check whether to enable the backlight energy saving function. 【Waiting Time】 Set the waiting time of no operation to turn off the HMI backlight. 【Turn on backlight when base screen changed】 If checked, when the screen enters the backlight energy saving mode, if the HMI has a page change action (such as using an alarm or change screen by register), the screen will be forced to light up.
【Object】	【Overlapped switches can be activated in sequence by one touch】If there are multiple buttons overlapped in the same position, when this position is touched, the overlapped buttons will be triggered at the same time. If 4 buttons (M0, M1, M2, M3) were overlapped, then they will be triggered. 【Animation Object Position Update Rate】 Update rate for the object. 【Disabled Sign Style】 There are 4 styles to satisfy the different requirements and the setting will be applied in the whole project. 

	【Window Title Bar Height】 After enabling this function, you can adjust the height of the title bar above the pop-up window, pop-up keyboard, etc. It should be noted that it will not have an effect when the model is PC and when using simulation.  【Scroll Bar Width】 This is to set the scroll width of all objects with sliders in the project, such as【Alarm Display】. If the scroll width of this component is set by device, the settings here will be read. 【Disable screen image optimize(Screen image and text will be sharpening】 Will optimize the image and words, but the use of memory will increase.

3.2.2 PLC Sync

Writing to or reading time from PLC.

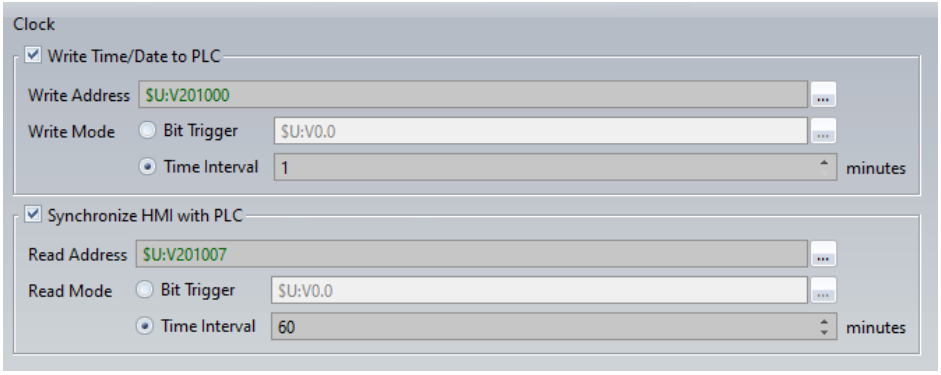


Figure 48 Unit Setting-PLC Sync

Table 16 Unit Setting-PLC Sync

Item	Description
【Clock】	HMI has built-in RTC clock. It can be synchronized with PLC RTC by this function. 【Write Time/Date to PLC】 【Write Address】Write the value in Time Register of HMI to

the Write Address of PLC.

【Write Mode】Set the execution conditions

【Bit Trigger】when the bit set on, it will sync PLC. Please note that this bit will not be automatically reset.

【Time Interval】Set how long it takes to execute, the range is 1~255 minutes.

【Synchronize HMI with PLC】

【Read Address】read the value in set address and write to the Time Register of HMI

【Read Mode】Set the execution conditions

【Bit Trigger】when the bit set on, it will sync PLC. Please note that this bit will not be automatically reset.

【Time Interval】Set how long it takes to execute, the range is 1~255 minutes.

Write Address and Read Address data format, 7 consecutive WORDs will be processed every time:

WORD 0	Second	0~59
WORD 1	Minute	0~59
WORD 2	Hour	0~23
WORD 3	Day	1~31
WORD 4	Month	1~12
WORD 5	Year	0~99
WORD 6	Day of Week	0~6

Note:

The value of Sunday is 0.

3.2.3 Custom

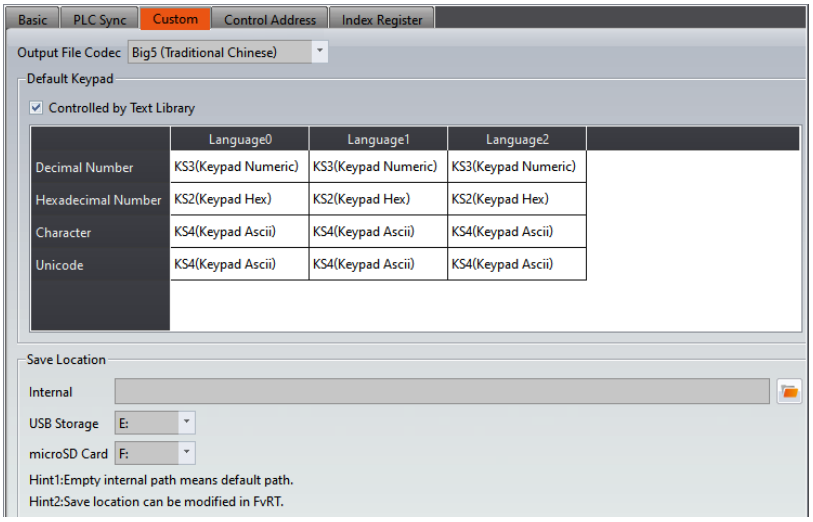


Figure 49 Unit Setting-Custom

Table 17 Unit Setting-Custom

Item	Description
【Output File Codec】	When the developer has set the export data(Data Log, Alarm, etc.) to the HMI, micro SD Card, or the USB storage, the data format can be selected. The exported file's data format [Big5(Traditional Chinese), GB18030(Simplified Chinese), UTF-8 encoding] can be chosen such that it satisfies the user's computer environment. For example, as the Traditional Chinese Windows environment, open a new project by default as Big5(Traditional Chinese).
【Default Keypad】	The developer can configure the preset keypad for the operating interface so that this pre-set keypad will pop up when operating text or numeric input objects. Available settings include Decimal Number, Hexadecimal Number, Character and Unicode. 【Controlled by Text Library】 When the customer has a customized keypad and would like to switch to another keypad when switch to another text library, this function should be checked to enable.

【Save Location】	When FvDesigner model choose as PC, will appear【Save Location】setting option, figure as shown below, this option is mainly to set the default location where FvRT is stored 【Internal】 Set when the FvRT is excuted, if setting export the file to【Internal】in the unit setting, the file will be save to the specified location, if this field is empty, then will save to the default location. Is use the default location to store, the system will create a folder the name is same as the project name under the same path. For example: The project save in: C:\Files\Project11.fpj then the system defaults to the【Internal】storage location: C:\Files\Project11\run\storage\ internal. 【USB Storage】 Set when the FvRT is excuted, if setting export the file to【USB Storage】in the unit setting, the file will be save to the specified location. 【microSD Card】 Set when the FvRT is excuted, if setting export the file to【microSD Card】in the unit setting, the file will be save to the specified location.

3.2.4 Control Address

The following control addresses are read from PLC periodically, and set or trigger specific internal functions.

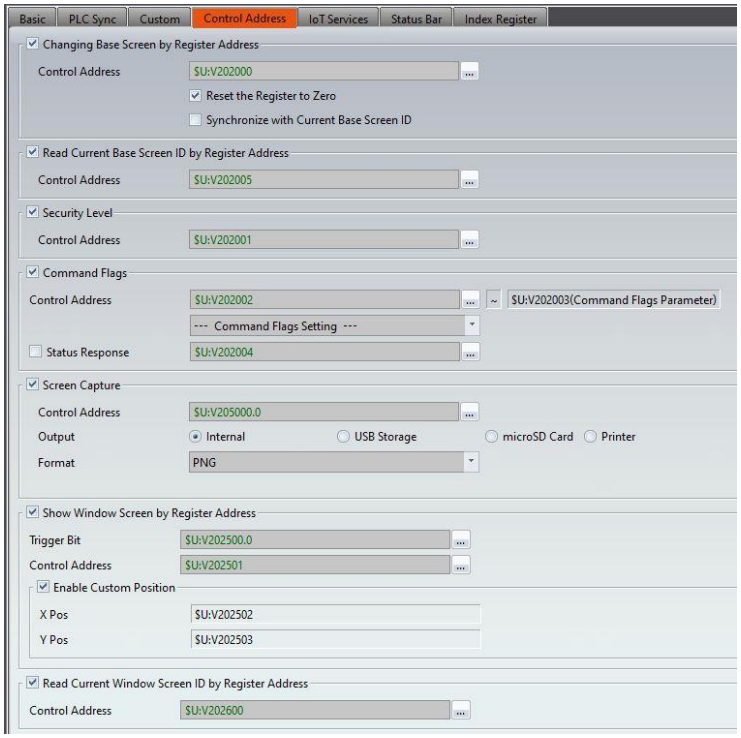
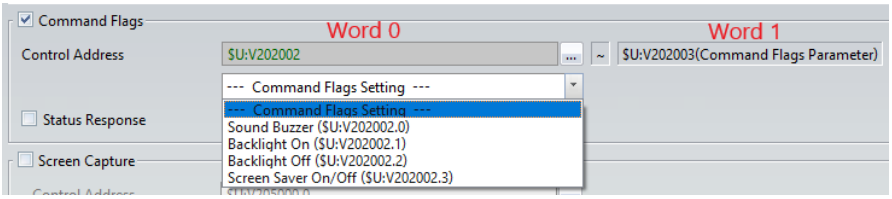


Figure 50 Unit Setting-Control Address

Table 18 Unit Setting-Control Address

Item	Description
【Changing Base Screen by Register Address】	【Control Address】 HMI changes the current screen to target screen, according to the value of register address, the address can be set from HMI internal register and PLC address. For example: set $U:V202000 to 3, then the screen will change to BS3. 【Reset the Register to Zero】 The value can be reset to 0 after changing screens. 【Synchronize with the Current Base Screen ID】 The value of the register will sane as the ID of the basic scree. ***note**: reset to 0 and synchronize features can not use at the same time.
【Read Current Base Screen ID by Register Address】	The current screen displayed on the HMI will have its screen ID written to the specified register. For example, if the HMI screen is base screen 3, the value of the specified register will be 3. The screen ID of the current screen can also be read by accessing the value inside the OP_BASE_SCREEN_ID register.
【Security	The【security】level can be modified by the value of register address.

<table>
<tr><td>Level】</td><td></td></tr>
<tr><td>【Command Flags】</td><td>【Control Address】includes 2 addresses.
 

<table>
<tr><th>Function</th><th>WORD 0</th><th>WORD 1</th></tr>
<tr><td>Sound Buzzer</td><td>Bit -------0
Bit = 0 off
Bit = 1 triggered</td><td>WORD 1 = 0 Short Beep
WORD 1 = 1 Long Beep
WORD 1 = 2 Short-Short Beep
WORD 1 = 3 Long-Short Beep
WORD 1 = 4 Continuous Beep</td></tr>
<tr><td>Backlight On</td><td>Bit -------1
Bit = 0 off
Bit = 1 triggered</td><td>Reserved</td></tr>
<tr><td>Backlight Off</td><td>Bit -------2
Bit = 0 off
Bit = 1 triggered</td><td>Reserved</td></tr>
<tr><td>Screen Saver On/ Off</td><td>Bit -------3
Bit = 0 off
Bit = 1 triggered</td><td>Reserved</td></tr>
</table>
【Status Response】
Return Word 0 trigger status to this address.</td></tr>
<tr><td>【Screen Capture】</td><td>By setting【Control Address】, a bit can be selected as the trigger address, also select the output space and format.</td></tr>
<tr><td>【Show Window Screen by Register Address】</td><td>【Trigger Bit】
This address controls whether to popup window screen.

【Control Address】
This address controls the window screen ID,
For example: $U:V202501=2, then display window screen 2 (WS2)

【Enable Custom Position】
After enabling, you can set the position of the window screen through the register</td></tr>
<tr><td>【Read Current Window Screen ID by Register Address】</td><td>【Control Address】
When checked, this address will display the ID of the topmost window screen</td></tr>
</table>

3.2.5 IoT Service

It provides users to set the connection status of MERITEK cloud functions on the HMI and GPS positioning messages of the HMI.

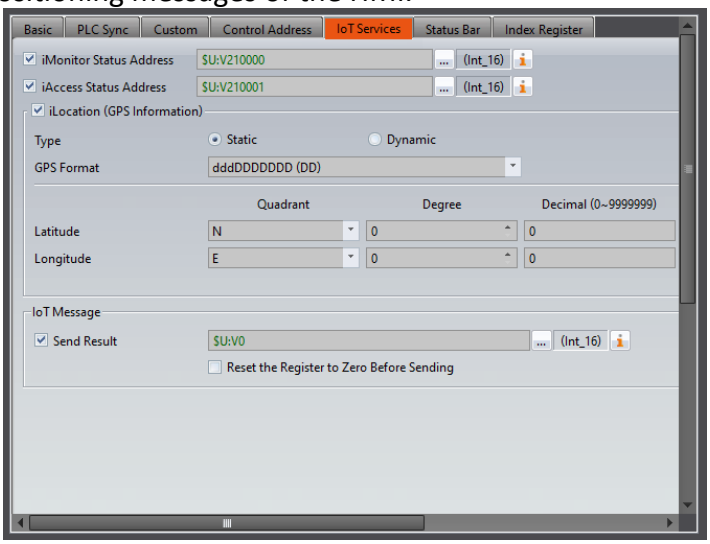


Figure 51 Unit Setting-IoT Service

Table 19 Unit Setting-IoT Service

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>【iMonitor Status Address】</td><td>Let user know the current iMonitor connection status through numeric display.

<table><tr><th>Value(16bit-INT)</th><th>Definition</th></tr><tr><td>0</td><td>Off-line</td></tr><tr><td>1</td><td>On-line</td></tr><tr><td>2</td><td>Try connecting</td></tr><tr><td>-300</td><td>Error: Invalid service password</td></tr><tr><td>-301</td><td>Error: The device is not registered in IoT Service</td></tr><tr><td>-302</td><td>Error: The device type does not match. Please check the device setting from MERITEK IoT.</td></tr><tr><td>-400</td><td>Error: DNS error. Please check the DNS setting.</td></tr><tr><td>Others</td><td>TBD</td></tr></table></td></tr>
<tr><td>【iAccess Status Address】</td><td>Let user know the current iAccess connection status through numeric display.

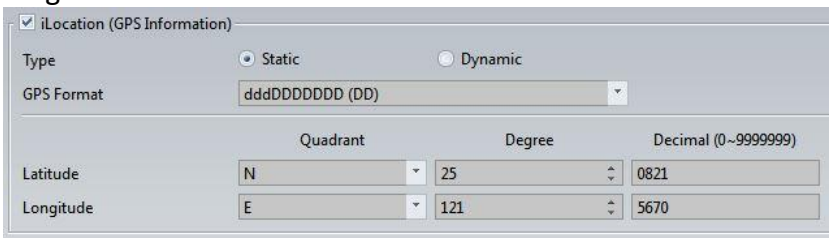
<table><tr><th>Value(16bit-INT)</th><th>Definition</th></tr><tr><td>0</td><td>Off-line</td></tr><tr><td>1</td><td>On-line</td></tr><tr><td>2</td><td>Try connecting</td></tr><tr><td>100</td><td>Occupied by IoT Services APP</td></tr><tr><td>101</td><td>Occupied by download</td></tr><tr><td>102</td><td>Occupied by upload</td></tr><tr><td>103</td><td>Occupied by file passthrough</td></tr><tr><td>105</td><td>Occupied by file transfer</td></tr><tr><td>106</td><td>Occupied by viewer</td></tr><tr><td>-100</td><td>Error: The LID is used by another device. Please cont act to your dealer.</td></tr></table></td></tr>
</table>

	-101	Error: LID is expired. Please contact to your dealer.
	-102	Error: Invalid LID. Please contact to your dealer(1)
	-103	Error: Invalid LID. Please contact to your dealer(2)
	-104	Error: The LID can not support this server. Please con tact to your dealer.
	-105	Error: The LID can not support HMI. Please contact t o your dealer.
	-200	System error.(-100) Please contact to your dealer.
	-300	Error: Invalid service password.
	-301	Error: The device is not registered in IoT Services.
	-302	Error: The device type does not match. Please check the device setting from MERITEK IoT.
	-400	Error: DNS error. Please check the DNS settings.
	-10000~-20000	System error. Please contact to your dealer.
	Others	TBD

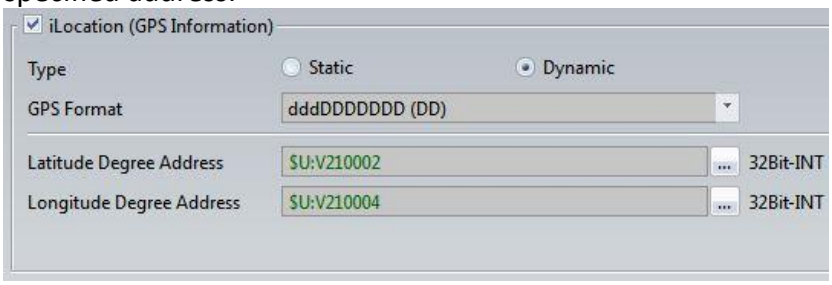
【iLocation (GPS Information)】

Support static and dynamic two types.
GPS format has dddDDDDDDD, dddmmMMMMM, and dddmmssSSS three types.

In static mode, users can set the parameter of the latitude and longitude.

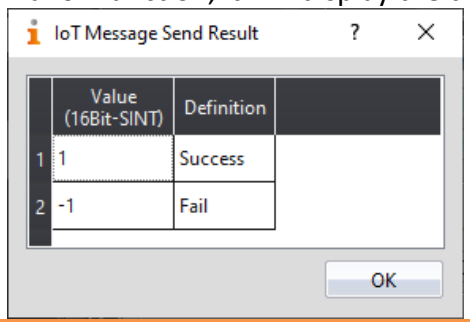


In dynamic mode, users can set the GPS coordinate in the specified address.



When selecting the dynamic range, the range of values that can be entered is
North Latitude: N (0~900,000,000), South Latitude: S (0~-900,000,000)
East: E (0~1,800,000,000), West longitude: W (0~-1,800,000,000)

	
	Or using script(**note**: because it is in 32bit-INT, need to use tag)
	`$T:Latitude = 0250822017`
	`$T:Longitude = 1215670210`

【IoT Message】	When using HMI to transmit messages to third -party devices via IoT function, it will display the transmission result here. 

3.2.6 Status Bar

The status bar can assist the user to quickly confirm the status of the HMI.

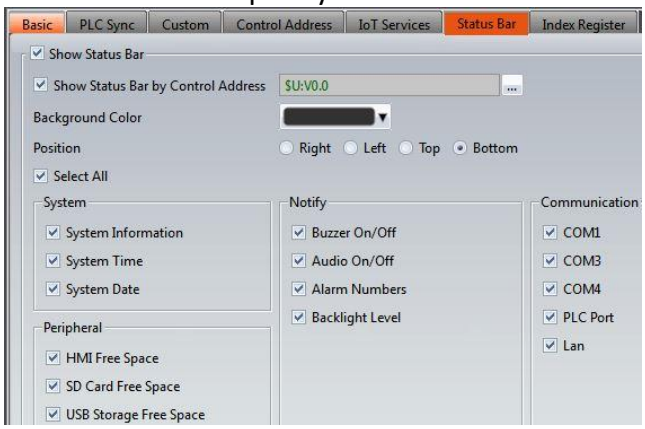
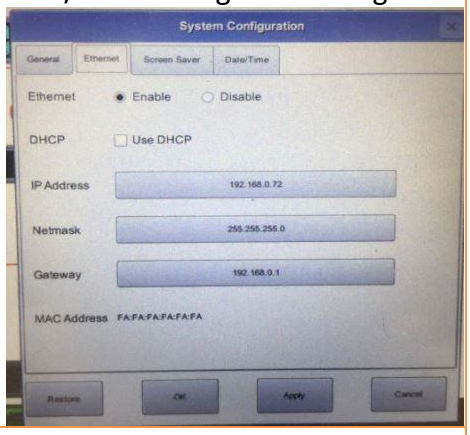


Figure 52 Unit Setting-Status Bar

Table 20 Unit Setting- Status Bar

Item	Description
【Show Status Bar】	Set to display the status bar. When this option is selected, the rest of the options are available to configure. 【Show Status Bar By Control Address】 Set a signal to control the status bar visibility. 【Background Color】 Set the background color of the status bar.

<table>
<tr><td></td><td>【Position】
Select status bar to position. Positions include: up/down/left/right edges.

【Select all】
Select system, peripheral devices, notification, and communication.</td></tr>
<tr><td>【System】</td><td>
<table>
<tr><th>Item</th><th>Icon</th><th>Description</th></tr>
<tr><td>【System Information】</td><td>  </td><td>Displays the device name, station number, firmware version, OS Version, Ethernet, Screen Saver, Date/Time and other information. And you can set the HMI ethernet, screen saver and date/time through this dialog
 
</td></tr>
<tr><td>【System Time】</td><td> 
</td><td>Displays the system time</td></tr>
<tr><td>【System Date】</td><td> 
</td><td>Displays the system date</td></tr>
</table>
</td></tr>
<tr><td>【Peripheral devices】</td><td>
<table>
<tr><th>Item</th><th>Icon</th><th>Description</th></tr>
<tr><td>【HMI Free Space】</td><td> 
</td><td>Displays the current available storage space and associated percentage.
The number is white when normal and red when less than 10%.</td></tr>
<tr><td>【SD Card Free Space】</td><td> 
</td><td>Displays the current SD card available storage space, and associated percentage
The number is white when normal and red</td></tr>
</table>
</td></tr>
</table>

			when less than 10%. If the HMI cannot detect a SD card it will be display a “?”.
	【USB Storage Free Space】		Displays USB device’s current available storage space and associated percentage. The number is white when normal and red when less than 10%. If the HMI cannot detect an USB device it will be display “?”.
【Notify】	**Item**	**Icon**	**Description**
	【Buzzer On/Off】		Displays the status of current buzzer on/off. The function also can turn on or turn off in HMI 【System setting】.
	【Audio On/Off】		Displays the status of current audio on/off. The function also can turn on or turn off in HMI 【System setting】.
	【Alarm Number】		This icon will flash when an Alarm occurs.
	【Backlight level】		Shows the current HMI backlight brightness
【Communication】	**Item**	**Icon**	**Description**
	【COM1】		Displays the current status of COM1 communication. The color will display green when communication is normal; the color is red when there is a communication error.(If the link is not set , the color will maintain in green not change). Detail about communication error codes, please refer

			ch31-Communication Error Codes
	【COM3】		Displays the current status of COM3 communication. The color will display green when communication is normal; the color is red when there is a communication error. (If the link is not set , the color will maintain in green not change). Detail about communication error codes, please refer ch31-Communication Error Codes
	【COM4】		Displays the current status of COM4 communication. The color will display green when communication is normal; the color is red when there is a communication error. (If the link is not set , the color will maintain in green not change). Detail about communication error codes, please refer ch31-Communication Error Codes
	【PLC Port】		Displays the current status of PLC Port communication. The color will display green when communication is normal; the color is red when there is a communication error. (If the link is not set , the color will maintain in green not change). Detail about communication

			error codes, please refer ch31-Communication Error Codes
	【Lan】		Displays the current status of Lan communication. The color will display green when communication is normal; the color is red when there is a communication error. (If the link is not set , the color will maintain in green not change). Detail about communication error codes, please refer ch31-Communication Error Codes

3.2.7 Index Register

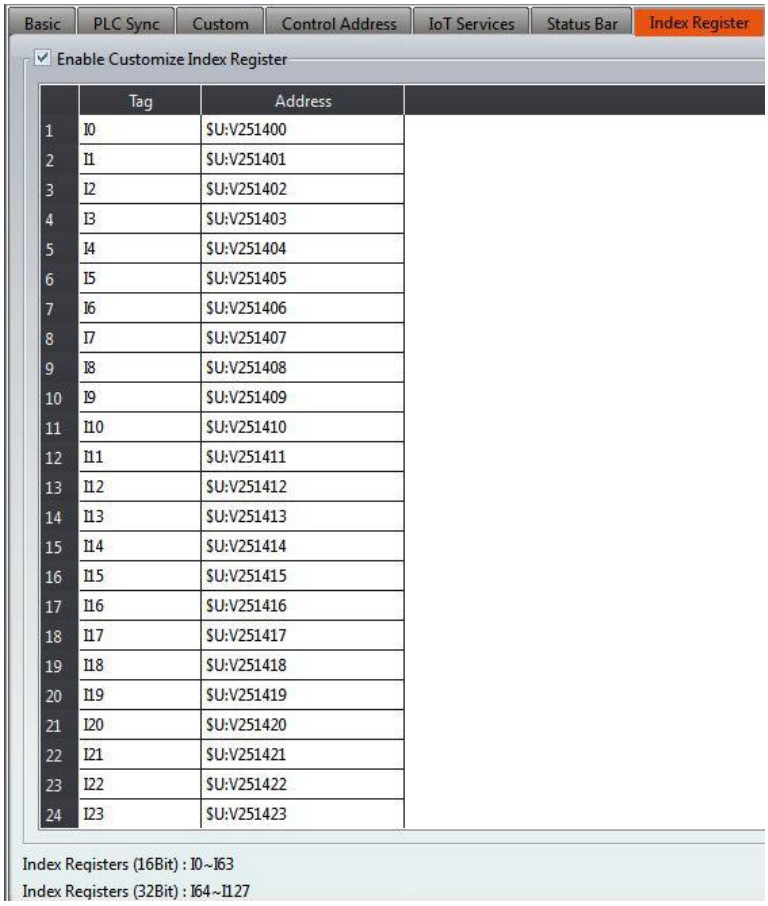


Figure 53 Unit Setting-Index Register

Table 21 Unit Setting- Index Register

Item	Description
【Enable Customize Index Register】	Enable index register to use default register or customize, you can define the corresponding address in the address field after enable, it can be HMI internal address or PLC register address, for example, I0 can correspond to PLC R100 address, for designer easy to use, please refer to ch0-Index Register for more details about index register.

3.3 Link

MERITEK HMI can connect to the following types of devices.

Table 22 Device Connection

Device	Description
PLC Device	Connecting to the various brands of Device/PLC Driver.
Printer	Connecting to the printer.
Video Input	Connecting to USB camera.
USB Barcode Scanner	Connecting to USB Barcode Scanner.

3.3.1 PLC Device

Setting up the communication device Device/PLC: The connection overview will list the information of all the devices connected to the HMI; use the Add/Edit/Delete functions to configure the connection device.

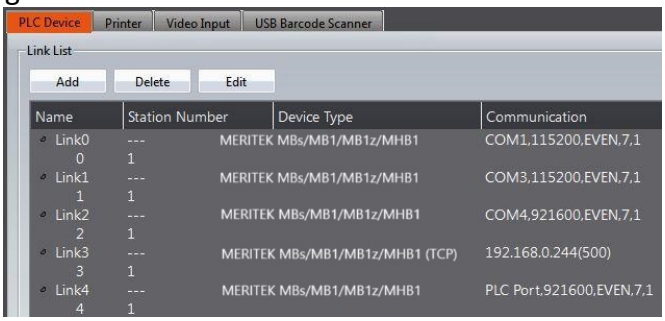


Figure 54 Device Connection Setting–PLC Device

Double click on a device in the list to open the device property setting window directly for editing. The interface of sub-link is as shown below.

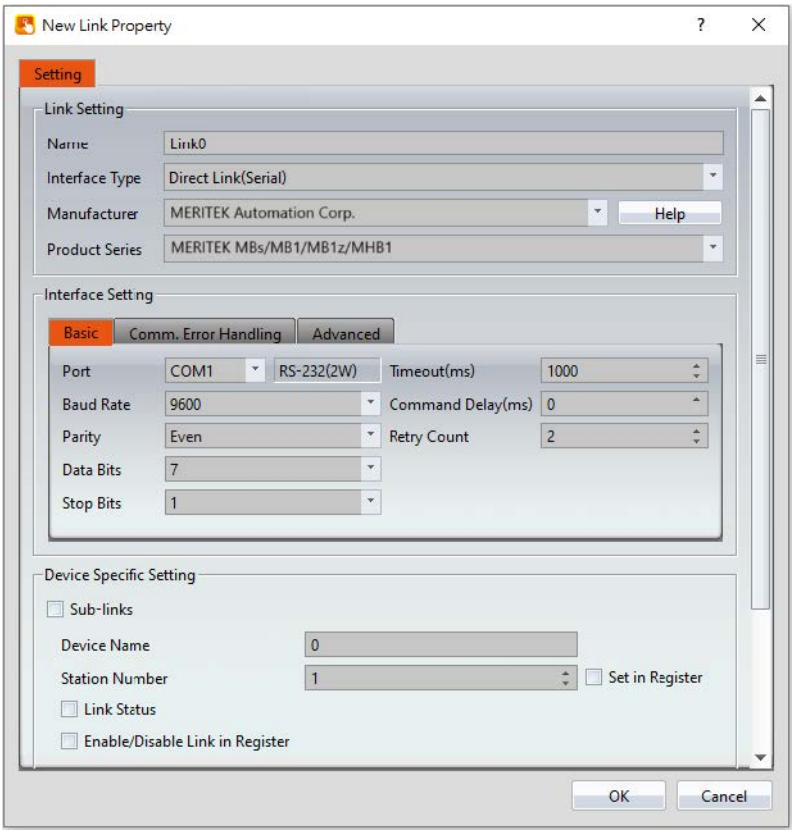


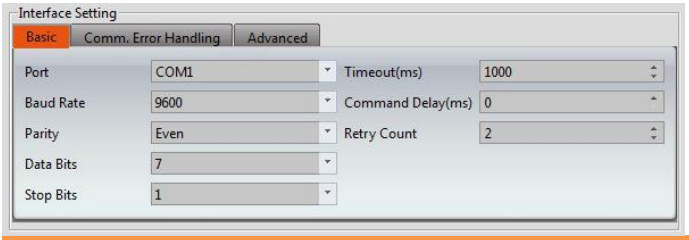
Figure 55 Link Properties

Table 23 Link Property Settings

Item	Description
【Link Setting】	Basic settings for connection.

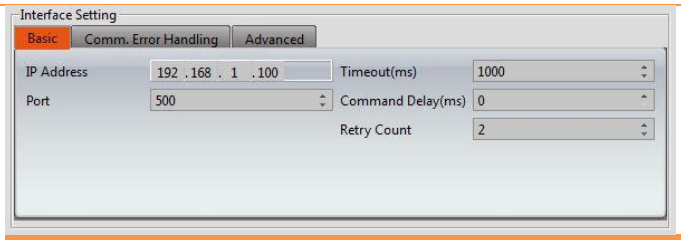
Item	Description
【Name】	The name of this connection.
【Interface Type】	Transfer method; available selections include Direct Link(Serial), Direct Link(Ethernet), Mult-Link Master(Serial), Mult-Link Master(Ethernetl), Mult-Link Slave(Serial) or Mult-Link Slave(Ethernet).
【Manufacturer】	The manufacturer of the connecting device.
【Help】	Look for a detailed description of each brand driver, for example, select MERITEK, then show up MERITEK PLC related communication settings. Includding communication settings, memory resource

<table>
<tr><td></td><td><table>
<tr><td></td><td>review, PLC setting, HMI setting, wiring diagrams, etc. for designers easy to view and use.</td></tr>
<tr><td>【Product Series】</td><td>The product name of the connecting equipment.</td></tr>
</table></td></tr>
<tr><td>【Interface Setting】</td><td>Communication interface setup; the interface will change according to the【Interface Type】in【Link Setting】.

When the【Interface Type】is【Direct Link(Serial)】
 

<table>
<tr><th>Item</th><th>Description</th></tr>
<tr><td>【Port】</td><td>Select the port to connect.</td></tr>
<tr><td>【Baudrate】</td><td>Select the baud rate.</td></tr>
<tr><td>【Parity】</td><td>Select the verification method.</td></tr>
<tr><td>【Data Bits】</td><td>Select the length of the data.</td></tr>
<tr><td>【Stop Bits】</td><td>Select the length of the stop bit.</td></tr>
<tr><td>【Timeout (ms)】</td><td>Set the waiting time before ending the connection and generating an error when there is abnormal communication.</td></tr>
<tr><td>【Command Delay (ms)】</td><td>The sending and receiving delay for controller signals.</td></tr>
<tr><td>【Retry Count】</td><td>The number of times the HMI will automatically re-send the confirmation signal when there is abnormal communication.</td></tr>
</table>

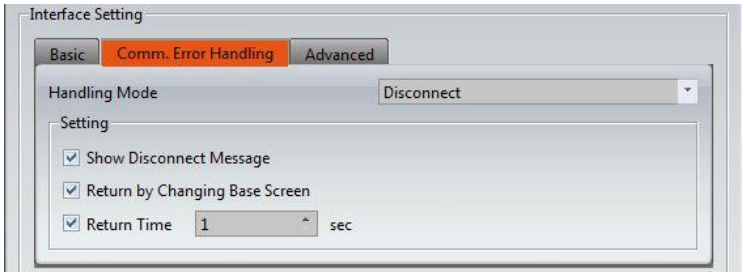
When【Interface Type】is【Direct Link(Ethernet)】</td></tr>
</table>



Item	Description
【IP Address】	Select the IP address of the device.
【Port】	Select the port terminal.
【Timeout Time (ms)】	Set the waiting time before ending the connection and generating an error when there is abnormal communication.
【Command Delay (ms)】	The sending and receiving delay for controller signals.
【Retry Count】	The number of times the HMI will automatically re-send the confirmation signal when there is abnormal communication.

【Comm. Error Handling】

Select an action to handle a communication error.



There are four handling modes as follows:

- **Process Sequentially**

  Process each communication data sequentially. If the data cannot be queried this scanning time, system will re-query it again next time.

  The communication error window shows up when communication has failed. User can close the window and continue to operate the current screen.

  Show Disconnect Message:

  Every time a communication error has occurred, an error message window will pop up. Operation may continue once the error message is closed.

- **Disconnect**

When a communication error occurs, the links stop communicating. It resets the condition to re-start communication according to Disconnect Setting.

【Disconnect Setting】

Show Disconnect Message:

The communication error window shows up when communication has failed. User can close the window and continue to operate the current screen.

Return by Changing Base Screen:

The disconnected link restarts communication after changing the base screen.

Return Time:

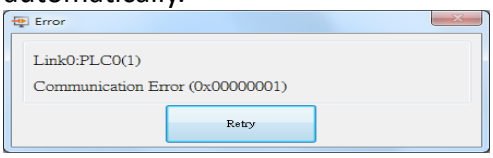
The disconnected link re-starts communication when return time is reached.

- **Continue**

  The communication error window shows up when communication has failed. User can **not** close the window and has to stop operating the current screen. When communication is restored, the window closes automatically.

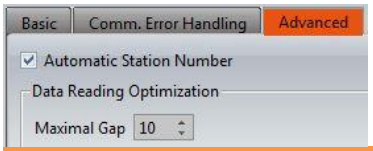
- **Stop**

  The communication error window shows when communication has failed. User can **not** close the window and has to stop to operating the current screen. **Retry** switch is available to attempt to reestablish communication. When the communication is restored, the window closes automatically.



For more info on communication error codes, refer to Chapter 31 – Communication Error Codes

【Advanced】



Options	Description
【Automatic Station Number】	MERITEK PLC only, it will automatically read the station number, but will not be able to use the sub-link function. **(The**

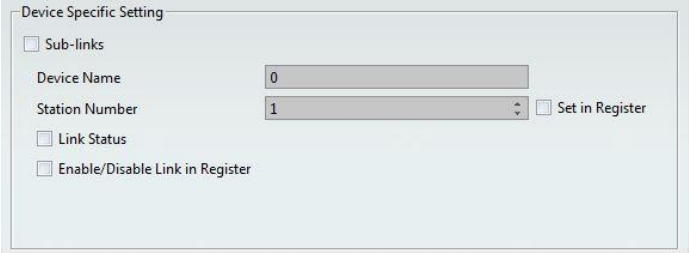
		connected PLC needs to be checked without checking the station number)
	【Maximal Gap】	Set the maximal gap for each read command. For example, there are D0, D5, D100, D102 four numeric display object, and the maximal gap is 10, then D0 and D5 will be composed of a read communication command, and D100 and D102 will be composed of another read communication command, because the maximal gap is 10.

【Device Specific Setting】

Configuration setting of the equipment.

【Sub-links】

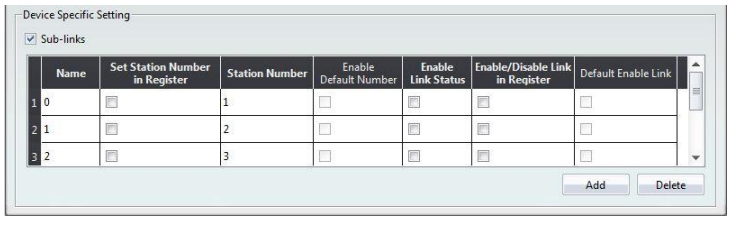
If the【Sub-links】 box is not to checked, 1-to-1 connection is used.



Item	Description
【Device Name】	Set the name of the equipment.
【Station Number】	Set the station number of the connection equipment.
【Set in Register】	The station number communicated with the connection equipment can be dynamically set by the HMI internal register. For example, set $U:V10, and $U:V10=1, then it will communicate with station no.1, during the HMI run time, when $U:V10=5, then it will communication with station no.5. after select this option, except setting the default register, there is 【Default Number】 below

		you can set, for example, set 3, download the project for the first time will be station no.3 to communicate with the link equipment, then it will communicate with the 【Register】value after that.
	【Link Status】	Display the link status, you can set default register after selected, if set $U:V30: $U:V30=0x0000 indicates that the connection is normal. $U:V30=0x0001 indicates that the connection is abnormal. $U:V30=0x8000 indicates that the connection is disconnect. **※When Modbus Slave is selected, the connection status stores the number of connections of the Modbus slave.**
	【Enable/Disable Link in Register】	The connected devices can be dynamically set by HMI internal register whether to enable or disable, provide maintenance personnel or operators can decide whether to connect with the device during HMI execution. Ex: set $U:V10.0, when $U:V10.0 = ON, then it will communicate with this device, when $U:V10.0 = OFF, then it will not communicate with this device

Select【Sub-links】, supports 1-to-N connections.

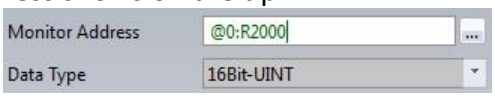


Set as figure, device name 0 communicate with station no.1 link device, device name 1 , enable【Set Station Number in Register】dynamically decision by $U:V20, for example, $U:V20=5, then it will communicate with

	station no.5 link device and enable default number as 5, device name 2 communicate with station no.3 link device and enable link status, enable【Link Status】when $U:V40=0 indicates that the connection is normal, when $U:V40=1 indicates that the connection is abnormal. Device name 3 communicate with station no.4, then enable【Enable/Disable Link in Register】, when $U:V51.0 = ON will communicate with this device, when $U:V51.0 = OFF will not communicate with this device

3.3.1.1 PLC Address Setting

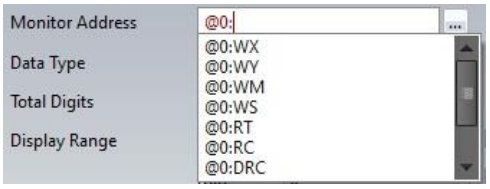
The address of the registers can be set at the address setting field in the settings window of each object. Users can enter the register address directly using the keypad or select the address from the【Input Address】settings dialog by pressing the button on the right. Users can also directly input a register address. The device name for the register is not necessary. For example, if the user enters R100, the software will automatically associate the register with a device name, i.e. @0:R100.
When typing a string in the PLC address setting field, it shows a hint list to quickly select a specific device or tag. When mouse moves into the setting filed with Tag string, the mapping address shows on the tip.



(Fill in the device name and address)



(Fill in the register address)



(Register list)



(Use tags)

Figure 56 PLC address setting field

The【Input Address】settings dialog is as shown below; the three source modes available for selection are Device, System and Tag.

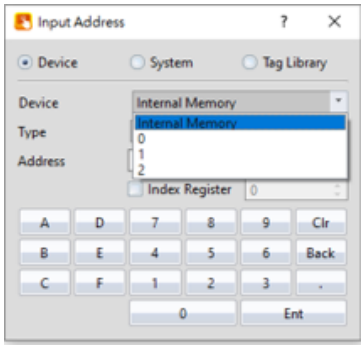
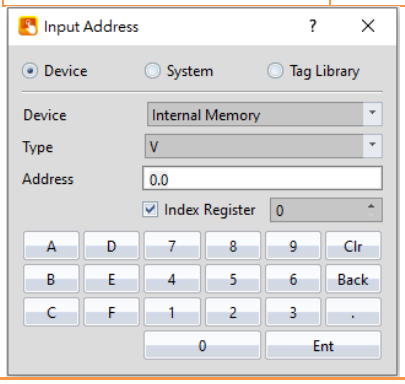


Figure 57 PLC Input Address Setting Dialog

Table 24 Access Address Settings

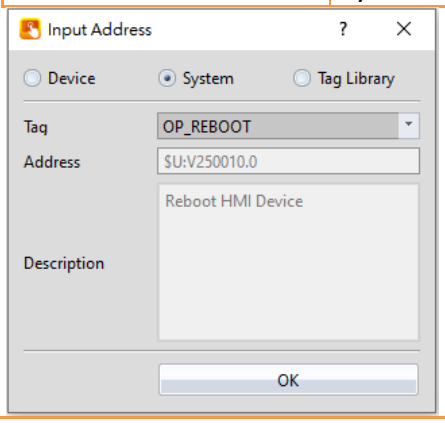
Item	Description
【Device】	Register address inside the HMI/PLC device. After selecting the connection, the address will display the register pattern for the designer to choose from and fill in the address of the pattern. Fill addresses in sequentially and the legal addresses will be displayed in green and illegal ones in red. This ensures correct addresses will always be entered.

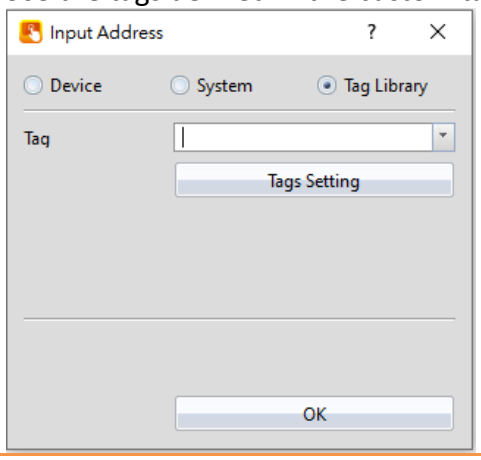
Item	Description
【Device】	Device where the register is located.
【Type】	Device type of the register.
【Address】	Register address.
【Index Register】	Index register setting. Selecting this option means using the index register. The last number(s) in the address is the index register address.

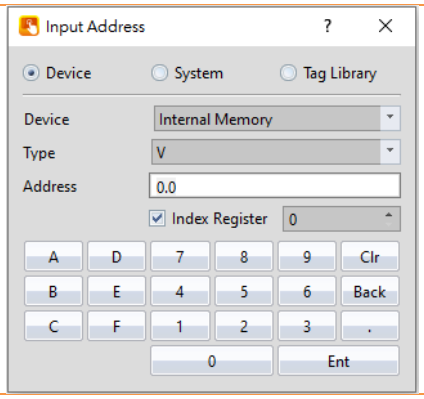


【System】	Special register address inside the HMI. The address type displays information on the register function and the corresponding register address of the function.

Item	Description

<table>
<tr><td></td><td>
<table>
<tr><td>【System Tag】</td><td>The system’s default register tag.</td></tr>
<tr><td>【Address】</td><td>The corresponding register address of the system tag.</td></tr>
<tr><td>【Description】</td><td>Describe the function of the system tag.</td></tr>
</table>


</td></tr>
<tr><td>【Tag】</td><td>Use the tags defined in the custom tag library.
 
</td></tr>
<tr><td>【Use Index Address】</td><td>The index register is an index addressing register. The user can change the read and write addresses of the online objects on the HMI while the screen program is running without changing the contents of the object address once there is an index register. This software provides a total of 128 sets of index registers with 64 sets of 16-bit index registers and 64 sets of 32-bit registers.
As shown in the example below, if the address content of the $I0 index register is 10, then this address is marked as R2010 of PLC0.</td></tr>
</table>



3.3.2 Printer

A printer can be connected to the HMI and can print out HMI screen captures or other information. To print, a printer has to be configured through selecting type of printer to connect and the port on the HMI it is connected to. Printing can also be controlled through a control address. See **Chapter 19.4.2.4 -【Function Switch】** for more details.

The【Printer】settings page is shown below. Each option is explained.

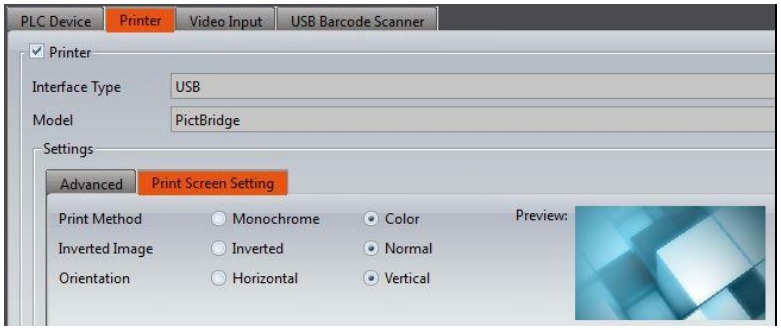


Figure 58【Printer】Settings Screen

Table 25【Printer】Settings

Property	Description
【Printer】	Check to enable printer configuration.
【Interface Type】	Support USB and serial two types, when the project model is PC , the PC Default Printer can be selected.
【Model】	【USB】- PictBridge Use mini-USB to connect to pictbridge printers. The following models are available for reference, but the settings may be slightly different between brands. There is no guarantee that the HMI can support all printer models. http://www.cipa.jp/pictbridge/CertifiedModels/PictBridgeCertifiedModels_E.html#PRT_BENQ

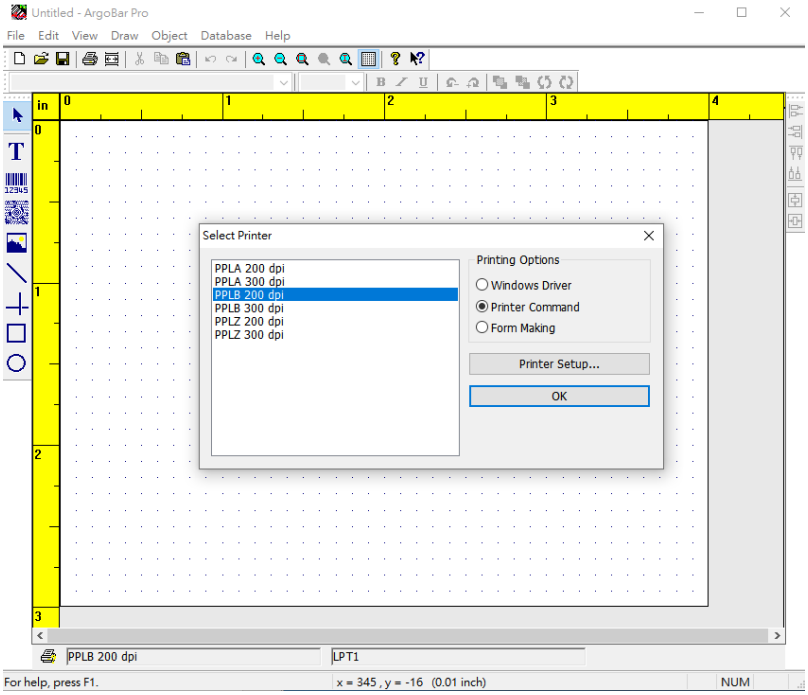
	【Serial】- Argox PPLB, EPSON ESC/POS, SPRT A Series Argox PPLB- label printer EPSON ESC/POS- Dox matrix/pos printer SPRT A Series- SPRT's A series printer 【PC Default Printer】 Print through the PC default printer.
【Settings】	【Basic】 Set the related port parameter. 【Advanced】 Set the encoding to communicate with the printer (EPSON only needs to be aware of), and print zoom and whether to cut. 【Print Screen Setting】 Set the Print Method, Inverted Image, and Orientation.

3.3.2.1 Argox PPLB tutorial

By using Argox Company provided software ArgoBar Pro to generate .prn file then import it to FvDesigner, allows FvDesigner and HMI to do tags editing. Currently only support PPLB series tag.

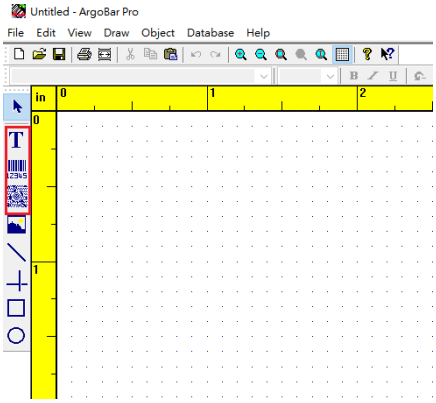
ArgoBar Pro offical download and simple tutorial: https://reurl.cc/D15d0e

1. Build project



Select PPLB 200dpi, Printing Options select Printer Command, or it may show format error after import tags.

2. Set up the tag for replacement

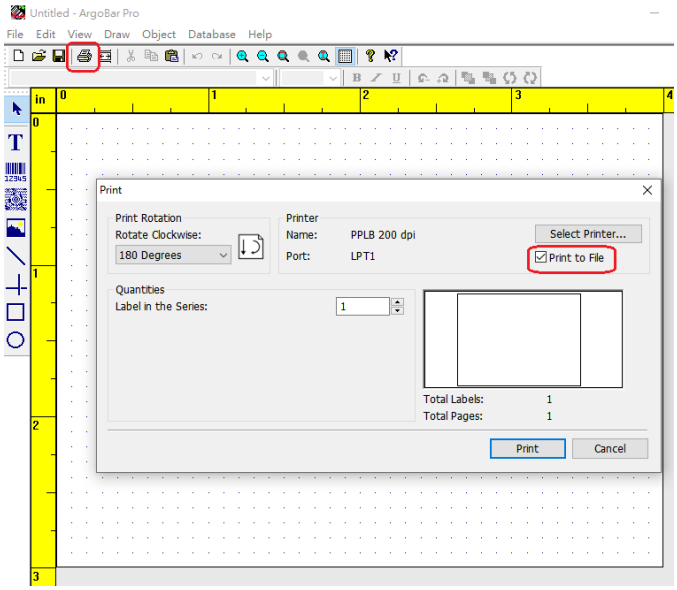


Currently we only support the following three functions:

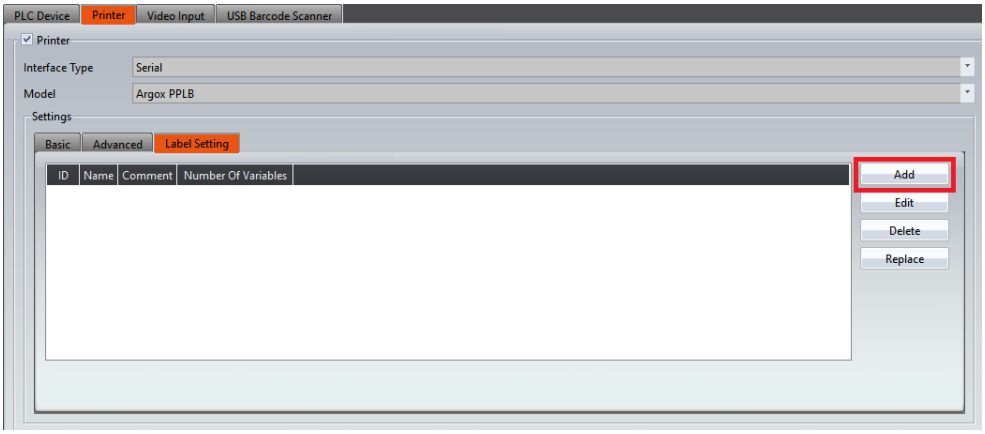
Item	Description
【Text】	Font: Need to select PPLB Font type so when importing the .prn file the FvDesigner will support the label replace function. If the font type is in TrueType, the file will be viewed as an image but not replaceable words. String: The 'Text String' field can only text English if text Chinese then the file will be viewed as image and can not be replaced after import to FvDesigner.
【Barcode】	Just follow the ArgoBar Pro software attention.
【QR Code】	Just follow the ArgoBar Pro software attention.

3. Output file

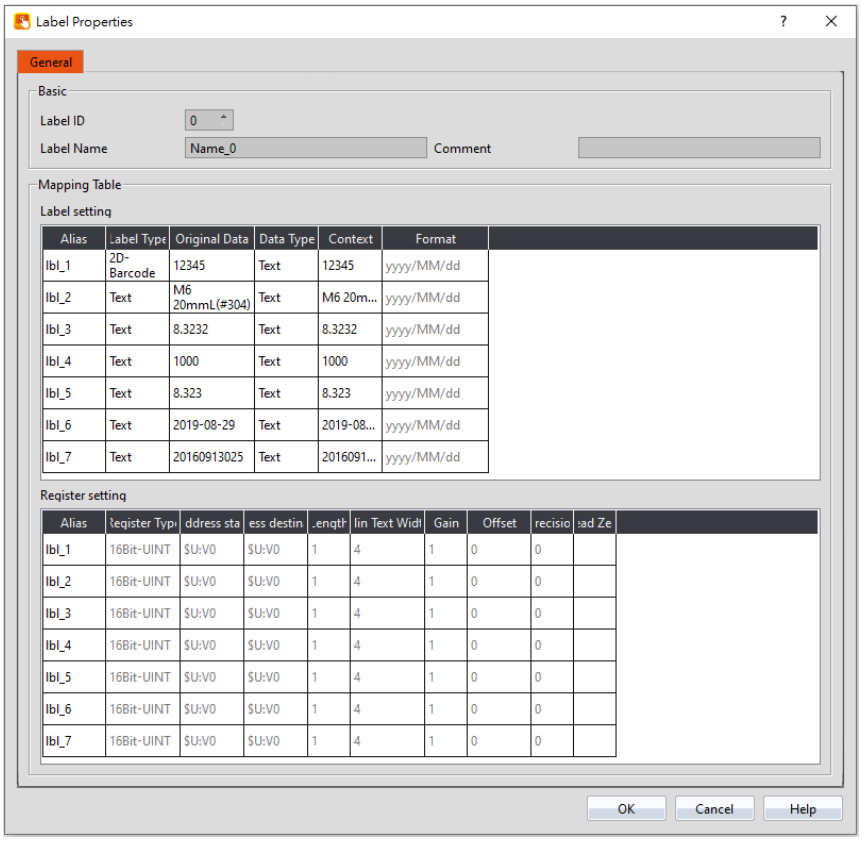
Click 'print' and check the checkbox 'print to file' to output the .prn file.



4. Import to FvDesigner



Click add button to import .prn file then the label properties can be set.



Item	Description
【General】	【Label ID】 Set a number to the label for printing. 【Label Name】 Name the label. 【Comment】 Add comment for the label.
【Mapping Table】	【Alias】

	Name the field. 【Label Type】 Tags set in the ArgoBar Pro. 【Original Data】 Default value to be displayed. 【Data Type】 Text(Static Word), Dataitem(Time), and Register.

3.3.3 Video Input

When the project wants to connect to USB Camera need to set the settings here first so that the video input display can do action, for more detail please refer to ch19.4.35-【Video Input Display】, in addition, when the alarm occurs, photos taken by the camera can also be sent to designated person via email, for more detail please refer to ch8.3-Alarm Application Example, this function only support after OS v1.0.14 or PC version.

If the HMI and the camera disconnected, change to another page and return for retry connection.

Note 1: This function only support in P5 all series HMI.
Note 2: This function only sipport HMI OS version 1.0.14 or later and PC version.
Note 3: This function has been tested it support MJPEG format.
Note 4: Currently has tested successful for supporting the following 3 USB cameras

- **Logitech: C270**
- **Logitech: C922 HD 1080P**
- **Microsoft: LifeCam HD-3000**

The【Video Input】settings page is shown below. Each option is explained.

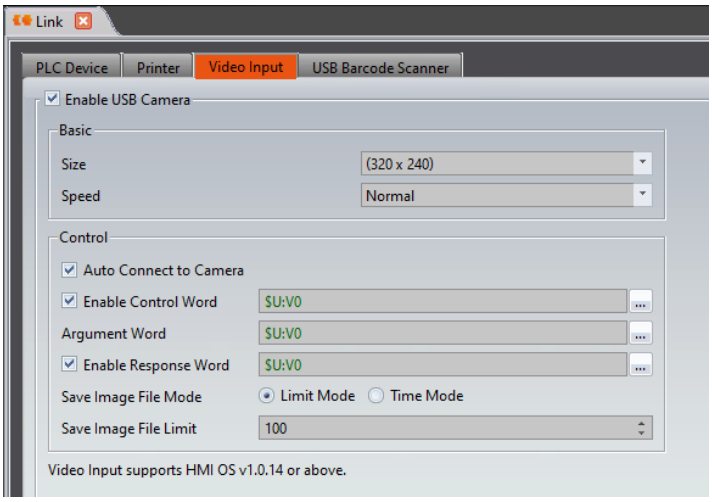


Figure 59【Video Input】Setting Window

Table 26【Video Input】property settings

<table>
<tr><th>Options</th><th>Description</th></tr>
<tr><td>【Basic】</td><td>【Enable USB Camera】
Set whether to enable USB camera function.

【Size】
Set the size of the video input display, whether the selected size is available depends on the camera support.

【Speed】
Set the screen update speed, it will take up more HMI system resources if select fast.</td></tr>
<tr><td>【Control】</td><td>【Auto Connect to Camera】
Set whether to Auto Connect to Camera function.

【Enable Control Word】
Control the video input display through control word, whether the control is available depends on the camera support.

【Argument Word】
When control word is enabled, argument word is the parameter to change the control of camera.

When control word or argument word have changed, the setting will be written.

<table>
<tr><th>Function</th><th>Control Word (Hex)</th><th>Argument Word (Hex)</th></tr>
<tr><td>Play</td><td>0x0001</td><td>N/A</td></tr>
<tr><td>Pause</td><td>0x0002</td><td>N/A</td></tr>
<tr><td>Stop</td><td>0x0003</td><td>N/A</td></tr>
<tr><td>Adjust the Image Contrast</td><td>0x0100</td><td>0-100 : The percentage value is between the minimum and the maximum;
255:Reset</td></tr>
<tr><td>Adjust the Image Brightness</td><td>0x0101</td><td>0-100 : The percentage value is between the</td></tr>
</table>
</td></tr>
</table>

			minimum and the maximum; 255:Reset
	Adjust the Image Saturation	0x0102	0-100 : The percentage value is between the minimum and the maximum; 255:Reset
	Adjust the Hue of the Image	0x0103	0-100 : The percentage value is between the minimum and the maximum; 255:Reset
	Adjust the Gamma Value of the Image	0x0104	0-100 : The percentage value is between the minimum and the maximum; 255:Reset
	Adjust the Image Gain	0x0105	0-100 : The percentage value is between the minimum and the maximum; 255:Reset
	Adjust the Image Sharpness	0x0107	0-100 : The percentage value is between the minimum and the maximum; 255:Reset
	Adjust the Image Backlight Compensation	0x0108	0-100 : The percentage value is between the minimum and the maximum; 255:Reset
	Adjust the Image White Balance Temperature	0x0109	0-100 : The percentage value is between the minimum and the maximum; 255:Reset
	Enable the Image White	0x010A	1 : Enable; 0 : Disable;

Balance Temperature		255:Reset
Adjust the Image Exposure Value	0x010B	0-100 : The percentage value is between the minimum and the maximum; 255:Reset
Enable the Image Exposure	0x010C	1 : Enable; 0 : Disable; 255:Reset
Enable Image Flip Horizontal	0x0110	1 : Enable; 0 : Disable; 255:Reset
Enable Image Flip Vertical	0x0111	1 : Enable; 0 : Disable; 255:Reset
Reset Image	0x01FF	N/A
Save Image to Internal Memory	0x0200	N/A
Save Image to USB Flash	0x0201	N/A
Save Image to SD Card	0x0202	N/A

【Enable Response Word】

Display whether the video iuput display was enable success or the result of control word setting.

	Description	Hex
Normal	No Error	0x0000
	connected	0x8001
Error	HMI no support	0x0100
	No device	0x0101
	Device initialization failed	0x0102
	Device disconnected	0x0103
	Control_device is not initialized	0x0200
	Control_Unsupported	0x0201
	Control _ wrong value	0x0202
	Control _ Busy	0x0203
	Control _ read only	0x0204
	Control _ input error	0x0205
	Control _ archive failed	0x0300
	unknown mistake	0x0FFF

	【Save Image File Mode】 ➢ 【Limit Mode】 When using the control word to save the file, the old files will be overwritten if the number of the files are over the limitation. ➢ 【Time Mode】 When using the control word to save the file, there is no limit for the numbers of the files, but it can no longer save the file if the storage space is not enough. The file name format would be the current date and time yyMMdd_hhmmss.jpg (For example: 200702_145018.jpg). 【Save Image File Limit】 This option will be displayed under【Limit Mode】, and the range of the saving files is 0~999.

3.3.4 USB Barcode Scanner

Scan the barcode and display the information on the numerical input display.
Please note that this function is a mandatory address setting, so after enabling this function, the numeric and text input display cannot use the【USB Barcode Scanner】function.

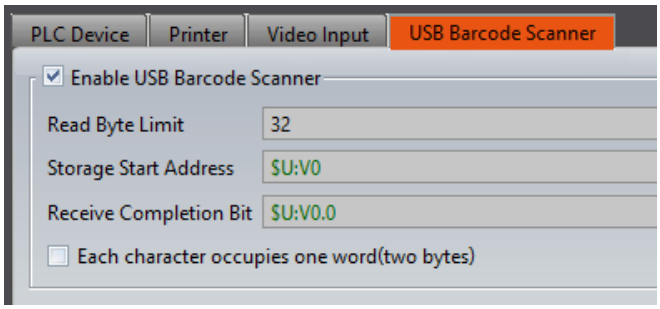


Figure 60【USB Barcode Scanner】Setting Window

Table 27【USB Barcode Scanner】property settings

Item	Description
【Read Byte Limit】	Set the maximum data that can be displayed.
【Storage Start Address】	Set the storage address.
【Receive Completion Bit】	The bit will be true when scanning complete.
【Each character occupies one word(two bytes)】	Set whether to enable one character per character.

4. Servers

This chapter will introduce the various server functions provided by the HMI; users can use these server functions to achieve needs such as remote file access , send email and remote screen control.

4.1 【FTP Server】

FTP Server allows users to access files on the internal storage, SD card and USB storage device of the HMI. There are two ways to deploy the FTP server on the HMI. One is through the system settings of the HMI and the other is through the projects settings. Project settings will override system settings at project startup.

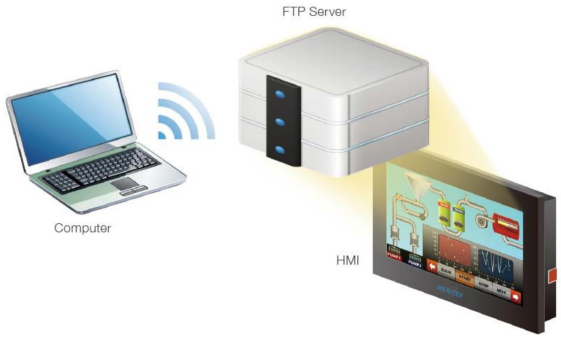


Figure 61 FTP Application Diagram

4.1.1 Deploying FTP Server using System Settings of HMI

The following screen will appear when the【Server Settings】page in the system settings of the HMI is opened:

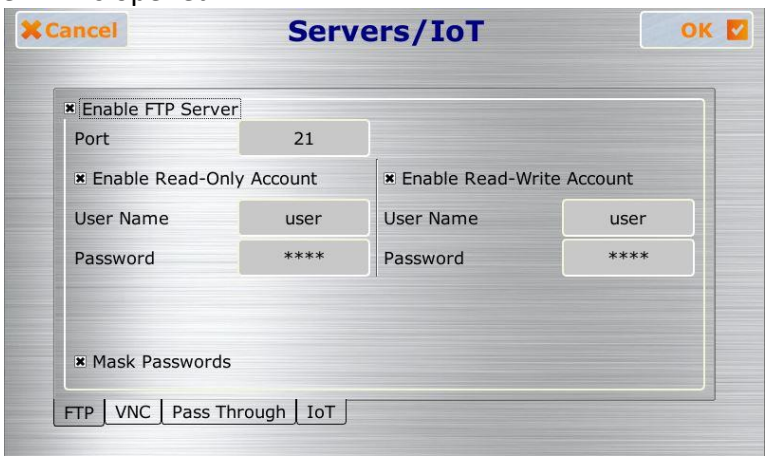


Figure 62 FTP Servers Setting–HMI

The following are the descriptions of each field in the figure above:

Table 28 FTP Server Settings

Field	Description
【Enable FTP Server】	Set to enable the FTP server; other fields can only be accessed when FTP Server is enabled.
【Port】	Specify the port to listen for FTP Server; the default port is 21.
【Enable Read-Only Account】 【User Name】 【Password】	Set to enable read-only accounts. A user name and password pair can be created once this option is enabled. Users who log in to FTP Server with this account can only read files and cannot perform operations including creating, modifying or deleting files.
【Enable Read-Write Account】 【User Name】 【Password】	Set to enable read-write accounts. A user name and password pair can be created once this option is enabled. Users who log in to FTP Server with this account can access files as well as perform operations including creating, modifying or deleting files.
【Mask Passwords】	Set if the password is to be encrypted.

4.1.2 Deploying FTP Server using Project Settings

Click on【Server】in the【System】window of the【Project Explorer】to the left of FvDesigner to enter the【Server】settings screen where the【FTP】tab page can be used to setup FTP Server, as shown in the figure below:

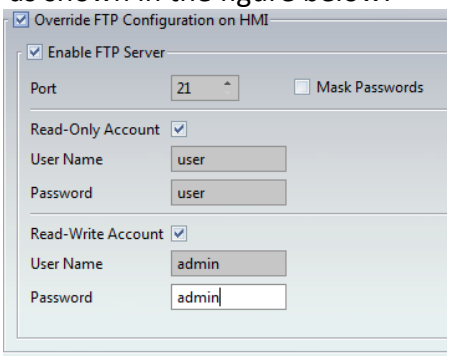


Figure 63 FTP Server Setting–Project

The FTP settings of the project can be used to override HMI【System Setting】FTP Server settings on the HMI when the project is loaded if【Overwrite FTP Configuration on HMI】is checked. The other settings are identical to the setting screen on the HMI; please refer to the explanations in **Chapter 24.2.4-【Servers/IoT】**.

Note: if HMI has enable FTP sever, but the project setting doesn't enable FTP

server, then the FTP sever will be disable when download the project.

4.1.3 FTP Server Example

We will use the following steps to illustrate how to use FTP Server:

1. Enter the system settings of the HMI during boot up and then open 【Server Settings】; setup FTP Server as shown in **Figure 471.**

2. Use Windows Explorer to open the address:ftp://user:password@HMI IP Address to see the files on the HMI, as shown in the figure below:

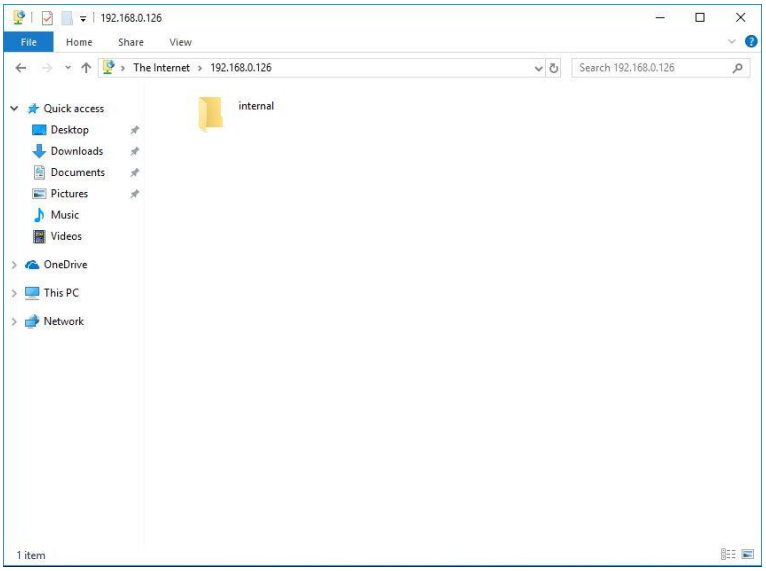


Figure 64 Using FTP to view files stored in internal memory, SD, or USB

4.2 【VNC Server】

VNC Server allows users to remotely view and operate the HMI functions through an Internet connection so that users can check the data on the HMI or operate the HMI remotely. There are two ways to deploy the VNC server on the HMI. One is through the system settings of the HMI and the other is through the project settings. Project settings will have a higher priority if both settings are set.



Figure 65 VNC application illustration

4.2.1 Deploying VNC Server using System Settings of HMI

The following screen will appear when the【Server Settings】page in the system settings interface of the HMI is opened:

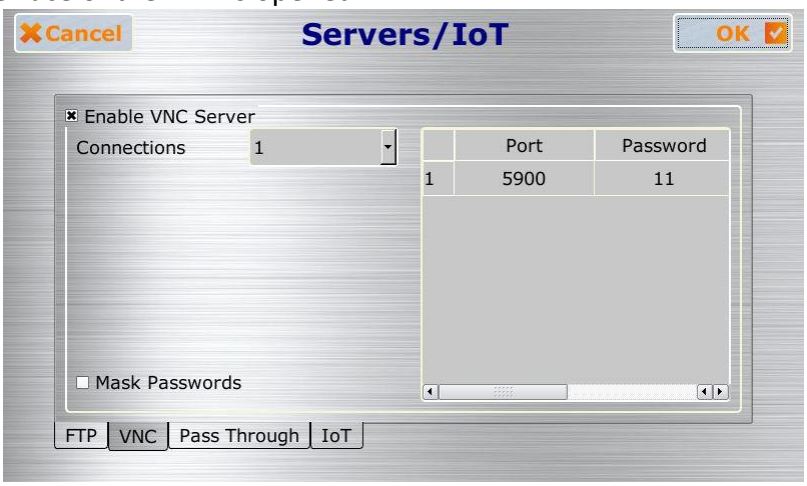


Figure 66 VNC Server Setting-HMI

The following are the descriptions of each field in the figure above:

Table 29 VNC Server Settings

Field	Description
【Enable VNC Server】	Set to enable the VNC server; other fields can only be set when the VNC server is enabled.
【Connections】	Set how many VNC clients can be connected to this VNC server, the maximum number of support will vary depending on the model.
【Mask Passwords】	Set if the password is to be encrypted.
【Port】	Set the VNC port, can only set the first client port, the second will automatically increase, for example, the first set 5900, the

	second will be 5901.
【Password】	The password used to login to the VNC server.

4.2.2 Deploying VNC Server using Project Settings

Click on【Server】in the【System】window of the【Project Explorer】to the left of FvDesigner to enter the【Server】settings, in which the【VNC】tab page can be used to set the VNC server, as shown in the figure below:

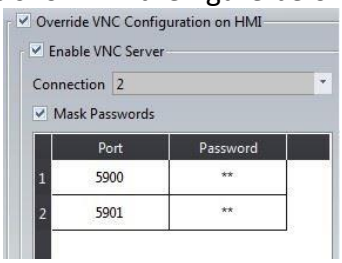


Figure 67 VNC Server Setting-Project

The VNC settings of the project can be used to override the VNC server settings when the project is loaded if【Overwrite VNC Configuration on HMI】is checked. The other settings are identical to the setting screen on the HMI; please refer to the explanations in **Chapter 24.2.4 -【Servers/IoT】**.

4.2.3 VNC Server Example

We will use the following steps to illustrate how to use the VNC server:

1. Install a VNC client software; VNC Viewer 6.1.7(https://www.realvnc.com/download/viewer/) by RealVNC is used in this example.

2. The following screen can be seen once VNC Viewer is opened and add link:

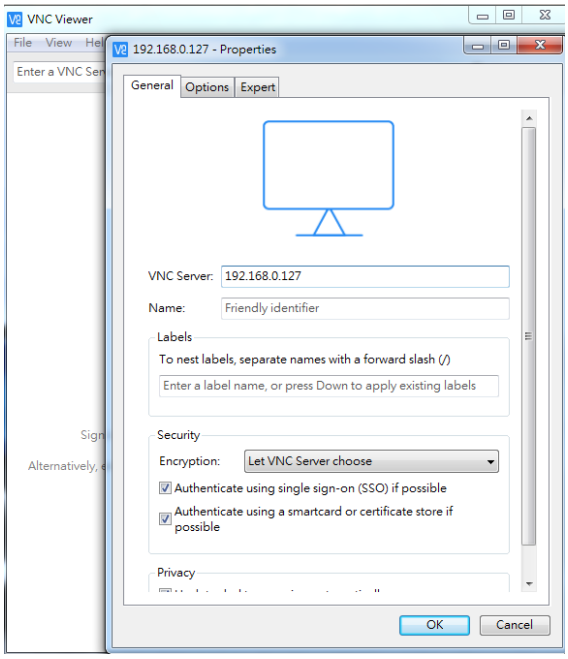


Figure 68 VNC Viewer Connection Screen

Press Connect after entering the IP of the HMI, and a prompt will appear asking the user to enter the password:



Figure 69 VNC Viewer Password Confirmation Screen

3. Press OK after entering the password and real-time screens on the HMI can be seen.

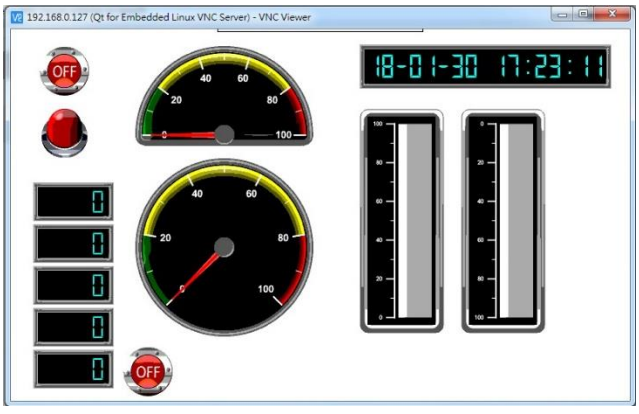


Figure 70 VNC Viewer remote monitor screen

Note: Please adjust the settings of the VNC Viewer if the HMI screens did not appear after entering the correct password; just set the value of FullColor in Options->Advanced->Expert to True.

4.3 【SMTP】

SMTP(Simple Mail Transfer Protocol), is a widely used protocol for sending mail over the Internet, this chapter will describe how to set to let user can send the email through HMI. For example, when an alarm occurs, an alarm message can be immediately sent to an operator or a designated e-mail recipient, so that the operator can handle and maintain the major issues that occur in the device.

4.3.1 【SMTP】setting

The function is on the left side of FvDesigner, is in【Project Explorer】【System】【Servers】setting page, figure as shown below.

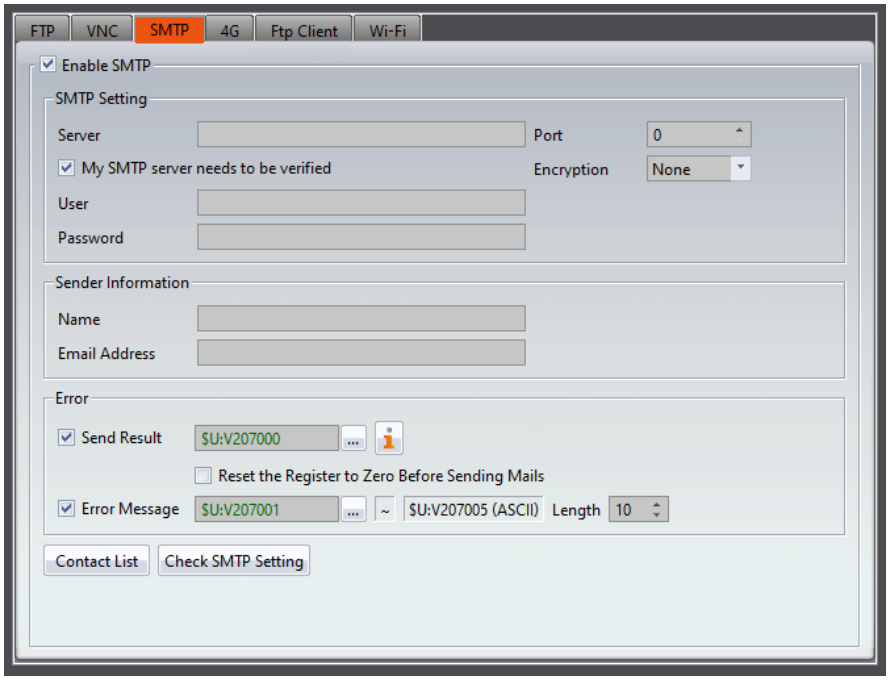


Figure 71【Sever】【SMTP】setting paging

Table 30【Sever】【SMTP】setting property

Field	Description
【Enable SMTP】	Decide whether to enable SMTP function, check to set the following fields.
【SMTP Setting】	Set the server, port, user, encryption and password of【SMTP】 【Server】 The sending email server, the following table shows common

<table>
<tr><td></td><td>mail servers for reference , please refer to the various mail server announcements .

<table>
<tr><th>Email</th><th>SMTP Server</th><th>Port</th><th>Encryption</th></tr>
<tr><td>Gmail</td><td>smtp.gmail.com</td><td>465</td><td>SSL</td></tr>
<tr><td>Hotmail</td><td>smtp.live.com</td><td>587</td><td>TLS</td></tr>
<tr><td>Yahoo</td><td>smtp.mail.yahoo.com</td><td>465</td><td>SSL</td></tr>
<tr><td>AOL</td><td>smtp.aol.com</td><td>587</td><td>TLS</td></tr>
<tr><td>QQ</td><td>smtp.qq.com</td><td>465</td><td>SSL</td></tr>
</table>

Note: If using gmail server, users should set the 2-step verification and generate the app password.
(Setting instruction:
https://support.google.com/mail/answer/185833)

【Port】
Each e-mail mail server has different connection ports. Please refer to the above table or check the mail server announcements.

【Encryption】
Each email mail server has different encryption ways. Please refer to the above table or check the mail server announcements.

【My SMTP server needs to be verified】
If this function is checked, the user name and password should be entered, the actual usage depends on the connected server.

【User】
Email address of sender.

【Password】
Email password of sender.</td></tr>
<tr><td>【Sender Information】</td><td>【Name】
Set the name of the sender.

【Email Address】
Set the sender’s email address to send the email.</td></tr>
<tr><td>【Error】</td><td>Set whether to display the result of sending email on the HMI or PLC register, error code show as below.</td></tr>
</table>

Error Code	Meaning
0	Successfully send.
1	Failed to connect to sever.
2	Failed to log in
3	Failed to send email.

【Reset the Register to Zero Before Sending Mails】

Check whether to reset the register to 0 before sending mails.

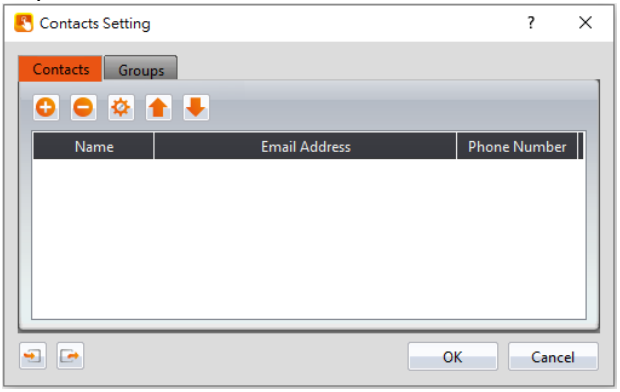
【Error Message】

Set the register to display error message from SMTP server with and the data type is【ASCII】.

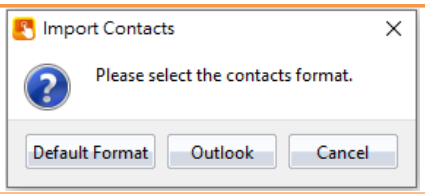
【Contact List】

Set the recipients's email address and groups, there are two pagings, includes【Contacts】and【Groups】.

【Contacts】paging shown as below, each meaning of the options are as follow:

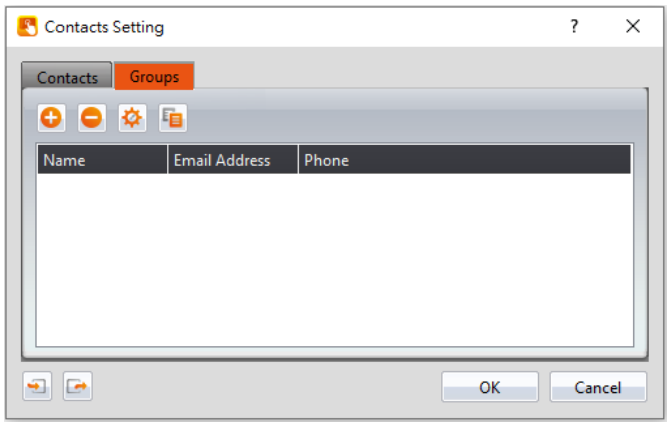


Options	Function	Icon
Add	Add new contacts.	
Delete	Delete the selected contacts.	
Edit	Edit the selected contacts.	
Move up	Move up the selected contacts.	
Move down	Move down the selected contacts.	
Import	Import contacts from outside, there are【Default Format】or【Outlook】two ways to import CSV file, figure as shown below.	



Export	Export the contact list as a MERITEK style CSV file.	

The【Groups】tab page as shown below, the meaning of each setting option is as follows:

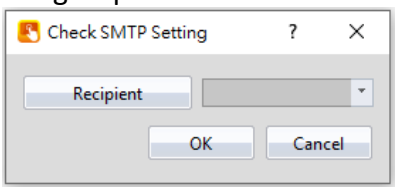


Options	Function	Icon
Add	Add Contact Group.	
Delete	Delete the selected contact group.	
Edit	Edit the selected contact group.	
Copy	Copy contact group.	

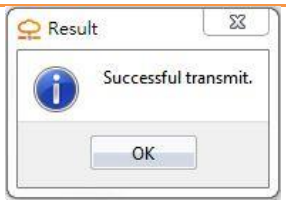
Note : the SMTP function of sending email will only send to the specified group. For example, group 1 has A recipient, group 2 has B and C recipients, when sending email to group 2, B and C will receive the same mail.

【Check SMTP Setting】

Check whether SMTP is setting correct or not, press【Check SMTP Setting】button, will show up the window and select the group.



If success will show up the window below



And the group will receive a SMTP testing email from FvDesigner.

4.3.2 【SMTP】setting example

We will use the following steps to explain how to set the【SMTP】function and test whether SMTP is correct, here we use gmail to explain, as for how to combine with alarms, when the alarm occurs, you can send emails to the configured recipients through the【SMTP】function. For details, refer to Section 8.3 - Alarm Application Example.

Step1 : Click【Servers】in the【System】window in【Project Explorer】on the left of FvDesigner, enter the【Servers】setting page, switch to【SMTP】tab, and enable【SMTP】, as shown below

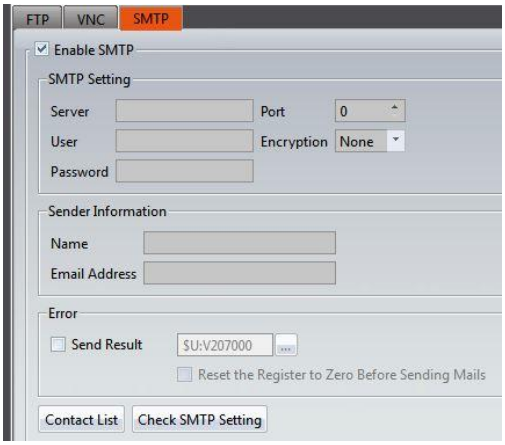


Figure 72 SMTP setting window

Step 2 : According to the Gmail server, set the【Servers】as smtp.gmail.com, set the【Port】as 465, set the【Encryption】as SSL, fill【User】in user's e-mail address, and set the sender's email password in【Password】, fill the actual user name and password of the【User】and【Password】, as shown below



Figure 73 SMTP sever setting window

Step 3 : fill up【Name】and【Email Address】of the sender information, fill up your actual【User】and【Password】, as shown below.



Figure 74 SMTP sender information setting window

Step 4 : fill up【Contacts】and【Groups】, please fill in your actual recipient's email, as shown below.

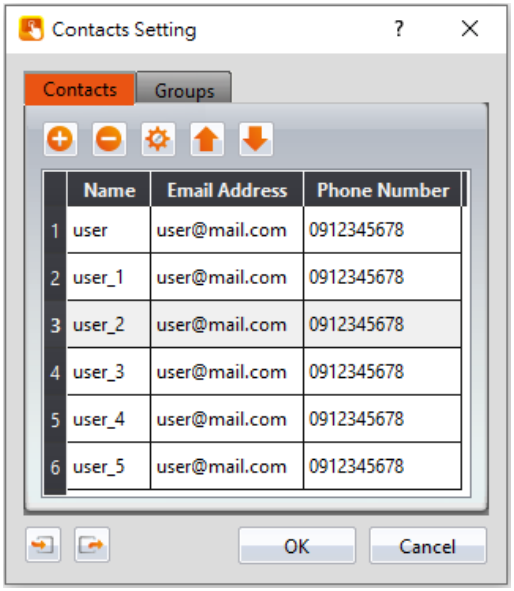


Figure 75 SMTP contacts setting window

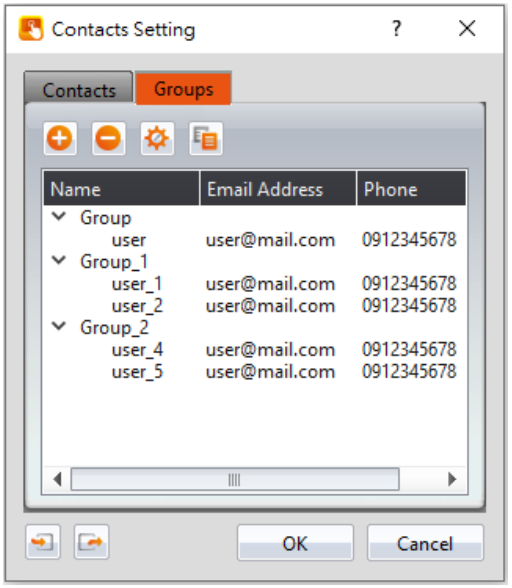


Figure 76 SMTP group setting window

Step 5 : press【Check SMTP setting】, and select the group you want to test, it will show up the following figure if successful transmit, the recipient's email will receive a SMTP test email from FvDesigner, as shown below.

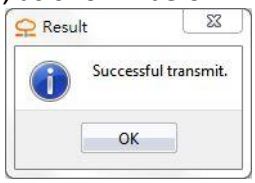


Figure 77 SMTP test successfully window



Figure 78 SMTP test letter send by FvDesigner

4.4 【4G】

Can plug 4G Dongle on HMI for wireless Internet access

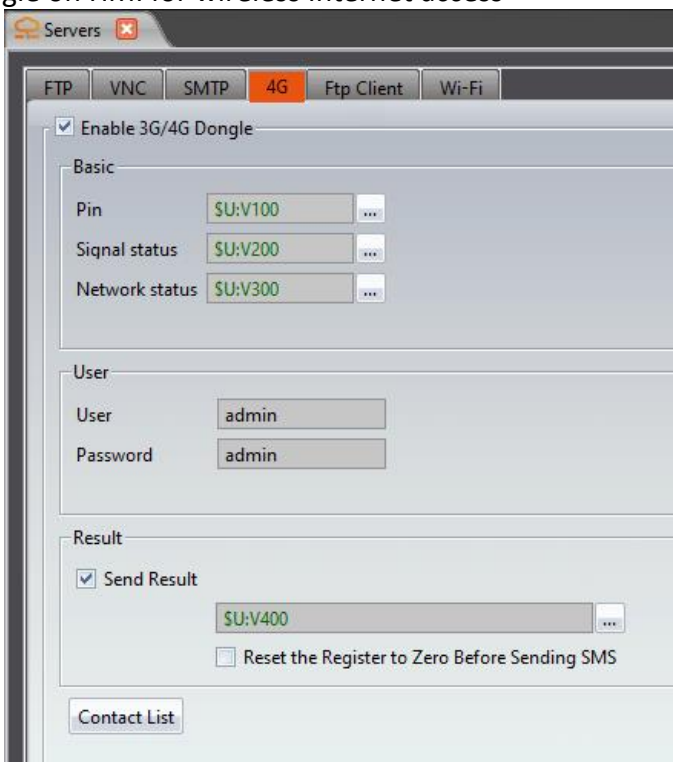


Figure 79【4G】setting page

Table 31【4G】properties setting

Property	Description
【Basic】	【Pin】 The pin code needs to be set up in the mobile phone or computer first, and the data type is【ASCII】, which occupies 6 words 【Signal status】 Display signal strength. The data type is【INT】, the range is 0~5 【Network status】 Show whether the network is connected or not, the data type is【INT】, the range is 0~1
【User】	This function is only useful when using Huawei's dongle, and using other cards will not affect it.
【Result】	【Send Result】 Display the SMS transmission result (can be set in the alarm),

	the data type is【INT】, -1 failure/1 success 【Reset the Register to Zero Before SMS】 Check whether to reset this address before sending SMS

HMI can use 4G sim card for wireless Internet access, please notice that the HMI firmware version: 1.5.32 / OS version: OS 2.0.4 and above are only supported
No special settings are required to use the 4G network card to access the Internet. Just plug in the 4G Dongle before powering on the HMI.

4.5 【FTP Client】

4.5.1 【FTP Client】setting

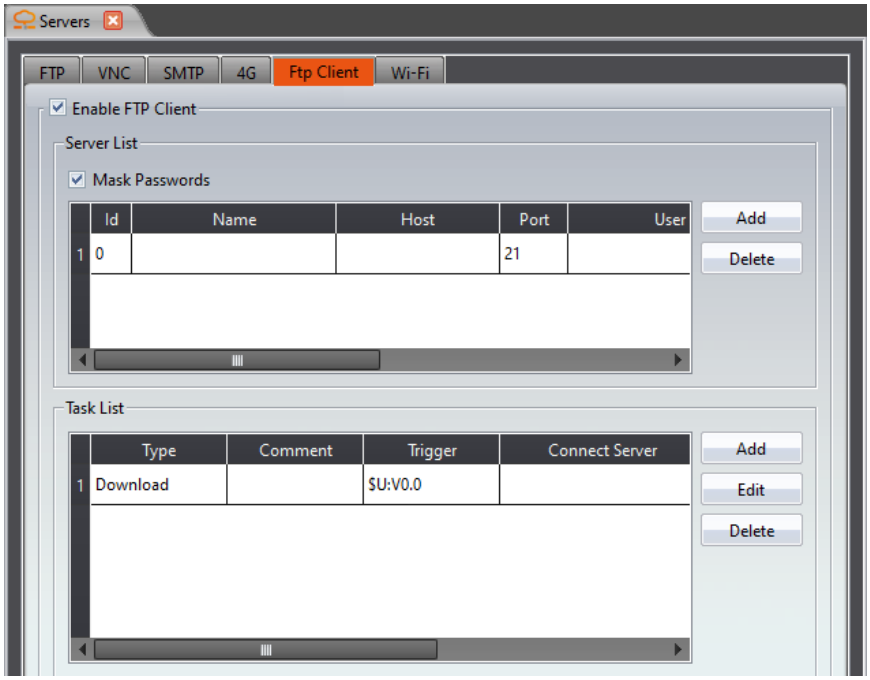


Figure 80【FTP Client】setting page

Table 32【FTP Client】properties setting

Property	Description
【Server List】	【Mask Passwords】 Set whether to show the password or not 【ID】 Set the server ID 【Name】

	Set the server's name 【Host】 Set the sever's IP 【Port】 Set the server's port. 【User】 Set the login name of the connection server 【Password】 Set the login password of the connection server
【Task List】	【Type】 Display the task type 【Comment】 Display the comment of the task 【Trigger】 Display the triggered address 【Connect Server】 Display the connecting server of the task 【Number of Files】 Display the number of the transfer files.

4.5.2 【FTP Client】Task setting

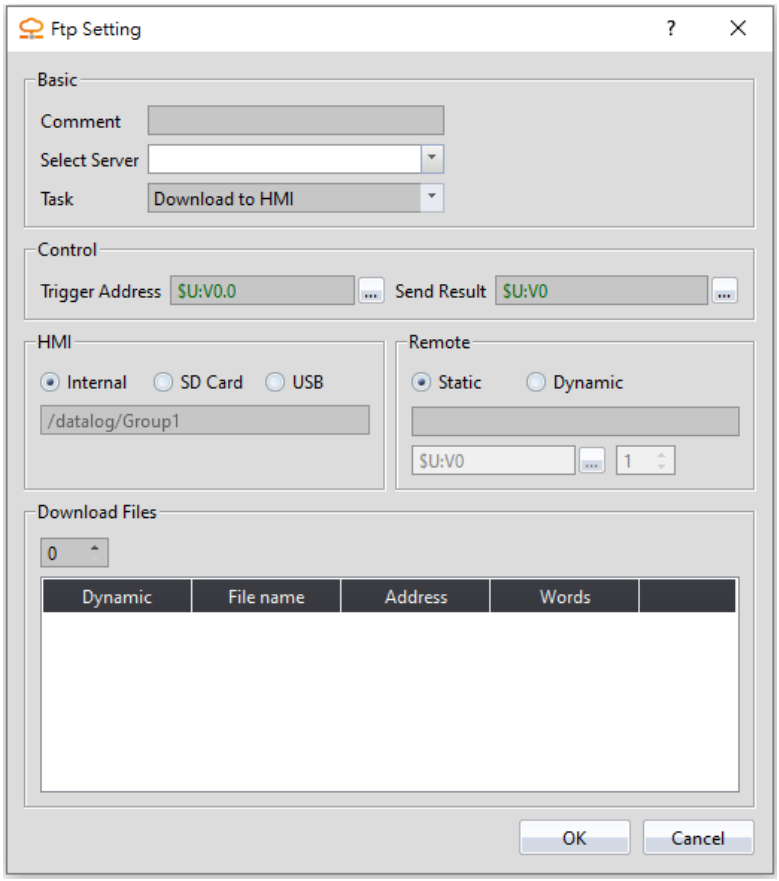
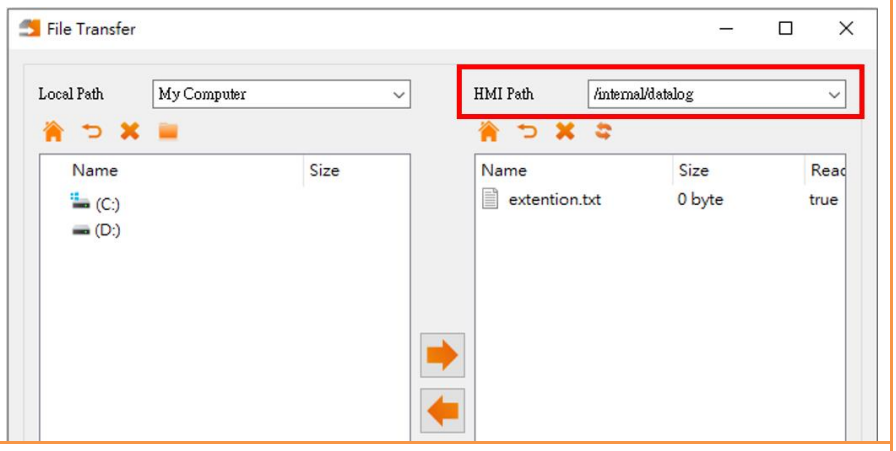


Figure 81【FTP Client】task list setting page

Table 33【FTP Client】task list properties setting

Property	Description
【Basic】	【Comment】 Comment for this task 【Select Server】 Select the server to connect 【Task】 Select the task, provides【Download to HMI】and【Upload to Server】
【Control】	【Trigger Address】 Set the trigger address to execute the task 【Send Result】 Display the result of the excuting task, the data type is【INT】, success: 1 / failed: -1

【HMI】	Select the location for uploading or downloading from the HMI. The following example: To use the data log folder as FTP 1. select【Internal】 2. Fill in the location /datalog/Group_1 (Note: /internal does not need to be filled, because【Internal】has been selected) If you don't know the internal location of the HMI, you can use【File Transfer】to connect and copy. 
【Remote】	Set the data access location of the connection server. If it is not filled in, the root directory of the server will be used by default. 【Static】 Read the settings of the server itself, you can fill in the path in the field below 【Dynamic】 The data type is【ASCII】, you can fill in the path in the set register, for example: /HMI_Datalog
【Download Files】	Set the number of access files for this task, the upper limit is 99 【Static】 Enter the full name of the file (including the extension filename) 【Dynamic】 The data type is【ASCII】, you can fill in the path in the set register, for example: DataLog.csv

4.5.3 Example – Upload the data log to PC

The following is an example of using the FTP client function to upload DataLog to the PC.

(This is an example. To use the upload data log, refer to【Upload to remote】in chapter 7.2.3-【Export Data】which will be easier)

1. Set the connected server, please note that all parameters except the name must

be the same as the server to be connected

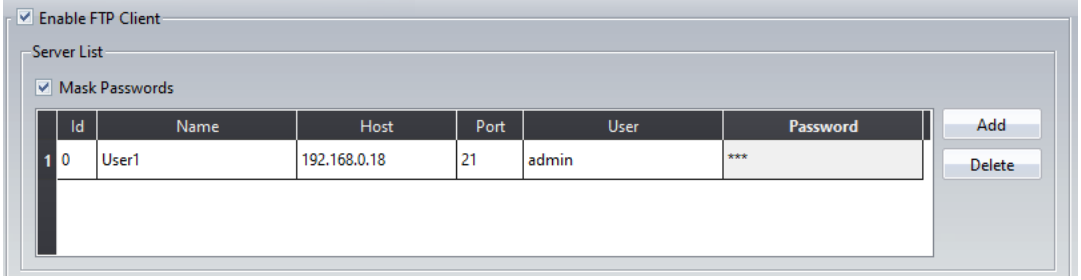


Figure 82 Set the server

2. When setting up data log, please note that we are uploading files, so we must enable the export data function.
   The location of storage is internal storage, and the name of the exported file is fixed as DataLog.

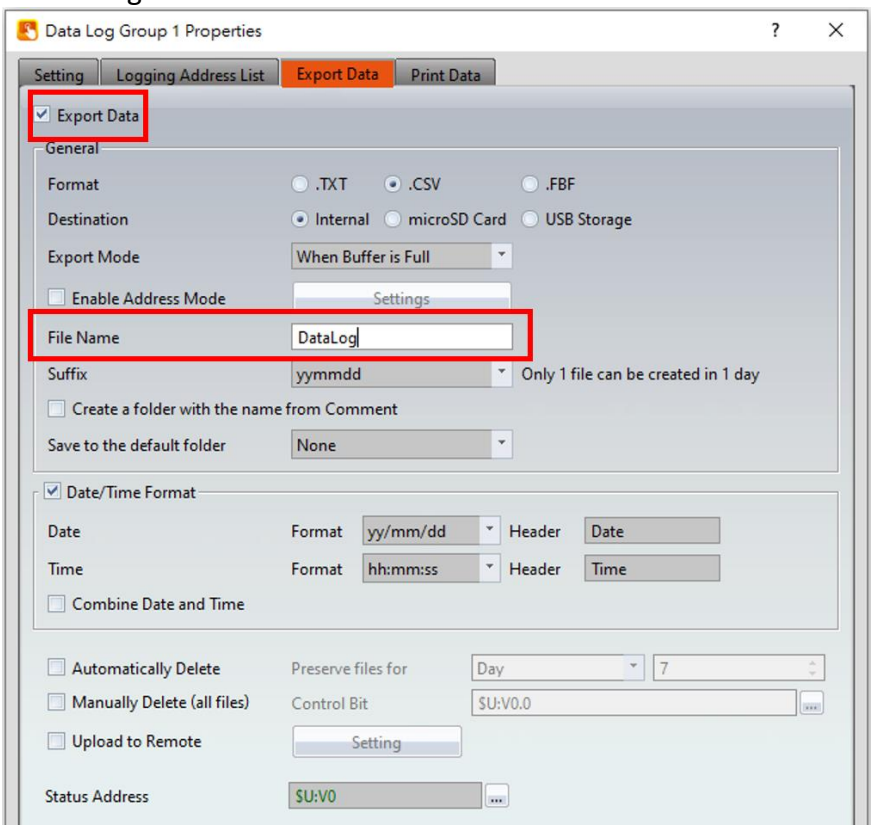


Figure 83 Data Log setting

3. Set the task item, the example is uploading to the PC, the task should select upload to server, the location of data log and storage is set to internal storage, so check internal and fill in the path of the data log group in the field.
   The file name must be the same as the exported file name

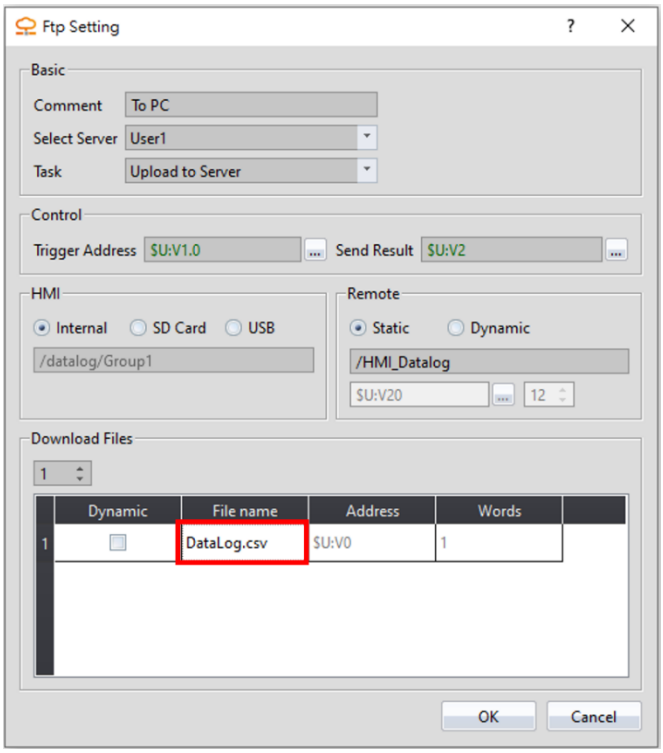


Figure 84 Ftp Setting

4. Download the project to the HMI, trigger the task after exporting the file.

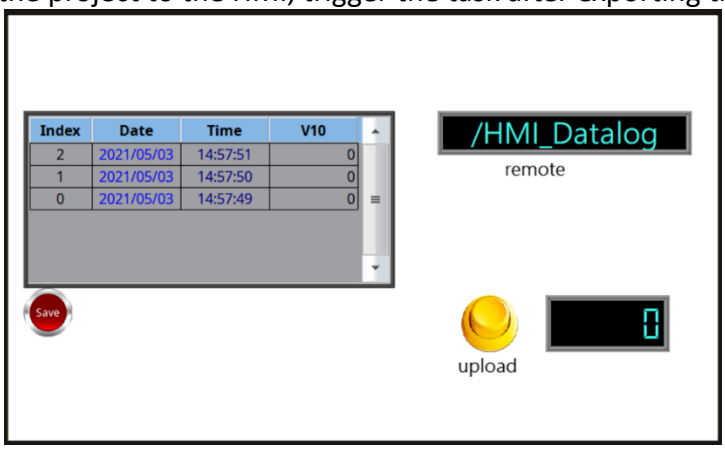


Figure 85 HMI execution screen

5. After uploading, you can see the file on the PC. Please note that the FTP Server must be enabled on the computer, otherwise the above operations will not take effect.
   For the FTP Server tool, there are many tools on the Internet, please check by yourself.

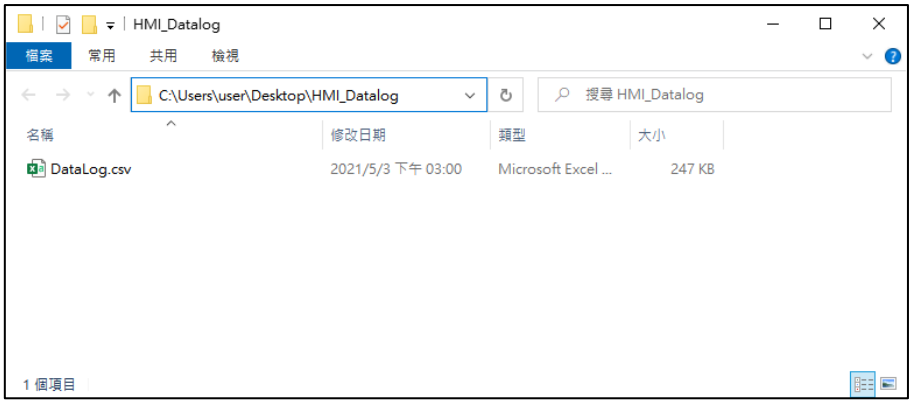


Figure 86 PC get the file

4.6 【Wi-Fi】

Wi-Fi Dongle can be plugged into the HMI for wireless Internet access.
Note: This is to enable the address control Wi-Fi function. Even if enable is not checked, the HMI can still plug in the Wi-Fi Dongle for wireless Internet access.

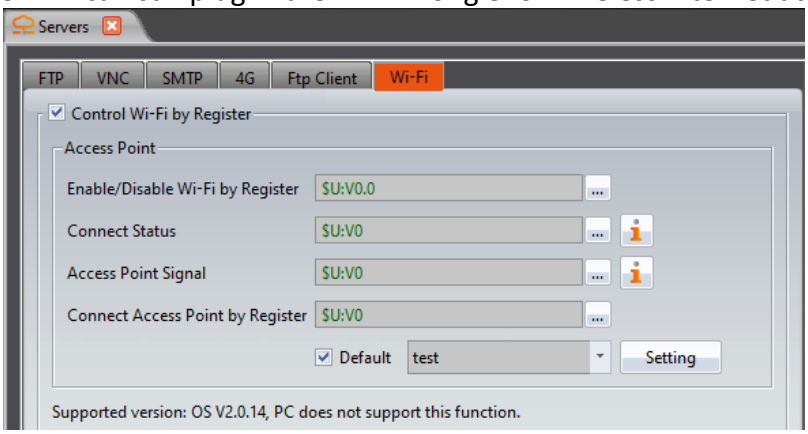
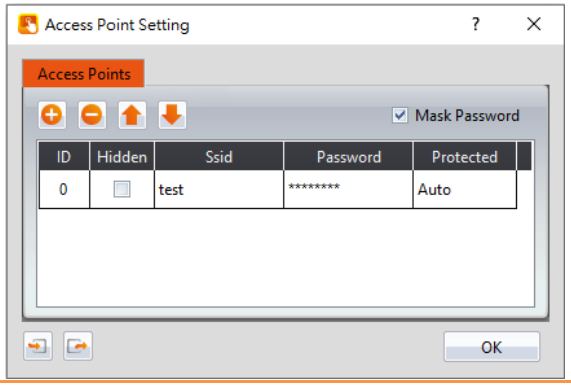


Figure 87【Wi-Fi】setting page

Table 34【Wi-Fi】properties setting page

<table>
<tr><th>Property</th><th>Description</th></tr>
<tr><td>【Enable/Disable Wi-Fi by Register】</td><td>Set a bit to control to enable or disable the Wi-Fi function</td></tr>
<tr><td>【Connect Status】</td><td>Each status as the table, data type is【INT】<table><tr><th>Status</th><th>Description</th></tr><tr><td>-1</td><td>No dongle is decteced</td></tr><tr><td>0</td><td>Connected</td></tr><tr><td>1</td><td>Unconnect</td></tr><tr><td>2</td><td>Get IP failed.</td></tr></table></td></tr>
<tr><td>【Access Point</td><td>Each status as the table, data type is【INT】</td></tr>
</table>

<table>
<tr><td>Signal】</td><td><table>
<tr><th>Status</th><th>Description</th></tr>
<tr><td>0</td><td>None</td></tr>
<tr><td>1</td><td>Unusable</td></tr>
<tr><td>2</td><td>Not Good</td></tr>
<tr><td>3</td><td>OK</td></tr>
<tr><td>4</td><td>Very Good</td></tr>
<tr><td>5</td><td>Amazing</td></tr>
</table></td></tr>
<tr><td>【Connect Access Point by Register】</td><td>Select the access point number through the register, the data type is【INT】.
【Setting】: Access point can be set in advance.
 
</td></tr>
</table>

Please refer to ch 24.2.3.4-【Wi-Fi】for more details.

5. Security

Different operating levels can be set for different objects during HMI operations so that different objects can be used or seen when different users log into the HMI. This prevents operating errors or ensures the security of the data.

5.1 【Security】Settings

5.1.1 【Security】Basic Settings

【Security】can be clicked on the【System】window in the【Project Explorer】to the left of the FvDesigner to enter its setting screen as shown below:

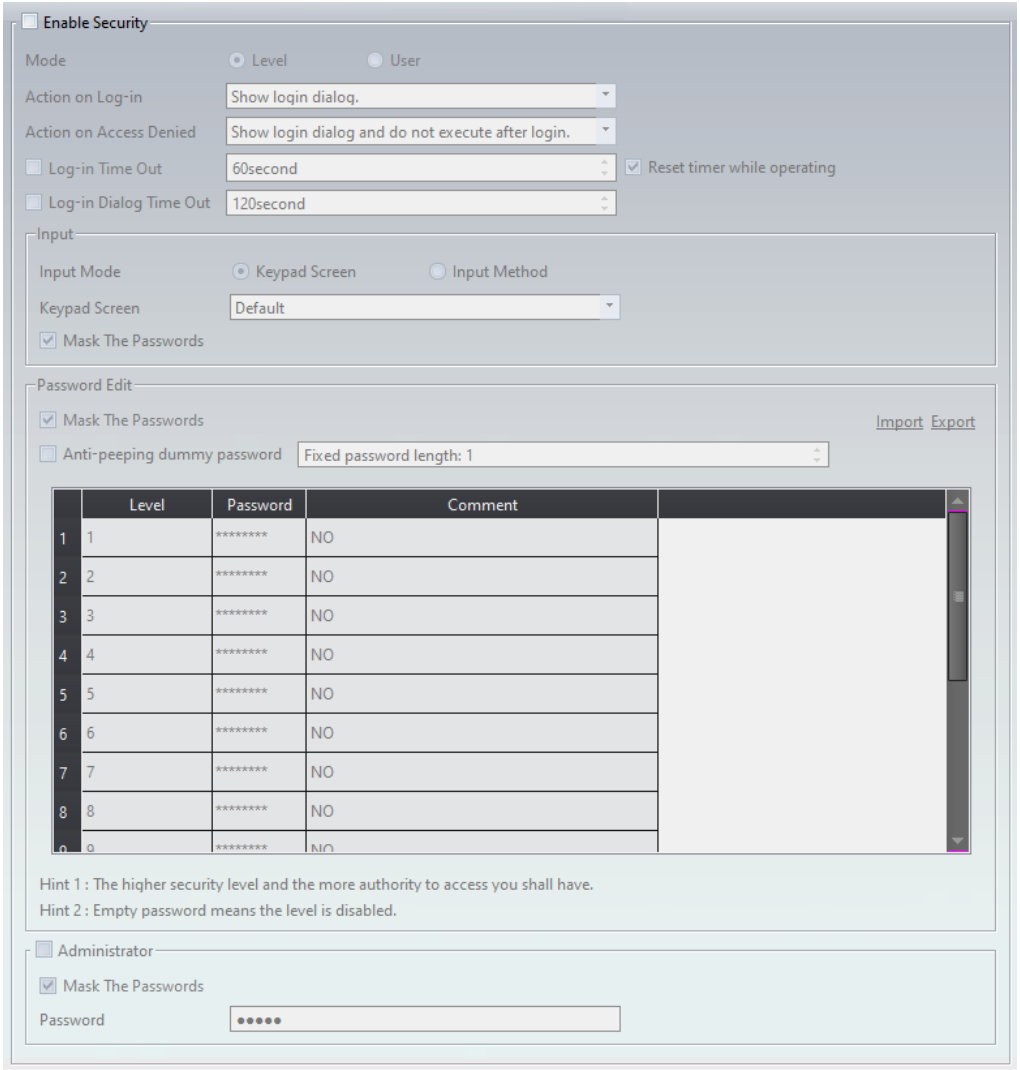


Figure 88 Basic Setting Screen for【Security】

Table 35 Basic Setting Properties of【Security】

Property	Description
【Enable Security】	Select to enable【Security】; this is the main switch of【Security】. 【Mode】 The mode can be divided into the following two types: ➢ 【Level】 Only the password needs to be entered during login. Security levels range from 1~15. The higher security level allows more authority for the access. ➢ 【User】 The user name and password needs to be entered during login. Allows a maximum of 100 user

accounts. Planning projects need to set【Level】and【User】mode, the mode can not be switched during operation.

【Action on Log-in】

When the mode is【Level】, this option will be displayed, and you can choose the behavior when logging in, which is divided into the following two types:

- 【Show login dialog】
  Pop-up the login dialog to enter the password
- 【Show Keypad】
  Only pop-up the keypad to enter the password

【Action on Access Denied】

When the【Lowest User Level】allowed by a certain object is higher than the level where the user currently logged in,【Security】will deny execution actions. This setting is used to determine the behavior of【Security】after denying the execution; it is divided into the following four types:

- 【None】
  No response
- 【Show login dialog and do not execute after login】
  Shows the password entry (or user name) login dialog, will not execute object's action, such as the operation control of the button needs level 2, press the button will show login dialog, login password even or bigger than level 2, the current level will be changed, but the button will not do action, needs to press the button again to do the action.
- 【Show login dialog and execute after login】
  Shows the password entry (or user name) login dialog, will execute object's action, such as the operation control of the button needs level 2, press the button will show login dialog, login password even or bigger than level 2, the current level will be changed, and the button will do action.
- 【Show Denied Message】
  Shows the default denial message of the system

	【User Name Type】 When it is in【User】mode, this option will be displayed. You can select the text format of the user name to ASCII String, Unicode String(Simplified Chinese, Traditional Chinese, and Others), GB18030 String(Simplified Chinese), and BIG5(Traditional Chinese). 【Log-in Time Out】 Set to make the HMI logout to the lowest user level when the HMI has not been operated for a certain amount of time. 【Log-in Dialog Time out】 Set the staying time for the dialog.
【Input】	Keypad mode for entering password. 【Input Mode】 Support default【Keypad Screen】and【Input Method】. 【Keypad Screen】 Can choose the keypad screen or designer-defined keypad. 【Input Method】 Can select Pinyin(Simplified Chinese) or Chewing(Traditional Chinese) input method.
【Password Edit】	【Mask Passwords】 Set encrypt passwords in the password form. 【Anti-peeping dummy password】 The function of this function is to use the set password as a keyword. You can enter any alphanumeric characters before and after the correct password, and you can still log in normally. For example, the password is set to 1234, and when logging in, enter 1234abgt or dj1234. 【Mode】is set to【Level】, the password must be of fixed length. If it is different from the fixed length, the compilation will report an error; 【Mode】is set to【User】, the password length is not limited, but the maximum length is still 8 characters. 【Import】

	Import CSV files with specific formats and updates it directly into the password from. 【Export】 Export the password form below into a CSV file with a specific format. 【New】 Adds a new user to the bottom of the table. The Level, Name, Password, and Comment can be set. This option is only available when the【Mode】is set to【User】. 【Delete】 Delete the currently selected user. By default, the bottommost entry in the table is delete. This option is only available when the【Mode】is set to【User】. 【Password Table】【Level】 Security level of a user. This option is only available when the【Mode】is set to【User】. Levels 1 to 15 are available. 【Password Table】【Name】 Set the user name. This option is only available when the【Mode】is set to【User】. 【Password Table】【Password】 Set the password. This option is only available when the【Mode】is set to【User】. 【Password Table】【Comment】 Add a comment describing the level/user. **Tip: Multiple users might need to be planned when the【Mode】is【User】.【Export】can be used to generate a default CSV file for editing, and then【Import】is used to update the project.**
【Administrator】	The administrator has the highest authority of the level/user mode, and can edit the passwords of all levels/users. It is not affected by【Advanced]】【Only Modify Current Level's Password】, and the level/password of the administrator cannot be modified when the HMI is running.

	【Mask Password】 Mask the password to avoid other people's peeping. 【Name】 Is only for【user】mode, set the administrator's name. 【Password】 Set the administrator's password, it can't be empty. **Note: The password of each level in the level mode cannot be the same as the password of the administrator.** **Each user name in user mode cannot be the same as the administrator's name.**

5.1.2 【Security】Advanced Settings

Enter basic settings of【Security】function, and click【Advanced】paging than go to its setting page below:

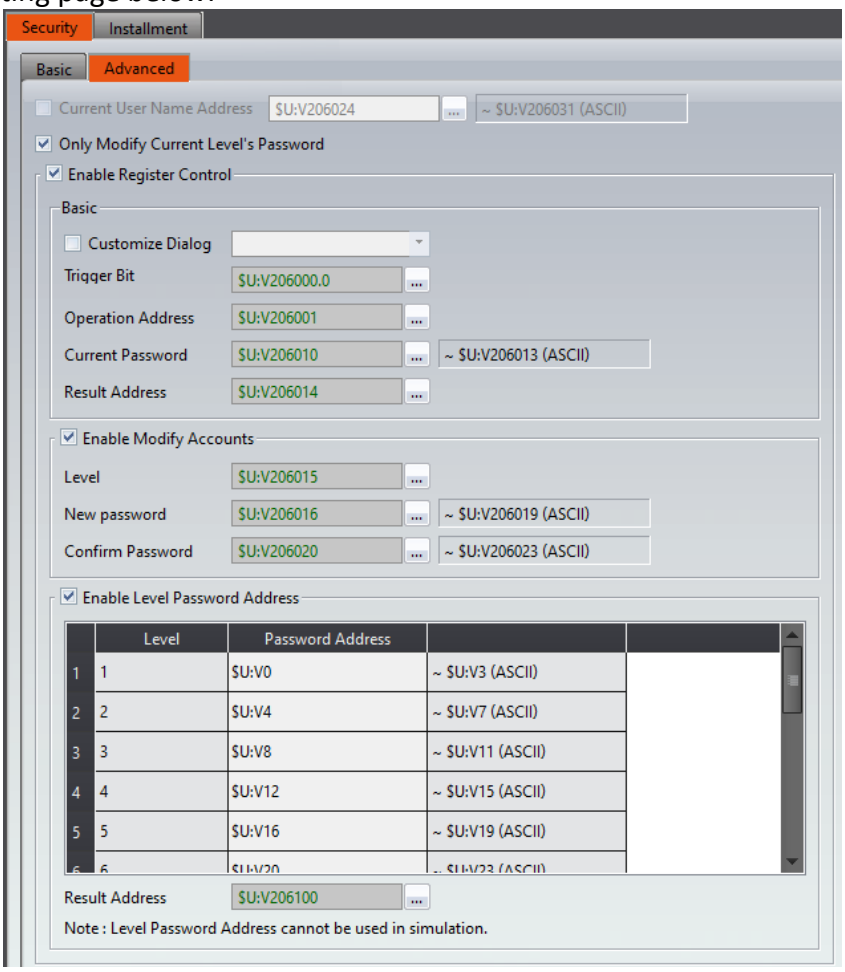
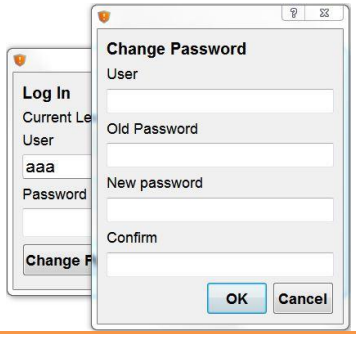


Figure 89 Advanced Setting Screen for【Security】【Level】

Table 36 Advanced Setting Properties of【Security】

Property	Description
【Advanced】	【Current User Name Address】 Set the display address of the current login user name, can set as HMI internal address or PLC register and will occupy 8 consecutive registers, for example, setting R100, will occupy R100~R107, it can be set when the mode choose as【User】.
【Only Modify Current Level's Password】	Only can modify the current level's password.
【Allow Changing Password in Login Dialog】	This function can choose when it's in【User】mode. 
【Enable Register Control】	Check whether to enable the advanced function of【Security】.
【Basic】	【Customize Dialog】 You can select the password login dialog window that designer defined, this option can only select【Window Screen】. 【Trigger Bit】 Set the trigger signal, when【Trigger Bit】turn OFF to ON will excute once,【Operation Address】setting mode. 【Operation Address】 Depending on the mode, different operating types are provided, where you can set the HMI internal address or PLC register. Data types is 16Bit-INT.

【Level】mode provides the following 5 types of operations.

Value of Operation Address	Operation Type
0	Log in
1	Log out
2	Passwoed modify. The password level that can be modified is only allowed to be lower or equal than the password level that is currently logged in.
3	A group of password levels is enabled. The password level that can be enabled is only allowed to be lower than the password level currently logged in.
4	A group of password levels is disabled. The password level that can be disabled is only allowed to be lower than the password level currently logged in.

Note: Need to check the【Enable Modify Accounts】option, the operation address in the value of 2,3,4 and other functions will take effect.

【User】mode provides the following 7 types of operations.

Value of Operation Address	Operation Type
0	Log in
1	Log out
2	Passwoed modify. The password level that can be modified is only allowed to be lower than the password level currently logged in.
3	Add new users. The password level for new users is only allowed to be lower or equal than the password level currently logged in.
4	Delete users. The password level that removes the user is only allowed to be lower than

	the password level currently logged in.
5	Modify user level. Modifying a user's level is only allowed to be lower than the password level currently logged in, and the original level needs to lower than the current level.
6	Modify user level and password. The level of the user who can modify the user is allowed to be lower than the password level that is now logged in and the original level needs to lower than the current level.

Note: Need to check the【Enable Modify Accounts】option, the operation address in the value of 2,3,4,5,6 and other functions will take effect.

【User ID】

User ID to sign in.

【Current Password】

Current level password, or password to login.

【Result Address】

When【Trigger Bit】turn OFF to ON, the system will excute depending on different mode of【Operation Address】settings, and the result will store in this address.
The meaning of each code is as follows.

Value of Result Address	Result Code Description
0	No error.
1	There is no corresponding password in the password table.
2	There is no corresponding user in the password table.
3	Password level error.
4	There is no matching confirmation password.
5	Other levels have the same password (Level mode).
6	Other levels have the same password (User mode).
7	The password for the new password is

		empty.
	8	Level has been enabled (Level mode).
	9	Advanced account is disabled.
	A	The value of the operation address is not supported.
	B	The administrator didn't support this operation.
	C	Virtual password setting wrong.
【Enable Modify Accounts】	【Level】 Password level is enabled or disabled, the level to be set when modifying the user level. 【New Password】 Change the password to set the new password. 【Confirm Password】 Change Password In addition to setting a new password, also set the confirmation password，and the new password is the same as the confirmation password。	
【Enable Level Password Address】	Visible when the mode selects【Level】, and the password can be modified from the register after enabled. 【Result address】 The length of this address is 16 bits, and the result of whether the passwords of different levels are legal will be stored in each bit separately. The legal is 0 and the illegal is 1. The password will only be updated when the password for each level is legal. **Note:** **1. The new password and the old password of other levels cannot be the same** **2. The new password and other levels of new passwords can not be the same**	
【Enable USB Security Key】	Please refer to **chapter 5.7-USB Security Key**	

Under【Level】mode or【User】mode, the relevant parameters must be set before the different operation types are triggered, as shown in the table below, for example, to modify the password,

1. first in the【Current Password】to enter the password to change the level,
2. 【New Password】and【Confirm Password】enter the password you want to change,

3. and let【Operation Address】equal to 3,
4. then let【Trigger Bit】turn OFF to ON, so that the correct implementation of advanced【Security】function of the password modification action.

【Level】mode

Table 37 The relevant control address required in the【Level】mode

Value of operation address	Operation Type	Basic		Advanced	
		Current	Password Level	New Password	Confirm Password
0	Log in	V			
1	Log out				
2	Password Modify	V		V	V
3	A group of password levels is enabled		V	V	V
4	A group of password levels is disabled		V		

Note: Need to check the【Enable Modify Accounts】option, the operation address in the value of 2,3,4 and other functions will take effect.

【User】mode

Table 38 The relevant control address required in the【User】mode

Value of operation address	Operation Type	Basic		Advanced		
		User ID	Current Password	Level	New Password	Confirm Password
0	Log in	V	V			
1	Log out					
2	Password Modify	V	V		V	V
3	Add User	V		V	V	V
4	Delete User	V				
5	Modify User Level	V		V		
6	Modify User Level	V	V	V	V	V

	and Password					

Note: Need to check the 【Enable Modify Accounts】 option, the operation address in the value of 2,3,4,5,6 and other functions will take effect.

5.2 Security Settings of Objects

The settings of 【Security】 were described above. Every object (except for drawing objects) has security settings themselves that must also be set if security management is needed.

The image below is the setting screen of an object; the security setting of objects can be found in the 【Operation】 tab page as shown in the image frame below, in which the green frame is the security control of visibility and the blue frame is the security control for operations. For example, the blue box in the figure below has the operation of the object set to a user level of 4. Therefore, the minimum level of user needed to operate the object is 4.

Note: Objects will not have security control for operations if the object itself does not have operation functions, such as meters etc.

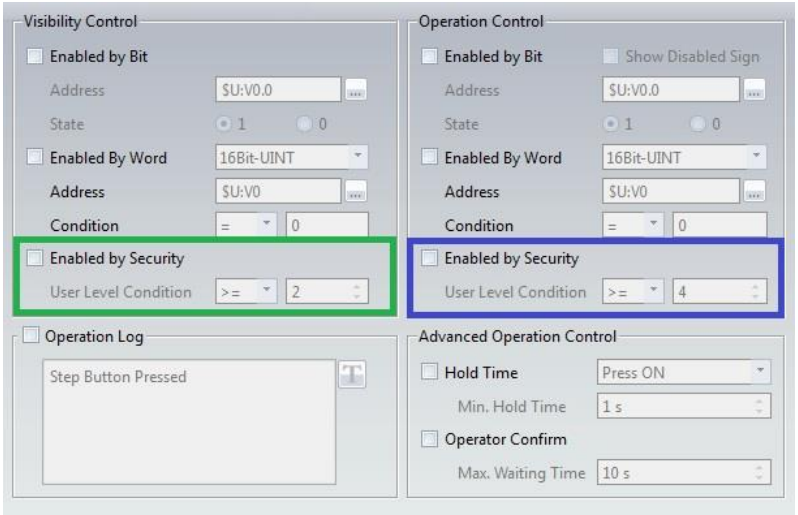


Figure 90 Security Settings for Objects

Table 39 Security Setting Properties of Objects

Property	Description
【Visibility Control】	Visibility control of the object can be controlled by a specific Bit or User Level. 【Enable by Bit】 Select to control visibility by a specific Bit. 【Address】

	Set the address of the visibility control Bit. 【State】 Set the control bit as 1 or 0 to show object. 【Enabled by Word】 Check whether the visibility is controlled by word. 【Address】 Set the visibility control word address. 【Condition】 Set the condition of word control and when it is true then show up the object, when false not show the object. The condition include' =',' !=', '>', '<', '>=', '<='. 【Enabled by Security】 Select if visibility is to be controlled by the level of the user logged in. 【User Level Condition】 Set the level and condition of the object.
【Operation Control】	Operation control of the object, which can be controlled by a specific bit or user level. 【Enable by Bit】 Select to control operation by a specific bit. 【Show Disabled Sign】 Check if you want to display the forbidden symbol, it's valid when check【Enable by Bit】,【Enabled by Word】 or【Enable by Security】.  【Address】 Set the address of the operation control bit. 【State】 Set the control bit as 1 or 0 to operate object. 【Enabled by Word】

	Check whether the operation is controlled by word. 【Address】 Set the operation control word address. 【Condition】 Set the condition of word control and when it is true then the object can be controlled, when false not the object can not be controlled. The condition include' =',' !=', '>', '<', '>=', '<='. 【Enabled by Security】 Select if operation is to be controlled by the level of the user logged in. 【User Level Condition】 Set the level and condition of the object.

5.3 Exporting/Importing CSV Files

Described below, the exported/imported CSV file can be divided into【Level】and【User】, and they are not compatible with one another.

- **CSV file for【Level】:**

As shown in the figure below where the section marked with the red frame is used by the system and no changes can be made; the section marked with the green frame can be edited.

Mode	Level_Mode	
Level	Password	Comment
1	1	NO
2	2	NO
3	3	NO
4	4	NO
5	5	NO
6	6	NO
7	7	NO
8	8	NO
9	9	NO
10	10	NO
11	11	NO
12	12	NO
13	13	NO
14	14	NO
15	15	NO

Figure 91 CSV File for【Level】

- **CSV file for【User】:**

As shown in the figure below where the section marked with the red frame is used

by the system and no changes can be made; the section marked with the green frame can be edited where the “Level” must be an integer between 1~15. Also, the section marked with the green frame can be appended in order to add or delete a user.

Mode	User_Mode		
Level	Name	Password	Comment
1	aaa	111	
2	bbb	222	
3	ccc	333	
4	ddd	444	
5	eee	555	

Figure 92 CSV File for【User】

5.4 Security Features of the Function Switch

The function switch has options that include【Log In】,【Log Out】,【Password Manager】, and【Import User Accounts】that are security features. Each function is explained in detail below.

5.4.1 【Log In】and【Log Out】Function Switch

The function switch is set to【Log In】. When pressed, the function switch opens a login screen Figure 93. The login screen opened depends on whether the security mode was set to【Level】or【User】. If the security mode was set to【Level】, The login screen requires only a password. Enter the password of the level the user wants to access to change the current user to that level. If the security mode was set to【User】, the login screen Figure 94 prompts the user to enter a username and password.

The function switch is set to【Log Out】. When pressed, the current level is reset to the lowest level if the security mode was set to【Level】. The username will become blank if the security mode was set to【User】.



Figure 93【User】Mode Login Window

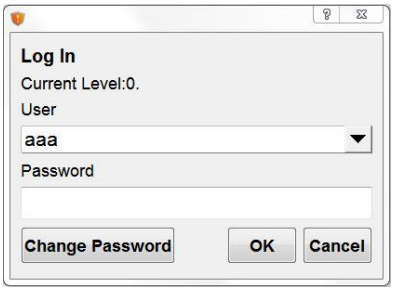


Figure 94【User】Mode Login Window

5.4.2 【Password Manager】Function Switch

The password management in the function button is mainly provided to the operator during the HMI operation for the operator to view, modify, add, or delete passwords, etc. When the password management function button is pressed, the HMI interface will display the password table for operation If you want to view, modify, add or delete, you need to log in to the security level before pressing this function button, such as the password for login level 5, the password table will show the password below level 5 (including level 5).

If the security mode is set to【Level】, as Figure 95, the【Password Manager】gives the user access to the current level's password as well as passwords for all lower levels. If the security mode is set to【User】, as Figure 96, the【Password Manager】gives the user access to all users at the current level or lower than the current level. The user can add or delete users, change the level, name, and password of other users. The level can only be changed to at most the current user's level.



Figure 95【Level】Mode Password Manager Window

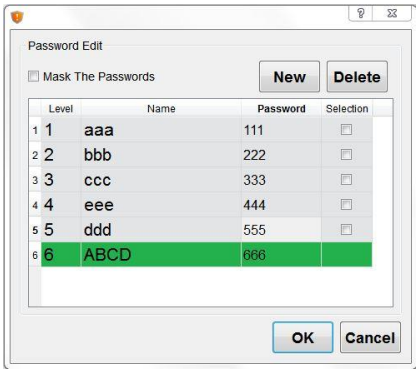


Figure 96【User】Mode Password Manager Window

5.4.3 【Import User Accounts】Function Switch

This function allows the account information saved in a CSV file to be imported into the current program. When the function switch is pressed, the user can choose to import from the HMI internal memory, the microSD card, or USB. After selecting a file to import, a confirmation dialog will appear.

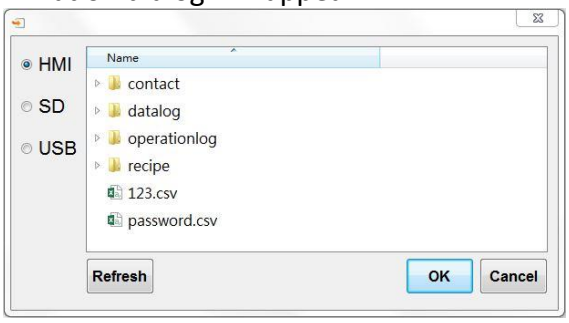


Figure 97 Import User Account Window



Figure 98 Import User Confirmation Window

5.5 Security Features in Screen Properties

Security features can be applied to base screens in the project. These features include the【Security Level】of a screen,【Change Screen Auto Logout】, and【Change User Level】for【Change Screen】buttons.

5.5.1 Screen Properties Security Level

The【Security Level】in screen properties can set the security level of the screen. As a result, access to this screen by a user with lower level than the one set will require a password. For example, in screen 12, the security level has been set to 2 and screen 1 contains a change screen button set to change the current screen to screen 12. If the user's level is less than 2, upon pressing the change screen button, a password prompt require a password in order to change the screen.

【Change Screen Auto Logout】In the screen properties, you can check whether you want to reduce the level to the lowest level when leaving this screen.

If screen 2 has the【Change Screen Auto Logout】option set, upon exiting from screen 12, the user has to enter the appropriate password in order to gain access to screen 12 if the change screen button is pressed again.

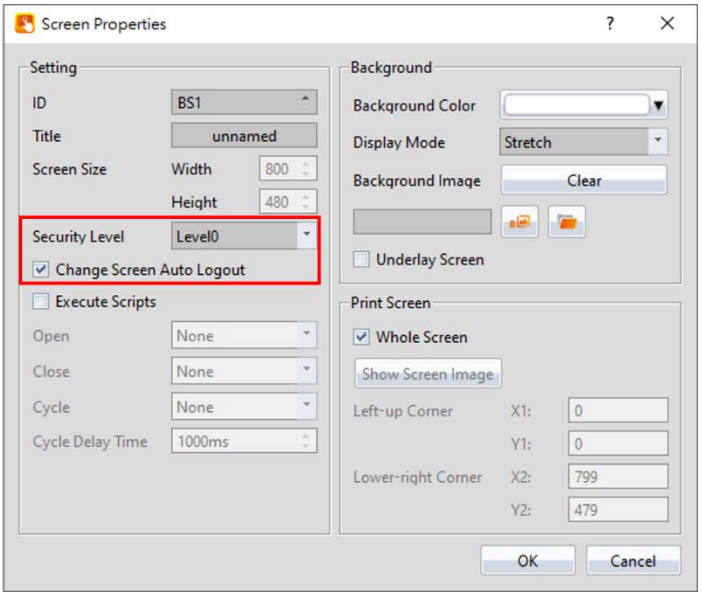


Figure 99 Security Settings in Screen Properties

Note: When cancel is pressed on the password dialogue screen, it is set such that the prompt will not continuously pop up. Access the object again for another password prompt.

5.5.2 Change Screen Button Change User Level

In the【Change Screen】button properties, there is an option to【Change User Level】. For example, the【Change User Level】option is selected and the level is set to 3. When the screen has switched to the selected screen, the user's level is now 3.

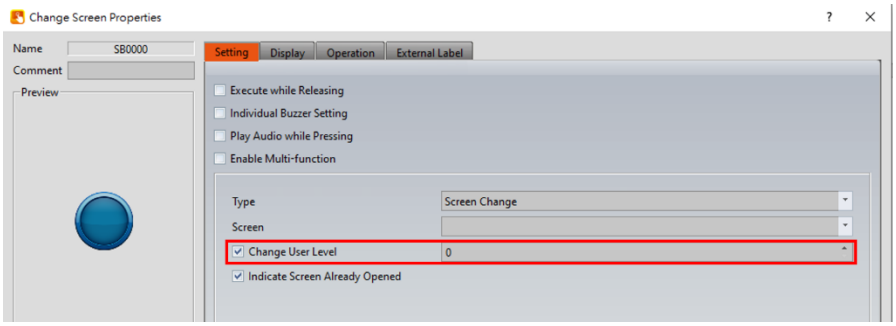


Figure 100 Security Settings in Change Screen Button

5.6 Installment

This function allows the user to a authorization time period. When this period ends, the HMI device will be locked. A window will appear on the HMI that does not let the HMI operate before the new authorization password is entered. Once the password is entered, the HMI device can be used. This function provides both static and dynamic modes.



Figure 101 Installment application illustration

5.6.1 Installment Basic Settings

To get to the【Installment】settings, open the Project Explorer, click on Security (In the System section) and go to the second tab labeled Installment.

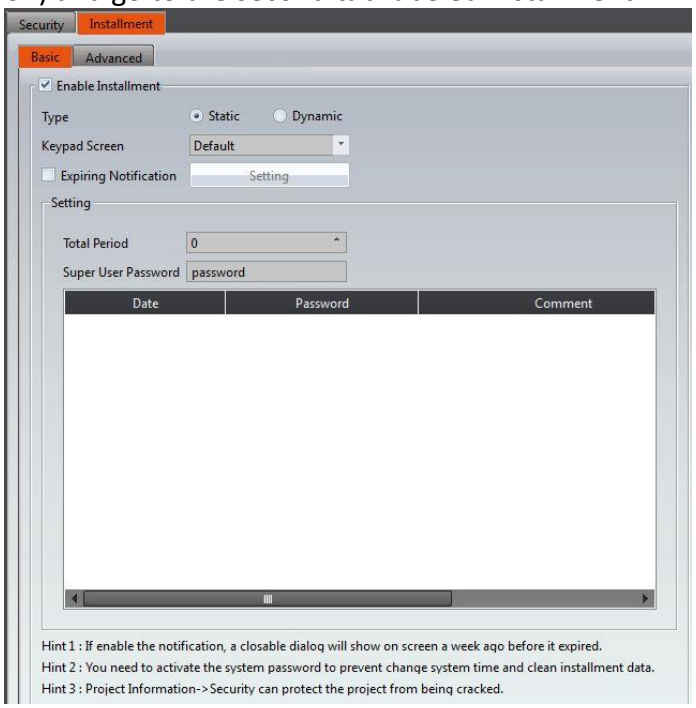
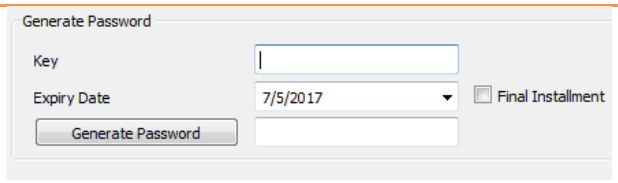


Figure 102 Installment Settings

Table 40 Installment Attributes

Field	Description
【Enable Installment】	Check whether to enable【Installment】, it's able to do the advanced settings after enable this function. 【Types of Installment】: 【Static Installment】specifies the total number of expiration periods during design the project, the date of each period, and the password. 【Dynamic Installment】allows the user to adjust the expiration period on the running HMI device 【Keypad】When the【Expiration Notification】pops up, a keypad will also pop-up, which is used to enter the new password. 【Expiration Notification】 Set whether to use the expiration reminder, if you check the【Expiration Notification】, you can set how many days before

	you want to pop up a password input window for the operator to enter the password.
【Static Installment】	【Total Period】 The amount of periods to be set, maximum is 48 periods. 【Super User Password】 The password that is used to disable static installment. Can bypass the installment password. 【Installment】【Date】 Set the expiration date of the installment period. When the mode is set to【Static】, the date can be modified. When the time left reaches zero, a window will pop up, prompting the user for the new password. The device will be locked until the password is entered. 【Installment】【Password】 The password for the installment period. When the installment mode is【Static】, the password can be modified. The maximum amount of charactars per installment password is 20. 【Installment】【Comment】 Edit installment period comment.
【Dynamic Installment】	Click【Dynamic】and the setting window below will appear  【Project Setting】【Key】 Key that is stored in the project. The password generator can be used to generate the next password. Up to 8 characters can be entered. 【Project Setting】【First Expiry Date】 First expiration date of the dynamic installment. 【Password】 You can generate a password using the next expiration date as shown below:



【Password Generator】【Key】
Needs to be consistent with the key set for the project.

【Password Generator】【Expiration Date】
The expected date for the next period.

【Password Generator】【Final Installment】
Check if it the last installment period of the dynamic installment.

【Password Generator】【Generate Password】
Press this button and the password will be generated. This password allows the user to use the device until the next period.

5.6.2 Installment Advanced Setting

Provides advanced control options for the【Installment】function, allows designers to achieve advanced installment payment functions through register control, click【Security】in the【System】window in the【Project Explorer】on the left of the FvDesigner, select【Installment】, and check【Enable Installment】to enter the advanced settings page

As shown in the figure below, the meaning of each setting option is as follows:

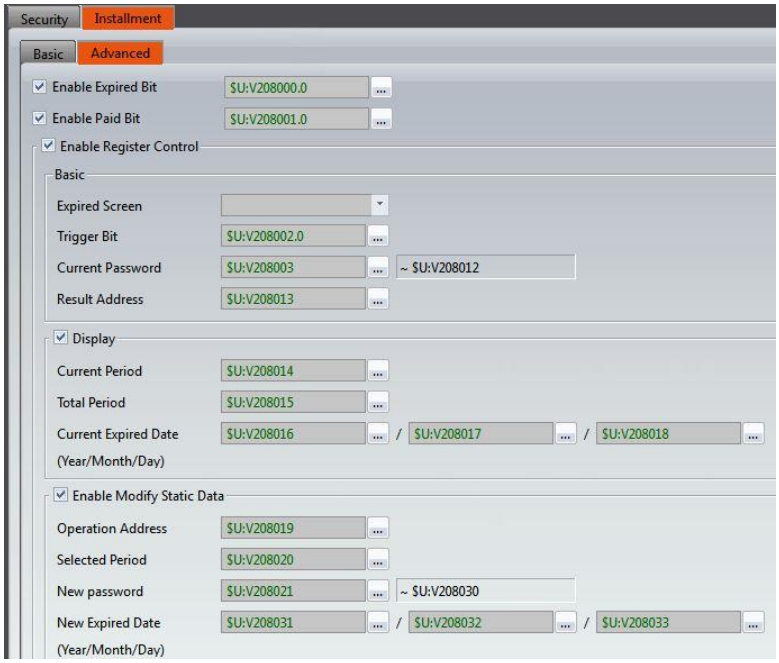


Figure 103【Static】setting window of【Installment】【Advanced】

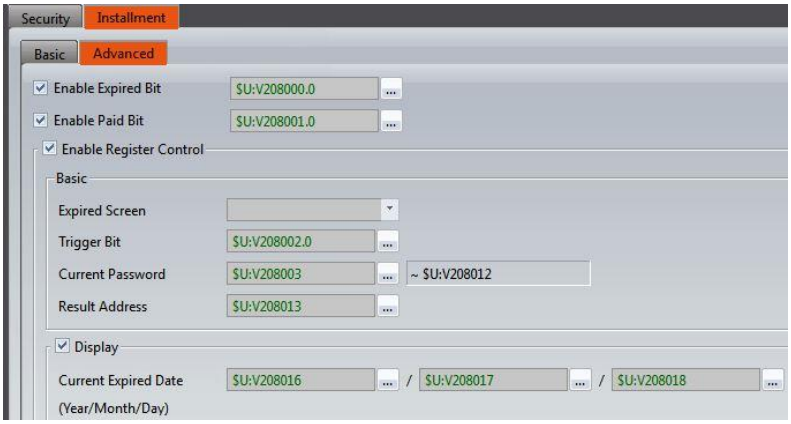


Figure 104【Dynamic】setting window of【Installment】【Advanced】

Table 41 【Installment】properties setting

Properties	Description
【Advanced】	【Enable Expired Bit】 Check whether to send a bit signal when the installment expires, the bit signal can be internal address or PLC address. 【Enable Paid Bit】 Check whether to send a bit signal when the installment has been paid , the bit signal can be internal address or PLC address.
【Enable Register	Check【Installment】function has enable the register's

<table>
<tr><td>Control】</td><td>advanced control.</td></tr>
<tr><td>【Basic】</td><td>【Expired Screen】
Select the custom login screen for which you want to enter the password.

【Trigger Bit】
Set the trigger bit for the password of the【Installment】, the bit signal can be internal address or PLC address , when the signal turned from OFF to ON , then the bit will tiggger a time.

【Current Password】
Set the address of the current password.

【Result Address】
Set after【Trigger Bit】signal has turn OFF to ON, system will check the execution result then put the result to this address, each code of the meaning as below.

<table><tr><th>Value of Result Address</th><th>Result code description</th></tr><tr><td>0x0000</td><td>Execution succeed</td></tr><tr><td>0x0001</td><td>Enter Super User’s password</td></tr><tr><td>0x0002</td><td>This function will end when all installment payments are completed.</td></tr><tr><td>0x0003</td><td>Enter password wrong.</td></tr></table></td></tr>
<tr><td>【Display】</td><td>【Current Period】
Display the current period, this function can only be used in【Static】mode.

【Total Period】
Display the total periods, this function can only be used in【Static】mode.

【Current Expired Date】
Display the current expired date, and the year, month, day will display in three different setting addresses.</td></tr>
<tr><td>【Enable Modify Static Data】</td><td>Check whether to enable modification of【Static】mode’s data, including changing passwords, adding or removing periods, etc.</td></tr>
</table>

【Operation Address】

Provide different kinds of operation modes, table as below, the adderss can be internal address or PLC address.

Value of Operation Address	Operation mode description
0x0000	Used in【Enable Register Control】【Basic】function.
0x0001	Display the relevant information of this period, such as password and date, etc.
0x0002	Modify the relevant information of this period, such as modify password and date, etc.
0x0003	Add a new period.
0x0004	Remove the selected period.

【Selected Period】

Select the【Installment】period that would like to modify or remove, when the value of the address is 0 will display or modify the data of【Super User】.

【New Password】

Provide new password that midified, if the mode is【Display the period revelant information】then the address will display the password for this period.

【New Expired Date】

Provide new expired date that midified, if the mode is【Display the period revelant information】then the address will display the expiration date for this period.

If has checked【Enable Modify Static Data】then the meaning of each code of【Result Address】are as follows

Value of Result Address	Result code description
0x0000	Execution succeed
0x0001	Enter Super User's password
0x0002	This function will end when all installment payments are completed

	0x0003	Enter password wrong
	0x0004	Periods are incorrect
	0x0005	This period has already entered the password
	0x0006	New Expired Date is incorrect
	0x0007	New Password is incorrect
	0x0008	The value of【Operation Address】is not supported, and the value of【Operation Address】is incorrect.

Table 42【Operation Address】relevant control address required in【Static】mode

Value of operation address	Operation type	Basic	Advanced		
		Current password	Select period	New password	New expied date
0x0000	Used in【Enable Register Control】【Basic】function	V			
0x0001	Display this period's revelant information				
0x0002	Modify this period's revelant information	V	V	V	V
0x0003	Add a new period		V	V	V
0x0004	Remove the selected periods		V		

5.6.3 Installment Related Function Switch

Function buttons and security-related functions, including【Installment: Enter Installment Password】,【Installment: Modify Static Installment】. These functions can be used through a【Function Switch】.

5.6.3.1 【Installment: Enter Installment Password】Function

When using the installment function, includes【Installment: Enter Installment Password】and【Installment: Modify Installment】buttons.

When the mode selection is【Static】, the following figure will appear, which will allow the operator enter the next password.

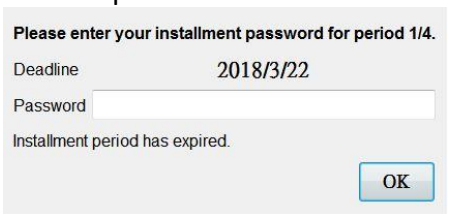


Figure 105 Static【Installment】password input window

When the mode is【Dynamic】the following window will appear, which will allow the operator to enter the next password.



Figure 106 Dynamic【Installment】mode password input window

5.6.3.2 【Installment: Modify Installment】

The【Modify Installment】function allows the supplier of the application to be able to modify, add, delete, the installment periods. After clicking on the button, passwords and installment dates can be changed.

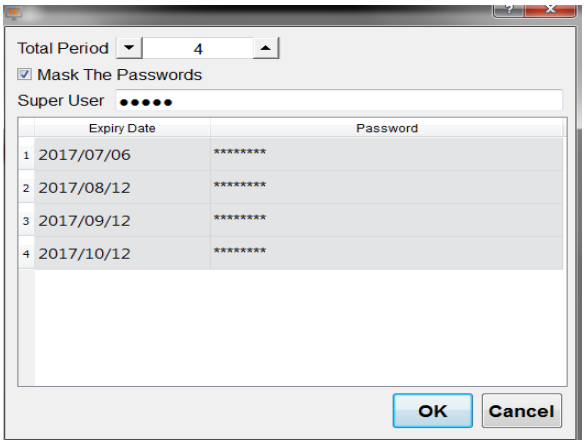


Figure 107【Modify Installment】Window

Table 43【Modify Installment】

Field	Description
【Modify Installment】	【Total Periods】 The amount of installment periods to be set, maximum amount of periods is 48. 【Mask the Passwords】 This option allows the user to hide the passwords currently on the screen. The characters turn into black dots for safety. This can also be disabled by unchecking the box. 【Super User Password】 Password that can bypass all installment period passwords. Can be changed by user controlling the installment periods. It is hidden for safety but can be made visible by unchecking the Mask the Passwords box. 【Expiry Date】 The user is able to adjust the【Expiry Date】. The expiration date needs to be a later date than the previous installment period. 【Password】 The password that is set to let the user be able to operate the machine again. The maximum number of characters per password is 20.

5.7 USB Security Key

The USB security key function is a secure login method. Use the tool to generate a key file and place it in the flash drive, and you can log in to the corresponding level according to the settings.

5.7.1 Enable USB Security Key

To use the USB security key function, the mode of the security function needs to be selected【User】, and then the screen can be found in the【Advanced】tab.

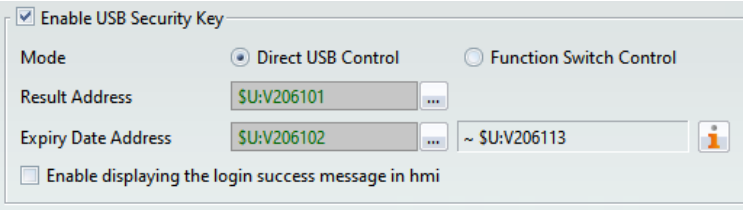
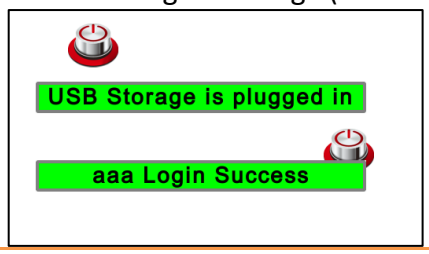


Figure 108 Enable USB Security Key

Table 44 USB Security Key setting properties

<table>
<tr><th>Function</th><th>Description</th></tr>
<tr><td>【Enable USB Security Key】</td><td>Check whether to enable USB security key function.</td></tr>
<tr><td>【Mode】</td><td>2 methods to login: Direct USB Control and Function Switch Control.
【Direct USB Control】
When plug the USB flash disk into the HMI with security key inside, it will longin the recorded user, and log out automatically when remove the USB flash disk.

【Function Switch Control】
After plugging the USB flash disk into the HMI with security key inside, press the function switch【Security: USB Log In】to log in.</td></tr>
<tr><td>【Result Address】</td><td>When the USB flash disk removed, the system will put the automatically log in/out result in this register address.
This function can be used under Direct USB Control, each code meaning introduce as follow:
<table>
<tr><th>Code</th><th>Description</th></tr>
<tr><td>0</td><td>Default value</td></tr>
<tr><td>1</td><td>Log in success</td></tr>
<tr><td>2</td><td>Log in failed</td></tr>
<tr><td>3</td><td>Log out success</td></tr>
<tr><td>4</td><td>Lof out failed</td></tr>
</table></td></tr>
<tr><td>【Expiry Date Address】</td><td>When the USB flash disk plug into the HMI, the system will automatically store the validity period of the security key in the USB at this address.
After the address is set, 12 consecutive addresses with it as the starting address will be used, and the corresponding data type is fixed as【16Bit-UINT】. The meaning of each address is: start date year/month/day, start date Time hour/minute/second, end date year/month/day, end time hour/minute/second</td></tr>
</table>

【Enable displaying the login success message in HMI】	When the USB flash disk plug into the HMI, check whether to display the user login successful message on the HMI. As shown in the figure below, the display on the second line is the login message (aaa is the user name). 

5.7.2 Create USB Security Key



Figure 109 USB Security Key tool

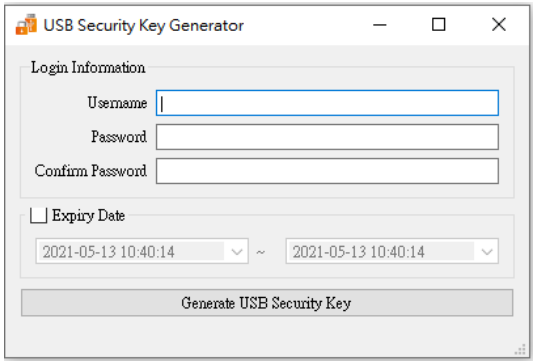


Figure 110 USB Security Key Generator

Table 45 USB Security Key Generator setting properties

Function	Description
【Username】	Enter the user name you want to log in. **Note: The user account entered must be a user account that already exists on the HMI program**
【Password】	Enter the password of the user.
【Confirm Password】	Confirm the password again.
【Expiry Date】	Check whether to enable the expiry date of the security key.

	If checked, the system will restrict the security key to be used within the entered time range. If the expiry date expires after logging in within the time range, the system will automatically log out.
【Generate USB Security Key】	After clicking, a window will pop up for the user to choose the key storage location.

5.7.3 Notice for Using USB Security Key

1. The name of the generated security key file is "usbkey", please do not modify the name to avoid unreadable
2. The key file needs to be placed in the root directory of the USB flash disk, if it is placed in the folder, it cannot be read
3. The USB security key function only supports P5 series HMI

6. System Message

【System Message】is located in【Project Explorer】under the【System】tab. 【System Messages】appear in a pop-up dialogue on the HMI whenever abnormal behavior is encountered. The message the user is prompted with includes the category of the message:【GENERAL_MESSAGE_TYPE】, 【COMMUICATION_TYPE】,【SECURITY_MESSAGE_TYPE】, 【FILE_MANAGER_TYPE】,【STANDER_BUTTON_TYPE】,【DATA_LOG_TYPE】, 【ALARM_TYPE】,【RECIPE_TYPE】,【PRINTER_TYPE】,【OPERLOG_TYPE】, 【STATUS_BAR_TYPE】,【DEVICE_TYPE】,【SCHEDULE_TYPE】,【SMTP_TYPE】, 【Link Setting Type】, and【UNKNOW】. The user is allowed to customize the 【System Messages】in order to satisfy the project needs. Click【System Message】 to access the following settings:

6.1 【System Message】Settings

【System Message】is located in the project manager under the system tab. The settings page is as follows:

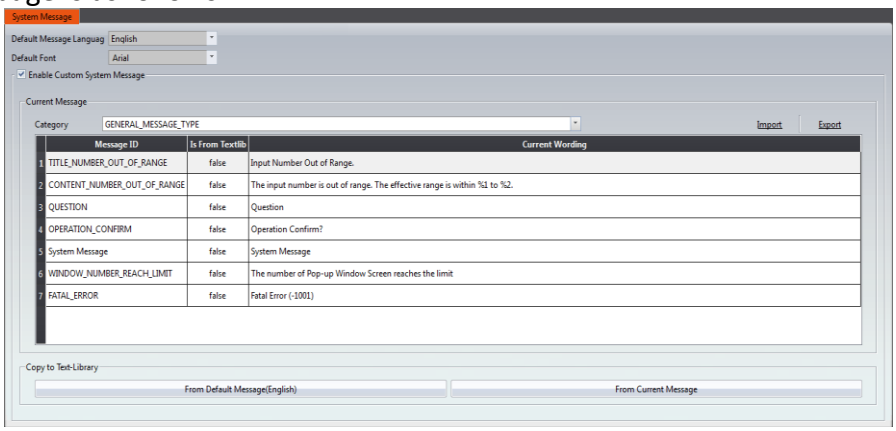
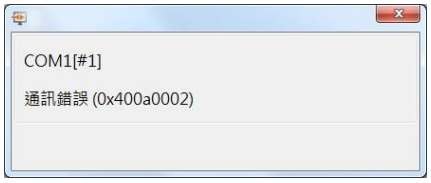
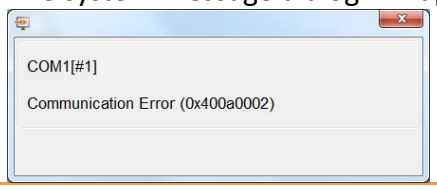


Figure 111【System Message】Settings Screen

Table 46【System Message】Settings

Property	Description
【Default Message Language】	The HMI has a built in set of system messages. This option allows for the selection of the language the systems are displayed in. There are currently 4 languages options: English, Traditional Chinese, Simplified Chinese, and Türkçe.

	 Example: The【Default Message Language】is set to Traditional Chinese. The system message dialog will appear as follows:  Example: The【Default Message Language】is set to English. The system message dialog will appear as follows: 
【Preset Font】	You can set the font of the system message.
【Enable Custom System Message】	Check this option to enable the system messages to be edited. The designer can set the system messages in a way that aligns closer to the project needs.
【Current Message】	Displays current system【Message ID】and【Current Wording】of the messages in the current【Default Message Language】. If the【Default Message Language】is changed, the【Current Wording】of the messages will reflect the change. 【Category】 System messages are divided into the following categories:【GENERAL_MESSAGE_TYPE】,【COMMUICATION_TYPE】,【SECURITY_MESSAGE_TYPE】,【FILE_MANAGER_TYPE】,【STANDER_BUTTON_TYPE】,【DATA_LOG_TYPE】,【ALARM_TYPE】,【RECIPE_TYPE】,【PRINTER_TYPE】,【OPERLOG_TYPE】,【STATUS_BAR_TYPE】,【DEVICE_TYPE】,【SCHEDULE_TYPE】,【SMTP_TYPE】and【Link Setting Type】. 【Import】 Select a CSV or Excel file to import. The custom system messages contained in the imported file will replace the

current custom system messages.

【Export】

The contents of the 【Current Messages】can be exported into a CSV or Excel file. The exported file is as shown below. The red box is for system use only and the user cannot make changes there. The green box contains the custom messages and is fully editable.

	A	B	C	D
1	MERITEK AUTOMATION CORP.	FvDesigner		
2	File Type	SystemMessageInfos		
3	File Version	1	0	
4				
5	Message ID	Custom Text	From TextLib	TextLib Row
6	1	Input Number Out of Range.	0	-1
7	2	The input number is out of range. The effective range is within %1 to %2.	0	-1
8	3	Question	0	-1
9	4	Operation Confirm?	0	-1
10	5	System Message	0	-1
11	6	The number of Pop-up Window Screen reaches the limit	0	-1
12	1025	Communication Error	0	-1
13	1026	Retry	0	-1
14	1027	Pass Through Now...	0	-1
15	1028	End Pass Through	0	-1
16	2049	Access Denied!	0	-1
17	2050	You don't have enough right to access it. Current level:%1. Requirement:>=%2.	0	-1
18	2051	Log In	0	-1
19	2052	Current Level:%1.	0	-1
20	2053	Current Level:%1. Requirement:>=%2.	0	-1
21	2054	User	0	-1
22	2055	Password	0	-1
23	2056	Change Password	0	-1
24	2057	Success!	0	-1
25	2058	Login OK!	0	-1
26	2059	Error!	0	-1
27	2060	Invalid password.	0	-1
28	2061	Invalid user name or password.	0	-1
29	2062	Change Password	0	-1
30	2063	User	0	-1
31	2064	Old Password	0	-1
32	2065	New password	0	-1
33	2066	Confirm	0	-1

The fields for the exported file are as follows.

【Message ID】

System Message ID, cannot be edited.

【Custom Text】

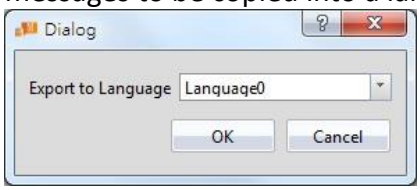
Contains the text that the message will show. Can be edited.

【From TextLib】

This value is 1 when the exported message's source is the text library. The value is 0 when the the message was entered directly.

【TextLib Row】

This value is -1 when the exported message's source is not

	from the text library. If the source was the text library, this number corresponds to the text's position in the text library. The fields for the【Current Message】table are as follows: 【Message ID】 Description for each system message. Cannot be edited. 【From Textlib】 True when the current message for the【Message ID】is from the text library. False when the current message is not from the text library (user entered text directly). 【Current Wording】 The text to be displayed when the system message appears. Click on the text to edit its contents.
【Copy to Text Library】	Copy messages to the system's text library. If the project requires multiple languages, this feature facilitates editing the messages. 【From Default Message (English)】 Copy the default system message text to the【Text Library】. The text is copied to positions 60000~60455 in the【Text Library】. The user can select which【Text Library】group to copy the message to, allowing the messages to be copied into a language group.  After the text has been copied, the messages can be edited from the【Text Library】and the changes will be reflected in the【System Messages】. 【From Current Message】 Copies the current custom system message text to the【Text Library】. The text is copied to positions 60000~60455 in the【Text Library】. The user can select which【Text Library】group to copy the message to,

	allowing the messages to be copied into a language group.  After the text has been copied, the messages can be edited from the【Text Library】and the changes will be reflected in the 【System Messages】.

6.2 【System Message】Applications

The following describes some applications of the【System Message】feature.

6.2.1 Single Language Project and Using the System Messages

When building a project in a single language such as English, the system messages should be consistent with the project language. Within the【System Message】settings, set the【Default Message Language】to English as shown in the following figure:

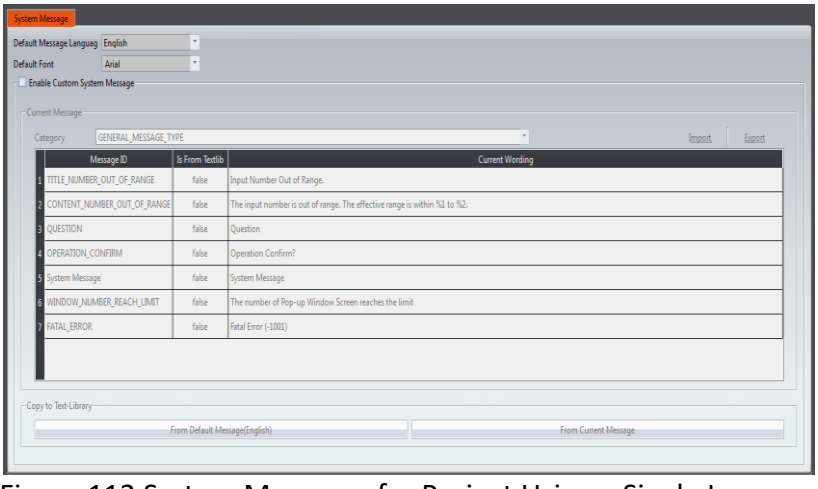


Figure 112 System Messages for Project Using a Single Language

As shown in the dialogue window below, the system message language is English.

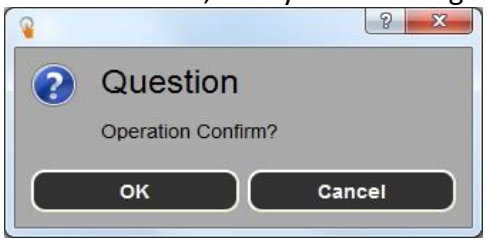


Figure 113 Confirmation Window

6.2.2 Single Language Project and Using Custom System Messages

When building a project in a single language such as English, the system messages should be consistent with the projet languge. In addition, the wording of messages may have to be customized in order to meet the project needs. The following steps can be taken customize the system messages.

1. Open the【System Message】window and select a language in the【Default Message Language】dropdown.
2. Check the【Enable Custom System Message】box.
3. Select type as【GENERAL_MESSAGE_TYPE】
4. Click the OPERATION_CONFIRM to edit and enter the custom message.

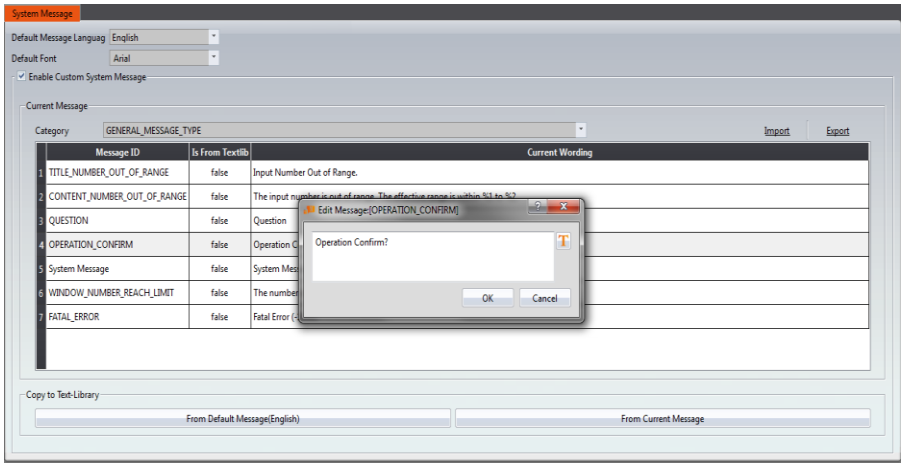


Figure 114 Customizing the System Message

The results of the customization can be seen in the confirmation window.

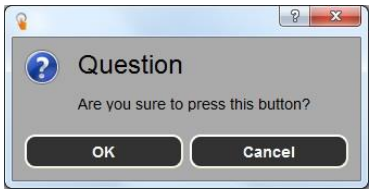


Figure 115 Modified Confirmation Window

6.2.3 Single Language Project and Using Only Custom System Messages

When building a project in a language that is currently not available in the system messages such as German (only English, Traditional Chinese, and Simplified Chinese is offered), the system messages should also be displayed in German. Therefore, all system messages have to be modified. The following steps can be taken to do so.

1. Open the【System Message】window and select English in the【Default Message Language】dropdown.
2. Check the【Enable Custom System Message】box.
3. Press【Export】to export all the messages as CSV file, and change the【Custom Text】filed's system message to German in the CSV file.
4. Press【Import】to import the CSV file that just modified.

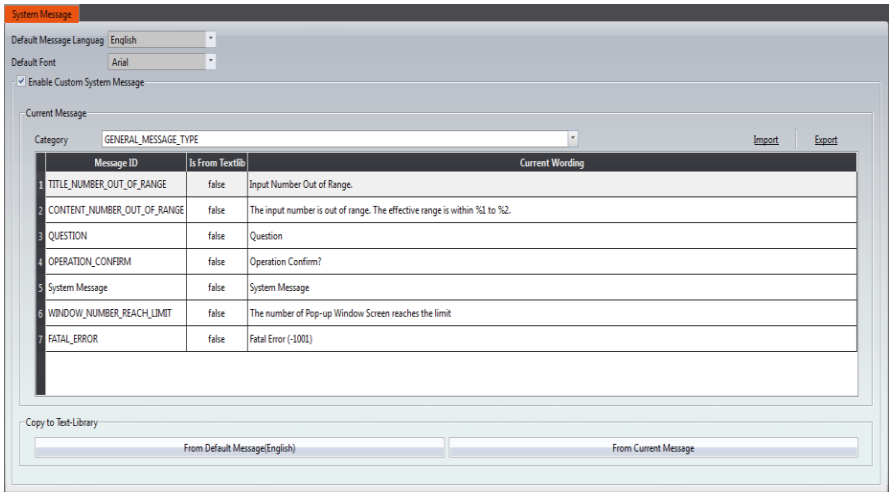


Figure 116 The【Default Message Language】is set to English

The results of the modification is shown in the figure below.



Figure 117 Modified Confirmation Window

6.2.4 Multiple Language Project and Using the Default System Messages

The project being built contains multiple languages in the text library. In this example, language 0 is Traditional Chinese , language 1 is Simplified Chinese, and language 2 is English. For each language, the system message language should be consistent. The following steps can be taken to do so.

1. Open the【System Message】window and select English in the【Default Message Language】dropdown, and check the【Enable Custom System Message】box.
2. Under【Copy to Text-Library】, click【From Default Language(繁體中文)】.

Under the dropdown in the dialogue window, select【Language0】(language 0 is Traditional Chinese).

3. Repeat the first two steps for Simplified Chinese. Select【Language1】in step 2.
4. Repeat the first two steps for English. Select【Language2】in step 2.
5. 【Default Message Language】select as English and check the【From Default Language(English)】box.
6. Under【Copy to Text-Library】, click【From Default Language(English)】. Under the dropdown in the dialogue window, select【Language2】

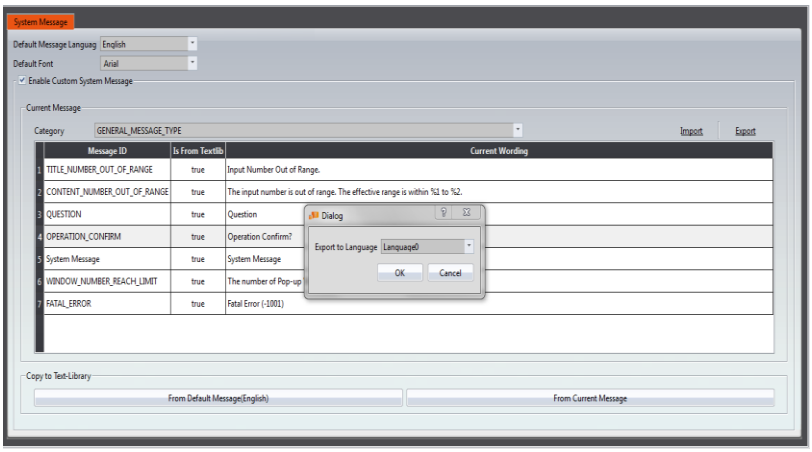


Figure 118 Exporting into Language0

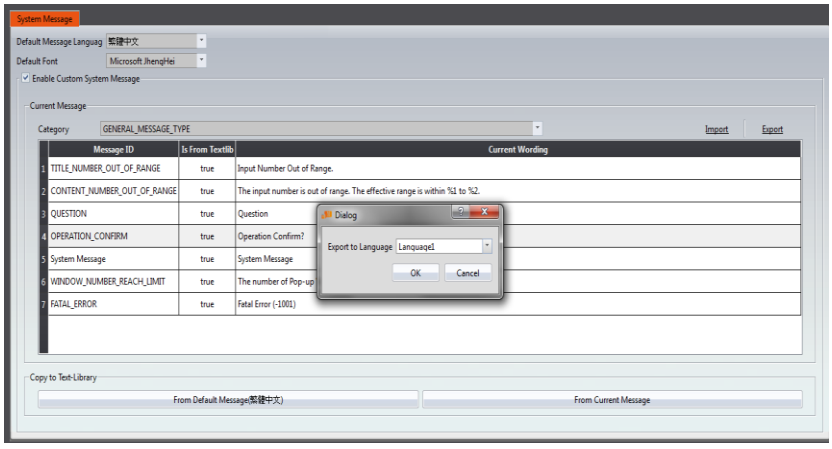


Figure 119 Exporting into Language1



Figure 120 Export Confirmation Window

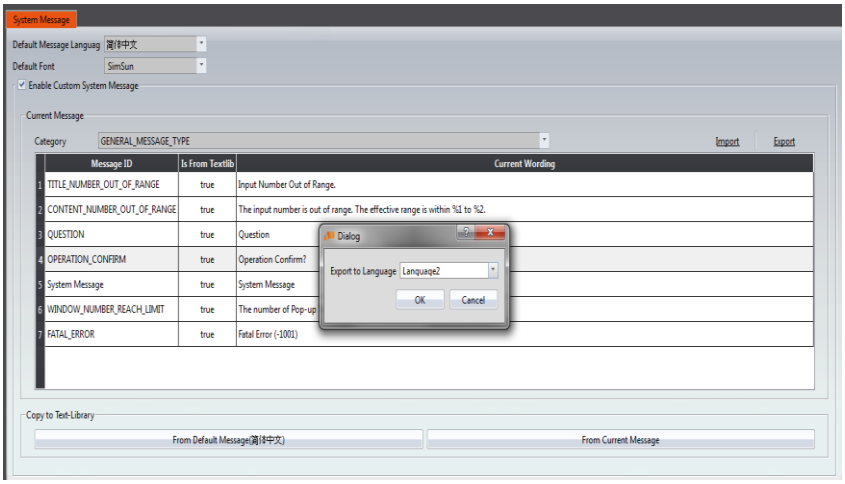


Figure 121 Exporting into Language2

Within the project, when using Traditional Chinese as the active language, the system messages will also be displayed in Traditional Chinese. The result is the same for Simplified Chinese and English. See **Chapter 18.4 -【Text Library】** for more details.

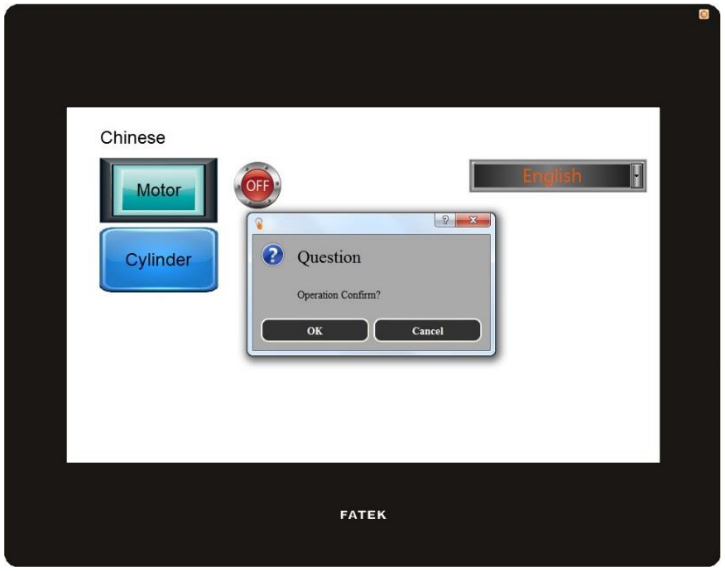


Figure 122 Confirmation Windows for Each Language

7. Data Log

Objects such as【Lamp】or【Numeric Input/Display】can be used to read the real-time changes of certain register values when the HMI is operating. However, in order to track changes of the value over time, the【Data Log】function must be used. The【Data Log】function is used to log the values of an address according to a set interval or when certain conditions are met to provide users with the long-term trends of values in addresses.

This chapter will explain Data Log functions, the settings, and how to export the data for the user to view and analyze.

7.1 Data Log List

Click on【Data Log】in the【Project Explorer】of FvDesigner, and the【Data Log List】will pop up; the current【Data Log Groups】that were already set will be displayed on the list according to the order of the【Group ID】.

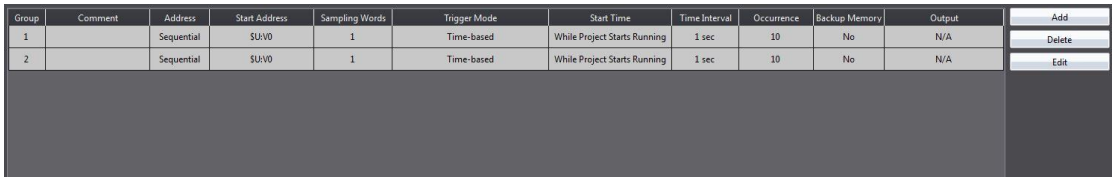


Figure 123【Data Log List】Screen

To add a new Data Log Group, click on the【Add】button to the right and the【Data Log Group】setting dialog will appear for the user to operate.

To edit an existing【Data Log Group】, double-click on the【Data Log Group】entry or first select the【Data Log Group】entry and then click on the【Edit】button to the right. The properties setting dialog of the【Data Log Group】entry will appear for the user to modify.

To delete an existing【Data Log Group】, select the【Data Log Group】entry and then click on the【Delete】button to the right to delete this【Data Log Group】entry.

7.2 Data Log Group Settings

Settings for the【Data Log Group】are divided into four parts:【Setting】,【Logging

Address List】, 【Export Data】 and 【Print Data】. 【Setting】 is used to set the behavior for the 【Data Log Group】 to log the data, the 【Data Address List】 is used to edit the address list logged by the 【Data Log Group】, and the 【Export Data】 is used to set the export behavior of the logged data, 【Print Data】 is used to set the format to print out the data log.

7.2.1 【Setting】

The 【Setting】 screen is as shown in the figure below. The meaning of each setting are also listed below:

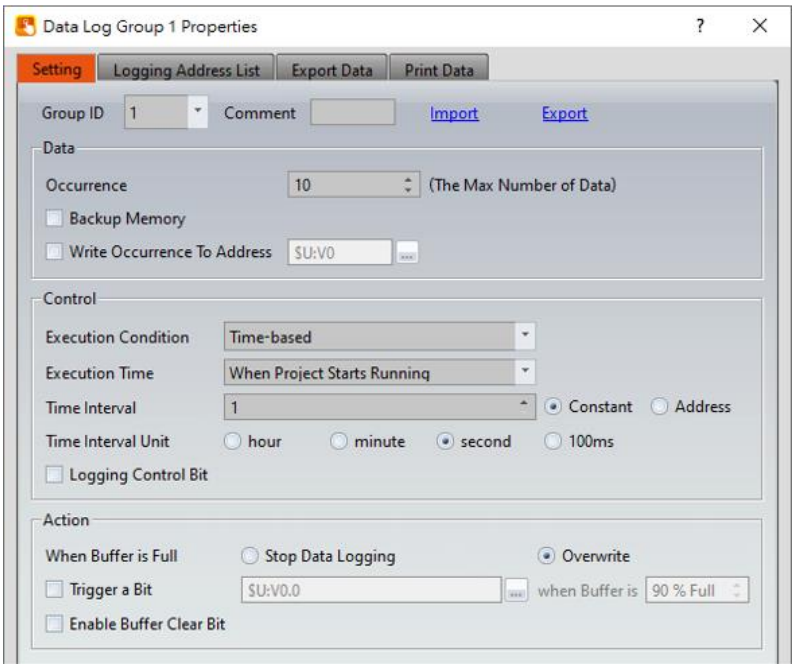


Figure 124 【Setting】 of 【Data Log Group】

Table 47 【Setting】 Properties of 【Data Log Group】

Property	Description
【Group ID】	Set the Group ID of the 【Data Log Group】.
【Comment】	Set a comment for the 【Data Log Group】.
【Import】	A CSV , xlsx or xls file can be selected after clicking on this button. All the logged addresses included in the file will be applied to the 【Data Log Group】 settings.
【Export】	The settings of the current 【Data Log Group】 can be saved into a CSV , xlsx or xls file after clicking on this button.
【Data】	Set the data content logged by the 【Data Log Group】.

	【Occurrence】 Set the number of times to collect data 【Backup Memory】 Set to enable Backup Memory. Select to save the Data Log of the HMI into the backup memory of the HMI when the power of the HMI is interrupted in order to avoid loss of data. 【Occurrence】 Set the number of times【Data Log Group】 logs data.
【Control】	Set the conditions for the【Data Log Group】to log data. 【Execution Condition】 Sets the condition to execute data logging. 【Time-based】 The【Data Log Group】will log data according to a set interval. 【Triggered by Bit】 The address logging will be executed when the status changes of the 【Logging Control Bit】satisfy the conditions set in【Trigger Condition】. **Execution Condition:【Time-based】** 【Start when Project Runs】 Set to start logging data when the project runs. 【Start Time】 When the【Start when Project Runs】is not selected then the start time for the【Data Log Group】can be set.The three time units that can be entered are hour, minute, and second. 【Time Interval】 Set the time interval for the data log function. The time interval will be a fixed value if【Constant】is selected. The time interval will be determined by the value in the address set if【Address】is selected; the data type of the address data read is fixed as【32Bit-UINT】.

	【Time Interval Unit】 Set the unit of the【Time Interval】. The maximum value of the time interval is 1 day. The maximum value that can be entered for the【Time Interval】is 24 if the【Time Interval Unit】is set as【Hour】. The maximum value that can be entered is 1440 if it is set as【Minute】. The maximum value that can be entered is 86400 if the Time Interval Unit】is set as【Second】. If the【Time Interval Unit】is set as【100ms】, the maximum value that can be entered for the【Time Interval】is fixed as 9. 【Logging Control Bit】 Set an address to control whether to execute【Data Log Group】, the function will be executed when the address is ON. **Execution Condition:【Trigger by Bit】** 【Logging Control Bit】 Set an address to control whether to execute【Data Log Group】. 【Trigger Condition】 There are three options:【Bit OFF -> ON】,【Bit ON -> OFF】, and【Bit Change】. 【Reset Logging Control Bit】 When the【Trigger Condition】is【Bit OFF -> ON】or【Bit ON -> OFF】, the bit will be automatically reset. **Note: If the communication error of the data log group happened then the triggered bit cannot reset automatically.**
【Action】	【When Buffer is Full】 Set the action to take when the【Data Log Group】has completed the number of data loggings set in【Occurrence】. If【Stop Data Logging】is selected, data logging will be stopped; if【Overwrite】is selected, then the【Data Log Group】will continue to log data and the data previously saved will be overwritten as new data is logged. 【Trigger a Bit】

	Set to trigger a specific bit when the data is full; the triggering address and the time to trigger the address can be set on the right if this is enabled. 【Enable Buffer Clear Bit】 Set to enable a buffer clear bit; the【Buffer Clear Bit】can be set at the right if this is enabled. When the status of this address is 1, the data saved in the buffer will be cleared.

7.2.2 【Logging Address List】

The【Logging Address List】screen is as shown in the figure below, the meaning of each setting are listed below:

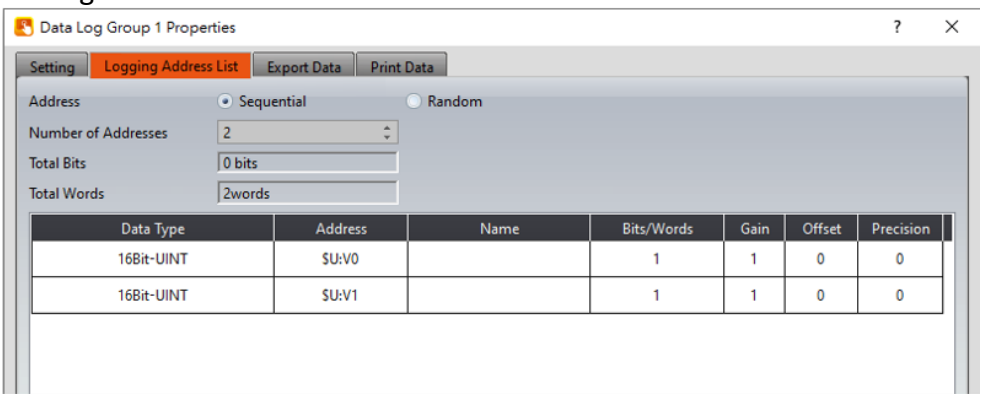


Figure 125【Logging Address List】Setting Screen of【Data Log Group】

Table 48【Logging Address List】Setting Properties of【Data Log Group】

Property	Description
【Address】	You can choose whether to automatically【continuous】address when creating the address, or【random】to be filled in by the user.
【Number of Addresses】	Set how many addresses to collect.
【Total Bits】	Display the total bits of the data logged.
【Total Words】	Display the total words of the data logged.
【Logging Address List】	【Data Type】 Set the data type of the data logged. Only the first row can be modified if the logged address type is set as【Sequential】.

	【Address】 Set the address of the data logged. Only the first row can be modified if the logged address type is set as 【Sequential】. 【Name】 Set the address name of the data logged; the default name is the address is itself if no name is entered. 【Bits/Words】 Display the length of the data logged by 【Data Type】. 【Words】can be modified if 【Data Type】is set as 【Ascii String】. 【Gain】 The amount of 【Gain】can be set. Formula is as follows: y=Ax+B, gain is A, offset for the B, y value is displayed for HMI, x is PLC value. 【Offset】 Set the 【Offset】value. See 【Gain】for more details. 【Precision】 Set the amount of decimal places shown.

7.2.3 【Export Data】

The【Export Data】screen is as shown in the figure below, the meaning of each setting are listed below:

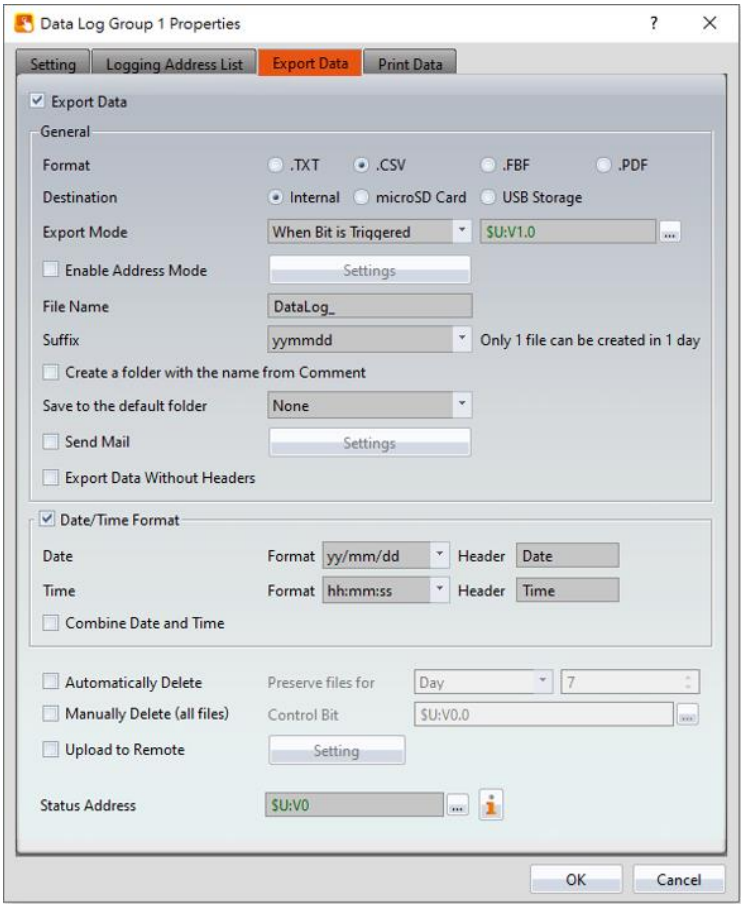


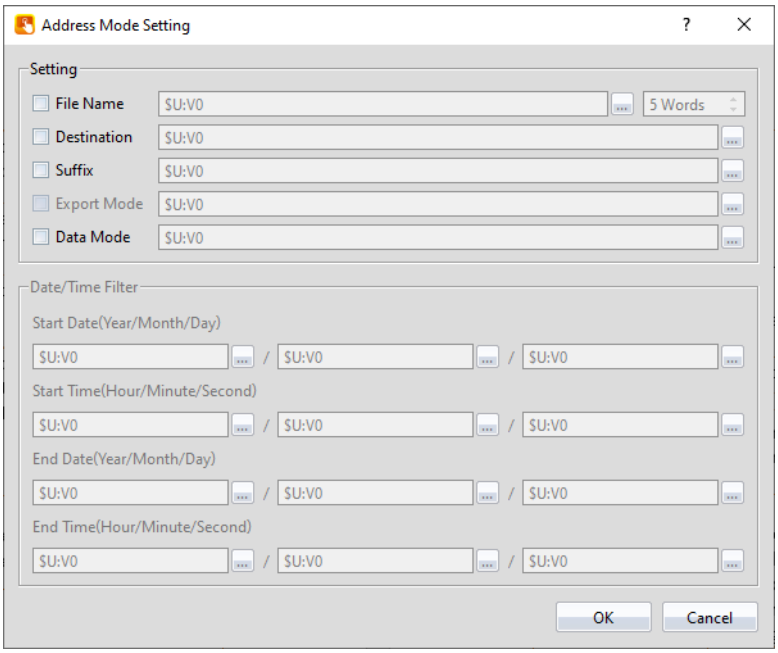
Figure 126【Export Data】Setting Screen of【Data Log Group】

Table 49【Export Data】Setting Properties of【Data Log Group】

Property	Description
【Export Data】	Set to enable to export data function; export settings will appear below if this function is enabled.
【Format】	Set the format of the output file; TXT, CSV, MBF, and PDF can be selected, MBF file is MERITEK's proprietary format, which requires the format of reading or converting files using【MBF Reader】in EasyDesigner【Tools】
【Destination】	Set the destination of the output file; available selections include internal, microSD card or USB storage device. If the output destination is internal storage, you can use FTP to connect to the HMI to read the stored file.
【Export Mode】	Set the timing of exporting files. There are four operation modes when the drop-down menu is clicked.

Mode	Description
【When Buffer is Full】	When the【Occurrence】reaches the set times, it will be automatically exported.

<table>
<tr><td></td><td><table>
<tr><td>【When Bit is Triggered】</td><td>When the set bit is triggered, the data will be exported</td></tr>
<tr><td>【Export Daily Time】</td><td>Automatically export when HMI time reaches the set time</td></tr>
<tr><td>【Export Regularly】</td><td>Export data according to the set time interval</td></tr>
</table></td></tr>
<tr><td>【Enable Continue File Mode】</td><td>Support for PC model with MBF export data format, Historic Trend and Historic Data Table will load the old files automatically if this option is checked. But at the same time, 【Enable Address Mode】and the Sub switch save in the 【Historic Data Table】will be disabled to avoid time repeat.</td></tr>
<tr><td>【Enable Address Mode】</td><td>After enabling, the exported file name, destination, suffix, export mode, data mode, date and time filtering, etc., will be controlled by the specific address. To be allowed to enable this mode, you need to first enable【Export Mode】and【When Bit is Triggered】. When【Export Mode】is【When Buffer is Full】, the export method cannot be set.

【Setting】
 

【File Name】
Use a defined address to set the name of the exported file. 5 characters is the default setting, maximum setting is 100 characters.</td></tr>
</table>

【Destination】

Use a defined address to set the destination of the output file. The destination values are shown in the following table,

Register Value	Function
1	HMI
2	microSD Card
3	USB Storage Device
Other Values	HMI

【Suffix】

Use a defined address to set the name of the exported file and the date/time format. The suffix values are shown in the following table,

Register Value	Function
1	yymmdd
2	yymmdd_hh
3	yymmdd_hhmm
4	yymmdd_hhmmss
5	None
6	yymm
Other Values	yymmdd_hhmmss

【Export Mode】

Use a defined address to set the export mode. The export mode values are shown in the following table,

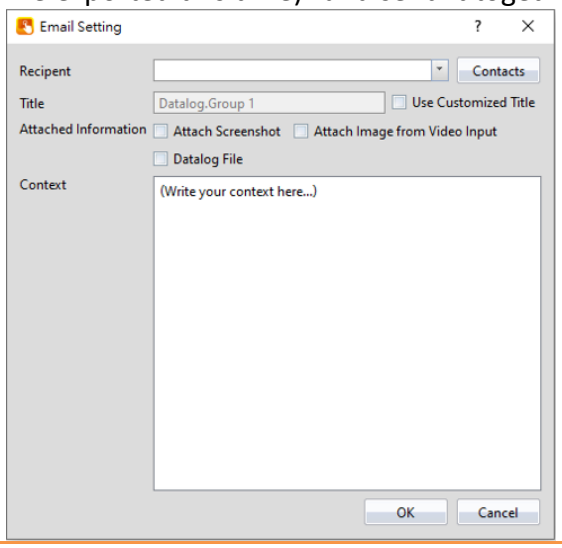
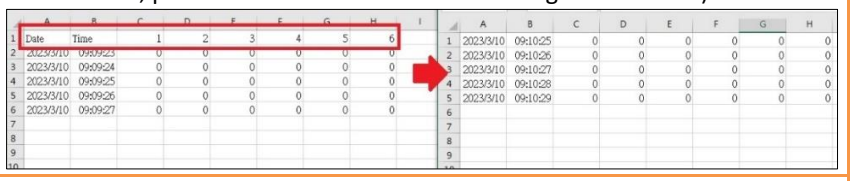
Register Value	Function
1	Overwrite Old Files
2	Continue to write on old file
Other Value	Continue to write on old file

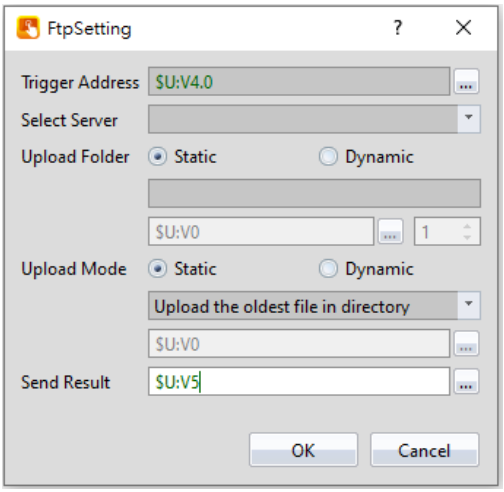
【Data Mode】

Use a defined address to set the data mode of the exported data. The data mode values are shown in the following table,

Register Value	Function
1	Save all unsaved data and mark the exported data as saved.
2	Save all data and mark the exported data as saved
3	Saved all data for a specific time without marking the exported data as saved.
Other Values	Save all data and mark the

	exported data as saved 【Data/Time Filter】 【Start Date (Year/Month/Day)】 Use a defined address to set the date at which filtering starts. 【Start Time (Hour/Minute/Second)】 Use a defined address to set the time to start filtering. 【End Date (Year/Month/Day)】 Use a defined address to set the date at which filtering ends. 【End Time (Hour/Minute/Second)】 Use a defined address to set the time at which filtering ends.
【File Name】	Set the name of the exported file; the file name of the exported file includes the save date and time (such as: DataLog_140519_151735.txt).
【Suffix】	Set the name of the exported file, such as yymmdd_hh, the name of exported file only has a date and hours (Example: DataLog_140519_17.txt) This setting also provides regular export archive mode, If the suffix selected is "yymm", it would produce one file per month, If the suffix selected is "yymmdd", it would produce one file per day, If the suffix select "yymmdd_hh", it would produce one file per hour, If the suffix selected is " yymmdd_hhmm", it would produce one file per minute, If the suffix selected is " yymmdd_hhmmss", it would produce one file per second, If the suffix to select "no", one file includes all data.
【Create a folder with the name from comment】	If this option is checked, the name of the folder will be name from【Setting】【Comment】, for example, comment temperature, the original Group_1 folder will be changed to the temperature folder, which is originally datalog \ Group_1 will become datalog \ temperature.
【Save to the default folder】	There is None, Folder created monthly and Folder created daily 3 opitons. If choose none then will not create another folder,for example, datalog\Group_1\DataLog_170403. csv. If choose folder created monthly then will create another monthly folder each month, for example, datalog\Group_1\201704\DataLog_170403.csv.

【Send Mail】	It can be seen after【SMTP】is enabled. The purpose of this function is to send emails when exporting. The details are as follows: When this group has exported data, an email will be sent to the set group according to the settings here. At the same time, you can check to include "Datalog File (the file exported this time)" and send it together. 
【Export Data Without Headers】	After checking, the title will not be exported when exporting data. (*Note: If you want to write a file with an existing title, the title of the file will still exist, please delete the old file before using this function) 
【Date/Time Format】	【Date】 Set the display format of the date when exporting files. 【Time】 Set the display format of the time when exporting files. 【Combine Date and Time】 If set, the date and time columns will be combined into a single column.
【Automatically Delete】	Check to set the number of days the exported file should be retained in memory. For example, if set to seven days, the HMI will use its internal calendar and files greater than seven days will be removed.
【Manually Delete (all files)】	It will delete all files when the bit turns to ON.

【Upload to Remote】	Enable ch4.5-【FTP Client】function then this option can be seen.  【Trigger Address】 Set a bit to trigger uploading. 【Select Server】 Click the drop-down menu to select the server to upload 【Upload Folder】 Fill in the path where the remote server is stored, if not filled in, it will be stored in the root directory of the server 【Upload mode】 There are 7 upload modes for【Static】, which will be described together with【Dynamic】below Setting Value(INT) / Description -10 / Upload the oldest 10 files in directory -5 / Upload the oldest 5 files in directory -1 / Upload the oldest file in directory 0 / Upload all files in directory 1 / Upload the lastest file in directory 5 / Upload the lastest 5 files in directory 10 / Upload the lastest 10 files in directory 【Send Result】 Set the address of the execution result display, the data type is【INT】, Success: 1 / Failure: -1

【Status Address】	Set the saving address of the error code.

Error Code	Description
0	No Error
1	Read Error
2	Write Error
5	Open Error
100	Not enough storage space

The following example exports specified time data:

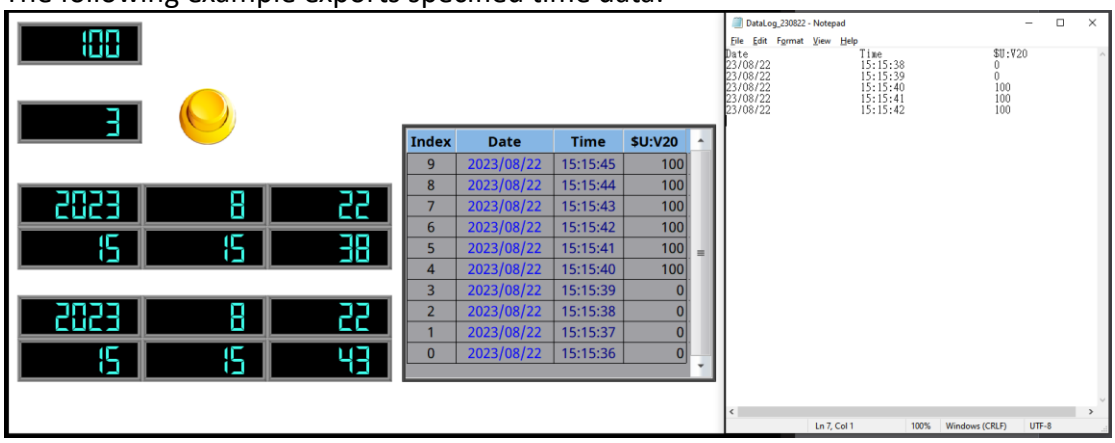


Figure 127 export specified time data example

Base on checking【Enable Address Mode】and【Data Mode】, set data 3 to【Data Mode】. Fill in fill in the required time range into the register that set in【Date/Time Filter】, datas between the range can be obtained.

7.2.4 【Print Data】

【Print Data】page as shown below, the meaning of each setting is as follows :

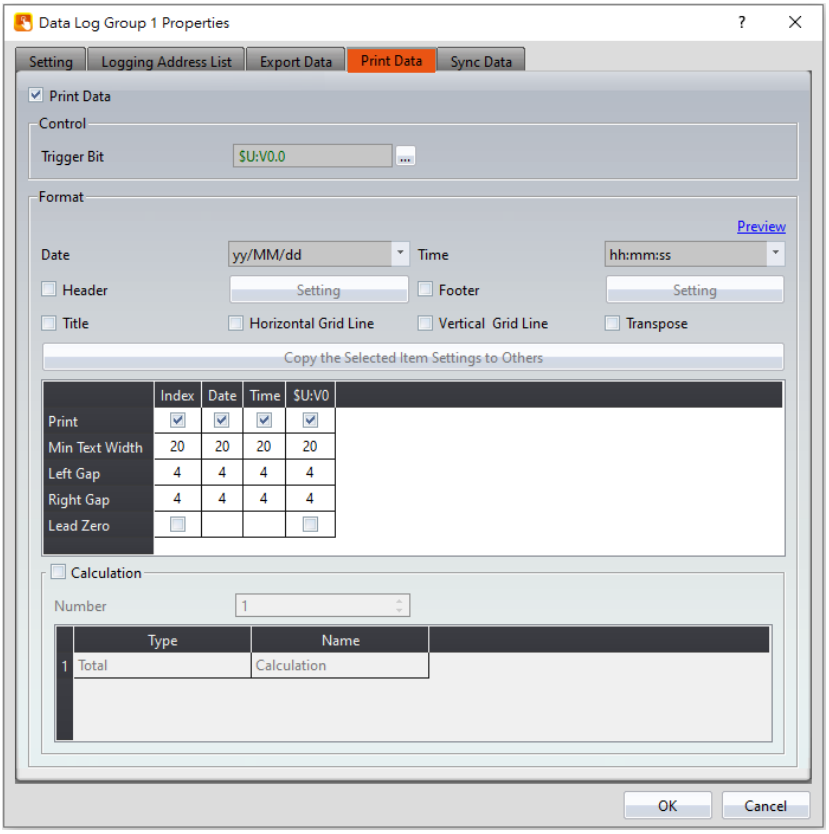
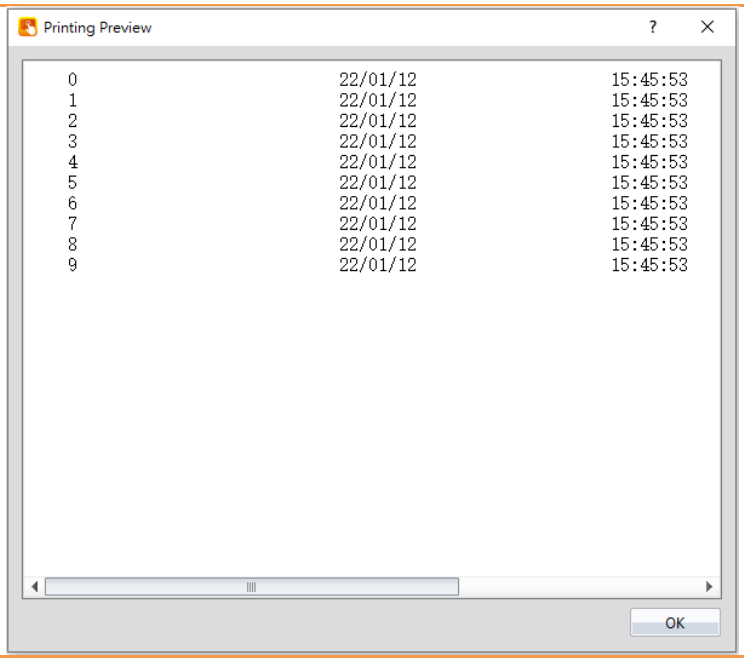


Figure 128【Print Data】Setting Screen of【Data Log Group】

Table 50【Print Data】Setting Properties of【Data Log Group】

Properties	Description
【Print Data】	Set whether to enable Print Data function, enable the function do the following settings.
【Control】	【Trigger Bit】 Set the trigger bit of print control.
【Format】	【Date】 Set the date print format. 【Time】 Set time print format. 【Header】 If checked, according to the setting, it will print header first then print the data log content. Press ''setting'' button to set the header.

	【Setting (Header)】 Header setting, please refer to **7.2.4.1-【Print Data】Header and Footer【Setting】** for more details. 【Footer】 If checked, according to the setting, it will print data log content first then print the footer. Press ‘’setting’’ button to set the footer. 【Setting (Footer)】 Footer setting, please refer to **7.2.4.1-【Print Data】Header and Footer【Setting】** for more details。 【Title】 Print the data log title. 【Horizontal Grid Line】 Print out with horizontal grid line. 【Vertical Grid Line】 Print out with vertical grid line. 【Transpose】 Data will be printed from left to right. 【Preview】 Press the preview to view the following table settings, whether it meets the printing requirements, press ‘’preview’’ following figure will appear



【Print Items】

Print items includes: Index, Date, Time and Data.

【Copy the Selected Item Settings to Others】

When a certain row is selected, this button will be enabled. The user can use this button to copy the setting value of the selected item to other items, which simplifies the user's setting procedure and improves the set efficiency.

【Print】

If checked, the printed data will include this item.

【Min Text Width】

The minimum expected text width of the print items, when the text width of the content is smaller than the minimum word width, will be automatically filled with spaces to keep the minimum word width setting. The letter width of the letter or number is 1 and the Chinese is 2 .

【Left Gap】

Space on the left of the print item

【Right Gap】

Space on the right of the print item

【Lead Zero】

For Data Log's items that are not ''text'' type, when the width of the printed content is less than the minimum width, it will automatically filled with ''0''.

【Calculation】	After the actual data that collected, will calculate for data log items that are not "text" types, and the calculation results will be printed in sequence. 【Number】 Set the number of calculations. The following is the setting description of the calculation item: 【Type】 Set the type of calculation, includes Total, Average, Maximum and Minimum. 【Name】 Calculate the customized name of the project, which will be printed with the calculation results.

7.2.4.1 【Print Data】Header and Footer【Setting】

For the header/footer, when click the【Setting】button, the following dialog box appears. There are two modes:【Static】and【Dynamic】.

【Static】
Users can edit any text content as static header/footer content.

【Dynamic】
The user sets the variables and edits the pattern, and matches the keyword "%[number]" (eg: %1, %2, %3, etc.) to achieve the dynamic header/footer requirements, where the keyword will be replaced by the actual content of the variable.

【Dtat Log】【Print Data】【Header/Footer】as shown in the figure below, the meaning of each setting option is as follows:

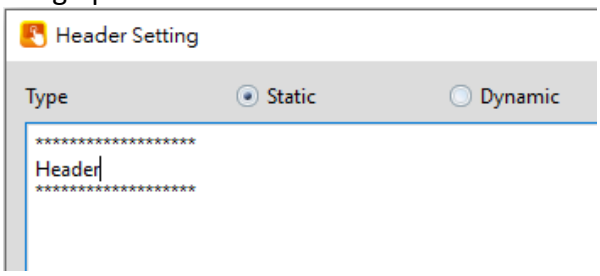


Figure 129【Print Data】【Header/Footer】Setting Screen of【Data Log Group】

(Static mode)

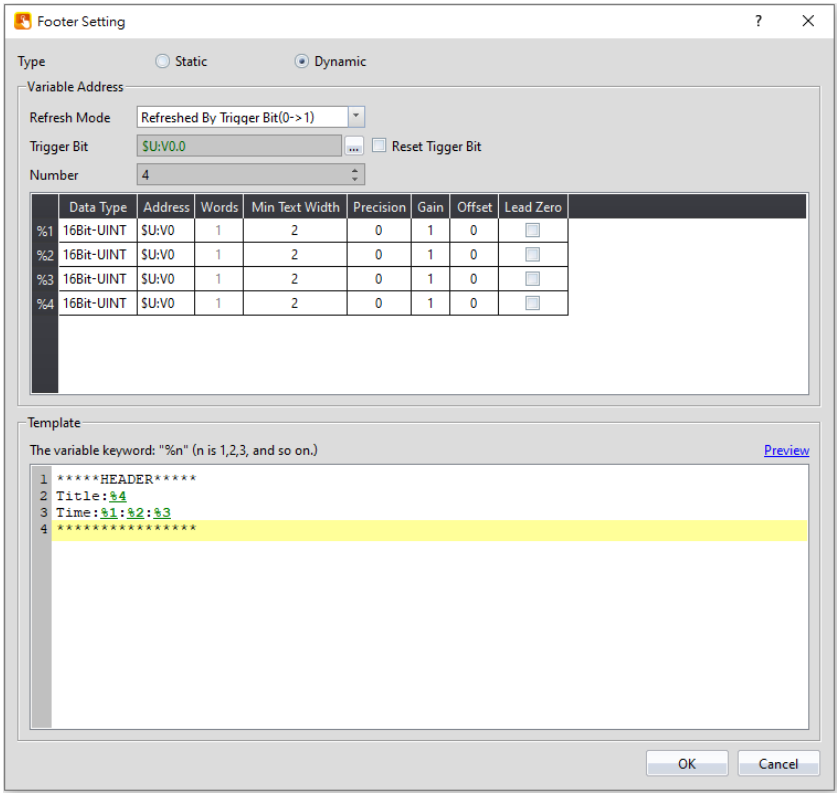
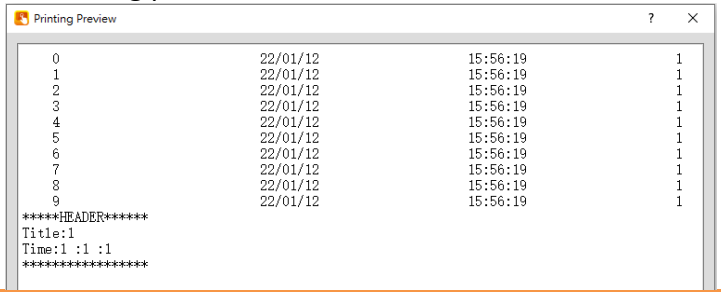


Figure 130【Print Data】【Header/Footer】Setting Screen of【Data Log Group】(Dynamic mode)

Table 51【Export Data】Setting Properties of【Data Log Group】

Options	Description
【Variable Address】	【Refresh Mode】 The refresh mode for setting variable content can be divided into: ➢ 【Refresh Periodically】: refresh variable content periodically, when select this mode please set the 【Time Interval】. ➢ 【Refreshed By Trigger Bit(0->1)】: when the bit turn 0 to 1, refresh variable content. ➢ 【Refreshed By Trigger Bit (1->0)】: when the bit turn 1 to 0, refresh variable content. ➢ 【Refreshed By Trigger Bit Changed】: when the bit turn 1 to 0, refresh variable content. 【Trigger Bit】

	Set the refresh variable content trigger address. This setting only needs to set when【Refresh Mode】is【Refreshed By Trigger Bit(0->1)】、【Refreshed By Trigger Bit (1->0)】or【Refreshed By Trigger Bit Changed】. 【Reset Trigger Bit】 Whether to reset trigger bit after refreshing variables. This setting only needs to set when【Refresh Mode】is【Refreshed By Trigger Bit(0->1)】or【Refreshed By Trigger Bit (1->0)】. 【Number】 Set the number of variables.
【Variable】	【Data Type】 Set the data type of variable. 【Address】 Set the address of variable. 【Words】 The number of words required of data types to display variables. If【Data Type】is【Ascii String】, then can set the number of words to collect at the beginning of the address. 【Min Text Width】 Set the minimum text width of the variable content. When the word width of the content is smaller than the minimum word width, it will be automatically filled with spaces to keep the minimum word width setting. 【Precision】 Set the precision of the variable. 【Gain】 Set the gain of the variable. 【Offset】 Set the offset of the variable.

	【Lead Zero】 For Data Log's items that are not ''text'' type, when the width of the printed content is less than the minimum width, it will automatically filled with ''0''.
【Template】	The user sets the variables and edits the pattern, and matches the keyword "%[number]" (eg: %1, %2, %3, etc.) to achieve the dynamic header/footer requirements, where the keyword will be replaced by the actual content of the variable. 【Preview】 For setting preview header/footer content, as shown below: 

7.2.5 【Sync Data】

Synchronize the data from the database. When enabled, the data will be automatically read from the database when the connection is successful. If you want to view it in the【Historic Data Table】, select【Historic Data Table】in the【Source】of the【Historic Data Table】.

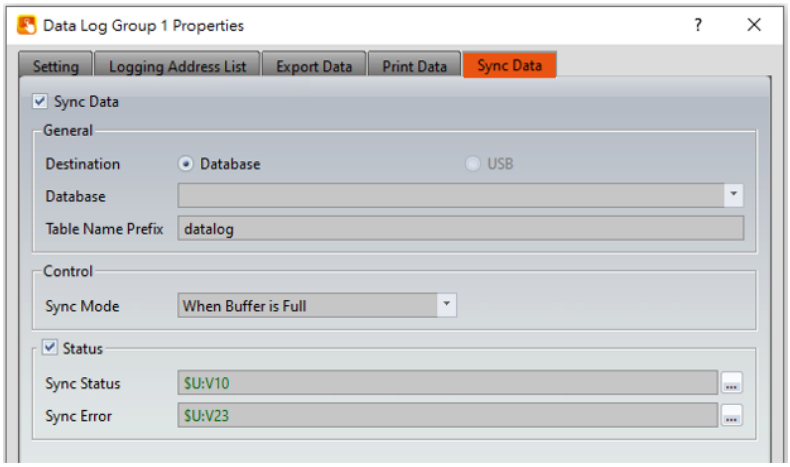


Figure 131【Data Log Group】【Sync Data】Setting Page

Table 52【Data Log Group】【Sync Data】Property Setting Page

Property	Description

<table>
<tr><td>【Sync Data】</td><td>Set whether to enable the data sync function. After enabling, the setting items will appear below.</td></tr>
<tr><td>【General】</td><td>【Destination】
Set the synchronize destination

【Database】
Set the synchronize database

【Table Name Prefix】
Set the generated table name of the after synchronization. If FvDatalog is set in this field then will generate FvDatalog_data and FvDatalog_data_format 2 tables.<table><tr><th>Table Name</th><th>Description</th></tr><tr><td><Customized Name>_data</td><td>Store the data of the Data Log</td></tr><tr><td>< Customized Name >_data_format</td><td>Store the setting of the Data Log(Use for internal system)</td></tr></table>Note: When the Data Log setting has changed (but the table name is not changed), after downloading to the HMI, the synchronized data table in the database needs to be deleted first then the new Data Log will take effect.</td></tr>
<tr><td>【Control】</td><td>【Sync Mode】
Set the timing of synchronizing data to the database, including When Buffer is Full, When Bit is Triggered, Daily Synchronization, and Sync Regularly.</td></tr>
<tr><td>【Status】</td><td>【Sync Status】
Set the storage address of the status<table><tr><th>Value</th><th>Status Description</th></tr><tr><td>0</td><td>Unconnect</td></tr><tr><td>1</td><td>Connecting</td></tr><tr><td>2</td><td>Connected</td></tr><tr><td>3</td><td>Synchronizing</td></tr></table>【Sync Error】
Set error code storage address<table><tr><th>Value</th><th>Status Description</th></tr><tr><td>0</td><td>No error</td></tr><tr><td>1</td><td>Unkown error</td></tr><tr><td>2</td><td>Database connection failed</td></tr><tr><td>3</td><td>Insufficient access authority</td></tr><tr><td>4</td><td>Database name error</td></tr><tr><td>5</td><td>Format error</td></tr><tr><td>6</td><td>Table connection failed</td></tr><tr><td>7</td><td>Build table failed</td></tr><tr><td>8</td><td>Write table failed</td></tr></table></td></tr>
</table>

8. Alarm

When the HMI is operating, the【Alarm】function can be used if real-time detection of excessive changes to specified numeric value is required. The【Alarm】function is used to monitor specific addresses of the PLC or HMI. When the numeric value of the monitored address reaches is outside a set range, the HMI will give out an alarm. In addition, the user can also record the numeric values of 1~8 addresses during the occurrence of the alarm in order to analyze reasons for the alarm, or when the alarm occurs, email can be set to notify the administrator, etc.

This chapter will explain alarm related functions, the settings, and how to export the alarm data for analysis.

8.1 Alarm List

Click on【Alarm】, which is located in the feature list on the left side of FvDesigner; the【Alarm List】will pop up and existing【Alarms】will be displayed on the list according to【Group ID】.

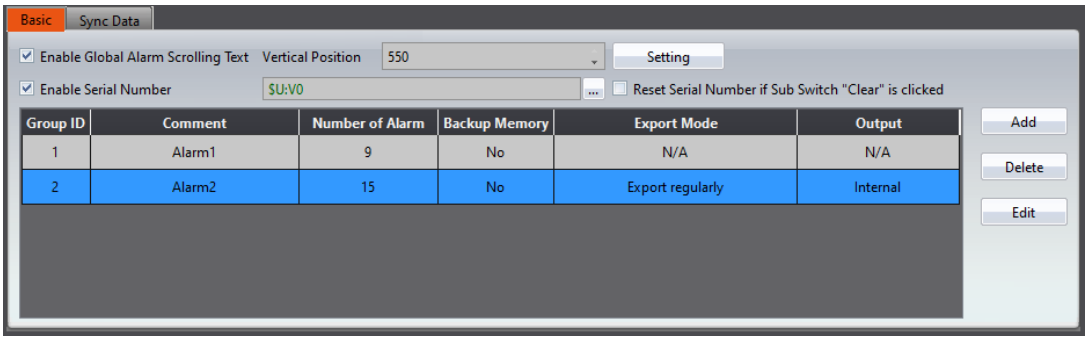


Figure 132【Alarm List】Screen

Press the【Add】button to add an alarm; the【Alarm】setting dialog will appear for the user to operate.

To edit an existing【Alarm】, double click on an【Alarm】in the list or first click the【Alarm】entry and then click the【Edit】button on the right. The setting dialog of this【Alarm】entry will appear for the user to modify.

To delete an existing【Alarm】, select the【Alarm】 entry and then click on the【Delete】button to the right.

8.1.1 【Global Alarm Scrolling Text】

After checking Enable, you can click the【Setting】button on the right to set the【Global Alarm Scrolling Text】.

When an alarm occurs, the currently occurring alarm items will be displayed on whole screens according to the settings.

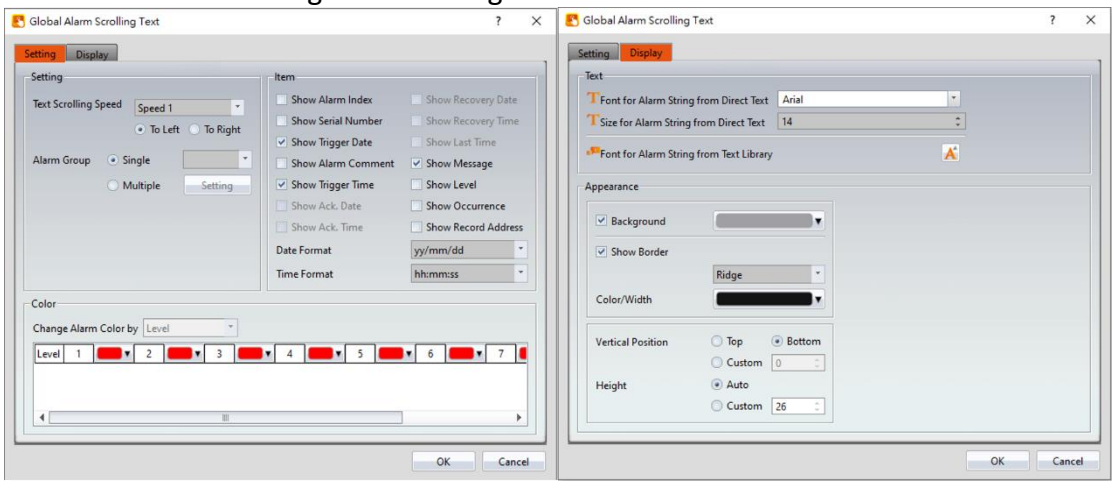


Figure 133 Global Alarm Scrolling Text setting page

8.1.2 【Serial Number】

After checking, enable the serial number function to display how many alarms have occurred in the current buffer.

It can be used with the sub-switch to do the reset action.

8.2 Alarm Setting

The properties of an【Alarm】is divided into【Setting】and【Export Data】, in which【Setting】is used to set the behavior and occurrence conditions of the【Alarm】and【Export Data】is used to set data export behaviors for alarms that already occurred.

8.2.1 【Setting】

The “Setting” screen is as shown in the figure below, the meanings of each setting are also listed below:

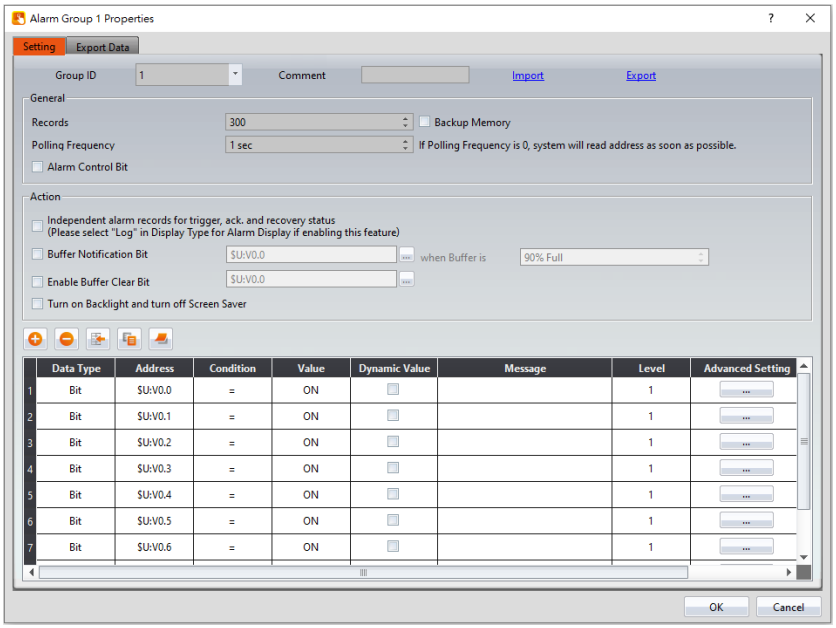


Figure 134【Setting】Screen of【Alarm】

Table 53【Setting】Properties of【Alarm】

<table>
<tr><th>Property</th><th>Description</th></tr>
<tr><td>【Group ID】</td><td>Set the Group ID of the【Alarm】.</td></tr>
<tr><td>【Comment】</td><td>Set the comment of the【Alarm】.</td></tr>
<tr><td>【Import】</td><td>A CSV or Excel file file can be selected after clicking this option. All of the【Alarm】contents of the file will be applied to the current【Alarm】settings.</td></tr>
<tr><td>【Export】</td><td>The settings of the current【Alarm】can be saved into a CSV or Excel file after clicking this option.</td></tr>
<tr><td>【Group Setting】</td><td>【General】
<table>
<tr><th></th><th>Description</th></tr>
<tr><td>【Records】</td><td>Set the maximum number of alarms to save for the current【Alarm】group. HMI can hold 10,000 and PC can hold 65,535 .</td></tr>
<tr><td>【Backup Memory】</td><td>Set to enable Backup Memory.
Select to save the Alarm data of the HMI in to the backup memory of the HMI when t he power to the HMI is interrupted in orde r to avoid data loss.</td></tr>
<tr><td>【Polling Frequency】</td><td>Sets the Polling Frequency of【Alarm】. When the Polling Frequency is set to 0, the system will read the monitoring address a s quickly as possible. If the Polling Frequen cy is set to a value greater than 0, the syst em will read the monitoring address accor ding to the set time. This lowers the comp</td></tr>
</table></td></tr>
</table>

<table>
<tr><td></td><td>
<table>
<tr><td></td><td>uting load of the system.</td></tr>
<tr><td>【Alarm Control Bit】</td><td>Check whether to enable the control address, the scan will only be performed when this address is on.</td></tr>
</table>

【Action】
<table>
<tr><th></th><th>Description</th></tr>
<tr><td>【Independent alarm records for trigger, ack. and recovery status】</td><td>If checked, the trigger time, acknowledgement time, and recovery time will be recorded separately. If not checked, the trigger time, acknowledgement time, and recovery time will be recorded in the same row.</td></tr>
<tr><td>【Buffer Notification Bit】</td><td>Set whether to trigger a specific address when the data stored in the alarm is full.</td></tr>
<tr><td>【Enable Buffer Clear Bit】</td><td>Set whether to enable the function to clear the alarm buffer record.</td></tr>
<tr><td>【Turn on Backlight and turn off Screen Saver】</td><td>Set whether the alarm turns off the screen saver and turns on the backlight when an alarm in the given group occurs.</td></tr>
</table>
</td></tr>
<tr><td>【Add】</td><td>Adds an alarm entry to the bottom of the alarm table when this button is pressed. The alarm address will automatically increase. For example, if the bottommost entry in the alarm table has an address of M10, when the【Add】button is pressed, the new alarm entry will have an address of M11. When the【Data Type】is set to bit, the address will increase bitwise.</td></tr>
<tr><td>【Delete】</td><td>The alarm data selected in the alarm table below will be deleted when this button is pressed.</td></tr>
<tr><td>【Copy】</td><td>The alarm data selected in the alarm table below will be copied when this button is pressed.</td></tr>
<tr><td>【Paste】</td><td>A new alarm data entry will be added and the alarm settings copied will be filled into this new alarm entry when this button is pressed.</td></tr>
<tr><td>【Alarm Table】</td><td>Set the occurrence condition of the【Alarm】.

【Data Type】
Set the data type for the monitoring address of the【Alarm】.

【Address】
Set the monitoring address of the【Alarm】.

【Condition】</td></tr>
</table>

	Set the condition to determine that an【Alarm】has occurred. 【Value】 Set a value to determine if an【Alarm】has occurred. 【Dynamic Value】 After checking,【Value】will become address mode for users to input. 【Message】 Set the message to display when an【Alarm】has occurred. 【Level】 Set the level (1~8) of this【Alarm】entry. This can be used to distinguish between different levels of alarm. 【Advanced Setting】 When the【Advanced Setting】button is pressed, a pop up dialog will appear for users to set the advanced settings for【Alarm】.

8.2.2 【Advanced Setting】

The【Advanced Setting】properties setting dialog is as shown in the figure below, the meaning of each setting are listed below:

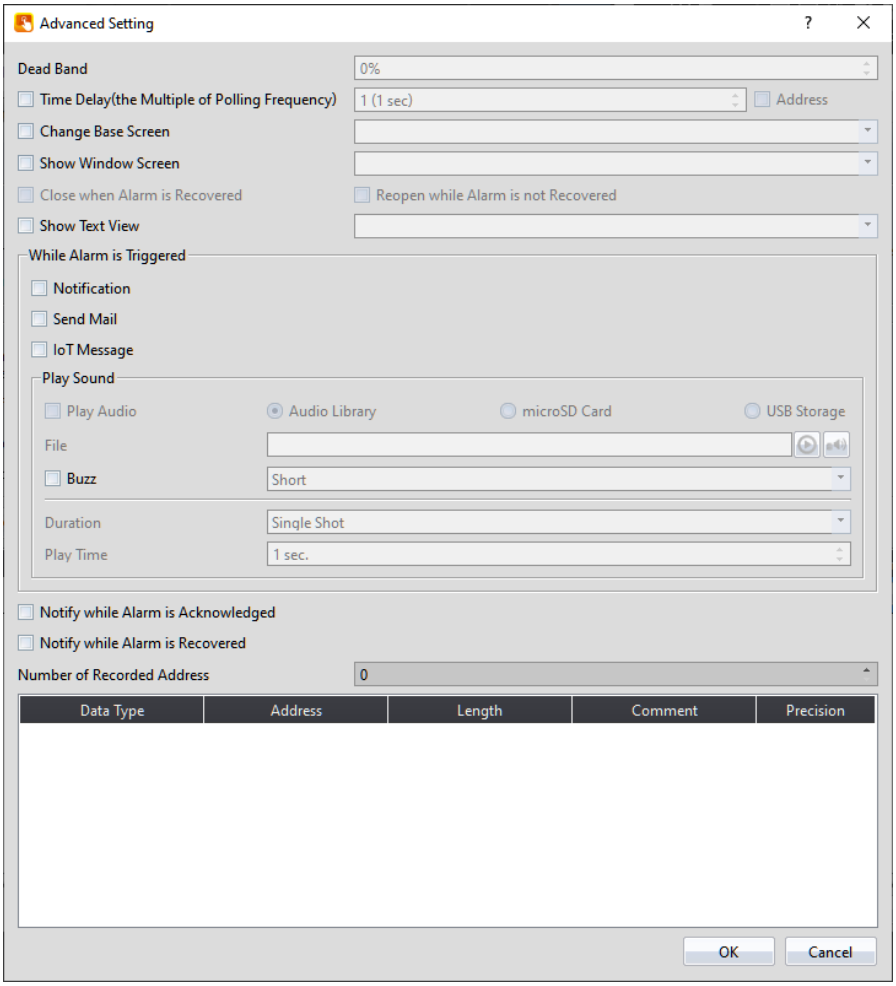
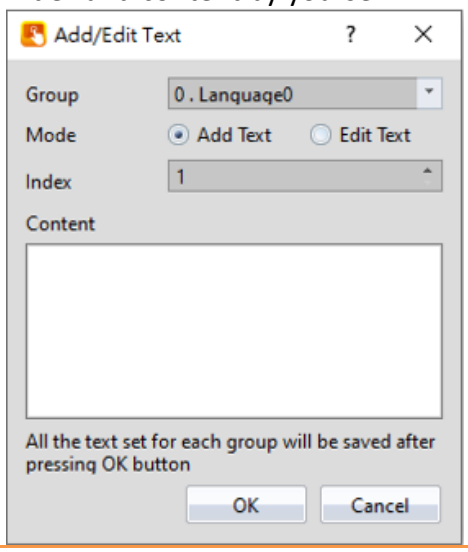


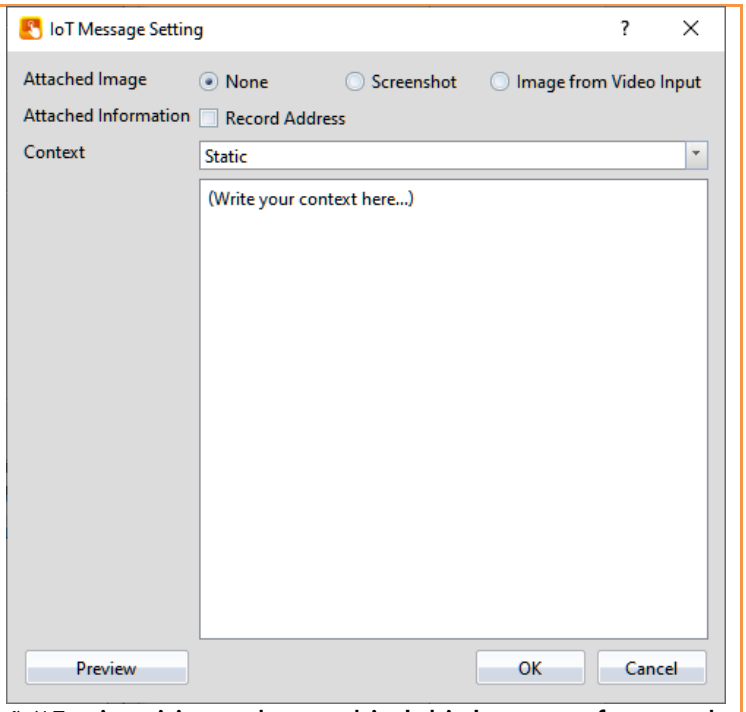
Figure 135【Advanced Setting】Property Setting Dialog of【Alarm】

Table 54【Advanced Setting】Properties of【Alarm】

Property	Description
【Dead Band】	Set the confirmed alarm recovery area after an【Alarm】occurred. For example, if the alarm occurrence condition is set as x>100, and【Dead Band】is set as 5%, then when x>100 the alarm occurs and when x<96 the alarm will recover.
【Time Delay (the Multiple of Polling Frequency】	Set the delay time to do trigger delay. If the polling frequency set 1 second, time delay set 5, then the alarm will be triggered when all the conditions were met within 5 seconds.
【Change Base Screen】	Set whether to enable the【Change Base Screen】function. If the function is enabled, you can select the【Base Screen】you want to change to when the alarm is triggered.

【Show Window Screen】	Set to enable the【Show Window Screen】function. The corresponding【Window Screen】for this alarm entry can be selected on the right once this option is enabled. If this function is enabled when the alarm occurs, a window screen will display or a【Show Window】sub switch can be pressed on the【Alarm Display】object to display the【Window Screen】set for this alarm. 【Close when Alarm is Recovered】 When the alarm is restored, the corresponding window screen will automatically close. 【Reopen while Alarm is not Recovered】 The window screen for the alarm will constantly reopen unless the alarm recovers.
【Show Text View】	When an alarm occurs, you can click the alarm and call a text window through the【sub-button】. After clicking the drop-down menu, you can select the existing text in the【Text Library】to display, or add an index and content by yourself. 
【While Alarm is Triggered】	Set to execute other behaviors when an alarm is triggered. 【Notification】 Set to notify specific addresses when an alarm is triggered. If this option is enabled, set the notification address and signal.

	Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】. 【Send Email】 Checkable when SMTP is enabled. If enable, you can set the address of the person to be notified when the alarm occurs, as well as additional messages and files. For details, refer to **ch8.2.3-【Send Email/Message Setting】** 【IoT Message】 When this option is enabled, messages will be sent to third-party software via the IoT cloud server when an alarm is triggered. 【Attached Image】When enabled, screenshots will be sent along with the message. However, please note that due to component update speeds, the image content may not correspond to the alarm content. 【Attached Information】Enabling this option allows the configuration information of【Record Address】in【Setting】to be sent together. 【Context】Enabling It is divided into【Static】and【Dynamic】and users can choose according to their needs. The receiving format can be previewed in【Preview】.



(※*For inquiries on how to bind third-party software, please refer to Chapter 7 of the "MERITEK IoT Cloud Service Manual" available for download at 到 hIttps://www.meritek.com/en/download.php?act=list&cid=16)

【Play Audio】

Set to play an audio file when an alarm is triggered. If this option is enabled, the audio set on the【Audio Selector】on the right which was selected from the【sound library】will be played when an alarm occurs. The【Duration】for the playback of the audio is controlled by the setting items below:【Single Shot】,【Time-based】,【Until Acknowledged or Recovered】and【Until Screen is Touched】are available for selection.

When select enable and select the audio file is from microSD or USB storage, you can set the file name of the microSD or USB storage audio file, when alarm happens, will play the set of the audio, file name need to contain filename extention.

If select【Address】, then the file name can be controlled by the set of the address.

Build a audio file in the microSD or USB storage, and put the audio file in the audio folder, the audio file can be read by HMI when the alarm ring.

	【Buzzer】 Sets whether or not to play the buzzer when the alarm is triggered. The buzzer sounds there are short, long, short-short, and long-short 4 ways. You can choose the buzz type, and adjust the【Duration】where you can choose【Single Shot】,【Time-Based】,【Until Acknowledged or Recovered】or【Until Screen is Touched】. 【Play Time】 When the【Time-based】option is selected, an option will appear and the play duration can be set.
【Notify while Alarm is Acknowledged】	Set to notify specific addresses when an alarm is acknowledged. If this option is enabled, the notification address set on the right will be set or reset when an alarm is acknowledged. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】.
【Notify while Alarm is Recovered】	Set to notify specific addresses when an alarm is recovered. If this option is enabled, the notification address set on the right will be set or reset when an alarm recovers. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】.
【Number of Recorded Address】	Set the number of address to read when an alarm is triggered; it can be set between 1~8. When the number set is changed, the number of rows in the address record table below will also change accordingly. 【Data Type】 Set the data type of the address to read when an alarm is triggered. 【Address】 Set the address to read when an alarm is triggered. 【Comment】 Set the comment of the address to read when an alarm is triggered. This comment can allow users to identify

	what the address represents. 【Precision】 Set the decimal point of the recorded value displayed in the【Alarm Display】.

8.2.3 【Send Email/Message Setting】

The【Setting】dialog box for sending emails is shown in the figure below.
The meaning of each setting option is as follows:

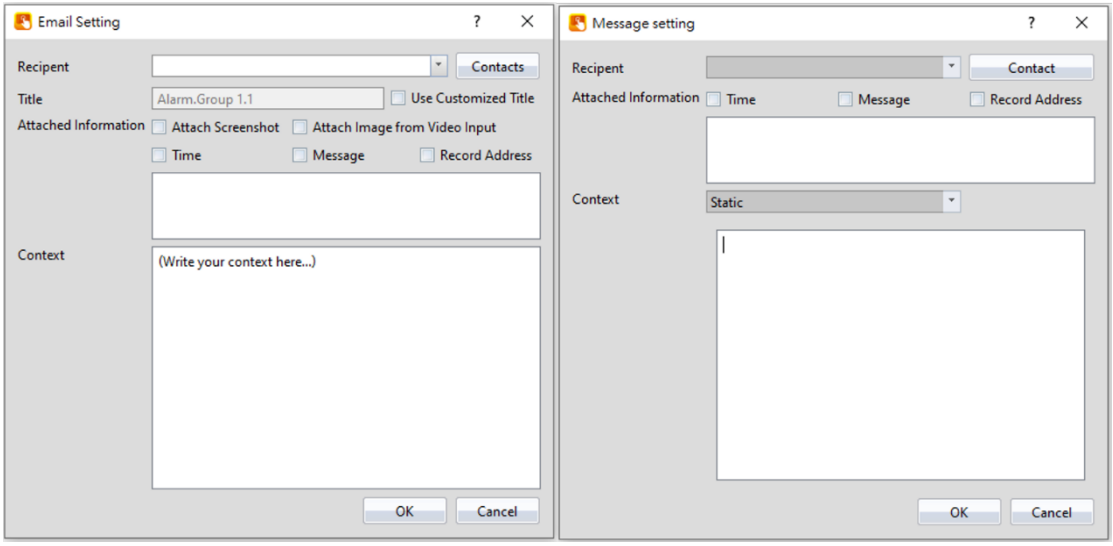
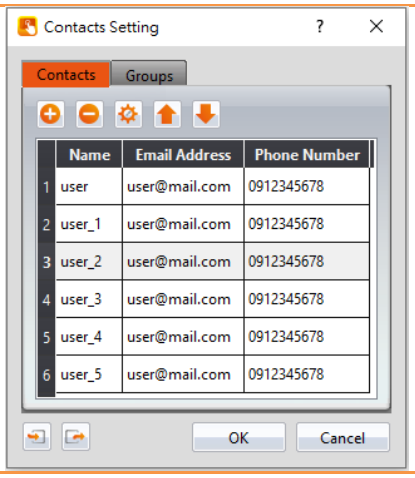


Figure 136【Advanced Setting】【Send Email/Message】Property Setting Dialog of【Alarm】

Table 55【Advanced Setting/Message】【Send Email】Properties of【Alarm】

Options	Description
【Recipent】	When the alarm occurs, the recipient of the email must first set the【Contacts】and【Groups】in the【Contact Lists】tab of the【SMTP】tab in【Severs】, or the【Contacts】button on the right set【Contacts】and【Groups】to be selected here.
【Contacts】	Provide the e-mail address of the person who receive the e-mail, and【Contacts】and【Groups】, etc. Press【Contact Lists】, the following figure will appear, you can add, delete, edit, import, export, etc. For more details, refer to **chapter4.3.1-【SMTP】setting**.

	
【Title】	Title of email, the title will be group's name if do not checked the【Use Customized Title】box on the right side, such as Alarm.Group 1.2, which indicates the second alarm in the first group of the alarm. Check the box【Use Customized Title】to edit the title of the mail here.
【Attached Information】	Set whether to send an email when an alarm occurs attach other messages or files at the same time. 【Attach Screenshot】 Check whether to attach HMI screenshot while sending email. 【Attach Image from Video Input】 Check whether to attach image from video input while sending email. 【Time】 Check whether to attach occurring time while sending email. 【Message】 Check whether to attach alarm message while sending email. 【Record Address】 Check whether to attach record address while sending email.
【Context】	【Static】 Set the mail content and sent it when the alarm occurs.

	【Dynamic】 A maximum of 99 bytes can be set, and the register of the sending message needs to be set

8.2.4 【Export Data】

The【Export Data】screen is as shown in the figure below, the meaning of each setting are listed below:

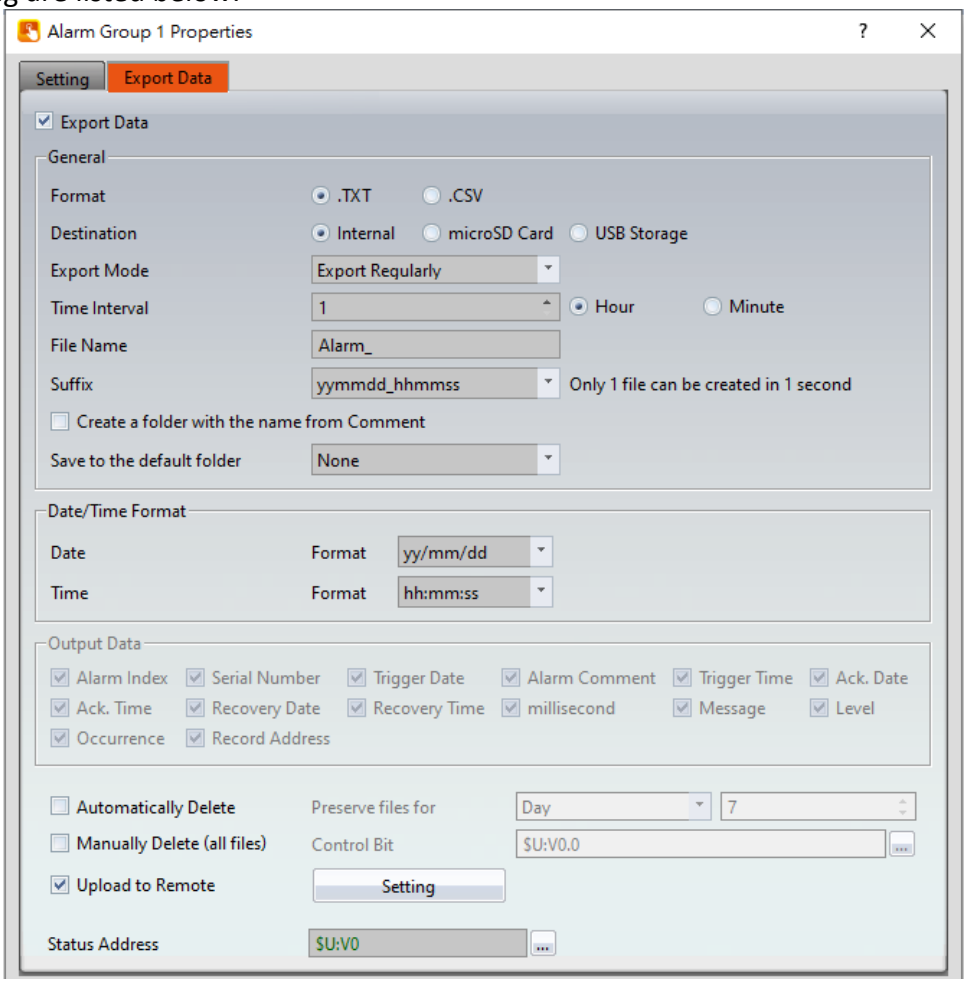


Figure 137【Export Data】Setting Screen of【Alarm】

Table 56【Export Data】Setting Properties of【Alarm】

Property	Description
【Export Data】	Set to enable the export function of the alarm data. Export setting items will appear below once this option is selected.
【General】	【Format】 Set the format of the export file; TXT file or CSV file can be selected.

【Destination】
Set the destination of the exported file: internal, microSD card or USB storage device can be selected.
If the output destination is internal storage, you can use FTP to connect to the HMI to read the stored file.

【Export Mode】
Set the time to export the file. If【Export Regularly】is selected, the alarm occurrence data saved by【Alarm】will be exported according to a set interval. If【Triggered by Bit】is selected, the alarm occurrence data saved by【Alarm】will be exported when the set bit is triggered.

【Time Interval】
Set the time interval between each export of the alarm occurrence data saved by【Alarm】; the time interval can be set on the right and the time step can be hours or minutes. This setting item will appear when the【Export Mode】is set as【Export Regularly】.

【Trigger Bit】
Set the control address to export the alarm occurrence data saved by【Alarm】. This setting item will appear when【Export Mode】is set as【Triggered by Bit】.

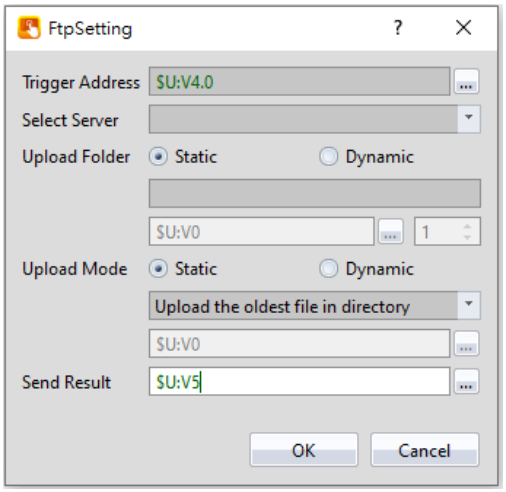
【File Name】
Set the name of the exported file; the file name of the exported file name includes the date and time the file was saved (for example: Alarm_140519_151735.txt).

【Suffix】
Set the name of the exported file, such as yymmdd_hh, the name of exported file only dates and hours (Example: DataLog_140519_17.txt)
This setting also provides export archive mode,
If the suffix selected is "yymm", it would produce one file per month,
If the suffix selected is "yymmdd", it would produce one file per day,

	If the suffix select "yymmdd_hh", it would produce one file per hour, If the suffix selected is " yymmdd_hhmm", it would produce one file per minute, If the suffix selected is " yymmdd_hhmmss", it would produce one file per second, If the suffix to select "no", one file includes all data. 【Create a folder with the name from comment】 If this option is checked, the name of the folder will be name from【Setting】【Comment】, for example, comment temperature, the original Group_1 folder will be changed to the temperature folder, which is originally alarm \ Group_1 will become alarm \ temperature. 【Save to the default folder】 There is none and folder created monthly two opitons, if choose none then will not create another folder, for example, alarm \Group_1\ Alarm _170403. csv. if choose folder created monthly then will create another monthly folder each month, for example, alarm \Group_1\201704\ Alarm _170403.csv.
【Date/Time Format】	【Date】 Set the display format of the date when exporting file. 【Time】 Set the display format of the time when exporting file.
【Output Data】	【Output Data】allows you to choose which items to export. You can select whether the export file will contain the alarm index, serial number, trigger date, alarm annotation, trigger time, confirmation time, recovery time, message, level, number of occurences, and record address.
【Automatically Delete】	Check if you want to automatically delete the exported file. 【Preserve files for】 For example, if you set 7 days, the HMI will check whether there are files over 7 days according to the calendar in the early morning of each day, and those files will be deleted.
【Manually Delete (all files)】	Set the control bit to delete the files manually. 【Control Bit】 Set a bit as trigger control, delete when on, and automatically turn back to off after finish deleting.

【Upload to Remote】

Enable ch4.5-【FTP Client】function then this option can be seen.



【Trigger Address】

Set a bit to trigger uploading.

【Select Server】

Click the drop-down menu to select the server to upload

【Upload Folder】

Fill in the path where the remote server is stored, if not filled in, it will be stored in the root directory of the server

【Upload mode】

There are 7 upload modes for【Static】, which will be described together with【Dynamic】below

Setting Value(INT)	Description
-10	Upload the oldest 10 files in directory
-5	Upload the oldest 5 files in directory
-1	Upload the oldest file in directory
0	Upload all files in directory
1	Upload the lastest file in directory
5	Upload the lastest 5 files in directory
10	Upload the lastest 10 files in directory

【Send Result】

Set the address of the execution result display, the data type is【INT】,

Success: 1 / Failure: -1

【Status Address】	Set the save address for error codes.

Error Code	Description
0	No Error
1	Read Error
2	Write Error
5	Open Error
100	Not enough storage space

8.3 Alarm Application Example

This section explains the application examples of the【Alarm】function and its setting procedure.

8.3.1 Send Email when Alarm Occurs

This chapter will explain when the alarm occurs, how to let user to send email through HMI, instantly send alarm messages to operators or set up e-mail recipients, and attach some informations to let operators get more messages, for the major problems happening on the equipment, it can be processed and maintained immediately.

Setting steps as follow:

Step 1 : In order to send an email when an alarm occurs, set the【SMTP】function first.

In the【System】window of the【Project Explorer】on the left of FvDesigner, click【Servers】, enter the【Servers】setting page, switch to【SMTP】page, and enable【SMTP】, figure as shown below.

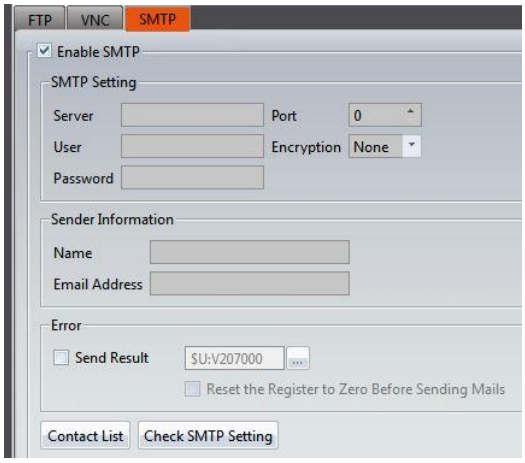


Figure 138【SMTP】Setting window

Step 2 : In this example, we use Gmail Server, set the【Server】to smtp.gmail.com,

set the【Port】to 465, set the【Encryption】mode to SSL, and fill in the【User】's e-mail address and the user's email password in【Password】field.【User】and【Password】should be filled in with your actual name and password, as shown below.



Figure 139 Server Setting Window in SMTP Setting

Step 3 : Fill in the【Name】and【Email Address】in the sender's properties. Please fill in with your actual name and password, as shown below.



Figure 140 Sender Information setting in SMTP Setting

Step 4 : Fill in the【Contacts】and【Groups】. Please fill in with actual name and password, as shown below.

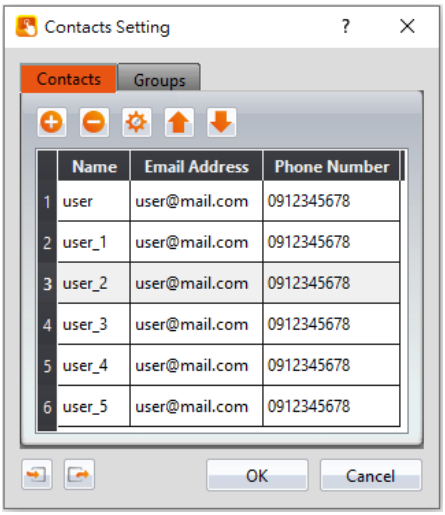


Figure 141 SMTP contacts setting window

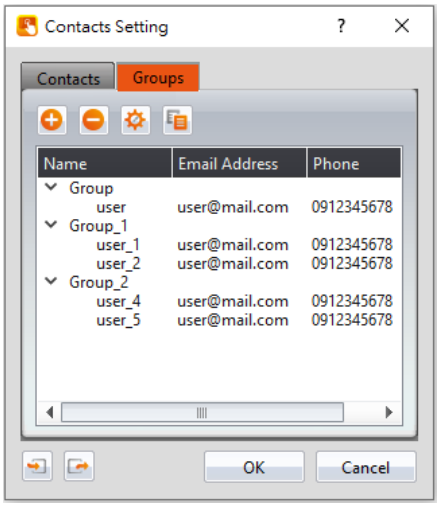


Figure 142 SMTP group setting window

Step 5 : In order to send an email attach with video input screenshot when an alarm occurs. Therefore, first set the【Video Input】function, click【Link】in the【System】window in the【Project Explorer】on the left of FvDesigner to switch to【Video Input】paging, and check the【Enable USB Camera】and【Auto Connect to Camera】function, as shown below

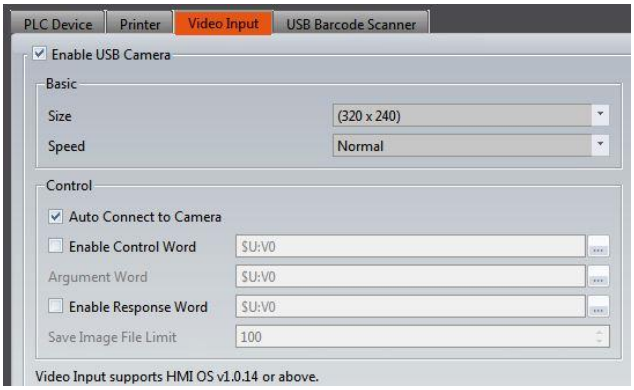


Figure 143【Video Input】setting window

Step 6 : Click the【Add】button to add an alarm group and edit the alarm message and PLC address, as shown below.

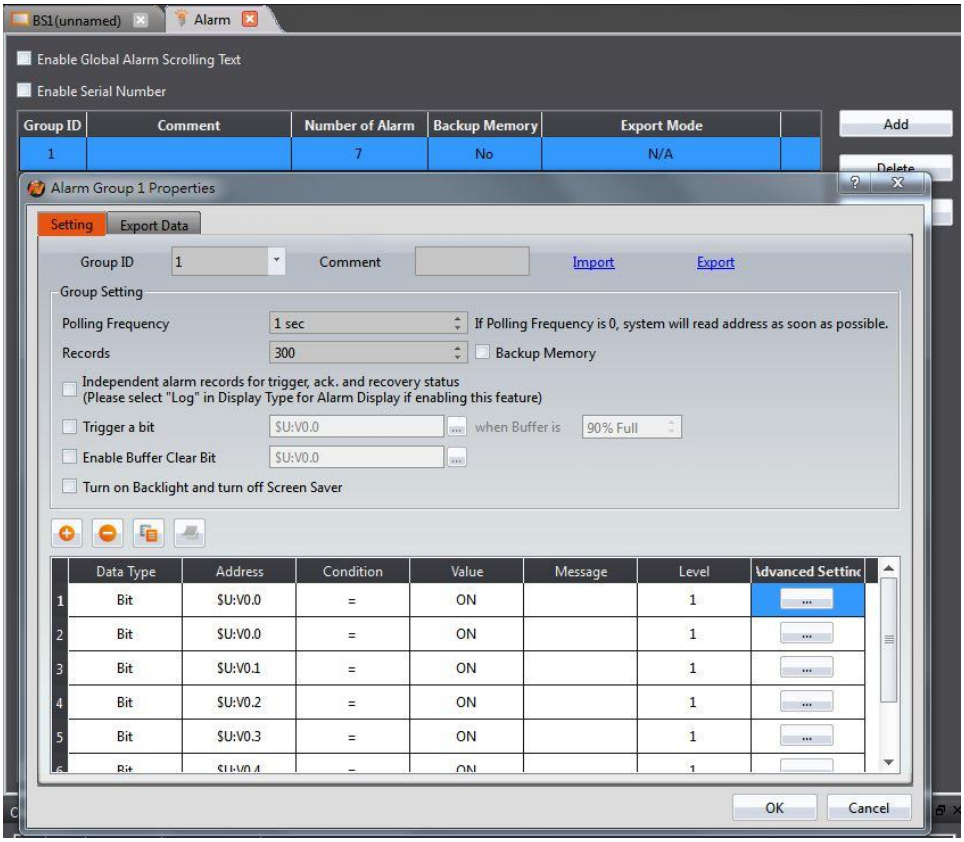


Figure 144【Alarm】message editing

Step 7 : Click the【Advanced Setting】button to send email alarm messages, as shown below.

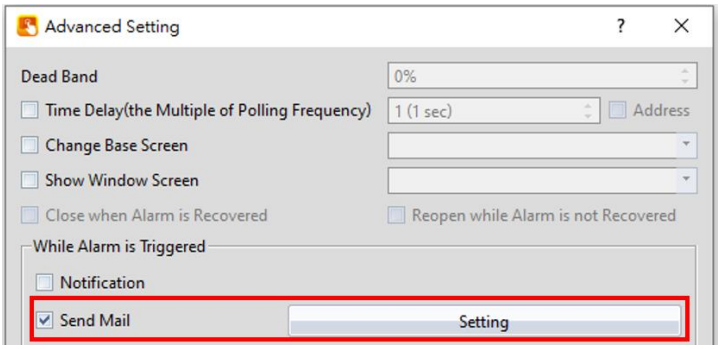


Figure 145 Alarm【Advanced Setting】setting window

Step 8 : Click on the drop-down menu on the right of the【Recipent】, select the group of email recipients, and check the【Attach Screenshot】, 【Attach Image from Video Input】,【Time】,【Message】options, and fill in the email context, as shown below.

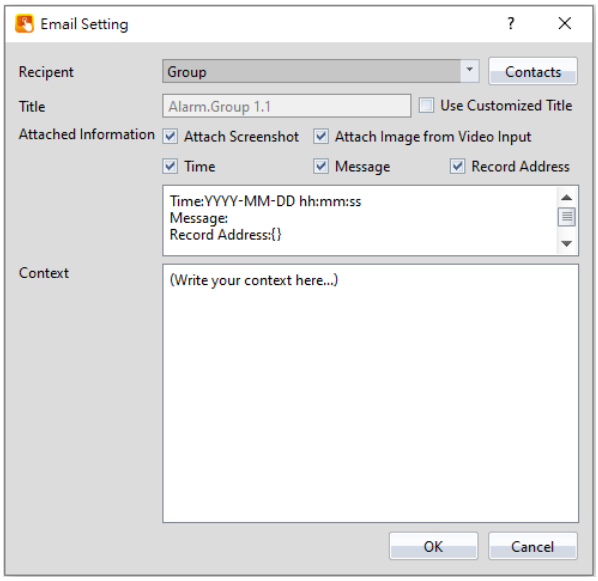


Figure 146【Email Setting】window

Step 9 : After compiling the project, download it to HMI and enter the HMI system settings. Click【Ethernet】to edit the DNS of the domain, as shown below.

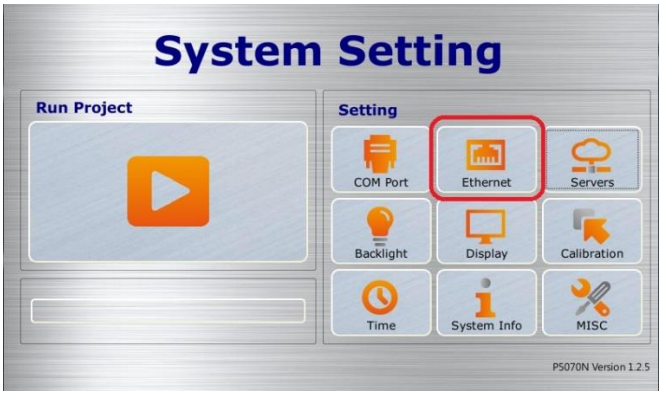


Figure 147【System Setting】window

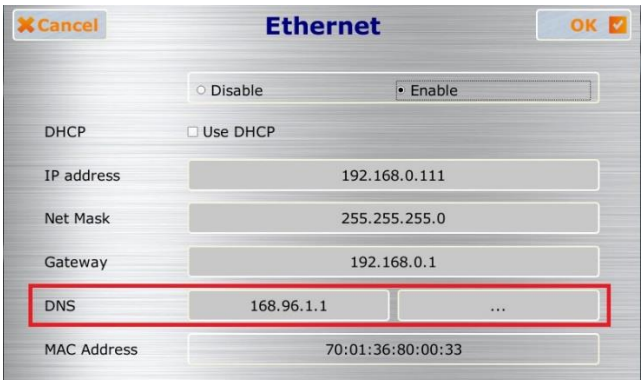


Figure 148【Ethernet】setting window

Step 10 : When this alarm occurs, the recipient will receive the mail, as shown below.

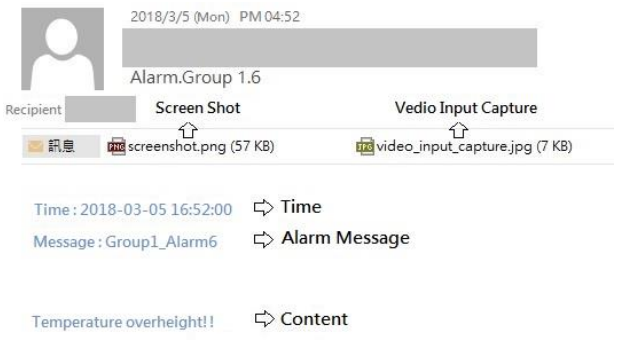


Figure 149 Recipient received mail when the alert occurred

8.4 【Sync Data】

Synchronize the alarm data from the database. When enabled, the data will be automatically read from the database when the connection is successful. If you want to view it in the【Alarm Display】, select【Database】in the【Display Type】of the【Alarm Display】.

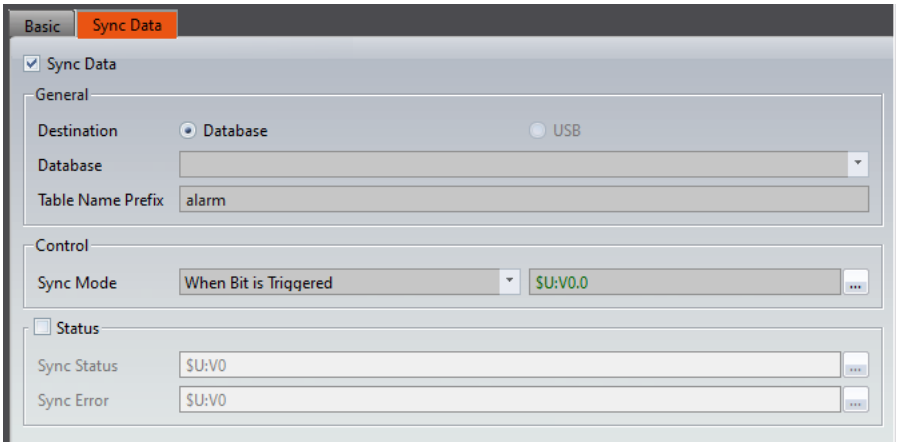


Figure 150【Alarm】【Sync Data】Setting Page

Table 57【Alarm】【Sync Data】Property Setting Page

Property	Description
【Sync Data】	Set whether to enable the data sync function. After enabling, the setting items will appear below. Note: If enable this function, needs to enable serial number as well.
【General】	【Destination】 Set the synchronize destination 【Database】 Set the synchronize database

<table>
<tr><td></td><td>【Table Name Prefix】
Set the generated table name of the after synchronization. If set name “alarm” as the figure above, then will generate two tables: alarm_data and alarm_data_format.
<table><tr><th>Table Name</th><th>Description</th></tr><tr><td><Customized Name>_data</td><td>Store the data of the Alarm</td></tr><tr><td>< Customized Name >_data_format</td><td>Store the setting of the Alarm(Use for internal system)</td></tr></table>Note: When the Alarm setting has changed (but the table name is not changed), after downloading to the HMI, the synchronized data table in the database needs to be deleted first then the new alarm will take effect.</td></tr>
<tr><td>【Control】</td><td>【Sync Mode】
Set the timing of synchronizing data to the database, including When Buffer is Full, When Bit is Triggered, Daily Synchronization, and Sync Regularly.</td></tr>
<tr><td>【Status】</td><td>【Sync Status】
Set the storage address of the status
<table><tr><th>Value</th><th>Status Description</th></tr><tr><td>0</td><td>Unconnect</td></tr><tr><td>1</td><td>Connecting</td></tr><tr><td>2</td><td>Connected</td></tr><tr><td>3</td><td>Synchronizing</td></tr></table>【Sync Error】
Set error code storage address
<table><tr><th>Value</th><th>Status Description</th></tr><tr><td>0</td><td>No error</td></tr><tr><td>1</td><td>Unkown error</td></tr><tr><td>2</td><td>Database connection failed</td></tr><tr><td>3</td><td>Insufficient access authority</td></tr><tr><td>4</td><td>Database name error</td></tr><tr><td>5</td><td>Format error</td></tr><tr><td>6</td><td>Table connection failed</td></tr><tr><td>7</td><td>Build table failed</td></tr><tr><td>8</td><td>Write table failed</td></tr></table></td></tr>
</table>

9. Recipe

In practical applications, settings with similar properties or behaviors but have different data contents for parameters are frequently used on equipment for manufacturing processes or actions; the collection of these parameter contents is called Recipe. Excellent recipe management helps increase engineering or production efficiencies.

9.1 Recipe Data Flow

Before we start explaining the data flow of recipes on HMI, we must first understand what recipe group files, recipe groups and recipes are.

Recipe

For instance, if a machine is able to produce bread and cakes, and their ingredients are both flour, eggs, butter and chocolate, the ingredients can be viewed as the parameters of the machine. However, because the ratio of ingredients for making bread is different from making cakes, the ingredient ratios of the two can be made into two sets of parameters: one for making bread and one for making cakes. The two sets of parameters described above are two different recipes; and every recipe will have a unique number.

Recipe Group

A group of recipes that have the same parameters is called a Recipe Group; take the example above for instance, the two recipes (bread and cake) can form a Recipe Group. The recipe function allows users to edit multiple recipe groups, and every recipe group will have a unique Recipe Group ID. All the recipes in the recipe group will have a unique number starting from 0. (For example, the number of bread is 0 and the number of cake is 1)

Recipe Group File

There is the common format csv file which the user can use text editors on their own computers or the Recipe Editor in the recipe function to edit the csv file. A recipe group file saves all the data of a recipe group, including all the parameter names and parameter values in the recipe.

Recipe Data Flow

When projects are executing on the HMI, all of the parameter data are saved in the recipe group file first, and the user can use the function switch object to import the file into the HMI. Complete parameter contents can be seen if the project has the recipe table object.

There is a buffer in the HMI used to save the data of the current recipe; which recipe to save in this buffer is determined by the Control Address of Recipe No., and the Control Address of Recipe No. is set in the recipe function. Please note that no matter what the Recipe No. currently is, once the import file function is used, the Recipe No. will be reset to 0.

The export function can be used to export the recipe group of the HMI into the recipe group file if the user changed the parameter data of the recipe group, and the contents in the original recipe group file will be overwritten.
The function switch object can be used to write the contents of the current recipe of the HMI to the target address (usually the PLC controller), and it can write the data of the target address into the current recipe of the HMI.

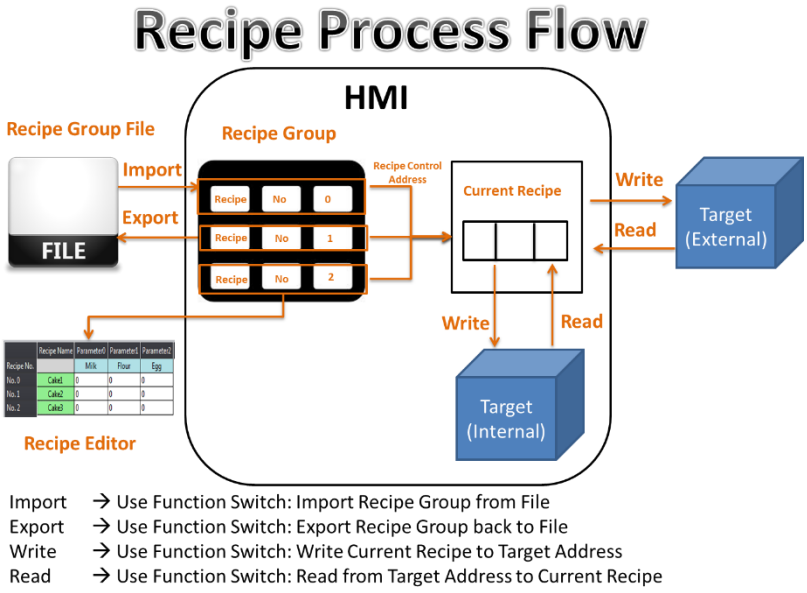


Figure 151 Recipe Data Flow

The recipe function can be found by clicking【Recipe】in the【Functions】window of【Project Explorer】located on the left side, to enter【Recipe Group List】.

Note: Each model of HMI has a different maximum number of recipes. For example, the P5 series has a maximum of 20.

The【Add】or【Delete】button on the right can be clicked to add a new recipe group or delete the selected recipe group; items in the recipe group list can also be double-clicked to edit the selected recipe group. On the left side of every recipe group in the recipe group list has a unique ID. This is called the recipe group ID.

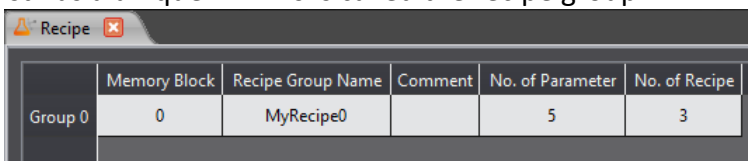


Figure 152 Recipe Settings Screen

【Recipe】in the【Insert】tab function group of the Ribbon workspace can also be clicked to add a new recipe group directly and enter the【Recipe Group Properties】editing page. The new recipe group will be added after pressing the【OK】button.

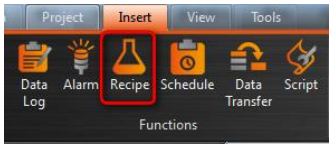


Figure 153 Insert Recipe Screen

The following are detailed explanations of the【Recipe Group Properties】.

9.2 Recipe Group Properties

9.2.1 【General】

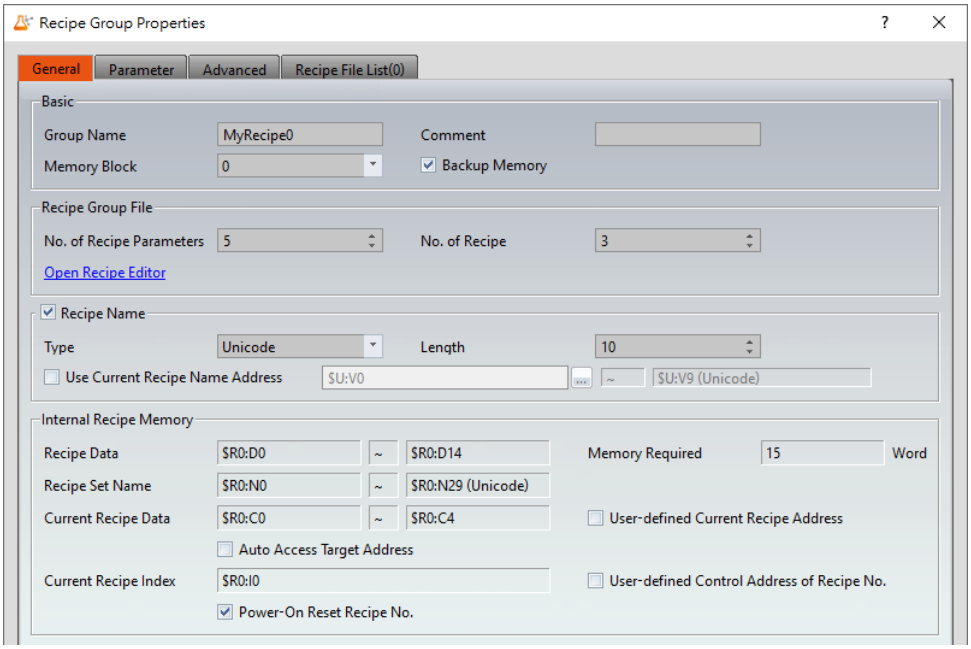
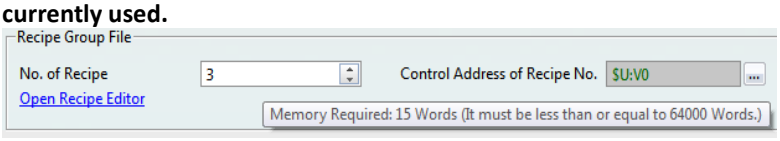


Figure 154【General】Screen of【Recipe】

Table 58【General】Properties of【Recipe】

Property	Description
【Basic】	【Group Name】 The name of the recipe group. 【Comment】 Comment describing this recipe group. 【Memory Block】 The number of the buffer area of this recipe group, the number of each recipe group is different. 【Backup Memory】

	Select to save the recipe data of the HMI into the backup memory of the HMI when the power to the HMI is interrupted in order to avoid loss of data.
【Recipe Group File】	【No. of Recipe Parameters】 Set the number of parameters for this recipe group. 【No. of Recipe】 Set the number of recipes for this recipe group. **Note: The memory size of every recipe group cannot exceed 6291456 words, which means that (the total number of words for every parameter) x (the number of recipes) ≦ 6291456. If the user is uncertain whether the limit has been exceeded, the user can move the mouse cursor onto the text and a tooltip will tell the user how many words are currently used.**  【Open Recipe Editor】 The recipe editor will appear, allowing the user to add a new recipe group file when this button is pressed or edit a recipe group file saved on the PC storage. **Note: When using the recipe editor to modify an existing file, if the parameter name is not same as the original, a warning window will pop up to ask whether to overwrite.** **When you use the function of simulation, the recipe group file will be put in the path: C:\Users\UserAccount\Documents\MERITEK\FvDesigner\run\storage \inte rnal\recipe**
【Recipe Name】	【Recipe Name】 Check whether to enable the recipe name function. 【Type】 Set the type of recipe name to Ascii or Unicode. 【Use Current Recipe Name Address】 Check to specify the address and length of the recipe name, when the recipe group changes, this address will display the corresponding recipe name, or you can use this address to modify the name of the current recipe group, when【Type】is selected as【Ascii】, because a register contains 2 Ascii, for example,【Length】is set to 5, so a total of 3 registers will be occupied, and when【Type】is selected as【Unicode】, a

	register will contain 1 Unicode, for example【Length】is set to 5, so a total of 5 registers will be used.
【Internal Recipe Memory】	【Recipe Data】 Display the address range used by the recipe group data in the internal memory area of the HMI 【Memory Required】 Display the number of words occupied by the recipe group data 【Recipe Set Name】 Display the address range used by the recipe name in the internal memory area of the HMI 【Current Recipe Data】 Display the address range of the current recipe data in the internal memory area of the HMI 【User-defined Current Recipe Address】 If you select the option to define the current recipe data address, the user can decide which address the buffer memory should start from **Note: This address can only use the internal register** 【Auto Access Target Address】 If you check this option, when the current recipe data is changed, the data will be automatically written into the 【target address】 【Current Recipe Index】 The register data of this address is a 16-bit UINT. This integer is used to represent the number of the current recipe. The recipe used by the recipe group when the HMI is executing is the current recipe. 【User-defined Current Recipe Address of Recipe No.】 User can decide the current recipe number control address by himself, instead of using the recipe register configured by the system default **Note: The recipe number control address cannot be the same as the current recipe start address** 【Power-On Reset Recipe No.】

	If check the box, when HMI restarts will reset the【Control Address of Recipe No.】to 0, that is, the group 0, the default is checked; if you do not check this option, when HMI restarts will not reset the【Control Address of Recipe No.】to 0, which means that the recipe number has a power-off retention. In addition, the internal memory V of the HMI has no power-off retention, so when the【Control Address of Recipe No.】is set to the internal memory V of the HMI, even if it is not checked, it will not power-off retention.

9.2.2 【Parameter】

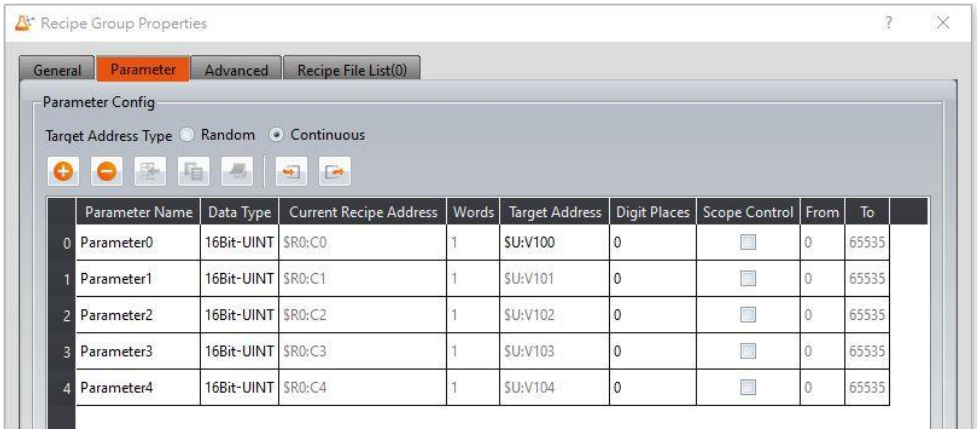


Figure 155【Parameter】【Recipe】settings

Table 59【Parameter】【Recipe】properties settings

Field	Description
【Parameter Config】	【Target Address Type】 【Continuous】 The target(usually PLC) address can only be set for the first parameter of in the table below. The addresses of the other parameters will be filled in consecutively in memory and the user cannot modify them. 【Random】 The user can set the target address for every parameter, but the addresses must be unique.  【Add】 Add a new item at the bottom of the parameter table

【Delete】

Delete the selected parameter, if not selected, delete the last one

【Insert】

Add one under the selected parameter

【Copy】

Copy the selected parameter

【Paste】

Paste the copied parameter

If is select a row, the parameter name and other parameters except the current recipe address will be overwritten.

If is not select a row, the copied parameters will be pasted in the last row.

【Import】

Import the recipe parameter file. The content has a fixed format. Be sure to export the file first and then modify the file then import.

When importing, it will check for validity, and if there is an error, a warning will pop up.

【Export】

To export the recipe parameter file, it should be noted that only the content in the red box can be changed.

BEGIN_RECIPE_PARAMETER_BLOCK							
Parameter I	Parameter I	Data Type	Words	Target Add	Decimal Pl	Scope Con	From	To
Parameter0		16Bit-UIN	1	$U:V100	0	N	0	65535
Parameter1		32Bit-INT	2	$U:V101	0	N	-2.1E+09	2.15E+09
Parameter2		32Bit-FLO	2	$U:V103	0	N	-3.40E+38	3.40E+38
Parameter3		Ascii String	1	$U:V105	0		NA	NA
Parameter4		Unicode St	1	$U:V106	0		NA	NA
END_RECIPE_PARAMETER_BLOCK								

The following are the explanations for parameter settings.

【Parameter Name】

The parameter name cannot be blank and each parameter should have a unique name. It can be entered directly or selected by【Font】.

【Data Type】

Available selections include 16Bit-BCD, 16Bit-INT, 16Bit-UINT, 16Bit-HEX, 32Bit-BCD, 32Bit-INT, 32Bit-UINT, 32Bit-FLOAT, 32Bit-HEX, Ascii-String, Uniucode (Simplified

Chinese), Uniucode (Traditional Chinese), Unucode (Others).

【Current Recipe Address】

The current recipe address of the parameter is determined by the start address set by the user. The user cannot change it.

【Words】

If the data type is 16 bits, it will occupy 1 word, and if the data is 32 bits, it will occupy 2 words. If the data type is Ascii-String or Uniucode, the user can decide how many characters this parameter occupies, and each word occupy 2 bytes.
Each Ascii-String occupy 2 words.
Each Unicode occupy 1 word.

【Target Address】

Set the address of the target register (usually PLC).

【Digit Places】

Set the position of the decimal.

【Scope Control】

Allows the user to set a value range for this parameter. If not selected, the default value range of the parameter will be the range set by the【From】and【To】columns.

【From】

Set the minimum value of this parameter; this value cannot be less than the absolute minimum value for the data type. The default value for this field is the absolute minimum value.

【To】

Set the maximum value of this parameter; this value cannot be greater than the absolute maximum value for the data type. The default value for this field is the absolute maximum value.

Data Type	Absolute Minimum Value	Absolute Maximum Value
16Bit-BCD	0	9999
16Bit-INT	-32768	32767
16Bit-UINT	0	65535

	16Bit-HEX	0	FFFF
	32Bit-BCD	0	99999999
	32Bit-INT	-2147483648	2147483647
	32Bit-UINT	0	4294967295
	32Bit-HEX	0	FFFFFFFF
	32Bit-FLOAT	-3.4E+38	3.4E+38

9.2.3 【Advanced】

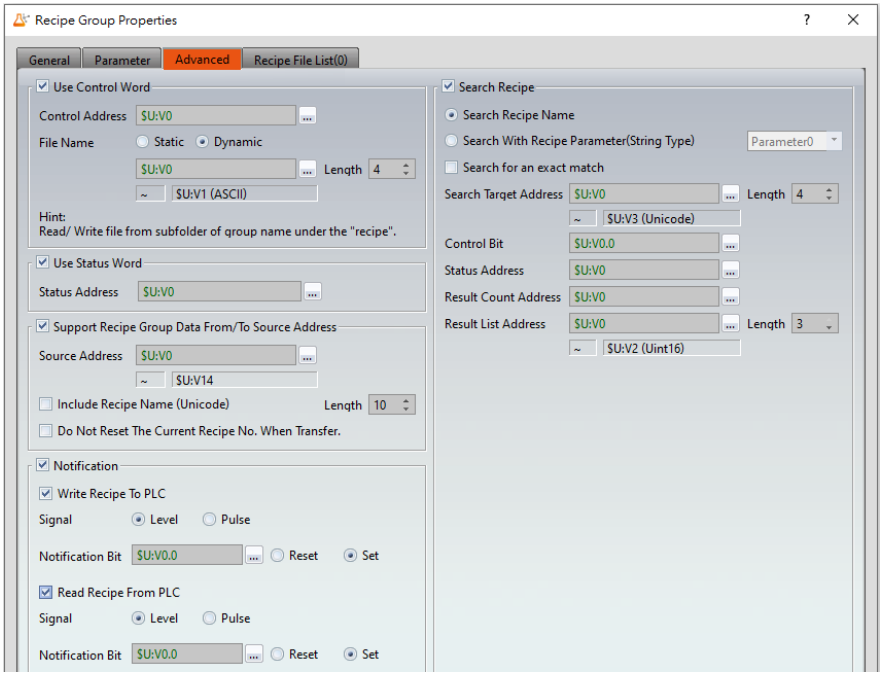


Figure 156【Advanced】【Recipe】Settings

Table 60【Advanced】General Settings

Field	Description
【Use Control Words】	Use the control word to control the recipes actions. Including; reading, or writing data from/to the PLC, editing, and other functions. 【Control Address】 Set the control address to a specific address that will trigger the function **Note: After the control address is triggered, it must be reset to zero to do the next function control.**

#	Controls the value of the address (Hex)	Features

1	0010h	The recipe data is transferred to the HMI
2	0011h	MicroSD card recipe data is transferred to the HMI
3	0012h	USB port recipe data is transferred to the HMI
4	0020h	HMI recipe data is stored in the interface
5	0021h	HMI recipe data is stored in the MicroSD card
6	0022h	HMI recipe data is stored in a USB storage device
7	0040h	The HMI recipe data is transferred to the target address (Usually the PLC address)
8	0080h	The recipe data of the target address (Usually the PLC address) is transferred to the HMI
9	0100h	Add a set of recipes to the specified recipe group, such as the current group 3 recipe. When this signal is triggered, a new set of recipes will be added and the new group will be group 3. The former group 3 will become group 4.
10	0101h	Add a set of recipes under the specified recipe group, such as group 3. When the signal is triggered, a new set of recipes is added. In this case, the recipe group is 4.
11	0102h	Copies a set of specified recipes on a specified recipe group, such as group 3. When the signal is triggered, the recipe of group 3 will be copied to a set of recipes and will become the new group 3. The former group 3 will become group 4.
12	0103h	Copies a specific set of recipies under the recipie group, such as a recipe currently in group 3.

		When the signal is triggered, replicates group 3's recipes with a set of recipes from group 4.
13	0104h	Deletes the current recipe group
14	0200h	Read the parameter data from the source address then write to the recipe group storage space, this function transfers the entire recipe group data.
15	0400h	Write the parameter data of the recipe storage space to the source address, this function transfers the entire recipe group data.

【File Name】

Two types of file names,【Static】and【Dynamic】.

【Static】allows you to set the recipe below the checkbox.

【Dynamic】allows you to set the string length. The maximum amount of characters is 16, the contents of the string affect the file name.

Note: No need to enter ".csv" by yourself.

【Use Status Word】

Use the status word group to monitor the current state of the recipe processing.

【Status Address】

Set the status address to the following to achieve the desired status message, as show in the table below.

#	Value of the Status Address (Hex)	Features
1	0000h	Initialize
2	4000h	Busy
3	8000h	Success
4	0100h	Recipe data transfer to HMI has failed.
5	0101h	MicroSD card recipe data transfer to HMI has failed.
6	0102h	USB recipe data transfer to HMI has failed
7	0200h	HMI recipe data has failed to save

<table>
<tr><td></td><td>
<table>
<tr><td>8</td><td>0201h</td><td>HMI recipe data has failed to save to the MicroSD card</td></tr>
<tr><td>9</td><td>0202h</td><td>HMI recipe data has failed to save to the USB storage device</td></tr>
</table>
</td></tr>
<tr><td>【Support Recipe Group Data From/To Source Address】</td><td>Set whether to use the entire recipe group and source address to transfer data.

【Source Address】
Set the source address of the starting address. The software will automatically calculate the total number of addresses used and will prompt the user for the ending address.

【Include Recipe Name】
Set whether to include the recipe name when using the entire recipe group and the source address.

【Length】
Set the recipe name length.

【Do Not Reset The Current Recipe No. When Transfer】
When unchecked, this function will reset the【Control Address of Recipe No.】to zero after transmission.
After checking, the current selection will be kept.</td></tr>
<tr><td>【Notification】</td><td>Set whether to allow the recipe group to enable the notification function.
After enabled, the notification address can be set at the follow, and it will be notified when the function【Write Recipe To PLC】or【Read Recipe From PLC】is executed.</td></tr>
<tr><td>【Recipe Search】</td><td>Set whether to use the search recipe function. Use this function to search for the current recipe name or the recipe parameter column for a particular ASCII type.
【Search Recipe Name】
Use the search recipe name to search for the recipe. When the【Recipe Name】is not checked in the【General】, it will become【Search With Recipe Parameter】.

【Search with Recipe Parameter(String Type)】
Search for recipe parameters in Ascii or Unicode format

【Search with Recipe(String Type)】</td></tr>
</table>

Search for recipe parameters in Ascii or Unicode format

【Search for an exact match】

Search for recipes with the exact same parameters as entered.

【Search Target Address】

Search using text address' and character length, up to 20 bytes.

【Control Bit】

Search is initialized when the control bit changes from 0 to 1

【Status Address】

Shows the status of the current search. The following is a list of status addresses and results

#	The value of the status address (Hex)	Features
1	0000h	Initialize
2	4000h	Busy
3	8000h	Search action is complete

【Result Count Address】

Set the search result count address. After the searching is complete, the number of search results will be stored. If there is no seach, the number stored will be 0

【Result List Address】

Set the search result list address. After the searching is complete, a number that represents the temporary register is stored. The magnitude of the number is the maximum number of searches and the maximum number of recipes that can be set.

【Length】

It is the number of searchable items, and the maximum length can be set as【No. of Recipe】

9.2.4 【Recipe File List】

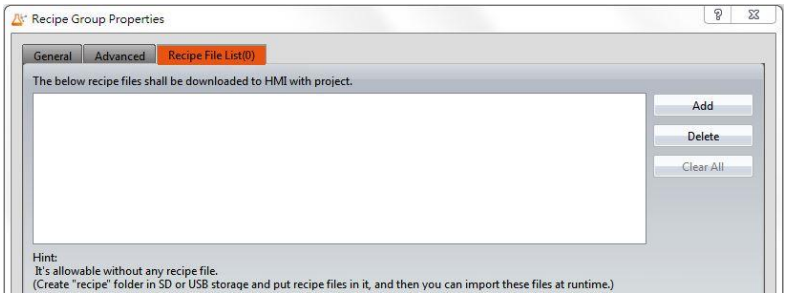


Figure 157【Recipe File List】Screen of【Recipe】

Table 61【General】Properties of【Recipe】

Property	Description
【Add】	Add an already existing recipe group file to the recipe file list.
【Delete】	Delete an item in the recipe file list.
【Clear All】	Delete all the items in the recipe file list.

9.3 【Recipe Memory】

The HMI system will allocate a dedicated memory area for each recipe group according to the【Memory Area No.】, so that users can directly access the data in the recipe group through the exclusive [recipe register], including: (n is【Memory Block No.】)

Recipe Data Memory---------- $Rn:D

Recipe Name Memory---------- $Rn:N

Current Recipe Data Memory------- $Rn:C

Current Recipe Name Memory----- $Rn:I

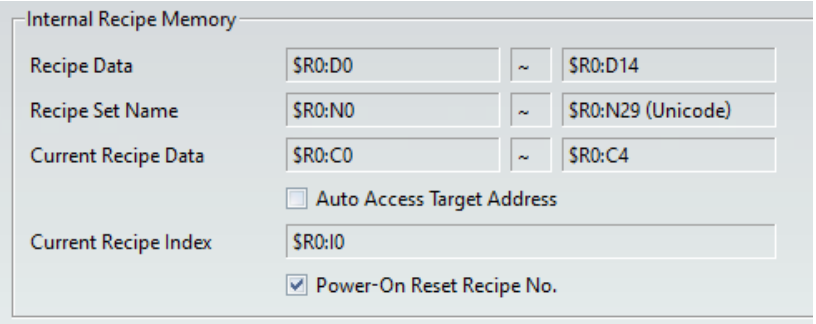


Figure 158 Recipe Memory

After the formula is created, the【Recipe Memory】can be read and written in various functions, such as using【Numeric Input/Display】to read.

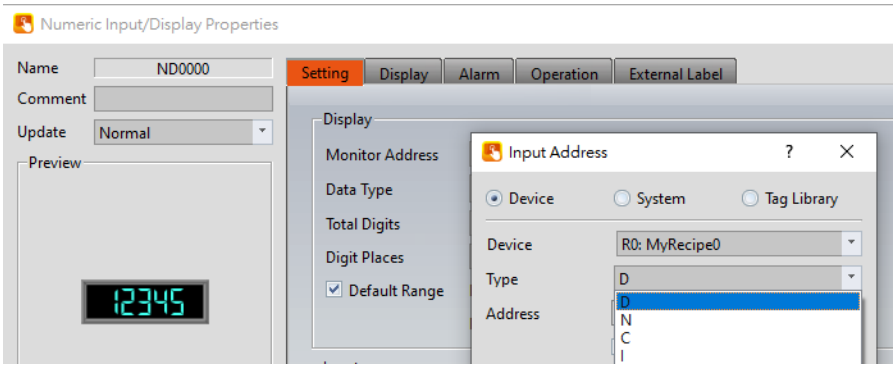
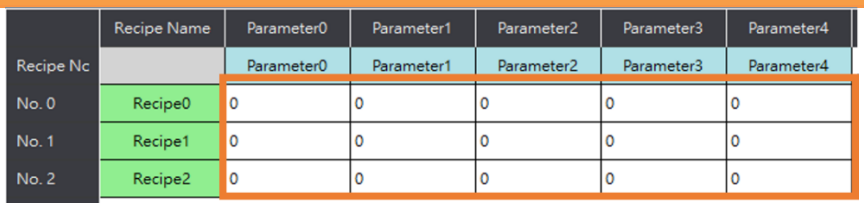
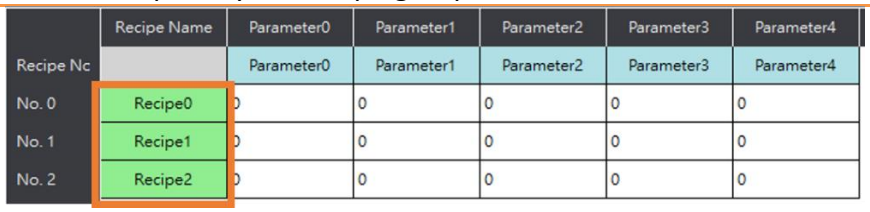


Figure 159 Recipe Memory Usage

Table 62 Recipe Memory

Property	Description
Recipe Data Memory 【$Rn:D】	 $Rn:D0~$Rn:Dm-1, n is【Memory Block No.】, m is the No. of words occupied by the recipe group data.
Recipe Name Memory 【$Rn:N】	 $Rn:N0~$Rn:Nm-1, n is【Memory Block No.】, m is the No. of words occupied by the recipe name.
Current Recipe Data Memory 【$Rn:N】	The address range of the current recipe data in the internal memory area in the HMI. $Rn:C0~$Rn:Cm-1, n is【Memory Block No.】, m is the No. of words occupied by the current recipe.
Current Recipe Name Memory 【$Rn:I】	The current recipe number address that in the address range of the internal memory area of the HMI. $Rn:I0, n is【Memory Block No.】.

9.4 【Recipe Editor】

This function allows users to add recipe group files or edit existing recipe group files. You can open this interface in【Open Recipe Editor】in the【Recipe Group Properties】【General】setting function, or click RecipeEditor.exe from the FvDesigner folder to open it.

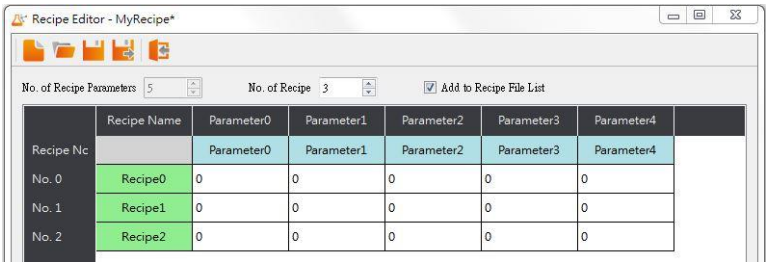


Figure 160 Open【Recipe Editor】from software

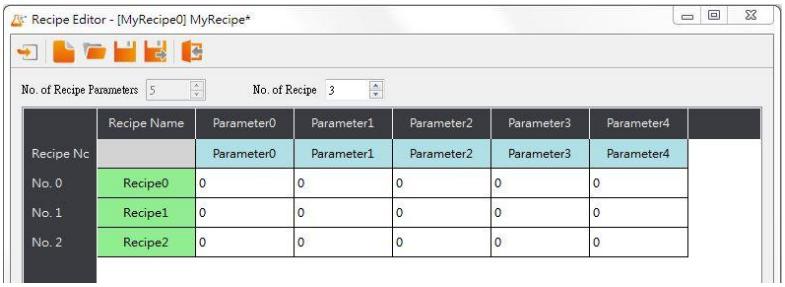


Figure 161 Open【Recipe Editor】from folder

Table 63【Recipe Editor】Functions

Property	Description
【Import Recipe Config】	It is visible when the editor is opened from the folder, and the recipe file (.rpcfg) exported by the software can be imported for editing.
【New Recipe】	Add a new recipe.
【Open Recipe】	Open an existing recipe file (.csv).
【Save Recipe】	Save the currently edited recipe group contents into a recipe group file. The user can select to save it as a csv file.
【Save Recipe As】	Save the currently edited recipe group contents into a new file; the user can select to save it as a csv file.
【Exit】	Exit the recipe editor.
【No. of Recipe Parameters】	The “No. of Recipe Parameters” cannot be set if the user is adding a recipe group file. The No. of Recipe Parameters can be set if the user is modifying an existing file.
【No. of Recipe】	Determine how many recipes this recipe group file has. A number will be automatically generated on the left side of the recipe.
【Add to Recipe File List】	Open the editor from software and the option can be seen. If checked, this file will be automatically added to the recipe file list after finishing editing.

Note:

Please note that when the user is editing the value of the parameters, this value cannot exceed the limit between the minimum and maximum value of this parameter, in which the data type of the

parameter usually defines the maximum/minimum value. However, the value set for the【Scope Control】will be referred to if the user selects【Scope Control】in parameter settings.
If this parameter is an Ascii String, the length of characters entered by the user cannot exceed the length configured for the parameter x2. If the parameter in the file opened by the user exceeded the restricted range, the background will be displayed in red.

9.5 【Recipe Table】

The【Recipe Table】is used to view or edit the contents of the recipe group. In addition, the user can decide to use a【Sub Switch】in the recipe table.【Sub Switch】allows users to load the data in the recipe group file into the【Recipe Table】or save the parameter contents in the【Recipe Table】into a recipe group file.

The【Recipe Table】object can be found in the【Recipe】category of the【Toolbox】to the right; it can also be found by clicking the icon in the【Object】group of the【Design】page on the Ribbon workspace. Please refer to the **Chapter 19.4.32–【Recipe Table】**for a detailed introduction to the properties of this object; the following is only an introduction to special properties and functions related to recipes.

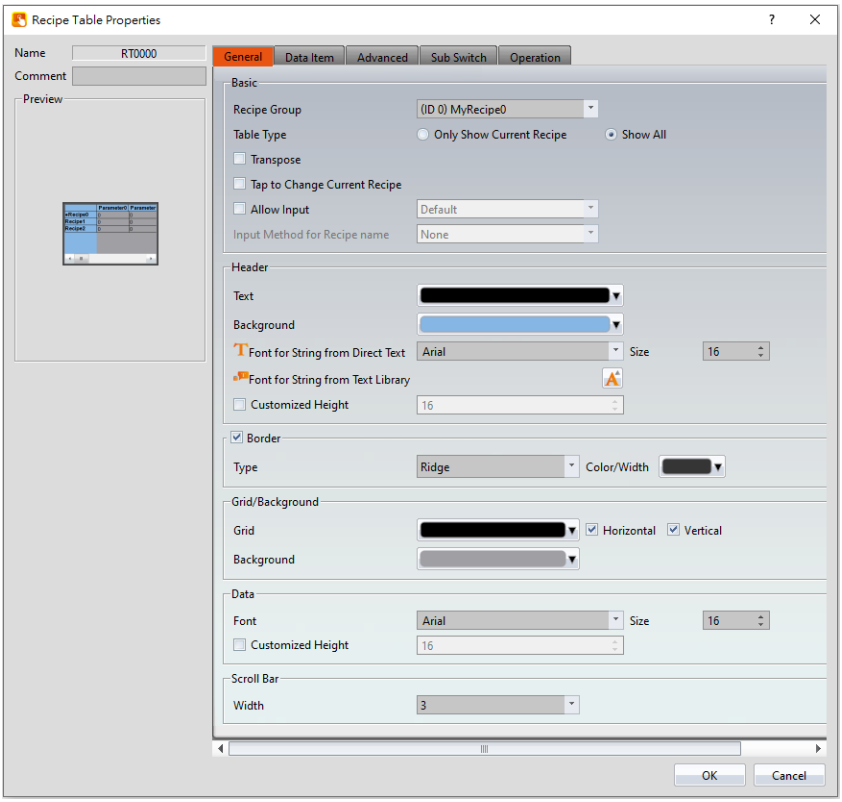
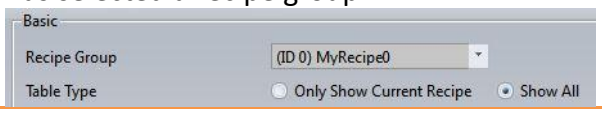
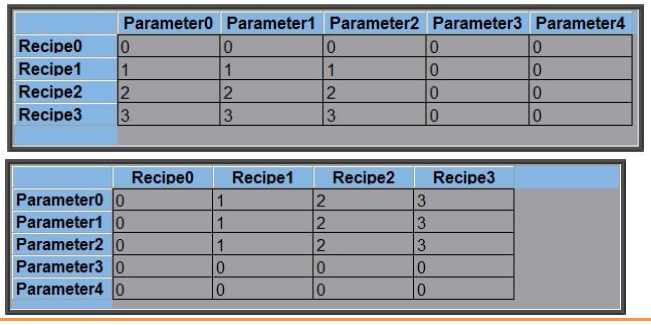
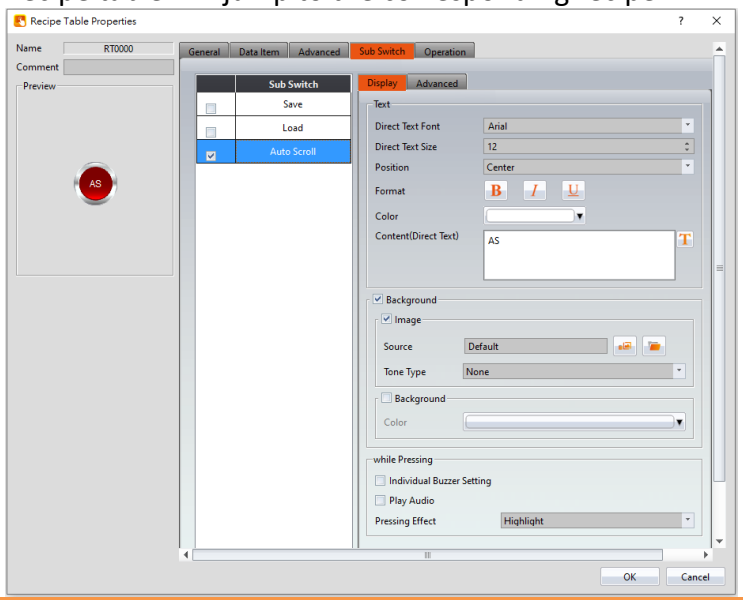


Figure 162【Recipe Table】Property Setting Screen

Table 64【Recipe Table】Functions

Property	Description
【Recipe Group】	The recipe group ID and recipe group name can be seen here if the user added a new recipe group in the recipe settings function. The【OK】button can only be pressed after the user has selected a recipe group. 
【Table Type】	【Only Show Current Recipe】 Display the current recipe according to the Control Address of the Recipe No. in recipe settings. The default value for index is 0. 【Show All】 Show all contents of the recipe group.
【Transpose】	Reverse the rows and columns. For example, row 1 in the original table becomes column 1 in the transposed table. 
【Tap to Change Current Recipe】	When checked, you can click the recipe header or item to automatically switch the current recipe to the clicked recipe.
【Allow Input】	The user will be able to change the parameter contents in the recipe table during execution if this option is selected. If【Function Switch】or【Sub Switch】in the Toolbox is also used, the user can save the value contents of the recipe table into a recipe group file, or change the parameter of the controller. 【Input Method for Recipe name】 Input methods includes【None】,【Pinyin(Simplified Chinese)】, and【Chewing(Traditional Chinese)】.
【Advanced】	【Use Filter】 ➢ Filter Recipe Name: Display the recipe group that is filter by recipe name. ➢ Filter Recipe Parameters(String Type): Display the recipe

	group that is filter by recipe parameters.
【Sub Switch】	If the【Save】or【Load】button in the【Sub Switch】page is selected, corresponding buttons will also appear on the top-right of the recipe table editing section screen when the【OK】button is pressed. 【Save】 Once the user clicks this button during execution, the parameter contents of the current【Recipe Table】will be saved onto the recipe group file in recipe settings. 【Load】 Once the user clicks this button during execution, the contents of this file will be loaded into the【Recipe Table】according to the recipe group file in recipe settings. 【Auto Scroll】 When the【Control Address of Recipe No.】has changed, the recipe table will jump to the corresponding recipe. 

9.6 【Recipe Selector】

The【Recipe Selector】is used to select a current recipe. The operator can only see the name of the recipe on the HMI and cannot know the contents of the recipe parameters. Therefore, the parameter data is confidential.

The【Recipe Selector】object can be found in the【Recipe】category of

【Toolbox】, it can also be found by clicking the icon in the【Object】group of the【Design】page on the Ribbon workspace. Please refer to the **Chapter19.4.31–【Recipe Selector】** for detailed introduction to the properties of this object; the following is only introduction to special properties and functions related to recipes.

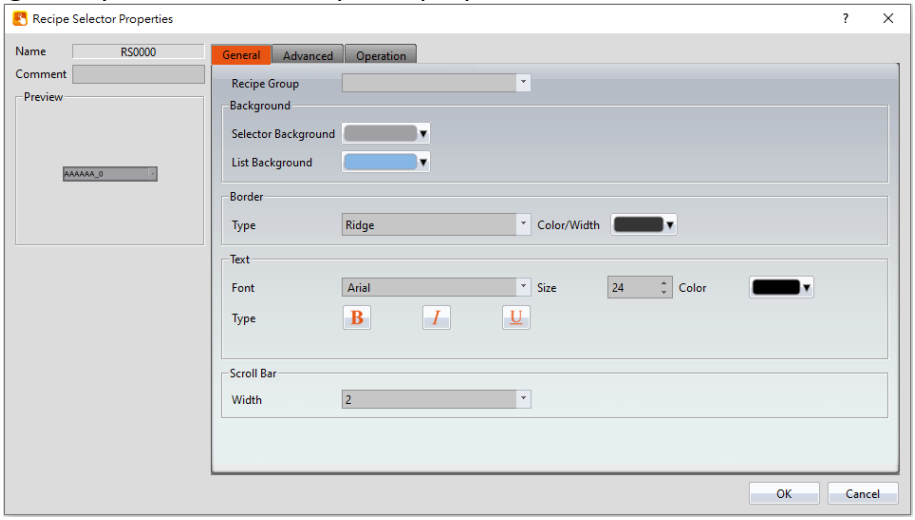


Figure 163【Recipe Selector】Property Setting Screen

Table 65【Recipe Selector】Functions

Property	Description
【Recipe Group】	【Recipe Group】 The recipe group ID and recipe group name can be seen here if the user added a new recipe group in the recipe settings function. The【OK】button can only be pressed after the user has selected a recipe group. 【Background】【Background Selector】 Set the background color. 【Background】【List Background】 Set the background color of the list.
【Advanced】	【Source】 Set the recipe selector's souce 【Recipe Name】 Default value. Use recipe name as recipe selector's data. 【Recipe Recipe(String Type)】 When the recipe parameter has ASCII String type, you can use

	the ASCII String type parameter as the data displayed of the recipe selector. 【Sort】 Set whether the recipe selector data is displayed in text order. 【Use Filter】 Use filter in dynamic mode, filter the needed options in the recipe selector by specifying the value or text of the【Filter String Address】, for example, the【Filter String Address】is R50, and R50=A, the recipe selector only the recipe group name with "A" text will be displayed

9.7 【Function Switch】

There are a few functions in the【Function Switch】component related to recipes; users can select these functions according to their needs. Please refer to the following table for detailed introductions to these functions.

The【Function Switch】object can be found in the【Lamp/Switch】category of the【Toolbox】to the right. Please refer to the **Chapter19.4.2.4-【Function Switch】** for detailed introduction to the properties of this object. The following is only introduction to special properties and functions related to recipes.

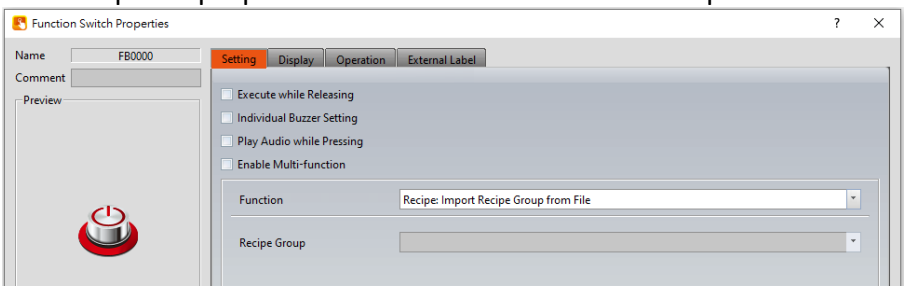
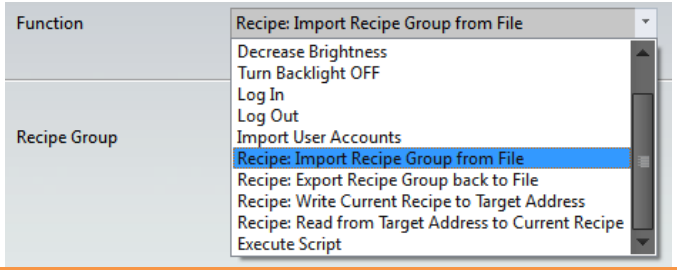


Figure 164【Function Switch】Property Setting Screen

Table 66【Function Switch】Recipe Functions

Property	Description
【Function】	【Recipe: Import Recipe Group from File】 Import the contents of the recipe group file. If a recipe table exists, the user will be able to see complete recipe group contents. If the register addresses of some displayed objects are the same as the current recipe address in the recipe settings, users will also be able to see the value changes of the displayed objects. A drop-down list will appear once this function is used; the user must decide which recipe group to use for this function

	switch. **Note: The current recipe of this recipe group will be set to Recipe No. 0 when this function is used.** 【Recipe: Export Recipe Group back to File】 Export the contents of the recipe group into a recipe group file. The user can choose to export a new file or overwrite the original recipe group file. A drop-down list will appear once this function is used; the user must decide which recipe group to use for this function switch. 【Recipe: Write Current Recipe to Target Address】 A drop-down list will appear once this function is used; the user must decide which recipe group to use for this function switch. The parameter value of the current recipe of the HMI will be written to the register of the target address according to the setting of this recipe group. 【Recipe: Read from Target Address to Current Recipe】 A drop-down list will appear once this function is used; the user must decide which recipe group to use for this function switch. The register contents of the target address will be read and the value will be written to the current recipe of the HMI according to the setting of this recipe group. 【Recipe: Add Default Recipe】 Add a set of recipes to or above the current recipe and switch the current recipe to the most recent recipe 【Recipe: Copy Current Recipe】 Copy the the current recipe and put it above or below the recipe you copied. 【Recipe: Delete Current Recipe】 Delete the current recipe and switch the deleted recipe group with the next recipe group. 【Recipe: Transfer Source Address to Recipe Group】 The source address parameter data is written to the recipe group. The source address can be set in the advanced tab of the recipe. The function the entire recipe group data. 【Recipe: Transfer Recipe Group to Source Address】

	The parameters of the recipe group are read and written to the source address. The source address can be set in the advanced tab of the recipe. The entire recipe group data is transferred. 【Recipe: Import Recipe group from File, then Transfer to Source Address】 After importing the contents of the recipe group file into the group storage space, the parameter data of the recipe group is read and written to the source address. The source address can be set in the advanced tab of the recipe. This function transfers the entire recipe group data. 【Recipe: Transfer Source Address to Recipe Group, then Export to File】 After the source address data is read, it is written to the recipe group. The contents of the recipe group are exported to the file. The source address can be set in the advanced tab of the recipe. This function sends the entire recipe group data. 
【Recipe Group】	Set the corresponding recipe group for this function switch.

9.8 Example

The following example can allow the users to better understand how to use the recipe functions and components related to recipes.

1. Adding a new recipe group in the recipe settings function. This recipe group uses 4 parameters and 3 recipes; please refer to the following figure for details on the settings:

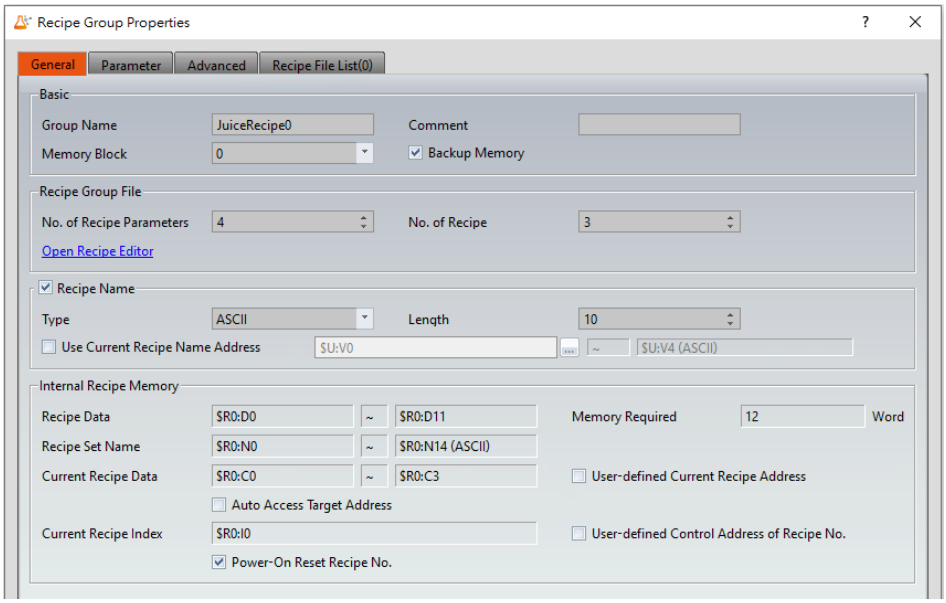


Figure 165 Recipe Settings Example 1

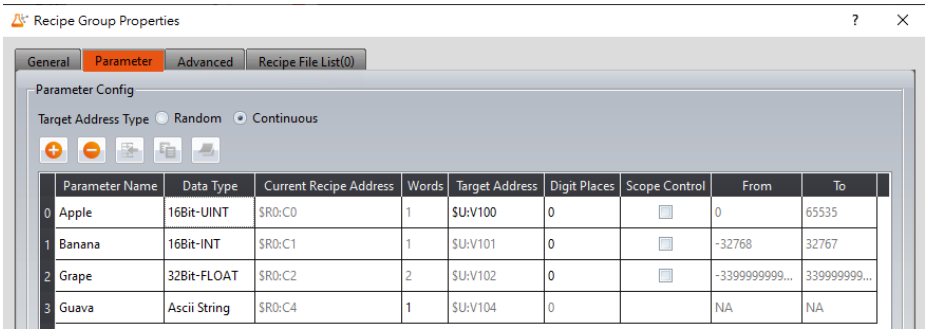


Figure 166 Recipe Settings Example 2

2. Press the【Open Recipe Editor】function and the【Recipe Editor】will appear on the screen; the parameter contents inside will be the same as the recipe settings, including the maximum and minimum value that the user will be able to input. Refer to the following figure for editing contents, and remember to save the file when editing is completed; please remember to check【Add to Recipe File List】.

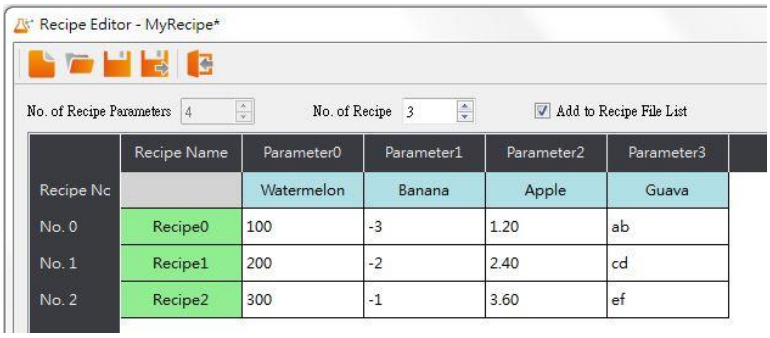


Figure 167【Recipe Editor】Example

3. Pull two【Recipe Table】from【Toolbox】to the editing section of the

screen, and select (ID 0) MyRecipe0 for【Recipe Group】. Please select【Only Show Current Recipe】for one of the recipe tables and【Show All】and【Allow Input】for the other recipe table.

4. Pull a【Recipe Selector】from【Toolbox】to the editing section of the screen, and select (ID 0) MyRecipe0 for recipe group.

5. Pull four【Function Switch】from【Toolbox】to the editing section of the screen, and select (ID 0) MyRecipe0 for recipe group. The functions of these four switches are【Recipe: Import Recipe Group from File】,【Recipe: Export Recipe Group back to File】,【Recipe: Write Current Recipe to Target Address】and【Recipe: Read from Target Address to Current Recipe】respectively. In order to avoid confusion, the text: Import, Export, 2PLC and 2HMI can be added to respective function switches.

6. Pull 6【Numeric Input/Display】and 2【Text Input/Display】from【Toolbox】to the editing section of the screen. The【Monitor Address】of these 8 objects corresponds to the【Current Recipe Address】and【Target Address】in recipe settings. The【Data Type】of the【Numeric Input/Display】object is also the same as the【Data Type】of the parameter. Set the maximum value and minimum value of these objects to provide a reasonable range.

7. Pull a【Numeric Input/Display】from【Toolbox】to the editing section of the screen. The【Monitor Address】of this object is the same as the【Control Address of Recipe No.】in recipe settings. Please also select【Allow Input】.【Max.】is 2.【Min.】is 0 (because there are only 3 recipes, therefore the values used is 0~2).

8. Drag 9【Numeric Input/Display】and 6【Text Input/Display】from the【Toolbox】to the workspace. The【Monitor Address】of these 15 objects correspond to the【Recipe Data Address】and【Recipe Name Address】of the【Recipe Memory Area】. The【Data Type】of the【Numeric Input/Display】object should also be consistent with the【Data Type】of the parameter. Please also set the maximum and minimum values of these objects within a reasonable range.

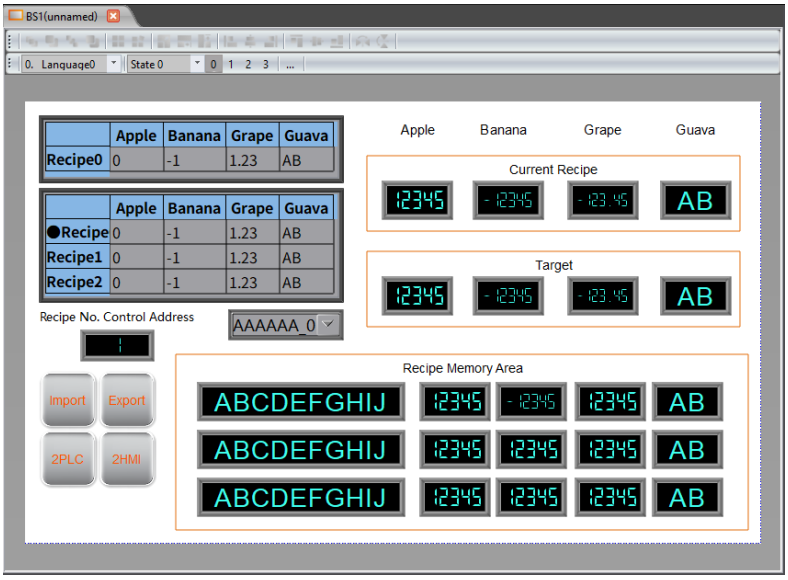


Figure 168 Example Screen

9. We can use the【Simulation】function once the project is created to simulate the behavior of this project in the HMI on the computer. Click【Simulation】in the【Project】function tab of the Ribbon. It will ask the user to build the project first before executing the function. The starting simulation screen is as shown below:

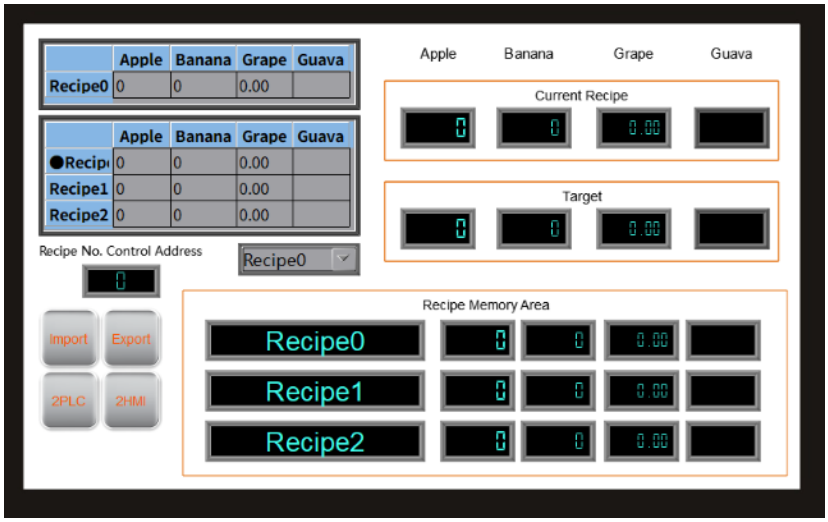


Figure 169 Simulation Screen 1

10. Click the import function switch; this operation will read the contents of the recipe group file into the HMI, including the current recipe and recipe table. If the monitored addresses of the displayed objects are the same as the current recipe address of the recipe settings, the displayed numeric value or text will changes accordingly. The contents of the recipe selector will also change accordingly. The current recipe will be reset to Recipe No. 0 every time a file is imported, so the contents of the recipe selector will be the Juice1 with a number of 0. During this time the screen will be displayed as follows:

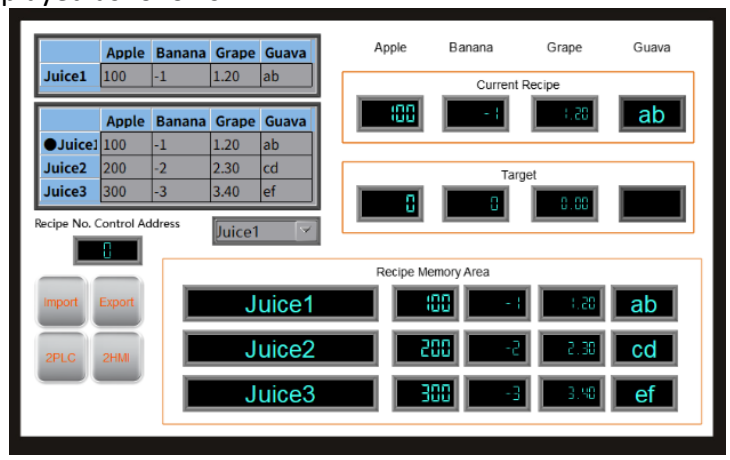


Figure 170 Simulation Screen 2

11. Change the numeric input of the Control Address of Recipe No. 2 and the current recipe will change to Juice 3.

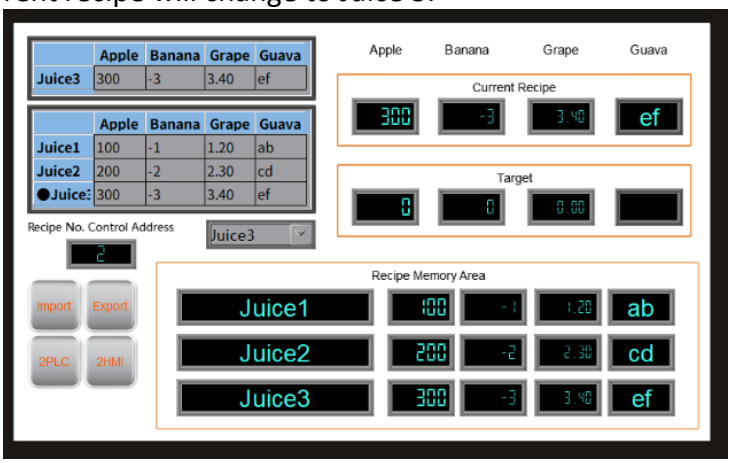


Figure 171 Simulation Screen 3

12. Click on the 2PLC function switch; this operation will write the data contents of the current recipe into the register of the target address (usually the controller). It can be observed that the displayed objects in the target area are also the parameter data of Juice 3 after clicking the switch.

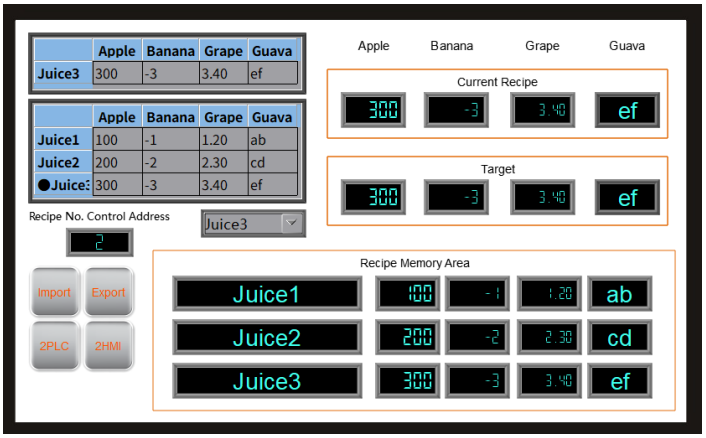


Figure 172 Simulation Screen 4

13. A keypad will appear allowing the user to input a numeric value once the apple field in the recipe table below is clicked. Enter 400 and press OK. It can be observed that the displayed objects for the recipe table and current recipe also changes to 400.

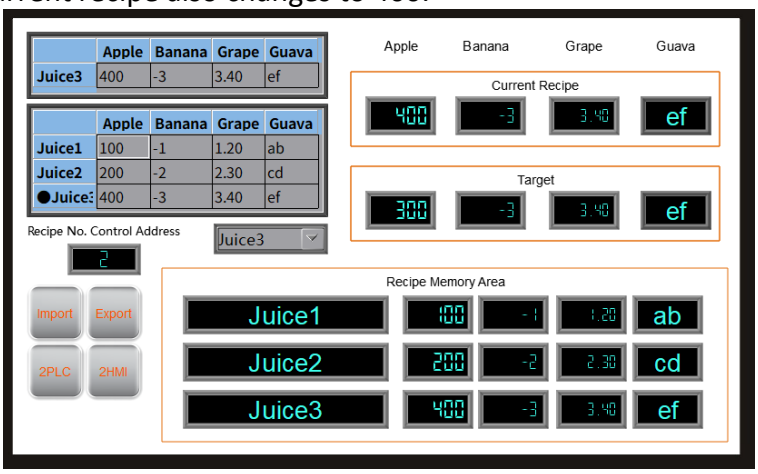


Figure 173 Simulation Screen 5

14. Click the Export function switch; this operation will export the parameter contents of this recipe group in the HMI onto the original file. Because we changed the apple parameter data of Juice 3, the recipe group file will also save the changed data.

15. Click the 2HMI function switch; this operation will write the contents of the target register back into the current recipe of the HMI. At this time, it can be observed that the value of the apple parameters of Juice 3 for the current recipe and recipe table changes back to 300.

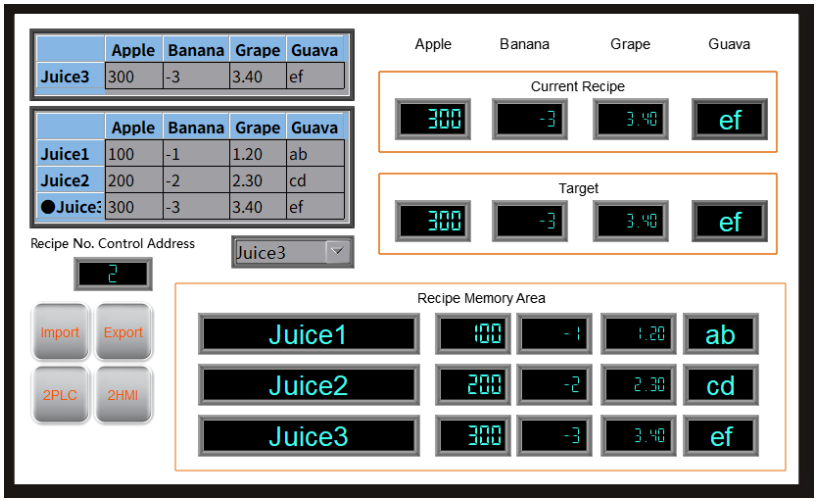


Figure 174 Simulation Screen 6

16. Click the Import function switch and it can be observed that the apple parameter of Juice 3 changes to 400 again. This is because we used the export function before, so the contents of the file have also been changed. However, because the file was imported again, the number of the current recipe was reset to Recipe No. 0, so the current recipe will show the data of Juice1.

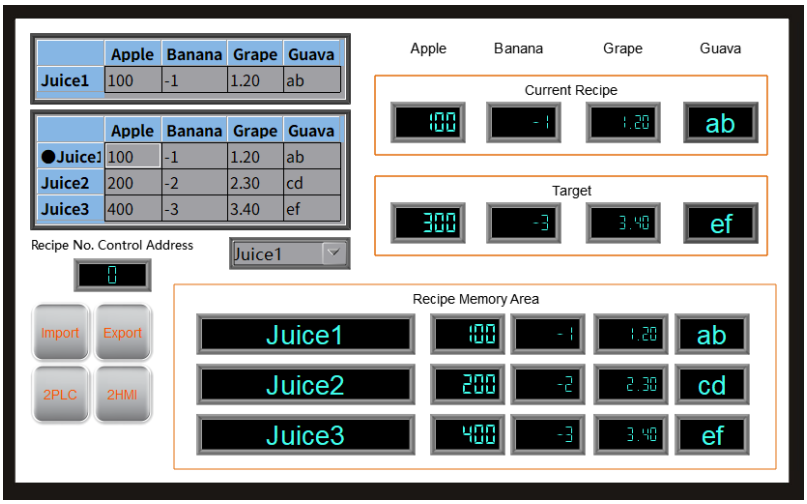


Figure 175 Simulation Screen 7

10. Operation Log

Historic logs are frequently required for the parameters and controls of certain equipment in many applications in order to track phenomenon that users care about. This is the function that the【Operation Log】provides. It can record the HMI operating processes performed by the user into the memory and also save it as a CSV file so that the user can view it afterwards.

10.1 【Basic】

【Operation Log】can be accessed from the【Function】window located in the【Project Explorer】to the left of the FvDesigner as shown below:

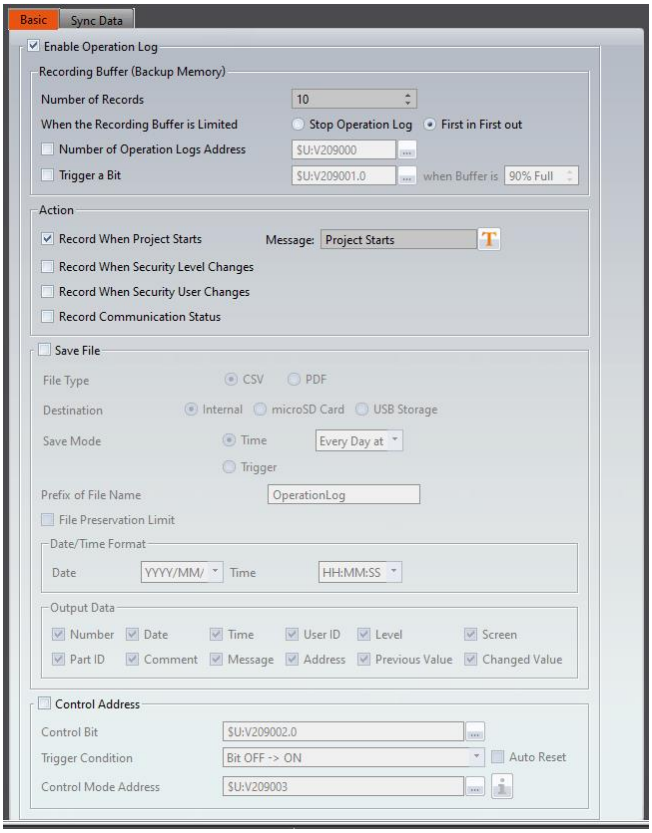


Figure 176 Setting Screen of【Operation Log】

Table 67 Setting Properties of【Operation Log】

Property	Description
【Enable Operation Log】	Check to enable the【Operation Log】; this is the master switch of the【Operation Log】.
【Recording Buffer (Backup	【Number of Records】 Set the number of logs that the recording buffer can record.

Memory)】	【When the Recording Buffer is Limited】 This can be divided into the following two behaviors: ➢ 【Stop Operation Log】 Stop logging immediately; any operations afterwards will no longer be recorded in the recording buffer. It can only start logging again once the recording buffer is cleared. ➢ 【First in First out】 Delete the oldest log and places the newest log information in the recording buffer. 【Number of Operation Logs Address】 Users can check the number of operation logs through a specific register. 【Trigger a Bit】 When the number of the operation logs reach the maximum limitation it will trigger the bit to notify users.
【Action】	【Record When Project Starts】 Check to record data in the recording buffer when the project starts. 【Message】 Set the messages to record when【Record When Project Starts】is selected. 【Record When Project Stops】 Check to record data in the recording buffer when the project ends. 【Message】 Set the messages to record when【Record When Project Stops】is selected. 【Record When Security Level Changes】 Check whether the information is recorded in the recording buffer when the security level changes 【Message】 Set the messages to record when【Record When Security

	Level Changes】is selected. 【Record When Security User Changes】 Check whether the information is recorded in the recording buffer when the security Name changes 【Message】 Set the messages to record when【Record When Security User Changes】is selected. 【Record Communication Status】 The communication status of the HMI will be recorded. 【Message】 Set the messages to record when【Record Communication Status】is selected.
【Save File】	【File Type】 Check to save the operation log recorded in the recording buffer into a CSV file. 【Destination】 Set the save location, including internal, microSD card, USB storage device. 【Save Mode】 This can be divided into the following two modes: ➢ 【Time】 Save into CSV files at fixed times and follow the time selections. ➢ 【Triggered by】 Use a certain triggering bit as the basis for saving files. 【Prefix of File Name】 【Prefix of File Name】 Set a prefix for the file name; The file name will come with_YYYYMMDD_hhmmss, For example, when setting AA, the generated file name is AA_YYYYMMDD_hhmmss.csv. 【File Preservation Limit】

<table>
<tr><td></td><td>When enabled, it allows the user to set the number of days the exported files are preserved. For example, if set for 7 days, the HMI will check the date and will delete the files on the 7th day.

【Date/Time Format】
Set the date format when exporting file.

【Output Data】
Select the content items you want to export</td></tr>
<tr><td>【Control Address】</td><td>【Control Bit】
Set the bit address of the control mode.

【Trigger Condition】
Set the triggering conditions of the control mode, there are【Bit OFF->ON】,【Bit ON->OFF】,【Bit Change】three conditions. When the setting was the first two conditions then the【Auto Reset】can be used.
For example: Select【Bit OFF->ON】and select【Auto Reset】, after pressing the button to switch it to ON, and it will automatically return to OFF.

【Control Mode Address】
Perform corresponding actions through parameters.
<table><tr><th>Parameter</th><th>Action</th></tr><tr><td>0</td><td>Clear buffer</td></tr><tr><td>1</td><td>Archive</td></tr><tr><td>2</td><td>Clear buffer after archiving</td></tr></table>
Note: If you want to use the "Archive" and "Clear the buffer after archiving" functions of the control address, you need to tick the【Save file】function.</td></tr>
</table>

10.2 【Sync Data】

Synchronize the Operation Log from the database. When enabled, the data will be automatically read from the database when the connection is successful.

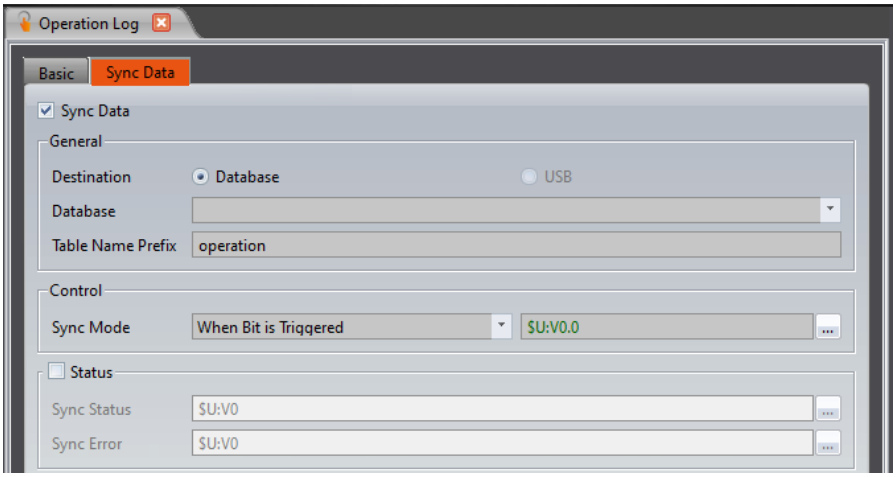


Figure 177【Operation Log】【Sync Data】Setting Page

Table 68【Operation Log】【Sync Data】Property Setting Page

<table>
<tr><th>Property</th><th>Description</th></tr>
<tr><td>【Sync Data】</td><td>Set whether to enable the data sync function. After enabling, the setting items will appear below.</td></tr>
<tr><td>【General】</td><td>【Destination】
Set the synchronize destination

【Database】
Set the synchronize database

【Table Name Prefix】
Set the generated table name of the after synchronization.
<table>
<tr><th>Table Name</th><th>Description</th></tr>
<tr><td><Customized Name>_data</td><td>Store the data of the Operation Log</td></tr>
</table></td></tr>
<tr><td>【Control】</td><td>【Sync Mode】
Set the timing of synchronizing data to the database, including When Buffer is Full, When Bit is Triggered, Daily Synchronization, and Sync Regularly.</td></tr>
<tr><td>【Status】</td><td>【Sync Status】
Set the storage address of the status
<table>
<tr><th>Value</th><th>Status Description</th></tr>
<tr><td>0</td><td>Unconnect</td></tr>
<tr><td>1</td><td>Connecting</td></tr>
<tr><td>2</td><td>Connected</td></tr>
<tr><td>3</td><td>Synchronizing</td></tr>
</table>
【Sync Error】
Set error code storage address</td></tr>
</table>

Value	Status Description
0	No error
1	Unkown error
2	Database connection failed
3	Insufficient access authority
4	Database name error
5	Format error
6	Table connection failed
7	Build table failed
8	Write table failed

10.3 【Operation Log】Settings of Objects

The descriptions above are for the function settings of the【Operation Log】, but every object with operating behaviors has their own corresponding settings that must also be set completely in order to use the Operation Log.

The following figure shows the setting screen of objects with operating behaviors; the Operation Log setting of the objects can be found under the【Operation】tab, as shown by the frame in the figure below.

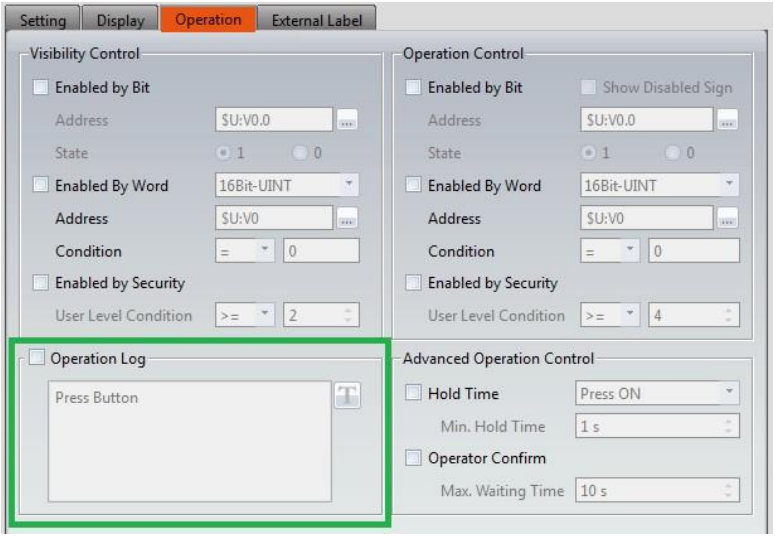


Figure 178 Setting Screen of Objects with Operation Behaviors

Table 69 Object Setting Properties of【Operation Log】

Property	Description
【Operation Log】	Select whether to enable the【Operation Log】of the object. It can also edit operation messages where the message can be inputted directly or acquired from the【Text Library】.

11. Schedule

The【Schedule】function can be used if users want the HMI to automatically execute specific actions regularly over long periods of time while the HMI is operating; the【Schedule】function can automatically execute the action selected by the user according to the date and time.

This chapter will explain the Schedule related screens and usage methods.

11.1 Schedule List

Click on【Schedule】in the【Project Explorer】of the FvDesigner and the【Schedule List】will appear; current【Schedules】that were already set will be displayed on the list in order according to the【Group ID】set for each schedule.

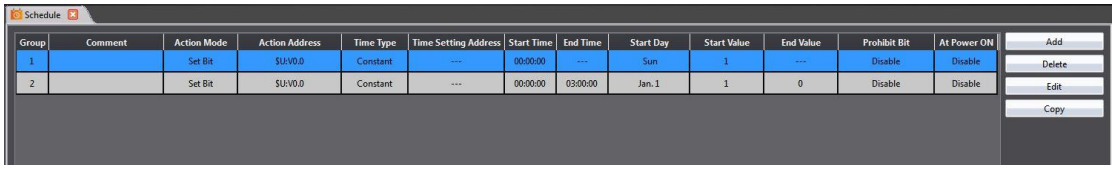


Figure 179【Schedule】List Screen

To set a new set of schedule, click on the【Add】button on the right and a【Schedule】settings dialog will appear for the user to operate.

To edit a【Schedule】that was already set, double-click on the【Schedule】entry on the list or first select the【Schedule】entry and then click on the【Edit】button on the right; at this time the settings dialog for this【Schedule】entry will appear for the user to modify.

To delete a【Schedule】that was already set, select the【Schedule】entry and click on the【Delete】button on the right to delete this【Schedule】entry.

11.2 Schedule Settings

The setting screen of the【Schedule】function is as shown in the figure below, the meanings of each setting option are listed below:

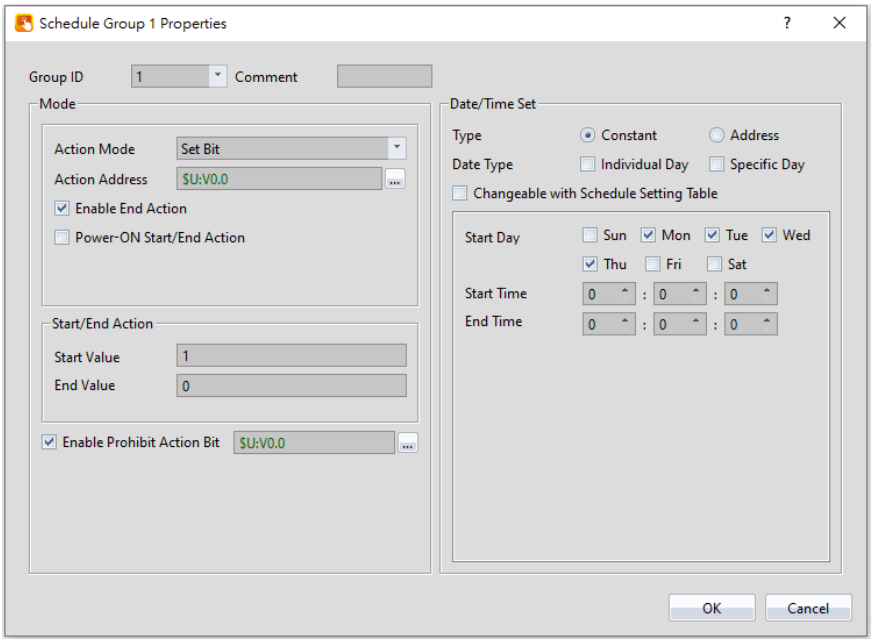


Figure 180【Schedule】Setting Screen

Table 70【Schedule】Setting Properties

Property	Description
【Group ID】	Set the Group ID of the【Schedule】.
【Comment】	Set the comments of the【Schedule】.
【Mode】	Set the execution action behavior of the【Schedule】. 【Action Mode】 Set the execution action mode of the【Schedule】. 1 【Set Bit】: If the【Action Mode】is set to this mode, when the system time reaches the set【Start Time】, the HMI will automatically set the【Action Address】as 1. 2 【Reset Bit】: If the【Action Mode】is set to this mode, when the system time reaches the set【Start Time】, the HMI will automatically set the【Action Address】as 0. 3 【Write Word】: If the【Action Mode】is set to this mode, when the system time reaches the set【Start Time】, the HMI will automatically set the【Action Address】to the【Start Value】.

4 【Run Script】: If the【Action Mode】is set to this mode, when the system time reaches the set【Start Time】, the HMI will automatically execute the【Start Script】.

【Action Address】

Set the action address of the【Schedule】.

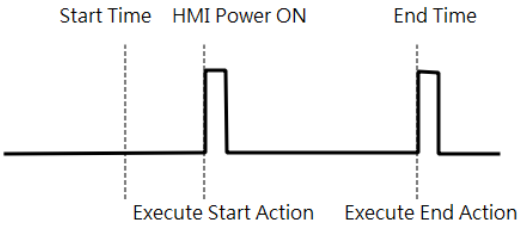
【Enable End Action】

Set to enable end action. The【End Value】,【End Script】and【End Time】of the【Schedule】can be set when this option is enabled; when the system time reaches the set【End Time】, the HMI will automatically execute the end action set.

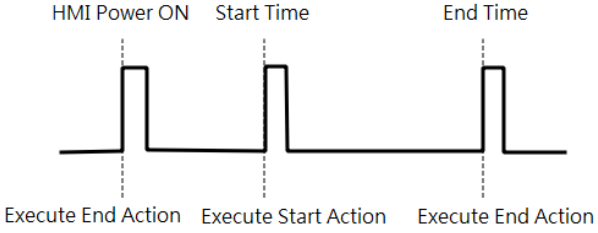
【Power-ON Start/End Action】

Set to enable the Power-ON Start/End Action, This function can only be enabled after selecting【Enable End Action】.

When Power-ON Start/End Action is enabled, if the HMI was turned on between the Start and End Time interval set in the【Schedule】, the HMI will automatically execute the Start action once.



When Power-ON Start/End Action is enabled, if the HMI was turned on outside the Start and End Time interval set in the【Schedule】, the HMI will automatically execute the End action once.



【Start Value】

Set the value to write into the【Action Address】when the【Schedule】executes the Start Action. The【Start Value】cannot be changed if the【Action Mode】is set as【Set Bit】or【Reset Bit】.

【End Value】

Set the value to write in the【Action Address】when the【Schedule】executes the end action. The【End Value】cannot be changed when the 【Action Mode】is set as【Set Bit】or【Reset Bit】.

【Type】

This setting item will appear when the 【Action Mode】is set as【Write Word】; it allows the setting of the【Start Value】and【End Value】type. The【Start Value】and【End Value】are fixed values when the type is set as【Constant】, and the【Start Value】and【End Value】will be the saved value of the address set when the type is set as【Address】.

【Data Type】

This setting item will appear when the【Action Mode】is set as【Write Word】; it allows the setting of the data type for the【Start Value】and【End Value】setting address.

【Start Script】

This setting item will appear when the【Action Mode】is set as【Run Script】; it allows setting of a script for the HMI to execute when the system time reaches the【Start Time】that was set.

【End Script】

This setting item will appear when the 【Action Mode】is

	set as【Run Script】; it allows setting of a script for the HMI to execute when the system time reaches the【End Time】that was set. Please note that this setting item cannot be operated if【Enable End Action】was not selected. 【Enable Prohibit Action Bit】 The prohibit action bit can be set on the right when this function is enabled. If the prohibit action bit is enabled when the HMI is operating, if the value of the prohibit action bit is 1, the Start Action or End Action that was set will not be executed even if the system time as reached the【Start Time】or【End Time】.
【Date/Time Set】	Set the date and time for the【Schedule】to execute the action. 【Type】 Set the type of the【Date/Time Set】; the date and time will both have fixed values when the date/time set is set as【Constant】,and the date and time for the【Schedule】to execute actions will be dynamically determined by the【Time Setting Address】that was set when the date/time set is set as【Address】. 【Date Type】 The date type can be set when the【Type】is set as【Constant】. Individual start day and end day can be set if【Individual Day】is selected, and the start day can be set as a specific date within a year if【Specific Day】is selected. If neither【Individual Day】nor【Specific Day】was selected, the start day can be set as a specific date within a week. 【Changeable with Schedule Setting Table】 After checking, you can dynamically change the start date, start time, and end time of the schedule on HMI. 【Start Month】 Set the month for the start month of the【Schedule】. This

setting item can only be set when the【Date Type】is set as【Specific Day】.

【Start Day】

Set the date for the【Schedule】to start execution.

【End Day】

Set the date for the【Schedule】to end execution. This setting item can only be set when the【Date Type】is set as【Individual Day】.

【Start Time】

Set the time for the【Schedule】to start execution.

【End Time】

Set the time for the【Schedule】to end execution.

【Time Setting Address】

The【Time Setting Address】can be set when the【Type】is set as【Address】. Once the【Time Setting Address】is set, it will use 11 continuous addresses starting from itself and the corresponding data type will be fixed as【16Bit-UINT】. The meaning of the values each address saves is as shown in the table below; please refer to Chapter 10.3 for examples:

Time Setting Address	When the bit 0 of this address is set as 1, the HMI will read the 9 continuous addresses from【Action Mode】to【End Time(Sec.)】, and change the start and end dates and time of the【Schedule】 according to the values read.
Status	【Time Setting Address】 + 1 When the bit 0 of the Time Setting Address is set as 1, the

		HMI will start to read the following 9 continuous addresses. This address will be set as 1 when the reading is successful, and be set as 2 if the reading failed; this address will be set as 3 if the date or time read is an invalid setting.
	Action Mode	【Time Setting Address】 + 2 The End Action will be enabled when the bit 0 of this address is set as 1. 【Individual Day】will be enabled if the bit 1 of this address is set as 1. 【Specific Day】will be enabled if the bit 2 of this address is set as 1. The action mode will be set as 【Individual Day】if the bit 1 and bit 2 of this address are both set as 1.
	Start Time(Day)	【Time Setting Address】 + 3 Sets the date for the 【Schedule】to start execution. The value of this address will be 1~7, which corresponds to Monday~Sunday, respectively. If the Action Mode is set as 【Individual Day】. The value of this address will be 1~12, which corresponds to January~December, respectively, and value 13 will correspond to all months if the Action Mode is set as【Specific

		Day】. If the Action Mode was not set as【Individual Day】or【Specific Day】, the bits 0~6 of this address will correspond to Monday~Sunday, respectively.
	Start Time(Hour)	【Time Setting Address】+ 4 Sets the hour of the Start Time for the【Schedule】to start execution.
	Start Time(Min.)	【Time Setting Address】+ 5 Sets the minute of the Start Time for the【Schedule】to start execution.
	Start Time(Sec.)	【Time Setting Address】+ 6 Sets the second of the Start Time for the【Schedule】to start execution.
	End Time(Day)	【Time Setting Address】+ 7 Sets the date for the【Schedule】to end execution. The value of this address will be 1~7, which corresponds to Monday~Sunday, respectively, if the Action Mode is set as【Individual Day】. The value of this address will be 1~31, which corresponds to the 1st~31st respectively, if the Action Mode is set as【Specific Day】.
	End Time(Hour)	【Time Setting Address】+ 8

		Sets the hour of the End Time for the【Schedule】to end execution.
	End Time(Min.)	【Time Setting Address】+ 9 Sets the minute of the End Time for the【Schedule】to end execution.
	End Time(Sec.)	【Time Setting Address】+ 10 Sets the second of the End Time for the【Schedule】to end execution.

11.3 Examples

Example 1: Execute start action at fixed times weekly.

Address	Value	Function
【Time Setting Address】	1	Start reading the【Time Setting Address】, and changes the【Schedule】settings according to the value read.
【Time Setting Address】+2	Bit 0: 0	Do not enable end action.
	Bit 1: 0	Do not enable【Individual Day】.
	Bit 2: 0	Do not enable【Specific Day】.
【Time Setting Address】+3	Bit 0: 0	Set not to execute【Schedule】on Monday.
	Bit 1: 1	Set to execute【Schedule】on Tuesday.
	Bit 2: 0	Set not to execute【Schedule】on Wednesday.
	Bit 3: 1	Set to execute【Schedule】on Thursday.
	Bit 4: 1	Set to execute【Schedule】on Friday.
	Bit 5: 0	Set not to execute【Schedule】on Saturday.

	Bit 6: 0	Set not to execute【Schedule】on Sunday.
【Time Setting Address】+4	8	Set the hour of the Start Time for the【Schedule】to start execution as 8 A.M.
【Time Setting Address】+5	30	Set the minute of the Start Time for the【Schedule】to start execution as 30 minutes.
【Time Setting Address】+6	0	Set the second of the Start Time for the【Schedule】to start execution as 0 seconds.

Example 2: Individually setting the date and time to execute start action and end action weekly.

Address	Value	Function
【Time Setting Address】	1	Start reading the【Time Setting Address】, and changes the【Schedule】settings according to the value read.
【Time Setting Address】+2	Bit 0: 1	Enable End Action.
	Bit 1: 1	Enable【Individual Day】; The end day and start day can be set individually.
	Bit 2: 0	Do not enable【Specific Day】.
【Time Setting Address】+3	1	Set the start day for the【Schedule】to start execution as Monday.
【Time Setting Address】+4	8	Set the hour of the Start Time for the【Schedule】to start execution as 8 A.M.
【Time Setting Address】+5	30	Set the minute of the Start Time for the【Schedule】to start execution as 30 minutes.
【Time Setting Address】+6	0	Set the second of the Start Time for the【Schedule】to start execution as 0 seconds.
【Time Setting Address】+7	7	Set the end day for the【Schedule】to end execution as Sunday.
【Time Setting	17	Set the hour of the End Time for the

Address】+8		【Schedule】to end execution as 5 P.M.
【Time Setting Address】+9	0	Set the minute of the End Time for the【Schedule】to end execution as 0 minutes.
【Time Setting Address】+10	30	Set the second of the End Time for the【Schedule】to end execution as 30 seconds.

Example 3: Execute start action on specific day and time.

Address	Value	Function
【Time Setting Address】	1	Start reading the【Time Setting Address】, and changes the【Schedule】settings according to the value read.
【Time Setting Address】+2	Bit 0: 0	Do not enable end action.
	Bit 1: 0	Do not enable【Individual Day】.
	Bit 2: 1	Enable【Specific Day】. 【Time Setting Address】+3 and 【Time Setting Address】+7 will save the start month and start day settings respectively.
【Time Setting Address】+3	6	Set the start month as June.
【Time Setting Address】+4	0	Set the hour of the Start Time for the【Schedule】to start execution as 0 A.M.
【Time Setting Address】+5	30	Set the minute of the Start Time for the【Schedule】to start execution as 30 minutes.
【Time Setting Address】+6	0	Set the second of the Start Time for the【Schedule】to start execution as 0 seconds.
【Time Setting Address】+7	30	Set the start day as the 30th.

12. Data Transfer

The【Data Transfer】function can be used if the user wants the HMI to execute data transfer actions under specific conditions while the HMI is operating; the【Data Transfer】function will execute a data transfer according to the conditions set by the user. There a two modes of data transfer:【Data to Data】and【CSV File to Data】. This chapter will explain【Data Transfer】related pages and settings.

12.1 Data Transfer List (Data to Data Mode)

Click on【Data Transfer】in【Project Explorer】of the FvDesigner and the【Data Transfer List】will appear;【Data Transfer】that are currently set will be displayed on the list in the order of the【Group ID】set for them.

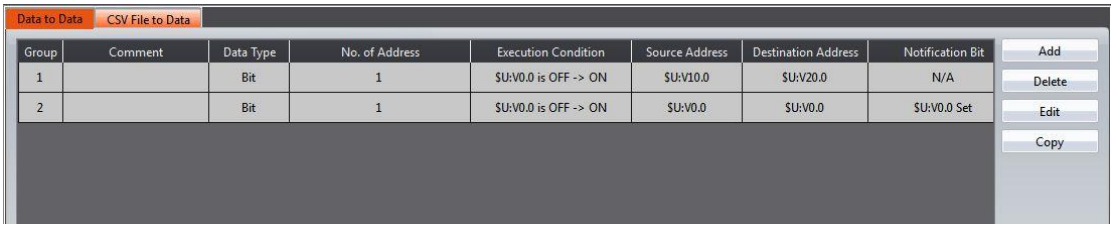


Figure 181【Data Transfer】List Screen

To set a new Data Transfer, click on the【Add】button on the right, and the【Data Transfer】setting dialog will appear for the user to operate.
To edit a【Data Transfer】that was already set, double-click on the【Data Transfer】entry or first select the【Data Transfer】entry and then click on the【Edit】button on the right. The settings dialog of this【Data Transfer】entry will appear for the user to modify.

To delete an existing【Data Transfer】, select the【Data Transfer】entry and then click on the【Delete】button on the right to delete this【Data Transfer】entry.

If you need to set a new data transfer, similar to the original, you can select the original【Data Transfer】and click the【Copy】button on the right side of the window.

12.2 Data Transfer Settings (Data to Data Mode)

The settings screen of the【Data Transfer】is as shown in the figure below and the meanings of each setting are listed below:

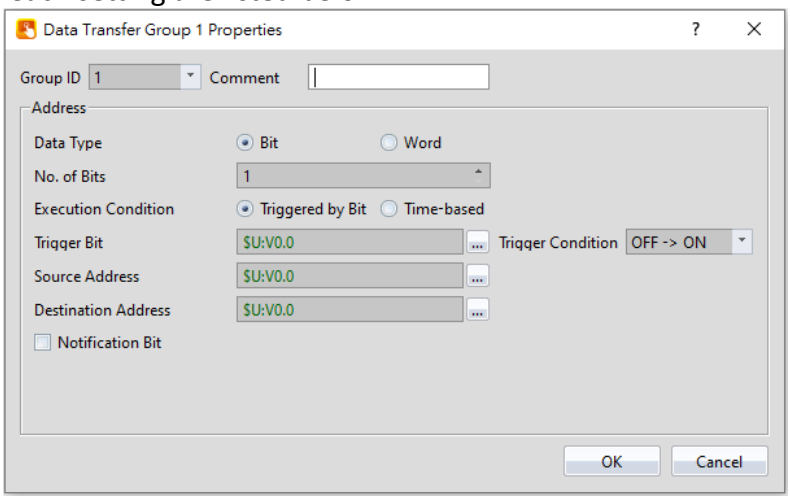


Figure 182 Setting Dialog of【Data Transfer】

Table 71 Setting Properties of【Data Transfer】

Property	Description
【Group ID】	Set the group ID of the【Data Transfer】.
【Comment】	Set the comment of the【Data Transfer】.
【Address】	Set the behavior of the【Data Transfer】. 【Data Type】 Set the data type of the【Data Transfer】. 【No. of Bits】 Set the number of bits per transfer; it can be set between1~65535 bits. The more number of bits per transfer, the longer it will take for the transfer to be completed. Therefore, make sure that there is sufficient time for the data transfer to be completed every time it is executed. 【No. of Words】 Set the number of words per transfer; it can be set between 1~65535 words. The more number of words per transfer, the longer it will take for the transfer to be completed. Therefore, make sure there is sufficient time for data transfer to be completed every time it is executed. 【Execution Condition】 Set the condition to execute【Data Transfer】. The【Trigger

	Bit】and【Trigger Condition】can be set below if the execution condition is set as【Triggered by Bit】; The data transfer will be executed when the status changes satisfy the conditions set. The【Time Interval】can be set below if the execution condition is set as【Time-based】; The HMI will execute the data transfer according to the set time interval. 【Source Address】 Set the source address for executing the【Data Transfer】; The HMI will read the No. of Bits or No. of Words set from the source address and write them into the【Destination Address】when the data transfer is executed. 【Destination Address】 Set the destination address for executing the【Data Transfer】; The HMI will read the No. of Bits or No. of Words set from the source address and write them into the【Destination Address】when the data transfer is executed. 【Notification Bit】 Specify a bit to set or reset upon the completion of the data transfer. This bit can be used to trigger other functions to run on the transferred data.

12.3 Data Transfer List (CSV to Data Mode)

Click on【Data Transfer】in【Project Explorer】and the【Data Transfer List】will appear. Switch to the【CSV File to Data】tab.【Data Transfer】that are currently set will be displayed on the list in the order of the【Group ID】set for them.



Figure 183 CSV Data Transfer List Screen

To set a new Data Transfer, click on the【Add】button on the right, and the【Data Transfer】setting dialog will appear for the user to operate.

To edit a【Data Transfer】that was already set, double-click on the【Data Transfer】entry or first select the【Data Transfer】entry and then click on the【Edit】button on the right. The settings dialog of this【Data Transfer】entry will appear for the user to modify.

To delete an existing 【Data Transfer】, select the【Data Transfer】entry and then click on the【Delete】button on the right to delete this【Data Transfer】entry.

If you need to create a new【Data Transfer】and set it similar to the original, select the original【Data Transfer】and click the【Copy】button on the right side of the window.

12.4 Data Transfer Settings (CSV to Data Mode)

The【CSV to Data Transfer Mode】settings are below. The meanings of each setting are listed below.

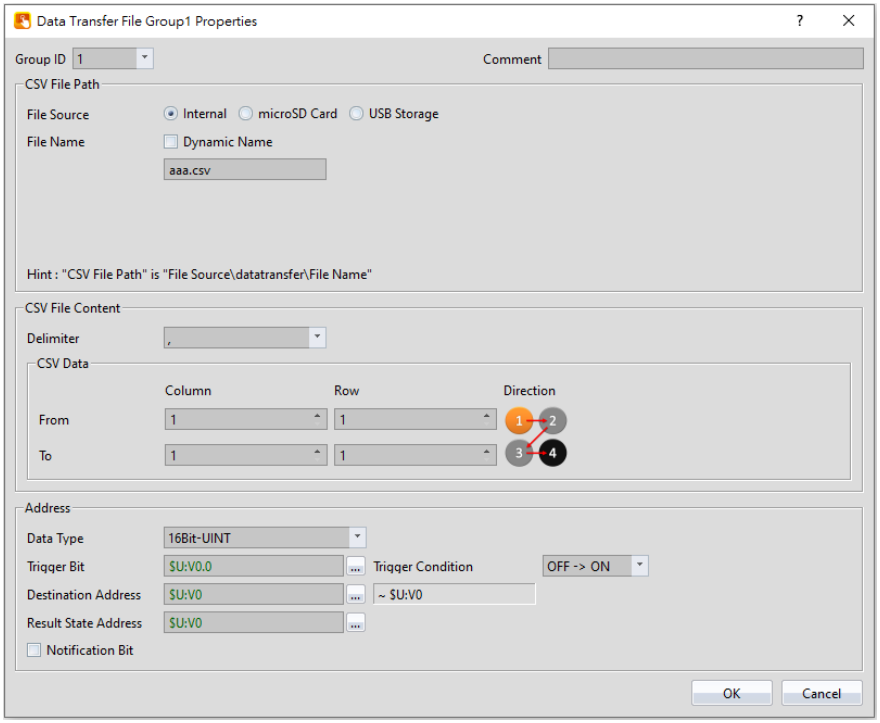


Figure 184【CSV to Data Transfer Mode】Settings Screen

Table 72【CSV to Data Transfer Mode】Setting Properties

Property	Description
【Group ID】	Set the group ID of the【Data Transfer】.
【Comment】	Set the comment of the【Data Transfer】.

【CSV File Path】	Set the source of the【Data Transfer】. 【File Source】 Set the location of the CSV file source:【internal】,【microSD Card】, or【USB Storage】. 【File Name】 Enter the file name of the CSV file. If【Dynamic Name】is selected, the name of the file can be saved to a specified location. This allows the program to change CSV files by saving a new name into the specified location. The register address and length can be set.
【CSV File Content】	【Delimiter】 Set the delimiter between entries. 【CSV Data】 Set the start and end positions in the CSV file. Enter a【From】column and row and an【To】column row. The direction the data is read can be changed by clicking the【Direction】icon.
【Address】	【Data Type】 Select the data type of the【CSV to Data File Transfer】. 【Trigger Bit】 Set the address of the bit that triggers the【CSV to Data File Transfer】. 【Trigger Condition】 Select the type of bit change that provides the trigger: OFF to ON, ON to OFF, or both directions. 【Destination Address】 Set the target address of the【CSV to Data File Transfer】. 【Result State Address】 The【CSV to Data File Transfer】result status is stored in this location. Result Explanation

0	Transfer Success
1	Source file open file failed
2	There are too few entries in the source
3	The source is unrecognized

【Notification Bit】

Notify a bit upon the completion of the【Data Transfer】.
Level: Set the bit as 0 or 1.
Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】.

13. Script

Script provides a simple language to allow users to write their own programs. Available statements include logical judgments, numerical computations, loop executions etc. Users can flexibly use the statements provided by the system to complete a complex task that cannot easily be accomplished with general objects. Existing scripts previously created could also be reused in different projects to save development time.

13.1 Using Scripts

In this section, we will introduce how to create and edit the scripts and its related attributes.

13.1.1 Script List

Click on【Script】in【Functions】of the【Project Explorer】, which is located to the left side of the FvDesigner, to enter the【Script List】.

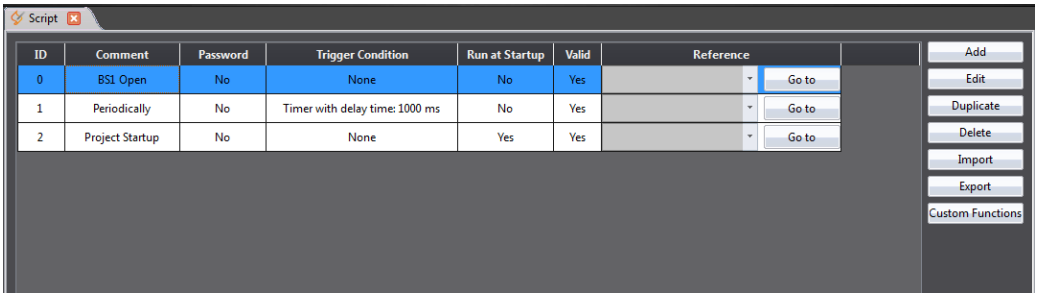


Figure 185【Script List】

The following are the description of each column in the script list:

Table 73【Script List】- Descriptions

Field	Description
【ID】	Every script must have a unique ID; the range of the ID is from 0 to 65534.
【Comment】	Descriptions that help understand the contents or usage of a script.
【Password】	Whether this script is protected by password or not.
【Trigger Condition】	Set the conditions that the script will be triggered in the background.
【Run at Startup】	Set to execute the script when the project starts.

【Valid】	Valid means that no errors were found when the script was compiled.
【Reference】	When a script is used in an object or function, pressing【Go to】can jump to the location where this script is used immediately.

The following are the descriptions of the buttons on the right side of the script list:

Table 74 Script List–Descriptions of the buttons on the right side

Button	Description
【Add】	Opens the【Script Editor】and a new empty script to edit.
【Edit】	Opens the【Script Editor】and allows the script currently selected in the Script List to be edited; double-clicking on the script of a Script List has the same effect as selecting the script first and then pressing【Edit】.
【Duplicate】	Makes a duplicate of the currently selected script.
【Delete】	Deletes the currently selected script.
【Import】	Imports scripts.
【Export】	Exports the currently selected script.
【Custom Functions】	Opens the【Script Editor】and displays the【Custom Functions】for editing.

13.1.2 Script Editor

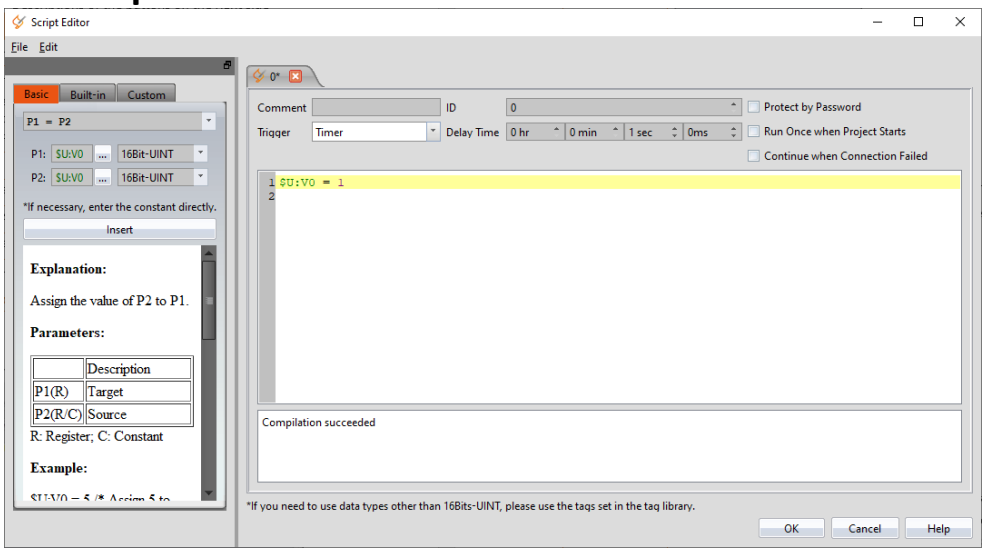
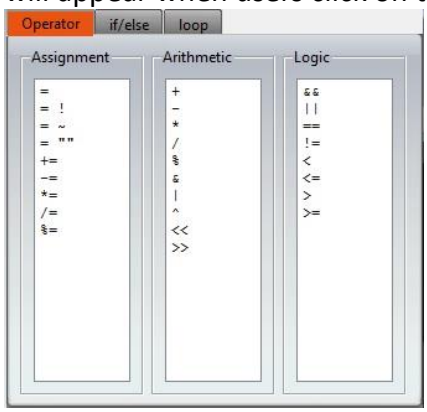
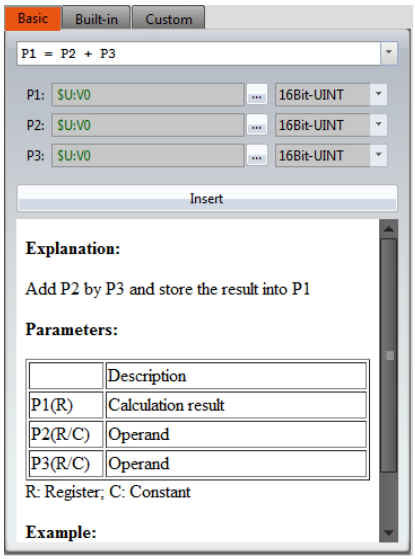
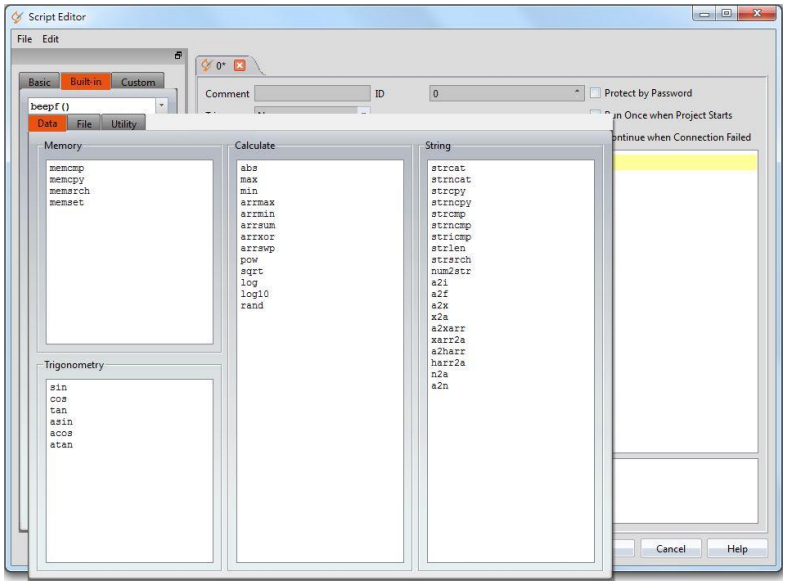
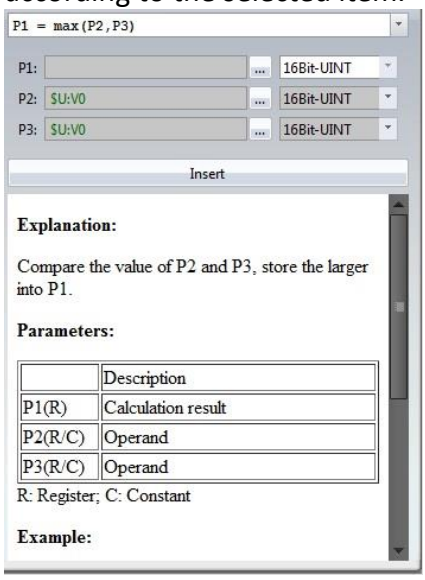


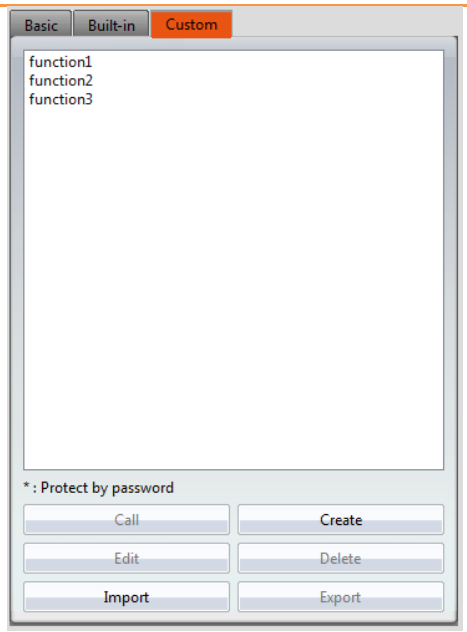
Figure 186 Script Editor Screen

The【Function】block to the left has three tab pages available for selection; Their descriptions are as follows:

Table 75 Script Editor–Function Block Description

Tab Page	Description
【Basic Functions】	Provides a convenient interface for inputting various operators, logical statements and iterative statements; the following menu will appear when users click on the pull-down menu button:  Users can select the item to use and the contents of the【Basic Function】tab page will be updated according to the selected item.  Users can quickly input or select the register and data type to use as parameters. Once selected, press【Insert】to add the entire statement into the location where the cursor is located in the editor to the right. The usage description and examples of this statement can be checked below the【Insert】button.
【Built-in Function】	Provides a convenient interface to input the system's built-in functions. Its usage is similar to that of【Basic Functions】, the following menu will appear after the user clicks on the pull-

	down menu button:  Users can select the item to use from the menu and then the contents of the【Built-in Function】tab page will be updated according to the selected item.  Users can quickly input or select the registers and its data type to use as parameters. Once selected, press【Insert】to add the entire statement into the location where the cursor is located in the editor to the right. The usage description and examples of this built-in function can be checked below the【Insert】button.
【Custom Functions】	Provides users with list of custom functions.

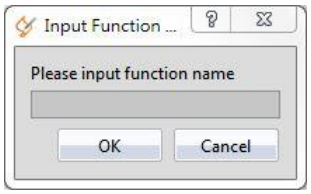


【Call】

Inserts and calls the statement of the currently selected custom function at the location where the cursor is located in the editing section to the right.

【Create】

Creates a new custom functions; the following window will appear once this button is pressed, asking for the name of the custom function.



A new editor tab page will appear in the【Editor】section to the right for editing the contents of the custom function after entering a legal function name and pressing OK.

【Edit】

Opens a new editor tab page for editing the currently selected custom function. It has the same effect as double-clicking on the function name on the list.

【Delete】

Deletes the currently selected custom function.

【Import】

Import custom function. If it is protected by password, you have to input password before import.

	【Export】 Export the selected function.

Descriptions of the top section of the【Editor】to the right are as follows:

Table 76 Script Editor–Script Properties Descriptions

Field	Description
【Comment】	Used to input a comment for the script.
【ID】	Used to set the ID of the script.
【Protect by Password】	To decide whether this script is protected by password or not.
【Trigger】	Selects when to trigger this script: 【None】 Do not select any triggering condition (but the script may still be executed when the project starts or triggered by other objects or functions). 【Timer】 Script will be triggered continuously but there will be a fixed delay time between the end of the first execution and the start of the next execution. 【When Bit Becomes 1】 Executes the script once when the【Bit】changed from 0 to 1. 【While Bit is 1】 Executes the script continuously once the【Bit】is 1. 【When Bit Becomes 0】 Executes the script once when the【Bit】changed from 1 to 0. 【While Bit is 0】 Executes the script continuously once the【Bit】is 0. 【When Bit is Changed】 Executes the script once when the【Bit】changed from 0 to 1 or 1 to 0.

【Run Once when Project Starts】	Set to execute the script once when the project first starts.
【Name】	The other fields above will disappear when editing a custom function except【Protect by password】, only the name of the custom function can be set.
【Continue when Connection Failed】	When there are using external registers in the script, it will stop executing when the connection failed. This function will ignore the connection failed part and execute other parts of the script.

The mid-bottom section of the【Editor】is divided into the statement editing section and compilation message display section; Every time a change is made in the statement editing section it will make the script compile again immediately, and the compilation results will be displayed below. The user can fix statement errors according to the message content and line number displayed until it displays 【Compilation succeeded】.

13.2 When to execute scripts

Scripts can be set to be triggered and executed at the following different times:

- **Global**
  1. Project startup: Execute when the project starts.
  2. Timer: After the script has finished executing, wait a fixed period of time and then execute again.
  3. Trigger by Bit: Execute the script when the status or changes of a specific bit meet the conditions (Please refer to **Table 76 Script Editor–Script Properties Descriptions** on the explanations for【Trigger】).
- **Screen**
  1. Screen open: Execute the script when a specific screen is opened.
  2. Screen close: Execute the script when a specific screen is closed.
  3. Screen cycle: Execute the script periodically when a specific screen is displayed in the foreground.
- **Object**
  1. Bit Switch: Execute scripts when the actions meets the conditions.
  2. Function Switch: Execute scripts when a switch is pressed.
- **Schedule**
  1. Execute scripts at the beginning or ending of a scheduled time.

13.3 Script Syntax

13.3.1 Basic

※Notice : If you need to use data types other than 16Bits-UINT, you must use the taqs

set in the 【Tag Library】, and it could be recognize when you use it in Script, unused tags will use 16Bit-UINT operations.

13.3.1.1 Assignment

Assignment operators can be used to save constants into registers or save the contents of the source register into the target register.

Table 77 Script–Assignment

Type	Description
Assignment =	Saves constants into registers, for example $U:V1 = 1234 // Saves integer 1234 into $U:V1 $T:FLOAT = 345.67 // Saves the float integer345.67 into $T:FLOAT(1) $T:STRING = "MERITEK" // Saves the ASCII string into $T:STRING(2) Saves the contents of the source register into the target register, for example: $U:V0 = $U:V3 // Saves the contents of register$U:V3 into $U:V0 When the data type of the target register is different from the source register, the value read from the source register will first be converted and then saved into the target register. Rounding of decimal places and overflow may occur according to the different data types, for example: $U:V0 = 0xFFFFFFF // Only saves 0xFFFF into $U:V0(**16Bit-UINT**) $T:INT32 = 345.67 // Only saves the integer 345 into $T:INT32(**32Bit-INT**) $T:BCD16 = 1234 /* Converts 1234 into BCD format and then
Negative Sign = !	Changes operand to positive or negative. If the operand is a positive value, it will return a negative value; if the operand is a negative value, it will return a positive value. For example: $T:INT16 = 123 $T:INT16 = -$T:INT16 // The value of $T:INT16 changed to -123
Complement = ~	Returns 1's complement of the operand, for example: $U:V0 = 0x5a5a $U:V0 = ~$U:V0 // The value of $U:V0 changed to 0xa5a5
Assignment = " "	After establishing an ASCII label in the label library, you can write the ASCII string into the depositor through the script. For example: $T:Ascii = "ABCD" Put a Text Input/Display on screen, choose Ascii String for Text Type in setting, choose $T:Ascii for Monitor Address in setting,

	then the content will present ABCD.
Assignment **= L“ “**	After establishing an Unicode label in the label library, you can write the Unicode string into the depositor through the script. For example: $T:Unicode = "ABCD" Put a Text Input/Display on screen, choose Unicode for Text Type in setting, choose $T: Unicode for Monitor Address in setting, then the content will present ABCD.

Note that every character in an ASCII string will take up a byte, and a 0 will be added at the end as the end of a string (which is called a null-terminating character); therefore when “MERITEK” is written, the content of the 3 words starting from $T:STRING will be 0x4146('F','A'), 0x4554('T','E'), and 0x004B('K', 0) respectively.

Table 78 Script–Arithmetic

Type	Example
Addition **+**	$U:V0 = 3 + 1 // Result is 4
Subtraction **-**	$U:V0 = 6 - 2 // Result is 4
Multiplication *****	$U:V0 = 2 * 2 // Result is 4
Division **/**	$U:V0 = 8 / 2 // Result is 4
Modulus **%**	$U:V0 = 9 % 5 // Result is 4
Bitwise-and **&**	$U:V0 = 12 & 4 // Result is 4
Bitwise-or **|**	$U:V0 = 0 | 4 // Result is 4
Bitwise-xor **^**	$U:V0 = 65531 ^ 65535 // Result is 4
Left shift **<<**	$U:V0 = 1 << 2 // Result is 4
Right shift **>>**	$U:V0 = 8 >> 1 // Result is 4

Table 79 Script–Logical

Type	Example
Logical and **&&**	$U:V0.0 = 1 && 1 // Result is 1
Logical or **||**	$U:V0.0 = 0 || 1 // Result is 1

Equal **==**	$U:V0.0 = 2 == 2 // Result is 1
Not equal **!=**	$U:V0.0 = 1 != 2 // Result is 1
Less than **<**	$U:V0.0 = 1 < 2 // Result is 1
Less than or equal **<=**	$U:V0.0 = 2 <= 2 // Result is 1
Greater than **>**	$U:V0.0 = 2 > 1 // Result is 1
Greater than or equal **>=**	$U:V0.0 = 2 >= 2 // Result is 1

When there are multiple operators for a statement, their precedence are as shown in the table below:

Table 80 Script–Operator precedence

0(Highest)	( )	Parenthesis
1	! – ~	Reverse logic, negative sign, 1's complement
2	* / %	Multiplication, division, modulus
3	+ –	Addition, subtraction
4	<< >>	Left shift, right shift
5	< <=	Less than, less than or equal
	> >=	Greater than, greater than or equal
6	== !=	Equal, not equal
7	&	Bitwise-and
8	^	Bitwise-xor
9	|	Bitwise-or
10	&&	Logical-and
11	||	Logical-or
12(Lowest)	=	Assignment operator

13.3.1.2 Logical Judgement

Logical Statement can execute different statement blocks according to different conditions, allowing scripts to flexibly execute corresponding operations for different situations.

Table 81 Logical Statement Syntaxes

Type	Description
if <condition> **…**	Executes the statement in the if block when ***if <condition>*** is true, for example:

End if	$U:V0 = 1
	if $U:V0.0
	  $U:V3 = 2 // Will be executed
	endif
	if $U:V0 > 2
	  $U:V3 = 3 // Will not be executed
	Endif

if <condition>
…
else
…
End if
	Execute the statement in the if block when the ***if <condition>*** is true, or else execute the statement in the **else** block if the ***if <condition>*** is false; for example:
	$U:V0 = 1
	if $U:V0 > 2
	  $U:V3 = 2 // Will not be executed
	else
	  $U:V3 = 3 // Will be executed
	Endif

if <condition>
…
Else if <condition1>
…
Else if <condition2>
…
End if
	When the ***if <condition>*** is true, execute the statement in the ***if block***. Otherwise, determine the first ***else if <condition>***; if the first ***else if <condition>*** is true, execute the statement in the ***else if block***. If the first ***else if <condition>*** is still false, try the next ***else if <condition>***, and so on. 0 or multiple ***else if block*s** can exist, for example:
	$U:V0 = 1
	if $U:V0 == 4
	  $U:V3 = 4 // Will not be executed
	Else if $U:V0 == 3
	  $U:V3 = 3 // Will not be executed
	Else if $U:V0 == 2
	  $U:V3 = 2 // Will not be executed
	Else if $U:V0 == 1
	  $U:V3 = 1 // Will be executed
	End if

if <condition>
…
elseif <condition>
…
elseif <condition>
…
else
…
Endif
	When the ***if <condition>*** is true, execute the statement in the ***if block***. Otherwise, determine the first ***else if <condition>***; if the first ***else if <condition>*** is true, execute the statement in its ***else if block***. If the first ***else if <condition>*** is still false, try the next ***else if <condition>***, and so on. 0 or multiple else if blocks can exist. If the ***if <condition>*** and all of the ***else if <condition>*** are false, the statement in the ***else block*** will be executed.
	For example:
	$U:V0 = 1
	if $U:V0 == 4
	  $U:V3 = 4 // Will not be executed
	Else if $U:V0 == 3

	$U:V3 = 3 // Will not be executed
	Else if $U:V0 == 2
	$U:V3 = 2 // Will not be executed
	else
	$U:V3 = 3 // Will be executed
	End if

13.3.1.3 Iterative

Iterative Statements can execute statement blocks repeatedly according to different conditions, allowing some repetitive tasks to be completed using fewer statements.

Table 82 Iterative Statement Syntax

Type	Description
loop <count> … Endloop	Repeatedly execute the statements in the loop block <count> times , <count> can be a register or a positive integer constant. For example: /*Calculate the sum of 1 to 10 and save it into $U:V0 */ $U:V0 = 0 // sum $U:V1 = 0 loop 10 $U:V1 = $U:V1 + 1 $U:V0 = $U:V0 + $U:V1 Endloop
for <reg> = <start> to <end> step <n> … Endfor	If <start> is less than <end>, <reg> will be set to <start>, and the ***for block*** will be executed once. Then the value of <reg> will be added by <n> and execute ***for block*** again, until <reg> plus <n> is greater than <end>. If <start> is greater than <end>, <reg> will be subtracted by <n> instead, ***for block*** will be executed every time until <reg> minus <n> is less than <end>. Note: 1. <reg> should be a register 2. <start> and <end> can be either registers or integer constants 3. <n> should be a positive integer or a register containing positive integer value 4. **Step <n>** can be ignored. In such case, <n> will be 1 5. If <n> is 0, ***for block*** will not be

	executed For example: /* Calculate the sum of $U:V0 to $U:V10 and save it into$U:V11 */ $U:V11 = 0 for $S:I0 = 0 to 10 $U:V11 = $U:V11 + $U:V0[$I0] Endfor
while<condition> **…** **Endwhile**	Execute the statement in the ***while block*** when the ***while <condition>*** is true, and then check whether the ***while <condition>*** is true or false again to determine whether to execute again or exit the loop. If the ***while <condition>*** is false, then the program exits the loop. The ***while <condition>*** can be a register or an expression combined by multiple registers and operators. For example: /* Calculate the sum of 1 to 10 and save it into$U:V0 */ $U:V0 = 0 // sum $U:V1 = 0 while $U:V1 <= 10 $U:V1 = $U:V1 + 1 $U:V0 = $U:V0 + $U:V1 Endwhile

Break	**break** statement can be used in **loop**, **for**, or **while** loops. When a break statement is executed, the program will exit the current loop and continue execution. **break** statement is usually used with an **if** statement so that it will exit the loop when specific conditions are met; for example:
	/* Search for the first non-zero word between $U:V0 to $U:V10; if the value of $U:V11 is 3 when the loop ends, then $U:V3 is the first non-zero word; if no non-zero word can be found, the value of $U:V11 will remain as 11 when the loop is finally existed*/
	$U:V11 = 11
	for $S:I0 = 0 to 10
	if $U:V0[$S:I0] != 0
	$U:V11 = $S:I0
	break
	end if
	endfor

Continue	**continue** statement can be used in **loop**, **for**, and **while** loops. When the continue statement is executed, the statements in the loops afterwards will be omitted and it will jump directly to the next iteration of the loop for execution, for example: $U:V0 = 0 $U:V1 = 0 loop 10 $U:V0 = $U:V0 + 1 /* Will be executed 10 times */ if $U:V1 >= 5 continue end if $U:V1 = $U:V1 + 1 /* Will only be executed the first 5 times*/ Endloop

13.3.2 Built-in Functions

The script statement collection provides many built-in functions; users can use these functions to execute numerical computations, string processing, file accessing and other more complicated operations.

Table 83 Script Built–in Functions

Type	Function	Description
Memory Operation	memcmp	Memory block comparison
	memcpy	Copy memory block
	memsrch	Search memory block
	memset	Memory block value
Trigonometry	sin	Sine
	cos	Cosine
	tan	Tangent
	asin	Arcsine
	acos	Arccosine
	atan	Arctangent
Numeric Computation	abs	Absolute value
	max	Maximum value
	min	Minimum value
	arrmax	Maximum value for array
	arrmin	Minimum value for array
	arrsum	Sum or array
	arrxor	And-Or array
	arrswp	Swap high and low byte of array
	pow	Power
	sqrt	Square root

	log	Natural logarithm
	log10	Common logarithm
	Rand	Generate random number
String Operations	strcat	Concatenate string
	Strncat	Concatenate string (restrict length)
	strcpy	Copy string
	strncpy	Copy string (restrict length)
	strcmp	String comparison
	strncmp	String comparison (restrict length)
	stricmp	String comparison(case-insensitive)
	strlen	String length
	strsrch	Search string
	substr	String extraction
	num2str	Numeric value to string
	a2i	String to integer
	a2f	String to floating point number
	a2x	String (hexadecimal) to integer
	x2a	Integer (hexadecimal) to string (ASCII)
	a2xarr	Convert string to consecutive integers separated by whitespace
	xarr2a	Convert words with the hexadecimal representation to an ASCII string.
	a2harr	Convert the unicode of the string into consecutive integers
	harr2a	Convert the array of the hexadecimal numbers to an ASCII string.
	n2a	Convert multiple consecutive integers to a string
	a2n	Convert continuous multiple strings to integers
	unicode2ascii	Convert the UNICODE string into an ASCII string.
	unicode2gb	Convert the UNICODE string into a GB18030 string.
	unicode2big	Convert the UNICODE string into a BIG5 string.
	ascii2unicode	Convert the ASCII string into an UNICODE string.

	gb2unicode	Convert the GB18030 string into an UNICODE string.
	big2unicode	Convert the BIG5 string into an UNICODE string.
File Operations	file_open	Open file (Internal Storage)
	file_read	Read file (Internal Storage)
	file_write	Write file (Internal Storage)
	file_close	Close file (Internal Storage)
	file_delete	Delete file (Internal Storage)
	file_ rename	Rename file (Internal Storage)
	file_ copy	Copy file (Internal Storage)
	mkdir	Create Directory (Internal Storage)
	screen_capture	Saves current screen into internal storage
SD File Operations	sd_file_open	Open file (SD Card)
	sd_file_read	Read file (SD Card)
	sd_file_write	Write file (SD Card)
	sd_file_close	Close file (SD Card)
	sd_file_delete	Delete file (SD Card)
	sd_file_ rename	Rename file (SD Card)
	sd_ file_ copy	Copy file (SD Card)
	sd_mkdir	Create Directory (SD Card)
	sd_screen_capture	Saves current screen into SD storage
USB File Operations	usb_file_open	Open file (USB Storage)
	usb_file_read	Read file (USB Storage)
	usb_file_write	Write file (USB Storage)
	usb_file_close	Close file (USB Storage)
	usb_file_delete	Delete file (USB Storage)
	usb _file_ rename	Rename file (USB Storage)
	usb _ file_ copy	Copy file (USB Storage)
	usb_mkdir	Create Directory (USB Storage)
	usb_screen_capture	Saves current screen into USB storage
Timer	Sleep	Pause the execution of script in seconds
	Msleep	Pause the execution of script in milliseconds
Date/Time Operation	get_datetime	Read date/time
	set_datetime	Set date/time
Print	print_screen	Prints current screen
Communication	io write and read	Write continuous data to the specified device and read

		continuous data to the specified address
	io write	Writing the lower bytes of consecutive words to device.
	io read1	Read the needed data length from the target device and display the result.
	io read2	Read the data from the target device and display the result.
	io read3	Read the data from device until the end code is received.
	init crc	Initialize the CRC checksum.
	checksum	Calculate the sum of the codes for consecutive addresses
	get_link_param_eth	Read the connection parameters of the Ethernet device to the specified address.
	set_link_param_eth	Set the connection parameters of the Ethernet device to the specified address.
Sound	play_sound	Play sound
	play_sound 2	Play a sound file from an external storage device (microSD card or USB drive).
	stop_sound	Stop playing sound
	Beep	Trigger the buzzer once
	Beepf	Force trigger the buzzer once.
Draw	change_bs	Change the foreground screen (base screen)
	popup_windows	Pop-up the window screen
	close_all_windows	Close all the window screens
System	get_id	Read the specified ID and store it to the start address.

Note: Built-in functions may be added, removed or modified during software updates; please refer to the built-in functions and related documentation listed in FvDesigner if the functions listed in FvDesigner are different from the ones listed in this document.

13.3.3 Custom Functions

Users can combine the frequently used statements into custom functions. Call the created custom function if these statements need to be used in different scripts. The use of custom functions allows the scripts to be simpler and saves the time to

repeatedly write the same statement combinations.

Table 84 Script–Custom function-related statements

Related Statement	Description

call <function>	Calls the custom function named <function>, and will start executing from the first statement in the custom function; it will exit the custom function and return to the script to continue executing the next statement after the call statement once it has finished executing the last statement in the custom function.
	The example below is used to determine whether it is working hours now, and will save the result into $U:V100; users can make it into a custom function called *IsWorkHour*
	if $S:TIME_LOCAL_HOUR >= 8 &&
	$S:TIME_LOCAL_HOUR <= 17
	$U:V100 = 1
	else
	$U:V100 = 0
	endif
	
	Just call *IsWorkHour* and then check $U:V100 when used in a script; for example:
	/* Determines whether it is working hour to set the brightness level for the backlight of the HMI */
	call IsWorkHour
	if $U:V100
	$S:OP_BACKLIGHT_LEVEL = 80
	else
	$S:OP_BACKLIGHT_LEVEL = 30
	Endif

Ret	**ret** statements can be used in custom functions so that it will exit the custom function and return to the script to continue executing the next statement after the call statement once it executes up to the **ret** statement; for example: /* If $U:V0.0 is 0, then this custom function will exit and return to the script to the line after the call statement; the if $U:V0.1 statement behind will not be executed */ if $U:V0.0 @PLC0:Y0 = 1

	else
	  ret
	endif
	if $U:V0.1
	  @PLC:Y1 = 1
	Endif

13.3.4 Comments

Comments can be used as program code explanations in the script to increase the readability of the program. Comments are omitted during script compilation. Therefore they will not affect the execution results of script. Program code that will not be used immediately can also be added into comments and moved out of the comment block for use when needed.

Table 85 Script–Comments

Type	Description
Single-Line Comment	Texts between the // symbol up to the end of the line will be treated as comments For example: // This is a single line comment
Multi-Line Comment	Texts between the /* symbol and */ symbol will be treated as comments For example: /* This is a multi-line comment */

13.4 Examples - Scrolling Lamp

The goal of this example is to create a scrolling lamp where the lamps will move back and forth. As shown in the figure below, there are 15 lamps on the screen and three of the lamps are lit. We wish to have a visual effect where these three lamps keep moving to the left and then move back to the right once it reaches the end and continues cycling in this manner.

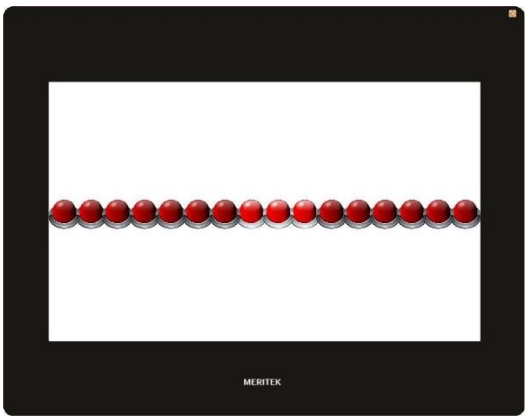


Figure 187 Scrolling Lamp Example

Idea

In order to achieve the effect of the lamps moving towards the left, we can match the 16 lamps on the screen to the 0 to 15th bit of a register word and then use scripts to execute left shift computing to this register. When the 15th bit of the register is 1, it means that the lamp has already moved to the left-most part; next the script should right shift the register until the 0th bit of the register is 1 and then switch to left shift again.
Now that we have an idea what needs to be accomplished, we can start implementing this example.

1. First we will place 16 lamps on the screen, and set the monitor address of the right-most lamp to $U:V0.0 and the second one to $U:V0.1, and so on and so forth, until the address of all 16 lamps have been set.

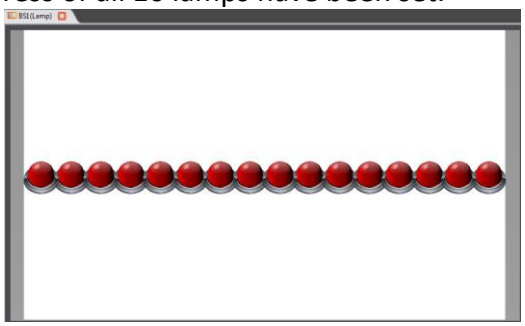


Figure 188 Scrolling Lamp Example Screen Setting

2. Next we will add a script to control the movement of the lamps; first enter the 【Script List】 and press 【Add】, input **Move Lamp** for the comment and then input the following script contents and save:

```
/* When $U:V1 = 0, move left
   When $U:V1 = 1, move right */
if !$U:V1
   if !$U:V0.15  // Lamp not yet reached to the left-most position
      $U:V0 = $U:V0 << 1  // Left shift the lamp
   else
      $U:V1 = 1  // Change the lamp movement to right shift
   endif
else
   if !$U:V0.0   // Lamp not yet reached the right-most position
      $U:V0 = $U:V0 >> 1  // Right shift the lamp
   else
      $U:V1 = 0  // Change the lamp movement to left shift
   endif
endif
```

3. Next is to add another script to initialize the value of the register; input **Init Lamp**

as the comment. the content is shown below:

```
$U:V0 = 7 // Light up the three right-most lamps initially
$U:V1 = 0 // Start moving the lamp to the left
```

4. Finally right click the mouse at an empty space on the screen and select 【Properties】to enter the【Screen Properties】to set the two scripts to execute when the screen opens and cycles respectively:

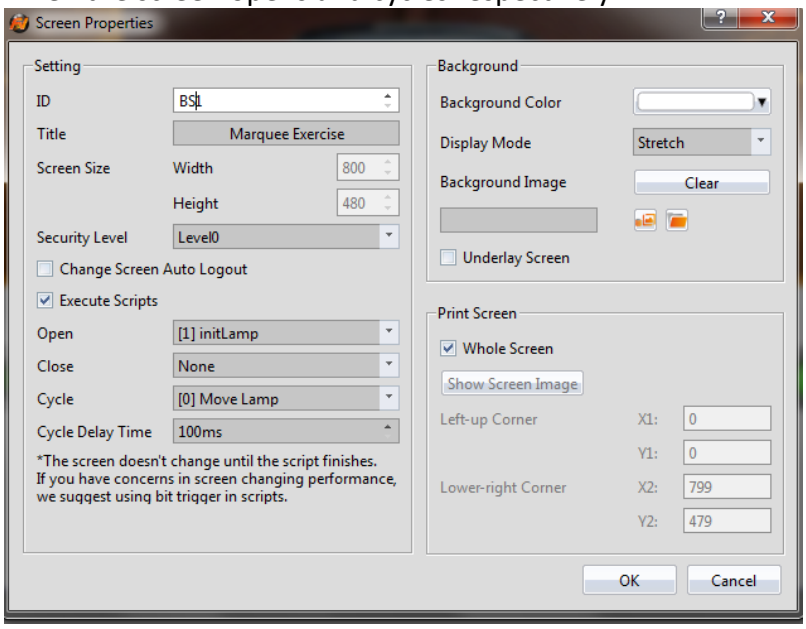


Figure 189 Using Script Setting for the Screen

Return to the【Script List】screen when the setting is complete and the following results can be seen:

ID	Comment	Password	Trigger Condition	Run at Startup	Valid	Reference	
0	Move Lamp	No	None	No	Yes	BS1.Screen.Cycle_Script	Go to
1	Init Lamp	No	None	No	Yes	BS1.Screen.Open_Script	Go to

Figure 190 Script Setting Result

5. Finally, click on【Simulate】which is located in the functions tab page of 【Project】located in the toolbar on the top of the main screen and we will be able to see on the simulation screen that the lamps are moving the way we expected.

14. MQTT

MQTT is a kind of communication protocol designed for IoT with simple and slight features, it's suitable with limited hardware and internet bandwidth environment, can reach the needs of remote monitor and data exchange.
The mechanism of message delivery includes publish and subscribe modes, and each of the message needs a topic name to be identified, such as Temperature. Client side includes Publisher and Subscriber, Publisher publish message with topic, Subscriber subscribe topic; Server side is the Broker, charge for receive the message from Publisher then transfer to Subscriber.
When enable MQTT function on HMI, it can play the above mentioned three roles: Publisher, Subscriber and Broker. HMI can publish the data that in the HMI and PLC register address to Broker via MQTT, also can connect with Broker to get the Subscriber's data. HMI has built-in Broker and no need to search another Broker tool. This chapter will describe the MQTT settings.

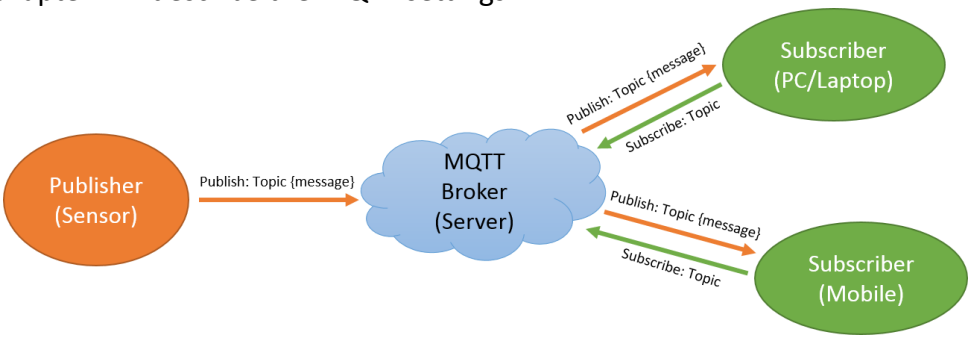


Figure 191 MQTT application schematic diagram

14.1 Server Settings

The MQTT function is in【Project Explorer】【Functions】, 【Broker】paging is used to set MQTT server (Broker), figure as below:

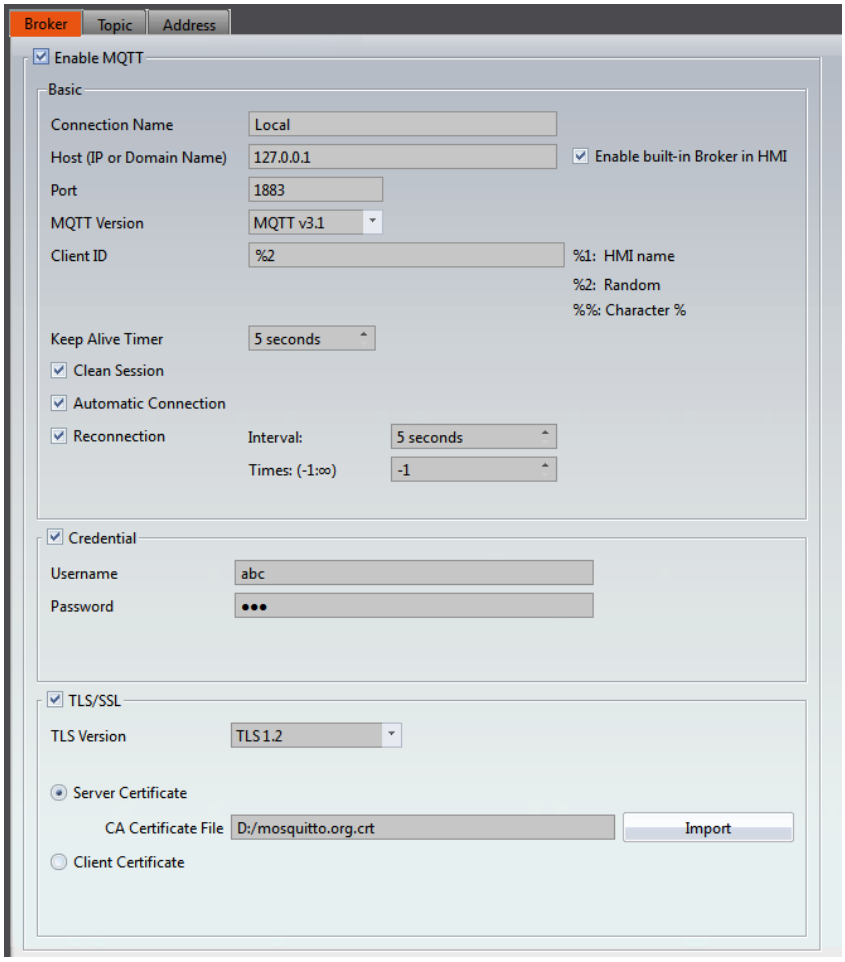


Figure 192【MQTT】【Broker】setting page

Table 86【MQTT】【Broker】setting properties

Field	Description
【Enable MQTT】	Enable to use【MQTT】. If want to use MQTT, enable the function to setup.
【Basic】	【Connection Name】 Set the connection name, can be used as a description. 【Host (IP or Domain Name)】 Set the address of Broker, can field up IP or domain name. Default is 127.0.0.1. (Note: If specified local side 127.0.0.1, means to connect the HMI built-in Broker, needs to check【Enable built-in Broker in HMI】to connect successfully.) 【Port】 Set the Broker's port. Default is 1883. 【Enable built-in Broker in HMI】 Decide whether to enable HMI built-in Broker, if enabled, the link limitations are1024, IP and Port will automatically change to default 127.0.0.1 and 1883. 【MQTT Version】 MQTT communication protocol version. 【Client ID】 Client-specific ID, can customized or use a special code starting with % to form a unique ID: %1: HMI name %2: Random code ％％: Character% (Note: if use the same Client ID to connect with the same Broker may cause identification error and disconnection.) 【Keep Alive Timer】 Indicates the maximum time interval for the server to receive messages from the client. If the server does not receive a message from the client within one and a half of the connection period, it will automatically disconnect from the client. By the unit of second.

	【Clean Session】 The settings in the broker will all be cleared after offline, includes the subscribe topics. 【Automatic Connection】 MQTT will automatically connected when turn on the HMI. 【Reconnection】 Whether to reconnect automatically if MQTT disconnect. a. 【Interval】 Time interval for reconnection, by the unit of second. b. 【Times】 Reconnection times, set ''-1'' as unlimited times. (Note: this reconnection mechanism will not be enabled when the control address for control disconnection is used.)
【Credential】	Enter the username and password when the connected broker has set credential. 【Username】Credential user name. 【Password】Credential password.
【TLS/SSL】	If the connected broker has use TLS/SSL encrypted message to transfer, user can import the certificate file here. 【TLS Version】 TLS version. 【Server Certificate】 Use server side to certificate. 【Import】the need of certification. 【Client Certificate】 Use client side to certificate. 【Import】the need of certificate file and private key.

14.2 Topic Settings

The MQTT function is in【Project Explorer】【Functions】, check the checkbox 【Enable MQTT】then will appear the【Topic】paging.【Topic】is divided into 【Topic Publish】and【Topic Subscribe】. Click【Add】to add new topic, click

【Delete】to delete the selected topic, click【Edit】or double click the selected topic to edit, if there is an existing item in the topic list, click【Export】to export the topics into specific format of CSV file, click【Import】to import specific format of CSV file to update the topics directly. There is an unique ID in the left side of the list, is for topic's ID.

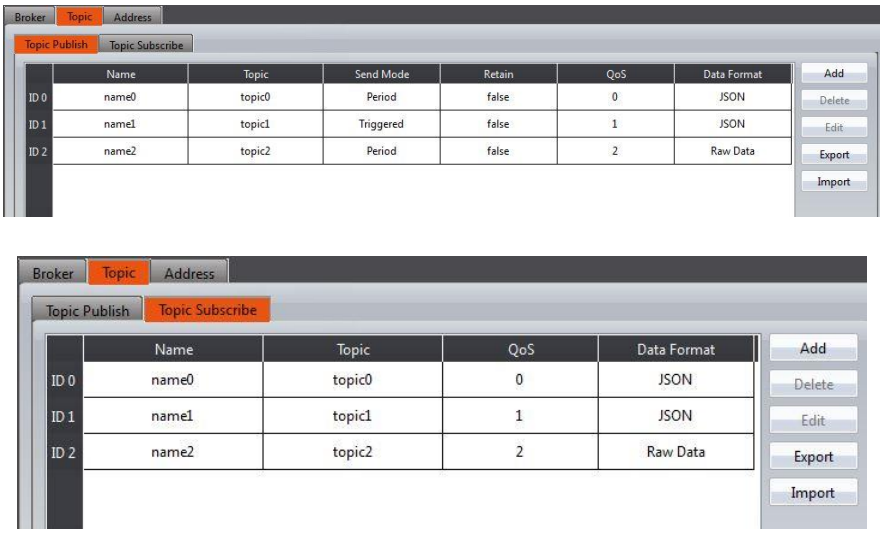


Figure 193【MQTT】【Topic】setting page

The following is a detailed description of the settings for【Topic Publish】and【Topic Subscribe】.

14.2.1 【Topic Publish】

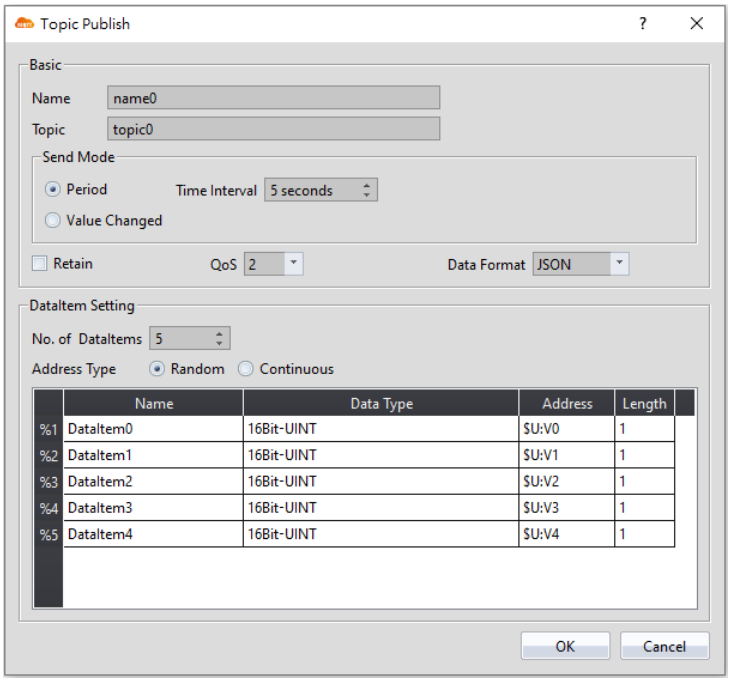


Figure 194【MQTT】【Topic Publish】setting page

Table 87【MQTT】【Topic Publish】properties setting

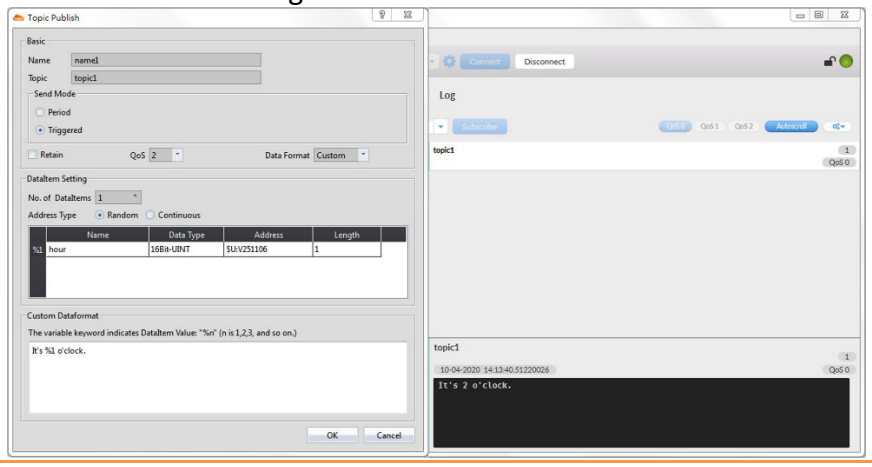
<table>
<tr><th>Field</th><th>Description</th></tr>
<tr><td>【Basic】</td><td>
【Name】
Set the topic name, can be used as a description.

【Topic】
The topic used by MQTT to send messages.
(Note: #,+ are wildcard character, cannot be used)

【Send Mode】
a. 【Period】
Send messages periodically, can set the interval times in seconds.
b. 【Triggered】
Send messages when the data item value changed.

【Retain】
Determine whether the MQTT message should keep in the server. Check this option as true then the server will retain this topic message. If there is new subscriber or the previous disconnected subscribers, will receive the latest remain message.

【QoS】
Set the QoS (Quality of Service) of MQTT, divided in three level:
<table>
<tr><th>Level</th><th>Description</th></tr>
<tr><td>0</td><td>The message will only send once, no guaranteed of delivery, will not be repeated.</td></tr>
<tr><td>1</td><td>The message will deliver at least once, guarantee delivery, might repeated.</td></tr>
<tr><td>2</td><td>The message delivered once, guaranteed delivery, will not be repeated.</td></tr>
</table>
【Data Format】
The message content of each topic is composed of the value of the data item address, there are 3 formats as follows:
<table>
<tr><th></th><th>Name</th><th>Data Type</th><th>Address</th><th>Length</th></tr>
<tr><td>0</td><td>DataItem0</td><td>Bit</td><td>$U:V0.0</td><td>1</td></tr>
<tr><td>1</td><td>DataItem1</td><td>16Bit-UINT</td><td>$U:V1</td><td>1</td></tr>
<tr><td>2</td><td>DataItem2</td><td>32Bit-FLOAT</td><td>$U:V2</td><td>2</td></tr>
<tr><td>3</td><td>DataItem3</td><td>Ascii String</td><td>$U:V3</td><td>4</td></tr>
</table>
a. 【JSON】
{
</td></tr>
</table>

<table>
<tr><td></td><td>
<pre>
"d": {
"DataItem0": [true],
"DataItem1": [810],
"DataItem2": [1.7899999618530273],
"DataItem3": ["love"]
},
"error": [],
"ts": "2019-06-18T10:55:41.491"
}
</pre>
b. 【Raw Data】
01 2a 03 b8 1e e5 3f 6c 6f 76 65
(Note: In order to exchange data successfully, the format and data item settings for publish and subscribe must be the same.)
c. 【Custom】
Users can customize their own publish messages. The variable keyword indicates DataItem Value “%n”.
Example figure as following, and the right side shows the custom message result.


</td></tr>
<tr><td>【DataItem Setting】</td><td>
【No. of DataItems】
Set the numbers of data items for this topic.

【Address Type】
a. 【Random】
Users can set the address of each data item.

b. 【Continuous】
Only the first item can set the address, the other item address will automatically generate, user cannot modify.

The following is the setting description of the data item.
【Name】
</td></tr>
</table>

	DataItem name cannot be blank and each of them should be unique. 【Data Type】 【Bit】,【16Bit-BCD】,【16Bit-INT】,【16Bit-UINT】,【32Bit-BCD】,【32Bit-INT】,【32Bit-UINT】,【32Bit-FLOAT】,【Ascii-String】can select. 【Address】 According to data type, user can set each of the data item address. 【Length】 If the data type is 16-bit then will occupy 1 word, 32-bit will occupy 2 words; if use Ascii-String, user can decide to use how many words. Each word can contain 2 characters.

14.2.2 【Topic Subscribe】

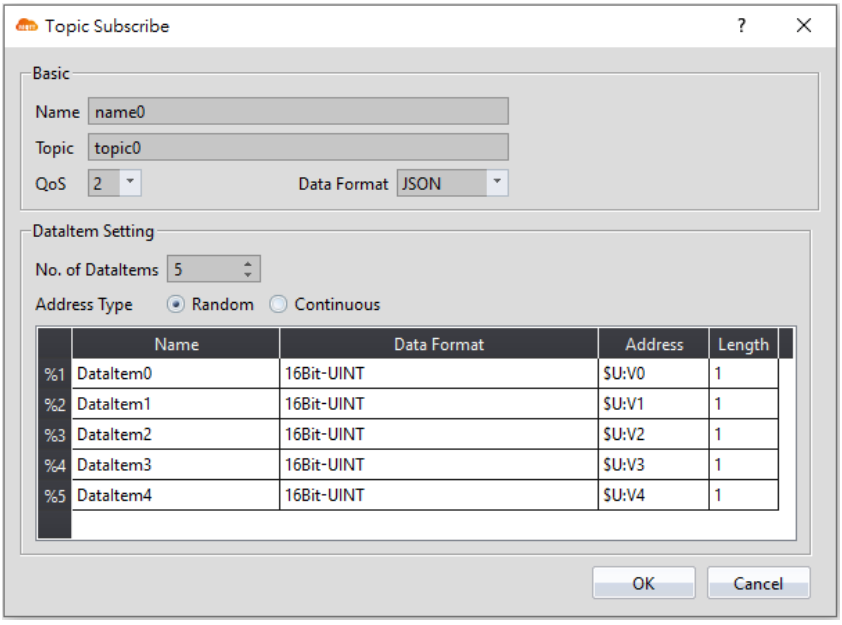


Figure 195【MQTT】【Topic Subscribe】setting page

Table 88【MQTT】【Topic Subscribe】properties setting

Field	Description
【Basic】	【Name】 Set the topic name, can be used as a description. 【Topic】

The topic used by MQTT to send messages.
(Note: #,+ are wildcard character, cannot be used)

【QoS】

Set the QoS (Quality of Service) of MQTT, divided in three level:

Level	Description
0	The message will only send once, no guaranteed of delivery, will not be repeated.
1	The message will deliver at least once, guarantee delivery, might repeated.
2	The message delivered once, guaranteed delivery, will not be repeated.

【Data Format】

The message content of each topic is composed of the value of the data item address, there are two formats as follows:

	Name	Data Format	Address	Length
0	DataItem0	Bit	$U:V0.0	1
1	DataItem1	16Bit-UINT	$U:V1	1
2	DataItem2	16Bit-UINT	$U:V2	1
3	DataItem3	16Bit-UINT	$U:V3	1
4	DataItem4	16Bit-UINT	$U:V4	1

a. 【JSON】


```
{
  "d": {
    "DataItem0": [true],
    "DataItem1": [810],
    "DataItem2": [1.7899999618530273],
    "DataItem3": ["love"]
  },
  "error": [],
  "ts": "2019-06-18T10:55:41.491"
}
```


b. 【Raw Data】

01 2a 03 b8 1e e5 3f 6c 6f 76 65

(Note: In order to exchange data successfully, the format and data item settings for publish and subscribe must be the same.)

c. 【Custom】

When using a customized subscription format, please note that it needs to be the same as that of the publisher to receive complete data, otherwise there will be data errors.

	(Note: The data format and data item settings of publish and subscribe must be the same to data transmission successfully)
【DataItem Setting】	【No. of DataItems】 Set the numbers of data items for this topic. 【Address Type】 c. 【Random】 Users can set the address of each data item. d. 【Continuous】 Only the first item can set the address, the other item address will automatically generate, user cannot modify. The following is the setting description of the data item. 【Name】 DataItem name cannot be blank and each of them should be unique. 【Data Type】 【Bit】,【16Bit-BCD】,【16Bit-INT】,【16Bit-UINT】,【32Bit-BCD】,【32Bit-INT】,【32Bit-UINT】,【32Bit-FLOAT】,【Ascii-String】can select. 【Address】 According to data type, user can set each of the data item address. 【Length】 If the data type is 16-bit then will occupy 1 word, 32-bit will occupy 2 words; if use Ascii-String, user can decide to use how many words. Each word can contain 2 characters.

14.3 Address Setting

The MQTT function is in【Project Explorer】【Functions】, check the checkbox【Enable MQTT】then will appear the【Address】paging. Use【Status Address】to

monitor the MQTT connected status and use【Control Address】to control the connection and broker settings of the MQTT. Figure as below:

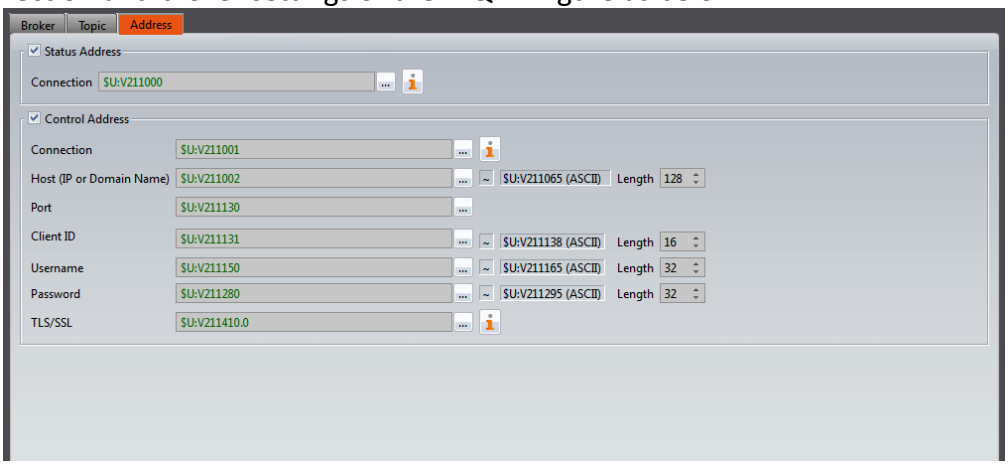


Figure 196【MQTT】【Address】setting page

Table 89【MQTT】【Address】properties setting

<table>
<tr><th>Field</th><th>Description</th></tr>
<tr><td>【Status Address】</td><td>Use status address can monitor the connection status of the MQTT.

【Connection】
Set the status address of the MQTT connection. Following is the connection status definition table, also can click to view.
<table>
<tr><th>No.</th><th>Value (16Bit-INT)</th><th>Definition</th></tr>
<tr><td>1</td><td>0</td><td>Disable</td></tr>
<tr><td>2</td><td>1</td><td>Disconnected</td></tr>
<tr><td>3</td><td>2</td><td>Connected</td></tr>
<tr><td>4</td><td>-1</td><td>Error</td></tr>
</table></td></tr>
<tr><td>【Control Address】</td><td>Use control address to control the connection of MQTT or the real time update the broker’s setting.

【Connection】
Set the control address of the MQTT connection. Following is the control connection definition table, also can click to view.
<table>
<tr><th>No.</th><th>Value (16Bit-INT)</th><th>Definition</th></tr>
<tr><td>1</td><td>0</td><td>None</td></tr>
<tr><td>2</td><td>1</td><td>Disconnect</td></tr>
<tr><td>3</td><td>2</td><td>Connect</td></tr>
</table></td></tr>
</table>

	4	3 Update After changing the following control address related to broker, update the control address command to update the broker's setting immediately. 【Host (IP or Domain Name)】 Set the IP control address, you can set the length of the string, it will automatically calculate the length of the continuous occupation register, the string can be up to 253 words, dynamically change the IP address of the broker by changing the content of the register. 【Port】 Set the control address of the port, is control by a word, dynamically change the port by changing the content of the register. 【Client ID】 Set the control address of Client ID, you can set the length of the string, it will automatically calculate the length of the continuous occupation register, the string can be up to 23 words, dynamically change the Client ID by changing the content of the register. 【Username】 Set the control address of username, you can set the length of the string, it will automatically calculate the length of the continuous occupation register, the string can be up to 256 words, dynamically change the username by changing the content of the register. 【Password】 Set the control address of password, you can set the length of the string, it will automatically calculate the length of the continuous occupation register, the string can be up to 256 words, dynamically change the password by changing the content of the register. 【TLS/SSL】 Set whether to enable TSL/SSL control address, is control by a bit, dynamically decided whether to enable TSL/SSL certificate by changing the content of the register. Following is the definition table, also can click  to view.

No.	Value (Bit)	Definition
1	False	Disable
2	True	Enable

14.4 Tool

Introduce how to use MQTT related tool.

14.4.1 Select server (Broker)

a. HMI built-in broker

To enable the built-in broker, check the checkbox【Enable built-in Broker in HMI】in【Broker】setting page, if【Host (IP or Domain Name)】set as local side 127.0.0.1 indicates MQTT will use the HMI built-in broker and it must check the【Enable built-in Broker in HMI】to connect successfully. If use the third party MQTT client program, then set the broker's IP as HMI's IP indicates to use the HMI broker to connect.

b. Public Broker

Enter the public broker IP or domain name in【Host (IP or Domain Name)】.

For example: Use Mosquitto public test broker (https://test.mosquitto.org/)

- Host: test.mosquitto.org
- Port: 1883

c. Set up your own Broker

Users can set up your own Broker.
For example: Use Mosquitto(http://mosquitto.org/download/), is free and open source, for detail installation and operations please refer to the website.

14.4.2 Client-Side Application

To monitor the information transmitted by MQTT, needs to use a third-party MQTT client application to connect to the selected broker and subscribe HMI's publish topic to receive the updated data. There are many free MQTT client-side applications that can be downloaded to use.
For example: MQTT.fx (https://mqttfx.jensd.de/index.php/download)

15. Database

It can be used to connect to the database server and upload data to the database or download data from the database to the HMI. The database function can be added and activated in the function【Function】of【Project Explorer】. (※Note: This item can only be seen when the model is PC.)

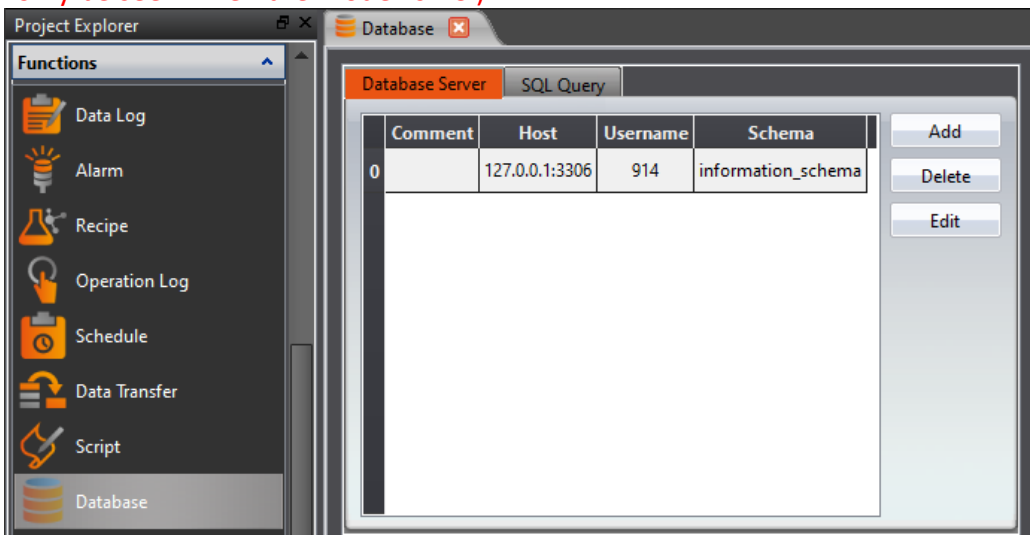


Figure 197 Database

15.1 【Database Server】

15.1.1 【General】

After clicking Add or Edit, the【Database Server Properties】window will pop up. The following describes each setting:

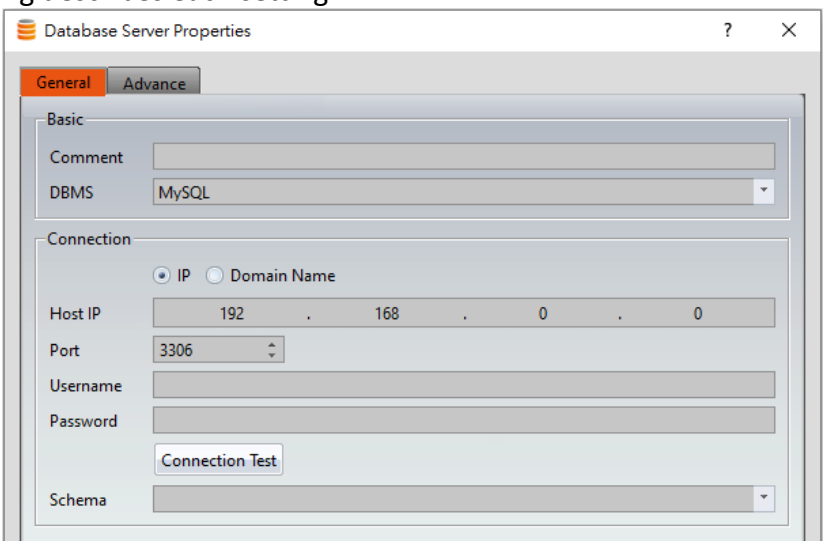


Figure 198【Database Server Properties】【General】setting page

Table 90【Database Server Properties】【General】properties setting page

Property	Description
【Basic】	【Comment】 Comment for this connection 【DBMS】 Database server system, currently only supports MySQL and Microsoft SQL Server.
【Connection】	【IP】 Set the address of the connected server, then you can enter【Host IP】below. 【Domain Name】 Set the address of the connected server, then you can enter the【Host Name】below 【Port】 Set the communication port connected to the database server, the default is 3306 【Username】 Set the user name to connect to the database server 【Password】 Set the password to connect to the database server 【Connection Test】 Test the above information can successfully connect to the server or not, if test success, then can select the【Schema】. 【Schema】 if test success, then can select the database.

15.1.2 【Advanced】

The connection status and parameters of the database can be viewed or controlled by setting the address.

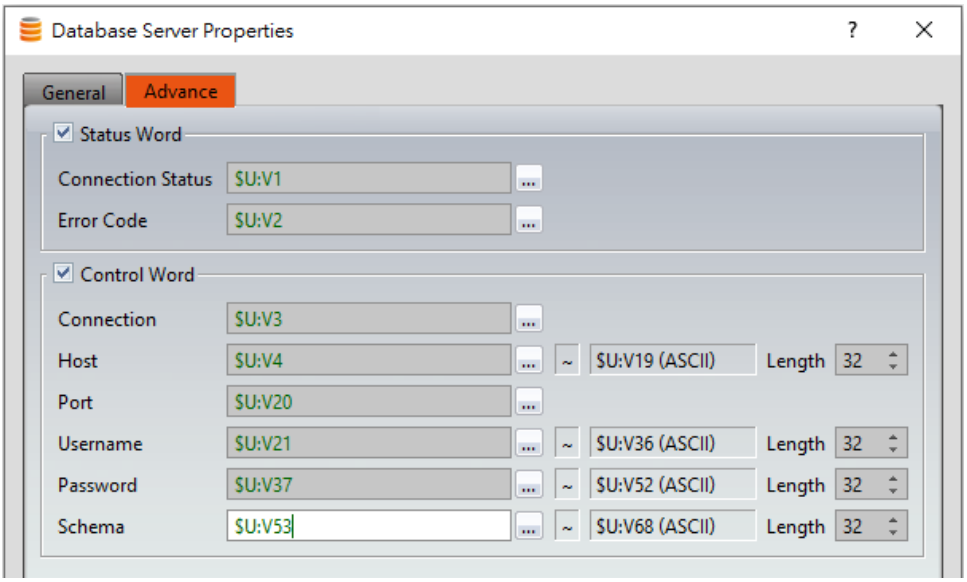


Figure 199【Database Server Properties】【Advanced】setting page

Table 91【Database Server Properties】【Advanced】properties setting page

<table>
<tr><th>Property</th><th>Description</th></tr>
<tr><td>【Status Word】</td><td>【Connection Status】
Display the connection status.
<table>
<tr><th>No.</th><th>Value</th><th>Status</th></tr>
<tr><td>1</td><td>0</td><td>Disconnected</td></tr>
<tr><td>2</td><td>1</td><td>Connection failed</td></tr>
<tr><td>3</td><td>2</td><td>Connected</td></tr>
</table>
【Error Code】
Database server system, currently only supports MySQL
<table>
<tr><th>No.</th><th>Value</th><th>Status</th></tr>
<tr><td>1</td><td>0</td><td>No error</td></tr>
<tr><td>2</td><td>Others</td><td>Error code returned by the database server</td></tr>
</table></td></tr>
<tr><td>【Control Word】</td><td>【Connection】
Control the connection status
<table>
<tr><th>No.</th><th>Value</th><th>Function</th></tr>
<tr><td>1</td><td>0</td><td>Ready</td></tr>
<tr><td>2</td><td>1</td><td>Start connecting</td></tr>
<tr><td>3</td><td>2</td><td>Stop connecting</td></tr>
<tr><td>4</td><td>3</td><td>Update connection parameters</td></tr>
</table>
【Host】
Set the connected host, for example:
If the connection setting selects【IP】, enter:</td></tr>
</table>

	192.168.0.100 If the connection setting selects【Domain Name】, enter: DESKTOP-NLURQM5 【Port】 Set the port to connect to the database server 【Username】 Set the username to connect to the database server 【Password】 Set the password to connect to the database server 【Schema】 Set the connected database name

15.2 【SQL Query】

Provides data exchange function for HMI and database, and can set the format of the data field for SQL query.

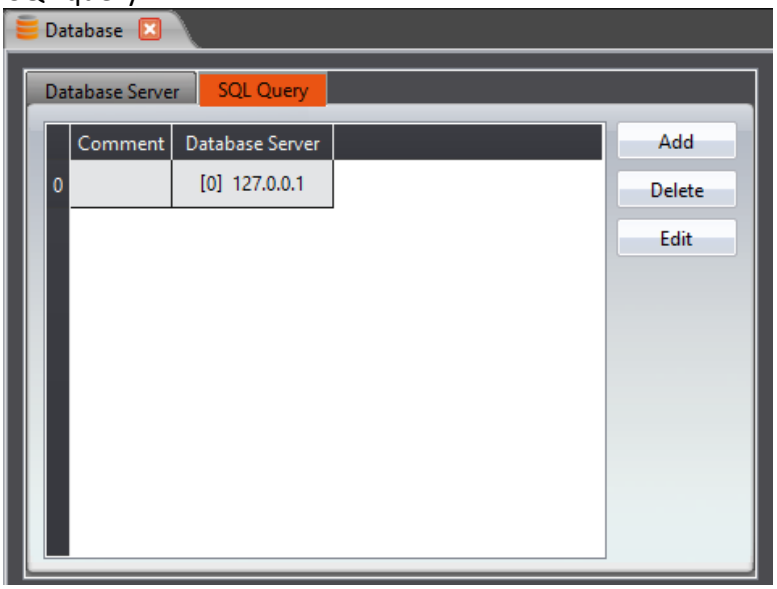


Figure 200【SQL Query】page

15.2.1 【General】

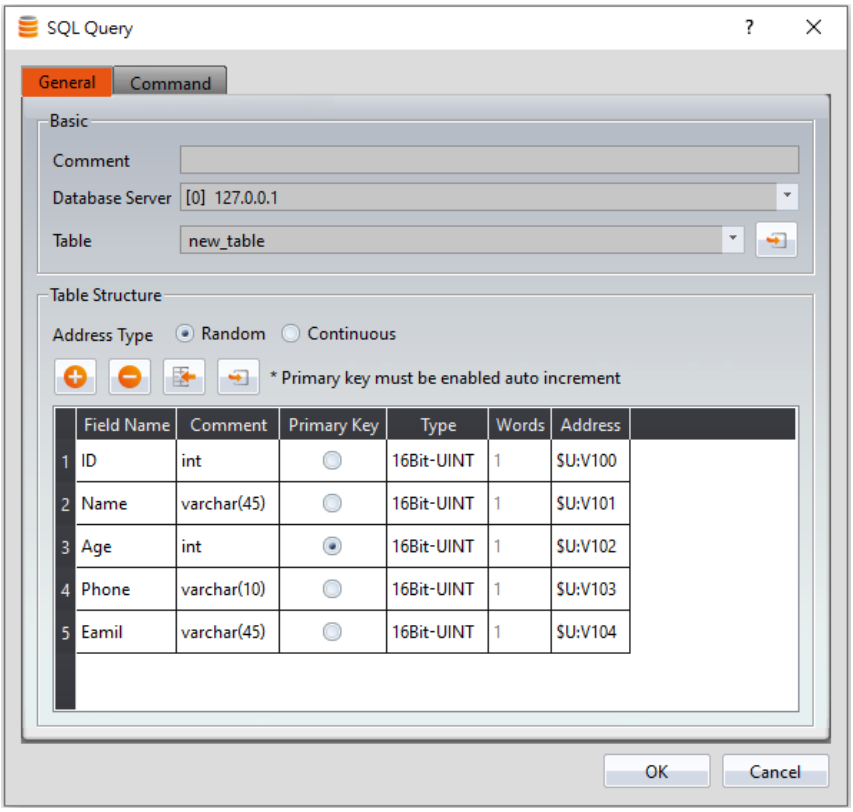


Figure 201【SQL Query】【General】setting page

Table 92【SQL Query】【General】properties setting page

Property	Description
【Basic】	【Comment】 Comment of this SQL Query 【Database Server】 Choose a database as the data source 【Table】 Import the form from the database
【Table Structure】	【Address Type】 Here you can select the address where the data will be placed after reading the column below  【Add】 Add a new column 【Delete】 Delete the selected column

	【Insert】 Insert a column below the selected column 【Import Files From Database】 Import field data from the selected database
【Table Column】	【Field Name】 The field name must same as the database table field setting 【Comment】 Comment for this column 【Primary Key】 Set the primary key 【Type】 Set the data type 【Words】 Set the needed words 【Address】 Set the address where the data is placed after reading

15.2.2 【Command】

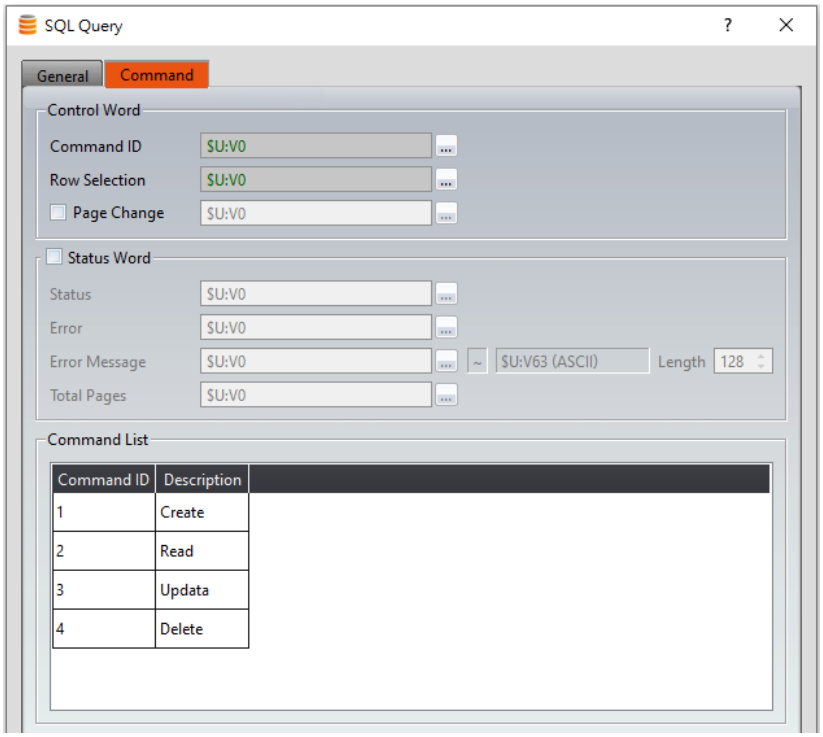


Figure 202【SQL Query】【Command】setting page

Table 93【SQL Query】【Command】properties setting page

Property	Description
【Control Word】	Use the control address to control the command of【SQL Query】. 【Command ID】 Choose the command from【Command List】to command ID: 1 – Add the target address data to the end of the database ID: 2 – According to【Row Selection】and【Page Change】to read data from the database to the target address. ID: 3 – According to【Row Selection】and【Page Change】, update the target address data to the database. ID: 4 – According to【Row Selection】and【Page Change】to delete a data 【Row Selection】 Select which row of data to read to the target address 【Page Change】 Choose which page to read. One page for every 1000 data,

<table>
<tr><td></td><td>if the database has more than 1000 data, you need to enable this function</td></tr>
<tr><td>【Status Word】</td><td>Use the status word group to monitor the processing status of【SQL Query】.

【Status】<table><tr><th>No.</th><th>Bit Value</th><th>Function</th></tr><tr><td>1</td><td>0</td><td>Normal</td></tr><tr><td>2</td><td>1</td><td>The data exceeds 1000, need to use the page change function</td></tr></table>
【Error】<table><tr><th>No.</th><th>Bit Value</th><th>Function</th></tr><tr><td>1</td><td>0</td><td>No error</td></tr><tr><td>2</td><td>1</td><td>Unknown error</td></tr><tr><td>3</td><td>2</td><td>Error command</td></tr><tr><td>4</td><td>3</td><td>Database is not connected</td></tr><tr><td>5</td><td>4</td><td>Error reading argument</td></tr><tr><td>6</td><td>5</td><td>Unable to write output</td></tr><tr><td>7</td><td>6</td><td>Wrong number of arguments</td></tr><tr><td>8</td><td>7</td><td>MySQL error</td></tr><tr><td>9</td><td>8</td><td>Unsupported data type</td></tr><tr><td>10</td><td>9</td><td>The number of fields exceeds the limit</td></tr><tr><td>11</td><td>10</td><td>Row Selection is out of range</td></tr><tr><td>12</td><td>11</td><td>Internal error</td></tr></table>
【Error Message】
Error message returned by the database server

【Total Pages】
Display the total number of pages</td></tr>
</table>

15.3 Database Related Object

【SQL Query Table】can be selected in the【Toolbox】, use【SQL Query Table】to display the execution results of【SQL Query】commands.

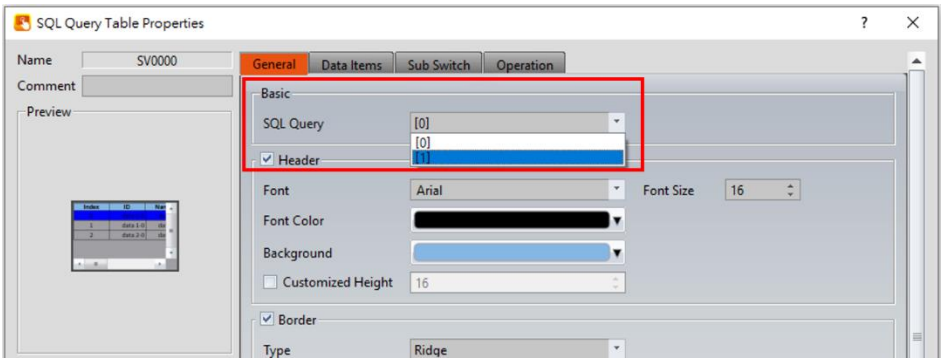


Figure 203【SQL Query Table】setting

16. OPC UA

OPC UA (OPC Unified Architecture) is a communication standard designed for industrial automation. The characteristic advantage is cross-platform, unified communication standardization, suitable for the communication environment of a variety of machines and equipment, and can meet the needs of data exchange and remote monitoring.

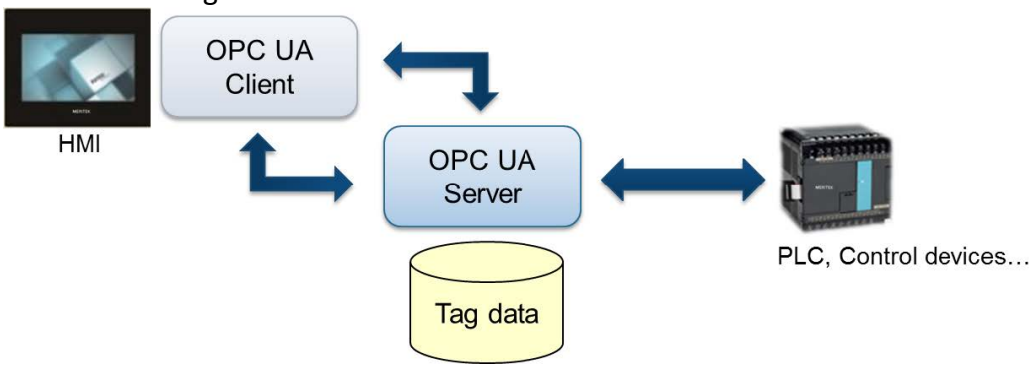


Figure 204 OPC UA Application architecture diagram

The main features of the MERITEK【OPC UA Server】include：

- Simple and fast establishment of OPC UA server data structure
- Support for folder structures, enabling grouping and classification of related dat a
- Remote browsing and access support
- Read and write functionality, enabling access to PLC register data
- Real-time display of server connection status on the execution screen

16.1 OPC UA Server

16.1.1 Setting

16.1.1.1 Server

When selecting the product series as 【FvRT(PC)】or 【OPC UA(PC)】, you can access the settings page for the OPC UA server by clicking on 【OPC UA Server】in the 【Function】window of the 【Project Explorer】panel on the left, the 【Server】tab can be used to set the the basic connection information and security verification mechanism of the OPC UA Server, as shown below:

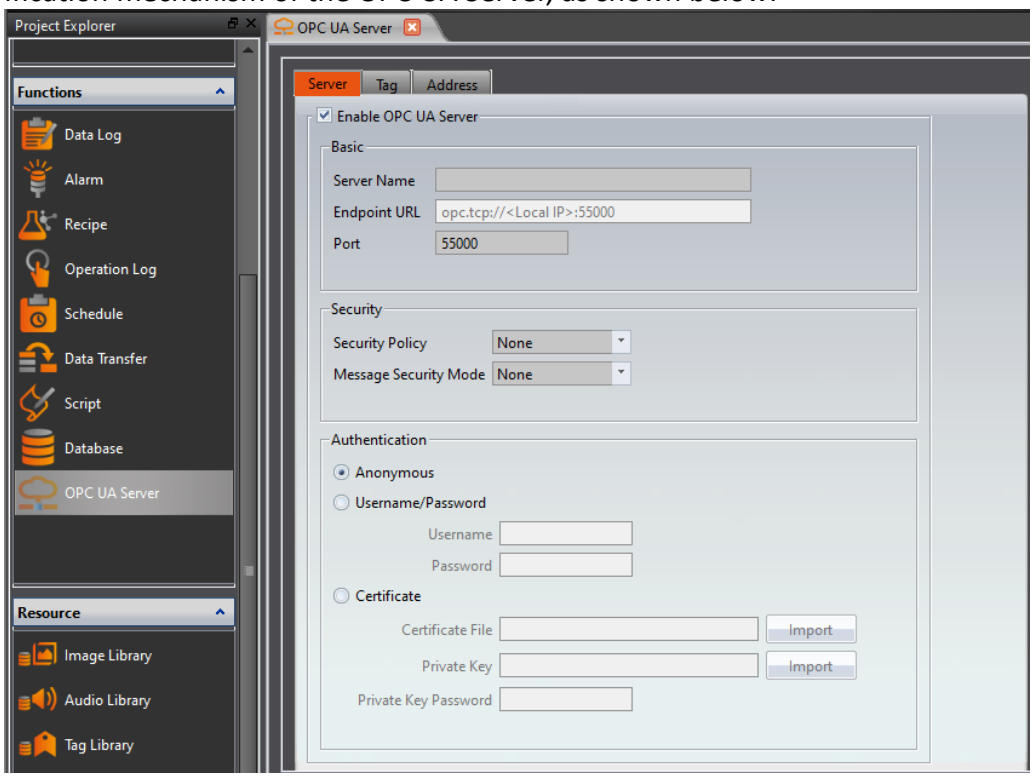


Figure 205 【OPC UA Server】【Server】setting page

Table 94 【OPC UA Server】【Server】properties setting

Properties	Description
【Enable OPC UA Server】	Check whether to enable 【OPC UA Server】, this is the main switch of 【OPC UA Server】function. The detailed fields can be set only after it is enabled, and the related 【Tag】and 【Address】tabs will appear.
【Basic】	【Server Name】 Set the name of the server, which can be used as a description

	【Endpoint URL】 The server address will be automatically set to the IP of the host (PC or HMI). This field is only for display and cannot be changed manually 【Endpoint URL】 Set the server port. Default is 55000
【Security】	Security protection and encryption method can be set. 【Security Policy】 You can specify the method of security protection, you can choose "None" or one of the following: ● Basic128Rsa15 ● Basic256 ● Basic256Sha256 【Message Security Mode】 You can specify the encryption mode, select "None" or one of the following: ● Sign ● Sign & Encrypt
【Authentication】	Set the authentication method. 【Anonymous】 No authentication required 【Username/Password】 Enter the username and password for authentication 【Certificate】 Import the certificate file and private key, and enter the corresponding private key password. After the password is entered, it will be mask.

16.1.1.2 Tag

Check【Enable OPC UA Server】to see this page, in which you can create tags and their corresponding addresses.

Click the【Add Group】button on the right to add a new group, click the【Add Tag】button to add a new tag, the group and the tag are in a tree structure: a group can be created underneath Added new groups and tags. Click the【Delete】button to delete the selected group or taf. Double-click the item to directly edit the field settings of the selected group or tag.

The OPC UA server specification supports the Embedded UA Server Profile 1.03 of the OPC Foundation.

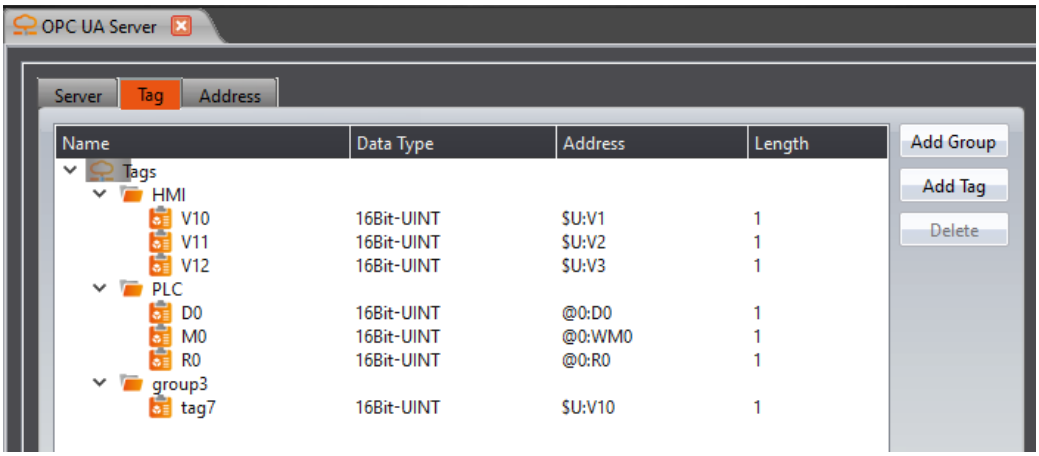


Figure 206【OPC UA Server】【Tag】setting page

Table 95【OPC UA Server】【Tag】properties setting

Properties	Description
【Group】	Each group can directly set the fields as follows 【Name】 Click on the name to directly enter and modify.
【Tag】	Each tag can directly set the fields as follows. 【Name】 Click on the name to directly enter and modify. 【Data Type】 There are【Bit】,【16Bit-INT】,【16Bit-UINT】,【32Bit-INT】,【32Bit-UINT】,【32Bit-FLOAT】,【ASCII】can be selected. 【Address】 According to the data type, the user can set the address corresponding to each tag 【Length】 If the data type is 16-bit, it will occupy 1 word, and 32-bit will occupy 2 words; if it is Ascii-String, the user can decide how many words the tag occupies. Each word group can contain 2 bytes.

【OPC UA Server】 supports OPC Foundation's Embedded UA Server Profile 1.03. In the 【Enable OPC UA Client】, register tags can be found in the "Objects/Tags" folder. Other tags contain default server information, as shown in the image below:

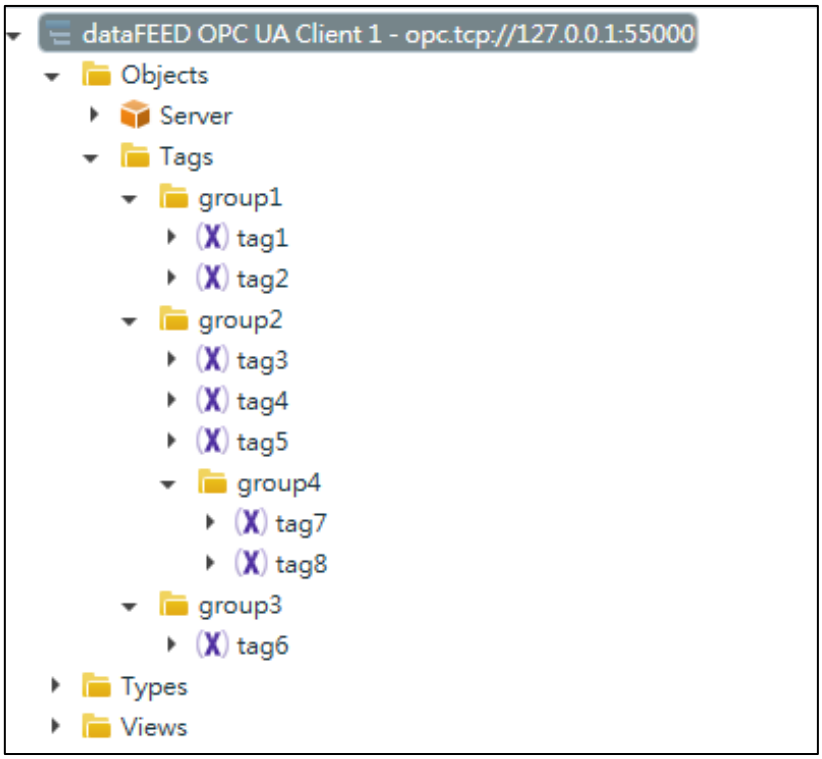


Figure 207 Reading Information with OPC UA Client

16.1.1.3 Address

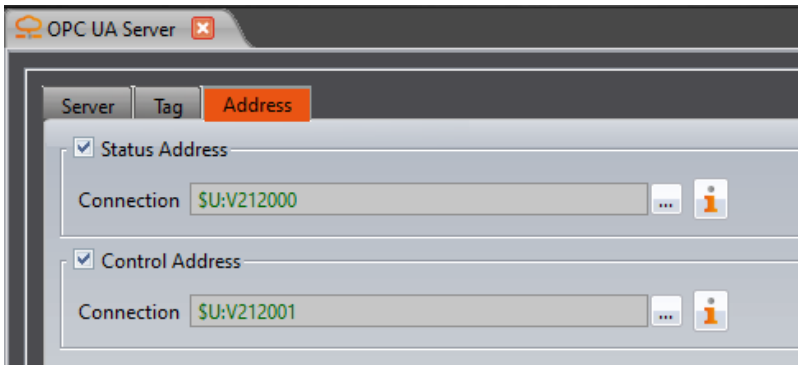


Figure 208【OPC UA Server】【Address】setting page

Table 96【OPC UA Server】【Address】properties setting

Properties	Description
【Status Address】	Use the status address to monitor the running status of the OPC UA server 【Connection】 Set the status address of the OPC UA server. The following is the state definition table. Value (16Bit-INT) / Description 0 / Disable 1 / Stopped 2 / Running -1 / Error
【Control Address】	Use the control address to control the operation of the OPC UA server in real time 【Connection】 Set the control address of the OPC UA server. The following is the state definition table. Value (16Bit-INT) / Description 0 / None 1 / Stop 2 / Start

16.1.2 Server setting steps

16.1.2.1 Adding a new project

To create a new project in FvDesigner, click 【New】on the left side of the project window. Choose either 【FvRT(PC)】or 【OPC UA(PC)】,then click 【Finish】to create the project.

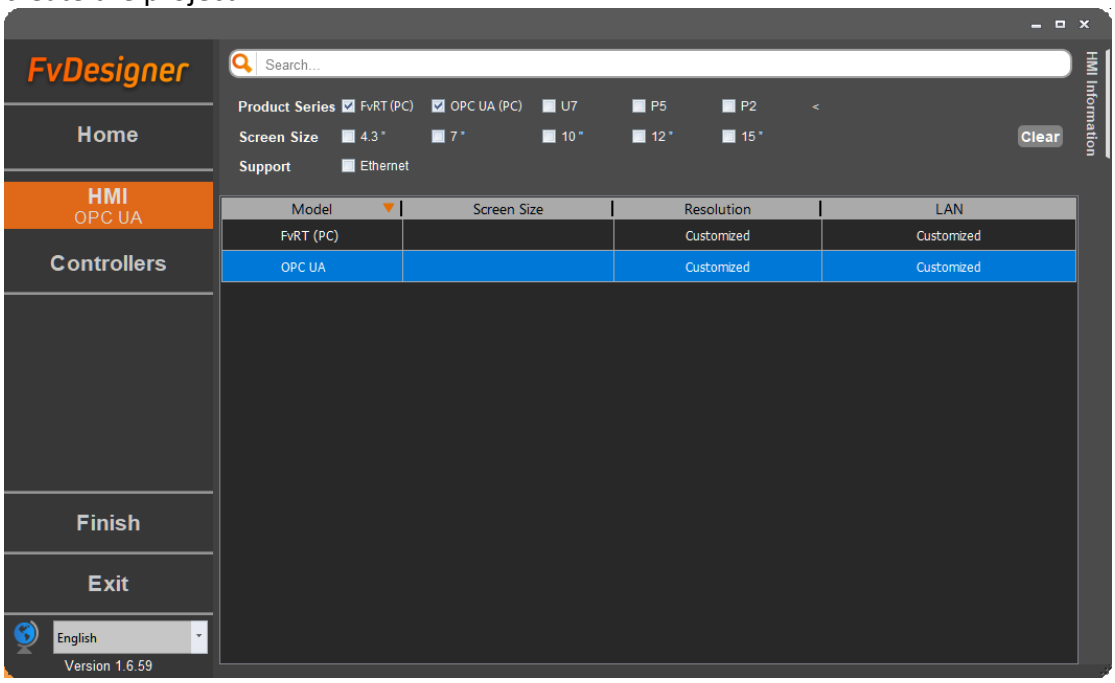


Figure 209 Choose product series of the project

16.1.2.2 Setting up PLC Connection

In the 【System】window of the 【Project Explorer】 panel on the left, click 【Link】to enter the link setup page. This page allows you to configure the PLC device that OPC UA will access. If 【OPC UA(PC)】is selected as the project model, only MERITEK PLCs can be used.

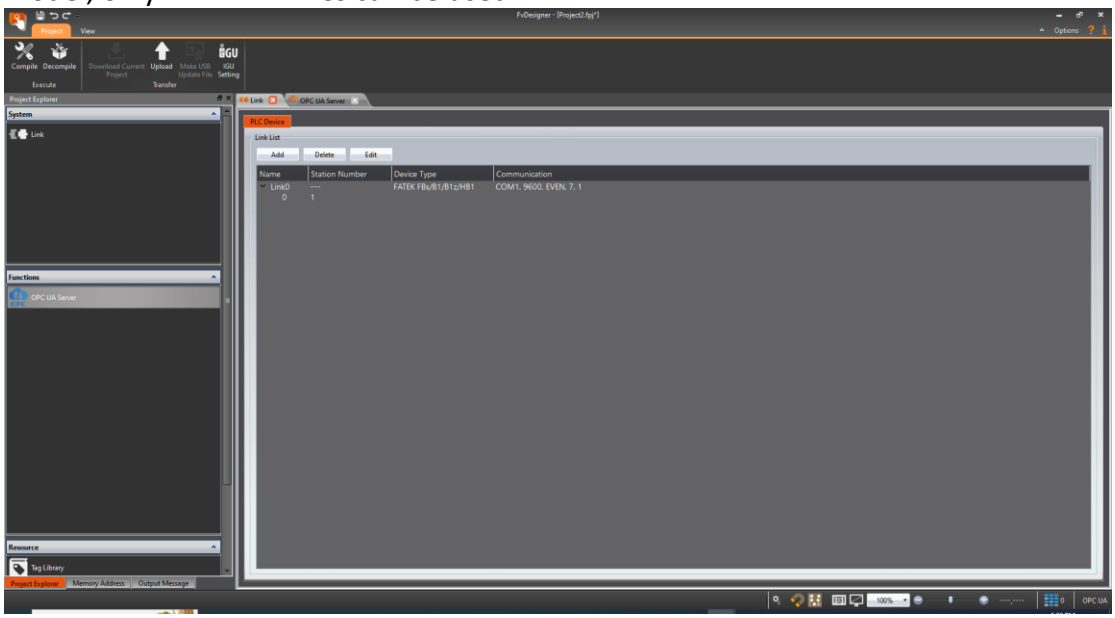


Figure 210 Choose external device connection

16.1.2.3 Setting up Server and Tags

On the left-hand side of the screen, in the 【Functions】window under 【Project Explorer】, click on 【OPC UA Server】. Check the box for 【Enable OPC UA Server】to configure the server. (The default port for the OPC UA server is 55000, but it can be changed as needed.)

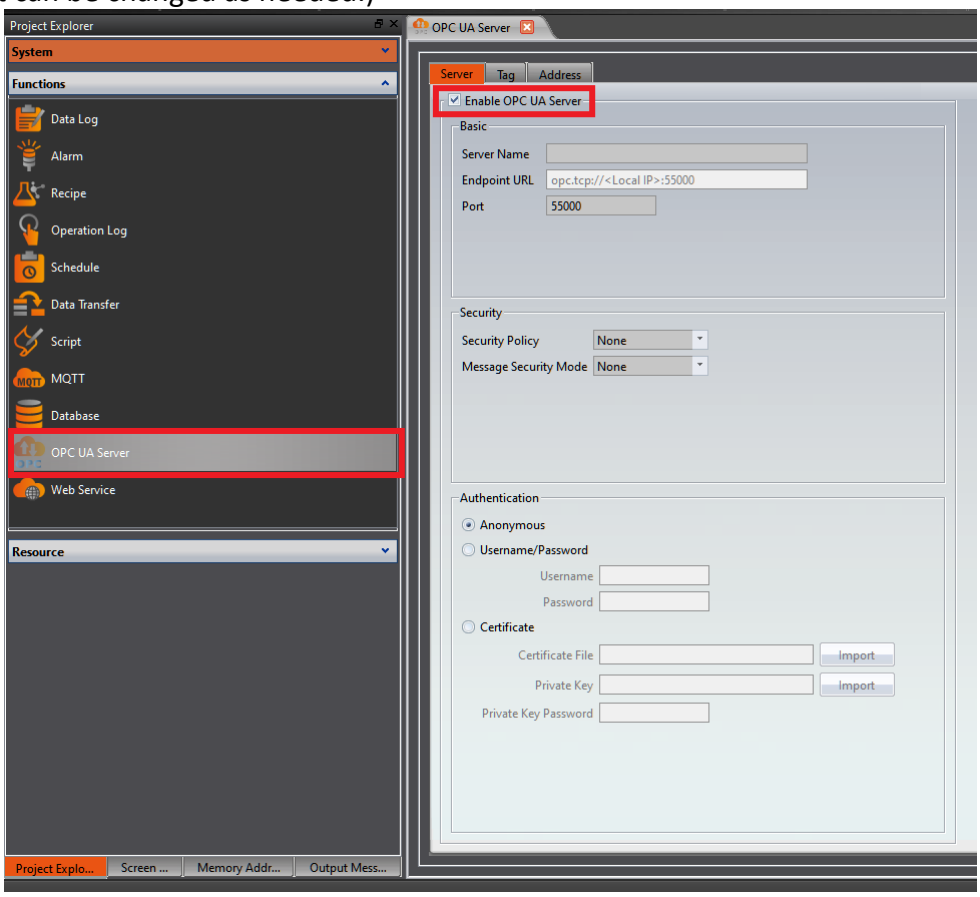


Figure 211 Enable OPC UA Server

On the 【Tags】page, you can create tags to access PLC register data. The steps are as follows : click the 【Add Tag】button to create a new tag, then click on the 【Address】of that tag to input the linked PLC register address. In the settings page, you can create multiple 【Group】and 【Tags】according to your own needs to establish a categorized data structure.

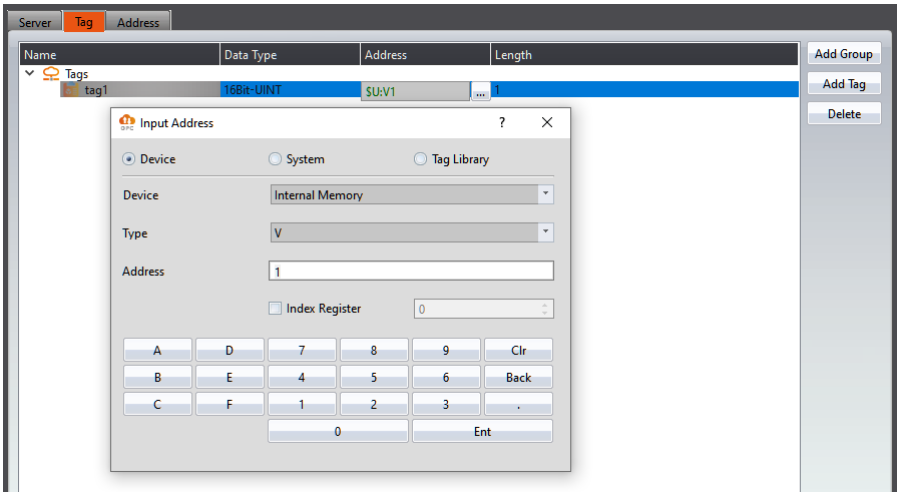


Figure 212 Set OPC UA Tags

16.1.2.4 Compilation and Simulation

After configuring the OPC UA server and tags, click 【Compile】to generate a .cfrp file upon successful compilation. The compilation result will display the location where the project is stored and information about the applicable dongle model. After compilation, click 【Simulation】to perform functional testing. Once testing is successful, use 【FvRT.exe】to run the project.

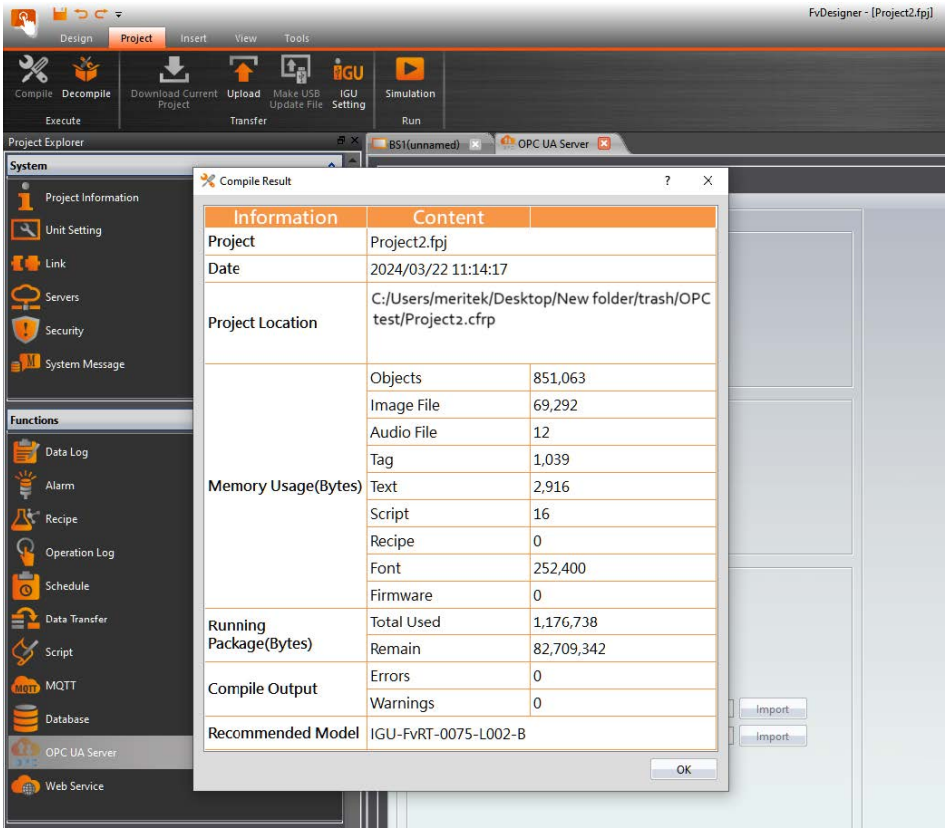


Figure 213 Compile project

16.1.2.5 Running the OPC UA Server

Insert 【IGU-FvRT】or 【IGU-OPC UA】into the computer, open the 【FvRT】software, click "Open Project," select the compiled project (.cfrp), and then click the 【Run】button to start running the OPC UA server.

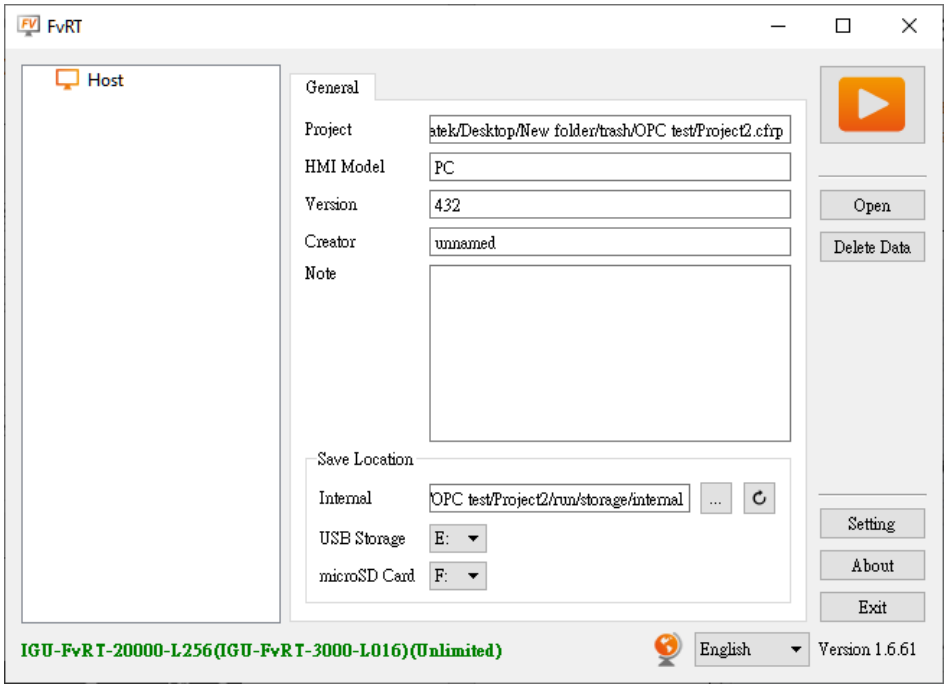


Figure 214 Choose project to run

If the project model is "OPCUA," the server running status and connection count information will be displayed.



Figure 215 OPC UA Server running screen

16.2 OPC UA Client

For the OPC UA client function,go to【Project Explorer】->【System】->【Link】, and add a link property in【PLC Device】:

【Interface Type】select【Direct Link (Ethernet)】,

【Manufacturer】select【OPC UA】

【Product Series】select【OPC UA Client】,then can set OPC UA Client connection

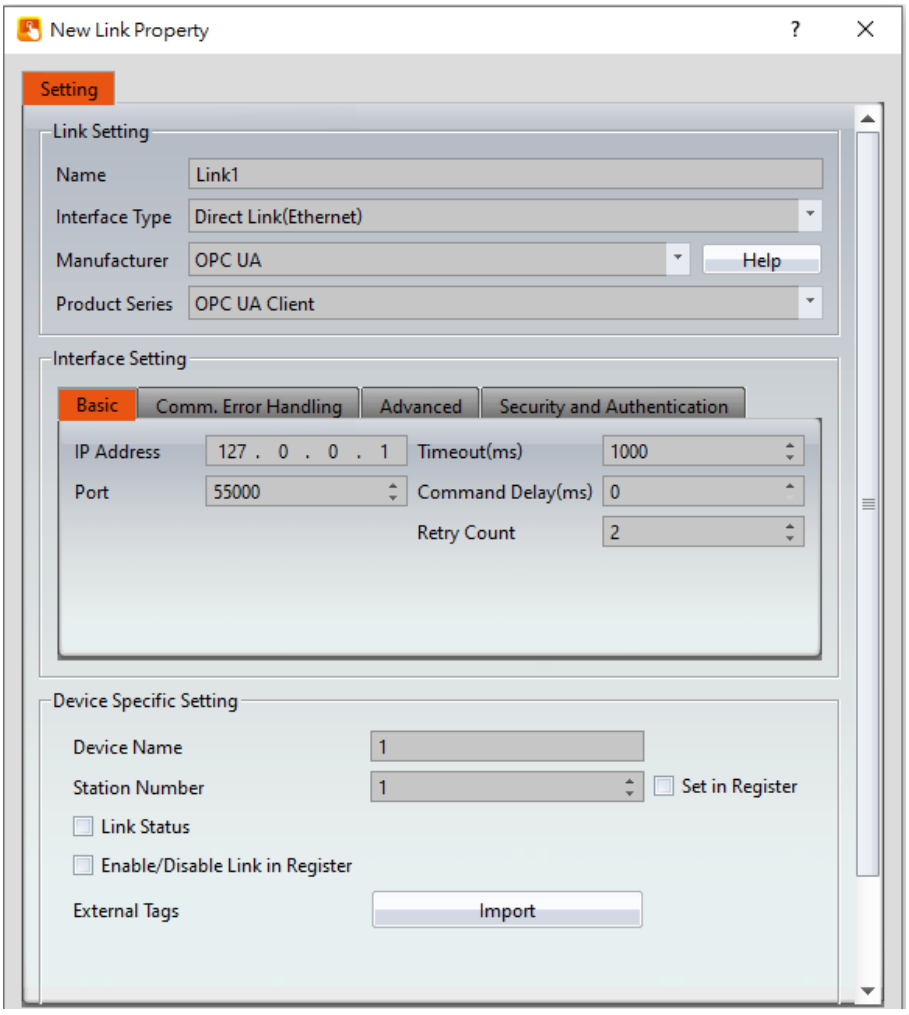


Figure 216【OPC UA Client】setting page

The setting method is same as 3.3.1-PLC Device

16.2.1 Tag

In the settings tab, click the external tags【Import】button on the below to open the import tag window

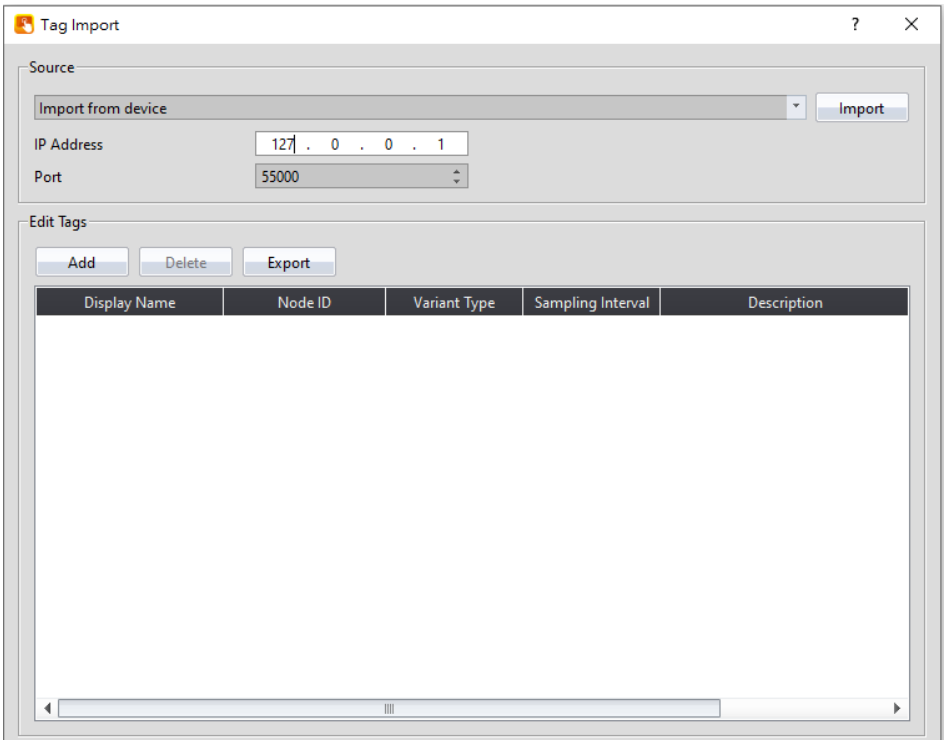
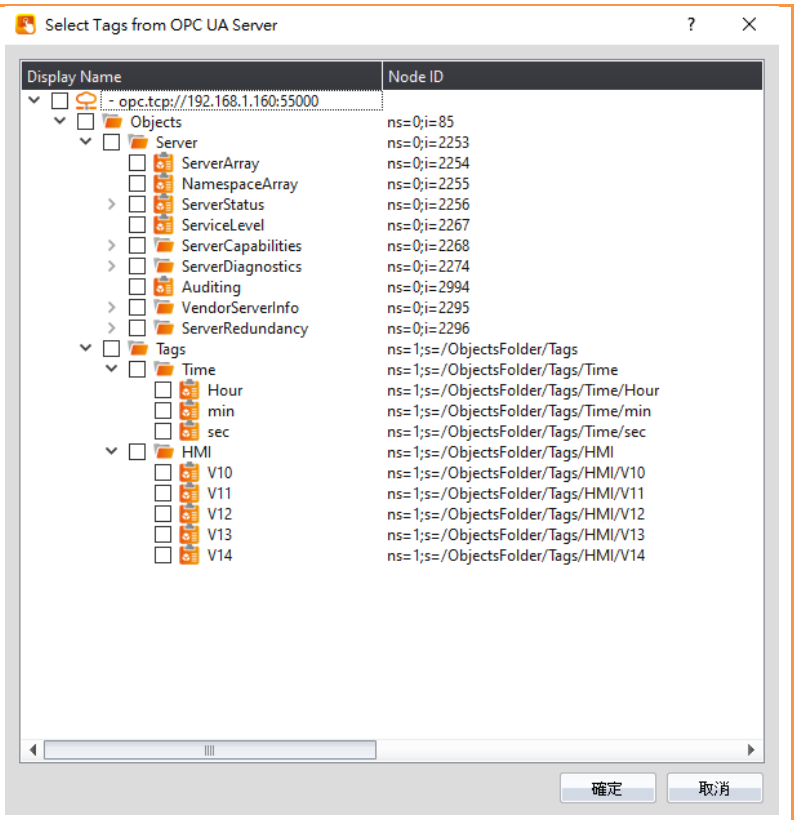


Figure 217【OPC UA Client】【Tag Import】setting page

Table 97【OPC UA Client】【Tag Import】properties setting

Properties	Description
【Source】	【Import from device】 Same as the IP address and port set before, which is the connection setting of the OPC UA server.

	 【Import from file】 Import a CSV file in a specific format and update the tag table directly
【Edit Tags】	【Add】 Select a new tag from the OPC UA server to add. (Note: You need to import tags from the device first and make sure to connect to an OPC UA server before you can add tags directly from the server) 【Delete】 Delete the selected tag 【Export】 Export the current label settings into a CSV file in a specific format, which can be imported and used later

16.2.2 Security and Authentication

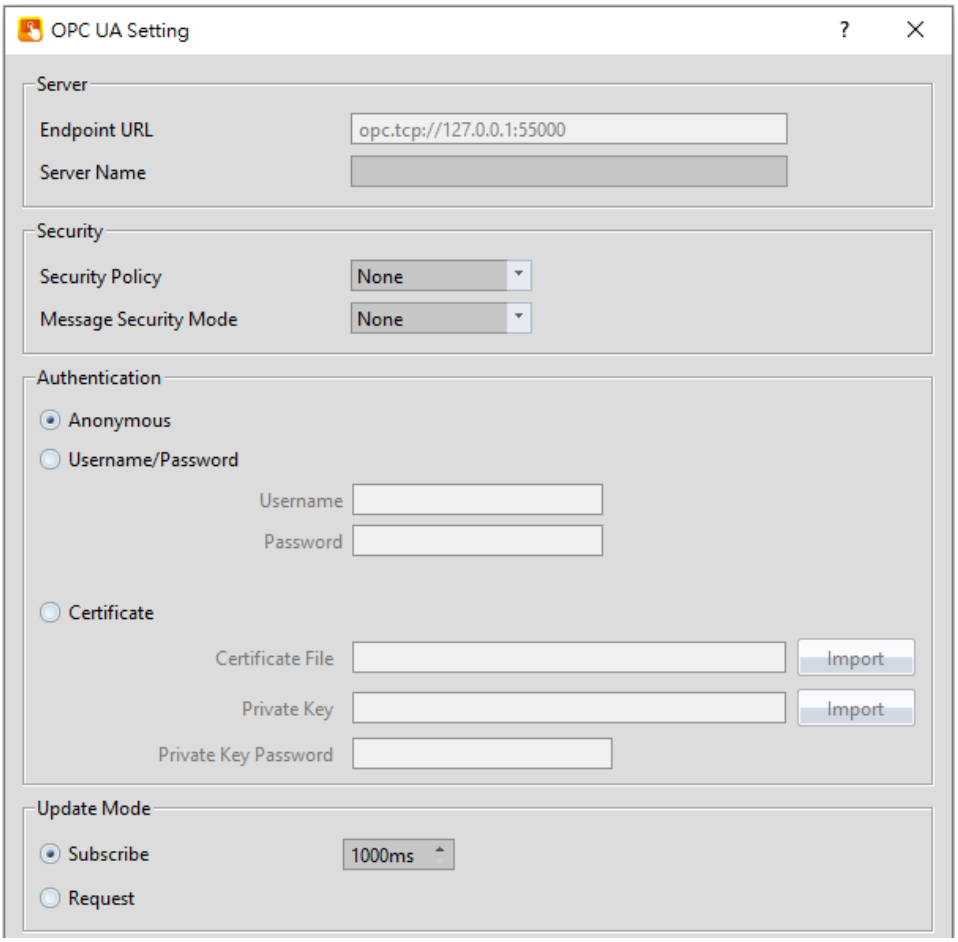


Figure 218【OPC UA Client】【Security and Authentication】setting page

Table 98【OPC UA Client】【Security and Authentication】properties setting

Properties	Description
【Server】	【Endpoint URL】 The URL of the OPC UA server will automatically use the 【IP Address】and【Port】in the【Interface Setting】【Basic】to form the format "opc.tcp://IP:port". This field cannot be used, only for display purposes. 【Server Name】 Set the name of the server, which can be used as a description
【Security】	Security protection and encryption methods can be set, please note that this setting must be the same as the connected server: 【Security Policy】 You can specify the method of security protection, you can choose "None" or one of the following:

	● Basic128Rsa15 ● Basic256 ● Basic256Sha256 【Message Security Mode】 You can specify the encryption mode, select "None" or one of the following: ● Sign ● Sign & Encrypt
【Authentication】	The authentication method can be set. Please note that this setting must be the same as the connected server: 【Anonymous】 No authentication required 【Username/Password】 Enter the username and password for authentication 【Certificate】 Import the certificate file and private key, and enter the corresponding private key password. After entering the password, it will be masked
【Update Mode】	Select the mode for updating tag data 【Subscribe】 A fixed time (milliseconds) can be set to read the tag data, read the data when it has been updated. 【Request】 Will continue to read tag data

17. Web Service

REST API is a widely used interface architecture in network communication technology. It can be used to exchange data with third-party services. Its advantages are simple and convenient design and practicality, and it follows safe, reliable and efficient communication standards.
The web application can use the REST API to send a request to the server, and then the server will send back a response to meet the needs of information exchange. The entire communication process is based on the standard rules designed and defined by the REST architecture, using standard HTTP methods, including GET, PUT, and POST.
HMI can send a request to an external network server through the REST API, and send the data of the devices' (HMI, PLC) register address to the server's database through POST/PUT, or gets data from the server through GET command and writes it into the register address.
This chapter will explain the relevant pages and setting methods of the REST API.

※This function only supports P5 series and FvRT.

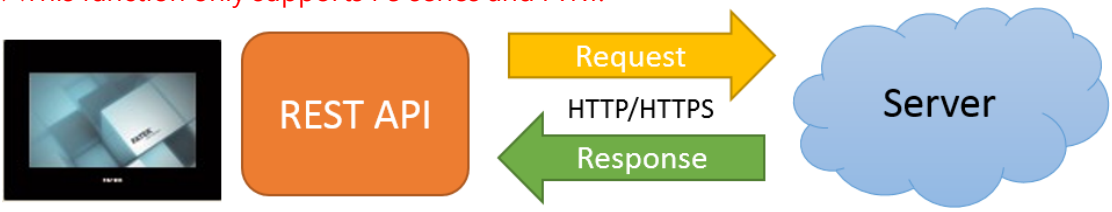


Figure 219 REST APIApplication architecture diagram

17.1 【Enable REST API】

Within 【Enable REST API】checked, you can add a new REST request in【Request List】. You can add a new request by click【Add】, click【Delete】to delete the request that you choose, click【Edit】or click the requst twiceto edit it.

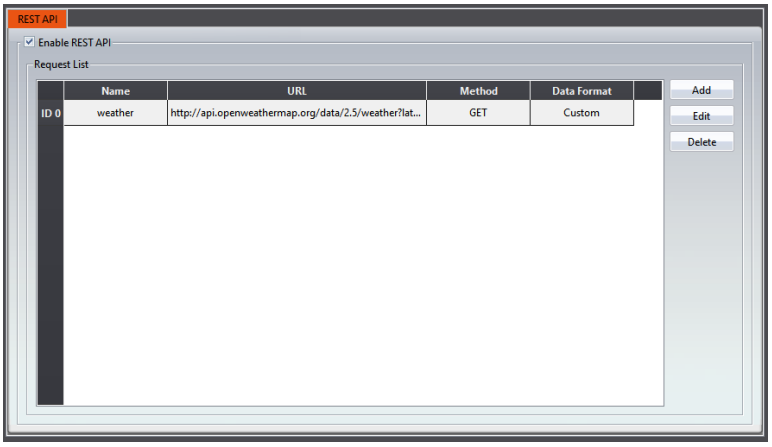


Figure 220 【REST API】setting page

17.1.1 REST API Setting

Following introduction is for setting interface

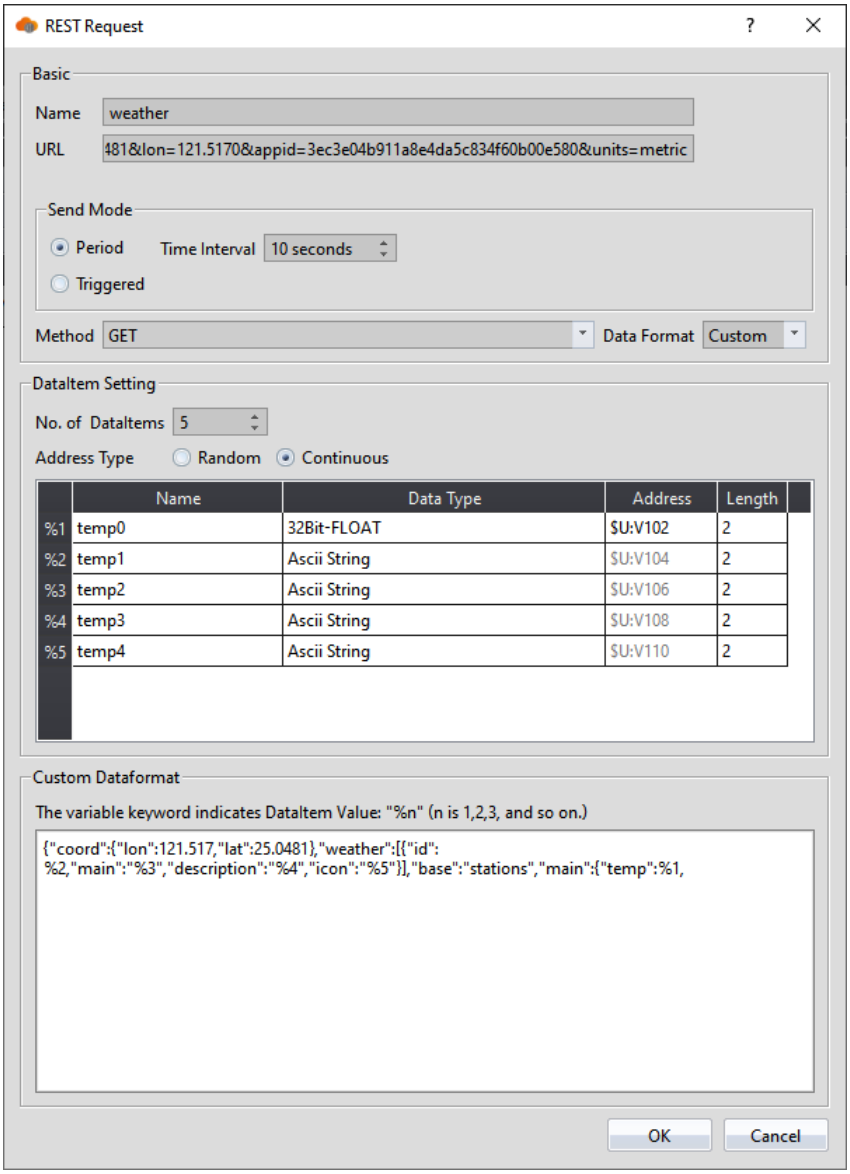


Figure 221 【REST Request】Editing Window

Table 99 Edit Window Setting Properties of the 【REST Request】

Property	Description
【Basic】	【Name】 Set the name of request, which can be used as a description. 【URL】 URL for sending request to get data from server. 【Send Mode】 a. 【Period】 You can set Time Interval to send request

<table>
<tr><td></td><td>b. 【Triggered】
The request only will be sent when the value of the DataItem changes.
（Notice：The content of the message will only display items with value changes）

【Method】
Common data transfer method, following description:
<table><tr><th>Command</th><th>description</th></tr><tr><td>POST</td><td>Add</td></tr><tr><td>PUT</td><td>Update</td></tr><tr><td>GET</td><td>Read</td></tr></table>
【Data Format】
a. 【JSON】: Commonly used standard formats, example:
{
"id": 111,
"name": "meritek",
"url": "https://www.meritek.com/",
"status": 100
}
（Notice：This is only for the DataItem in first hierarchy of JSONformat, Besides, please choose【Custom】）

b. 【Custom】: Format that you can have your own definition, You need to know that custom is using【Text】 for type format.</td></tr>
<tr><td>【DataItem Setting】</td><td>【No. of DataItems】
Sets the number of data items for this request.

【Address Type】
a. 【Random】
Only the first item can set the address, the other item address will automatically generate, user cannot modify.
b. 【Continuous】
Users can set the address of each data item.

Following direction is for data item setting.
【Name】
DataItem name cannot be blank and each of them should be unique.

【Address】
According to data type, user can set each of the data item address.

【Length】
If the data type is 16-bit then will occupy 1 word, 32-bit will occupy 2 words; if use Ascii-String, user can decide to use how</td></tr>
</table>

	many words. Each word can contain 2 characters.

17.1.2 REST API Example

The following demonstration obtains the project of current temperature in Taipai , Please note that this is an example based on the API of openweathermap.org, and there is no guarantee that the value can be obtained effectively at any time.

Step1.
Type in 【URL】
http://api.openweathermap.org/data/2.5/weather?lat=25.0481&lon=121.5170&appid=3ec3e04b911a8e4da5c834f60b00e580&units=metric

Choose 【GET】in【Method】

Choose【Custom】in【Data Format】

Step2.
Set 【No. of DataItems】as 5, customize the name at will, 【Address Type】contains one 32bit-float and four Ascii.

Step3.
Fill in 【Custom Dataformat】
{"coord":{"lon":121.517,"lat":25.0481},"weather":[{"id":%n,"main":"%n","description":"%n","icon":"%n"}],"base":"stations","main":{"temp":%n,

%n represents the variable that needs to be read, refer to the setting of Figure 221.
For more detailed parameters, please refer to https://openweathermap.org/api/one-call-3

Step4.
Put the address corresponding to %n of "temp":%n on the screen using the numeric input device, and after compiling the project, use online simulation or download to HMI to see the value.

18. Resource

18.1 【Image Library】

The【Image Library】function can be used when designing projects with the FvDesigner to create images that need to be used in the【Image Library】files (*.fil) in advance so that they can be conveniently used when editing objects. In addition, the generated【Image Library】files (*.fil) can also be exported when several people are developing a project together, so that other developers can import and use the files.

18.1.1 Image Library Settings

Click on【Image Library】in【Project Explorer】of the FvDesigner and the【Image Library】Edit Window (as shown in the figure below) will appear, where the usage methods of each setting is as shown in the table below:

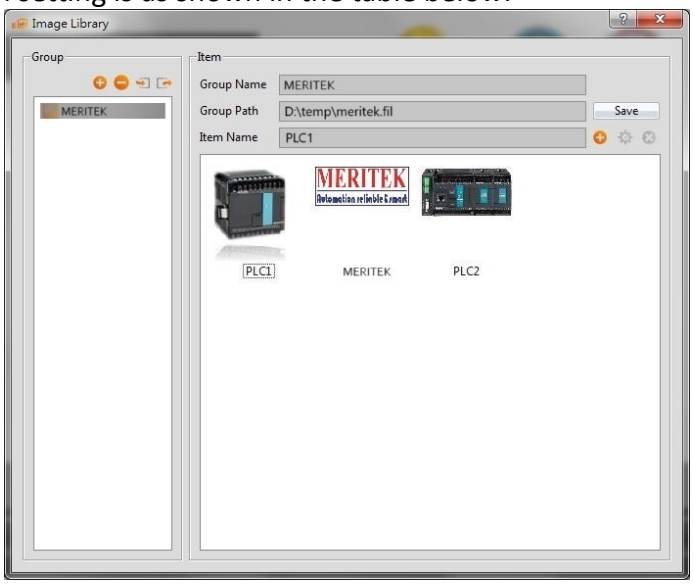


Figure 222 Image Library Editing Window

Table 100 Edit Window Setting Properties of the Image Library

Property	Description
【Add】	Add an【Image Library】group; the system will generate a new【Image Library】file (*.fil) when this button is pressed.
【Remove】	Remove an【Image Library】group; this【Image Library】will be removed from the image library when this button is pressed, but the【Image Library】file (*.fil) will

	not be deleted.
【Import】	 Import a new【Image Library】file and generates a corresponding【Image Library】group.
【Export】	 Save the current【Image Library】group into the specified path as a new file.
【Group List】	Display the【Image Library】groups currently included in the computer. When the mouse is clicked on a specific【Image Library】group, the item list on the right will display all image contents included in that【Image Library】group.
【Group Name】	Set the name for the currently selected【Image Library】group. Note: This name is only the displayed name of the【Image Library】group; it is not the file name of the【Image Library】file.
【Group Path】	Display the file path of the currently selected【Image Library】group.
【Item Name】	Edit the item name of the currently selected image.
【Save】	Save the contents of the edited【Image Library】group into the corresponding【Image Library】file.
【Add Item】	 Add an image into the active【Image Library】group.
【Edit Item】	 Change the saved image of the currently selected item.
【Delete Item】	 Delete the currently selected image.
【Item List】	Display all the image contents included in the currently selected【Image Library】; the【Add Item】,【Edit Item】and【Delete Item】buttons on the top-right can be used to edit the selected【Image Library】group.

18.1.2 Image Library Usage Method

The【Image Selector】must be used if the users want to use the image library they created or the default image libraries provided by the FvDesigner. This chapter will introduce the【Image Selector】usage and how to select images saved in the【Image Library】.

18.1.2.1 Image Selector

The【Image Selector】is as shown in the figure ( ); it allows users to select images. When the images saved in the【Image Library】need to be used, click on the "" button to the left to select the image needed from the【Image Library】. If the image needed is saved on the user's computer, the "" button to the right can be pressed to select the image needed from the user's computer.

18.1.2.2 Image Library Selection Window

The image selection window of the【Image Library】is as shown in the figure below. Use the pull-down menu to select the【Image Library】group where the image that the user wants to use is located, and then select the image needed from the【Item List】below. The【Item List】will synchronize and update the display of images included in the【Image Library】group when switched to another【Image Library】group.

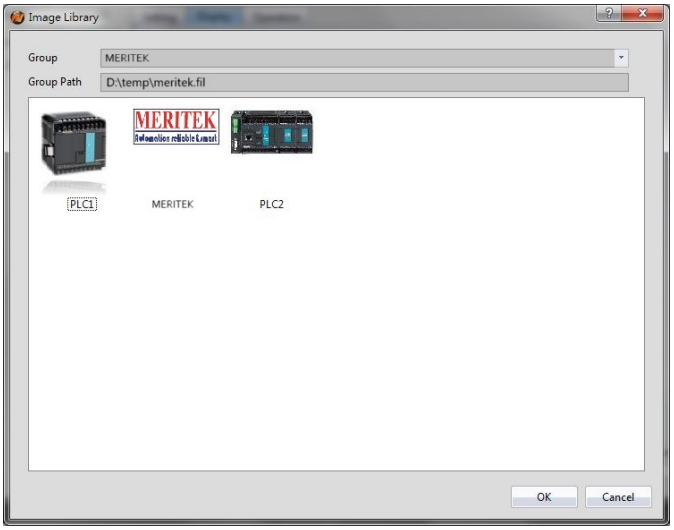


Figure 223 Image Selection Window of Image Library

18.2 【Audio Library】

The【Audio Library】function can be used while designing projects with the FvDesigner to create the audio files that need to be used into the【Audio Library】files (*.fal) in advance so that they can be conveniently used when editing objects. In addition, the generated 【Audio Library】files (*.fal) can also be exported when several people are developing a project together, so that other developers can import and use the files, too.

18.2.1 Audio Library Settings

Click on【Audio Library】in【Project Explorer】of the FvDesigner and the【Audio Library】Edit Window (as shown in the figure below) will appear where the usage of each setting is as shown in the table below:

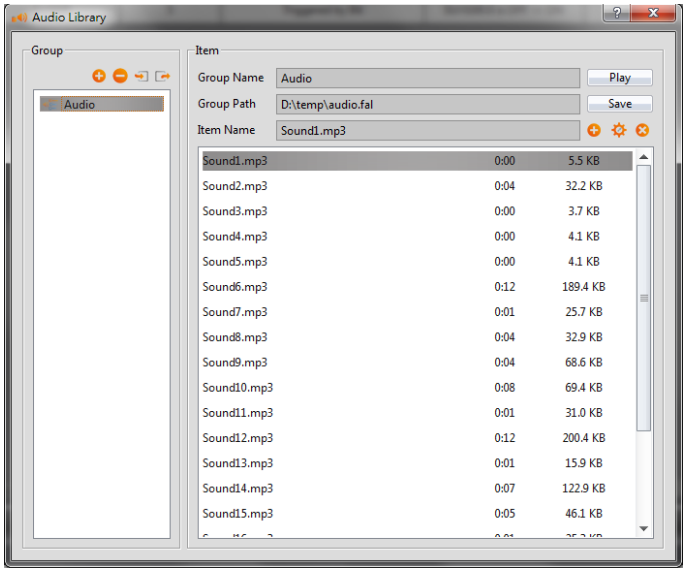


Figure 224 Audio Library Edit Window

Table 101 Edit Window Setting Properties of Audio Library

Property	Description
【Add】	Add an【Audio Library】group; the system will generate a new【Audio Library】file (*.fal) when this button is pressed.
【Remove】	Remove an【Audio Library】group; this【Audio Library】will be removed from the audio library when this button is pressed, but the【Audio Library】file (*.fal) will not be deleted.
【Import】	Import a new【Audio Library】file and generates a corresponding【Audio Library】group.
【Export】	Save the current【Audio Library】group into the specified path as a new file.
【Group List】	Display the【Audio Library】groups currently included on the computer. When a specific【Audio Library】group is clicked, the item list on the right will display all audio contents included in that【Audio Library】group.
【Group Name】	Set the name for the currently selected【Audio Library】group.

	Note: This name is only the displayed name of the【Audio Library】group; it is not the file name of the【Audio Library】file.
【Group Path】	Display the file path of the currently selected【Audio Library】group.
【Item Name】	Edit the item name of the currently selected audio file.
【Play】	Play the currently selected audio file. This button will change to the【Stop】function when the audio file starts to play; It can stop playing the audio file that is currently playing.
【Save】	Save the contents of the edited【Audio Library】group into the corresponding【Audio Library】file.
【Add Item】	Add an audio file into the active【Audio Library】group.
【Edit Item】	Change the currently selected audio.
【Delete Item】	Delete the audio file of the currently selected item.
【Item List】	Display all the audio contents included in the currently selected【Audio Library】; the【Add Item】,【Edit Item】and【Delete Item】buttons on the top-right can be used to edit the selected【Audio Library】group.

18.2.2 Audio Library Usage Method

The【Audio Selector】must be used if the users want to use the audio files saved in the【Audio Library】. This chapter will introduce the usage of the【Audio Selector】and how to select audio saved in the【Audio Library】.

18.2.2.1 Audio Selector

The【Audio Selector】is as shown in the figure (

); It allows users to select the audio files to be used. When an audio file saved in the【Audio Library】needs to be used, the "  " button on the right can be pressed to select the audio file from the【Audio Library】. The "  " button to the left can be pressed to play the selected audio file if the users want to listen to it.

18.2.2.2 Audio Library Selection Window

The audio file selection window of the【Audio Library】is as shown in the figure

below. Use the pull-down menu to select the【Audio Library】group where the audio file that the user wants to use is located, and then select the audio file needed from the【Item List】below. Click on the【Play】button located at the top-right to play the selected audio file. The 【Item List】will synchronize and update the display of audio files included in the【Audio Library】group when switched to another 【Audio Library】group.

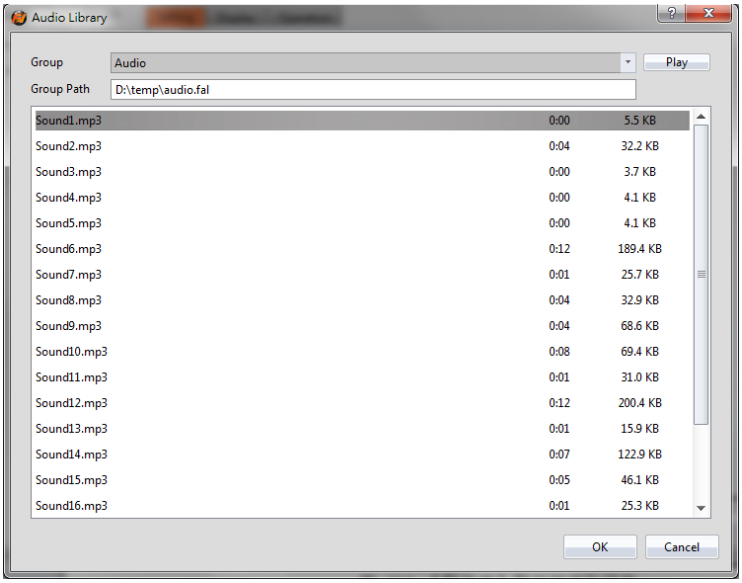


Figure 225 Audio File Selection Window of Audio Library

18.3 【Tag Library】

The【Tag Library】can be used to define the frequently used registered addresses to increase readability during the system design.

18.3.1 Tag Library Settings

Click on【Tag Library】in【Project Explorer】of the FvDesigner and the【Tag Library】Edit Window (as shown in the figure below) will appear where the usage of each setting is as shown in the table below:

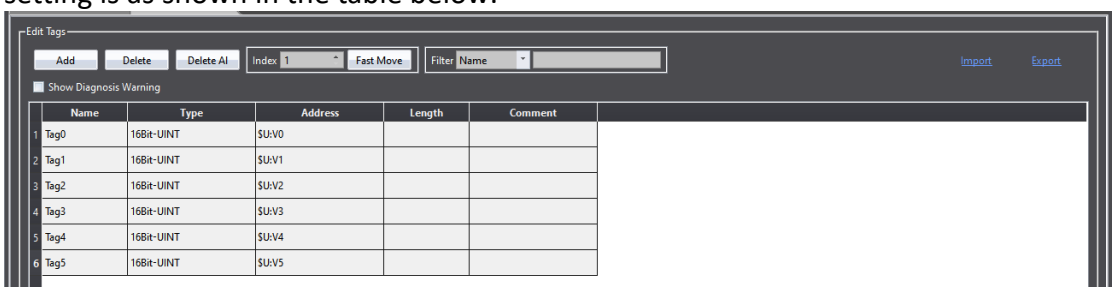
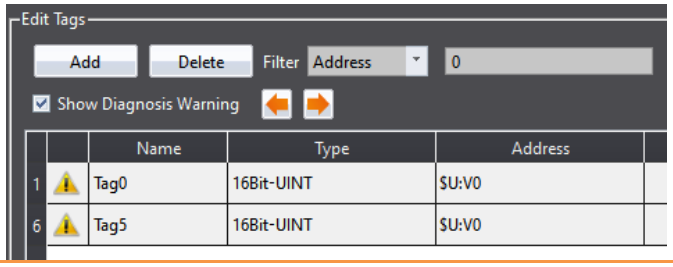
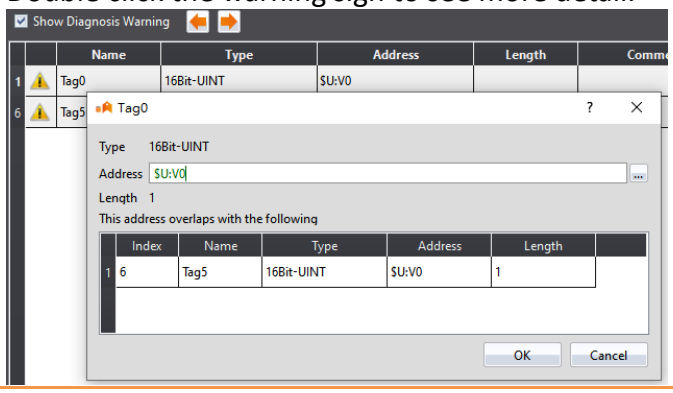
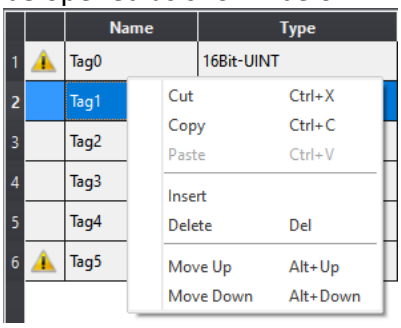
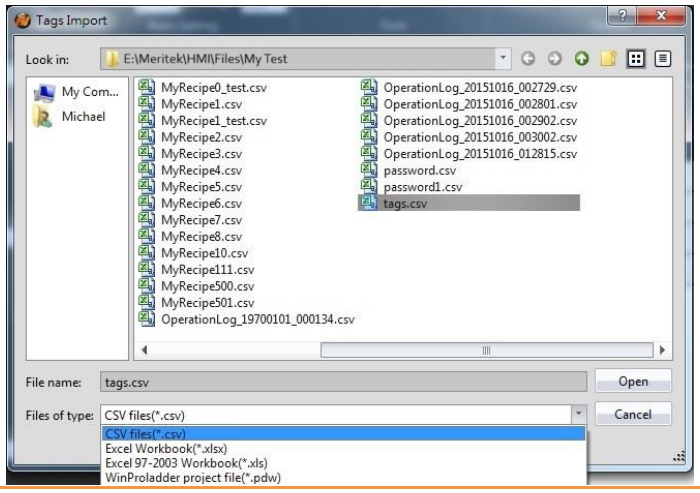
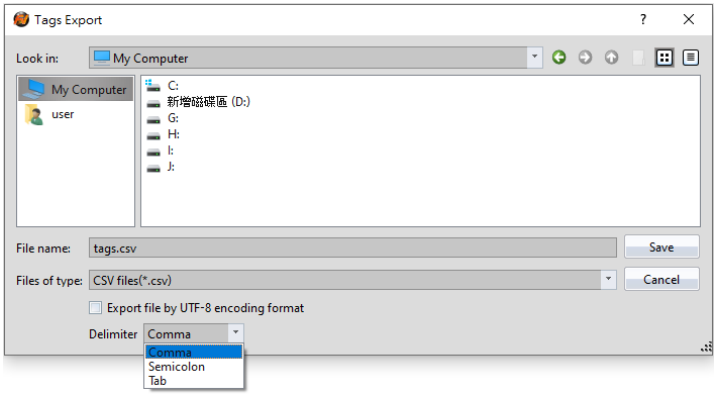


Figure 226 Tag Library Edit Window

Table 102 Edit Window Setting Properties of Tag Library

Property	Description
【Add】	Add a tag.
【Delete】	Delete the selected tag. 【Delete Al】 Delete all unused tags in the table.
【Index】	You can jump to the specified row and column quickly. It is more convenient to use this function to debug when there are too many labels.
【Filter】	Filter the name of tag. Allows designer to find tag quickly. Filters includes Name, Type, Address, Length, Comment and All. 
【Show Diagnosis】	Diagnosis the tag address is overlapped with the other or invalid. Diagnosis warning sign: Warns when different tags have used the same address. /: Switch to the previous or next warning tag. Double click the warning sign to see more detail. 
【Tags List Table】	The tag settings can be edited directly from the table. The settings include: 【Name】Tag name of the address. 【Type】Data type of the address. 【Address】Address of the register 【Length】The amount of data for this data type. 【Comment】Comment explanation of this tag. Right-click in the【Tags List Table】, the edit menu can

	be opened as shown below.  The description of the item in the edit menu. 【Cut】Cut the selected tag. The shortcut key is Ctrl+X. 【Copy】Copy the selected tag. The shortcut key is Ctrl+C. 【Paste】Paste the copied tag. The shortcut key is Ctrl+X. 【Insert】Insert a row in the table. 【Delete】Delete a row in the table. The shortcut key is Del. 【Move Up】Move the selected row to up in the table. The shortcut key is Alt+Up. 【Move Down】 Move the selected row to down in the table. The shortcut key is Alt+Down.
【Import】	Import a file and fills in the settings included in this file into the【Tag Library】of the currently editing project. Four formats can be imported as CSV file (* .CSV), Excel file (* .xlsx, or * .xls), WinProladder file (* .pdw), as shown below. The WinProladder file is a Meritek PLC program, which supports importing the file directly without any conversion. 

【Export】	Export the【Tag Library】settings of the currently editing project into a CSV file. Three formats can be exported as CSV file (* .CSV), Excel file (* .xlsx, or * .xls). Three delimiter can choose: Comma, Semicolon, Tab. 

18.3.2 Introduction of Tag Library Import Mode

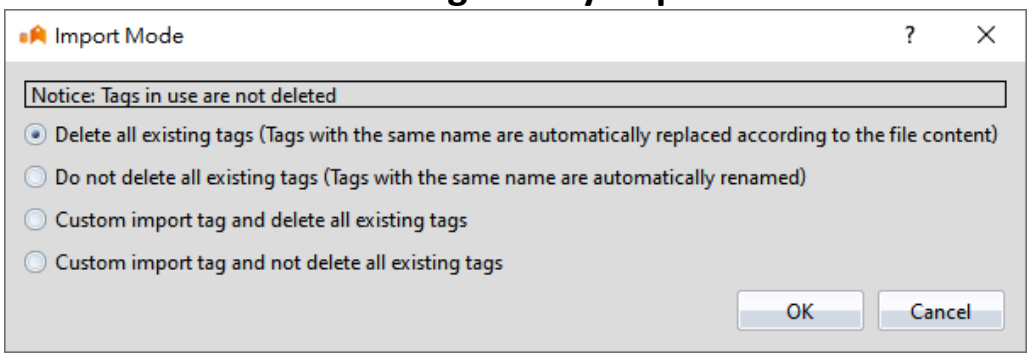


Figure 227【Tag library import mode】dialog

18.3.2.1 Delete all existing tags

The action of this option is to delete unused tags and add all tags in the file when importing ·

Example 1. None of the tags in the tag library are in use
Today's tag library contains: Tag0($U:V0), Tag1($U:V1), Tag2($U:V2)
Imported file content: Tag5($U:V5), Tag6($U:V6), Tag7($U:V7)
Then the final tag library is: Tag5($U:V5), Tag6($U:V6), Tag7($U:V7)

Example 2. There are tags in use in the tag library, but the imported tags do not have this name (red means in use)
Today's tag library contains: Tag0($U:V0), Tag1($U:V1), Tag2($U:V2)
Imported file content: Tag5($U:V5), Tag6($U:V6), Tag7($U:V7)
Then the final tag library is: Tag0($U:V0), Tag5($U:V5), Tag6($U:V6), Tag7($U:V7)

Example 3, if there is a tag in use in the tag library, and the imported file has the same name, the address will be modified
Today's tag library contains: Tag0($U:V0), Tag1($U:V1), Tag2($U:V2)
Imported file content: Tag0($U:V5), Tag6($U:V6), Tag7($U:V7)
Then the final tag library is: Tag0($U:V5), Tag6($U:V6), Tag7($U:V7)

18.3.2.2 Not delete all existing tags

The action of this option is to keep the original tag when importing. If the name is the same, the suffix _0 will be added automatically.

Example 1, general import
Today's tag library contains: Tag0($U:V0), Tag1($U:V1), Tag2($U:V2)
Imported file content: Tag5($U:V5), Tag6($U:V6), Tag7($U:V7)
Then the final tag library is: Tag0($U:V0), Tag1($U:V1), Tag2($U:V2), Tag5($U:V5), Tag6($U:V6), Tag7($U :V7)

Example 2. There is a tag with the same name in the imported file
Today's tag library contains: Tag0($U:V0), Tag1($U:V1), Tag2($U:V2)
Imported file content: Tag2($U:V2)
Then the final tag library is: Tag0($U:V0), Tag1($U:V1), Tag2($U:V2), Tag2_0($U:V2)

18.3.2.3 Custom Import Tags and Delete All Existing Tags

The action of this option is to delete unused tags when importing. If they have the same name, you can manually modify the name, or choose to automatically add the suffix _0.

Example 1, general import

Today's tag library contains: Tag0($U:V0), Tag1($U:V1), Tag2($U:V2)
Imported file content: Tag5($U:V5), Tag6($U:V6), Tag7($U:V7)

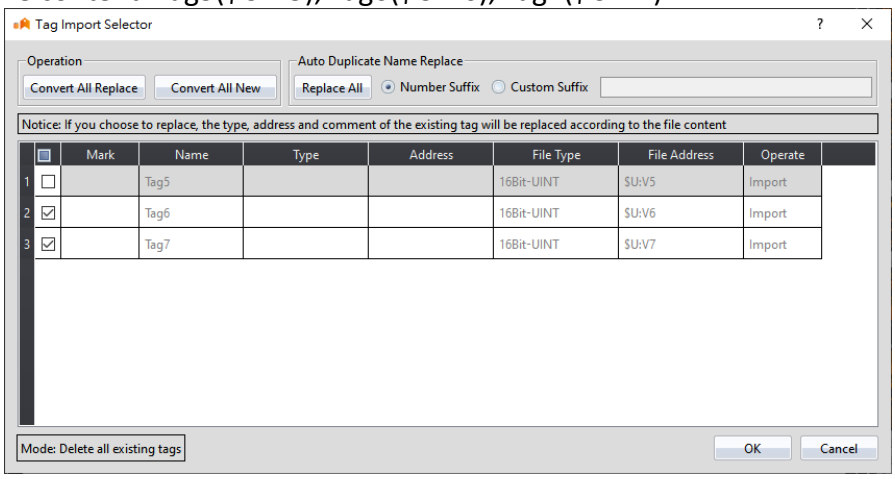


Figure 228【Custom import example 1-1】edit window

If set according to the above figure, the final tag library content is: Tag6($U:V6), Tag7($U:V7)

Example 2. If there are tags in use in the tag library, they will be reserved

Today's tag library contains: Tag0($U:V0), Tag1($U:V1), Tag2($U:V2)
Imported file content: Tag5($U:V5), Tag6($U:V6), Tag7($U:V7)

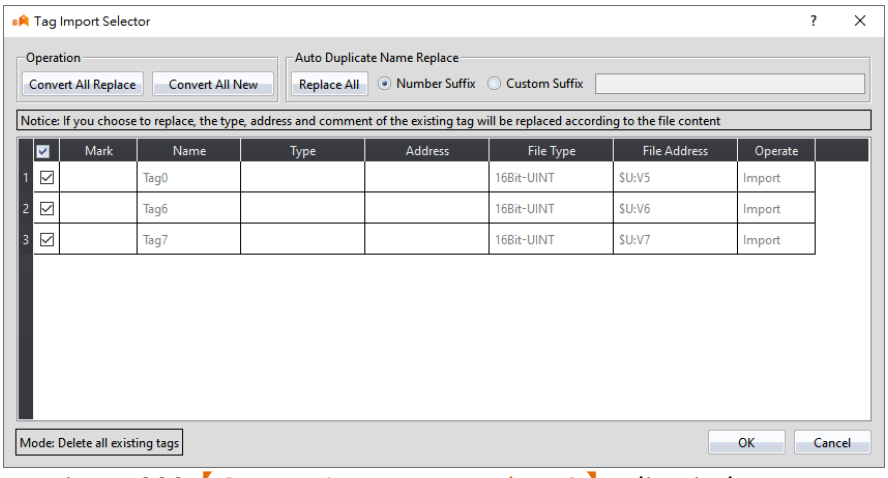


Figure 229【Custom import example 1-2】edit window

As shown in the above figure, the final tag library content is: Tag0($U:V0), Tag5($U:V5), Tag6($U:V6), Tag7($U:V7)

Example 3. If there is a tag in use in the tag library, and the imported file has the

same name, it will ask to overwrite or add

Today's tag library contains: Tag0($U:V0), Tag1($U:V1), Tag2($U:V2)

Imported file content: Tag0($U:V5), Tag6($U:V6), Tag7($U:V7)

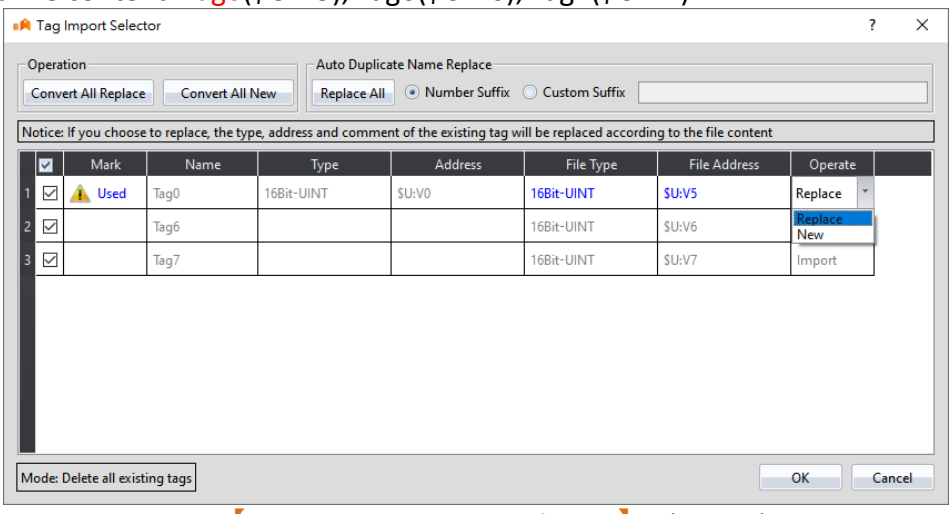


Figure 230【Custom import example 1-3】edit window

If you choose to replace, the final tag library content is: Tag0($U:V5), Tag6($U:V6), Tag7($U:V7)

If you choose to add, the final tag library content is: Tag0($U:V0), Tag0_0($U:V5), Tag6($U:V6), Tag7($U:V7)

18.3.2.4 Import custom tags and not delete all existing tags

The action of this option is to keep the original tag when importing. If the name is the same, you can manually modify the name, or choose to automatically add the suffix _0.

Example 1, general import

Today's tag library contains: Tag0($U:V0), Tag1($U:V1)
Imported file content: Tag5($U:V5), Tag6($U:V6)

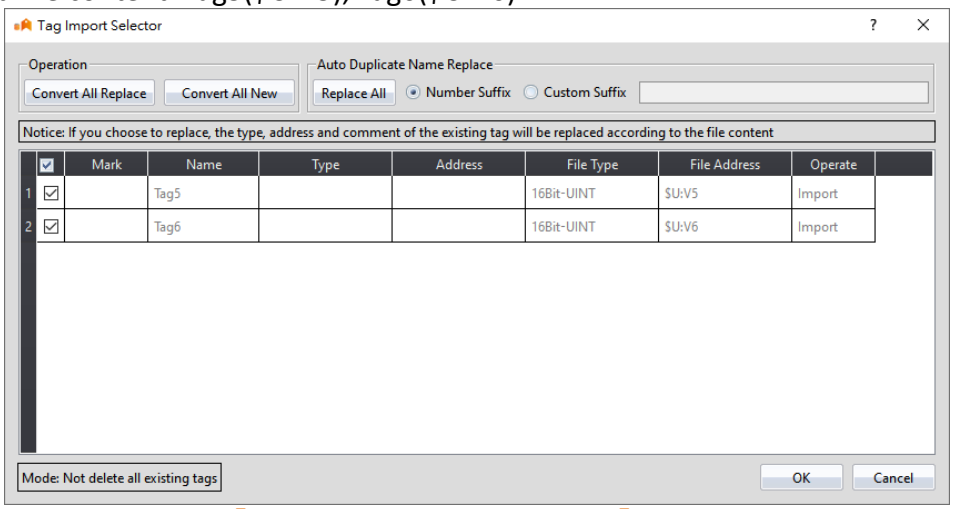


Figure 231【Custom import example 2-1】edit window

As shown in the above figure, the final tag library content is: Tag0($U:V0), Tag1($U:V1), Tag5($U:V5), Tag6($U:V6)

Example 2. If there is a tag with the same name in the imported file, it will ask to overwrite or add

Today's tag library contains: Tag0($U:V0), Tag1($U:V1)
Imported file content: Tag0($U:V5), Tag6($U:V6), Tag7($U:V7)

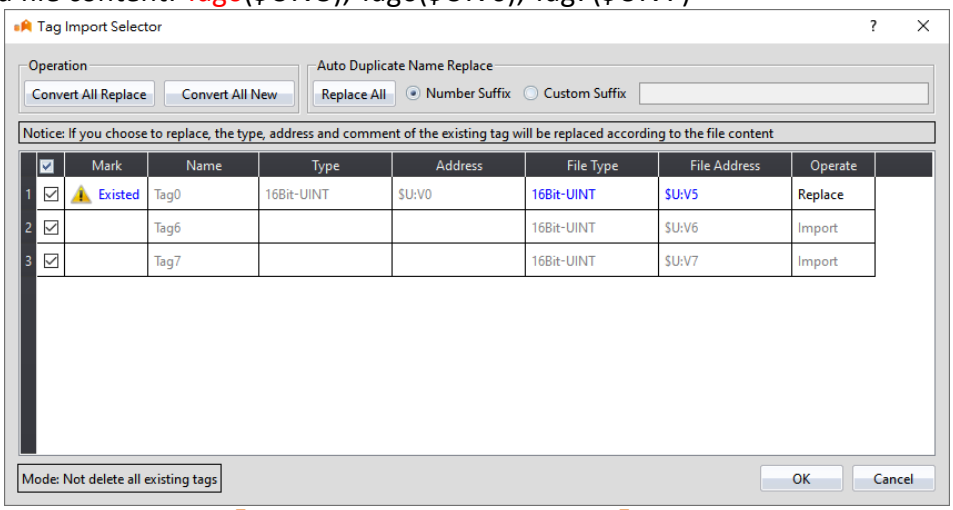


Figure 232【Custom import example 2-2】edit window

If you choose to replace, the final tag library content is: Tag0($U:V5), Tag1($U:V1), Tag6($U:V6), Tag7($U:V7)
If you choose to add, the final tag library content is: Tag0($U:V0), Tag0_0($U:V5), Tag1($U:V1), Tag6($U:V6), Tag7($U:V7)

18.3.3 Tag Library Usage

The【Address Selector】must be used to select the tag in order to use the【Tag Library】. The 【Address Selector】is as shown in the figure below; the address tag can be entered directly in the edit field of the【Address Selector】, or press the button to the right of the selector to open the【Address Selector】dialog to select a tag.

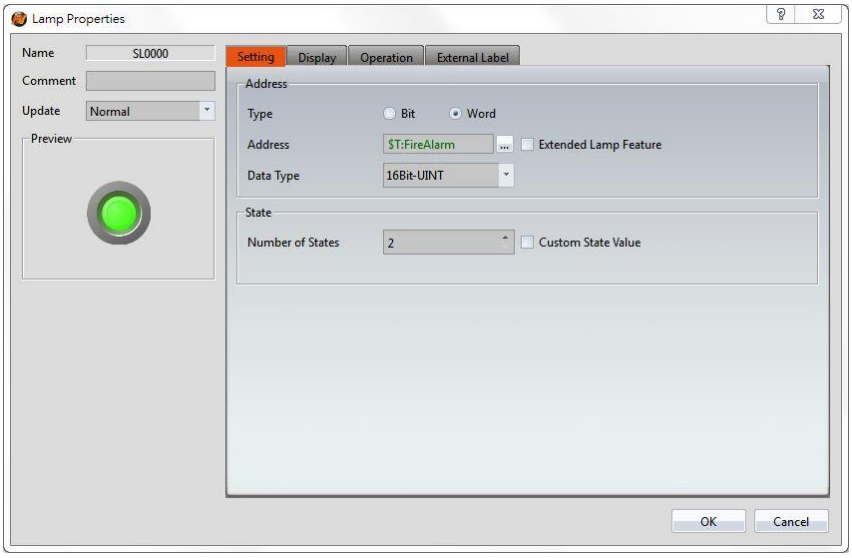


Figure 233 Inputting Address Tag in【Address Selector】Edit Field

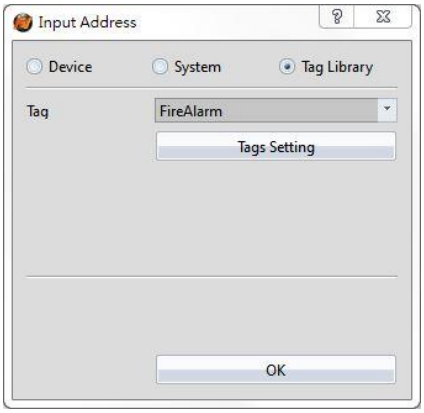


Figure 234 Selecting Address Tag in【Address Selector】Dialog

18.4 【Text Library】

If there is the need to switch displayed texts in real-time in order to achieve multi-language functionality while designing a project using the FvDesigner, the【Text Library】can be used to edit the text to display for different needs by creating a table. This allows the project to switch between text groups currently displayed through the【Control Address】while the HMI is operating.

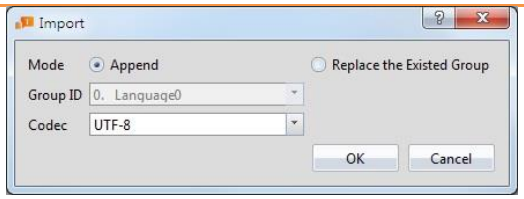
18.4.1 Text Library Settings

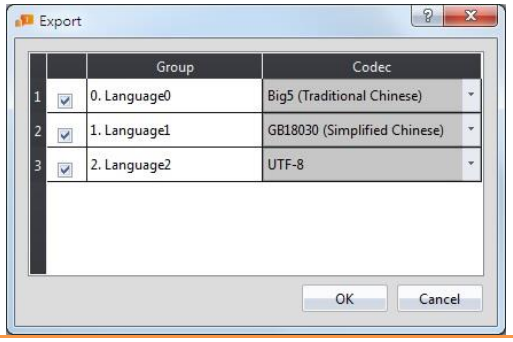
Click on the【Text Library】in【Project Explorer】of the FvDesigner and the【Text Library】Edit Window (as shown in the figure below) will appear where the usage of each setting is as shown in the table below:



Figure 235 Text Library Edit Window

Table 103 Edit Window Setting Properties of Text Library

Property	Description
【Number of Groups】	Set the number of groups for the【Text Library】.
【Initial Group】	Set the text group to display when the HMI starts operating.
【Control Address】	Set the control address of the【Text Library】. This address is used to control the text group currently displayed by the【Text Library】; the data type used is fixed as【16Bit-UINT】. For example, when the value of the【Control Address】is 0, the【Text Library】will display the text in group 0.
【Filter】	Can select【Show Entire Table】and【Show All Text Items】,【Show Entire Table】includes all contents,【Show All Text Items】only shows text part.
【Default Font】	Set the default font of the currently selected group.
【Default Size】	Set the default size of the currently selected group.
【Header】	Set the header of the currently selected group.
【Import】	 【Append】 Import a【Text Library】CSV file and fills in all the contents included in the file into a new text group.

	【Replace the Existed Group】 Import a【Text Library】CSV file and fills in all the contents included in the file into the selected text group. 【Codec】 Set the text encoding format. The available codecs are Big5 (Traditional Chinese), GB18030 (Simplified Chinese), and UTF-8.
【Export】	Select the【Text Library】group and encoding format that you want to export, and export the selected【Text Library】group as a CSV file to the specified folder. 
【Text Table】	The text editing table for each group included in the【Text Library】. If the color of the text is black, means the object is used, if the color of the text is gray, means the object is not used, the designers can distinguish what objects are being used.

18.4.2 Text Library Usage Method

The【Text Selector】must be used if the users want to use the text contents saved in the【Text Library】. The【Text Selector】is as shown in the figure below; it includes two text selection modes: entering the text directly or selecting text from the【Text Library】. Users can switch between the two modes by using the button to the right.

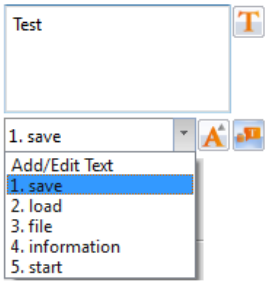


Figure 236 Text Selector

The default setting for the【Text Selector】is the direct text input mode; the users can enter the text that they want to display in the editing section to the left of the【Text Selector】directly. To select texts saved in the【Text Library】, the button to the right must first be pressed to switch modes. At this time the left of the【Text Selector】will change into a pull-down menu and this menu includes all text contents saved in the【Text Library】for the users to choose from. If the contents currently included in the menu is inadequate for use, the user can also select the first option【Add/Edit Text】in the menu and edit the contents of the【Text Library】in the window as shown in the figure below.

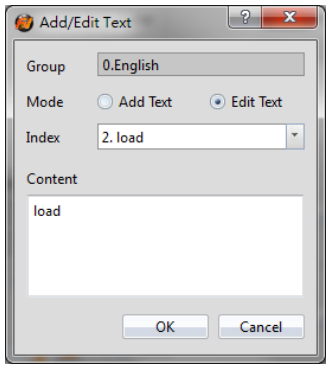


Figure 237 Add/Edit Text Window

If the displayed text is selected from【Text Library】, the dialog of setting the text font and size for different languages will appear after pressing the button. The user can set the font and size of the text displayed in each language. If【Default Font】or【Default Size】is selected, the font or size of the displayed text will be the font or size set in the【Text Library】.

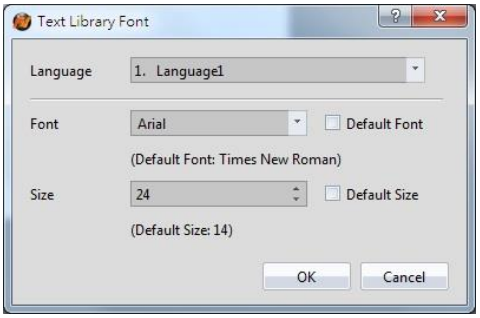


Figure 238 Text Library Font Window

18.5 【Font Library】

When using FvDesigner to design a project, you can use the【Font Library】function to pre-set the required fonts and common texts and download them to the HMI for use, so as to prevent the future HMI from displaying correctly.

18.5.1 Font Library Settings

Click【Font Library】in the【Project Explorer】to get to the window as seen below:

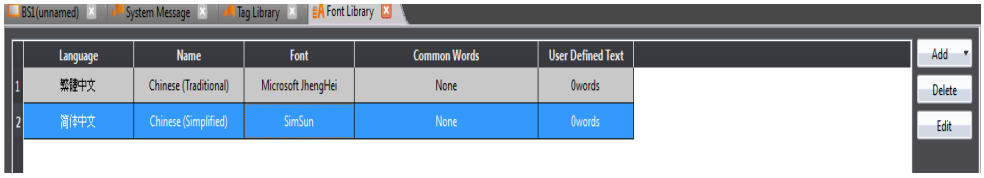
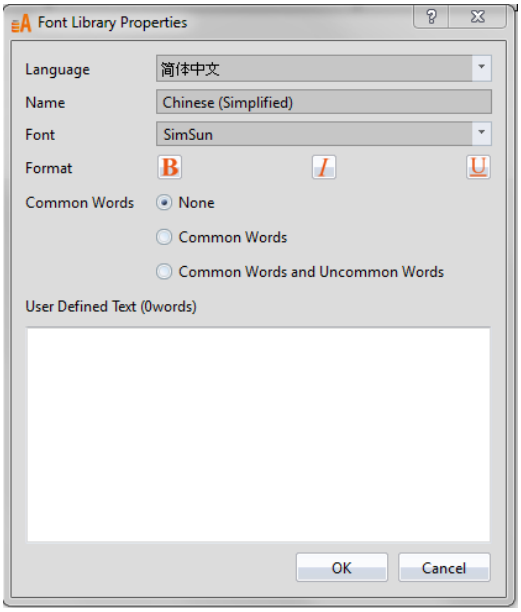


Figure 239【Font Library】

Table 104【Font Library】Edit Properties

Field	Description
【Add】	Add languages such as Chinese (Traditional), Chinese (Simplified), or other languages. The font can also be changed.
【Delete】	Remove the selected font.
【Edit】	Change the font used in the currently selected language.
【Font library list】	The font library list contains fields such as language, font, and common words. 【Language】can display Chinese (Traditional), Chinese (Simplified) or other languages. 【Name】The name of the selected language 【Font】Displays the font used for the selected language 【Common Words】can display commonly and uncommonly used words. 【User Defined Text】Allows the user to input specific words

	for the chosen language
【Font Library Properties】	To get to the【Font Library Properties】, double-click the item in the font library list or press edit when the item is selected. The window for【Font Library Properties】will pop up, as show in the figure below.  【Language】You can choose Chinese (Traditional), Chinese (Simplified), or other languages. 【Name】The name of the specific text setting. 【Font】The font used for the text setting. 【Common Words】You can choose between 3 options, none, common words, and common words and uncommon words. Common words consists of about 4800 commonly used words and common words and uncommon words consists of about 11000 words. 【User Defined Text】The user can input custom words for the specified language

19. Objects

FvDesigner provides plenty of objects for users, the following is a list of all available objects and an introduction to each object.

19.1 Object Planning and Properties Modification

There are two ways to place an object onto the work space:

1. Left-click the mouse on an object in the object section of the design page in the function section and then left-click the mouse on the work space.
2. Use the mouse to drag-and-drop an object in the toolbox onto the work space.

Every object added to the work space will appear in the object list and has its own unique ID. There are two ways to view and change the properties of an object:

1. Double-click on the object and the setting page of the object will appear.
2. Single-click on an object and then click on the right mouse button to display the object menu, and then select Properties.

When the objects on the screen overlap, you can right-click the object, and the 【Overlapping Object List】 will appear in the order for users to view

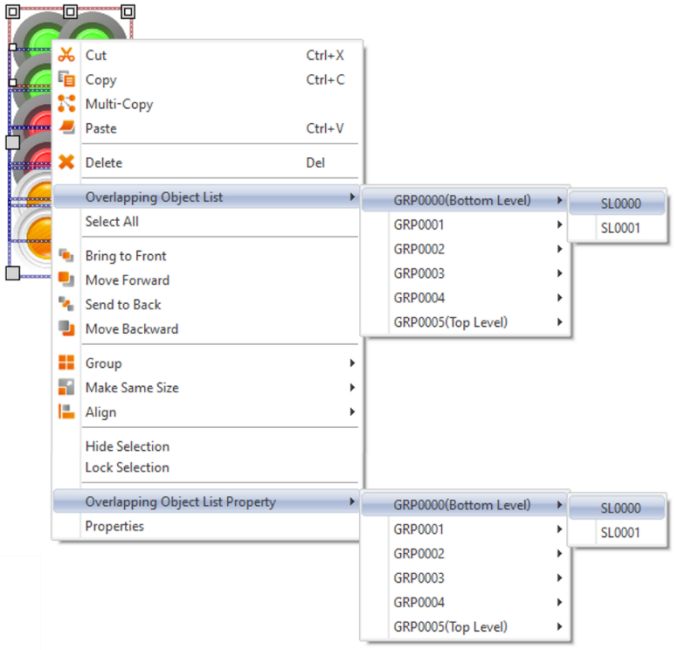


Figure 240 Object List【Overlapping Object List】

The Monitor Address can be set for many objects. This means that the data source of this object is from the register address of the device (HMI, PLC). Details can be viewed at the 【Memory Address】 section of the screen in order for the user to have a better understanding of the usage status of the registers.

Part of the objects can be set from the Ribbon workspace 【Theme】 on the software interface, as shown in the figure below.

Note: The Ribbon only has some common settings. Detailed settings for each object must be set through another method.

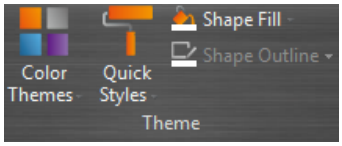


Figure 241 【Theme】in【Ribbon workspace】【Design】paging

The following is the list of objects provided by the FvDesigner; click on the hyperlink of the object's name to view the detailed descriptions of the object.

Table 105 Image Objects and Basic Object Library Categories

Function	Description
【Draw】	Basic Draw components.

Function	Description
【Dot】	Draw a dot
【Line】	Draw a line
【Polyline】	Draw a polyline
【Rectangular】	Draw a rectangle
【Polygon】	Draw a polygon
【Ellipse】	Draw an ellipse
【Arc】	Draw an arc
【Pie】	Draw a pie
【Table】	Draw a table
【Text】	Text input block
【Image】	Insert image block
【Scale】	Insert linear scale
【Pipeline】	Draw a pipeline

Function	Description
【Lamp/Switch】	Basic Lamp/Switch.

Function	Description
【Lamp】	Use the changes in the lamp icon to display the status of an address.
【Bit Switch】	Allow users to press the switch to change the bit status.

	【Word Switch】	Allow users to press the switch to change the word value.
	【Change Screen】	Allow users to press the switch to change the currently displayed screen.
	【Function Switch】	Allow users to press the switch to execute specific functions.
【Numeric/Text】	Numeric/Text Display/Input.	
	Function	**Description**
	【Numeric Input/Display】	Display/Input the value saved on the address.
	【Text Input/Display】	Display/Input the text saved on the address.
	【QR Code Input/Display】	Display QR code
【Display】	Display Date/Time, Window Screen Display	
	Function	**Description**
	【Date/Time Display】	Display the current date and time according to the format set by the user.
	【Window Screen Display】	Display the window screens created in the project.
【Graph】	Graph	
	Function	**Description**
	【Meter】	Use a pointer to represent data
	【Linear Meter】	Use the bar length/width changes to represent data
	【Circular Graph】	Display the value in an arc
	【Data Block Graph】	Captures continuous data and plots it as a curve.
	【Data Block XY Scatter】	Capture continuous data and plots it as a scatter plot.
【Other Switch】	Other Switches.	
	Function	**Description**

	【Multistate Switch】	Write the values corresponding to the status set by the user sequentially into the address.
	【Slide Switch】	Allow users to write the value into the address by dragging a slide.
	【Selector List】	Display values with a pull-down menu allowing the user to select the value needed.
	【Radio Button】	Combine multiple buttons into a group, Only one of the group buttons will be ON.
【Keypad】	Keypad related objects.	

Function	Description
【Input Display】	Used to display the currently entered value or text on the keypad screen.
【Key】	Used to provide the functions required for entering values or text, etc. on the keypad screen.
【Limit Value Display】	Used to display the currently allowed maximum or minimum input value on the keypad screen.

【Animated Graphic】	Animated Graphic.

Function	Description
【Animated Graphic】	Used when a dynamic display of changes in status, address and size is required.
【Rotation Indicator】	Changing the indicator of Rotation Indicator direction and speed by register.
【Gif Display】	Select a .gif image to display.

【Data Log】	Data Log-related objects.

Function	Description

	【Historic Trend】	Plot the data and corresponding time acquired by the【Data Log】onto a curve.
	【Historic XY Scatter】	Plot the data acquired by the【Data Log】as a historic XY scatter.
	【Historic Data Table】	Display the data acquired by the【Data Log】as a table.
	【Historic Data Selector】	Read the【Historic XY Scatter】or【Historic Data Table】data table files. The corresponding file can be selected from a dropdown menu.
【Alarm】	Alarm-related objects.	

Function	Description
【Alarm Display】	Use a table to display alarm-related contents including messages , levels, when the alarm occurred, if alarm was acknowledged the recovery time, etc.
【Alarm Scrolling Text】	Use a scrolling text to display alarm-related contents including messages, levels, when the alarm occurred, if alarm was acknowledged, recovery time, etc.
【Alarm Data Selector】	Use a dropdown menu to display alarm-related contents, including messages, levels, when the alarm occurred, if alarm was acknowledged, recovery time, etc.

【Recipe】

Function	Description
【Recipe Selector】	Used to select the recipe.

<table>
<tr><td></td><td>【Recipe Table】</td><td>Used to view or edit the recipe.</td></tr>
<tr><td></td><td colspan="2">Recipe-related objects.</td></tr>
<tr><td>【Operation Logger】</td><td colspan="2">Operation Logger-related objects.

<table><tr><th>Function</th><th>Description</th></tr><tr><td>【Operation Viewer】</td><td>View the Operation Logger.</td></tr></table></td></tr>
<tr><td>【Schedule】</td><td colspan="2">Schedule-related objects.

<table><tr><th>Function</th><th>Description</th></tr><tr><td>【Schedule Setting Table】</td><td>Table of view and setting up.</td></tr></table></td></tr>
<tr><td>【Video Input】</td><td colspan="2">Video Input-related objects.

<table><tr><th>Function</th><th>Description</th></tr><tr><td>【Video Input Display】</td><td>Display the video image.</td></tr></table></td></tr>
</table>

19.2 Object Operation Page Setting

The paging is shown in the figure below, and the meanings of each setting option are as follows:

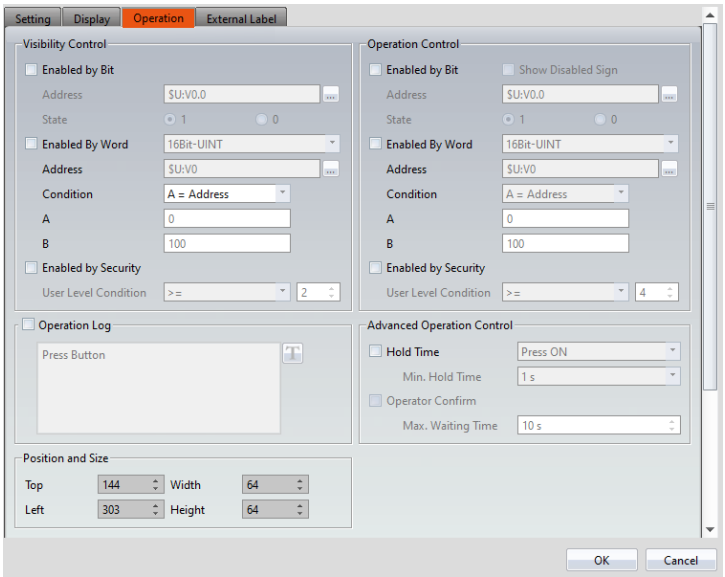


Figure 242 Object Setting page for【Operation】

Table 106 Property settings for【Operation】

Property	Description
【Visibility Control】	Visibility control of the object. It can be controlled by a specific Bit or by User Level. 【Enable by Bit】 Select to control visibility by a specific Bit. 【Address】 Set the address of the visibility control Bit. 【State】 Set the control bit as 1 or 0 to show object. 【Enabled by Word】 Check whether the visibility is controlled by word. 【Address】 Set the visibility control word address. 【Condition】 Set the condition of word control and when it is true then show up the object, when false not show the object. The condition include' =',' !=', '>', '<', '>=', '<='. 【Enabled by Security】 Select if visibility is to be controlled by the level of the user logged in. 【User Level Condition】 Set the level and condition of the object.
【Operation Control】	Operation control of the object. It can be controlled by a specific Bit or User Level. 【Enable by Bit】 Select to control operation by a specific Bit. 【Show Disabled Sign】 Check if you want to display the forbidden symbol, it's valid when check【Enable by Bit】,【Enabled by Word】 or 【Enable by Security】. 

	【Address】 Set the address of the operation control Bit. 【State】 Set the control bit as 1 or 0 to operate object. 【Enabled by Word】 Check whether the operation is controlled by word. 【Address】 Set the operation control word address. 【Condition】 Set the condition of word control and when it is true then the object can be controlled, when false not the object can not be controlled. The condition include' =',' !=', '>', '<', '>=', '<='. 【Enabled by Security】 Select if operation is to be controlled by the level of the user logged in. 【User Level Condition】 Set the level and condition of the object.
【Operation Log】	Select to enable the【Operation Log】of the object. It can also edit operation messages, in which the message can be inputted directly or acquired from the【Text Library】.
【Advanced Operation Control】	【Input Timeout】 Select if the【Pop-up Keypad】,【On-screen Keypad】or【USB Barcode Scanner】is controlled by time. 【Timeout Time】 If the user did not operate the【Keypad Screen】within this time, the system will close the【Keypad Screen】and cancel this operation. 【Operation Confirm】 Select to display the confirmation window after the operation is executed.

	【Max Waiting Time】 The system will close the confirmation window and cancel this operation if the user did not acknowledge it within this time.
【Position and Size】	Set the position and size of the object on the screen.

19.3 Draw Object Properties Dialog

19.3.1 【Dot】

19.3.1.1 【Setting】

The 【Dot】【Setting】 page is a shown in the figure below. Each option is explained.

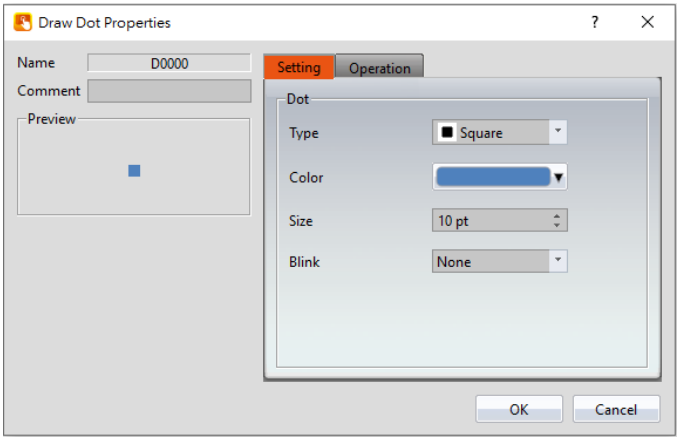


Figure 243 Setting page for 【Dot】

Table 107 Property settings for 【Dot】

Property	Description
【Preview】	Preview the appearance of the object.
【Dot】	【Type】 Set the type of dot. 【Color】 Set the color of the dot. 【Size】 Set the size of the dot.

	【Blink】 Set the blinking of the dot; four blinking speeds are available for selection: None, Fast, Medium and Slow.

19.3.2 【Line】

19.3.2.1【Setting】

The【Line】【Setting】page is a shown in the figure below. Each option is explained.

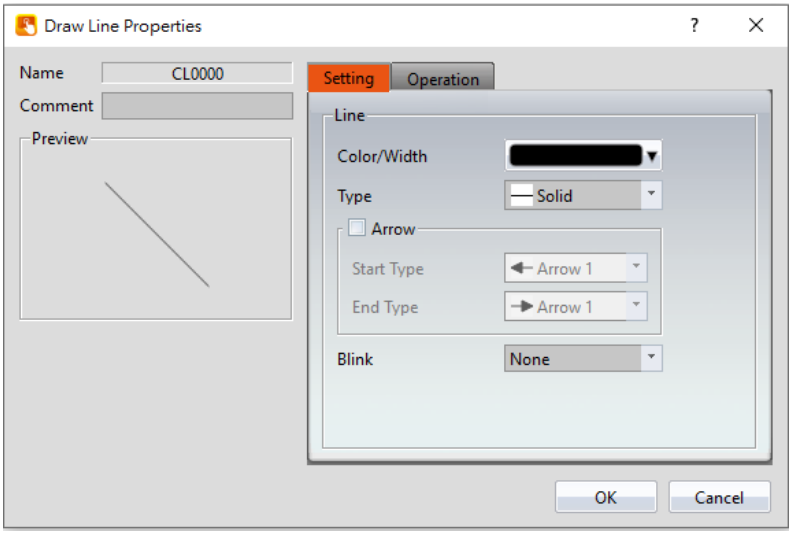


Figure 244 Setting page for【Line】

Table 108 Property settings for【Line】

Property	Description
【Preview】	Preview the appearance of the object.
【Line】	【Color/Width】 Set the color and the width of the line. 【Type】 Set the type of line. 【Arrow】 Set whether to have arrows on the ends of the line. 【Start Type】 Set the arrow type at the start of the line. 【End Type】 Set the arrow type at the end of the line.

	【Blink】 Set the blinking speed of the line; four blinking speeds are available for selection: None, Fast, Medium and Slow.

Tips:

1. User can create a line at an angle that is a multiple of 45 degrees (including horizontal and vertical line) easily by holding "Shift" while creating the line.
2. If user modifies the line's length while pressing "Shift", the line's angle will be fixed.
3. Generally (without pressing any keypad), the angle can be changed at multiples of 5 degrees.
4. If user modifies the line's length while pressing "Alt", the line angle can be changed freely

19.3.3 【Polyline】

19.3.3.1 【Setting】

The 【Polyline】【Setting】 page is a shown in the figure below. Each option is explained.

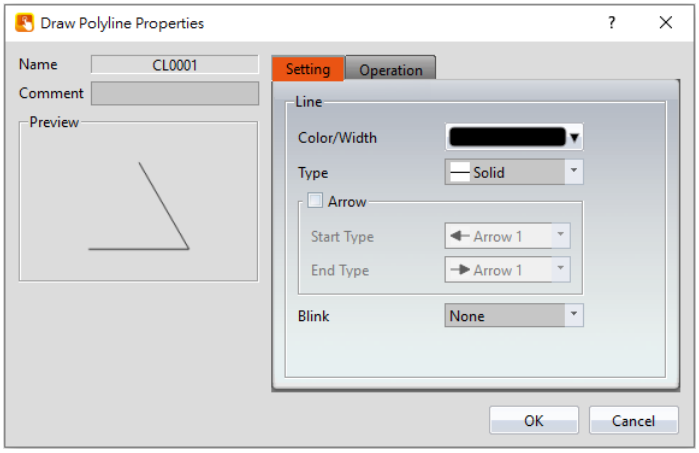


Figure 245 Setting page for 【Polyline】

Table 109 Property setting for 【Polyline】

Property	Description
【Preview】	Preview the appearance of the object.
【Line】	【Color/Width】 Set the color and the width of the line. 【Type】

	Set the type of line. 【Arrow】 Set whether to have arrows on the ends of the line. 【Start Type】 Set the arrow type at the start of the line. 【End Type】 Set the arrow type at the end of the line. 【Blink】 Set the blinking speed of the line; four blinking speeds are available for selection: None, Fast, Medium and Slow.

Users can freely modify the corresponding dot positions for【Polyline】, as well as add or delete a dot.

1. To modify the relative position of a dot
   When the user double-clicks on an object, a dragging block will be displayed for the dots of this object; this is when you can change the position of the dots, as shown in the figure below:

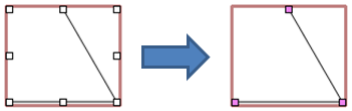


Figure 246 Illustration diagram when users double-click on a【Polyline】

2. Adding a dot

When the user double-clicks on an object, a dragging block will be displayed for the dots of this object; move the mouse anywhere on the line and the cursor will change to  . At this time, press and hold the left mouse button and move the mouse to insert a dot anywhere you want.

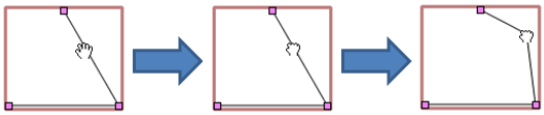


Figure 247 Illustration diagram of adding a dot on a【Polyline】

3. Deleting a dot

When the user double-clicks on an object, a dragging block will be displayed for the dots of this object; move the mouse onto any block on the line and the cursor will change to  . At this time, press and hold the right mouse button to display the option to delete the dot.

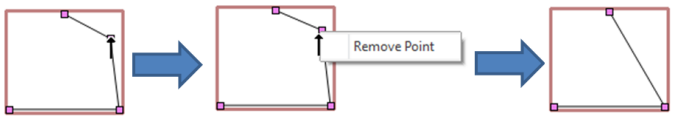


Figure 248 Illustration diagram of deleting a dot on a【Polyline】

19.3.4 【Rectangle】

19.3.4.1【Setting】

The 【Rectangle】【Setting】page is a shown in the figure below. Each option is explained.

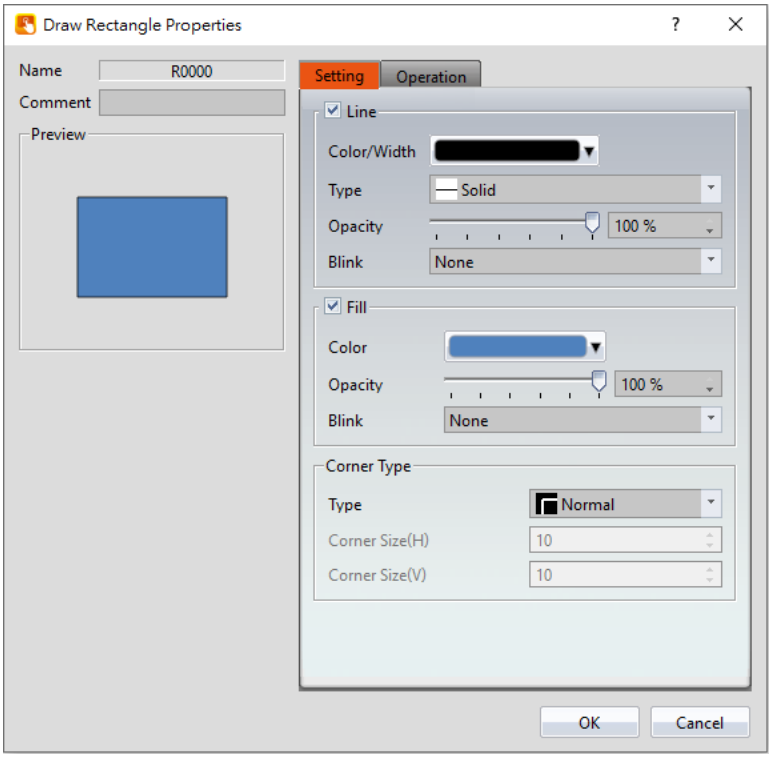


Figure 249 Setting page for【Rectangular】

Table 110 Property setting for【Rectangular】

Property	Description
【Preview】	Preview the appearance of the object.
【Line】	【Color/Width】 Set the color and the width of the line. 【Type】 Set the type of line. 【Opacity】

	Set the opacity of the line. 【Blink】 Set the blinking speed; four blinking speeds are available for selection: None, Fast, Medium and Slow.
【Fill】	【Color】 Set the color or material type of the fill. 【Opacity】 Set the opacity of the fill. 【Blink】 Set the blinking of the fill; four blinking speeds are available for selection: None, Fast, Medium and Slow.
【Corner Type】	【Type】 Set the corner type. Supports Normal, Rounded, and Clipped. 【Corner Size(H)】 Set the horizontal size of the corner. 【Corner Size(V)】 Set the vertical size of the corner.

19.3.5 【Polygon】

【Polygon】is similar to【Polyline】. Users can freely modify the corresponding dot positions as well as add and delete dots. The operating method is identical to【Polyline】.

19.3.5.1【Setting】

The 【Polygon】【Setting】page is a shown in the figure below. Each option is explained.

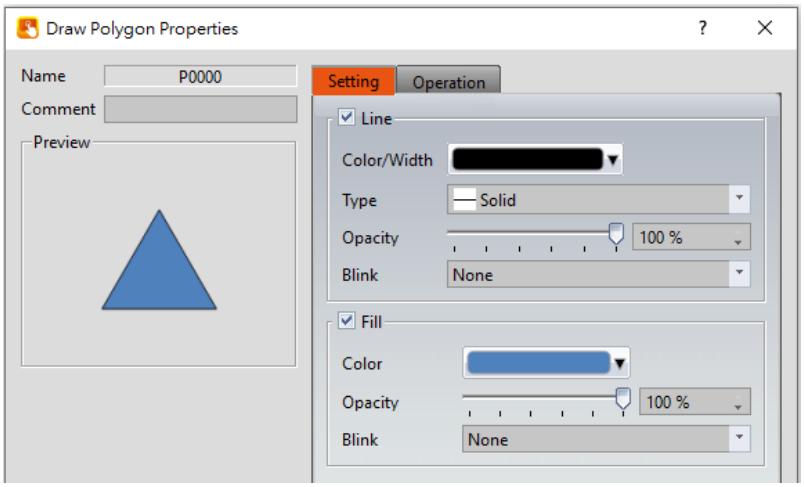


Figure 250 Setting page for【Polygon】

Table 111 Property settings for【Polygon】

Property	Description
【Preview】	Preview the appearance of the object.
【Line】	【Color/Width】 Set the color and the width of the line. 【Type】 Set the type of line. 【Opacity】 Set the opacity of the line. 【Blink】 Set the blinking speed of the line; four blinking speeds are available for selection: None, Fast, Medium and Slow.
【Fill】	【Color】 Set the color or material type of the fill. 【Opacity】 Set the opacity of the fill. 【Blink】 Set the blinking speed of the fill; four blinking speeds are available for selection: None, Fast, Medium and Slow.

19.3.6 【Ellipse】

19.3.6.1 【Setting】

The【Ellipse】【Setting】page is a shown in the figure below. Each option is explained.

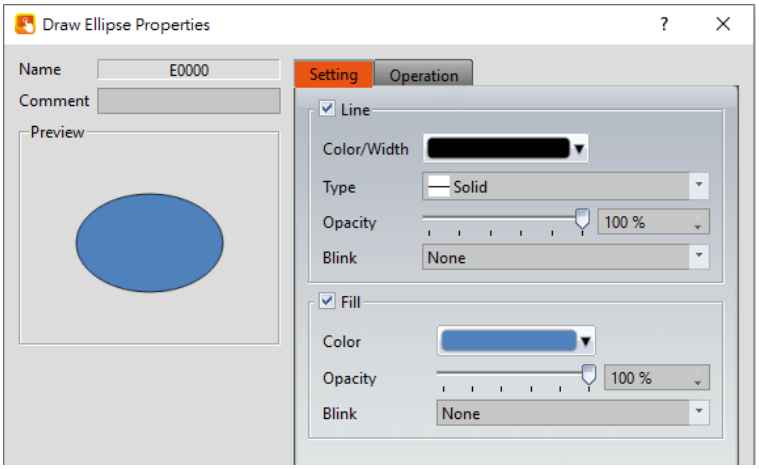


Figure 251 Setting page for【Ellipse】

Table 112 Property settings for【Ellipse】

Property	Description
【Preview】	Preview the appearance of the object.
【Line】	【Color/Width】 Set the color and the width of the line. 【Type】 Set the type of line. 【Opacity】 Set the opacity of the line. 【Blink】 Set the blinking speed of the line; four blinking speeds are available for selection: None, Fast, Medium and Slow.
【Fill】	【Color】 Set the color or material type of the fill. 【Opacity】 Set the opacity of the fill. 【Blink】 Set the blinking speed of the fill; four blinking speeds are available for selection: None, Fast, Medium and Slow.

19.3.7 【Arc】

19.3.7.1【Setting】

The【Arc】【Setting】page is a shown in the figure below. Each option is explained.

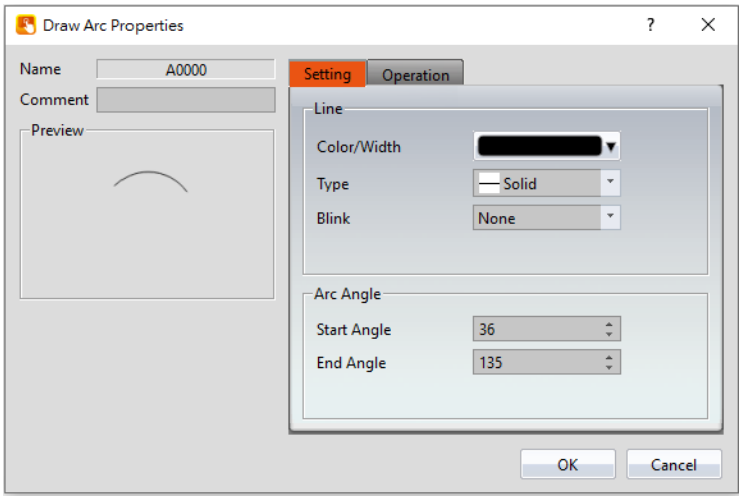


Figure 252 Setting page for【Arc】

Table 113 Property settings for【Arc】

Property	Description
【Preview】	Preview the appearance of the object.
【Line】	【Color/Width】 Set the color and the width of the line. 【Type】 Set the type of line. 【Blink】 Set the blinking speed of the line; four blinking speeds are available for selection: None, Fast, Medium and Slow.
【Arc Angle】	【Start Angle】 Set the starting angle of the arc. 【End Angle】 Set the ending angle of the arc.

Users can change the angle of the【Arc】directly:

When the user clicks on the object, dragging blocks will appear at the two ends of this object. Drag the blocks to change the angle of the arc.

19.3.8 【Pie】

19.3.8.1【Setting】

The【Pie】【Setting】page is a shown in the figure below. Each option is explained.

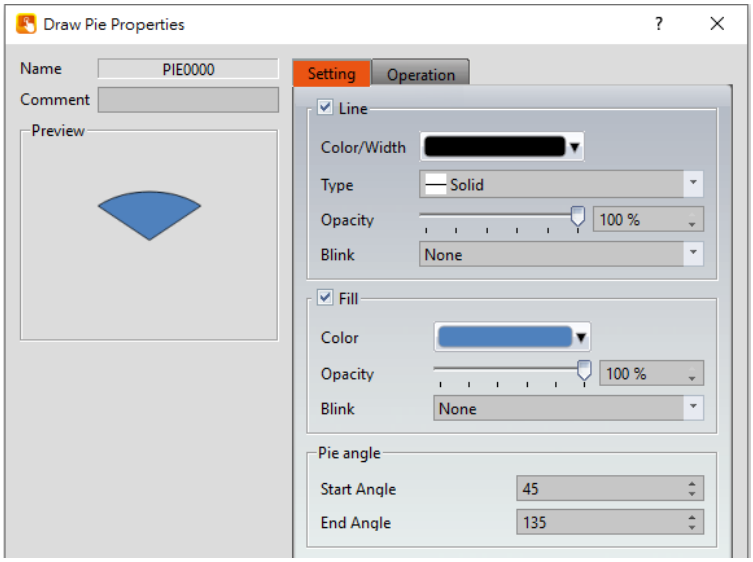


Figure 253 Setting page for【Pie】

Table 114 Property settings for【Pie】

Property	Description
【Preview】	Preview the appearance of the object.
【Line】	【Color/Width】 Set the color and the width of the line. 【Type】 Set the type of line. 【Opacity】 Set the opacity of the line. 【Blink】 Set the blinking speed of the line; four blinking speeds are available for selection: None, Fast, Medium and Slow.
【Fill】	【Color】 Set the color or material type of the fill. 【Opacity】

	Set the opacity of the fill. 【Blink】 Set the blinking speed of the fill; four blinking speeds are available for selection: None, Fast, Medium and Slow.
【Pie Angle】	【Start Angle】 Set the starting angle of the pie. 【End Angle】 Set the ending angle of the pie.

Users can change the angle of the【Pie】directly:
When the user clicks on the object, dragging blocks will appear at the two ends of this object. Drag the blocks to change the angle of the arc.

19.3.9 【Table】

19.3.9.1【Setting】

The【Table】【Setting】page is a shown in the figure below. Each option is explained.

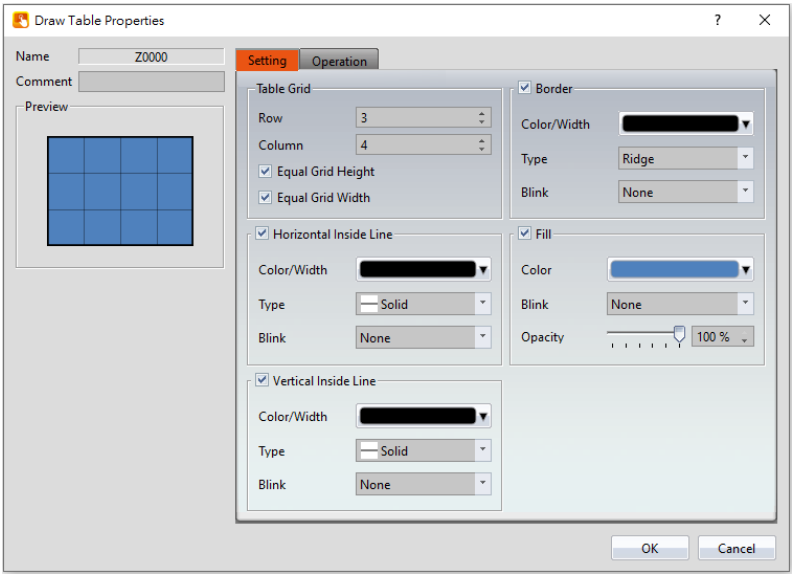


Figure 254 Setting page for【Table】

Table 115 Property settings for【Table】

Property	Description
【Preview】	Preview the appearance of the object.
【Border】	【Color/Width】

	Set the color and the width of the border. 【Type】 Set the border type. 【Blink】 Set the blinking speed of the border; four blinking speeds are available for selection: None, Fast, Medium and Slow.
【Table Grid】	【Row】 Set the number of rows for the table. 【Column】 Set the number of columns for the table. 【Equal Grid Height】 Set the cells in the table to have the same height. 【Equal Grid Width】 Set the cells in the table to have the same width. **Note: When【Equal Grid Height】and【Equal Grid Width】are not selected, users can drag the border of the grids to change the size of the grids.**
【Fill】	【Color】 Set the color or material type of the fill. 【Blink】 Set the blinking speed of the fill; four blinking speeds are available for selection: None, Fast, Medium and Slow. 【Opacity】 Set the opacity of the fill.
【Horizontal Inside Line】	Select to display the horizontal grid lines. 【Color/Width】 Set the color and width of the horizontal grid lines. 【Type】 Set the type of horizontal grid line. 【Blink】 Set the blinking speed of the fill; four blinking speeds are available for selection: None, Fast, Medium and Slow.

【Vertical Inside Line】	Select to display the vertical grid lines. 【Color/Width】 Set the color and width of the vertical grid lines. 【Type】 Set the type of vertical grid line. 【Blink】 Set the blinking speed of the fill; four blinking speeds are available for selection: None, Fast, Medium and Slow.

19.3.10 【Text】

19.3.10.1 【Setting】

The【Text】【Setting】page is a shown in the figure below. Each option is explained.

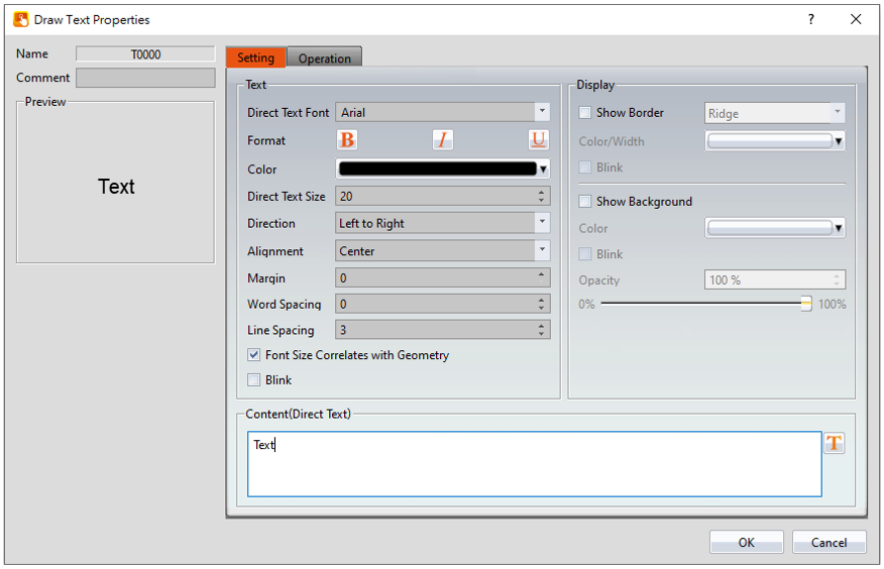


Figure 255 Settings page for【Text】

Table 116 Property settings for【Text】

Property	Description
【Preview】	Preview the appearance of the object.
【Text】	【Font】 Set the font of the text. 【Format】 Set the format of the text, bold, italics or bottom line.

	【Color】 Set the color of the text. 【Size】 Set the size of the text, default is 20. 【Direction】 Set the direction of the text, optional vertical or horizontal. 【Alignment】 Set the alignment of the text. 【Margin】 Set the margin of the text, it will only work when【Font Size Correlates with Geometry】is checked. 【Word Spacing】 Set word sapcing of the text. 【Line Spacing】 Set line spacing of the text. 【Font Size Correlates with Geometry】 The size of the object may change more or less by the font size. 【Blink】 Select to turn on the blinking function for the texts.
【Display】	Divided into two parts: borders and backgrounds; can be set individually. Border: 【Show Border】 Select to display the border. When it is checked, the color, width and blinking function of the border can be set at the bottom. 【Color/Thickness】 Set the displayed color and thickness of the border. 【Blink】 Set to turn on the blinking function of the border.

	Background: 【Show Background】 Select to display the background. When it is checked, the color, width and blinking function of the background can be set at the bottom. 【Color】 Set the background color of the object. 【Blink】 Set to turn on the blinking function for the background of the object. 【Opacity】 Set the background opacity of the object. The larger the value, the less transparent the background.
【Content】	Fill the words you want, can be entered directly or by the 【Font Library】.

19.3.11 【Image】

19.3.11.1 【Setting】

The【Image】【Setting】page is a shown in the figure below. Each option is explained.

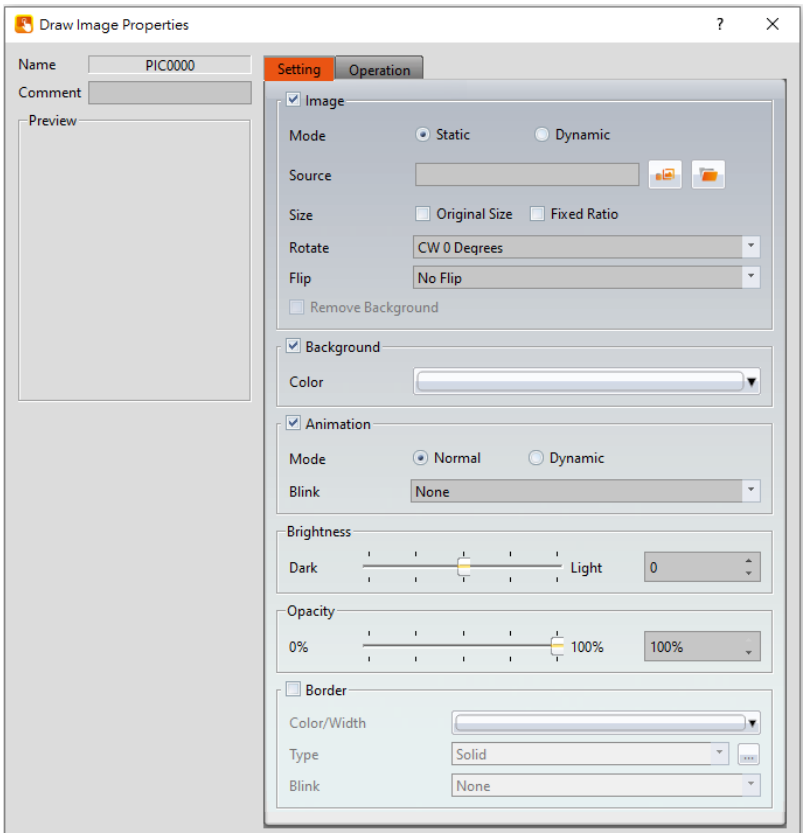


Figure 256 Settings page for【Image】

Table 117 Property settings for【Image】

Property	Description
【Preview】	Preview the appearance of the object.
【Setting】	【Mode】 【Static】Display fixed image, can select from file or library. 【Dynamic】Switch image dynamically, more details in the next chapter. 【Source】 【Static】Display the path of image. 【Dynamic】Can set the path of dynamic image, more details in the next chapter. 【Size】 When the mode is【Static】, this option can be used. It is use to setup the limit of the image size. 【Original Size】The size of the image object is fixed at its original size.

	【Fixed Ratio】the image object can be scaled proportional to its original ratio. The image object can be stretched freely when neither is selected. 【Rotate】 Set the rotate degree of the figure, including CW 0 Degrees, CW 90 Degrees, CW 180 Degrees and CW 270 Degrees. 【Flip】 Set the degree the image is rotated, including no flip, X Axis and Y Axis. 【Tone Type】 There are multiple color modes to choose from. 【Tone Color】 Set the color to apply when using【Tone Type】. 【Remove Background】 The mode can be enabled when【Static】is selected and a image has been selected. After checking it, you can click the button of 【Select Color】to select the color to be deleted.
【Background】	【Color】 Set the background color.
【Animation】	Check whether to enable animated effects. 【Mode】Choose whether to use static or dynamic control elements to flicker. 【Blink】Select the blinking mode, and use the numerical value to switch during dynamic control.
【Brightness】	Set the brightness of the image object. The greater the value the brighter the object will be displayed.
【Opacity】	Set the opacity of the image object. The greater the value the less transparent the object will be displayed.
【Border】	Set the border of the image object. The display appearance of the border can be set once this option is selected. 【Color/Thickness】 Set the displayed color and thickness of the border. 【Type】

	Set the border type. 【Blink】 Set the blinking speed of the border. Four blinking speeds are available for selection: None, Fast, Medium and Slow.

19.3.11.2 Dynamic Image Setting

The following describes the settings when【Dynamic】option is selected.

Note : The images that can be read are limited to JPG/PNG/BMP, and the file size must be less than 2MB.

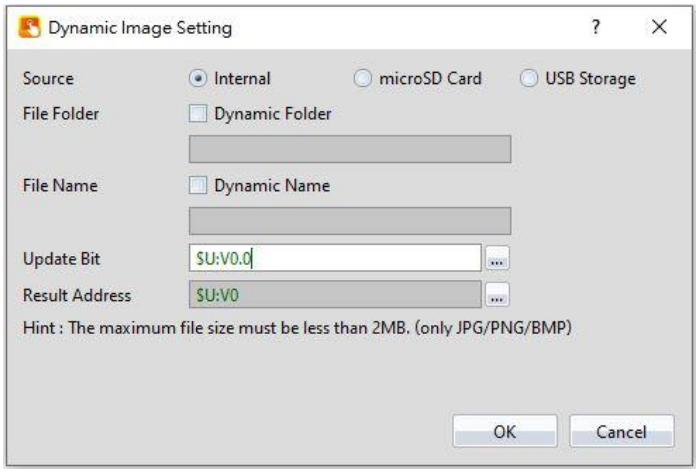


Figure 257 Dynamic Image Setting Page

Table 118 Property settings for Dynamic Image

Property	Description
【Source】	Select the source path, including Internal, SD Sard, and USB drive.
【File Folder】	If【Dynamic Folder】is not checked, it will be in【Static】mode. 【Static】 If didn't set the folder name, the default file is in the outermost layer of the USB. If did set up the folder name, it will be read in the specified folder. It should be noted that only can read one layer of folders in【Static】mode, and no slashes are required. 【Dynamic folder】 The data type is【Ascii】, the length of the string can be set below, and the length of the continuous occupied register will be automatically calculated. The maximum string of characters

<table>
<tr><td></td><td>is 100 words, and the folder name can be dynamically changed according to the content of the register.</td></tr>
<tr><td>【File Name】</td><td>It can be divided into【Static】and【Dynamic】file names. If【Dynamic】is not checked, it will be【Static】and the file name can be set directly below. If【Dynamic】is checked, the data type is【Ascii】. The length of the string can be set below, and the length of the continuous occupied register will be automatically calculated. The maximum length of the string is 100 words, and the file name can be dynamically changed according to the content of the register.
The file name can be manually selected using the file name extractor. Please click the text below to refer to【Filename Extractor】.
The file name needs to be added with a file extension, for example: image.jpg</td></tr>
<tr><td>【Update Bit】</td><td>Set a bit register as a trigger to read the picture according to the file name, update it when it is on, and it will automatically change back to off after the end.</td></tr>
<tr><td>【Result Address】</td><td>Displays the address of the read result, the result address is in word. The following is the result address definition table:
<table>
<tr><th>Value(16Bit-INT)</th><th>Definition</th></tr>
<tr><td>1</td><td>Reading Success</td></tr>
<tr><td>2</td><td>Reading</td></tr>
<tr><td>3</td><td>Reading Failed</td></tr>
<tr><td>4</td><td>Reading image exceeds file size limit</td></tr>
</table>
</td></tr>
</table>

19.3.12 【Scale】

19.3.12.1 【Setting】

The【Scale】【Setting】page is a shown in the figure below. Each option is explained.

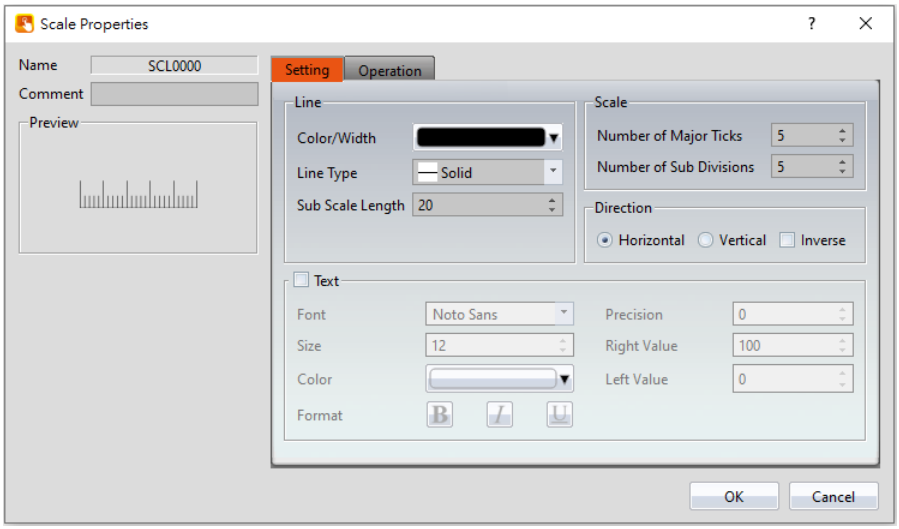


Figure 258 Settings Page for【Scale】

Table 119 Property Settings for【Scale】

Property	Description
【Preview】	Preview the appearance of the object.
【Line】	【Color/Width】 Set the line width and color. 【Line Type】 Select the appearance of the line. 【Sub Scale Length】 Set the length of the minor scales.
【Scale】	【Number of Major Ticks】 Set the number of major divisions of the scale. 【Number of Sub Divisions】 Set the number of minor divisions of the scale.
【Direction】	【Horizontal】 Set to align the scale horizontally. If the scale has text, the text is displayed above. 【Vertical】 Set to align the scale vertically. If the scale has text, the text is displayed on the right. 【Inverse】 If the scale is aligned horizontally, set to display the text below the

	scale. If the scale is aligned vertically, set to display the text on the left side of the scale.
【Text】	【Font】 Select the font of the text. 【Size】 Select the size of the text. 【Color】 Select the color of the text. 【Format】 Set the format of the text. 【Precision】 Set the number of decimal places for the text. 【Right/Bottom Value】 When the direction is horizontal, set the far right value of the text. When the direction is vertical, set the bottom value of the text. 【Left/Top Value】 When the direction is horizontal, set the far left value of the text. When the direction is vertical, set the top value of the text.

19.3.13 【Pipeline】

FvDesigner provide user can build pipeline easily and can use in different environment , such as water treatment application,display flow state and effect, etc.

The object can except drang【Pipeline】from【Toolbox】【Draw】to work space, also can drag from【Ribbon】【Draw】, figure as shown below.

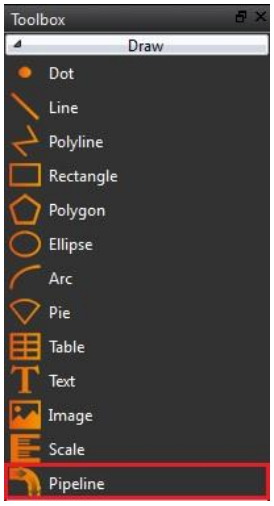


Figure 259【Pipeline】in【Toolbox】



Figure 260【Pipeline】in【Ribbon】

19.3.13.1 【General】

The【Pipeline】【General】page is as shown in the figure below, the meaning of each setting item are listed below:

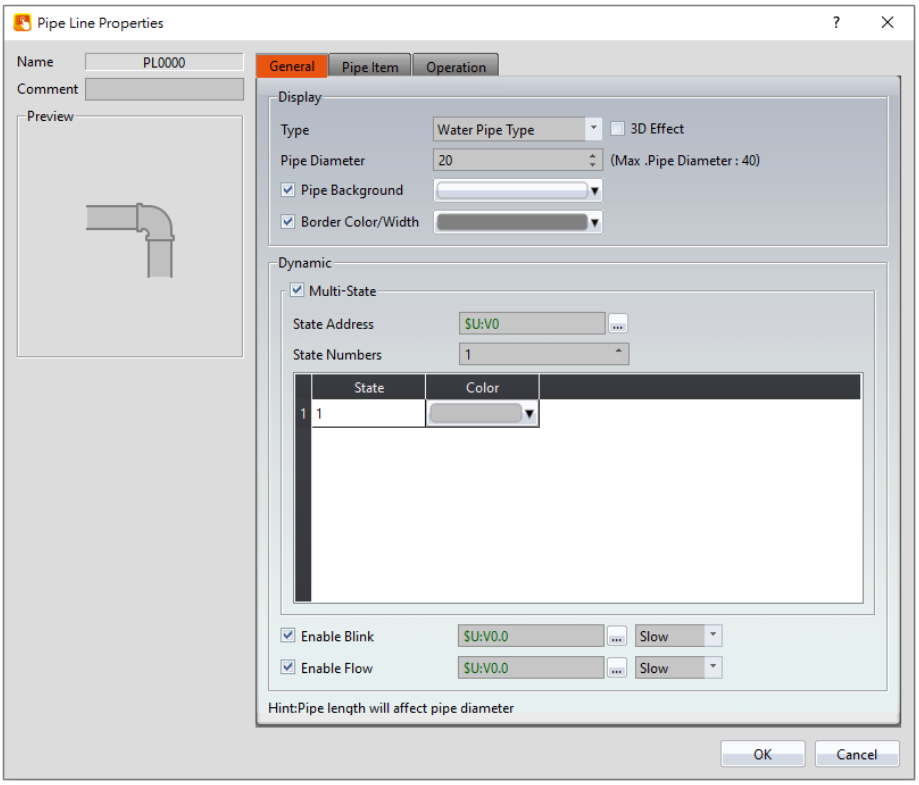
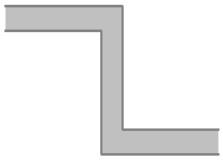
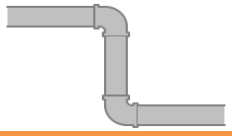
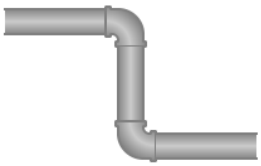


Figure 261 Settings Page for【Pipeline】【General】

Table 120【General】Properties of【Pipeline】

Property	Description
【Preview】	Preview the appearance of this object.
【Display】	【Type】 Pipeline has 3 types to choose, right side you can click【3D Effect】,totally 5 types.

Type	Illustration
Right Angle Tyoe	
Arc Angle Tyoe	
Water Pipe Type	

	3D Arc Angle Tyoe	
	3D Water Pipe Type	
	【Pipe Diameter】 Set the diameter of pipe, the length of each pipe affects the maximum diameter, with a maximum diameter of 40. 【Pipe Background Color】 Set the background color of pipe, if the【Multi-State】has checked, then set the color in the below table. 【Border Color/Width】 Set the color and width of border.	
【Dynamic】	【Multi-State】 Check the pipeline whether to be multi-states function. 【Multi-State】【State Address】 Set the reading address of multi-state, the pipeline will read this adress to change different states, such as set the address as R30, when R30=0 display state 1, when R30=1 display state 2, when R30=2 display state 3, and so on. 【Multi-State】【State Numbers】 Set the state numbers. 【Multi-State】【Table】 Set the color of each state. 【Enable Blink】 Check whether to let pipeline blink, if checked, will show up the address and speed options to set, such as set the address set as M10, when M10=ON the pipeline will blink. 【Enable Flow】 Check whether to let pipeline show flow effect, if checked, will show up the address and speed options to set, such as set the	

	address set as M20, when M20=ON the pipeline will show flow effect.

19.3.13.2 【Pipe Item】

The【Pipeline】【Pipe Item】page is as shown in the figure below, the meaning of each setting item are listed below:

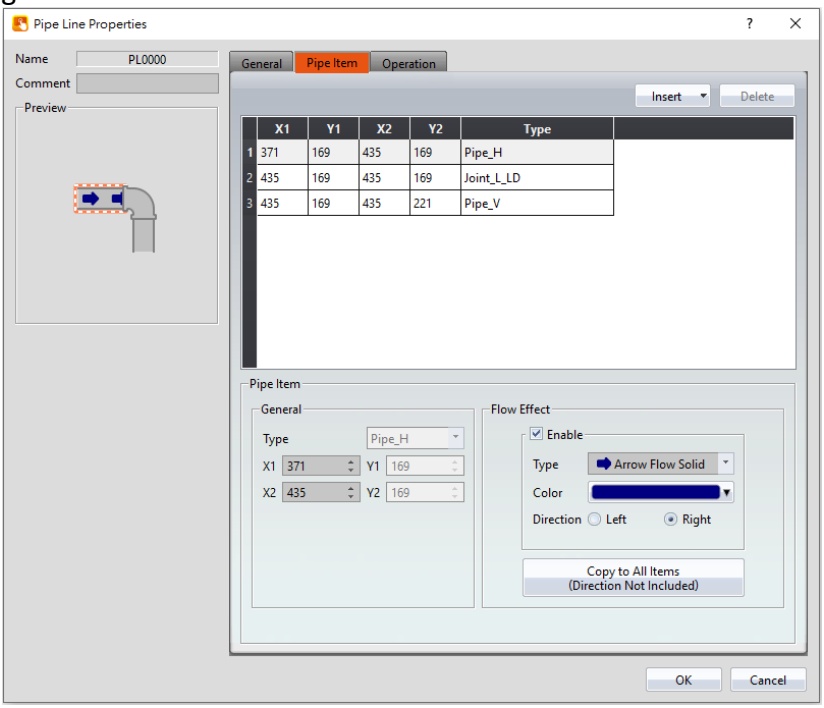
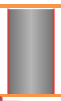
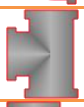
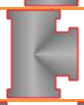
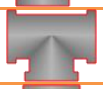
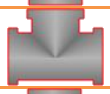


Figure 262 Settings Page for【Pipeline】【Pipe Item】

Table 121【Pipe Item】Properties of【Pipeline】

Property	Description
【Insert】	Insert joint to the middle of the pipe or add at the end of the pipe.
【Delete】	Delete pipe or joint of the pipeline, the first pipe cannot be deleted and the pipe that connected to the back will be deleted.
【Table】	Display all of the pipe item, choose the pipe item , can modify the property of【General】and【Flow Effect】modify the property. All of the pipe items are as follows:

Type	Illustration
Pipe_H	

	Pipe_V	
	Joint_L_LD	
	Joint_L_LU	
	Joint_L_RD	
	Joint_L_RU	
	Joint_T_L	
	Joint_T_R	
	Joint_T_D	
	Joint_T_U	
	Joint_X	
【Pipe Item】	【General】【Type】 Set the type of pipe item, only joint can be modified. 【General】【Length】 Set the length of pipe item, only pipe can be modified. 【Flow Effect】 Set the flow effect of pipe item, only pipe can be modified. 【Flow Effect】【Type】 Set the type of all flow effect. Flow effect types as follows:	

Type	Illustration
Arrow Flow Solid	
Arrow Flow Hollow	
Triangle Flow Solid	
Triangle Flow Hollow	
Polygon Flow 1 Solid	
Polygon Flow 1 Hollow	

Polygon Flow 2 Solid	
Polygon Flow 2 Hollow	
Single Angle Flow	
Double Angle Flow	
Single Line Flow	
Double Line Flow	
Single Wave Flow	
Double Wave Flow	
Rectangle Flow Solid	
Rectangle Flow Hollow	

【Flow Effect】【Color】
Set the color of flow effect type.

【Flow Effect】【Copy to All Items(Direction Not Included)】
Copy the flow effect to all items.

【Flow Effect】【Direction】
Set the direction of flow effect.

19.3.13.3 Pipeline Pipe Add or Delete

【Pipeline】in addition to adding, inserting and deleting in【Pipe Item】of object properties setting, also can click the right mouse botton and select the desired item to modify the pipe or joint, the quick menu will be displayed and select the item will to modify.

Setting methods as follow:

1. Modify joint:

First, click the object you would like to modify and will appear a red outer frame, as the left figure below.
Second, click the right botton of the mouse on the joint that you want to modify, then will appear a quick menu, as the middle figure below.
Third, click replace and select the joint , result as the right figure below.

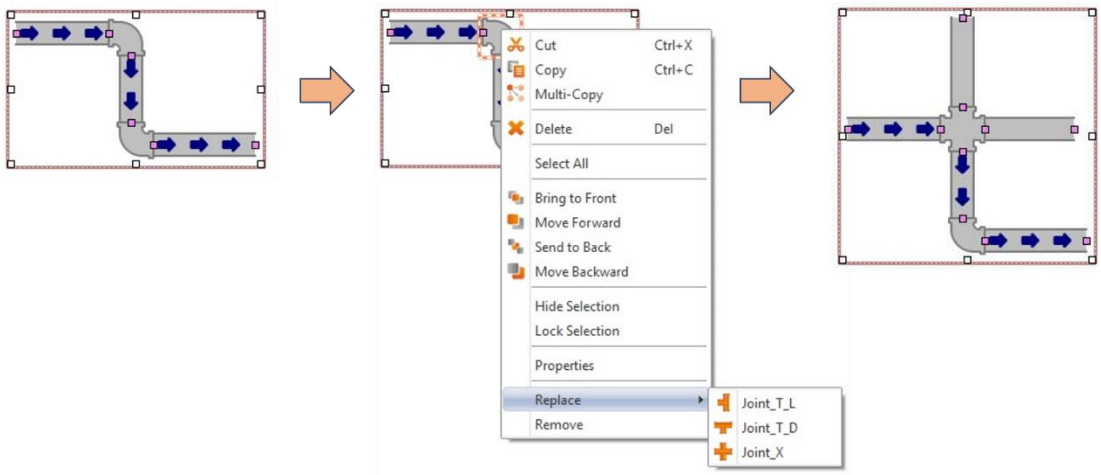


Figure 263【Pipeline】click the right mouse button to modify joint

2. Insert pipe:

First, First, click the object you would like to modify and will appear a red outer frame, as the left figure below.

Second, click the right botton of the mouse on the pipe that you want to modify, then will appear a quick menu, as the middle figure below.

Third, click replace and select the joint , result as the right figure below.

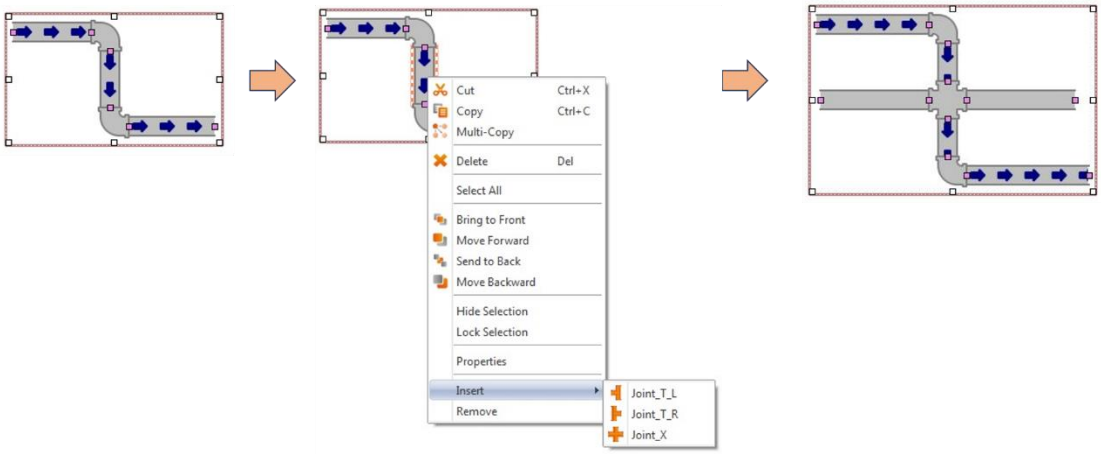


Figure 264【Pipeline】click the right mouse button to insert pipe

3. Remove pipe or joint :

First, click the object you would like to remove and will appear a red outer frame, as the left figure below.

Second, click the right botton of the mouse on the object that you want to remove, then will appear a quick menu, as the middle figure below.

Third, click remove then the object will be removed , result as the right figure below.

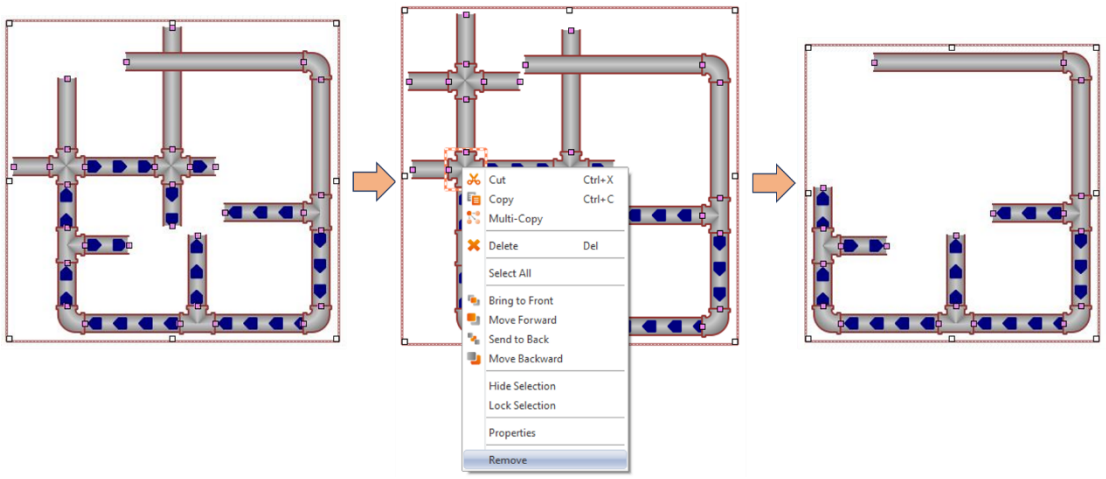


Figure 265【Pipeline】click the right mouse button to remove pipe or joint

19.4 Base Object Properties Dialog

19.4.1 【Lamp】

When the numeric value of an address has changed, the【Lamp】object can be used to map the changes of each numeric value of the register to a specific icon (such as bright or dim lamp) in order to allow a more intuitive understanding of the current numeric value of the register.

19.4.1.1【Setting】

The【Lamp】【Setting】page is as shown in the figure below, the meaning of each setting item are listed below:

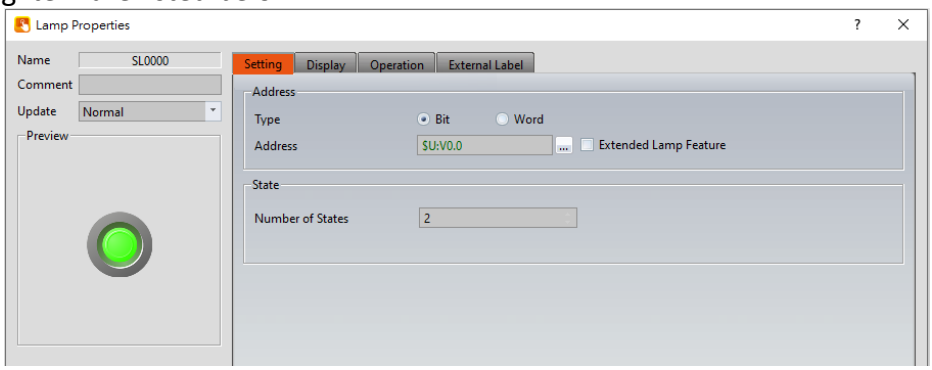
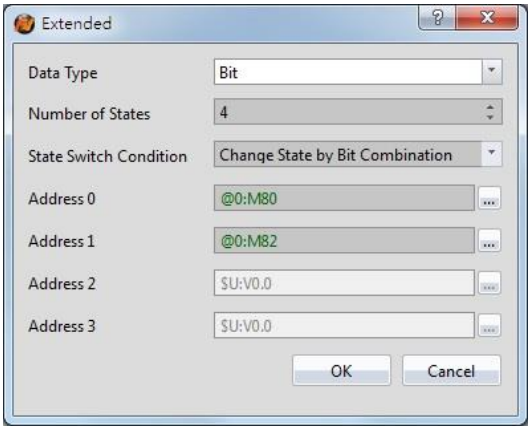


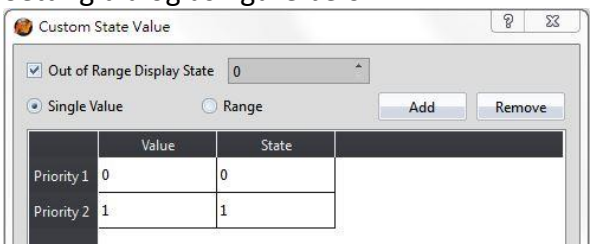
Figure 266【Setting】Screen of【Lamp】

Table 122【Setting】Properties of【Lamp】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.

【Comment】	Set the comment of the object.
【Update】	Provide user can select a suitable speed to get the latest data under different situation, such as you would like to get the latest data or adjust the object on the screen to display first, etc. Provide three modes: 【once】: update once only when switch to this page or use the system tag【OP_UPDATE_SCREEN_OBJECTS】, update once when trigger once a time, it will keep update if the monitor address is internal address. 【normal】: normal update speed. 【fast】: the fastest update speed.
【Address】	【Type】 Set whether the monitored address of the lamp is a Bit or Word. The default setting is Bit. 【Address】 Set the address for the lamp to monitor. 【Enable Extended Lamp Feature】 Set to enable extra features for the lamp object. When set, extension options will appear to the right. The original address set in the window will no longer be read and is replaced by the【Addresses 0~3】in the dialog as shown below. After checked, the original【Type】and【Data Type】setting value will be changed from the following figure【Data Type】to set.  【Data Type】 Set the address type of【Addresses 0~3】. Data types include Bit, 16Bit-BCD, 16Bit-INT, 16Bit-UINT, 32Bit-BCD,

	32Bit-INT and 32Bit-UINT. 【Number of states】 Set the number of states the lamp will have. 【State Switch Condition】 Set how the state of the lamp is determined. The conditions include【Change State by Bit Combination】,【Change State by Bit】, or【Change State by Data】. 【Change State by Bit Combination】uses【Addresses 0~3】in combination to switch the displayed state. For example, the【Number of states】is 4,【Address 0】is M80,【Address 1】is M82,【Addresses 2】and【Addresses 3】are not set, the state will be determined as follows: M80 = OFF and M82 = OFF State 0 M80 = ON and M82 = OFF State 1 M80 = OFF and M82 = ON State 2 M80 = ON and M82 = ON State 3, and so on. 【Change State by Bit】refers to【Addresses 0~3】to switch the displayed state. For example, the【Data Type】is set to Bit, the【Number of states】is 4,【Address 0】is M80,【Address 1】is M82,【Address 2】is M84, and【Address 3】is not set, the state will be determined as follows: M80, M82, M84 = OFF State 0 M80 = ON, M82 = OFF, M84 = OFF State 1 M80 = OFF, M82 = ON, M84 = OFF State 2 M80 = OFF, M82 = OFF, M84 = ON State 3, and so on. If the【Data Type】is 16Bit-UINT, the【Number of states】is 5,【Address 0】is R40, the other addresses are not set, when R40 = 0 the state is 0. R40 = 1, state 1. R40 = 2, state 2. R40 = 4, state 3. R40 = 8, state 4. 【Change State by Data】refers to switching the display status according to the value of【Address 0】. In【Data Type】, this option will appear for all types except Bit type. If the【Data Type】is 16Bit-Uint, the【Number of states】is

	5,【Address 0】is R40, the other addresses are not set, when R40 = 0, the state is 0. R40 = 1, state 1. R40 = 2, state 2, R40 = 3, state 3, R40 = 4, state 4, and so on. 【Addresses 0~3】 Specify the address to use to determine the state of the lamp. 【Data Type】 Set the data type of the lamp; this setting item will appear when the type is set as Word.
【State】	【Number of States】 Set the number of states of the lamp. When the Lamp Type is Bit, the number of states is fixed as 2. If the Type is Word, it can be set between 2~256. 【Custom State Value】 When choose【Word】, you can check【Custom State Value】beside the【Number of States】. If didn't check【Custom State Value】, for example, the address of the lamp is R52, munber of states is two, then R52=0, state display as 0, R52=1, state display as 1. After checked【Custom State Value】, you can press【Detail】to set each single value and range corresponding to the state. Setting dialog as figure below.  【Out of Range Display State】 Set the status to be displayed when the value exceeds the corresponding range 【Single Value】 Set the mode corresponding to the state as single value, the field will changed after checked, then you can set each value corresponding to the state in【Value】field.

	【Range】 Set the mode corresponding to the state as range, the field will changed after checked, then you can set each value corresponding to the state in【Lower Limit】and【Upper Limit】field.

19.4.1.2【Display】

The【Lamp】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

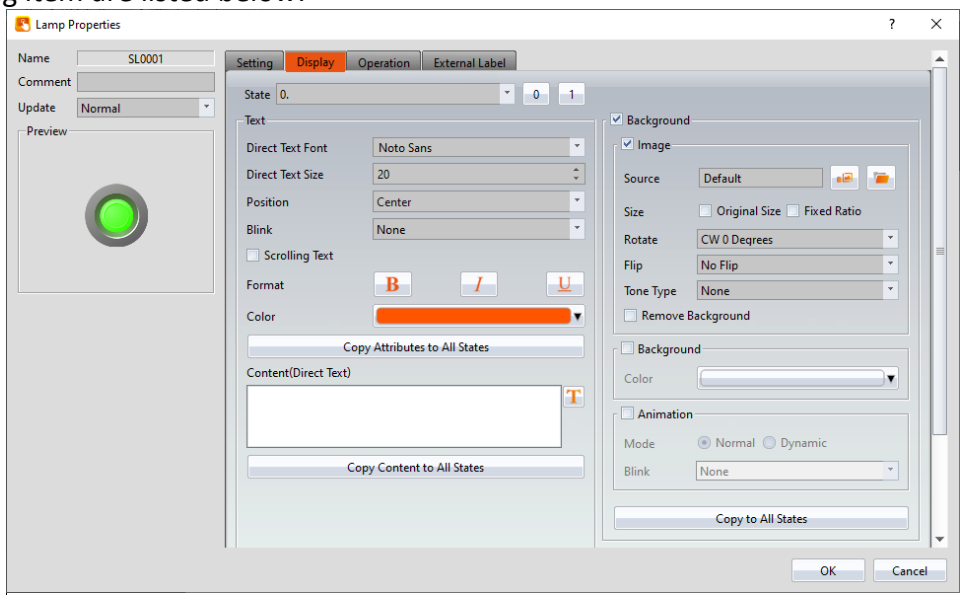


Figure 267【Display】Setting Screen of【Lamp】

Table 123【Display】Setting Properties of【Lamp】

Property	Description
【State】	Select the state to be edited. 0 and 1 buttons are provided to enable quick switching between states 0 and 1.
【Text】	【Direct Text Font】 Set the font of the text displayed for the current editing state. 【Direct Text Size】 Set the size of the text displayed for the current editing state. 【Position】 Set the position of the text displayed for the current editing

	state. 【Blink】 Set the blinking function for the text of the current editing state. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Scrolling Text】 Set the scrolling text function for the text of the current editing state. There are four scrolling speeds available to choose, from slow to fast. 【Format】 Set the format of the text displayed for the current editing state, including Bold, Italics and Underline. 【Color】 Set the color of the text displayed for the current editing state. 【Copy Attributes to All States】 The text properties for the current editing state is applied to all states. 【Content (Direct Text)】 Set the text displayed for the current editing state. It can be inputted directly or acquired from the【Text Library】. 【Copy to All States】 Apply the settings of the text for the current editing state to all states.
【Background】	【Background】 Check whether to enable background 【Image】 Check whether to use image 【Source】 Set whether to use an image for the displayed background of the current editing state. When this option is checked, an【Image Selector】will appear asking the user to select an

	image either from the【Image Library】or from【File】. 【Size】 You can set the picture to use 【Original Size】, or check 【Fixed Ratio】 to maintain a fixed length and width ratio when stretching 【Rotate】 Set image rotation angle 【Flip】 Set the flip direction of the image, includes No Flip, X-Axis and Y-Axis. 【Tone Type】 You can choose the tone type you want to change. After selecting the type, you can choose the color from【Tone Color】. 【Remove Background】 You can set the color to be transparent by【Choose Color】. 【Background】 Check whether to enable the background. After checking, you can set the background color displayed in the current editing state from【Color】. 【Animation】 Check whether to enable animated effects. 【Mode】Choose whether to use static or dynamic control elements to flicker. 【Blink】Select the blinking mode, and use the numerical value to switch during dynamic control. 【Copy to All States】 Apply the settings of the background for the currently editing state to all states.
【Border】	Set the border of the lamp object, set the appearance after

	checked. 【Color/Width】 Set the color and width of the border. 【Type】 Set the type of the boder, click … for more types. 【Copy to All States】 Apply the settings of the border for the currently editing state to all states.

19.4.1.3【External Lable】

The【Lamp】【External Lable】page is as shown in the figure below, the meanings of each setting item are listed below:

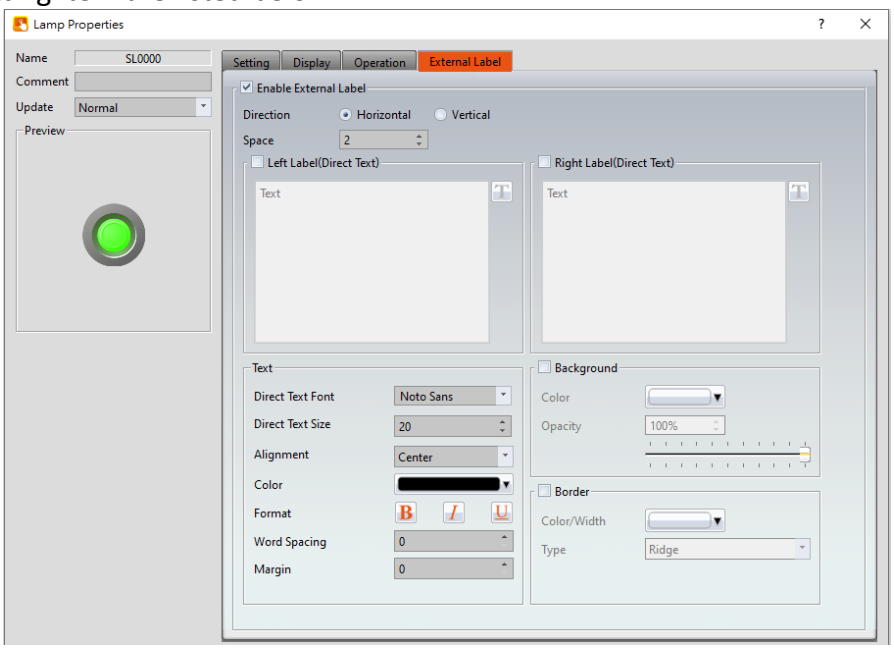


Figure 268【External Lable】Setting Screen of【Lamp】

Table 124【Lamp】【External Lable】setting properties

Option	Description
【Enable External Lable】	Checked, the bottom will appear the external lable settings of the object.
【Direction】	Set the display direction, there are horizontal and vertical two selections.
【Space】	Set the space between external lable and the object.

【Left/Top Lable(Direct Text)】	Fill in the text to be displayed on the left / top lable of the object, can be directly input or selected from【Font Library】.
【Right/Bottom Lable(Direct Text)】	Fill in the text to be displayed on the right / bottom lable of the object, can be directly input or selected from【Font Library】.
【Text】	【Direct Text Font】 Set the font of text. 【Direct Text Size】 Set the size of text, the default size is 20. 【Alignment】 Set the alignment of text. 【Color】 Set the color of text. 【Format】 Set the format of text, includes Bold, Italic and Underline. 【Word Spacing】 Set the word space of text. 【Margin】 Set the margin of text.
【Background】	Check whether to display background, set the color and opacity of background after checked. 【Color】 Set the background color of external lable. 【Opacity】 Set the opacity of external lable background, the greater the value the more the background opacity is.
【Border】	Check whether to display border. 【Color/Width】 Set the color and width of border. 【Type】

	Set the type of border.

19.4.2 【Switch】

Switch allows users to perform specific operation behaviors by pressing objects, including【Bit Switch】,【Word Switch】,【Change Screen】and【Function Switch】.

19.4.2.1 【Bit Switch】

The【Bit Switch】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

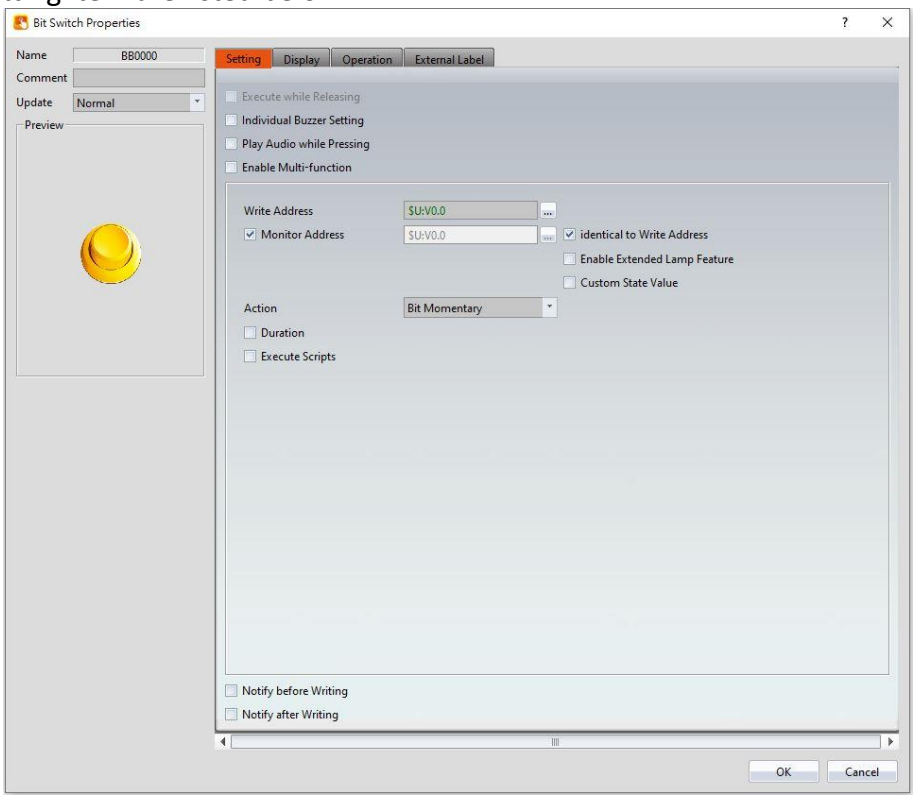
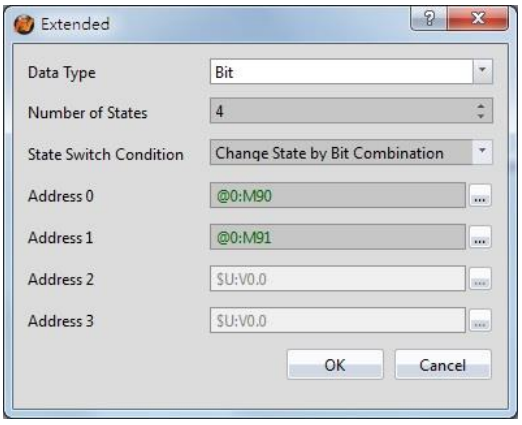


Figure 269【Setting】Screen of【Bit Switch】

Table 125【Setting】Properties of【Bit Switch】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Update】	Provide user can select a suitable speed to get the latest data under different situation, such as you would like to get

	the latest data or adjust the object on the screen to display first, etc. Provide three modes: 【once】: update once only when switch to this page or use the system tag【OP_UPDATE_SCREEN_OBJECTS】, update once when trigger once a time, it will keep update if the monitor address is internal address. 【normal】: normal update speed. 【fast】: the fastest update speed.
【Execute while Releasing】	Select to execute the action set for the Bit Switch while releasing. The action will be executed immediately when the switch is pressed if this option is not selected.
【Individual Buzzer Setting】	Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short.
【Play Audio while Pressing】	Select to play audio when the switch is pressed; an【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio Selector】can be pressed to play the selected audio.
【Enable Multi-function】	Select to enable the Multi-function Switch. A【Multi-function List】will appear on the left when selected.
【Multi-function List】	This list will appear when【Enable Multi-function】 is selected. The【Multi-function List】is used to display the list of functions that will be executed when the switch is pressed. A maximum of 16 operations can be set, and the system will execute the operations in order when the switch is pressed. 【Add】 Add to the number of switches in【Multi-function List】. The type of switch to add can be selected. 【Delete】 Delete the switch currently selected in the【Multi-function List】. 【Up】 Move the order of the switch currently selected in the

	【Multi-function List】up. 【Down】 Move the order of the switch currently selected in the 【Multi-function List】down. Notice: 1. When the first and second buttons are the same switch type, it canbe moved up or down. 2. An object can only include one【Change Screen】or 【Function Switch】, and it must be last in the list.
【Address】	Set the operating address of the Bit Switch.
【Monitor Address】	Set the switch to change its state according to the value in the monitored address. The user will be able to set the address to monitor when this option is selected. After checking【identical to Write Address】, the【Monitor Address】cannot be modified and will be the same as the write address.
【Enable Extended Lamp Feature】	Set to enable extra features for the bit switch object. When set, extension options will appear to the right. The original address set in the window will no longer be read and is replaced by the【Addresses 0~3】in the dialog as shown below. After checked, the original【Type】and【Data Type】setting value will be changed from the following figure【Data Type】to set.  【Data Type】 Set the address type of【Addresses 0~3】. Data types include Bit, 16Bit-BCD, 16Bit-INT, 16Bit-UINT, 32Bit-BCD, 32Bit-INT and 32Bit-UINT.

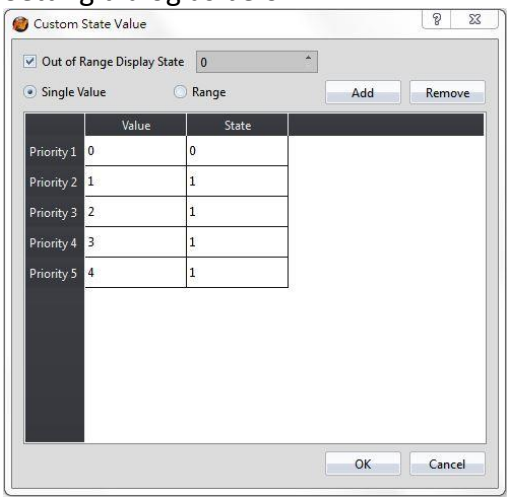
【Number of states】
Set the number of states the bit switch will have.

【State Switch Condition】
Set how the state of the bit switch is determined. The conditions include【Change State by Bit Combination】, 【Change State by Bit】, or【Change State by Data】.

【Change State by Bit Combination】uses【Addresses 0~3】in combination to switch the displayed state.
For example, the【Data Type】is set to Bit, the【Number of states】is 4,【Address 0】is M90,【Address 1】is M91, 【Addresses 2】and【Addresses 3】are not set, the state will be determined as follows:
M90 = OFF and M91 = OFF State 0
M90 = ON and M91 = OFF State 1
M90 = OFF and M91 = ON State 2
M90 = ON and M91 = ON State 3, and so on.

【Change State by Bit】refers to【Addresses 0~3】to switch the displayed state.
For example, the【Data Type】is set to Bit, the【Number of states】is 4,【Address 0】is M90,【Address 1】is M91, 【Address 2】is M92, and【Address 3】is not set, the state will be determined as follows:
M90, M91, M92 = OFF State 0
M90 = ON, M91 = OFF, M92 = OFF State 1
M90 = OFF, M91 = ON, M92 = OFF State 2
M90 = OFF, M91 = OFF, M92 = ON State 3, and so on.
If the data type is 16Bit-UINT, the number of states is 5, 【Address 0】is R50, the other addresses are not set, when R50 = 0 the state is 0. R50 = 1, state 1. R50 = 2, state 2. R50 = 4, state 3. R50 = 8, state 4.

【Change State by Data】refers to switching the display status according to the value of【Address 0】. In【Data Type】, this option will appear for all types except Bit type.
If the【Data Type】is 16Bit-Uint, the【Number of states】is 5,【Address 0】is R50, the other addresses are not set,

	when R40 = 0, the state is 0. R50 = 1, state 1. R50 = 2, state 2, R50 = 3, state 3, R50 = 4, state 4, and so on. 【Addresses 0~3】 Specify the address to use to determine the state of the bit switch.
【Custom State Value】	After check【Custom State Value】, you can click【Detail】at the back, set the value and range of each state. Setting dialog as below:  【Out of Range Display State】 Set the state when the value display out of range. 【Single Value】 Set the mode of corresponding state as single value, the following table will change after clicked, then you can set the value of each corresponding state in【Value】field. 【Range】 Set the mode of corresponding state as range, the following table will change after clicked, then you can set the value of each corresponding state in【Lower Limit】and【Upper Limit】field.
【Action】	Set the operation of the Bit Switch. Setting items that will appear below varies according to the different operation selected.
【Duration】	The duration of the operation when the Bit Switch is pressed. The duration time can be set on the right when this option is selected.

	For example, if the operation is set as【Set Bit】, and the duration is set as 1 second, when the Bit Switch is pressed the【Address】will change to 1 and then automatically change to 0 after 1 second.
【Execute Scripts】	Set to execute scripts when the Bit Switch is pressed. The ID of the script to execute can be set on the right when this option is selected. If the【Action】is set as【Bit Momentary】,【Bit Invert】or【Periodic Switch】, individual scripts can be set to execute when the【Address】is 1 or 0.
【Set Bit】	The【Address】will change to 1 when the Bit Switch is pressed.
【Reset Bit】	The【Address】will change to 0 when the Bit Switch is pressed.
【Bit Momentary】	The【Address】will change to 1 when the Bit Switch is pressed, and the【Address】will change to 0 when the Bit Switch is released.
【Bit Invert】	The current state of the【Address】will change from 1 to 0 or 0 to 1 according to its current state.
【Comparison】	If the numeric value of the【Reference Address】read by【Data Type】satisfies the【Condition】and【Constant】set when the Bit Switch is pressed, the【Address】will change to 1.
【Periodic Switch】	The state of the【Address】will change periodically according to the【Time Interval】and【Number of Times】set for the【Address】when the Bit Switch is pressed.
【Notify before Writing】	The signal will notify before writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】.
【Notify after Writing】	The signal will notify after writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】.

19.4.2.2 【Word Switch】

The【Word Switch】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

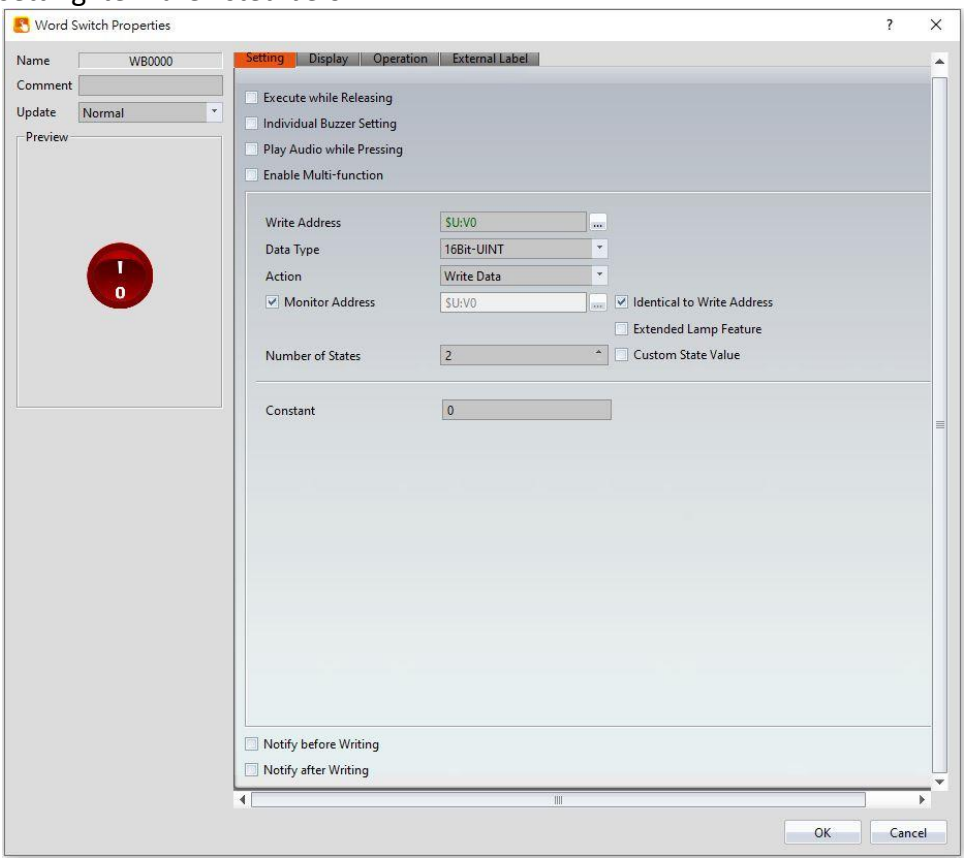


Figure 270【Setting】Screen of【Word Switch】

Table 126【Setting】Properties of【Word Switch】

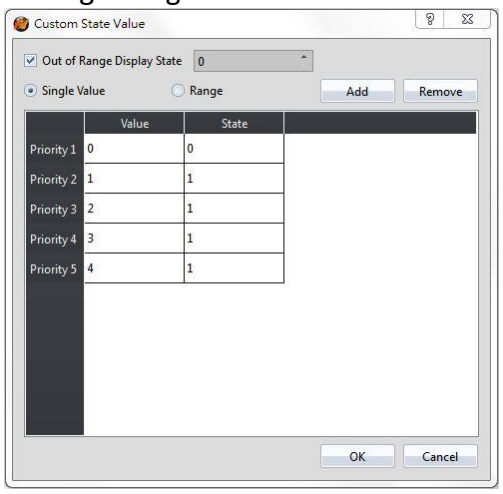
Property	Description
【Preview】	Previews the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Update】	Provide user can select a suitable speed to get the latest data under different situation, such as you would like to get the latest data or adjust the object on the screen to display first, etc. Provide three modes: 【once】: update once only when switch to this page or use the system tag【OP_UPDATE_SCREEN_OBJECTS】, update once when trigger once a time, it will keep update if the monitor address is internal address. 【normal】: normal update speed. 【fast】: the fastest update speed.

【Execute while Releasing】	Select to execute the action set for the Word Switch while releasing. The action will be executed immediately when the switch is pressed if this option is not selected.
【Individual Buzzer Setting】	Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short.
【Play Audio while Pressing】	Select to play audio when the switch is pressed. An【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio Selector】can be pressed to play the selected audio.
【Enable Multi-function】	Select whether to enable the Multi-function Switch. A【Multi-function List】will appear on the left when selected.
【Multi-function List】	This list will appear when【Enable Multi-function】is selected. The【Multi-function List】is used to display the list of functions that will be executed when the switch is pressed. A maximum of 16 operations can be set, and the system will execute the operations in order when the switch is pressed. 【Add】 Add to the number of switches in【Multi-function List】. The type of switch to add can be selected. 【Delete】 Delete the switch currently selected in the【Multi-function List】. 【Up】 Move the order of the switch currently selected in the【Multi-function List】up. 【Down】 Move the order of the switch currently selected in the【Multi-function List】down. Notice: 1. When the first and second buttons are the same switch type, it canbe moved up or down.

	2. An object can only include one【Change Screen】or 【Function Switch】, and it must be last in the list.
【Address】	Set the operating address of the Word Switch.
【Monitor Address】	Set the switch to change its state according to the value in the monitored address. The user will be able to set the address to monitor when this option is selected.
【Data Type】	Set the data type of the Word Switch.
【Action】	Set the operate action of word switch, following will show different options according different action.
【Write Data】	When pressing word switch, the【Constant】will be write into 【Write Address】according to its【Data Type】.
【Add Data】	This function increases the value of【Write Address】by the value of【Constant】every time you press the word switch. 【Constant】 Set the value to increase each time when pressing the switch. 【Max】 Set the maximum value of this address. For example: set 10, if the original value of this address is 50, it will become 10 after pressing this button. Check【Address】to dynamically control the maximum value. 【Continuously Add】 If check this option, when pressing the word switch and unrelease, word switch will excute【Add Data】continuously, and after wait for【Time Delay】will excute【Add Data】according to【Interval】time. 【Cyclically Add】 If check this option, when the value has add to【Max】, press this word switch then will write【Min】to【Address】.
【Subtract Data】	This function reduces the value of【Write Address】to the value of【Constant】every time you press the word group button. 【Constant】 Set the value to decrease each time when pressing the switch.

	【Min】 Set the minimum value of this address. For example: set 10, if the original value of this address is 0, it will become 10 after pressing this button Check【Address】to dynamically control the minimum value. 【Continuously Subtract】 If check this option, when pressing the word switch and unrelease, word switch will excute【Subtract Data】continuously, and after wait for【Time Delay】will excute【Subtract Data】according to【Interval】time. 【Cyclically Subtract】 If check this option, when the value has subtract to【Min】, press this word switch then will write【Max】to【Address】.
【Numeric Input】	When this button is pressed, the keyboard will pop up, allowing the user to set the value to【Write Address】. The setting method is the same as in chapter 19.4.3.1-【Setting】.
【Enable Extended Lamp Feature】	Set to enable extra features for the bit switch object. When set, extension options will appear to the right. The original address set in the window will no longer be read and is replaced by the【Addresses 0~3】in the dialog as shown below. After checked, the original【Type】and【Data Type】setting value will be changed from the following figure【Data Type】to set.  【Data Type】 Set the address type of【Addresses 0~3】. Data types include Bit, 16Bit-BCD, 16Bit-INT, 16Bit-UINT, 32Bit-BCD, 32Bit-INT and

	32Bit-UINT. 【Number of states】 Set the number of states the bit switch will have. 【State Switch Condition】 Set how the state of the bit switch is determined. The conditions include【Change State by Bit Combination】, 【Change State by Bit】, or【Change State by Data】. 【Change State by Bit Combination】uses【Addresses 0~3】in combination to switch the displayed state. For example, the【Data Type】is set to Bit, the【Number of states】is 4,【Address 0】is M90,【Address 1】is M91, 【Addresses 2】and【Addresses 3】are not set, the state will be determined as follows: M90 = OFF and M91 = OFF State 0 M90 = ON and M91 = OFF State 1 M90 = OFF and M91 = ON State 2 M90 = ON and M91 = ON State 3, and so on. 【Change State by Bit】refers to【Addresses 0~3】to switch the displayed state. For example, the【Data Type】is set to Bit, the【Number of states】is 4,【Address 0】is M90,【Address 1】is M91, 【Address 2】is M92, and【Address 3】is not set, the state will be determined as follows: M90, M91, M92 = OFF State 0 M90 = ON, M91 = OFF, M92 = OFF State 1 M90 = OFF, M91 = ON, M92 = OFF State 2 M90 = OFF, M91 = OFF, M92 = ON State 3, and so on. If the data type is 16Bit-UINT, the number of states is 5, 【Address 0】is R50, the other addresses are not set, when R50 = 0 the state is 0. R50 = 1, state 1. R50 = 2, state 2. R50 = 4, state 3. R50 = 8, state 4. 【Change State by Data】refers to switching the display status according to the value of【Address 0】. In【Data Type】, this option will appear for all types except Bit type. If the【Data Type】is 16Bit-Uint, the【Number of states】is

	5,【Address 0】is R50, the other addresses are not set, when R40 = 0, the state is 0. R50 = 1, state 1. R50 = 2, state 2, R50 = 3, state 3, R50 = 4, state 4, and so on. 【Addresses 0~3】 Specify the address to use to determine the state of the bit switch.
【Custom State Value】	After check【Custom State Value】, you can click【Detail】at the back, set the value and range of each state. Setting dialog as below:  【Out of Range Display State】 Set the state when the value display out of range. 【Single Value】 Set the mode of corresponding state as single value, the following table will change after clicked, then you can set the value of each corresponding state in【Value】field. 【Range】 Set the mode of corresponding state as range, the following table will change after clicked, then you can set the value of each corresponding state in【Lower Limit】and【Upper Limit】field.
【State】	Set the number of states, set whether the word switch changes its status according to the value of the set monitor address.
【Notify before Writing】	The signal will notify before writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after

	continuing the time set by【Width】.
【Notify after Writing】	The signal will notify after writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】.

19.4.2.3【Change Screen】

The【Change Screen】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

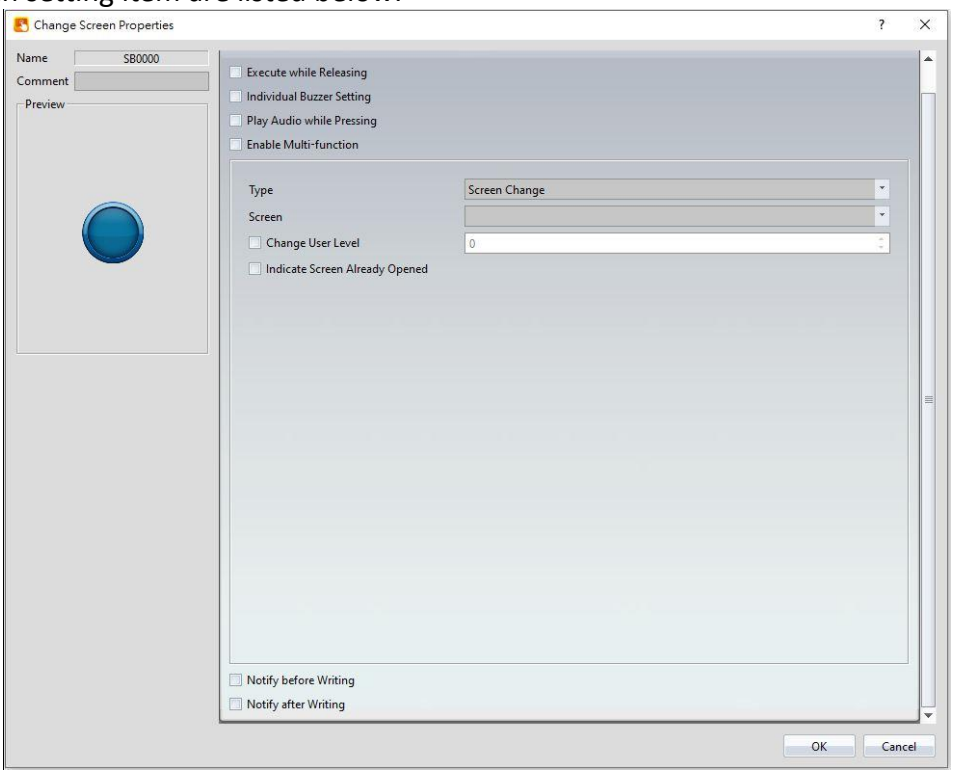


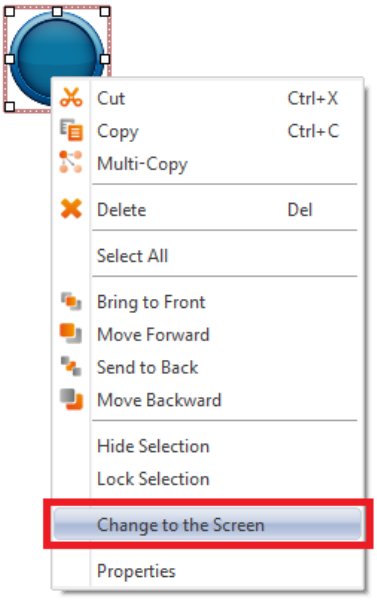
Figure 271【Setting】Screen of【Change Screen】

Table 127【Setting】Properties of【Change Screen】

Property	Description
【Preview】	Previews the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Execute while Releasing】	Select to execute the action set for Change Screen while releasing; the action will be executing immediately when the switch is pressed if this option is not selected.
【Individual Buzzer Setting】	Can individually setup buzzer setting.

	Includes 5 modes: Off, Short, Long, Short-Short, Long-Short.
【Play Audio while Pressing】	Select to play audio when the switch is pressed; an【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio Selector】can be pressed to play the audio selected.
【Enable Multi-function】	Select whether to enable the Multi-function Switch. A【Multi-function List】will appear on the left when selected.
【Multi-function List】	This list will appear when【Enable Multi-function】is selected. The【Multi-function List】is used to display the list of functions that will be executed when the switch is pressed. A maximum of 16 operations can be set, and the system will execute the operations in order when the switch is pressed. 【Add】 Add to the number of switches in【Multi-function List】. The type of switch to add can be selected. 【Delete】 Delete the switch currently selected in the【Multi-function List】. 【Up】 Move the order of the switch currently selected in the【Multi-function List】up. 【Down】 Move the order of the switch currently selected in the【Multi-function List】down. Notice: 1. When the first and second buttons are

	the same switch type, it canbe moved up or down. 2. An object can only include one 【Change Screen】 or 【Function Switch】, and it must be last in the list.
【Type】	Set the operation type of Change Screen; setting items that will appear below varies according to the different operation selected.
【Screen Change】	The displayed screen of the human machine interface will change to the screen set in 【Screen】 when Change Screen is pressed.
【Previous Screen】	The displayed screen of the human machine interface will change to the previous screen displayed when Change Screen is pressed.
【Pop-up Window Screen】	When the button is pressed, the HMI display will pop up the selected window screen.
【Close Pop-up Window Screen】	When the button is pressed, the pop-up window screen containing the button will close.
【Close Pop-up Window Screen and Switch Screen】	When the button is pressed, the pop-up window screen containing the button will close and the screen set to switch will appear.
【Change User Level】	When the button is pressed, security level of the user will be changed to the selected value.
【Indicate Screen Already Opened】	If the screen ID is the same as the button's setting then the color of the word and background will turn into the complementary color.
【Change to the Screen】	When the type of the 【Change Screen】 are: Screen Change, Pop-up Window Screen, Close Pop-up Window Screen, Close Pop-up Window Screen and Screen Change. Right-click the object will show this option.

	
【Notify before Writing】	The signal will notify before writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by 【Width】.
【Notify after Writing】	The signal will notify after writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by 【Width】.

19.4.2.4 【Function Switch】

The【Function Switch】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

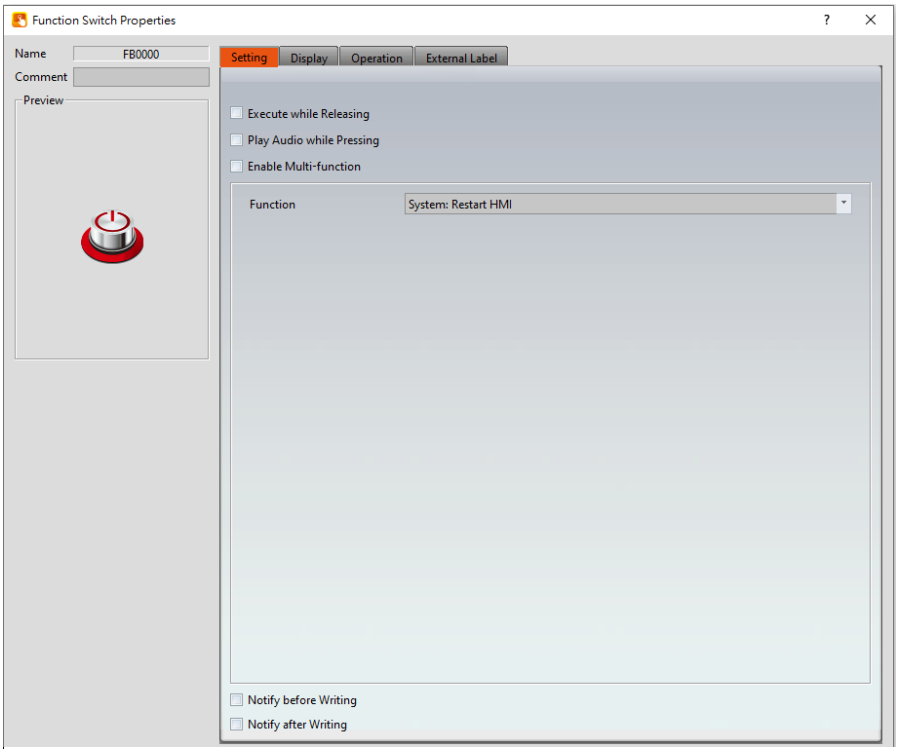
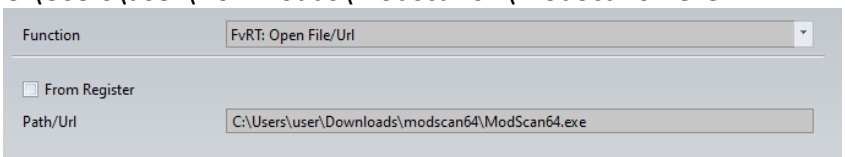


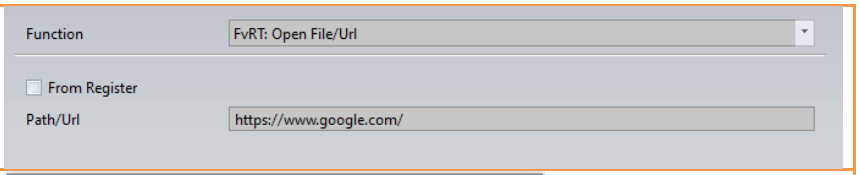
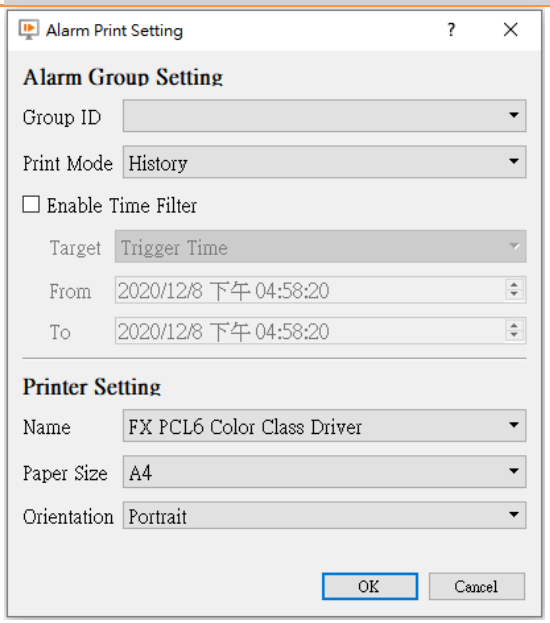
Figure 272【Setting】Screen of【Function Switch】

Table 128【Setting】Properties of【Function Switch】

Property	Description
【Preview】	Previews the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Execute while Releasing】	Select to execute the action set for the Function Switch while releasing. The action will be executed immediately when the switch is pressed if this option is not selected.
【Play Audio while Pressing】	Select to play audio when the switch is pressed; an【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio Selector】can be pressed to play the audio selected.
【Enable Multi-function】	Select whether to enable the Multi-function Switch. A【Multi-function List】will appear on the left when selected.
【Multi-function List】	This list will appear when【Enable Multi-function】is selected. The【Multi-function List】is used to display the list of functions that will be executed when the switch is pressed. A maximum of 16 operations can be set, and the system will execute the

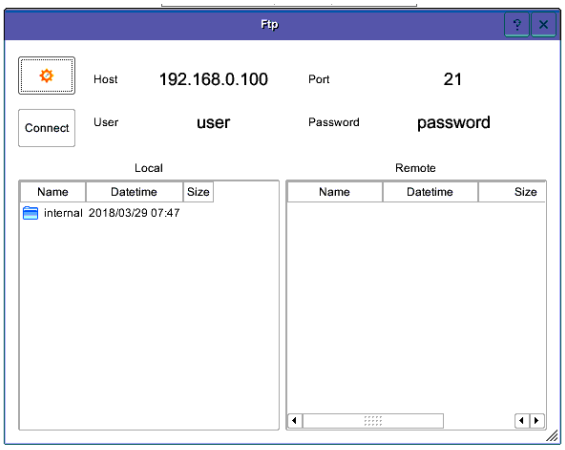
	operations in order when the switch is pressed. 【Add】 Add to the number of switches in【Multi-function List】. The type of switch to add can be selected. 【Delete】 Delete the switch currently selected in the【Multi-function List】. 【Up】 Move the order of the switch currently selected in the【Multi-function List】up. 【Down】 Move the order of the switch currently selected in the【Multi-function List】down. Notice: 1. When the first and second buttons are the same switch type, it canbe moved up or down. 2. An object can only include one【Change Screen】or【Function Switch】, and it must be last in the list.
【Function】	Set the operation function of the Function Switch. Setting items that will appear below varies according to the different functions selected.
【System: Restart HMI】	The human machine interface will restart when the Function Switch is pressed.
【System: Increase Brightness】	The brightness of the human machine interface display will increase when the Function Switch is pressed.
【System: Decrease Brightness】	The brightness of the human machine interface display will decrease when the Function Switch is pressed.
【System: Turn Backlight OFF】	The brightness of the human machine interface display will decrease to the lowest brightness level when the Function Switch is pressed.
【System:	The system will pop-up system configuration when Function

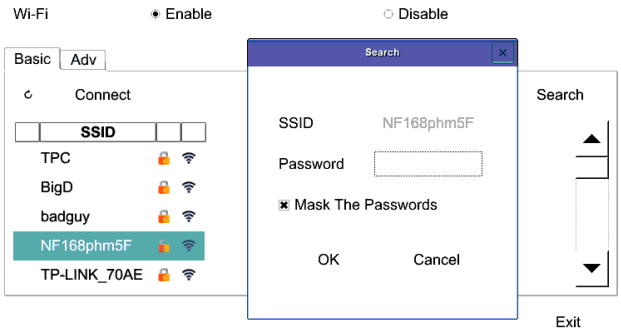
Show System Configuration 】	Switch is pressed, including four paging【General】, 【Ethernet】,【Screen Saver】and【Date/Time】,user can select items to be displayed. 【General】paging including device name, station number, OS Version, Firmware Version. 【Ethernet】paging set whether to enable ethernet, whether to use DHCP, display or set HMI IP Address, display or set HMI Netmask, display , DNS setting or set HMI Gateway. 【Screen Saver】paging set whether to enable screen saver, waiting time. 【Date/Time】paging display or set HMI date and time.
【System: Show Link Setting】	The HMI will show the link setting configuration and users can also adjust the settings as well. **Note: the interface type can not be changed.**
【FvRT: Restart Project】	Restart the project.
【FvRT: Stop FvRT】	After stopping the FvRT setting, there are four ways to select as below. 【Following FvRT setting】Perform the according to the seeting of 'After stopping the project' in FvRT settings. 【Return to startup screen】Press the button to end up the project then return to the FvRT startup interface. 【Close the program】Press the button to end up the project and close the FvRT program. 【Shutdown the machine】Press the button to end up the project and close the PC.
【FvRT: Open File/Url】	When the function button is pressed, other software in the computer will be executed according to the preset path, and the path of the file to be opened can also be dynamically modified through the register. Open the file filling example: C:\Users\user\Downloads\modscan64\ModScan64.exe  Open the webpage filling example: https://www.google.com/

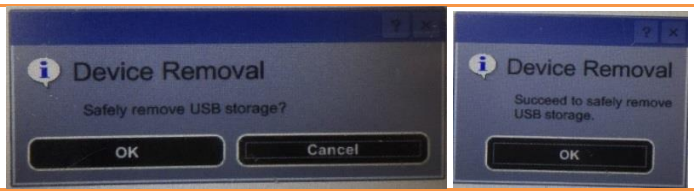
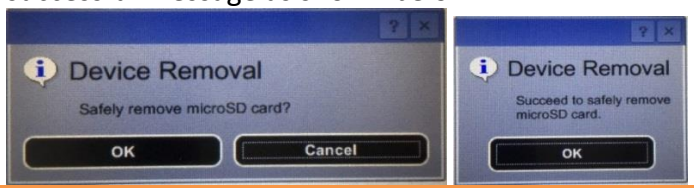
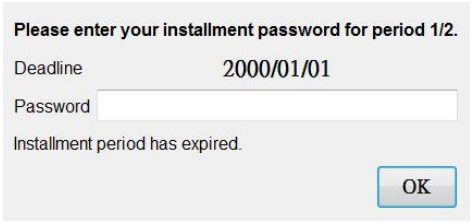
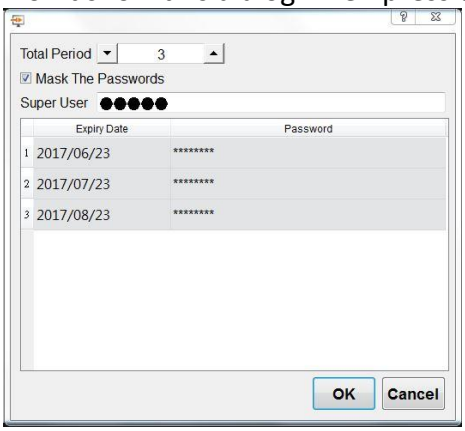
	
【FvRT: Print Alarm Data】	 【Alarm Group Setting】 【Group ID】Select the group to print, the alarm group must set the export data and choose .csv format. 【Print Mode】Support History and File modes. 【History】When Enable Time Filter is not checked, will print all messages. When Enable Time Filter is checked, the selected range of messages will be printed. 【File】Select the csv file to print. 【Printer Setting】 【Name】Select the printer. 【Paper Size】Select the print size. 【Orientation】Select the print orientation.
【Security: Log in】	The system will display the log in window for the operator to log in when Function Switch is pressed.
【Security: Log Out】	The operator will be logged out when Function Switch is pressed.
【Security: Password Manager】	The password table will be displayed for the operator to view. For example, if the security level of the operator is 5, the level 5 password table will appear. For more details refer to **Chapter 5 -**

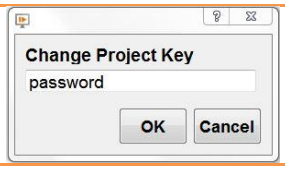
	Security.
【Security: Import User Accounts】	Update the username and user passwords, or passwords only, it depends on the setting in 【Security】. 【Overwrite】 If【Overwrite】is selected, the usernames and user passwords currently saved on the human machine interface will be overwritten. If it is not selected, the new username and user password will be added to the human machine interface.
【Script: Execute Script】	The system will execute the selected【Script】when Function Switch is pressed.
【Recipe: Import Recipe Group from File】	Import the file contents of the recipe group; user will be able to see the complete contents of the recipe group if recipe tables are available. Users will also be able to see the changes in the numeric value of the displayed components if the register addresses of the displayed components are the same as the current recipe address set in the recipe. A drop-down list will appear below when this function is used for the user to decide which recipe group will be used. 【Recipe Group】 The recipe group ID and recipe group name can be seen here if the user adds new recipe groups with the recipe setting function. **Note: the index of this recipe group will become 0 when this function is used, so the current recipe collection will have an index value of 0.**
【Recipe: Export Recipe Group back to File】	Export the contents of the recipe group into a recipe group file. The user can choose to export a new file or overwrite the original recipe group file. A drop-down list will appear below when this function is used for the user to decide which recipe group will be used.
【Recipe: Write Current Recipe to Target Address】	A drop-down list will appear below when this function is used for the user to decide which recipe group will be used. The contents of the parameter in the HMI current recipe will be written to the register of the target address according to the setting of this recipe group.
【Recipe: Read From Target Address to Current Recipe】	A drop-down list will appear below when this function is used for the user to decide which recipe group will be used. The register contents of the target address will be read and the value will be written to the current recipe of the HMI according to the setting of this recipe group.

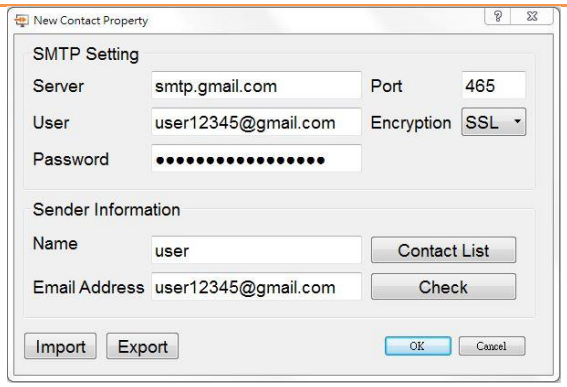
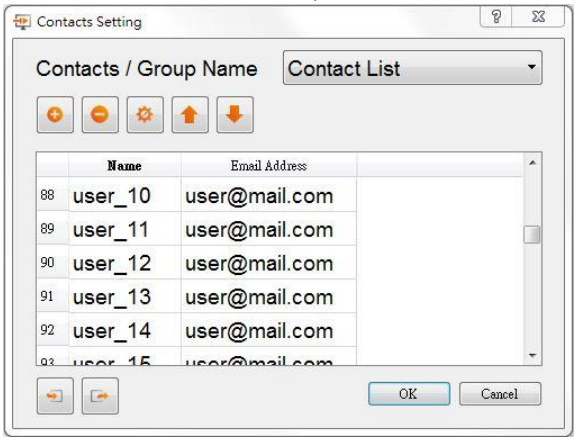
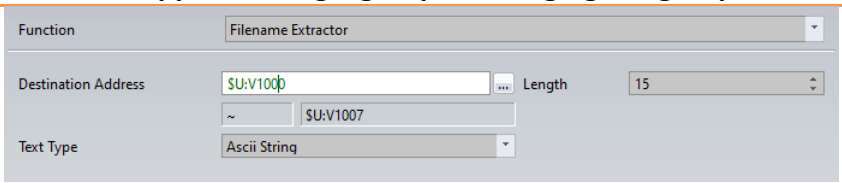
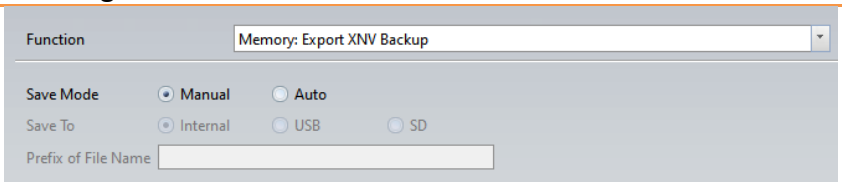
【Recipe: Add Default Recipe】	Add a set of recipes in recipe table to above or below the current recipe and switch current recipeto the new recipe.
【Recipe: Copy Current Recipe】	Copy current recipe in recipe table to above or below the current recipe and switch current recipeto the new recipe.
【Recipe: Delete Current Recipe】	Delete the current recipe and switch current recipe to next recipe.
【Recipe: Transfer Source Address to Recipe Group】	Read the parameter data from source address and write to the recipe group storage space, source address can be set in the advanced paging of the recipe, the function switch transfer all recipe group data.
【Recipe: Transfer Recipe Group to Source Address】	Write the parameter data of the recipe group storage space to source address, source address can be set in the advanced paging of the recipe, the function switch transfer all recipe group data.
【Recipe: Import Recipe Group from File, then Transfer to Source Address】	After import the contents of the recipe group file to recipe group stprage space and write the parameter data of the recipe group storage space to source address, source address can be set in the advanced paging of the recipe, the function switch transfer all recipe group data.
【Recipe: Transfer Source Address to Recipe Group,then Export to File】	After read the parameter data from source address and write to the recipe group storage space, then export the contents of the recipe group storage space, source address can be set in the advanced paging of the recipe, the function switch transfer all recipe group data.
【File Manager: Transfer File from HMI to USB Storage】	Transfer the files from HMI internal storage to USB storage.
【File Manager: Transfer File	Transfer the files from HMI internal storage to microSD card.

from HMI to microSD Card】	
【Switch to VGA Input Terminal】	When the function switch is pressed, the display signal switches to the VGA input. Currently, the P5070VS and P5102VS models are supported. 【Long Press VGA Return Time (s)】 Set the long press time it takes for the screen to return from the VGA display.
【Printer: Print Screen】	When the function switch is pressed, the current screen will be printed to the specified location. 【Save To】allows the user to specify the location to save the screenshot. The available options are internal, USB, SD, or printer. 【Format】allows the user to change the type of file the screenshot is. The available options are PNG or JPG.
【Printer: Abort Print Job】	When the function switch is pressed, the current print job will be stopped.
【FTP: Connect to FTP】	When the function switch is pressed, the setting window will appear, users can set the HMI to remote, press  to do the remote control. 
【Wi-Fi: Show Wifi Configuration】	When the function switch is pressed, the setting window will appear.

	
【PLC: Show Ladder Viewer】	When the function switch is pressed, HMI interface will show 【Select Device】 dialog, after selected the device, press 【OK】 button, then it will excute read and display MERITEK PLC program of the link device. For more detail please refer **ch27-PLC Integration**
【PLC: Update MERITEK PLC Project From HMI or USB Flash Drive】	When the function switch is pressed, HMI UI will show 【Select Update File】 dialog, after selected the file, will show 【Select link Device】 dialog, then press 【OK】 button, if you have set the password will show up 【Enter Password】 dialog first , and enter password to excute MERITEK PLC program update. For more detail please refer **ch27-PLC Integration**
【PLC: Show Ethernet Module Configuration 】	When the function switch is pressed, HMI UI will scan the dialog list of the ethernet module of MERITEK PLC on the internet, after choose, press 【Properties】 button, will show the dialog of the module property, provide view and modify, same as the use of 【MERITEK Ethernet Module Configuration tool】 dialog. For more detail please refer **ch27-PLC Integration**
【PLC: Run PLC】	When this function button is pressed, MERITEK PLC can be put into Run state. For more detail please refer **ch27.5-Control PLC run/stop from HMI.**
【PLC: Stop PLC】	When this function button is pressed, MERITEK PLC can be put into stop state. For more detail please refer **ch27.5-Control PLC run/stop from HMI.**
【Safe Removal: Remove USB Storage】	When the function switch is pressed, HMI UI will check whether insert the USB Drive, if yes will show 【Device Removal】 dialog, figure show as below, press 【Ok】 button, will show a successful message as shown below.

	
【Safe Removal: Remove microSD Card】	When the function switch is pressed, HMI UI will check whether insert the MicroSD card, if yes will show【Device Removal】dialog, figure show as below, press【Ok】button, will show a successful message as shown below. 
【Installment: Enter Installment Password】	When the function switch is pressed, HMI UI will show【Installment Password Enter】dialog, figure as shown below. If you have entered the last password or super user password, it won't show this dialog when press the function switch. 
【Installment: Modify Installment】	When the function switch is pressed, HMI will pop-up modify dialog, figure shown as below. For static mode: The dialog can modify【Total Period】,【Super User】password, next period deadline and password, etc. If you have entered the last password or super user password, it won't show this dialog when press the function switch.  For dynamic mode: You can change the project key.

	
【Screen Lock: Operation Lock(Lock)】	When the function switch is pressed, if the multi-link of the current HMI has open the【Operation Lock】function, then other multi-link HMI will go into screen lock status, that is, other multi-link HMI cannot operate, and other multi-link HMI will show【Operation Lock】figure in the upper left corner, figure as shown below, remide operator the HMI has already in the operation lock status.  【Do Not Automatically Unlock】 If check the【Do Not Automatically Unlock】function, only press【Screen Lock: Operation Lock(Unlock)】or【Screen Lock: Operation Lock(Lock & Unlock)】can unlock other multi-link HMI. For more detail please refer **ch29-Multi-Link**
【Screen Lock: Operation Lock(Unlock)】	When the function switch is pressed, if the multi-link of the current HMI has open the【Operation Lock】function, then other multi-link HMI will go into screen unlock status, and other multi-link HMI will show【Operation Lock】figure in the upper left corner will disappear. For more detail please refer **ch29-Multi-Link**
【Screen Lock: Operation Lock(Lock & Unlock)】	When the function switch is pressed, if the multi-link of the current HMI has open the【Operation Lock】function, then other multi-link HMI will go into lock or unlock screen status according to the status of the current HMI. For more detail please refer **ch29-Multi-Link**
【Update: Project Update】	When this function button is pressed, a dialog window for selecting the project update will be displayed. You can select the .uferp file stored in the HMI, SD card, or USB flash drive, which is a USB update file created using the software. After selection, you can update the current HMI project.
【Upload: Project Upload】	When this function button is pressed, a dialog window for selecting the project update is displayed. You can choose to store it in the HMI, SD card, or USB flash drive. The uploaded .cfrp file needs to be decompiled to see the project content.
【SMTP: Modify Sender	Modify sender's SMTP Setting, Sender Information, Contact List, Import and Export.

Information】	 For more detail please refer **ch4.3-【SMTP】** **Note: Due to security considerations during export, the password will not be exported.**
【SMTP: Modify Contact Lists】	Add or remove contacts, etc.  For more detail please refer **ch4.3-【SMTP】** **Note: Press this button when the HMI is executing a project, it does not support adding a group or changing the group name.**
【Filename Extractor】	 This function is applied by pressing the button and the file selection window will appear. After selecting the file, the file name will be recorded to the specified destination address in Ascii format. The length can be set from 1 to 100
【Memory: Export XNV Backup】	 If user choose【Manual】, it will pop up a window to let users choose the project to open and check asks for the path and file name to be saved.

	If user choose【Auto】, It will follow the settings of【Save To】and【File name prefix】generate files at the destination.
【Memory: Inport XNV Backup】	it will pop up a window to let users choose the file to be inported. Human machine interface will restart after the import is successful.
【Notify before Writing】	The signal will notify before writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】.
【Notify after Writing】	The signal will notify after writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】.

19.4.2.5【Display】

The【Switch】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

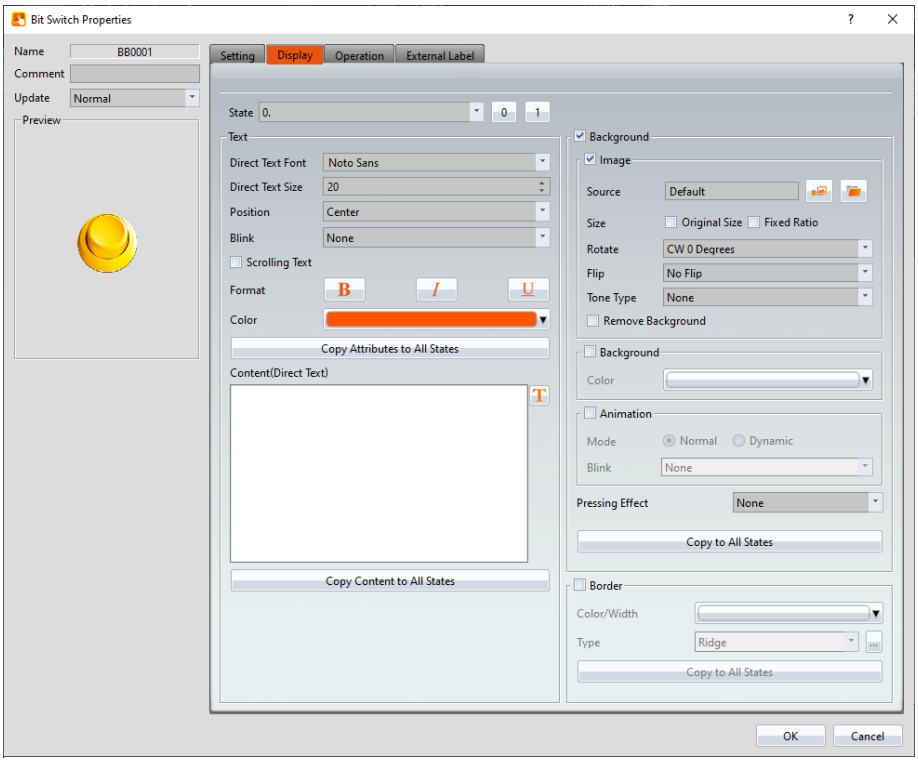


Figure 273【Display】Setting Screen of【Switch】

Table 129【Display】Setting Properties of【Switch】

Property	Description

【Set All the States to State 0】	If it's【Change Screen Switch】, there will appear a option as【Set All the States to State 0】, will set all the switch as state 0.
【State】	Select the state needed to be edited. 0 and 1 buttons are provided to enable quick switching between states 0 and 1.
【Text】	【Direct Text Font】 Set the font of the text displayed for the current editing state. 【Direct Text Size】 Set the size of the text displayed for the current editing state. 【Position】 Set the position of the text displayed for the current editing state. 【Blink】 Set the blinking function for the text of the current editing state. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Scrolling Text】 Set the scrolling text function for the text of the current editing state; There are four scrolling speeds available to choose from slow to fast. 【Format】 Set the format of the text displayed for the current editing state, including Bold, Italics and Underline. 【Color】 Set the color of the text displayed for the current editing state. 【Copy Attributes to All States】 The text properties for the current editing state is applied to all states. 【Content (Direct Text)】 Set the displayed text of the currently editing state; it can

	be inputted directly or acquired from the【Text Library】. 【Copy to All States】 Apply the settings of the text for the current editing state to all states.
【Background】	【Background】 Check whether to enable background 【Image】 Check whether to use image 【Source】 Set whether to use an image for the displayed background of the current editing state. When this option is checked, an【Image Selector】will appear asking the user to select an image either from the【Image Library】or from【File】. 【Size】 You can set the picture to use【Original Size】, or check【Fixed Ratio】to maintain a fixed length and width ratio when stretching 【Rotate】 Set image rotation angle 【Flip】 Set the flip direction of the image, includes No Flip, X-Axis and Y-Axis. 【Tone Type】 You can choose the tone type you want to change. After selecting the type, you can choose the color from【Tone Color】. 【Remove Background】 You can set the color to be transparent by【Choose

	Color】. 【Background】 Check whether to enable the background. After checking, you can set the background color displayed in the current editing state from【Color】. 【Animation】 Check whether to enable animated effects. 【Mode】Choose whether to use static or dynamic control elements to flicker. 【Blink】Select the blinking mode, and use the numerical value to switch during dynamic control. 【Pressing Effect】 Set the pressing effect of the current editing state. There are two effects available for selection: None and Highlight. 【Copy to All States】 Apply the settings of the background for the currently editing state to all states.
【Border】	Set the border of the object, set the appearance after checked. 【Color/Width】 Set the color and width of the border. 【Type】 Set the type of the boder, click  for more types. 【Copy to All States】 Apply the settings of the border for the currently editing state to all states.

19.4.2.6【External Lable】

The【Switch】【External Lable】page is as shown in the figure below, the meanings of each setting item are listed below:

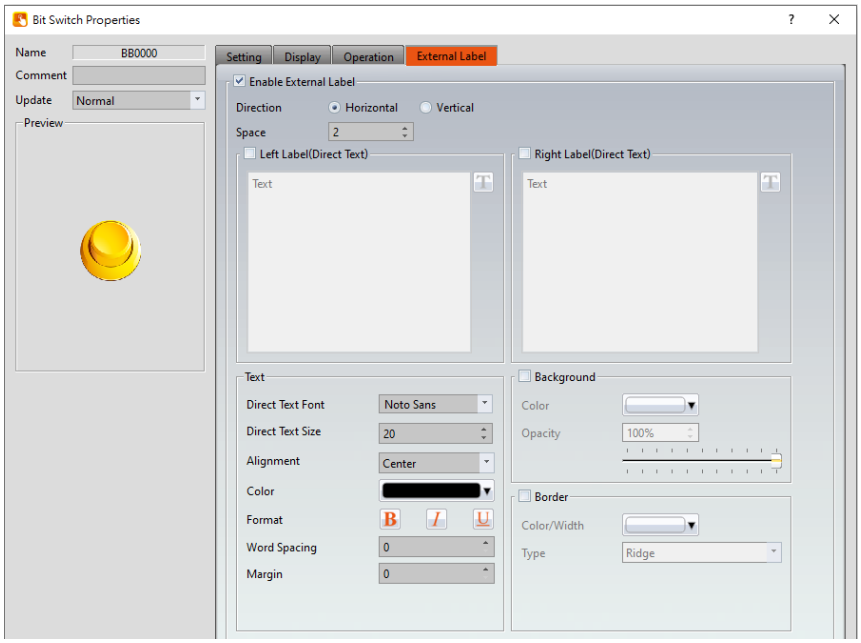


Figure 274【External Lable】Setting Screen of【Switch】

Table 130【Switch】【External Lable】setting properties

Option	Description
【Enable External Lable】	Checked, the bottom will appear the external lable settings of the object.
【Direction】	Set the display direction, there are horizontal and vertical two selections.
【Space】	Set the space between external lable and the object.
【Left/Top Lable(Direct Text)】	Fill in the text to be displayed on the left / top lable of the object, can be directly input or selected from【Font Library】.
【Right/Bottom Lable(Direct Text)】	Fill in the text to be displayed on the right / bottom lable of the object, can be directly input or selected from【Font Library】.
【Text】	【Direct Text Font】 Set the font of text. 【Direct Text Size】 Set the size of text, the default size is 20. 【Alignment】 Set the alignment of text. 【Color】

	Set the color of text. 【Format】 Set the format of text, includes Bold, Italic and Underline. 【Word Spacing】 Set the word space of text. 【Margin】 Set the margin of text.
【Background】	Check whether to display background, set the color and opacity of background after checked. 【Color】 Set the background color of external lable. 【Opacity】 Set the opacity of external lable background, the greater the value the more the background opacity is.
【Border】	Check whether to display border. 【Color/Width】 Set the color and width of border. 【Type】 Set the type of border.

19.4.3 【Numeric Input/Display】

【Numeric Input/Display】can display the numeric value saved in specific addresses; The【Numeric Input/Display】can also be clicked to enter specific numeric values to the register address if the【Allow Input】setting is enabled.

19.4.3.1【Setting】

The【Numeric Input/Display】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

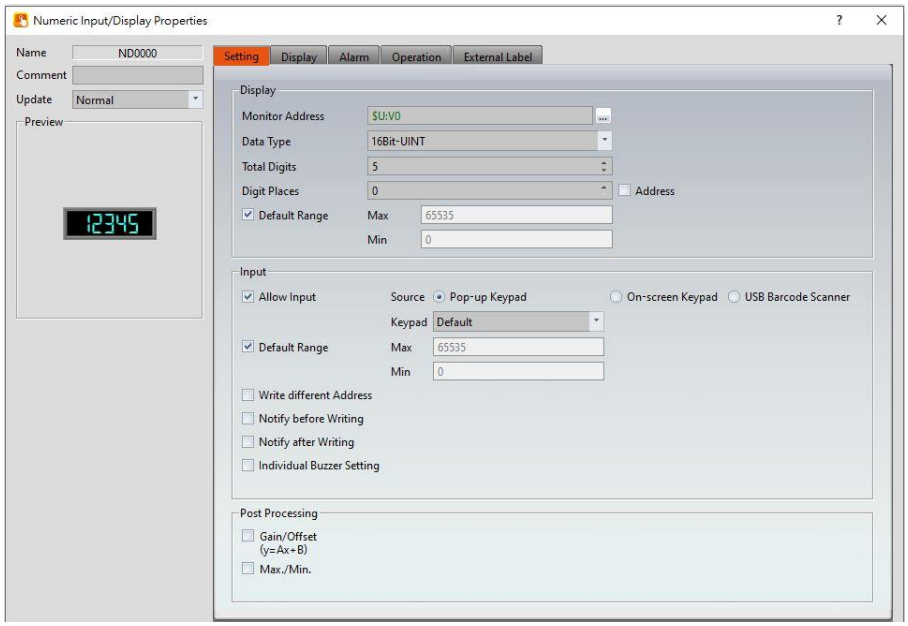


Figure 275【Setting】Screen of【Numeric Input/Display】

Table 131【Setting】Properties of【Numeric Input/Display】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Update】	Provide user can select a suitable speed to get the latest data under different situation, such as you would like to get the latest data or adjust the object on the screen to display first, etc. Provide three modes: 【once】: update once only when switch to this page or use the system tag【OP_UPDATE_SCREEN_OBJECTS】, update once when trigger once a time, it will keep update if the monitor address is internal address. 【normal】: normal update speed. 【fast】: the fastest update speed.
【Display】	【Monitor Address】 Set the monitored address of Numeric Input/Display. The address can be from internal memory or a PLC register address. 【Data Type】 Set the data type of Numeric Input/Display. The available data

	types are: 16Bit-BCD, 16Bit-INT, 16Bit-UINT, 16Bit-HEX, 32Bit-BCD, 32Bit-INT, 32Bit-UINT, 32Bit-HEX, 32Bit-FLOAT. When 32Bit-FLOAT is selected, you can also choose a display option for【Exponential Format】. 【Total Digits】 Set the total number of digits of Numeric Input/Display. 【Digit Places】 Set the decimal place of the Numeric Input/Display. If check【Address】then you can set the source address of digital places, and digital places can be dynamically control, data type used by address is same as【Data Type】. 【Default Range】 Set the【Max】and【Min】display of the Numeric Input/Display. The【Address】checkbox can be used to set the source address for reading the maximum value or minimum value by【Data Type】. If this option is checked , the option will have a different default range depending on the【Data Type】. For example, type select as 16Bit-UINT, the【Max】is 65535,【Min】is 0 【Maximum Value】 Set the maximum value allowed for the numeric input / display to be displayed. If you check the address, the maximum value can be set to the value of the source address, allowing the maximum value to be dynamic. 【Minimum Value】 Set the minimum value allowed for the numeric input / display to be displayed. If you check the address, the minimum value can be set to the value of the source address, allowing the minimum value to be dynamic.
【Input】	【Allow Input】 Set whether to allow the input function for the Numeric Input/Display object. Related input setting items will appear if this option is selected. 【Source】 When setting the touch Numeric Input/Display object, the

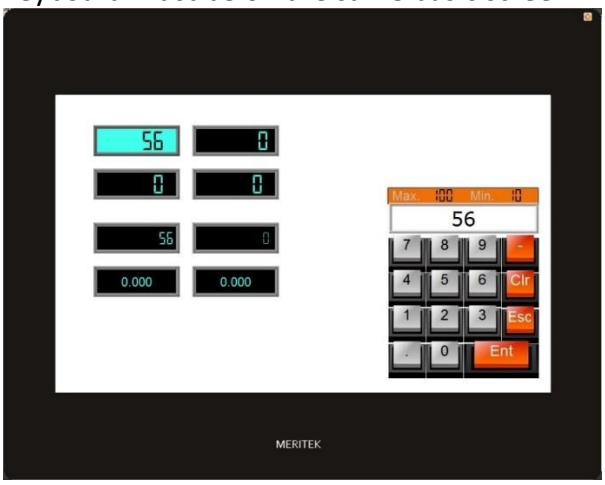
source of the keyboard is【Pop-up Keypad】,【On-screen Keypad】or【USB Barcode Scanner】.

【Pop-up Keypad】

Select the【Keypad Screen】no. to use.

【On-screen Keypad】

Use the self-planned keyboard on the basic screen, and the Numeric Input/Display object object and the self-planned keyboard must be on the same basic screen.



【USB Barcode Scanner】

When the source is selected as a USB barcode scanner, touching the Numeric Input/Display object changes the object color and is put on standby for the input of the USB barcode scanner. When the input is complete, the data is transferred directly to the specified address.

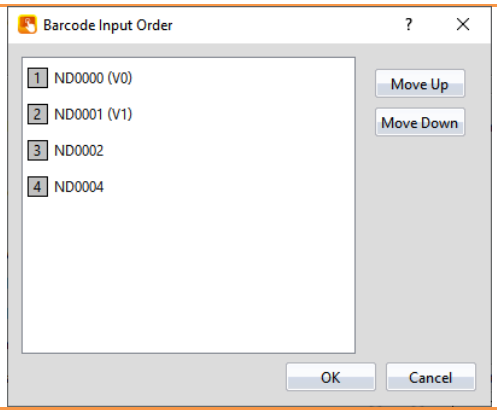
【Default Range】

Default Range of the Numeric Input/Display object,if this option is checked , the option will have a different default range depending on the【Data Type】. For example, type select as 16Bit-UINT, the【Max】is 65535,【Min】is 0 , if don't check this option, then can enter the【Max】and【Min】of the Numeric Input/Display object.

【Max】

Set the maximum allowed input value for Numeric Input/Display. The【Address】checkbox can be used to set

	the source address for writing the maximum value by【Data Type】. 【Min】 Set the minimum allowed input value for Numeric Input/Display. The【Address】checkbox can be used to set the source address for writing the minimum value by【Data Type】. 【Write different Address】 Set to allow writing to a different address for the Numeric Input/Display object. Related settings will appear if this option is selected, allowing the setting of a target address for writing values. The source address for reading value and the target address for writing value will be different if this option is used. 【Notify before Writing】 The signal will notify before writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】. 【Notify after Writing】 The signal will notify after writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】. 【Individual Buzzer Setting】 Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short. 【Barcode Continuous Input】 Base on【USB Barcode Scanner】, you can determine which component to input next by Bit controlling to reduce inconvenience of manual selection ; if there is a component in【Comment】, it will be displayed in Barcode input Order interface.



【Post Processing】

【Gain/Offset】

Set whether to allow post-processing functions for the Numeric Input/Display object. Related post processing settings will appear if this option is selected, allowing the setting of processing functions (add, subtract, multiply and divide) and constants.

Formula is as follows: y=Ax+B, gain is A, offset for the B, y value is displayed for HMI, x is PLC value.

For example, gain A=5, offset B=2, when the PLC x=3, HMI value display is 17 (17=(5*3)+2).

Gain A	Offset B	PLC Value x	HMI displayed value y
A=5	B=2	x=3	y = 17

In the numerical input/display object, enter 12 and the PLC value x will get 2 (x=(y-B)/A, 2=(12-2)/5).

Gain A	Offset B	PLC Value x	HMI displayed value y
A=5	B=2	y = 12	x=2

The【Address】checkbox can be used to set the source address for processing constant. The type of data used to read the address is fixed to 16Bit-INT.

【Max./Min.】

Sets the ratio of the read source address and the display. Can be set by【Data Max.】,【Data Min.】,【Display Max.】and【Display Min.】to determine the proportional relationship.

For example, read the PLC R100 address, and the maximum of the R100 is 100, minimum is 0, in the HMI wants to show the maximum is 1000, minimum is 0. So the【Data Max.】indicates the maximum value of the source address, can be set to 100,【Data Min.】indicates the minimum valueof the source address, can be set to 0,【Display Max.】indicates the maximum value of the display, can be set to 1000,【Data

	Min.】indicates the minimum value of the display, can be set to 0, when PLC register R100=50, then HMI will display as 500. If check the【Address】then can set the source address of the【Data Max.】,【Data Min.】,【Display Max.】and【Display Min.】, the data type of the read address is fixed to 16Bit-INT.

19.4.3.2【Display】

The【Numeric Input/Display】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

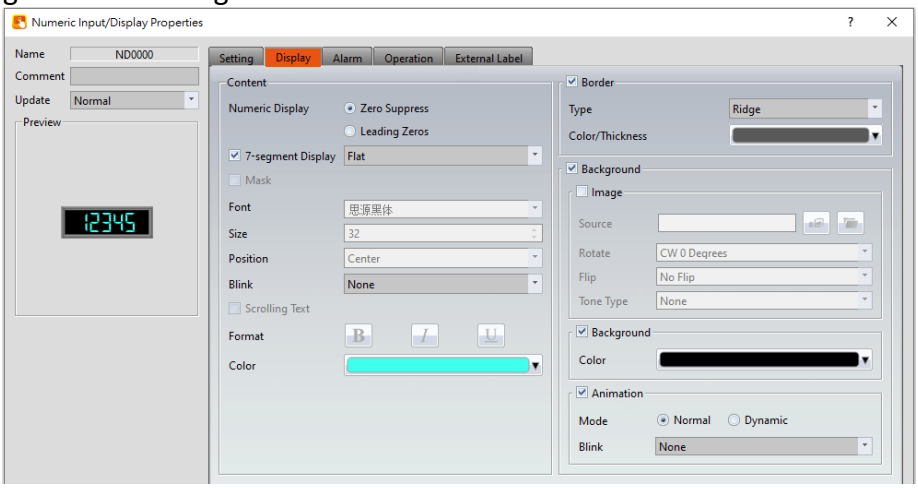


Figure 276【Display】Setting Screen of【Numeric Input/Display】

Table 132【Display】Setting Properties of【Numeric Input/Display】

Property	Description
【Content】	【Numeric Display】 Set the display method for the numeric value of Numeric Input/Display. Selecting【Zero Suppress】will not display the zeros in front and selecting【Leading Zeroes】will display the zeros in front. 【7-segment Display】 Set to allow the 7-segment display function for the Numeric Input/Display object. If this option is selected, related settings for the style of the 7-segment display will appear. These styles include outline, filled, and flat.

	【Mask】 Set the text of the numerical input/display object displayed as asterisks (#), can not use the【Mask】function if use the【7-segment Display】. 【Font】 Set the font for the displayed text of Numeric Input/Display, can not use the【Mask】function if use the【7-segment Display】. 【Size】 Set the size for the displayed text of Numeric Input/Display, can not use the【Mask】function if use the【7-segment Display】. 【Position】 Set the position for the displayed text of Numeric Input/Display, can not use the【Mask】function if use the【7-segment Display】. 【Blink】 Set the blinking function for the text of Numeric Input/Display. There are four blinking speeds available to choose from: None, Slow, Medium and Fast, can not use the【Mask】function if use the【7-segment Display】. 【Scrolling Text】 Set the scrolling text function for the text of Numeric Input/Display. There are four scrolling speeds available to choose from slow to fast. 【Format】 Set the format of the text displayed for the Numeric Input/Display, including Bold, Italics and Underline, can not use the【Mask】function if use the【7-segment Display】. 【Color】 Set the color for the displayed text of Numeric Input/Display.

【Border】	【Type】 Set the border types for Numeric Input/Display. 【Color/Thickness】 Set the color and thickness for the displayed border of Numeric Input/Display.
【Background】	【Background】 Check whether to enable background 【Image】 Check whether to use image 【Source】 Set whether to use an image for the displayed background of the current editing state. When this option is checked, an 【Image Selector】 will appear asking the user to select an image either from the 【Image Library】 or from 【File】. 【Rotate】 Set image rotation angle 【Flip】 Set the flip direction of the image, includes No Flip, X-Axis and Y-Axis. 【Tone Type】 You can choose the tone type you want to change. After selecting the type, you can choose the color from 【Tone Color】. 【Background】 Check whether to enable the background. After checking, you can set the background color displayed in the current editing state from 【Color】. 【Animation】 Check whether to enable animated effects. 【Mode】 Choose whether to use static or dynamic control elements to flicker.

	【Blink】Select the blinking mode, and use the numerical value to switch during dynamic control.

19.4.3.3【Alarm】

The【Numeric Input/Display】【Alarm】page is as shown in the figure below, the meanings of each setting item are listed below:

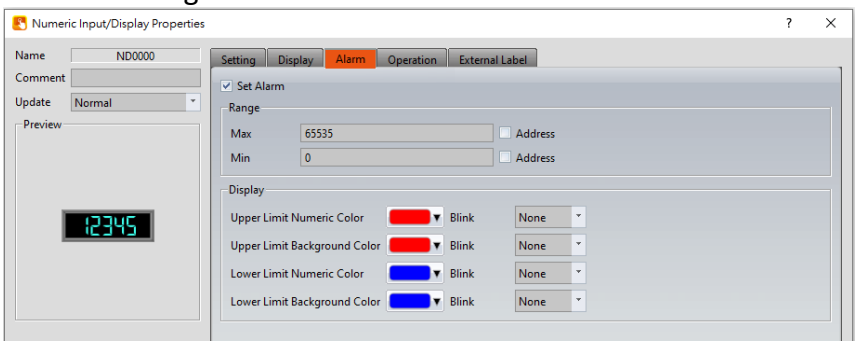


Figure 277【Alarm】Setting Screen of【Numeric Input/Display】

Table 133【Alarm】Setting Properties of【Numeric Input/Display】

Property	Description
【Set Alarm】	Set to enable the alarm function of Numeric Input/Display. Alarm related settings will appear below when this option is selected.
【Range】	Set the range of the alarm; the alarm condition is fulfilled when the numeric value of the Numeric Input/Display reaches the maximum or minimum value. 【Max】 Set the maximum alarm value for the Numeric Input/Display; the【Address】below can be used to set the source address for the maximum value by the【Data Type】set in the【Setting】page. 【Min】 Set the minimum alarm value for the Numeric Input/Display; the【Address】on the rear can be used to set the source address for the minimum value by the【Data Type】set in the【Setting】page.
【Display】	Set the appearance of the Numeric Input/Display follows the change when the alarm conditions are fulfilled.

	【Upper Limit Numeric Color】 Sets the color of the text for the Numeric Input/Display when the set【Max】is exceeded. The【Blink】dropdown menu can be used to set the blinking speed of the text. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Upper Limit Background Color】 Sets the color of the background for the Numeric Input/Display when the set【Max】is exceeded. The【Blink】dropdown menu can be used to set the blinking speed of the background. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Lower Limit Numeric Color】 Sets the color of the text for the Numeric Input/Display when the set【Min】is not reached. The【Blink】dropdown menu can be used to set the blinking speed of the text. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Lower Limit Background Color】 Sets the color of the background for the Numeric Input/Display when the set【Min】is not reached. The【Blink】dropdown menu can be used to set the blinking speed of the background. There are four blinking speeds available to choose from: None, Slow, Medium and Fast.

19.4.3.4【External Lable】

The【Numeric Input/Display】【External Lable】page is as shown in the figure below, the meanings of each setting item are listed below:

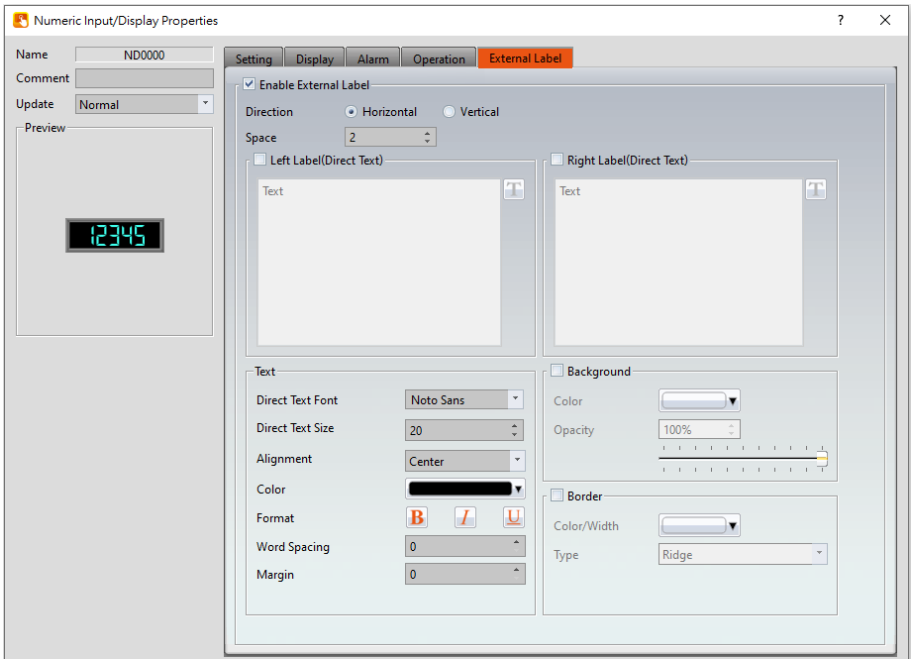


Figure 278【External Lable】Screen of【Numeric Input/Display】

Table 134【Numeric Input/Display】【External Lable】setting properties

Option	Description
【Enable External Lable】	Checked, the bottom will appear the external lable settings of the object.
【Direction】	Set the display direction, there are horizontal and vertical two selections.
【Space】	Set the space between external lable and the object.
【Left/Top Lable(Direct Text)】	Fill in the text to be displayed on the left / top lable of the object, can be directly input or selected from【Font Library】.
【Right/Bottom Lable(Direct Text)】	Fill in the text to be displayed on the right / bottom lable of the object, can be directly input or selected from【Font Library】.
【Text】	【Direct Text Font】 Set the font of text. 【Direct Text Size】 Set the size of text, the default size is 20. 【Alignment】 Set the alignment of text.

	【Color】 Set the color of text. 【Format】 Set the format of text, includes Bold, Italic and Underline. 【Word Spacing】 Set the word space of text. 【Margin】 Set the margin of text.
【Background】	Check whether to display background, set the color and opacity of background after checked. 【Color】 Set the background color of external lable. 【Opacity】 Set the opacity of external lable background, the greater the value the more the background opacity is.
【Border】	Check whether to display border. 【Color/Width】 Set the color and width of border. 【Type】 Set the type of border.

19.4.4 【Text Input/Display】

【Text Input/Display】can display the text saved in specific addresses. The【Text Input/Display】can also be clicked to enter specific text to the register address if the【Allow Input】setting is enabled.

19.4.4.1【Setting】

The【Text Input/Display】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

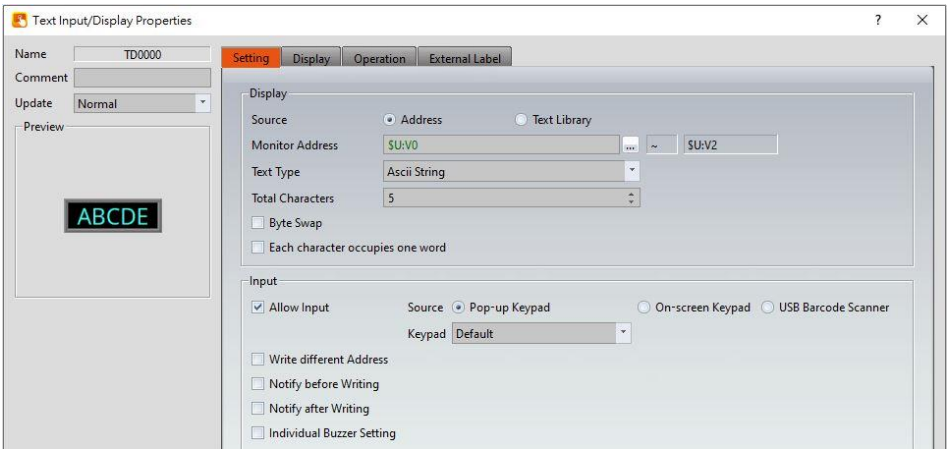


Figure 279【Setting】Screen of【Text Input/Display】

Table 135【Setting】Properties of【Text Input/Display】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Update】	Provide user can select a suitable speed to get the latest data under different situation, such as you would like to get the latest data or adjust the object on the screen to display first, etc. Provide three modes: 【once】: update once only when switch to this page or use the system tag【OP_UPDATE_SCREEN_OBJECTS】, update once when trigger once a time, it will keep update if the monitor address is internal address. 【normal】: normal update speed. 【fast】: the fastest update speed.
【Display】	【Source】 The source of the text can be either an【Address】or from the【Text Library】. If【Address】is selected, the【Monitor Address】can be set below and directly corresponds to the text to display. If【Text Library】is selected, the【Monitor Address】corresponds to the entry in the【Text Library】to read the text from. 【Monitor Address】 Set the monitored address of Text Input/Display; when this

setting is changed, the final address below will change according to the inputted【Monitor Address】and【Total Characters】.

【Text Type】

Set the display type of text input/display, includes Ascii String, Unicode String(Simplified Chinese, Traditional Chinese, GB18030(Simplified Chinese), and Big5(Traditional Chinese).

【Ascii String】

When select as【Ascii String】, the object will display the Ascii string corresponding to【Monitor Address】, because one register includes 2 Ascii, such as【Total Characters】set as 5, it will take 3 registers.

【Unicode String(Simplified Chinese)】

When select as【Unicode String(Simplified Chinese)】, the object will display the Unicode string corresponding to【Monitor Address】, because one register includes 1 Unicode, such as【Total Characters】set as 5, it will take 5 registers.



【Unicode String(Others)】

When select as【Unicode String(Others)】, the object will display the Unicode string corresponding to【Monitor Address】, figure as shown below(display German), because one register includes 1 Unicode, such as【Total Characters】set as 15, it will take 15 registers.



	【Total Characters】 Sets the total number of characters for Text Input/Display; when this setting is changed, the final address above will change according to the inputted【Monitor Address】and【Total Characters】. 【Byte Swap】 Select whether to enable the high and low byte swapping function. 【Each character occupies one word】 Set whether enable each character occupies one word, for example R0=A, R1=B, R2=C, R3=D, R4=E. 【Data Type】 Set the data type of the monitored address. This option is only enabled when【Text Library】is selected as the【Source】. 【Start Row】 Set the starting row in the【Text Library】that the text is obtained. For example, if the start row is set to 1 and the【Monitor Address】contains the value 3, the display will display the 4th entry in the【Text Library】. The【Start Row】can also be obtained from a specified address. This option is only enabled when【Text Library】is selected as the【Source】.
【Input】	【Allow Input】 Set whether to allow the input function for the Text Input/Display object; related input settings will appear if this option is selected. 【Source】 When setting the touch Text Input/Display object, the source of the keyboard is【Pop-up Keypad】,【On-screen Keypad】or【USB Barcode Scanner】.

【Pop-up Keypad】

Select the【Keypad Screen】no. to use.

【On-screen Keypad】

Use the self-planned keyboard on the basic screen, and the Text Input/Display object object and the self-planned keyboard must be on the same basic screen.

【USB Barcode Scanner】

When the USB barcode scanner is selected as the input source, the text input/display object will change color when touched and will wait for the input of the USB barcode reader. After the input is entered, the data will be transferred directly to the specified address.

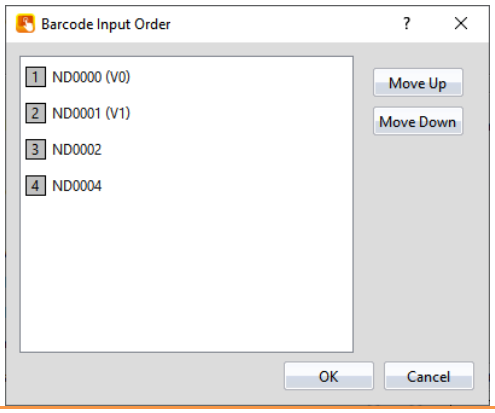
When【Text Type】choose as【Unicode String(Simplified Chinese)】, the input keypad can only use provide by system, click【Text Input/Display】while executing, will show up the pinyin keypad, figure shown as below.
Click the lower left corner【English/拼音(簡)】, can switch to English or Pinyin.
If the input keypad is in pinyin, you can choose the word after enter pinyin.



【Write different Address】

Set to allow writing to a different address for the Text Input/Display object. Related settings will appear if this option is selected, allowing the setting of target address for writing text. The source address for reading text and the target address for writing text will be different if this option is used.

【Notify before Writing】

	The signal will notify before writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】. 【Notify after Writing】 The signal will notify after writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】. 【Individual Buzzer Setting】 Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short. 【Barcode Continuous Input】 Base on【USB Barcode Scanner】, you can determine which component to input next by Bit controlling to reduce inconvenience of manual selection ; if there is a component in【Comment】, it will be displayed in Barcode input Order interface. 

19.4.4.2【Display】

The【Text Input/Display】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

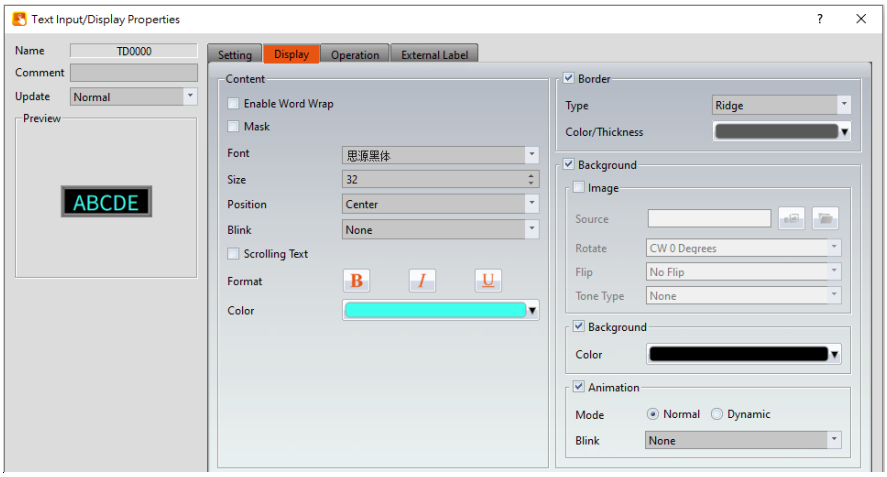


Figure 280【Display】Setting Screen of【Text Input/Display】

Table 136【Display】Setting Properties of【Text Input/Display】

Property	Description
【Content】	【Enable Word Wrap】 Enter a space in a word then will do the word wrap. 【Mask】 Set the text to be displayed as asterisks (*) for the Text Input/Display object. 【Font】 Set the font for the text of the Text Input/Display. 【Size】 Set the size for the text of the Text Input/Display. 【Position】 Set the position for the text of the Text Input/Display. 【Blink】 Set the blinking function for the text of the Text Input/Display. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Scrolling Text】 Set the scrolling text function for the text of the Text Input/Display. There are four scrolling speeds available to choose from slow to fast.

	【Format】 Set the format of the text for the Text Input/Display, including Bold, Italics and Underline. 【Color】 Set the color for the text of the Text Input/Display.
【Border】	【Type】 Set the border type for the Text Input/Display. 【Color/Thickness】 Set the color and thickness for the border of the Text Input/Display.
【Background】	【Background】 Check whether to enable background 【Image】 Check whether to use image 【Source】 Set whether to use an image for the displayed background of the current editing state. When this option is checked, an 【Image Selector】 will appear asking the user to select an image either from the 【Image Library】 or from 【File】. 【Rotate】 Set image rotation angle 【Flip】 Set the flip direction of the image, includes No Flip, X-Axis and Y-Axis. 【Tone Type】 You can choose the tone type you want to change. After selecting the type, you can choose the color from 【Tone Color】. 【Background】 Check whether to enable the background. After checking, you can set the background color displayed in the current editing state from 【Color】.

	【Animation】 Check whether to enable animated effects. 【Mode】Choose whether to use static or dynamic control elements to flicker. 【Blink】Select the blinking mode, and use the numerical value to switch during dynamic control.

19.4.4.3【External Lable】

The【Text Input/Display】【External Lable】page is as shown in the figure below, the meanings of each setting item are listed below:

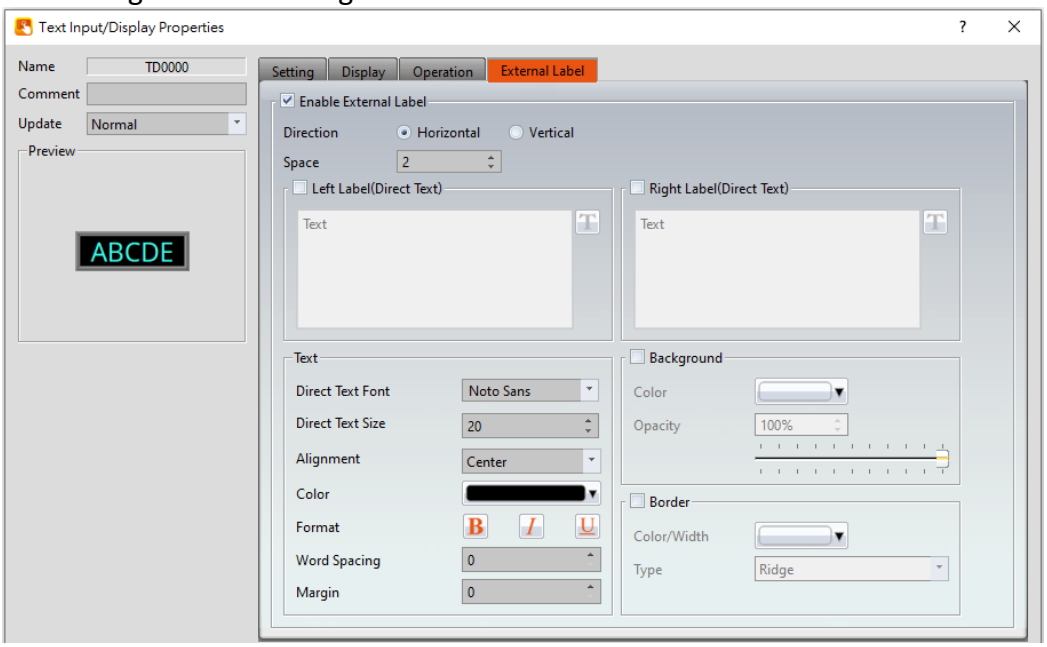


Figure 281【External Lable】Setting Screen of【Text Input/Display】

Table 137【Text Input/Display】【External Lable】setting properties

Option	Description
【Enable External Lable】	Checked, the bottom will appear the external lable settings of the object.
【Direction】	Set the display direction, there are horizontal and vertical two selections.
【Space】	Set the space between external lable and the object.
【Left/Top Lable(Direct Text)】	Fill in the text to be displayed on the left / top lable of the object, can be directly input or selected from【Font Library】.

【Right/Bottom Lable(Direct Text)】	Fill in the text to be displayed on the right / bottom lable of the object, can be directly input or selected from 【Font Library】.
【Text】	【Direct Text Font】 Set the font of text. 【Direct Text Size】 Set the size of text, the default size is 20. 【Alignment】 Set the alignment of text. 【Color】 Set the color of text. 【Format】 Set the format of text, includes Bold, Italic and Underline. 【Word Spacing】 Set the word space of text. 【Margin】 Set the margin of text.
【Background】	Check whether to display background, set the color and opacity of background after checked. 【Color】 Set the background color of external lable. 【Opacity】 Set the opacity of external lable background, the greater the value the more the background opacity is.
【Border】	Check whether to display border. 【Color/Width】 Set the color and width of border. 【Type】 Set the type of border.

19.4.5 【QR code Input/Display】

【QR code Input/Display】can display QR code on the screen.

19.4.5.1 【Setting】

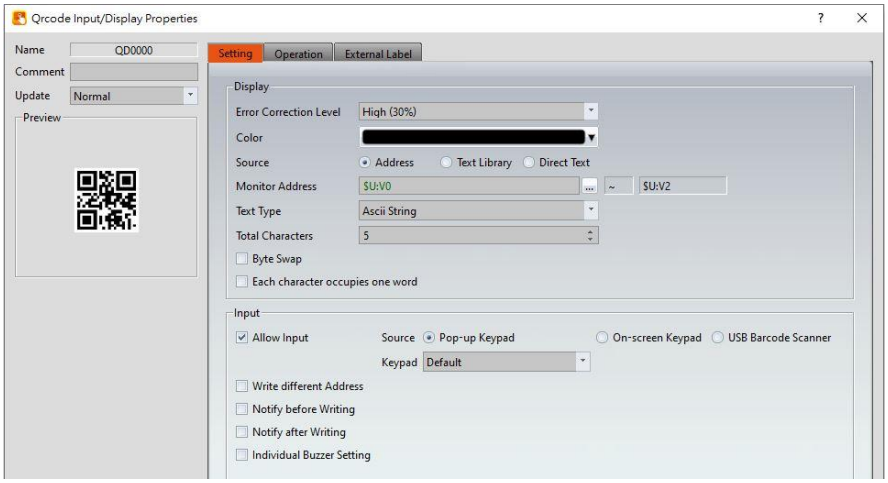
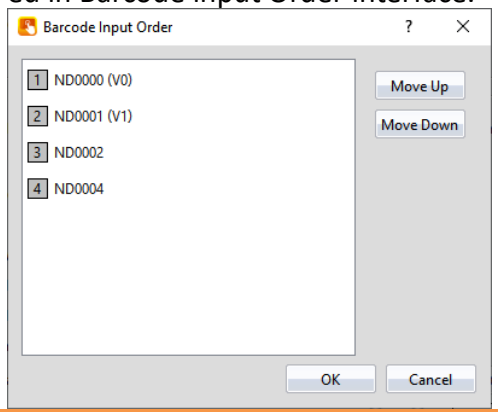


Figure 282【Setting】Screen of【QR code Input/Display】

Table 138【Setting】Properties of【QR code Input/Display】

Property	Description
【Error Correction Level】	If the QR code graphic is damaged, the content can still be read by the machine. Support 4 levels of Low (7%), Medium (15%), Quartile (25%), High (30%).
【Color】	Set the color of QR code graphics.
【Source】	Select the reading address of the QR code graphic data . 【Address】 Read the data of the set monitoring address, support Ascii String, Unicode (Simplified Chinese, Traditional Chinese, Others), GB18030 (Simplified Chinese), BIG5 (Traditional Chinese). 【Text Library】 Read the data in the text library to display the QR code. 【Direct Text】

	After selecting, an input window will appear for the user to enter text
【Input】	【Allow Input】 Set whether to allow the input function for the Numeric Input/Display object. Related input setting items will appear if this option is selected. 【Source】 When setting the touch Numeric Input/Display object, the source of the keyboard is【Pop-up Keypad】,【On-screen Keypad】or【USB Barcode Scanner】. 【Pop-up Keypad】 Select the【Keypad Screen】no. to use. 【On-screen Keypad】 Use the self-planned keyboard on the basic screen, and the Numeric Input/Display object object and the self-planned keyboard must be on the same basic screen. 【USB Barcode Scanner】 When the source is selected as a USB barcode scanner, touching the Numeric Input/Display object changes the object color and is put on standby for the input of the USB barcode scanner. When the input is complete, the data is transferred directly to the specified address. 【Write different Address】 Set to allow writing to a different address for the Numeric Input/Display object. Related settings will appear if this option is selected, allowing the setting of a target address for writing values. The source address for reading value and the target address for writing value will be different if this option is used. 【Notify before Writing】 The signal will notify before writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0

	after continuing the time set by【Width】. 【Notify after Writing】 The signal will notify after writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】. 【Individual Buzzer Setting】 Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short. 【Barcode Continuous Input】 Base on【USB Barcode Scanner】, you can determine which component to input next by Bit controlling to reduce inconvenience of manual selection ; if there is a component in【Comment】, it will be displayed in Barcode input Order interface. 

19.4.5.2【External Lable】

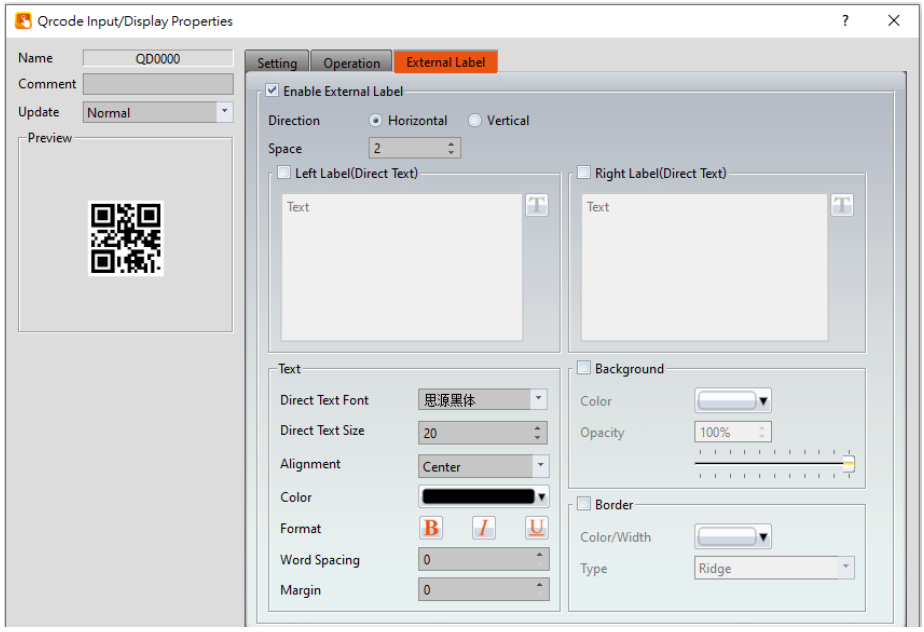


Figure 283【External Lable】Setting Screen of【QR code Input/Display】

Table 139【External Lable】Properties of【QR code Input/Display】

Option	Description
【Enable External Lable】	Checked, the bottom will appear the external lable settings of the object.
【Direction】	Set the display direction, there are horizontal and vertical two selections.
【Space】	Set the space between external lable and the object.
【Left/Top Lable(Direct Text)】	Fill in the text to be displayed on the left / top lable of the object, can be directly input or selected from【Font Library】.
【Right/Bottom Lable(Direct Text)】	Fill in the text to be displayed on the right / bottom lable of the object, can be directly input or selected from【Font Library】.
【Text】	【Direct Text Font】 Set the font of text. 【Direct Text Size】 Set the size of text, the default size is 20. 【Alignment】

	Set the alignment of text. 【Color】 Set the color of text. 【Format】 Set the format of text, includes Bold, Italic and Underline. 【Word Spacing】 Set the word space of text. 【Margin】 Set the margin of text.
【Background】	Check whether to display background, set the color and opacity of background after checked. 【Color】 Set the background color of external lable. 【Opacity】 Set the opacity of external lable background, the greater the value the more the background opacity is.
【Border】	Check whether to display border. 【Color/Width】 Set the color and width of border. 【Type】 Set the type of border.

19.4.6 【Date/Time Display】

【Date/Time Display】can display the current date and time according to the format set by the user.

19.4.6.1 【Setting】

The【Date/Time Display】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

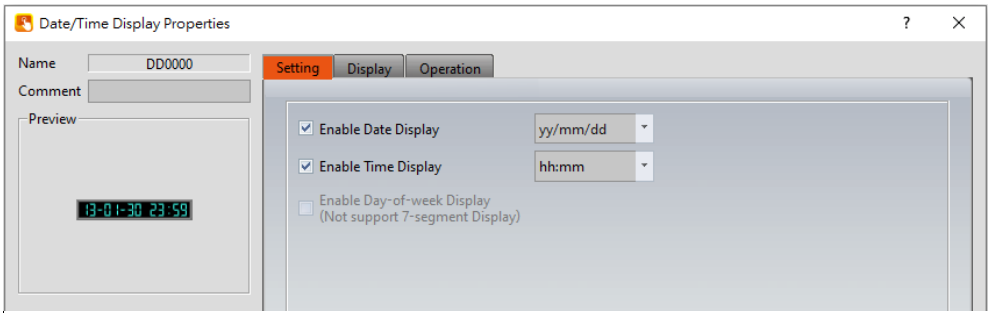


Figure 284【Setting】Screen of【Date/Time Display】

Table 140【Setting】Properties of【Date/Time Display】

Property	Description
【Preview】	Previews the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Enable Date Display】	Set to enable date display; a date format selector will appear for the user to select the display format of the date if this option is selected.
【Enable Time Display】	Set to enable time display. A time format selector will appear for the user to select the display format of the time if this option is selected.
【Enable Day-of-week Display】	Set to enable day-of-the-week display; a day-of-the-week format selector will appear for the user to select the display format of the day-of-the-week if this option is selected. This option is not available if a【7-segment Display】is used, please uncheck the【7-segment Display】option in the【Date/Time Display】【Display】page.

19.4.6.2【Display】

【Date/Time Display】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

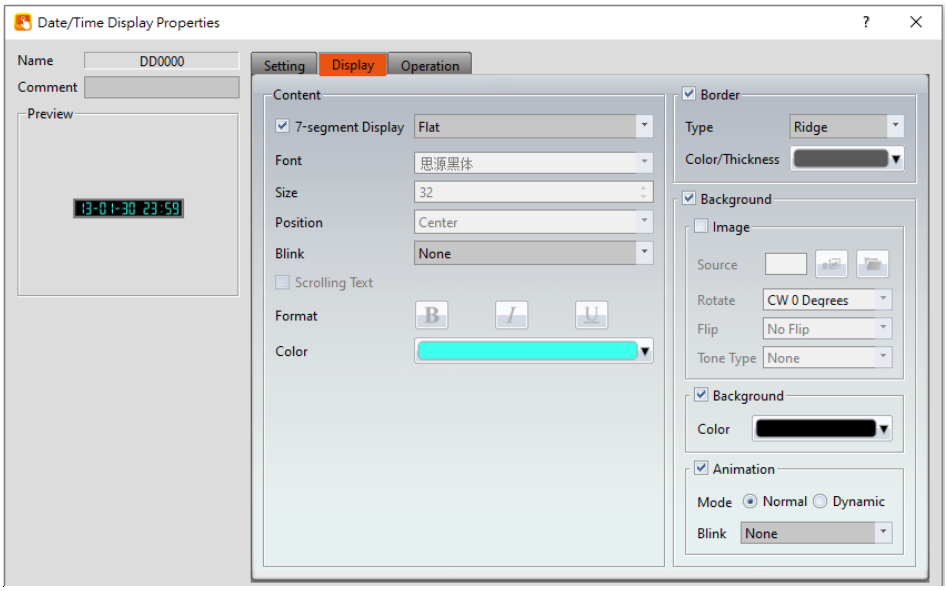


Figure 285【Display】Setting Screen of【Date/Time Display】

Table 141【Display】Setting Properties of【Date/Time Display】

Property	Description
【Content】	【7-segment Display】 Set to use the 7-segment display function for the Date/Time Display object. If this option is selected, related settings for setting of style of the 7-segment display will appear, including outlined, filled, flat. **Note: while this option is selected, because it can only show part of text (0/O, 1, 2, 3, 4, 5/S, 6, 7, 8, 9/g, A, B, C, D, E, F, H, H, L, o, P, r, u, U, Y), the【Enable Day-of-week Display】function will be disabled.** 【Font】 Set the font for the text of the Date/Time Display. 【Size】 Set the size for the text of the Date/Time Display. 【Position】 Set the position for the text of the Date/Time Display. 【Blink】 Set the blinking function for the text of the Date/Time Display. There are four blinking speeds available to choose from: None, Slow, Medium and Fast.

	【Scrolling Text】 Set the scrolling text function for the text of the Date/Time Display. There are four scrolling speeds available to choose from slow to fast. 【Format】 Set the format of the text for the Date/Time Display, including Bold, Italics and Underline. 【Color】 Set the color for the text of Date/Time Display.
【Border】	【Type】 Set the border type for the Date/Time Display. 【Color/Thickness】 Set the color and thickness for the border of the Date/Time Display.
【Background】	【Background】 Check whether to enable background 【Image】 Check whether to use image 【Source】 Set whether to use an image for the displayed background of the current editing state. When this option is checked, an 【Image Selector】 will appear asking the user to select an image either from the 【Image Library】 or from 【File】 . 【Rotate】 Set image rotation angle 【Flip】 Set the flip direction of the image, includes No Flip, X-Axis and Y-Axis. 【Tone Type】 You can choose the tone type you want to change. After selecting the type, you can choose the color from 【Tone Color】 .

	【Background】 Check whether to enable the background. After checking, you can set the background color displayed in the current editing state from【Color】. 【Animation】 Check whether to enable animated effects. 【Mode】Choose whether to use static or dynamic control elements to flicker. 【Blink】Select the blinking mode, and use the numerical value to switch during dynamic control.

19.4.7 【Window Screen Display】

【Window Screen Display】can display the【Window Screen】created in the project, and supports using the numeric value of specific addresses to control the【Window Screen】displayed by the Window Screen Display.

19.4.7.1 【Setting】

The【Window Screen Display】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

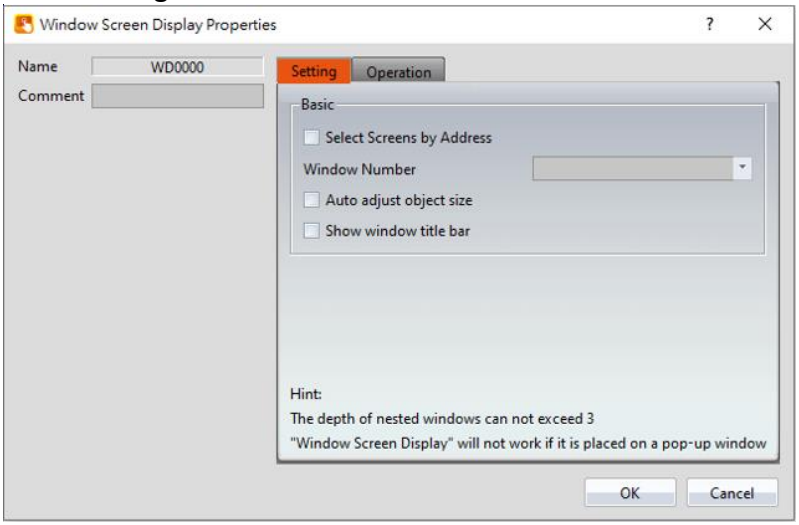


Figure 286【Setting】Screen of【Window Screen Display】

Table 142【Setting】Properties of【Window Screen Display】

Property	Description
【Name】	The default name of the object.

【Comment】	Set the comment of the object.
【Select Screens by Address】	Set to select a screen by address. The【Window Screen】displayed by Window Screen Display will be determined by the numeric value saved in【Window Selection Address】if this setting is selected. If this setting is not selected, the Window Screen Display will have a fixed display of the【Window Screen】selected by【Window Number】.
【Window Number】	Set the【Window Screen】displayed by the Window Screen Display. This setting will appear if【Select Screens by Address】is not selected.
【Window Selection Address】	Set the【Window Selection Address】of the Window Screen Display. When the HMI is operating, the Window Screen Display will read the【Window Selection Address】according to the【Data Type】Set, and display the【Window Screen】with the number that matches the numeric value read. This setting will appear if【Select Screens by Address】is selected.
【Data Type】	Set the Data Type of the【Window Selection Address】.
【Auto adjust object size】	Set the size of【Window Screen Display】, automatically adjust object size depending on the selected window screen.
【Show Screens by Address】	After checking, the title bar will not appear when placing this component.

19.4.8 【Meter】

【Meter】can read the value of specific registers and display this value by a pointer

indicator.
Introduction to the property setting dialog are as follows:

19.4.8.1【General】

The【Meter】【General】page is as shown in the figure below, the meanings of each setting item are listed below:

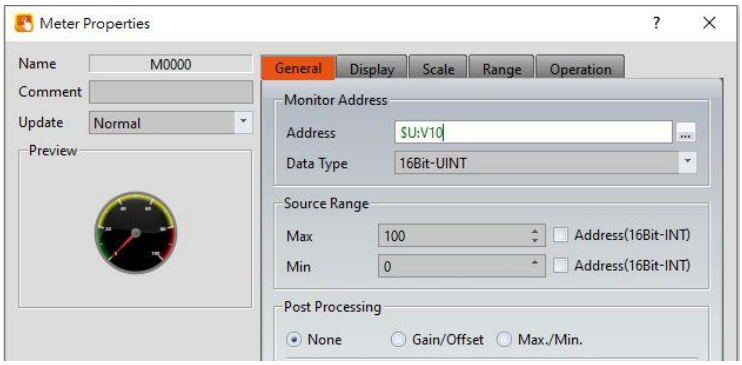


Figure 287【General】Setting Screen of【Meter】

Table 143【General】Setting Properties of【Meter】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Update】	Provide user can select a suitable speed to get the latest data under different situation, such as you would like to get the latest data or adjust the object on the screen to display first, etc. Provide three modes: 【once】: update once only when switch to this page or use the system tag【OP_UPDATE_SCREEN_OBJECTS】, update once when trigger once a time, it will keep update if the monitor address is internal address. 【normal】: normal update speed. 【fast】: the fastest update speed.
【Monitor Address】	【Address】 Set the address to monitor. 【Data Type】 Set the data format of the monitored address.

<table>
<tr><td>【Source Range】</td><td>【Max】
Set the maximum value of the display range.
-【Address】
Select to allow a maximum value of for the display range to change according to the contents of the specified address.

【Min】
Set the minimum value of the display range.
-【Address】
Select to allow a minimum value of for the display range to change according to the contents of the specified address.

Note: When【Address】is selected, the content value of the maximum address must be greater than the content value of the minimum address in order for the display range to be changed validly.</td></tr>
<tr><td>【Post Processing】</td><td>【None】
The object unused the post processing function.

【Gain/Offset】
Set whether to allow post-processing functions for the object. Related post processing settings will appear if this option is selected, allowing the setting of processing functions (add, subtract, multiply and divide) and constants.
Formula is as follows: y=Ax+B, gain is A, offset for the B, y value is displayed for HMI, x is PLC value.
For example, gain A=5, offset B=2, when the PLC x=3, HMI value display is 17 (17=(5*3)+2).
<table>
<tr><th>Gain A</th><th>Offset B</th><th>PLC Value x</th><th>HMI displayed value y</th></tr>
<tr><td>A=5</td><td>B=2</td><td>x=3</td><td>y = 17</td></tr>
</table>
In the object, enter 12 and the PLC value x will get 2 (x=(y-B)/A, 2=(12-2)/5).
<table>
<tr><th>Gain A</th><th>Offset B</th><th>PLC Value x</th><th>HMI displayed value y</th></tr>
<tr><td>A=5</td><td>B=2</td><td>y = 12</td><td>x=2</td></tr>
</table>
The【Address】checkbox can be used to set the source address for processing constant. The type of data used to read the data type of the read address will change according to the setting of the monitor address.

【Max./Min.】
Sets the ratio of the read source address and the display. Can be set by【Data Max.】,【Data Min.】,【Display Max.】and</td></tr>
</table>

	【Display Min.】to determine the proportional relationship. For example, read the PLC R100 address, and the maximum of the R100 is 100, minimum is 0, in the HMI wants to show the maximum is 1000, minimum is 0. So the【Data Max.】indicates the maximum value of the source address, can be set to 100,【Data Min.】indicates the minimum valueof the source address, can be set to 0,【Display Max.】indicates the maximum value of the display, can be set to 1000,【Data Min.】indicates the minimum value of the display, can be set to 0, when PLC register R100=50, then HMI will display as 500. If check the【Address】then can set the source address of the【Data Max.】,【Data Min.】,【Display Max.】and【Display Min.】, the data type of the read address will change according to the setting of the monitor address.

19.4.8.2【Display】

The【Meter】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

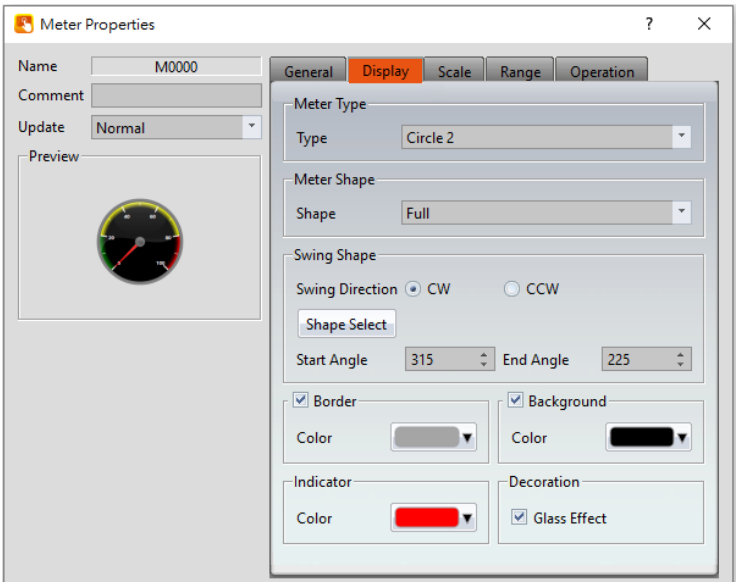
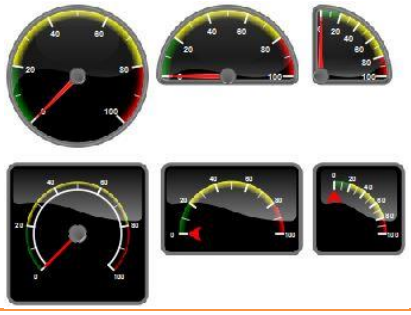


Figure 288【Display】Setting Screen of【Meter】

Table 144【Display】Setting Properties of【Meter】

Property	Description
【Meter Type】	【Type】 Set the meter type. There are the following four types:

	
【Meter Shape】	【Shape】 Set the meter shape. There are Circular/Semicircular/Quadrant available for selection. 
【Swing Shape】	Set the swinging angle of the meter indicator. 【Shape Select】 Users can click this button to set common pointer swinging angles quickly. 【Swing Direction】 Set the swinging direction. There are two options:【CC】(Clockwise) and【CCW】(Counter-Clockwise). 【Start Angle】 Set the start angle of the meter. 【End Angle】 Set the end angle of the meter.
【Border】	【Color】 Set the color of the border.
【Background】	【Color】 Set the background color and filling of the meter.
【Indicator】	【Color】 Set the color of the indicator.
【Decoration】	【Glass effect】 Set whether or not the “glass effect” is shown.

19.4.8.3【Scale】

The【Meter】【Scale】page is as shown in the figure below, the meanings of each setting item are listed below:

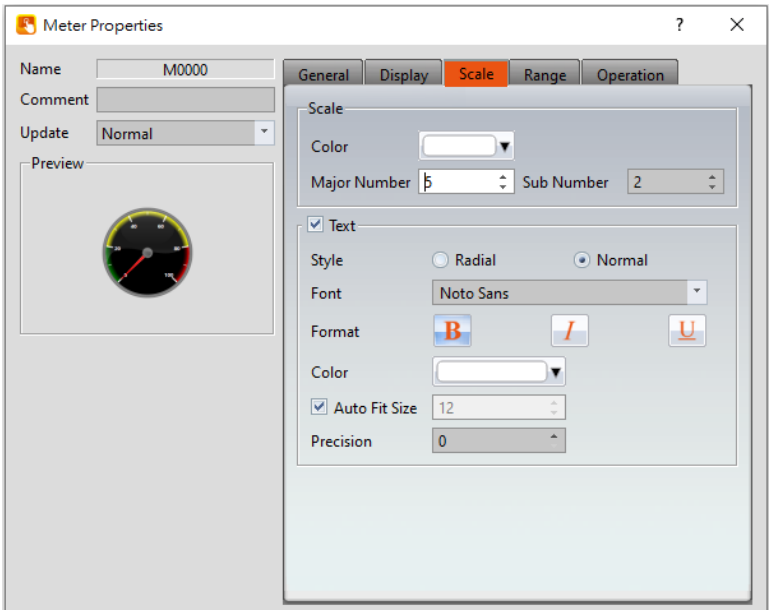


Figure 289【Scale】Setting Screen of【Meter】

Table 145【Scale】Setting Properties of【Meter】

Property	Description
【Scale Frame】	【Color】 Set the color of the scale. 【Major Number】 Set the number of major ticks. 【Sub Number】 Set the number of minor ticks.
【Text】	【Style】 Set the style of the text, including radial and normal. 【Radial】 The text is angled such that it is perpendicular to the major ticks. 【Normal】 The text is angled such that it is parallel to the horizontal. 【Font】 Select the font for the text.

	【Format】 Select the format of the text. 【Color】 Select the color of the text. 【Auto Fit Size】 If checked, the size of the text is automatically adjusted according to the size of the object. If not checked, the user is able to manually adjust the text size. 【Precision】 Set the number of decimal places the labels display.

19.4.8.4【Range】

The【Meter】【Range】page is as shown in the figure below, the meanings of each setting item are listed below:

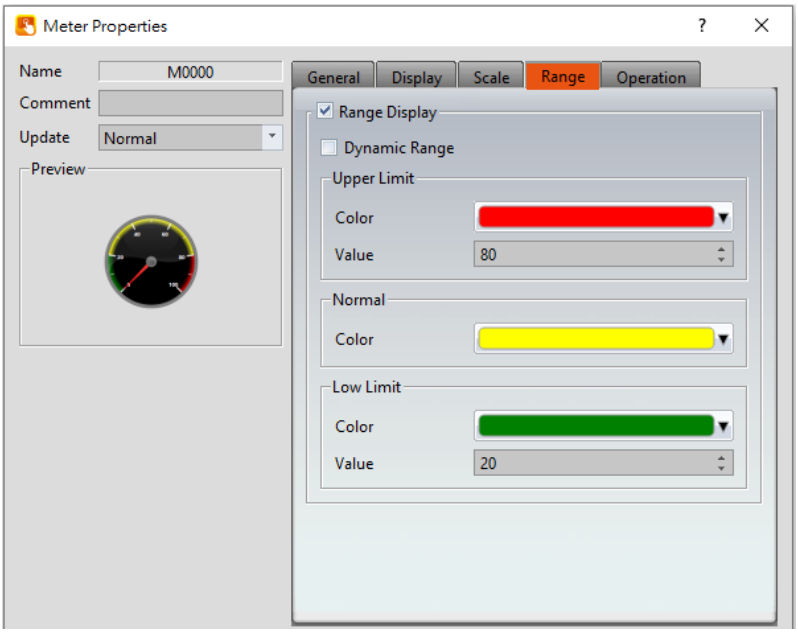


Figure 290【Range】Setting Screen of【Meter】

Table 146【Range】Setting Properties of【Meter】

Property	Description

【Scale Frame】	Select to display range marks on the meter. 【Dynamic Range】 Select to allow a maximum and minimum value of for the display range to change according to the contents of the specified address. **Note: When【Dynamic Range】is selected, the content value of the maximum address must be greater than the content value of the minimum address in order for the range marks to be changed validly.**
【Upper Limit】	【Color】 Set the color of the upper limit range. 【Value】 Set the value of the upper limit. When【Dynamic Range】is selected, the address of the upper limit value will be set.
【Normal】	【Color】 Set the color of the normal range.
【Lower Limit】	【Color】 Set the color of the lower limit range. 【Value】 Set the value of the lower limit. When【Dynamic Range】is selected, the address of the lower limit value will be set.

19.4.9 【Linear Meter】

【Linear Meter】can read the value of specific registers and display the value read using changes in the length or width of a bar.
Introduction to the property setting dialog is as follows

19.4.9.1【General】

The【Linear Meter】【General】page is as shown in the figure below, the meanings of each setting item are listed below:

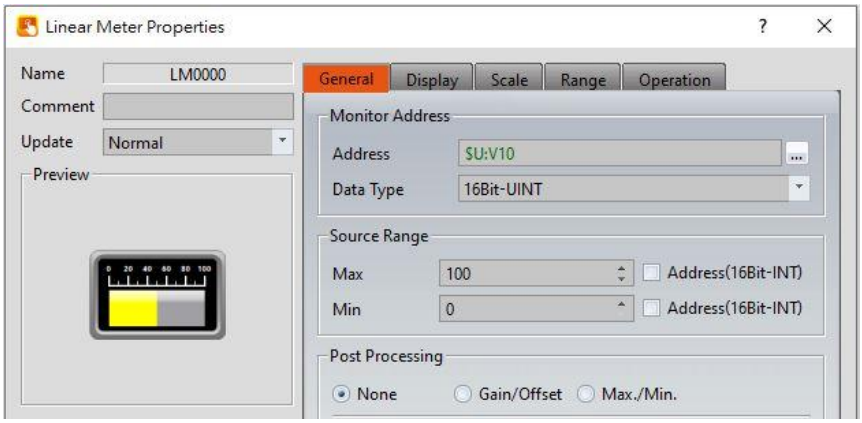


Figure 291【General】Setting Screen of【Linear Meter】

Table 147【General】Setting Properties of【Linear Meter】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Update】	Provide user can select a suitable speed to get the latest data under different situation, such as you would like to get the latest data or adjust the object on the screen to display first, etc. Provide three modes: 【once】: update once only when switch to this page or use the system tag【OP_UPDATE_SCREEN_OBJECTS】, update once when trigger once a time, it will keep update if the monitor address is internal address. 【normal】: normal update speed. 【fast】: the fastest update speed.
【Monitor Address】	【Address】 Set the address to monitor. 【Data Type】 Set the data format of the monitor address.

<table>
<tr><td>【Source Range】</td><td>【Max】
Set the maximum value of the display range.
-【Address】
Select to allow a maximum value of for the display range to change according to the contents of the specified address.

【Min】
Set the minimum value of the display range.
-【Address】
Select to allow a minimum value of for the display range to change according to the contents of the specified address.

Note: When【Address】is selected, the content value of the maximum address must be greater than the content value of the minimum address in order for the display range to be changed validly.</td></tr>
<tr><td>【Post Processing】</td><td>【None】
The object unused the post processing function.

【Gain/Offset】
Set whether to allow post-processing functions for the object. Related post processing settings will appear if this option is selected, allowing the setting of processing functions (add, subtract, multiply and divide) and constants.
Formula is as follows: y=Ax+B, gain is A, offset for the B, y value is displayed for HMI, x is PLC value.
For example, gain A=5, offset B=2, when the PLC x=3, HMI value display is 17 (17=(5*3)+2).
<table>
<tr><th>Gain A</th><th>Offset B</th><th>PLC Value x</th><th>HMI displayed value y</th></tr>
<tr><td>A=5</td><td>B=2</td><td>x=3</td><td>y = 17</td></tr>
</table>
In the object, enter 12 and the PLC value x will get 2 (x=(y-B)/A, 2=(12-2)/5).
<table>
<tr><th>Gain A</th><th>Offset B</th><th>PLC Value x</th><th>HMI displayed value y</th></tr>
<tr><td>A=5</td><td>B=2</td><td>y = 12</td><td>x=2</td></tr>
</table>
The【Address】checkbox can be used to set the source address for processing constant. The type of data used to read the data type of the read address will change according to the setting of the monitor address.

【Max./Min.】
Sets the ratio of the read source address and the display. Can be set by【Data Max.】,【Data Min.】,【Display Max.】and</td></tr>
</table>

	【Display Min.】to determine the proportional relationship. For example, read the PLC R100 address, and the maximum of the R100 is 100, minimum is 0, in the HMI wants to show the maximum is 1000, minimum is 0. So the【Data Max.】indicates the maximum value of the source address, can be set to 100, 【Data Min.】indicates the minimum valueof the source address, can be set to 0,【Display Max.】indicates the maximum value of the display, can be set to 1000,【Data Min.】indicates the minimum value of the display, can be set to 0, when PLC register R100=50, then HMI will display as 500. If check the【Address】then can set the source address of the【Data Max.】,【Data Min.】,【Display Max.】and【Display Min.】, the data type of the read address will change according to the setting of the monitor address.

19.4.9.2【Display】

The【Linear Meter】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

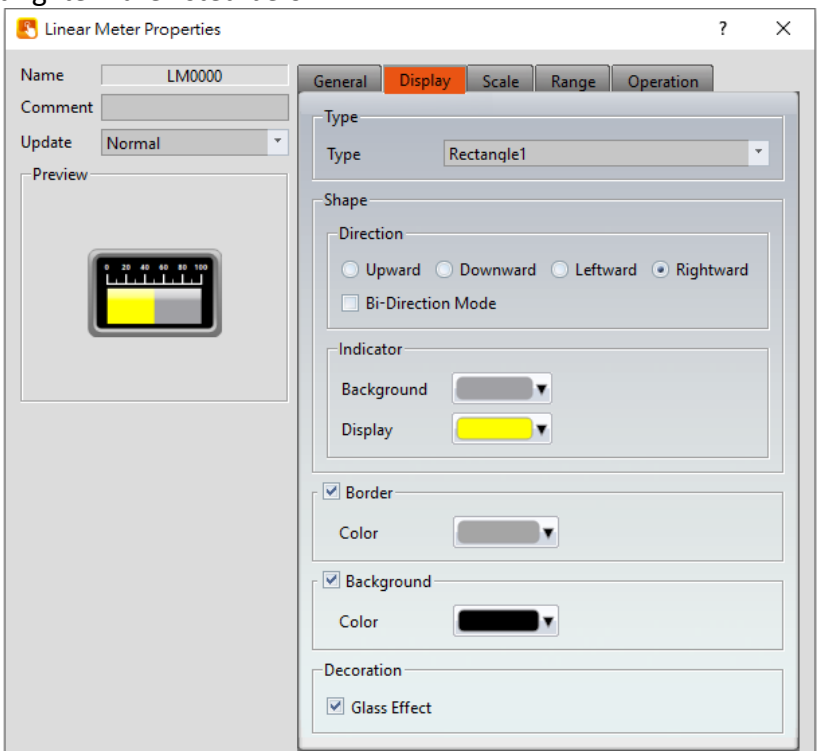
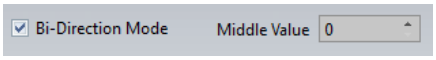


Figure 292【Display】Setting Screen of【Linear Meter】

Table 148【Display】Setting Properties of【Linear Meter】

Property	Description
【Type】	There are 2 types: Rectangle and Cylinder.
【Shape】	【Direction】: Set the direction of the Linear Meter; there are【Upward】,【Downward】,【Leftward】and【Rightward】available to choose from. 【Bi-Direction Mode】 Select for a Linear Meter that changes with respect to the reference point -【Middle Value】.  【Middle Value】 Sets the reference point of【Bi-Direction Mode】. 【Indicator】: 【Background】 Set the background color of the indicator. 【Display】 Set the display color of the indicator.
【Border】	【Color】 Set the color of the border.
【Background】	【Color】 Set the color and filling of the background.
【Decoration】	【Glass Effect】 Set whether or not the “glass effect” is shown.

19.4.9.3【Scale】

The【Linear Meter】【Scale】page is as shown in the figure below, the meanings of each setting item are listed below:

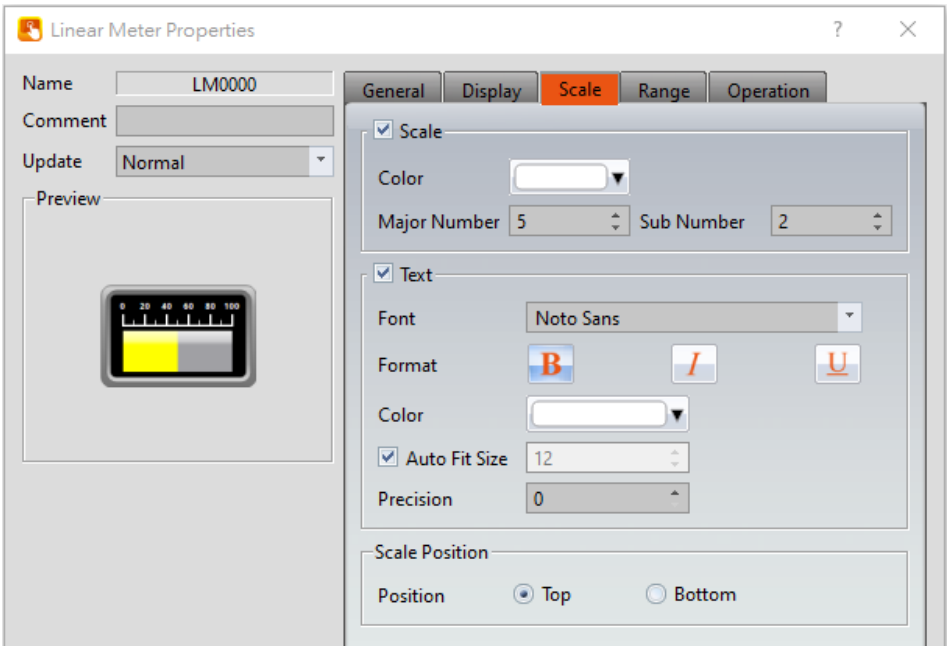


Figure 293【Scale】Setting Screen of【Linear Meter】

Table 149【Scale】Setting Screen of【Linear Meter】

Property	Description
【Scale Frame】	【Color】 Set the color of the scale. 【Major Number】 Set the number of major ticks. 【Sub Number】 Set the number of minor ticks.
【Text】	【Font】 Select the font for the text. 【Format】 Select the format of the text. 【Color】 Select the color of the text. 【Auto Fit Size】 If checked, the size of the text is automatically adjusted according to the size of the object. If not checked, the user is able to manually adjust the text size.

	【Precision】 Set the number of decimal places the labels display.
【Scale Position】	When the user set the direction of the Linear Meter to 【Upward】 or 【Downward】, 【Left】 or 【Right】 can be selected for the scale position. When the direction of the Linear Meter is 【Leftward】 or 【Rightward】, 【Top】 or 【Bottom】 can be selected for the scale position.

19.4.9.4 【Range】

The 【Linear Meter】【Range】 page is as shown in the figure below, the meanings of each setting item are listed below:

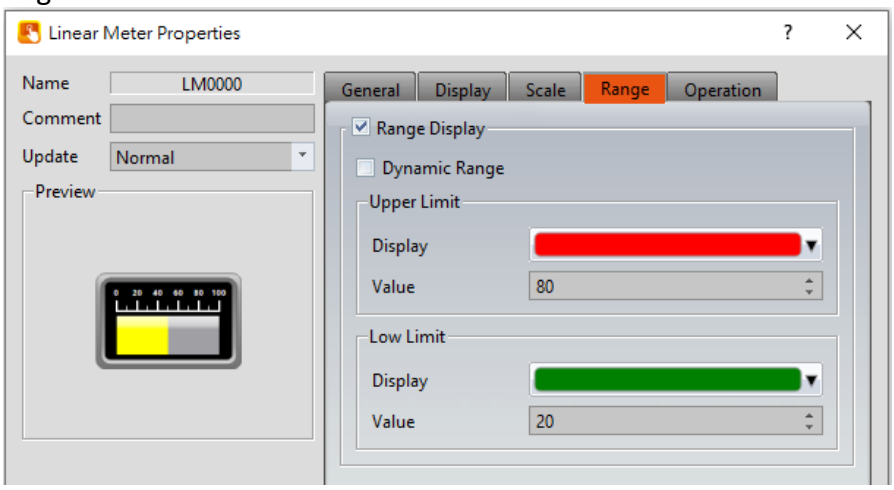


Figure 294 【Range】 Setting Screen of 【Linear Meter】

Table 150 【Range】 Setting Properties of 【Linear Meter】

Property	Description
【Range Display】	Select if the color for the indicator of the Linear Meter will be changed according to the contents of the monitored address. 【Dynamic Range】 Select to allow a maximum and minimum value for the display range to change according to the contents of the specified address. **Note: When 【Dynamic Range】 is selected, the content value of the upper limit address must be greater than the content value of the lower limit address in order for the color of the indicator to change accordingly.**
【Upper Limit】	【Display】 Set the color of the upper limit range. 【Value】

	Set the value of the upper limit. When【Dynamic Range】is selected, the address of the upper limit value will be set.
【Lower Limit】	【Display】 Set the color of the lower limit range. 【Value】 Set the value of the lower limit. When【Dynamic Range】is selected, the address of the lower limit value will be set.

19.4.10 【Circular Graph】

Circular Graph can read the specified register address value, and display the value as circular.

19.4.10.1 【General】

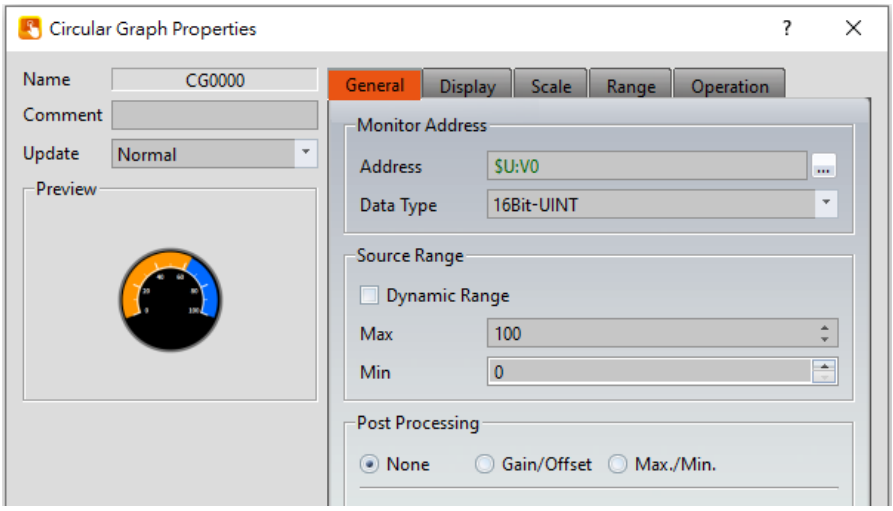


Figure 295【General】Setting Screen on【Circular Graph】

Table 151【General】Setting Properties of【Circular Graph】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Update】	Provide user can select a suitable speed to get the latest data under different situation, such as you would like to get the latest data or adjust the object on the screen to display first, etc. Provide three modes: 【once】: update once only when switch to this page or use

	the system tag【OP_UPDATE_SCREEN_OBJECTS】, update once when trigger once a time, it will keep update if the monitor address is internal address. 【normal】: normal update speed. 【fast】: the fastest update speed.
【Monitor Address】	【Address】 Set the monitor address to read 【Data Type】 Set the data type of the reading monitor address
【Source Range】	【Dynamic Range】 Set the specified address of the maximum and minimum to change dynamically. 【Max】 Set the maximum value. If【Dynamic Range】is checked, then set the address to control. 【Min】 Set the minimum value. If【Dynamic Range】is checked, then set the address to control. **Note: If【Dynamic Range】is checked, the maimum value must greater than the minimum value, the display range can be changed.**
【Post Processing】	【None】 This object does not use post-processing functions. 【Gain/Offset】 Set the value of gain and offset 【Max./Min.】 Set the ratio of reading source address and display.

19.4.10.2 【Display】

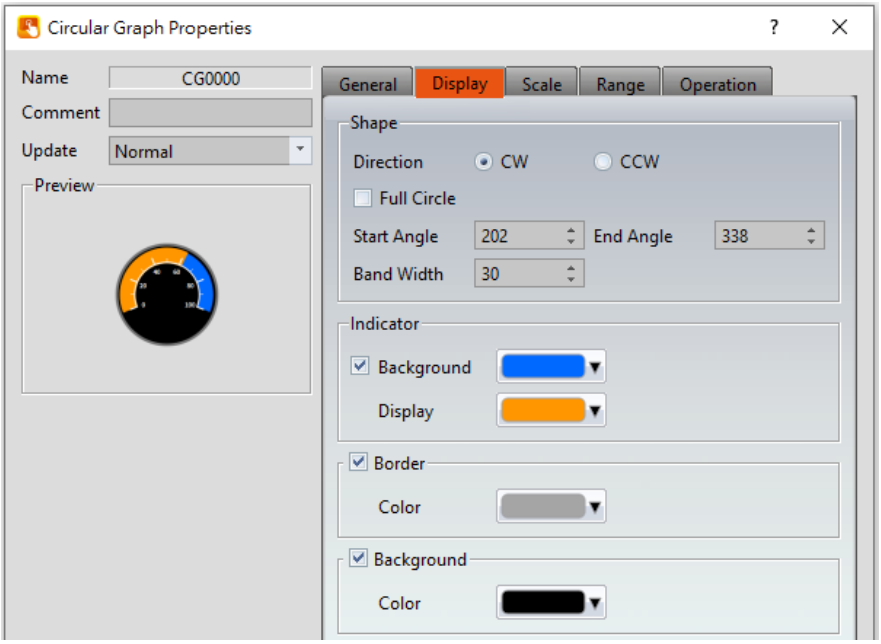


Figure 296【Display】Setting Screen on【Circular Graph】

Table 152【Display】Setting Properties of【Circular Graph】

Property	Description
【Shape】	Set the changing direction of the circular indicator area.
【Direction】	Set the changing direction. There are two directions, [clockwise(CW)] and [counterclockwise(CCW)].
【Full Circle】	Set whether to the change range of the display area to a full circle. If [No], the range of change is from [Start Angle] to [End Angle].
【Start Angle】	Set the starting angle of the circular indicator area.
【End Angle】	Set the end angle of the circular indicator area.
【Band Width】	Set the width ratio of the circular belt, the ratio range is 5%~100%.
【Indicator】	【Background】 The background color setting of the indicator area. 【Display】 The display color setting of the indicator area.
【Border】	Border color setting
【Background】	Background color and fill setting

19.4.10.3 【Scale】

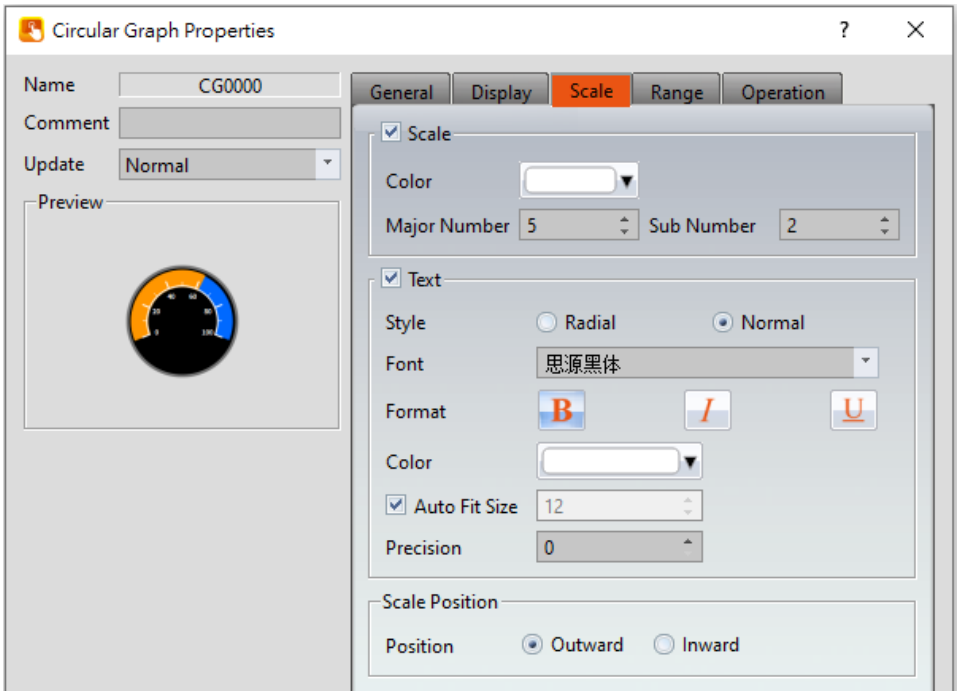


Figure 297【Scale】Setting Screen on【Circular Graph】

Table 153【Scale】Setting Properties of【Circular Graph】

Property	Description
【Scale】	【Color】 Set the scale color 【Major Number】 Set the scale major number 【Sub Number】 Set the scale sub number
【Text】	【Style】 Provides【Radial】and【Normal】2 types 【Font】 Set the text font displayed on the bar graph scale 【Format】 Set the text format displayed on the bar graph scale, including bold, italic and underline 【Color】 Set the text color displayed on the bar graph scale

	【Auto Fit Size】 The text size displayed by the bar graph scale is automatically adjusted according to the size of the object, if it is not checked, it can be adjusted manually 【Precision】 Set the decimal point position of the bar graph scale
【Scale Position】	When the user sets the direction of the bar graph to 【up】 or 【down】, the scale position can be selected from 【Left】 or 【Right】; on the contrary, when the direction of the bar graph is 【Left】 or 【Right】, the scale The position can be selected from 【up】 or 【down】.

19.4.10.4 【Range】

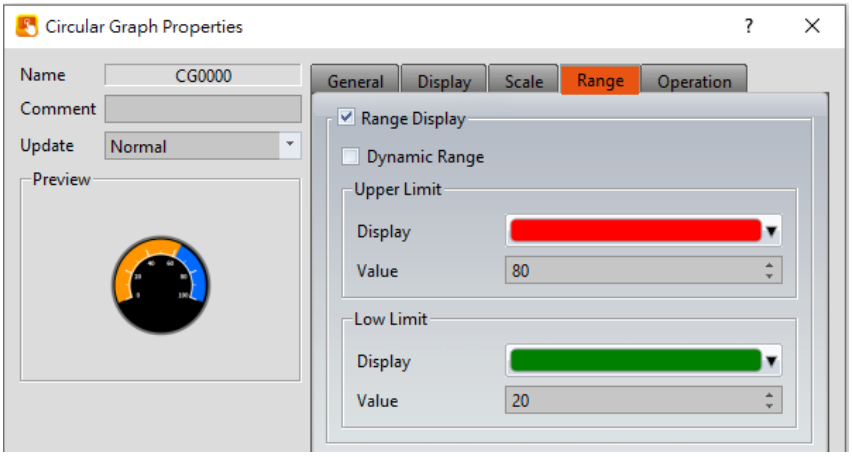


Figure 298【Range】Setting Screen on【Circular Graph】

Table 154【Range】Setting Properties of【Circular Graph】

Property	Description
【Range Display】	Check【Dynamic Range】to indicate whether the color of the indicator area of the bar graph changes with the content of the monitoring address. 【Dynamic Range】 The checked range shows whether the upper and lower limits can be changed with the content of the specified address. **Note: When【Dynamic Range】is checked, the upper limit address content value must be greater than the lower limit address content value, and the color of the indicator area can be changed accordingly.**

【Upper Limit】	【Display】 Set the upper range color 【Value】 Set the upper limit value. When【Dynamic Range】is checked, the address of the upper limit value is set.
【Low Limit】	【Display】 Set the lower limit range color 【Value】 Set the lower limit value. When【Dynamic Range】is checked, the address of the lower limit value is set.

19.4.11 【Pie Chart】

It can read the value of a specific continuous register, and display the proportion of the multiple values read in the fo

19.4.11.1 【General】

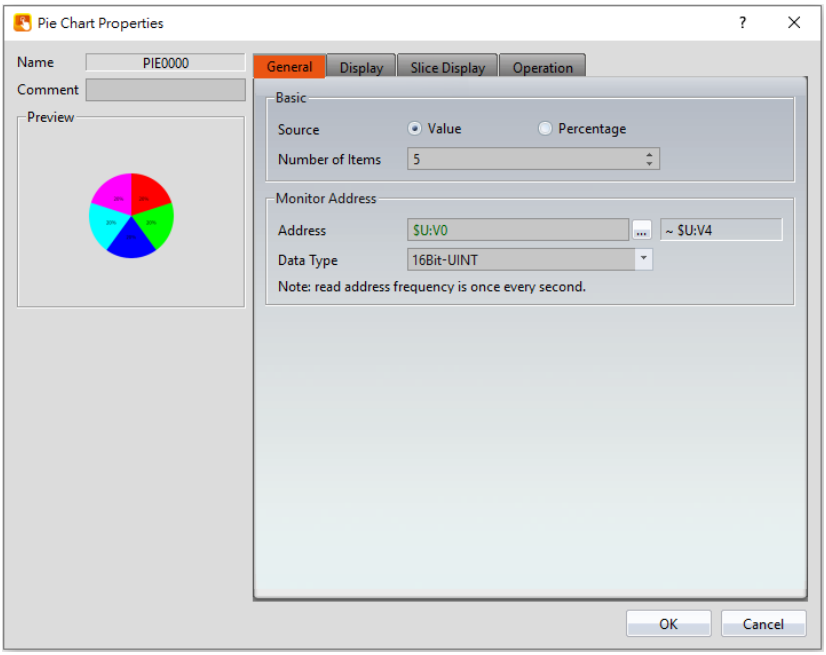
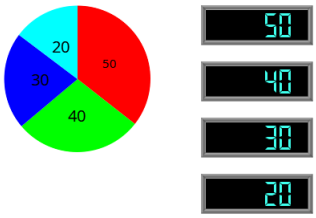
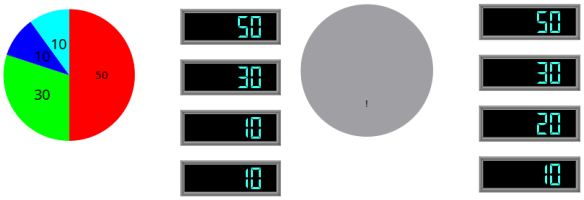


Figure 299【General】Setting Screen on【Pie Chart】

Table 155【General】Setting Properties of【Pie Chart】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.

【Comment】	Set the comment of the object.
【Basic】	【Source】 Set the type of data source to read from the pie chart, there are two type:【Value】and【Percentage】.  When【Percentage】is selected, the distribution of the pie chart will be displayed proportionally. If the total exceeds 100%, the pie chart will display Error.  【Number of Items】 Set the number of data items for the pie chart.
【Monitor Address】	【Address】 Set the read address of the pie chart monitor. 【Data Type】 Set the number of data items for the pie chart.

19.4.11.2 【Display】

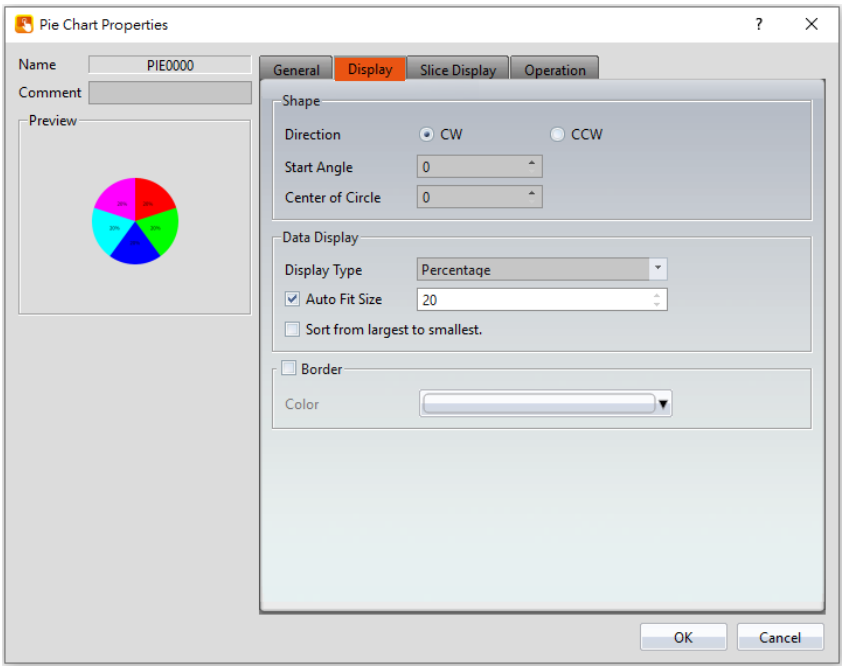


Figure 300【Display】Setting Screen on【Pie Chart】

Table 156【Display】Setting Properties of【Pie Chart】

Property	Description
【Shape】	【Direction】 Set the direction to display each items, includes【CW】and【CCW】. 【Center of Circle】 Set the center size of the circle.
【Data Display】	【Display Type】 Set the font type of the pie chart to display the data, includes【None】,【Value】,【Percentage】. 【Auto Fit Size】 Auto adjust the font size according to the object size, it can be manual adjusted if this option is not enabled. 【Sort from largest to smallest】 Set the sorting of the data items of the pie chart, whether to sorting by the value of the data.
【Border】	【Color】 Set the color of the pie chart border.

19.4.11.3 【Slice Display】

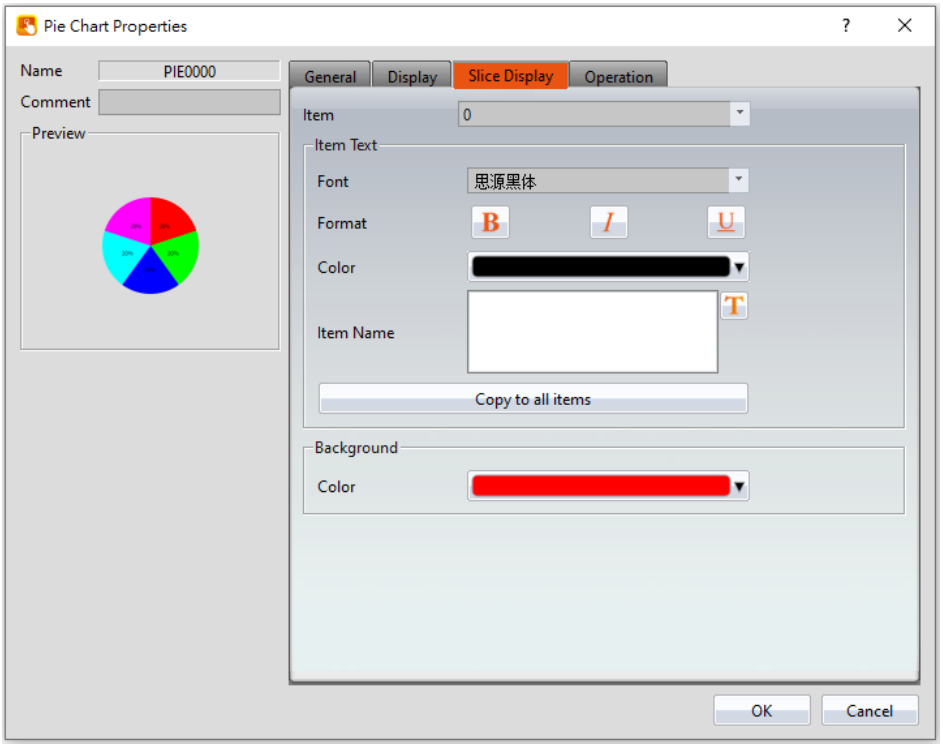


Figure 301【Slice Display】Setting Screen on【Pie Chart】

Table 157【Slice Display】Setting Properties of【Pie Chart】

Property	Description
【Item】	Switches the currently edited data item.
【Item Text】	【Font】 Set the text font displayed in the currently edited item. 【Format】 Set the text format displayed in the current editing item, including bold, italic and underline. 【Color】 Set the text color displayed in the currently edited item. 【Item Name】 Set the item name to be displayed for the currently edited project. 【Copy to all items】 Apply the text property settings of the currently edited item to all items.

【Background】	【Color】Sets the slice background color for data items.

19.4.12 【Data Block Graph】

【Data Block Graph】is an object used to display curves, in which the x value of the curve uses continuous data values from a specified address as the source, and the y value is derived from the contents of the continuous data. Its main functions are as follows:

- Read the continuous data of a specified address directly.
- Pauses or starts updating the reading of the continuous data of a specified address through the【Sub Switch】, and clearing the displayed data. It can also temporarily preserve the old curve (persistence) for comparison purposes.

Introduction to the【Data Block Graph】property settings dialog box are as follows:

19.4.12.1 【General】

The【Data Block Graph】【General】page is as shown in the figure below, the meanings of each setting item are listed below:

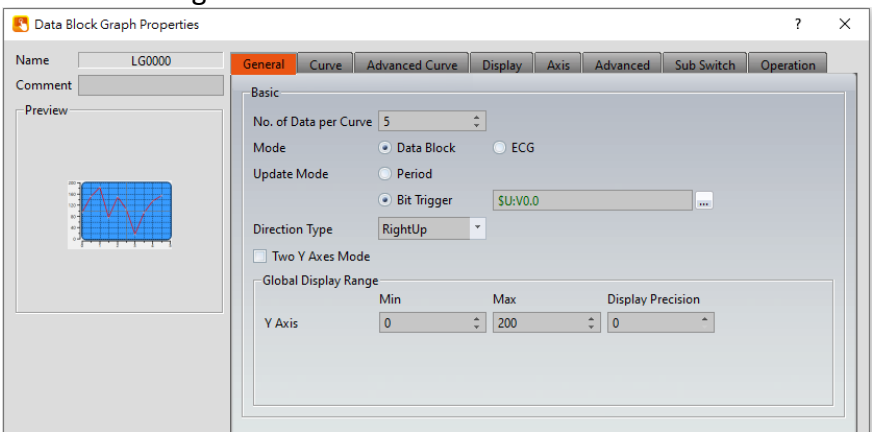


Figure 302【General】Setting Screen on【Data Block Graph】

Table 158【General】Setting Properties of【Data Block Graph】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Basic】	【No. of Data per Curve】 Set the amount of data per curve, which is the number of dots per curve.

	【Mode】 Set the mode of data curve operation, you can choose 【Data Block】or【ECG】. 【Update Mode】 Set the update mode, includes【Period】and【Bit Trigger】. 【Period】 Set the curve to be updated at a period time when it is display, set the period time of each curves after the option was checked. 【Bit Trigger】 Set the curve to be updated by trigger a bit when it is display, set the address of trigger bit of each curves after the option was checked. 【Direction Type】 Support 4 types: RightUp, LeftUp, RightDown, and LeftDown. 【Two Y Axes Mode】 Select to display two y axes on the graph.
【Global Display Range】	Represents the range that can be displayed. 【Min】 Set the minimum Global Range value for the Y-axis. 【Max】 Set the maximum Global Range value for the Y-axis. **Note: The【Global Display Range】represents the range that can be displayed. If【Max】is 100 and【Min】is 0, data exceeding this range will not be able to be displayed.** 【Display Precision】 Set the number of decimal places the labels display.

19.4.12.2 【Curve】

The【Data Block Graph】【Curve】page is as shown in the figure below, the meanings of each setting item are listed below:

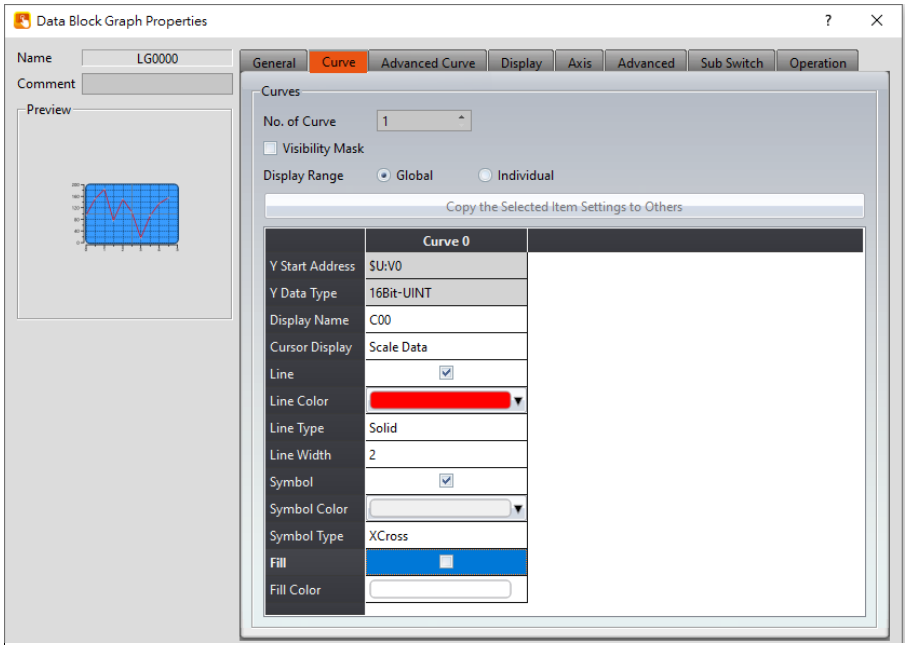


Figure 303【Curve】Setting Screen on【Data Block Graph】

Table 159【Curve】Setting Properties of【Data Block Graph】

Property	Description
【Curves】	【No. of Curves】 Set the number of curves. The maximum is 32. 【No. of Curves (ECG)】 When【ECG】is selected, the curve will become 2 lines as a group, starting from curves 0-0, 0-1, the next group will be curves 1-0, 1-1, and so on, can be established in total 32 ECG curves (16 groups). 【Visibility Mask】 Select to use a visibility mask to control the visibility of the each curve. The user should assign a **32Bit-UINT** register as the mask such that the 0 bit controls the display of curve 0, the 1 but controls the display of curve 1, and so on. 【Visibility Mask (ECG)】 When selecting the【ECG】, the user needs to set a register with a **16Bit-UINT** data type. The 0th bit controls the visibility of the 0-0 and 0-1 curves, and the 1st bit controls the visibility of the 1-0 and 1-1 curves, and so on. 【Display Range】 Set the display mode for the display range of the curve. It is one of

the two following types:

- 【Global】

  The display ranges of all the curves are identical to the 【Global Display Range】.

- 【Individual】

  The display range of all the curves can be different from the 【Global Display Range】.

Explanation: When to set 【Display Range】 as 【Individual】 -When the value ranges of the number of curves are different, for example when the value range of curve a is 0~10, and curve b is 0~1000, it can be discovered that the degree of changes for curve a will be difficult to observe if the two curves are placed in the same figure. This is when 【Display Range】 can be set as 【Individual】 and the display range of each curve can be defined; the system will automatically zoom the value of the curves according to the value in 【Global Display Range】. Take this case for example,
If the value in 【Global Display Range】 is 0~100, when the value of curve a is 5, the system will zoom it to 50; and when the value of curve b is 500, the system will also zoom it into 50, and so on.

The parameters for curve properties in the table are as follows:

【Y Start Address】

Set the starting address for the source of the Y value of the curve.

【Y Data Type】

Set the data type for the Y value of the curve.

Explanation: The range of the curve reading address is determined by the 【No. of Data per Curve】, 【Start Address】 and 【Data Type】; users can determine the range by looking at the following example.

- **Example 1:**

【No. of Data per Curve】= 3; Y-axis 【Start Address】@0:R0; Y-axis 【Data Type】=16Bit-UINT

Dot	X value	Y value
0	0	@0:R0
1	1	@0:R1
2	2	@0:R2

- **Example 2:**

【No. of Data per Curve】= 3; Y-axis 【Start Address】=$U:V0; Y Y-axis 【Data Type】=32Bit-UINT

Dot	X value	Y value
0	0	@0:R0@0:R1
1	1	@0:R2@0:R3
2	2	@0:R4~@0:R5

	【Display Name】 The name of the curve to display on the graph. 【Y Max】 Set the maximum Individual Display Range value for the Y value of the curve, if【Display Range】is【Individual】 【Y Min】 Set the minimum Individual Display Range value for the Y-axis, if【Display Range】is【Individual】. 【Cursor Display】 Four options are available: None, Scale Data, Original Data, and Both. For example, if the【Global Display Range】was set to 0~100, the【Display Range】was set to individual,【Y Max】is set to 200 and【Y Min】is set to 0, when Y is 60, the cursor is set such that the scaled value of 30 is displayed. If the【Cursor Display】is set to orginal, the original value of 60 is displayed. 【Y Axis】 If【Two Y Axes Mode】is selected, the setting is used to decide the curve's reference y-axis. 【Line】 Select whether to display the curve line. 【Line Color】 Set the color of the curve. 【Line Type】 Set the line type of curve, including solid, dash, dot, dash dot, dash dot dot, etc. 【Line width】 Set the width of the curve. 【Symbol】 Select to display the curve symbols.

	【Symbol Color】 Set the color of the symbols. 【Symbol Type】 Set the symbol type.

19.4.12.3 【Advanced Curve】

The【Data Block Graph】【Advanced Curve】page is as shown in the figure below, the meanings of each setting item are listed below:

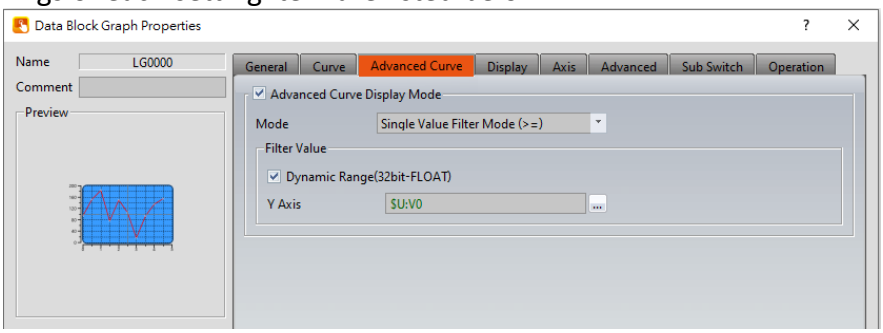
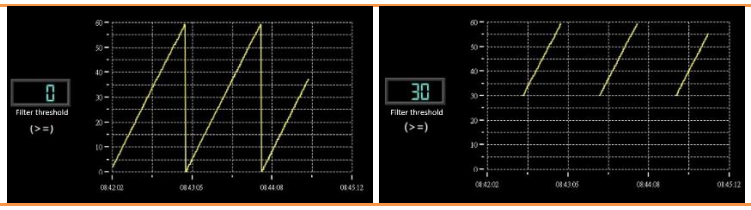


Figure 304【Advanced Curve】Setting Screen of【Data Block Graph】

Table 160【Advanced Curve】Setting Properties of【Data Block Graph】

Property	Description
【Advnaced Curve Display Mode】	Select to enable the advanced curve display mode. 【Mode】 There are four filter modes for setting the curve display, which are: 【Single Value Filter Mode (>=)】Display all curves greater than or equal to the filtered value. 【Single Value Filter Mode (>)】Display all curves greater than the filtered value. 【Single Value Filter Mode (<)】Display all curves less than the filtered value. 【Single Value Filter Mode (<=)】Display all curves less than or equal to the filtered value. The following is an example: Select the mode【Single Value Filter Mode (>=)】and set this value to 30.

	
【Filter Value】	Set the filter value of the filter mode. 【Dynamic Range(32bit-FLOAT)】 Check whether the filter value can be changed according to the content of the specified address. The data type is 32-bit floating point. 【Y Axis (Left)】 Set the filter value of the left Y axis. 【Y Axis (Right)】 Set the right Y-axis filter value (this setting can only be set when【Two Y Axes Mode】is checked).

19.4.12.4 【Display】

The【Data Block Graph】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

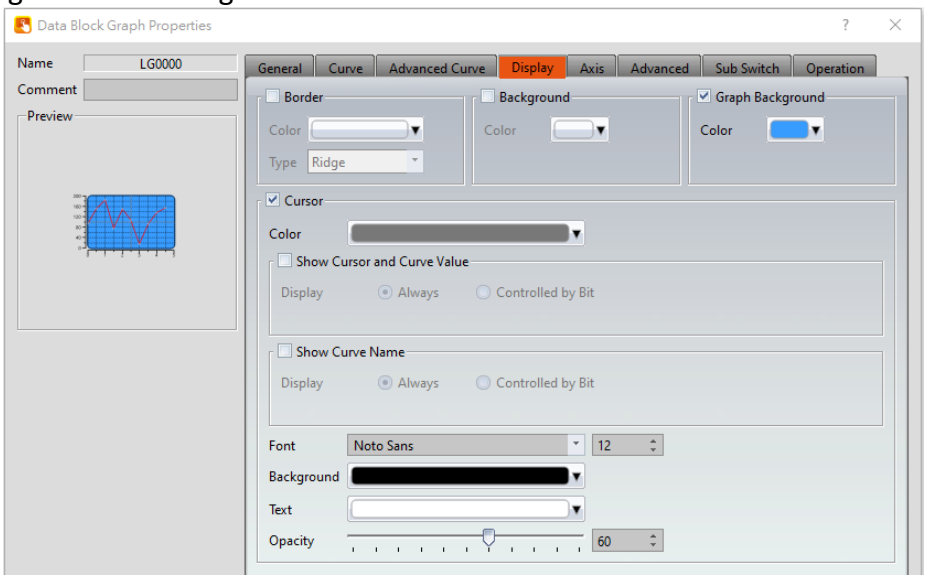


Figure 305【Display】Setting Screen of【Data Block Graph】

Table 161【Display】Setting Properties of【Data Block Graph】

Property	Description
【Border】	Select to display the border.

	【Color】 Set the color of the border. 【Type】 Set the border type.
【Background】	Select to display the background. 【Color】 Set the color of the background.
【Graph Background】	Select to display the graph background. 【Color】 Set the color of the graph background.
【Cursor】	Select to display the cursor. 【Color】 Set the color of the cursor. 【Show Cursor and Curve Value】 Select to display the value of cursor and curve. 【Show Cursor and Curve Value】【Display】 Set the visibility of the values. If【Always】is set, the values are always shown. If【Controlled by Bit】is selected, the visibility depends on the specified bit. 【Show Curve Name】 Select to display the curve name. 【Show Curve Name】【Display】 Set the visibility of the curve name. If【Always】is set, the curve name is always shown. If【Controlled by Bit】 is selected, the visibility of the curve name depends on the specified bit. 【Font】 Set the font and size of the cursor value. 【Background】 Set the background color of the cursor value. 【Text】 Set the text color of the cursor value.

	【Opacity】 Set the background opacity of the cursor value.

19.4.12.5 【Axis】

The【Data Block Graph】【Axis】page is as shown in the figure below, the meanings of each setting item are listed below:

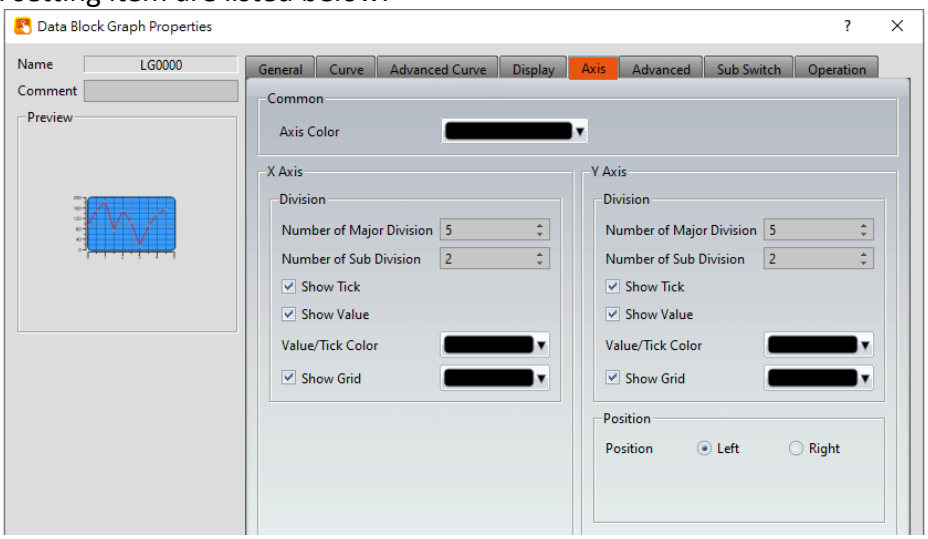


Figure 306【Axis】Setting Screen of【Data Block Graph】

Table 162【Axis】Setting Properties of【Data Block Graph】

Property	Description
【Common】	【Axis Color】 Set the color of the axis.
【X-axis】 **【Division】**	【Number of Major Division】 Set the number of major divisions for the X-axis. 【Number of Sub Division】 Set the number of sub divisions for the X-axis. 【Show Tick】 Select to display the ticks. 【Show Value】 Select to display the values on the X-axis. 【Value/Tick Color】 Set the colors of the values and ticks.

	【Show Grid】 Select to display vertical gridlines and set the color of the gridlines.
【Y-axis】 【Division】	【Number of Major Division】 Set the number of major divisions for the Y-axis. 【Number of Sub Division】 Set the number of sub divisions for the Y-axis. 【Show Tick】 Select whether to display the tick on the Y-axis. 【Show Value】 Select to display the values on the Y-axis. 【Value/Tick Color】 Set the colors of the values and ticks. 【Show Grid】 Select to display horizontal gridlines and sets the color of the gridlines.
【Y-axis】 【Position】	【Position】 Set the Y-axis position.

19.4.12.6 【Advanced】

The【Data Block Graph】【Advanced】page is as shown in the figure below, the meanings of each setting item are listed below:

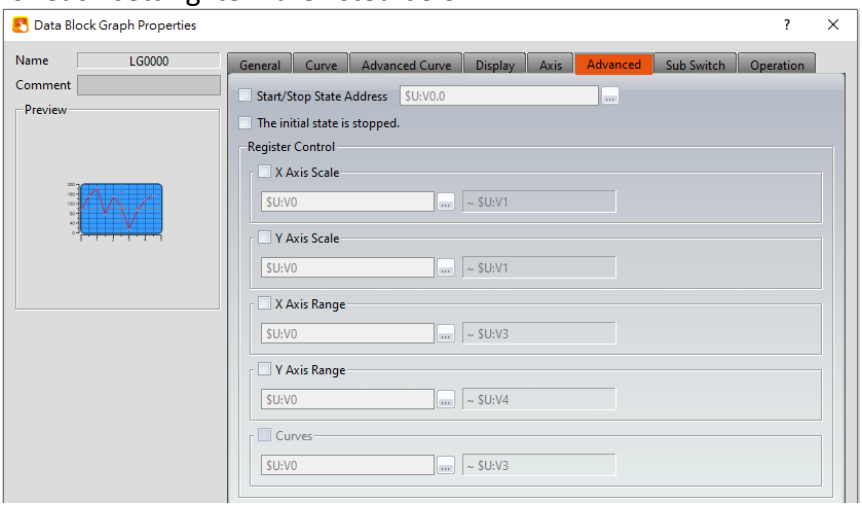


Figure 307【Advanced】Setting Screen of【Data Block Graph】

Table 163【Advanced】Setting Properties of【Data Block Graph】

<table>
<tr><th>Property</th><th>Description</th></tr>
<tr><td>【Advanced】</td><td>【Start/Stop State Address】
Set such that the【Data Block Graph】will start/stop at the specified address. Only the display unit's internal memory is supported.
A value of 0 specifies the start state. A value of 1 specifies the stop state.

【The initial state is stopped】
Check whether to set the【Data Block Graph】initial state to stop state.</td></tr>
<tr><td>【Register Control】</td><td>【X Axis Scale】
X axis scale numbers can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, this register is in 16 Bit-UINT format, table as below.
<table>
<tr><th>Word</th><th>Description</th><th>Data Type</th><th>Min.</th><th>Max.</th></tr>
<tr><td>0</td><td>Number of Major Division</td><td>16Bit-UINT</td><td>1</td><td>30</td></tr>
<tr><td>1</td><td>Number of Sub Division</td><td>16Bit-UINT</td><td>1</td><td>30</td></tr>
</table>
【Y Axis Scale】
Y axis scale numbers can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, this register is in 16 Bit-UINT format, table as below.
<table>
<tr><th>Word</th><th>Description</th><th>Data Type</th><th>Min.</th><th>Max.</th></tr>
<tr><td>0</td><td>Number of Major Division</td><td>16Bit-UINT</td><td>1</td><td>30</td></tr>
<tr><td>1</td><td>Number of Sub Division</td><td>16Bit-UINT</td><td>1</td><td>30</td></tr>
</table>
【X Axis Range】
X axis range can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, table as below.
<table>
<tr><th>Word</th><th>Description</th><th>Data Type</th><th>Min.</th><th>Max.</th></tr>
</table></td></tr>
</table>

0 & 1	Maximum value of x axis.	32Bit-INT	x	x
2 & 3	Minimum value of x axis.	32Bit-INT	x	x

Note: The X-axis range of【ECG】is【No. of Data per Curve】, and dynamic adjustment is not supported.

【Y Axis Range】

Y axis range can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, table as below.

Word	Description	Data Type	Min.	Max.
0 & 1	The maximum of the Y-axis on the left side of the graph	32Bit-FLOAT	x	x
2 & 3	The minimum of the Y-axis on the left side of the graph	32Bit-FLOAT	x	x
4	Decimal point position of the Y-axis value on the left side of the graph	16Bit-UINT	0	5
5 & 6	The maximum of the Y-axis on the right side of the graph	32Bit-FLOAT	x	x
7 & 8	The minimum of the Y-axis on the right side of the graph	32Bit-FLOAT	x	x
9	Decimal point position of the Y-axis value on the right side of the graph	16Bit-UINT	0	5

Note: maximum value should bigger than minimum value.

【Curves】

Word	Description	Data Type	Min.	Max.
0 & 1	Max. value of curve 0.	32Bit-FLOAT	x	x
2 & 3	Min. value of curve 0.	32Bit-FLOAT	x	x
4 & 5	Max. value of curve 1.	32Bit-FLOAT	x	x
6 & 7	Min. value of curve 1.	32Bit-FLOAT	x	x
8 & 9	Max. value of curve 2.	32Bit-FLOAT	x	x
10 & 11	Min. value of curve 2.	32Bit-FLOAT	x	x
⋮				
124 & 125	Max. value of curve 31.	32Bit-FLOAT	x	x
126 & 127	Min. value of curve 31.	32Bit-FLOAT	x	x

Note: maximum value should bigger than minimum value.

【Curves (ECG)】

Word	Description	Data Type	Min.	Max.
0 & 1	Max. value of curve 0-0 and 0-1.	32Bit-FLOAT	x	x
2 & 3	Min. value value of curve 0-0 and 0-1.	32Bit-FLOAT	x	x
4 & 5	Max. value of curve 1-0 and 1-1.	32Bit-FLOAT	x	x
6 & 7	Min. value value of curve 1-0 and 1-1.	32Bit-FLOAT	x	x
8 & 9	Max. value of curve 2-0 and 2-1.	32Bit-FLOAT	x	x
10 & 11	Min. value of curve 2-0 and 2-1.	32Bit-FLOAT	x	x
⋮				
60 &	Max. value	32Bit-	x	x

	61	value of curve 15-0 and 15-1.	FLOAT		
	62 & 63	Min. value value of curve 15-0 and 15-1.	32Bit-FLOAT	x	x
	Note: maximum value should bigger than minimum value.				

19.4.12.7 【Sub Switch】

The【Data Block Graph】【Sub Switch】page is as shown in the figure below, the meanings of each setting item are listed below:

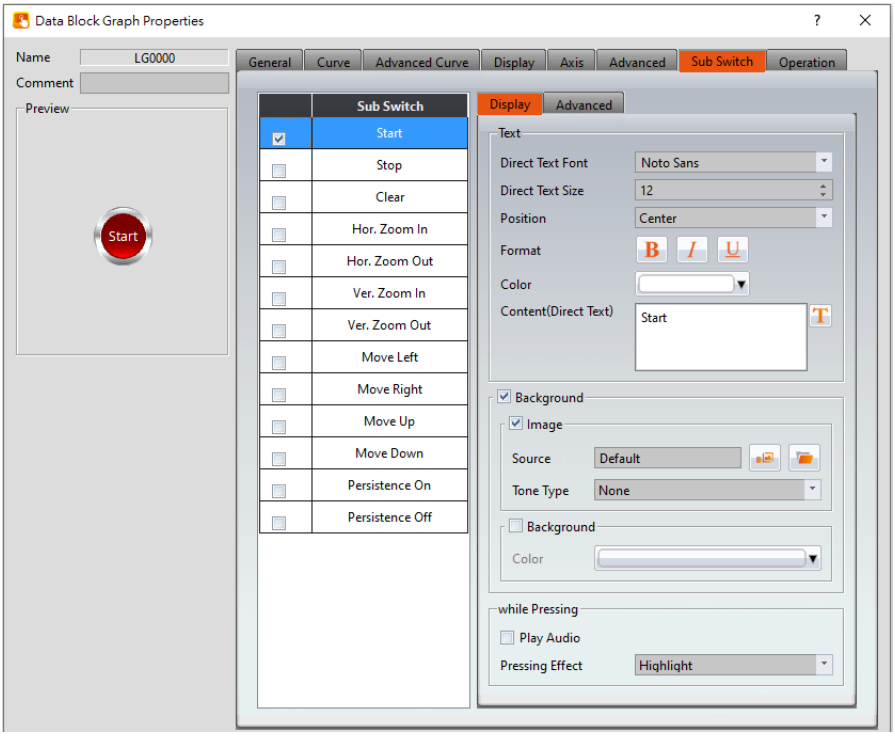


Figure 308【Sub Switch】Setting Screen of【Data Block Graph】

Table 164【Sub Switch】Setting Properties of【Data Block Graph】

Property	Description
【Sub Switch List】	【Sub Switch List】that can be selected for【Data Block Graph】. Sub switches can be enabled after selecting them. Settings for the appearance of the selected sub switches will also appear on the right. When different sub switches are selected from the list, the appearance settings to the right will be updated according to the sub switches selected. In which the (Sub Switches) are divided into:

	➢ 【Start】—Start updating curve. ➢ 【Stop】—Stop updating curve. ➢ 【Clear】—Clear curve. ➢ 【Hor. Zoom In】—Horizontal zoom in. ➢ 【Hor. Zoom Out】—Horizontal zoom out. ➢ 【Ver. Zoom In】—Vertical zoom in. ➢ 【Ver. Zoom Out】—Vertical zoom out. ➢ 【Move Left】—Move Left. ➢ 【Move Right】—Move Right. ➢ 【Move Up】—Move Up. ➢ 【Move Down】—Move Down. ➢ 【Persistence On】-Preserve old curves ON; used for comparing curves. The color of old curves will be darker than the original ones. ➢ 【Persistence Off】-Preserve old curves OFF; clears all old curves. Some sub switches are **not supported** under【ECG】, as follow: 【Hor. Zoom In】,【Hor. Zoom Out】,【Move Left】,【Move Right】,【Persistence On】,【Persistence Off】.
【Display】【Text】	【Direct Text Font】 Set the text font of the sub switch currently selected. 【Direct Text Size】 Set the text size of the sub switch currently selected. 【Position】 Set the text position of the sub switch currently selected. 【Format】 Set the text format of the sub switch currently selected, including Bold, Italics and Underline. 【Color】 Set the text color of the sub switch currently selected. 【Content(Direct Text)】

	Set the text of the sub switch currently selected.
【Display】【Background】	Set the background of the sub switch currently selected. Check it to activate background settings, and the displayed background of the sub switch currently selected can be edited below. If this option is not checked, the background will be transparent. 【Use Image】 Set to use an image for the background of the sub switch currently selected. When this option is checked, image selection settings will appear asking the user to select an image either from the【Image Library】or from a file. 【Background Color】 Set the background color of the sub switch currently selected. This setting item will appear if 【Use Image】was not selected.
【Display】【while Pressing】	【Play Audio】 Select to play audio when the sub switch is pressed. An【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio Selector】can be pressed to play the selected audio. 【Pressing Effect】 Set the pressing effect of the sub switch currently selected. There are two effects available for selection:【None】and【Highlight】.
【Advanced】【Operation Control】	Operation control of sub switch, it can enabled by bit or security. 【Enable by Bit】 Check whether the sub switch operation is controlled by a bit 【Show Disabled Sign】 Check if you want to display the forbidden symbol, it's valid when check【Enable by Bit】,【Enabled by Word】or【Enable by Security】.

【Address】
Set the address of the sub switch operation control bit.

【State】
Set the control bit as 1 or 0 to operate object.

【Enabled by Word】
Check whether the operation is controlled by word.

【Address】
Set the operation control word address.

【Condition】
Set the condition of word control and when it is true then the object can be controlled, when false not the object can not be controlled. The condition include' =',' !=', '>', '<', '>=', '<='.

【Enable by Security】
Select the sub switch whether controlled by user level.

【User Level Condition】
Set the level and condition of the object.

【Hold Time】
Check whether the operation is controlled by hold time. Hold time can be divided into two kinds:

- 【Press On】: press directly, according to the【Min. Hold Time】to confirm whether the operation is executed.
- 【Double Press】: quickly double press to confirm whether the operation is executed.

【Operator Confirm】
Check whether show comfirmation message window after checking the operation.

【Max. Waiting Time】
When the confirmation message window is displayed, If the user does not reply within this time, the system will close the confirmation message window and cancel this operation

19.4.13 【Data Block XY Scatter】

【Data Block XY Scatter】is an object used to display a curve, in which the sources of both X/Y values are the continuous data contents of specified addresses. Its main functions are as follows:

- Read the continuous data of the specified addresses directly.
- Pauses or starts updating the reading of the continuous data of a specified address through the【Sub Switch】and clearing the displayed data. It can also temporarily preserve the old curve for comparison purposes.

Introduction to the property setting dialog box are as follows:

19.4.13.1 【General】

The【Data Block XY Scatter】【General】page is as shown in the figure below, the meanings of each setting item are listed below:

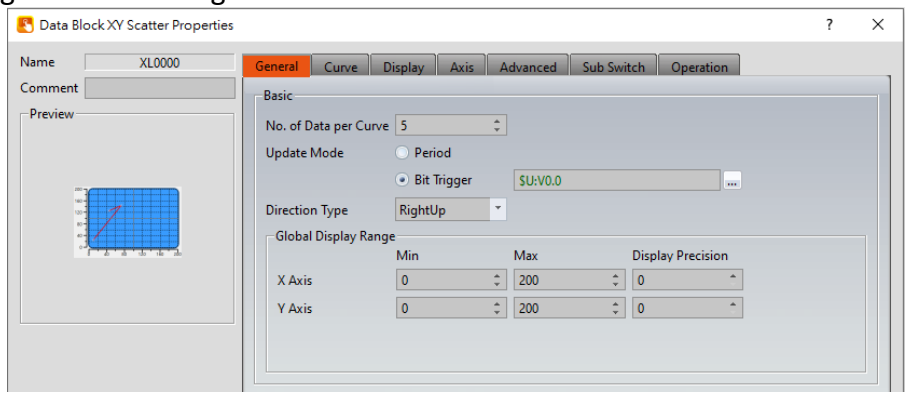


Figure 309【General】Setting Screen of【Data Block XY Scatter】

Table 165【General】Setting Properties of【Data Block XY Scatter】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Basic】	【No. of Data per Curve】 Set the amount of data per curve, which is the number of dots per curve. 【Update Mode】 Set the update mode, includes【Period】and【Bit Trigger】.

	【Period】 Set the curve to be updated at a period time when it is display, set the period time of each curves after the option was checked. 【Bit Trigger】 Set the curve to be updated by trigger a bit when it is display, set the address of trigger bit of each curves after the option was checked. 【Direction Type】 Supprt 4 types: RightUp, LeftUp, RightDown, and LeftDown.
【Global Display Range】	Set the range that can be displayed. 【Max】 Set the maximum Global Range value for the X-axis/Y-axis. 【Min】 Set the minimum Global Range value for the X-axis/Y-axis. **Note: The 【Global Display Range】 represents the range that can be displayed. If【Max】is 100 and【Min】 is 0, data exceeding this range will not be able to be displayed.** 【Display Precision】 Set the number of decimal places the labels display.

19.4.13.2 【Curve】

The【Data Block XY Scatter】【Curve】page is as shown in the figure below, the meanings of each setting item are listed below:

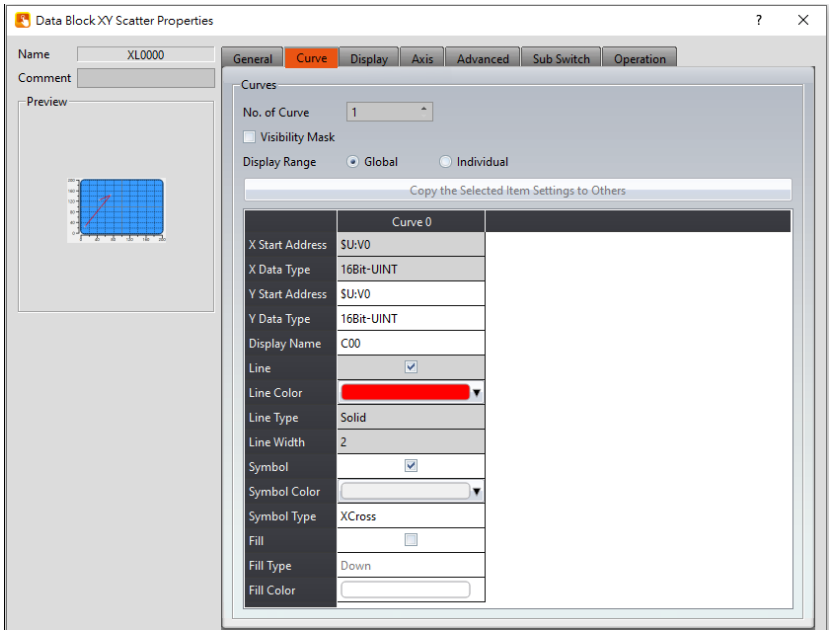


Figure 310【Curve】Setting Screen of【Data Block XY Scatter】

Table 166【Curve】Setting Properties of【Data Block XY Scatter】

Property	Description
【Curves】	【No. of Curves】 Set the number of curves. The maximum is 32. 【Visibility Mask】 Select to use a visibility mask to control the visibility of the each curve. The user should assign a 32bit UINT register as the mask such that the 0 bit controls the display of curve 0, the 1 but controls the display of curve 1, and so on. 【Display Range】 Set the display mode for the display range of the curve. It is one of the two following types: ➢ 【Global】 The display ranges of all the curves are identical to the 【Global Display Range】. ➢ 【Individual】 The display range of all the curves can be different from the 【Global Display Range】. **Explanation: When to set【Display Range】as【Individual】-When the value ranges of the number of curves are different, for example when the value range of curve a is 0~10, and curve b is 0~1000, it can be discovered that the degree of changes for curve a will be difficult to observe if the two curves are**

placed in the same figure. This is when【Display Range】can be set as【Individual】and the display range of each curve can be defined; the system will automatically zoom the value of the curves according to the value in【Global Display Range】. Take this case for example,
If the value in【Global Display Range】is 0~100, when the value of curve a is 5, the system will zoom it to 50; and when the value of curve b is 500, the system will also zoom it into 50, and so on.

The parameters for curve properties in the table are as follows:

【X/Y Start Address】

Set the starting address for the source of the X/Y value of the curve.

【XY Data Type】

Set the data type for the X/Y value of the curve.

Explanation: The range of the curve reading address is determined by the【No. of Data per Curve】,【Start Address】and【Data Type】; users can determine the range by looking at the following example.

- **Example 1:**

【No. of Data per Curve】= 3; Y-axis【Start Address】@0:R0; Y-axis【Data Type】=16Bit-UINT

Dot	X value	Y value
0	0	@0:R0
1	1	@0:R1
2	2	@0:R2

- **Example 2:**

【No. of Data per Curve】= 3; Y-axis【Start Address】=$U:V0; Y Y-axis【Data Type】=32Bit-UINT

Dot	X value	Y value
0	0	@0:R0@0:R1
1	1	@0:R2@0:R3
2	2	@0:R4~@0:R5

【X/Y Max】

Set the maximum Individual Display Range value for the Y value of the curve, this option will appear if【Display Range】is【Individual】.

【X/Y Min】

Set the minimum Individual Display Range value for the Y-axis, this option will appear if【Display Range】is【Individual】.

	【Display Name】 The name of the curve to display on the graph. 【Line】 Select to display the curve line. 【Line Color】 Set the color of the curve. 【Line Type】 Set the line type of curve, including solid, dash, dot, dash dot, dash dot dot, etc. 【Line width】 Set the width of the curve. 【Symbol】 Select to display the curve symbols. 【Symbol Color】 Set the color of the symbols. 【Symbol Type】 Set the symbol type. 【Fill】 Set whether to fill-up the block. 【Fill Type】 Set the fill-up direction. 【Fill Color】 Set the fill-up color.

19.4.13.3 【Display】

The【Data Block XY Scatter】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

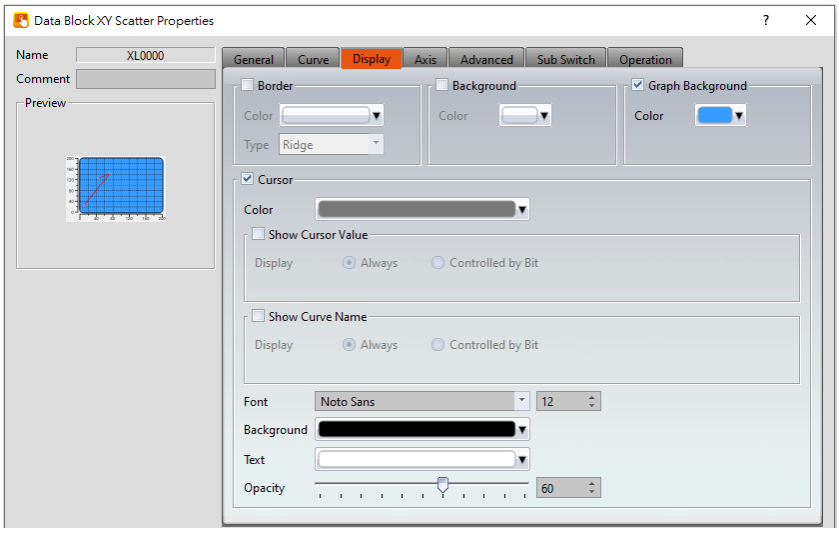


Figure 311【Display】Setting Screen of【Data Block XY Scatter】

Table 167【Display】Setting Properties of【Data Block XY Scatter】

Property	Description
【Border】	Select to display the border. 【Color】 Set the color of the border. 【Type】 Set the border type.
【Background】	Set the visibility of the background. 【Color】 Set the color of the background.
【Graph Background】	Select to enable a graph background. 【Color】 Set the color of the graph background.
【Cursor】	Set the visibility of the cursor. 【Color】 Set the color of the cursor. 【Show Cursor Value】 Select the visibility of the cursor value. 【Show Cursor Value】【Display】 Set the visibility of cursor values. If【Always】is set, the cursor values are always shown. If【Controlled by Bit】is selected, the visibility of cursor values depends on the specified bit.

	【Show Curve Name】 Select to display the curve name. 【Show Curve Name】【Display】 Set the visibility of the curve name. If【Always】is set, the curve name is always shown. If【Controlled by Bit】 is selected, the visibility of the curve name depends on the specified bit. 【Font】 Set the font type and size of cursor values. 【Background】 Set the background color of the cursor values. 【Text】 Set the text color of the cursor values. 【Opacity】 Set the background opacity of the cursor values.

19.4.13.4 【Axis】

The【Data Block XY Scatter】【Axis】page is as shown in the figure below, the meanings of each setting item are listed below:

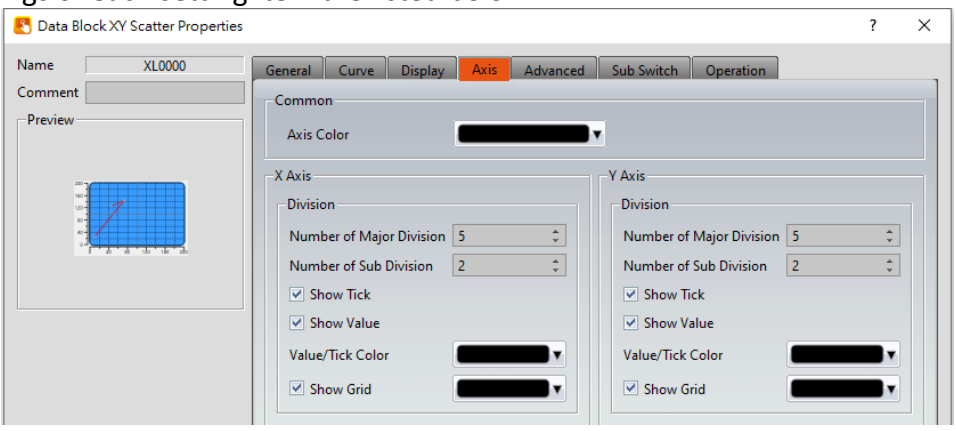


Figure 312【Axis】Setting Screen of【Data Block XY Scatter】

Table 168【Axis】Setting Properties of【Data Block XY Scatter】

Property	Description

【Common】	【Axis Color】 Set the color of the axis.
【X-axis】 **【Division】**	【Number of Major Division】 Set the number of major divisions for the X-axis. 【Number of Sub Division】 Set the number of sub divisions for the X-axis. 【Show Tick】 Select to display the ticks. 【Show Value】 Select to display the values on the X-axis. 【Value/Tick Color】 Set the color of the values and ticks. 【Show Grid】 Select to display vertical gridlines, and set the color of the gridlines.
【Y-axis】 **【Division】**	【Number of Major Division】 Set the number of major divisions for the Y-axis. 【Number of Sub Division】 Set the number of sub divisions for the Y-axis. 【Show Tick】 Select to display the ticks on the Y-axis. 【Show Value】 Select to display the values on the Y-axis. 【Value/Tick Color】 Set the color of the values and ticks. 【Show Grid】 Select to display horizontal gridlines, and set the color of the gridlines.

19.4.13.5 【Advanced】

The【Data Block XY Scatter】【Advanced】page is as shown in the figure below, the meanings of each setting item are listed below:

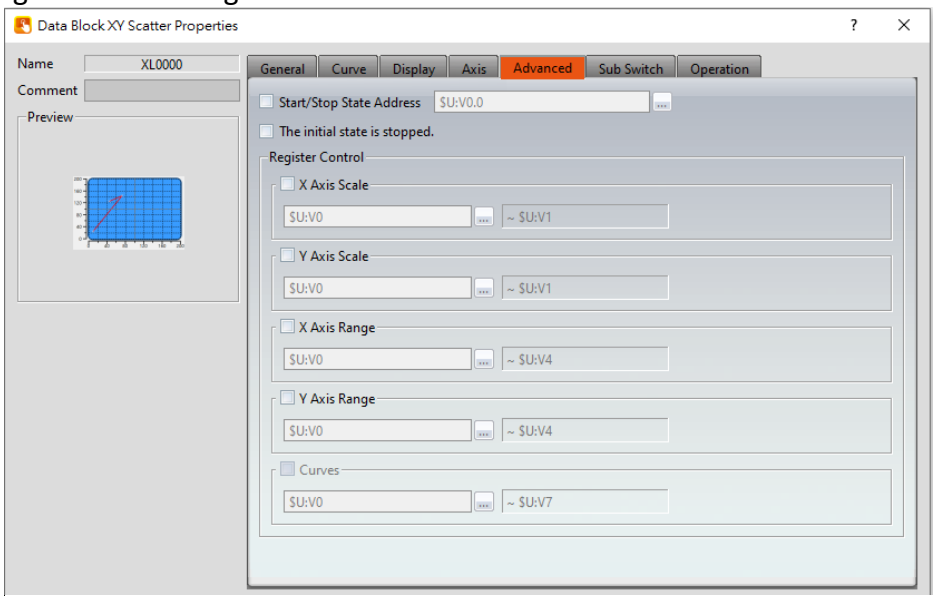


Figure 313【Advanced】Setting Screen of【Data Block XY Scatter】

Table 169【Advanced】Setting Properties of【Data Block XY Scatter】

<table>
<tr><th>Property</th><th>Description</th></tr>
<tr><td>【Advanced】</td><td>【Start/Stop State Address】
Set such that the【Data Block Graph】will start/stop at the specified address. Only the display unit's internal memory is supported.
A value of 0 specifies the start state. A value of 1 specifies the stop state.

【The initial state is stopped】
Set the initial state of of the data to stop.</td></tr>
<tr><td>【Register Control】</td><td>【X Axis Scale】
X axis scale numbers can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, this register is in 16 Bit-UINT format, table as below.
<table>
<tr><th>Word</th><th>Description</th><th>Data Type</th><th>Min.</th><th>Max.</th></tr>
<tr><td>0</td><td>Number of Major Division</td><td>16Bit-UINT</td><td>1</td><td>30</td></tr>
<tr><td>1</td><td>Number of Sub Division</td><td>16Bit-UINT</td><td>1</td><td>30</td></tr>
</table>
</td></tr>
</table>

【Y Axis Scale】

Y axis scale numbers can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, this register is in 16 Bit-UINT format, table as below.

Word	Description	Data Type	Min.	Max.
0	Number of Major Division	16Bit-UINT	1	30
1	Number of Sub Division	16Bit-UINT	1	30

【X Axis Range】

X axis range can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, table as below.

Word	Description	Data Type	Min.	Max.
0 & 1	Maximum of x axis.	32Bit-FLOAT	x	X
2 & 3	Minimum of x axis.	32Bit-FLOAT	x	X
4	The decimal point position of the X axis value	16Bit-UINT	0	5

Note: maximum value should bigger than minimum value.

【Y Axis Range】

Y axis range can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, table as below.

Word	Description	Data Type	Min.	Max.
0 & 1	The maximum of the Y-axis on the left side of the graph	32Bit-FLOAT	x	x
2 & 3	The minimum of the Y-axis on the left side of the graph	32Bit-FLOAT	x	x
4	Curve left side	16Bit-UINT	0	5

	of the Y-axis value of the decimal point position			
5 & 6	The maximum of the Y-axis on the right side of the graph	32Bit-FLOAT	x	x
7 & 8	The minimum of the Y-axis on the right side of the graph	32Bit-FLOAT	x	x
9	Curve right side of the Y-axis value of the decimal point position	16Bit-UINT	0	5

Note: maximum value should bigger than minimum value.

【Curves】

If curve Y-axis display range use【individual】, check this option, each of the Y-axis curve can be specified by register, and will display the number of consecutive occupancy registers, table as below.

Word	Description	Data Type	Min.	Max.
0 & 1	X-axis maximum value of curve 0.	32Bit-FLOAT	x	x
2 & 3	X-axis minimum value of curve 0.	32Bit-FLOAT	x	x
4 & 5	Y-axis maximum value of curve 0.	32Bit-FLOAT	x	x
6 & 7	Y-axis minimum value of curve 0.	32Bit-FLOAT	x	x
8 & 9	X-axis maximum of	32Bit-FLOAT	x	x

	curve 1.			
10 & 11	X-axis minimum of curve 1.	32Bit-FLOAT	x	x
12 & 13	Y-axis maximum value of curve 1.	32Bit-FLOAT	x	x
14 & 15	Y-axis minimum value of curve 1.	32Bit-FLOAT	x	x
⋮				
248 & 249	X-axis maximum of curve 31.	32Bit-FLOAT	x	x
250 & 251	X-axis minimum of curve 31.	32Bit-FLOAT	x	x
252 & 253	Y-axis maximum value of curve 31.	32Bit-FLOAT	x	x
254 & 255	Y-axis minimum value of curve 31.	32Bit-FLOAT	x	x

Note: maximum value should bigger than minimum value.

19.4.13.6 【Sub Switch】

The【Data Block XY Scatter】【Sub Switch】page is as shown in the figure below, the meanings of each setting item are listed below:

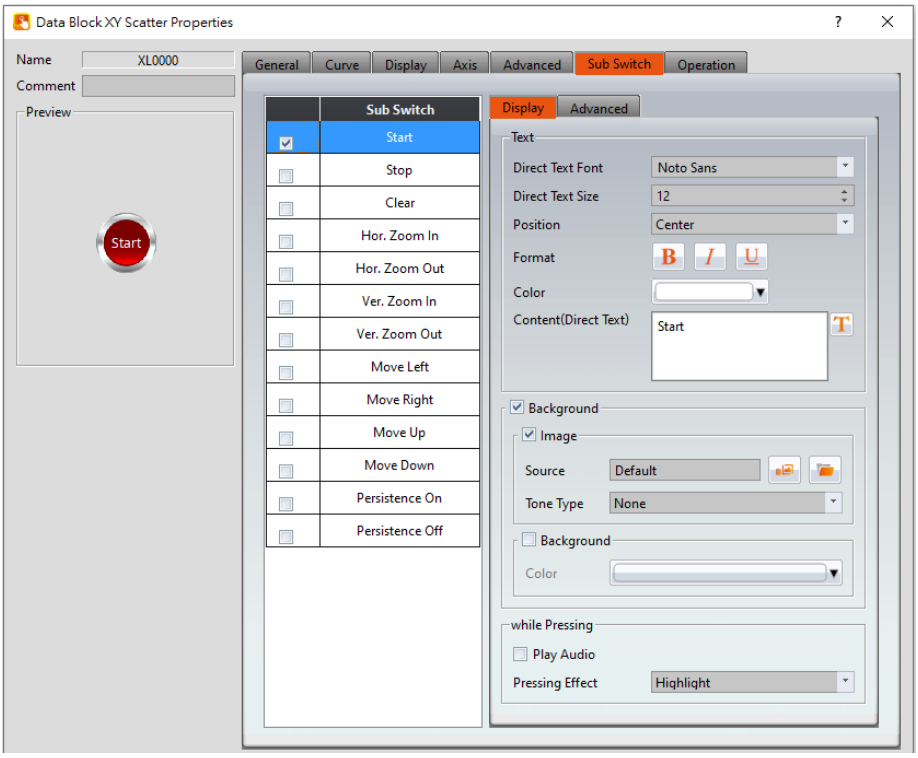


Figure 314【Sub Switch】Setting Screen of【Data Block XY Scatter】

Table 170【Sub Switch】Setting Properties of【Data Block XY Scatter】

Property	Description
【Sub Switch List】	【Sub Switch List】that can be selected for【Data Block XY Scatter】. Sub switches can be enabled after selecting them. Settings for the appearance of the selected sub switches will also appear on the right. When different sub switches are selected from the list, the appearance settings to the right will be updated according to the sub switches selected. In which the【Sub Switches】are divided into: ➢ 【Start】—Start updating curve. ➢ 【Stop】—Stop updating curve. ➢ 【Clear】—Clear curve. ➢ 【Hor. Zoom In】—Horizontal zoom in. ➢ 【Hor. Zoom Out】—Horizontal zoom out. ➢ 【Ver. Zoom In】—Vertical zoom in. ➢ 【Ver. Zoom Out】—Vertical zoom out. ➢ 【Move Left】—Move Left.

	➢ 【Move Right】—Move Right. ➢ 【Move Up】—Move Up. ➢ 【Persistence On】-Preserve old curves ON; used for comparing curves. The color of old curves will be darker than the original ones. ➢ 【Persistence Off】-Preserve old curves OFF; clears all old curves.
【Display】【Text】	【Direct Text Font】 Set the text font of the sub switch currently selected. 【Direct Text Size】 Set the text size of the sub switch currently selected. 【Position】 Set the text position of the sub switch currently selected. 【Format】 Set the text format of the sub switch currently selected, including Bold, Italics and Underline. 【Color】 Set the text color of the sub switch currently selected. 【Content(Direct Text)】 Set the text of the sub switch currently selected.
【Display】 **【Background】**	Set the background of the sub switch currently selected. Check it to activate background settings, and the displayed background of the sub switch currently selected can be edited below. If this option is not checked, the background will be transparent. 【Use Image】 Set to use an image for the displayed background of the sub switch currently selected. When this option is checked, image selection settings will appear asking the user to select an image either from the【Image Library】or from a file. 【Background Color】 Set the background color of the sub switch currently selected. This setting will appear if 【Use Image】was not selected.

【Display】【while Pressing】	【Play Audio】 Select to play audio when the sub switch is pressed. An 【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the 【Audio Selector】can be pressed to play the audio selected. 【Pressing Effect】 Set the pressing effect of the sub switch currently selected. There are two effects available for selection:【None】and 【Highlight】.
【Advanced】【Operation Control】	Operation control of sub switch, it can enabled by bit or security. 【Enable by Bit】 Check whether the sub switch operation is controlled by a bit 【Show Disabled Sign】 Check if you want to display the forbidden symbol, it's valid when check【Enable by Bit】,【Enabled by Word】or 【Enable by Security】. 【Address】 Set the address of the sub switch operation control bit. 【State】 Set the control bit as 1 or 0 to operate object. 【Enabled by Word】 Check whether the operation is controlled by word. 【Address】 Set the operation control word address. 【Condition】 Set the condition of word control and when it is true then the object can be controlled, when false not the object can not be controlled. The condition include' =',' !=', '>', '<', '>=', '<='.

	【Enable by Security】 Select the sub switch whether controlled by user level. 【User Level Condition】 Set the level and condition of the object. 【Hold Time】 Check whether the operation is controlled by hold time. Hold time can be divided into two kinds: ➢ 【Press On】: press directly, according to the【Min. Hold Time】to confirm whether the operation is executed. ➢ 【Double Press】: quickly double press to confirm whether the operation is executed. 【Operator Confirm】 Check whether show comfirmation message window after checking the operation. 【Max. Waiting Time】 When the confirmation message window is displayed, If the user does not reply within this time, the system will close the confirmation message window and cancel this operation

19.4.14 【Multistate Switch】

【Multistate Switch】can write the numeric value corresponding to the set state into specific registers. The state can be changed by pressing the Multistate Switch and the numeric value written into the register will also change accordingly.

19.4.14.1 【Setting】

The【Multistate Switch】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

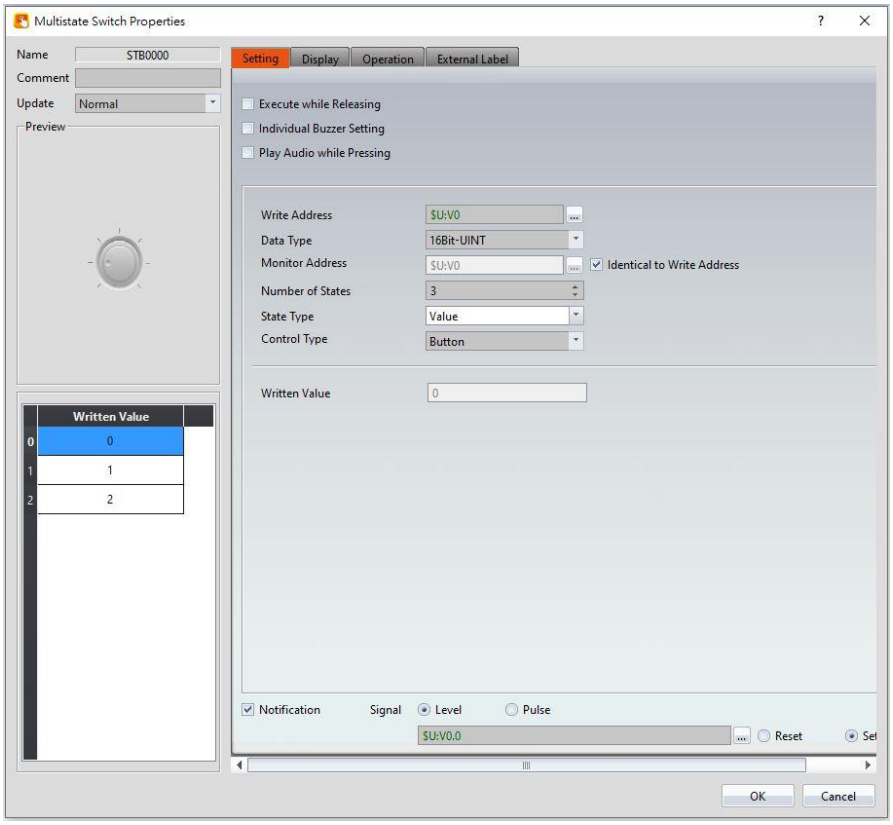


Figure 315【Setting】Screen of【Multistate Switch】

Table 171【Setting】Properties of【Multistate Switch】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Update】	Provide user can select a suitable speed to get the latest data under different situation, such as you would like to get the latest data or adjust the object on the screen to display first, etc. Provide three modes: 【once】: update once only when switch to this page or use the system tag 【OP_UPDATE_SCREEN_OBJECTS】, update once when trigger once a time, it will keep update if the monitor address is internal address. 【normal】: normal update speed. 【fast】: the fastest update speed.

【Execute while Releasing】	Select to execute the action set for the Multistate Switch while releasing. The action will be executing immediately when the Step Switch is pressed if this option is not selected.
【Individual Buzzer Setting】	Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short.
【Play Audio while Pressing】	Select to play audio when the Multistate Switch is pressed. An【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio Selector】can be pressed to play the audio selected.
【Write Address】	Set the operating address of the Multistate Switch.
【Data Type】	Set the Data Type of the Multistate Switch.
【Number of States】	Set the number of states of the Multistate Switch; the maximum number of states is 256.
【State Type】	Set the State Type of the Multistate Switch. The【Written Value】cannot be edited and numeric values identical to each state number will be automatically filled out if【Value】is selected. For example, the【Written Value】will be 0 of the state is 0. Users can switch between states from the list on the left and customize the numeric value corresponding to each state from【Written Value】if【Custom】is selected.
【Control Type】	Support 2 types to control: Button and List.
【Written Value】	Sets the numeric value to write for each state when the Multistate Switch is pressed.
【Notification】	Set to allow the notification function for the Multistate Switch. Related settings will appear if this option is selected, allowing setting of bit and value for notification.

19.4.14.2 【Display】

The【Multistate Switch】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

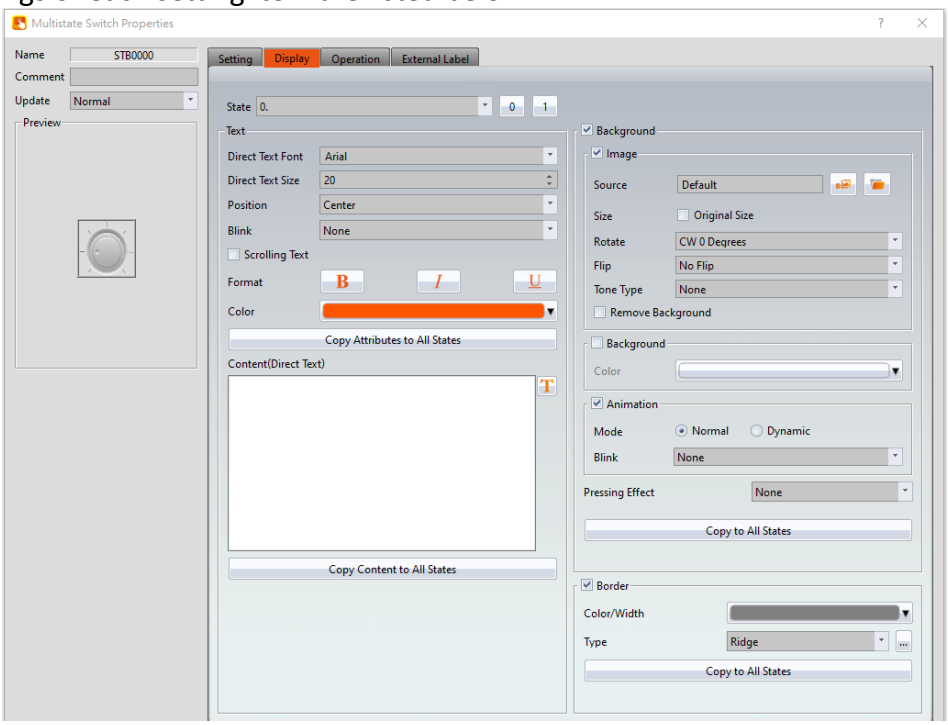


Figure 316【Display】Setting Screen of【Multistate Switch】

Table 172【Display】Setting Properties of【Multistate Switch】

Property	Description
【State】	Switch to the state currently editing. 0 and 1 buttons are provided to enable quick switching between states 0 and 1.
【Text】	【Direct Text Font】 Set the font of the text for the current editing state. 【Direct Text Size】 Set the size of the text for the current editing state. 【Position】 Set the position of the text for the current editing state. 【Blink】 Set the blinking function for the text of the current editing state. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Scrolling Text】 Set the scrolling text function for the text of the current

	editing state. There are four scrolling speeds available to choose from slow to fast. 【Format】 Set the format of the text for the current editing state, including Bold, Italics and Underline. 【Color】 Set the color of the text for the current editing state. 【Copy Attributes to All States】 The text properties for the current editing state is applied to all states. 【Content (Direct Text)】 Set the text of the current editing state. It can be inputted directly or acquired from the【Text Library】. 【Copy Content to All States】 Apply the settings of the text for the current editing state to all states.
【Background】	【Background】 Check whether to enable background 【Image】 Check whether to use image 【Source】 Set whether to use an image for the displayed background of the current editing state. When this option is checked, an【Image Selector】will appear asking the user to select an image either from the【Image Library】or from【File】. 【Size】 After setting, the original size of the picture can be displayed, and the【Position】option will appear to allow the user to select the area to be displayed. 【Rotate】 Set image rotation angle

	【Flip】 Set the flip direction of the image, includes No Flip, X-Axis and Y-Axis. 【Tone Type】 You can choose the tone type you want to change. After selecting the type, you can choose the color from【Tone Color】. 【Remove Background】 You can set the color to be transparent by【Choose Color】. 【Background】 Check whether to enable the background. After checking, you can set the background color displayed in the current editing state from【Color】. 【Animation】 Check whether to enable animated effects. 【Mode】Choose whether to use static or dynamic control elements to flicker. 【Blink】Select the blinking mode, and use the numerical value to switch during dynamic control. 【Pressing Effect】 Set the pressing effect of the current editing state. There are two effects available for selection: None and Highlight. 【Copy to All States】 Apply the settings of the background for the currently editing state to all states.
【Border】	Set the object border. 【Color/Width】 Set the color and width of the border. 【Type】 Set the type of the border.

	【Copy to All States】 Apply the settings of the border for the current editing state to all states.

19.4.14.3 【External Lable】

The【Multistate Switch】【External Lable】page is as shown in the figure below, the meanings of each setting item are listed below:

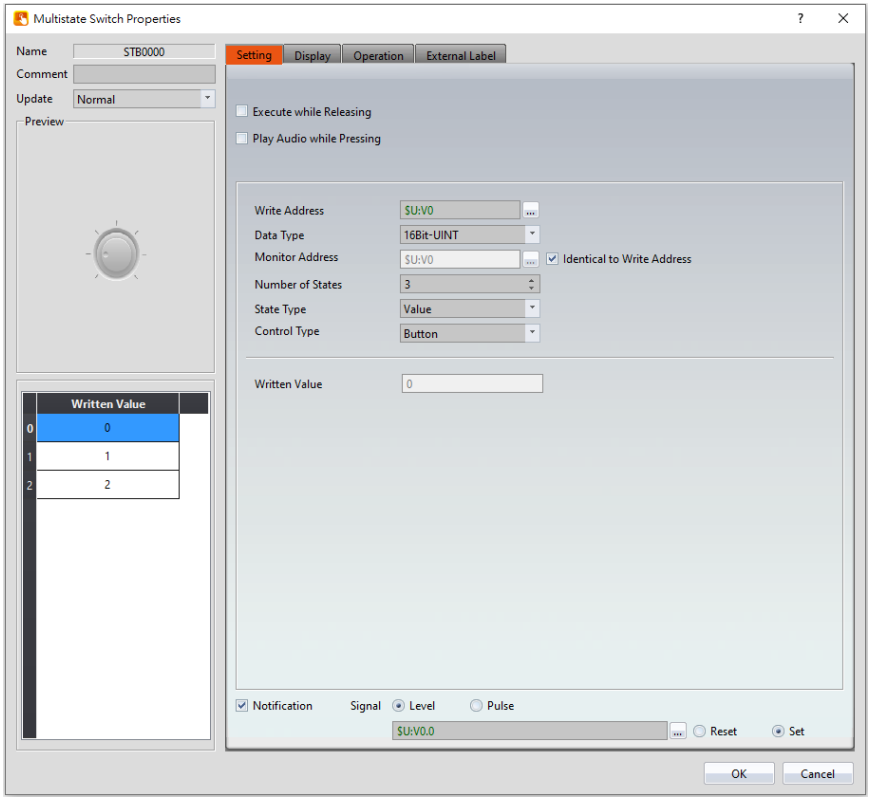


Figure 317【External Lable】Setting Screen of【Multistate Switch】

Table 173【Multistate Switch】【External Lable】setting properties

Option	Description
【Enable External Lable】	Checked, the bottom will appear the external lable settings of the object.
【Direction】	Set the display direction, there are horizontal and vertical two selections.
【Space】	Set the space between external lable and the object.
【Left/Top Lable(Direct Text)】	Fill in the text to be displayed on the left / top lable of the object, can be directly input or selected from【Font Library】.

【Right/Bottom Lable(Direct Text)】	Fill in the text to be displayed on the right / bottom lable of the object, can be directly input or selected from 【Font Library】.
【Text】	【Direct Text Font】 Set the font of text. 【Direct Text Size】 Set the size of text, the default size is 20. 【Alignment】 Set the alignment of text. 【Color】 Set the color of text. 【Format】 Set the format of text, includes Bold, Italic and Underline. 【Word Spacing】 Set the word space of text. 【Margin】 Set the margin of text.
【Background】	Check whether to display background, set the color and opacity of background after checked. 【Color】 Set the background color of external lable. 【Opacity】 Set the opacity of external lable background, the greater the value the more the background opacity is.
【Border】	Check whether to display border. 【Color/Width】 Set the color and width of border. 【Type】 Set the type of border.

19.4.15 【Slide Switch】

【Slide Switch】allows users to write the numeric value corresponding to the final position of the slider into the set register by dragging.

19.4.15.1 【Setting】

The【Slide Switch】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

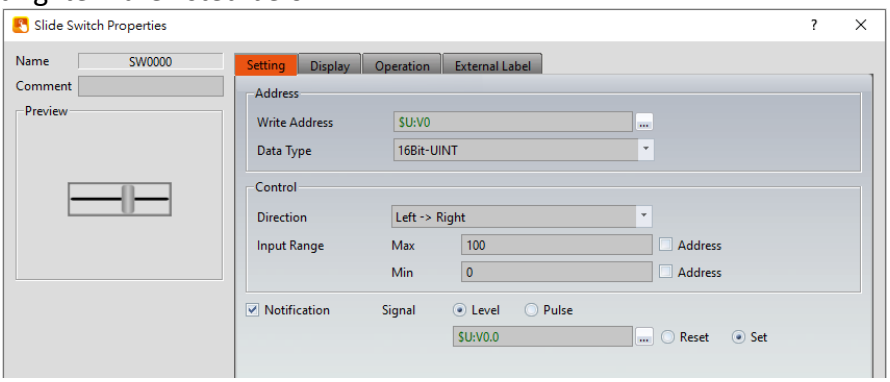


Figure 318【Setting】Screen of【Slide Switch】

Table 174【Setting】Properties of【Slide Switch】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Address】	【Write Address】 Set the register address to write the numeric value when the user operates the Slide Switch. 【Data Type】 Set the Data Type of the Slide Switch Write Address.
【Control】	【Direction】 Set the moving direction of the Slide Switch, including left to right, right to left, top to bottom, bottom to top. 【Input Range】 Set the【Max】and【Min】numeric values for the Slide Switch to write. The【Address】

	below can be used to set the source address for reading the maximum value or minimum value by【Data Type】.
【Notification】	Set to allow the notification function for the Slide Switch. Related settings will appear if this option is selected, allowing setting of a register for notification, includes reset and set.

19.4.15.2 【Display】

The【Slide Switch】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

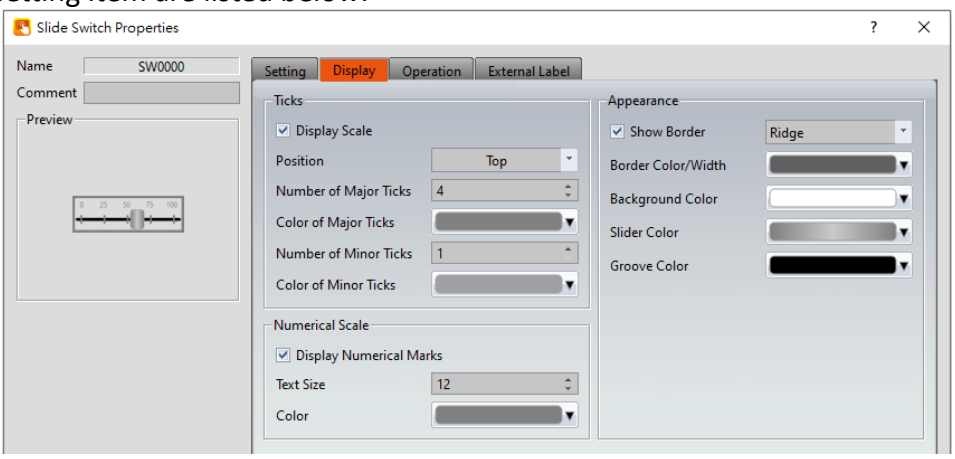


Figure 319【Display】Setting Screen of【Slide Switch】

Table 175【Display】Setting Properties of【Slide Switch】

Property	Description
【Ticks】	【Display Scale】 Set whether to display the scale of the Slide Switch. 【Position】 Set the position to display the scale for the Slide Switch. 【Number of Major Ticks】 Set the number of major ticks for the Slide Switch. 【Color of Major Ticks】 Set the color of the major ticks for the Slide Switch. 【Number of Minor Ticks】

	Set the amount of minor ticks for the Slide Switch. 【Color of Minor Ticks】 Set the displayed color of the minor ticks for the Slide Switch.
【Numerical Scale】	【Display Numerical Marks】 Set to display the numerical marks for the Slide Switch. 【Color】 Set the color for the numerical marks on the Slide Switch.
【Appearance】	【Border Type】 Set the border type of the Slide Switch. 【Border Color/Width】 Set the border color and border thickness of the Slide Switch. 【Background Color】 Set the background color of the Slide Switch. 【Slider Color】 Set the slider color of the Slide Switch. 【Groove Color】 Set the groove color of the Slide Switch.

19.4.15.3 【External Lable】

The【Slide Switch】【External Lable】page is as shown in the figure below, the meanings of each setting item are listed below:

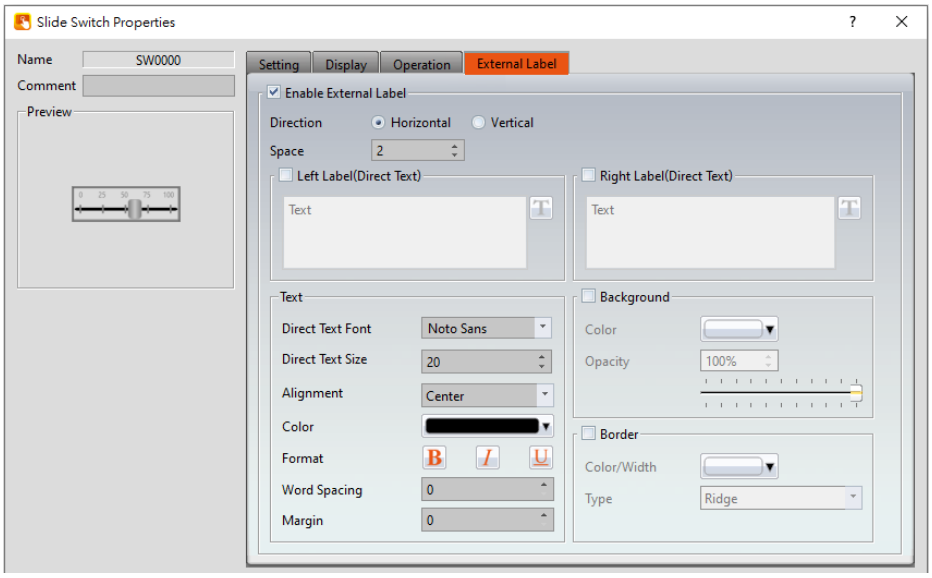


Figure 320【External Lable】Setting Screen of【Slide Switch】

Table 176【Slide Switch】【External Lable】setting properties

Option	Description
【Enable External Lable】	Checked, the bottom will appear the external lable settings of the object.
【Direction】	Set the display direction, there are horizontal and vertical two selections.
【Space】	Set the space between external lable and the object.
【Left/Top Lable(Direct Text)】	Fill in the text to be displayed on the left / top lable of the object, can be directly input or selected from【Font Library】.
【Right/Bottom Lable(Direct Text)】	Fill in the text to be displayed on the right / bottom lable of the object, can be directly input or selected from【Font Library】.
【Text】	【Direct Text Font】 Set the font of text. 【Direct Text Size】 Set the size of text, the default size is 20. 【Alignment】 Set the alignment of text. 【Color】 Set the color of text.

	【Format】 Set the format of text, includes Bold, Italic and Underline. 【Word Spacing】 Set the word space of text. 【Margin】 Set the margin of text.
【Background】	Check whether to display background, set the color and opacity of background after checked. 【Color】 Set the background color of external lable. 【Opacity】 Set the opacity of external lable background, the greater the value the more the background opacity is.
【Border】	Check whether to display border. 【Color/Width】 Set the color and width of border. 【Type】 Set the type of border.

19.4.16 【Selector List】

【Selector List】allows users to display multiple switches using a pull-down menu so that related switches can be organized into a single list, making it convenient for the operators to select the switches needed.

19.4.16.1 【Setting】

The【Selector List】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

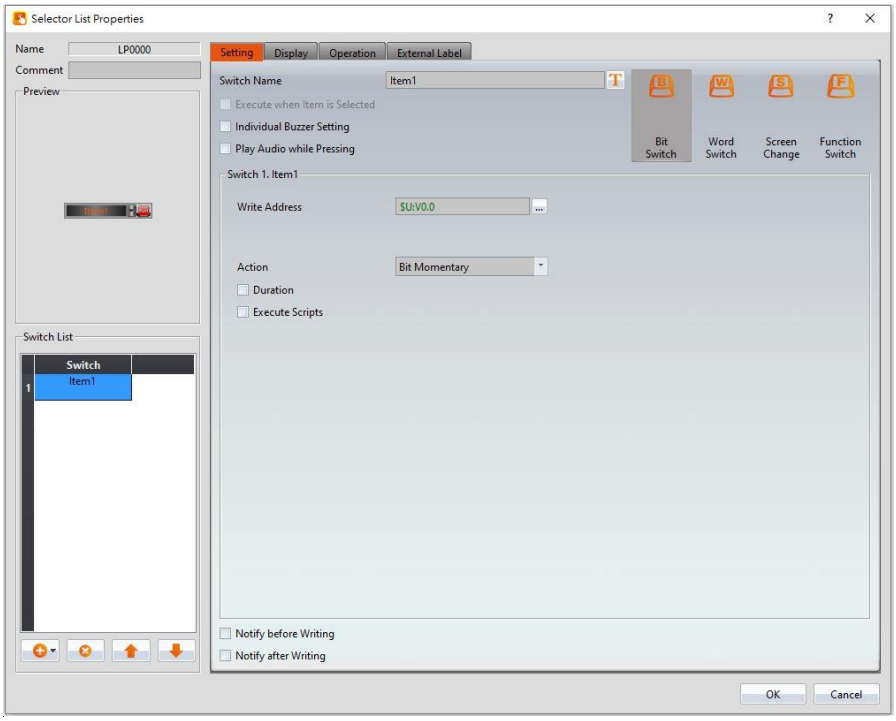


Figure 321【Setting】Screen of【Selector List】

Table 177【Setting】Properties of【Selector List】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Switch Name】	Set the name of the switch currently selected. Users can change the currently selected switch from the【Switch List】.
【Play Audio while Pressing】	Select to play audio when the Step Switch is pressed. An【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio Selector】can be pressed to play the audio selected.
【Execute when Item is Selected】	Select whether to enable the【Execute when Item is Selected】function. When it is enabled, the function of a switch will be executed immediately when the user selected a switch from the Selector List

	object. If it is not enabled, the function of the selected switch will only be executed after the user pressed the【Execute】button. When the Switch using【Bit Momentary】action of【Bit Switch】in the【Switch List】, or the【Continuously Add】/【Continuously Subtract】of【Add Data】action /【Subtract Data】 action in the【Word Switch】,【Execute When this Item is Selected】the option will not be able to check.
【Individual Buzzer Setting】	Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short.
【Bit Switch】	Change the currently editing switch type to【Bit Switch】,for the related property settings please refer to the description of the switch.
【Word Switch】	Change the currently editing switch type to【Word Switch】,for the related property settings please refer to the description of the switch..
【Change Screen】	Change the currently editing switch type to【Change Screen】,for the related property settings please refer to the description of the switch..
【Function Switch】	Change the currently editing switch type to【Function Switch】,for the related property settings please refer to the description of the switch..
【Notification】	Set whether to allow the notification function. Related setting items will appear if this option is selected, allowing setting of bit and value for notification.
【Switch List】	Display the switch list currently included in the Selector List item object. 【Add】 Increase the number of switches in the【Switch List】; the type of switch to add

	can be selected. 【Delete】 Delete the switch currently selected in the【Switch List】. 【Up】 Move the order of the switch currently selected in the【Switch List】up. 【Down】 Move the order of the switch currently selected in the【Switch List】down.
【Notify before Writing】	The signal will notify before writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】.
【Notify after Writing】	The signal will notify after writing. Level: Set the bit as 0 or 1. Pulse: Set the bit to 1 and automatically restore to 0 after continuing the time set by【Width】.

Note: When all members of the selector list are【Word Switches】, the action set to【Write Data】, and the【Data Types】are the same, if the address is changed through the list, the constant change will show up in the monitoring object. If the address is changed through an outside object, the item in the list will change accordingly. This does not apply if the【Data Type】is 32Bit-Float.

Example: There are three【Word Switches】in the【Selector List】. The actions are all set to【Write Data】and the【Data Types】are the same. All three switches also control the same register: R100. Item1 is set write 1 into the address, Item2 is set write 2 into the address, and Item3 is set to write 3 into the address. If R100 has 2 written into it, the item shown in the selector list will be item 2.

19.4.16.2 【Display】

The【Selector List】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

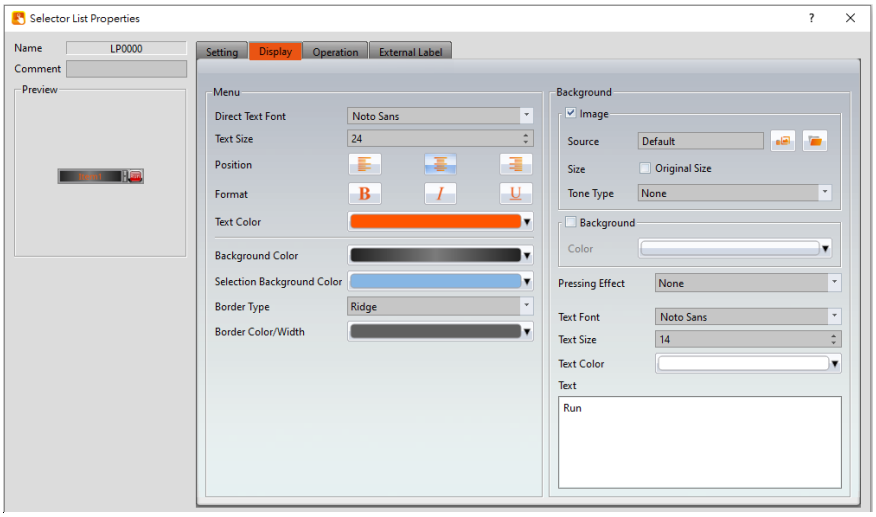


Figure 322【Display】Setting Screen of【Selector List】

Table 178【Display】Setting Properties of【Selector List】

Property	Description
【Menu】	【Direct Text Font】 Set the font of the text displayed for the Selector List. 【Size】 Set the size of the text displayed for the Selector List. 【Position】 Set the position of the text displayed for the Selector List. 【Format】 Set the format of the text displayed for the Selector List, including Bold, Italics and Underline. 【Color】 Set the color of the text displayed for the Selector List. 【Background Color】 Set the displayed background color of the Selector List. 【Selection Background Color】 Set the displayed background color of the selected item in Selector List. 【Border Type】 Set the displayed border type of the Selector List.

	【Border Color/Width】 Set the displayed border color and border thickness of the Selector List.
【Background】	【Image】 Check whether to use image 【Source】 Set whether to use an image for the displayed background of the current editing state. When this option is checked, an 【Image Selector】 will appear asking the user to select an image either from the 【Image Library】 or from 【File】. 【Size】 After setting, the original size of the picture can be displayed, and the 【Position】 option will appear to allow the user to select the area to be displayed. 【Tone Type】 You can choose the tone type you want to change. After selecting the type, you can choose the color from 【Tone Color】. 【Background】 Check whether to enable background 【Pressing Effect】 Set the pressing effect of the current editing state. There are two effects available for selection: None and Highlight. 【Text Font】 Set the text font displayed on the item menu button. 【Text Size】 Set the text size displayed on the item menu button. 【Text Color】 Set the text color displayed on the item menu button. 【Text】

	Set the text displayed on the item menu button.

19.4.16.3 【External Lable】

The【Selector List】【External Lable】page is as shown in the figure below, the meanings of each setting item are listed below:

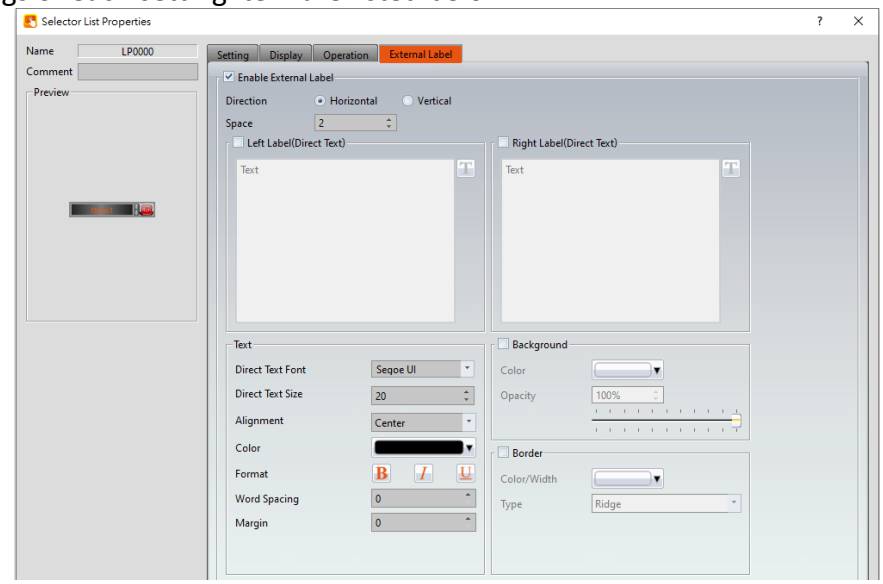


Figure 323【External Lable】Setting Screen of【Selector List】

Table 179【Selector List】【External Lable】setting properties

Option	Description
【Enable External Lable】	Checked, the bottom will appear the external lable settings of the object.
【Direction】	Set the display direction, there are horizontal and vertical two selections.
【Space】	Set the space between external lable and the object.
【Left/Top Lable(Direct Text)】	Fill in the text to be displayed on the left / top lable of the object, can be directly input or selected from【Font Library】.
【Right/Bottom Lable(Direct Text)】	Fill in the text to be displayed on the right / bottom lable of the object, can be directly input or selected from【Font Library】.
【Text】	【Direct Text Font】 Set the font of text. 【Direct Text Size】 Set the size of text, the default size is 20.

	【Alignment】 Set the alignment of text. 【Color】 Set the color of text. 【Format】 Set the format of text, includes Bold, Italic and Underline. 【Word Spacing】 Set the word space of text. 【Margin】 Set the margin of text.
【Background】	Check whether to display background, set the color and opacity of background after checked. 【Color】 Set the background color of external lable. 【Opacity】 Set the opacity of external lable background, the greater the value the more the background opacity is.
【Border】	Check whether to display border. 【Color/Width】 Set the color and width of border. 【Type】 Set the type of border.

19.4.17 【Radio Button】

【Radio Button】includes multiple buttons and status,in this group button, only one of the state objects can be operated at a time, write the data to the corresponding value or corresponding bit of the PLC, and at the same time only one state will be on, for operator easy to use.

19.4.17.1 【Setting】

【Radio Button】【Setting】paging shown as below, each of the setting meaning as follow:

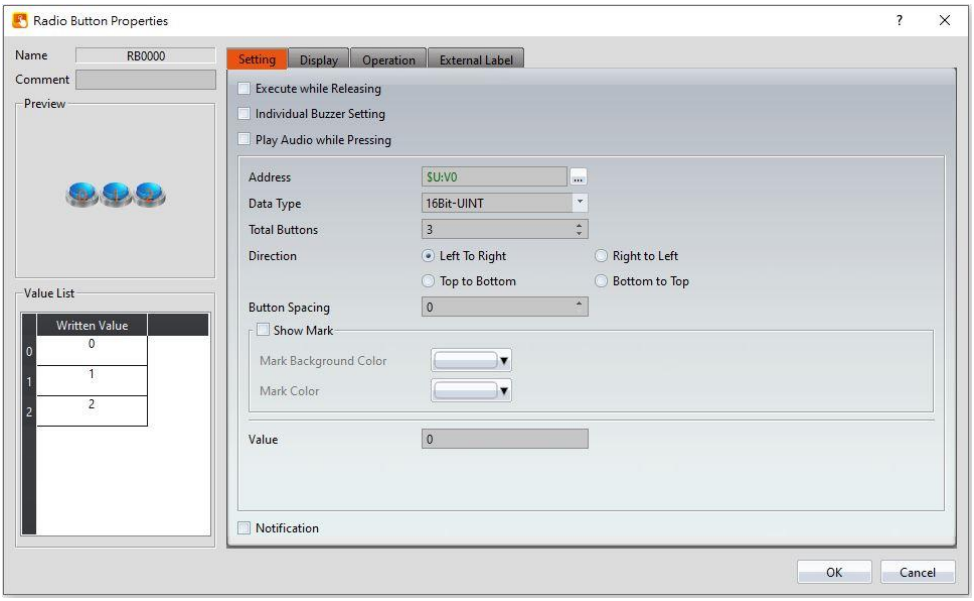


Figure 324【Radio Button】【Setting】setting paging

Table 180【Radio Button】【Setting】setting properties

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Excute while Releasing】	Select to execute the action set for the radio button while releasing. The action will be executed immediately when the switch is pressed if this option is not selected.
【Individual Buzzer Setting】	Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short.
【Play Audio while Pressing】	Select to play audio when the switch is pressed. An【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio Selector】can be pressed to play the selected audio.
【Address】	Set the operate address of the radio button.
【Data Type】	Set the data type of the radio button, including 16Bit-BCD、16Bit-INT、16Bit-UINT、32Bit-BCD、32Bit-

	INT、32Bit-UINT and 32Bit-FLOAT, etc.
【Total Buttons】	Set the numbers of total buttons.
【Direction】	Set the direction of the radio button, including right to left, left to right, top to bottom, bottom to top.
【Button Spacing】	Set button spacing of each button.
【Show Mark】	Set whether mark the radio button. 【Mark Backgroung Color】 Set the background color that the radio button mark to display. 【Mark Color】 Set the color that radio button mark to display.
【Value】	Set each button write the vaiue to the【Address】.
【Notification】	Set whether permit radio button to enable notification function. After enable, can set the notification address and the value that want to write in while excute the radio button
【Value List】	Display Each button in the radio button group corresponds to the value written to【Address】, while【Total Buttons】increase or decrease,【Value List】will also changed.

19.4.17.2 【Display】

【Radio Button】【Display】paging shown as below, each of the setting meaning as follow:

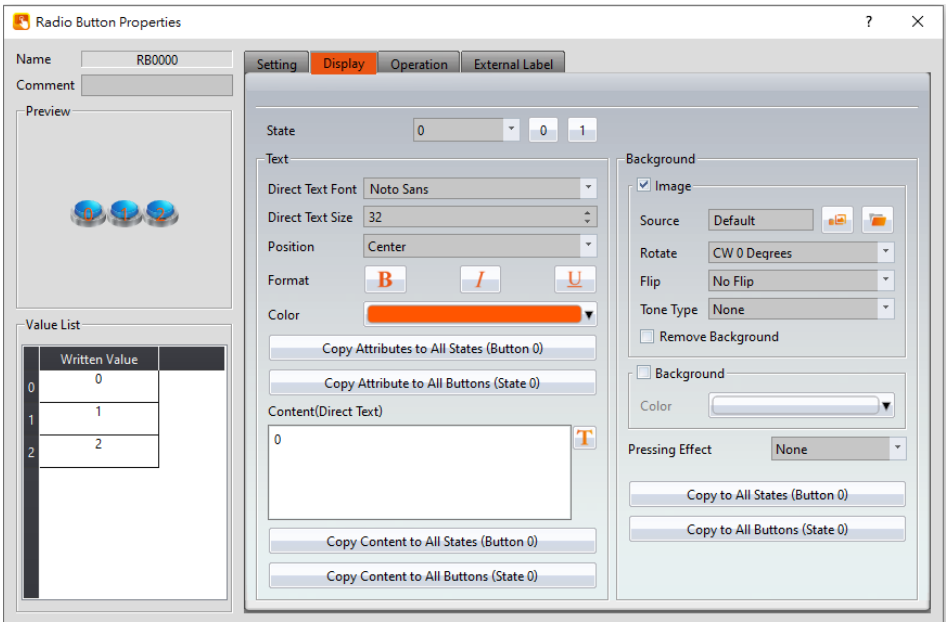


Figure 325【Radio Button】【Display】setting paging

Table 181【Radio Button】【Display】setting properties

Property	Description
【State】	Select the state needed to be edited. 0 and 1 buttons are provided to enable quick switching between states 0 and 1.
【Text】	【Direct Text Font】 Set the font of the radio button. 【Direct Text Size】 Set the size of the radio button. 【Position】 Set the position of the radio button. 【Format】 Set the format of the radio button, including bold, italic, underline 【Color】 Set the color of the radio button. 【Copy Attributes to All States (Button)】 Applies the text attribute setting of the current edit state to all states 【Copy Attributes to All Buttons (State)】

	Apply the text attribute settings for the current edit state to all buttons 【Content】 Set the text displayed of the current edit status, either directly or by the【Text Library】. 【Copy Content to All States (Button)】 Applies the text settings of the current edit state to all states. 【Copy Content to All Buttons (State)】 Applies the text settings of the current edit state to all buttons.
【Background】	【Image】 Check whether to use image 【Source】 Set whether to use an image for the displayed background of the current editing state. When this option is checked, an【Image Selector】will appear asking the user to select an image either from the【Image Library】or from【File】. 【Rotate】 Set image rotation angle 【Flip】 Set the flip direction of the image, includes No Flip, X-Axis and Y-Axis. 【Tone Type】 You can choose the tone type you want to change. After selecting the type, you can choose the color from【Tone Color】. 【Remove Background】 You can set the color to be transparent by【Choose Color】.

	【Background】 Check whether to enable the background. After checking, you can set the background color displayed in the current editing state from【Color】. 【Pressing Effect】 Set the pressing effect of the current editing state. There are two effects available for selection: None and Highlight. 【Copy to All States (Button n)】 Apply the settings of the background for the currently editing state to all buttons. 【Copy to All States (State n)】 Apply the settings of the background for the currently editing state to all states.

19.4.17.3 【External Lable】

The【Radio Button】【External Lable】page is as shown in the figure below, the meanings of each setting item are listed below:

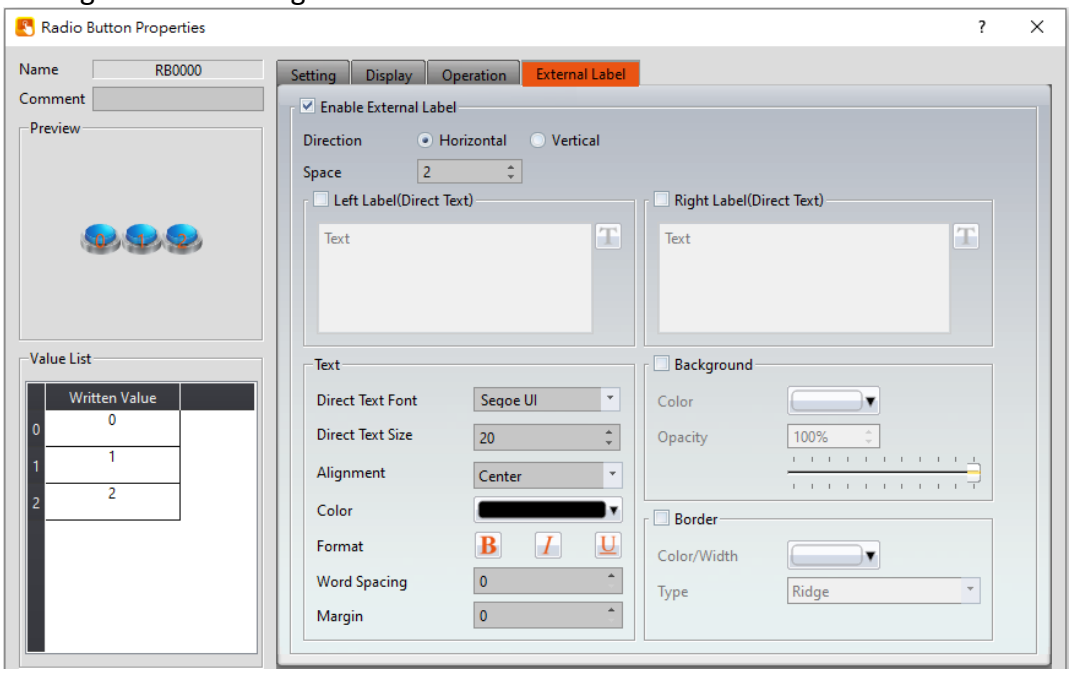


Figure 326【Radio Button】【External Lable】setting paging

Table 182【Radio Button】【External Lable】setting properties

Option	Description

【Enable External Lable】	Checked, the bottom will appear the external lable settings of the object.
【Direction】	Set the display direction, there are horizontal and vertical two selections.
【Space】	Set the space between external lable and the object.
【Left/Top Lable(Direct Text)】	Fill in the text to be displayed on the left / top lable of the object, can be directly input or selected from【Font Library】.
【Right/Bottom Lable(Direct Text)】	Fill in the text to be displayed on the right / bottom lable of the object, can be directly input or selected from【Font Library】.
【Text】	【Direct Text Font】 Set the font of text. 【Direct Text Size】 Set the size of text, the default size is 20. 【Alignment】 Set the alignment of text. 【Color】 Set the color of text. 【Format】 Set the format of text, includes Bold, Italic and Underline. 【Word Spacing】 Set the word space of text. 【Margin】 Set the margin of text.
【Background】	Check whether to display background, set the color and opacity of background after checked. 【Color】 Set the background color of external lable. 【Opacity】 Set the opacity of external lable background, the greater the value the more the background opacity is.

【Border】	Check whether to display border. 【Color/Width】 Set the color and width of border. 【Type】 Set the type of border.

19.4.18 【Input Display】

【Input Display】is used on a【Base Screen】/【Window Screen】/【Keypad Screen】; it can display the numeric value or text currently entered with the keypad.

The【Input Display】property settings dialog is as shown in the figure below, the meanings of each setting option are listed below:

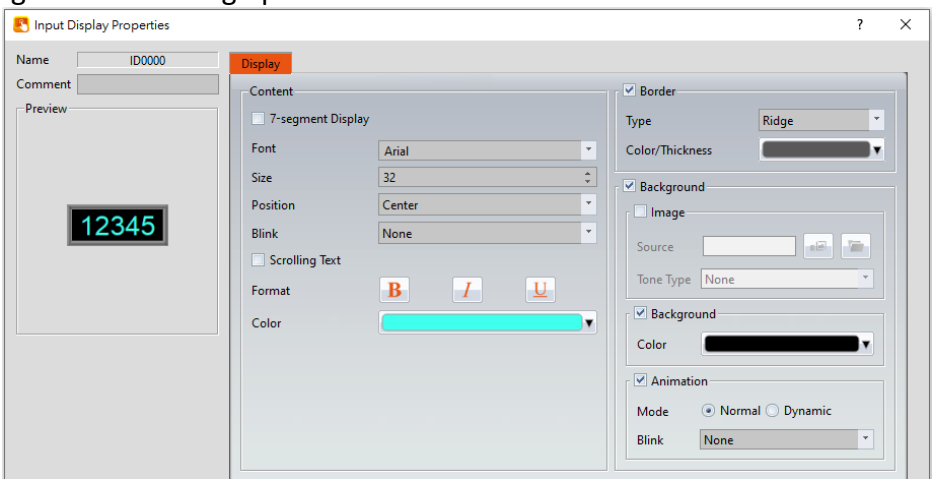


Figure 327 Setting Dialog of【Input Display】

Table 183 Setting Properties of【Input Display】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Content】	【7-segment Display】 Set to use the 7-segment display function for the Input Display object. If this option is selected, related setting items for setting of style of the 7-segment display will appear. **Note: while this option is selected, it can only show part of text (0/O, 1, 2, 3, 4, 5/S, 6, 7, 8, 9/g, A, B, C, D, E, F, h, H, L, o, P, r, u, U, Y).**

	【Font】 Set the font for the text of Input Display. 【Size】 Set the size for the text of Input Display. 【Position】 Set the position for the text of Input/Display. 【Blink】 Set the blinking function for the text of the Input/Display. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Scrolling Text】 Set the scrolling text function for the text of the Input/Display. There are four scrolling speeds available to choose from slow to fast. 【Format】 Set the format of the text for the Input/Display, including Bold, Italics and Underline. 【Color】 Set the color for the text of the Input/Display.
【Border】	【Type】 Set the border types for Input Display. 【Color/Thickness】 Set the color and thickness for the border of the Input/Display.
【Background】	【Image】 Check whether to use image 【Source】 Set whether to use an image for the displayed background of the current editing state. When this option is checked, an 【Image Selector】 will appear asking the user to select an image either from the 【Image Library】 or from 【File】.

	【Tone Type】 You can choose the tone type you want to change. After selecting the type, you can choose the color from【Tone Color】. 【Background】 Check whether to enable the background. After checking, you can set the background color displayed in the current editing state from【Color】. 【Animation】 Check whether to enable animated effects. 【Mode】Choose whether to use static or dynamic control elements to flicker. 【Blink】Select the blinking mode, and use the numerical value to switch during dynamic control.

19.4.19 【Key】

Key is used on a【Base Screen】/【Window Screen】/【Keypad Screen】. It can provide the functions for the keypad needed for inputting numeric value or text. The 9 functions include【Text】,【ENT】,【CLR】,【BS】,【DEL】,【LEFT】,【RIGHT】,【Caps Lock】and【CANCEL】.

19.4.19.1 【Setting】

The【Key】【Setting】 page is as shown in the figure below, the meanings of each setting item are listed below:

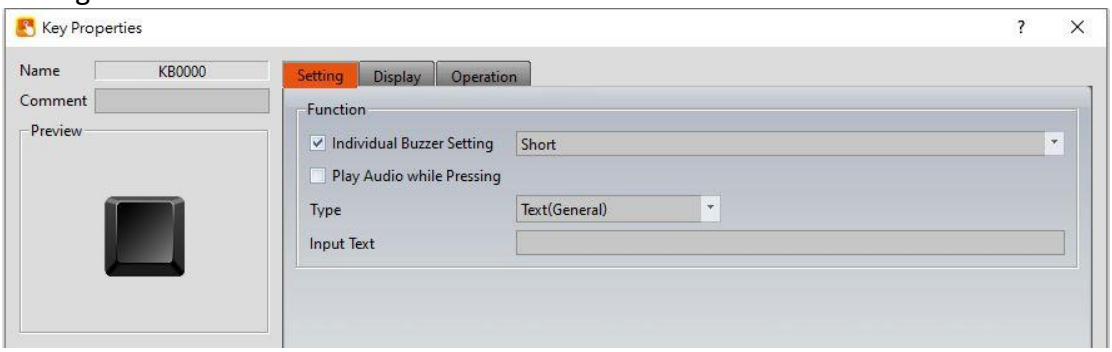


Figure 328【Setting】Screen of【Key】

Table 184【Setting】Properties of【Key】

Property	Description

【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Function】	Set the function type of the key. 【Individual Buzzer Setting】 Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short. 【Play Audio while Pressing】 Select to play audio when the Key is pressed. An【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio Selector】can be pressed to play the audio selected. 【Text(General)】 Text input, when the user presses it, the planned characters will be displayed on the【Input Display】. 【Text(Custom Letter Case)】 Text input. After selecting, you can customize the characters that can be entered when the keyboard is switched between upper and lower case. If select this option, you can set the content in【Input text (Upper case)】and【Input text (Lower case)】 【ENT】 The numeric value or text entered on the【Keypad Screen】will be submitted and the【Keypad Screen】will be closed after this key is pressed. 【CLR】 The numeric value or text entered on the【Keypad Screen】will be cleared after this key is pressed. 【BS】 A single numeric value or text prior to the position of the

	cursor will be deleted after this key is pressed. 【DEL】 A single numeric value or text after the position of the cursor will be deleted after this key is pressed. 【LEFT】 The cursor will move one space forward after the user presses this key. 【RIGHT】 The cursor will move one space backward after the user presses this key. 【Caps Lock】 The case mode of the text input will be changed after this key is pressed. 【Cancel】 The【Keypad Screen】will be closed and input will be cancelled after the user presses this key.

19.4.19.2 【Display】

The【Key】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

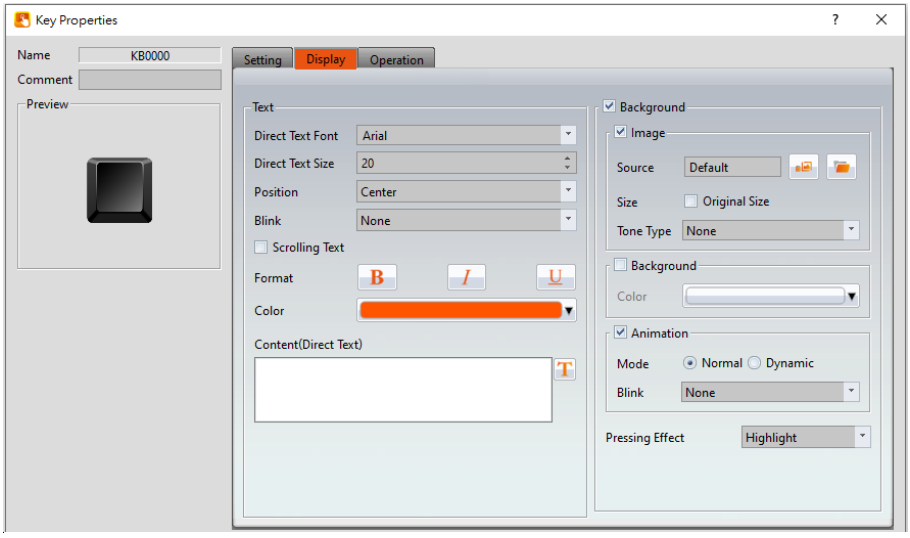


Figure 329【Display】Setting Screen of【Key】

Table 185【Display】Setting Properties of【Key】

Property	Description
【Text】	【Direct Text Font】 Set the font of the text for the key. 【Direct Text Size】 Set the size of the text for the key. 【Position】 Set the position of the text for the key. 【Blink】 Set the blinking function for the text of the key. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Scrolling Text】 Set the scrolling function for the text of the key. There are four scrolling speeds available to choose from slow to fast. 【Format】 Set the format of the text for the key, including Bold, Italics and Underline. 【Color】 Set the color of the text for the key. 【Content(Direct Text)】 Set the text of the key; it can be inputted directly or acquired from the【Text Library】.
【Background】	Background settings for the key. The background of the key can be edited below if the background setting is selected, otherwise the background will be transparent. 【Use Image】 Set to use an image for the background of the key. When this option is checked, an【Image Selector】will appear asking the user to select an image either from the【Image Library】or from a file.

	【Original Size of Image】 Display the original size of the image. 【Image Position】 Appears after checking【Original Size of Image】, you can select the position of the picture to be displayed. 【Color】 Set the background color of the key. This setting item will appear if【Use Image】was not selected. 【Blink】 Set the blinking function for the background of the key. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Animation】 Check whether to enable animated effects. 【Mode】Choose whether to use static or dynamic control elements to flicker. 【Blink】Select the blinking mode, and use the numerical value to switch during dynamic control. 【Pressing Effect】 Set the pressing effect of the key. There are two effects available for selection: None and Highlight.

19.4.20 【Limit Value Display】

【Limit Value Display】is used on a【Base Screen】/【Window Screen】/【Keypad Screen】, it can display the maximum or minimum input value allowed for the current keypad.

The【Limit Value Display】settings page is as shown in the figure below, the meanings of each setting item are listed below:

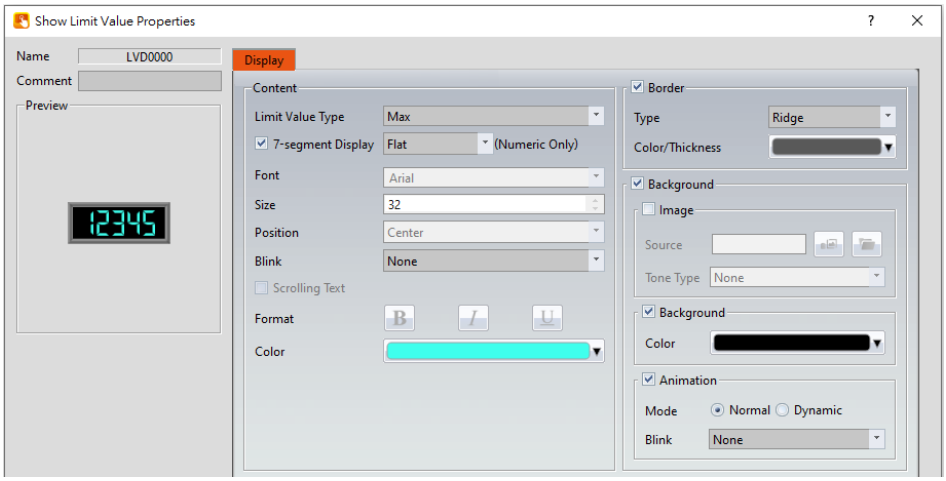


Figure 330 Setting Dialog of【Limit Value Display】

Table 186 Setting Properties of【Limit Value Display】

Property	Description
【Preview】	Previews the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Content】	【Limit Value Type】 Set to display【Max】or【Min】for Limit Value Display. 【7-segment Display】 Set to use the 7-segment display function for the Limit Value Display object. If this option is selected, related setting items for setting of style of the 7-segment display will appear, including outline, filled, flat. **Note: When using the 7-segment display function, only part of the text (0 / O, 1, 2, 3, 4, 5 / S, 6, 7, 8, 9 / g, A, B, C, D, E , F, h, H, L, o, P, r, u, U, Y) can be displayed.** 【Font】 Set the font of the text for the Limit Value Display. 【Size】 Set the size of the text for the Limit Value Display. 【Position】 Set the position of the text for the Limit Value Display.

	【Blink】 Set the blinking function for the text of the Limit Value Display. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Scrolling Text】 Set the scrolling text function for the text of the Limit Value Display. There are four scrolling speeds available to choose from slow to fast. 【Format】 Set the format of the text for the Limit Value Display, including Bold, Italics and Underline. 【Color】 Set the color of the text for the Limit Value Display.
【Border】	Border settings for the Limit Value Display. The border of the Limit Value Display can be edited below if border setting is selected, otherwise the Limit Value Display will be displayed with no border. 【Type】 Set the border types for the Limit Value Display. 【Color/Thickness】 Set the color and thickness for the border of the Limit Value Display.
【Background】	Background settings for the Limit Value Display. The background of the Limit Value Display can be edited below if background setting is selected, otherwise the background will be transparent. 【Use Image】 Set to use an image for the background of Limit Value Display. When this option is checked, an【Image Selector】will appear asking the user to select an image either from the【Image Library】or from a file. 【Color】 Set the background color of the Limit Value Display. This setting item will appear if 【Use Image】 was not selected.

	【Blink】 Set the blinking function for the background of the Limit Value Display. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Animation】 Check whether to enable animated effects. 【Mode】Choose whether to use static or dynamic control elements to flicker. 【Blink】Select the blinking mode, and use the numerical value to switch during dynamic control.

19.4.21 【Animated Graphic】

【Animated Graphic】can control multiple states. The state, position and size displayed by【Animated Graphic】can be changed by setting specific control addresses in order to achieve effects such as moving objects, zooming in, zooming out etc.

19.4.21.1 【Setting】

The【Animated Graphic】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

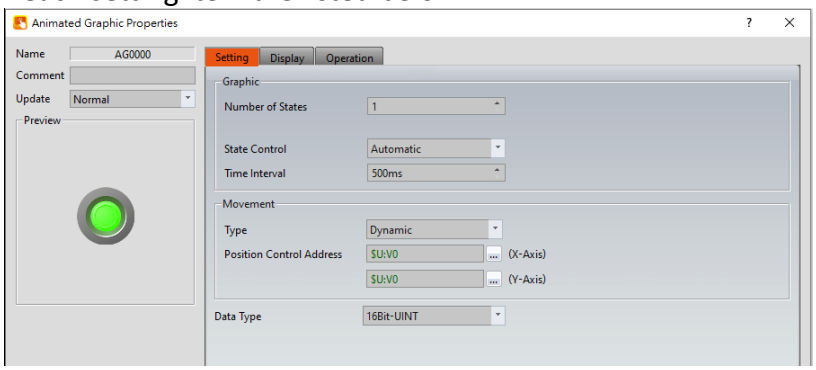


Figure 331【Setting】Screen of【Animated Graphic】

Table 187【Setting】Properties of【Animated Graphic】

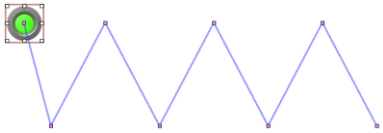
Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Update】	Provide user can select a suitable speed to get the latest data

	under different situation, such as you would like to get the latest data or adjust the object on the screen to display first, etc. Provide three modes: 【once】: update once only when switch to this page or use the system tag【OP_UPDATE_SCREEN_OBJECTS】, update once when trigger once a time, it will keep update if the monitor address is internal address. 【normal】: normal update speed. 【fast】: the fastest update speed.
【Graphic】	【Number of States】 Set the number of states for the animated graphic. 【State Control】 Set the state changing method of the animated graphic; 【Automatic】mode means that the state of the animated graphic will change regularly. 【Dynamic】mode indicates the state of the dynamic graphic, which will change according to the value【State Control Address】. 【Time Interval】 Set the state change time interval for the animated graphic. 【State Control Address】 Sets the time interval for the dynamic graphic state change, and change according to the register's value.
【Movement】	【Type】 Set the position changing method of the animated graphic. 【Dynamic】mode means that the position of the animated graphic will change according to the numeric value saved on the【Position Control Address】. 【Still】mode means that the position of the animated graphic will remain the same. 【Polyline】mode means that the position of the animated graphic will change according to the planning path or position.

【Position Control Address】
Divided into X-axis and Y-axis control addresses. If the 【Type】is【Dynamic】, the user can move the animated graphic by changing the numeric value saved in the X-axis and Y-axis control address.

【Move Control】
Display when【Type】select as【Polyline】, main to set the path or position under【Polyline】mode.

【Along Path】
The animated graph change the position according to the planning path.

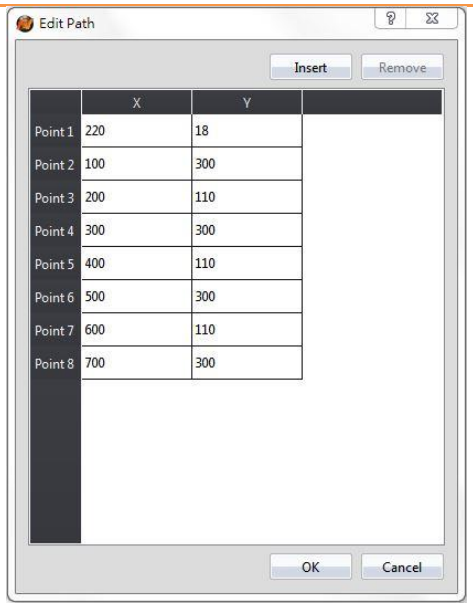


【Along Position】
The animated graph change the position according to the planning position(point).

【Dynamically Change Position】
The animated graph change the position(point) according to the【Position Control Address】value, if【Position Control Address】=0 display point 1,【Position Control Address】=5 display point 6.

【Rate】
Animated graph moving speed, the unit is v/s.

【Edit Path】
Will show up this option when【Type】select as【Polyline】, click to show the figure as below. Provide user to change the position by modify x-axis and y-axis or adjust the path by【Insert】and【Remove】.

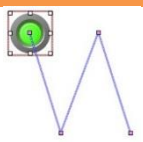
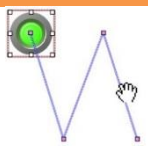
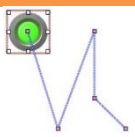
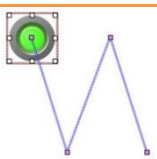
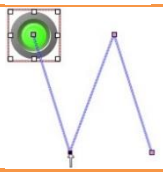
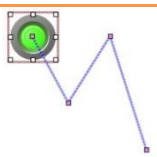


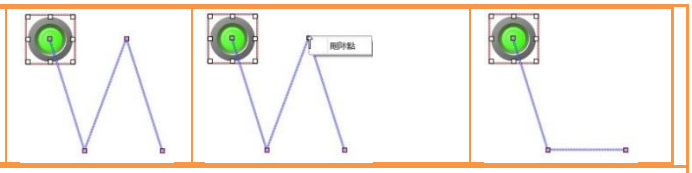
Except adjust the path by【Edit Path】also can directly edit on the work space by dragging, table as follow:

- Add point : click the animated graph, move the mouse to the desired path and will show up a hand sign, click the left botton of the mouse and move to the desired new point.

- Adjust point : click the animated graph, move the mouse to the desired position and will show up a arrow sign, click the left botton of the mouse and move to the desired new point.

- Remove point : click the animated graph, move the mouse to the desired point and will show up a arrow sign, click the right botton of the mouse to remove the point.

	Click Object	Add/Adjust/Remove	Result
Add point			
Adjust point			

	Remove point	
【Data Type】	Set the data type of the animated graphic; this setting will appear when the selection of the 【Type】 for 【State Control】 or 【Movement】 is controlled by specific addresses.	

19.4.21.2 【Display】

The 【Animated Graphic】【Display】 page is as shown in the figure below, the meanings of each setting are listed below:

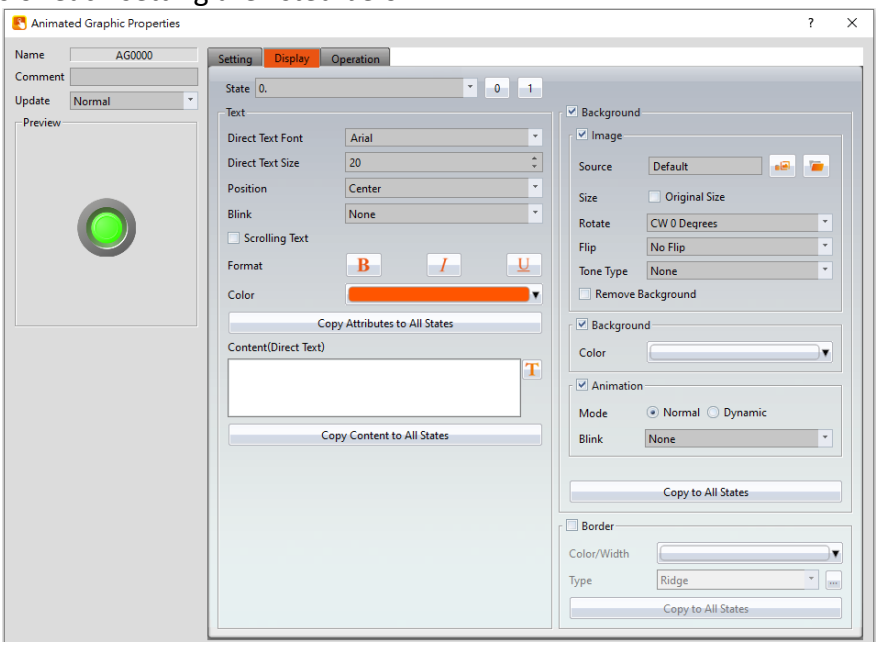


Figure 332 【Display】 Setting Screen of 【Animated Graphic】

Table 188 【Display】 Setting Properties of 【Animated Graphic】

Property	Description
【State】	Select the state needed to be edited. 0 and 1 buttons are provided to enable quick switching between states 0 and 1.
【Text】	【Direct Text Font】 Set the font of the text for the current editing state. 【Direct Text Size】 Set the size of the text for the current editing state. 【Position】

	Set the position of the text for the current editing state. 【Blink】 Set the blinking function for the text of the current editing state. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Scrolling Text】 Set the scrolling text function for the text of the current editing state. There are four scrolling speeds available to choose from slow to fast. 【Format】 Set the format of the text for the current editing state, including Bold, Italics and Underline. 【Color】 Set the color of the text for the current editing state. 【Copy Attributes to All States】 The text properties for the current editing state is applied to all states. 【Content (Direct Text)】 Set the text of the current editing state. It can be inputted directly or acquired from the【Text Library】. 【Copy Contents to All States】 Apply the settings of the text for the current editing state to all states.
【Background】	Background settings for the current editing state. The displayed background of the animated graphic can be edited below if background setting is selected. Otherwise, the background of the currently editing state will be transparent. 【Use Image】 Set to use an image for the displayed background of the current editing state. When this option is checked, an【Image Selector】will appear asking the user to select an image either from the【Image Library】or from a file.

	【Original Size of Image】 Display the original size of the image. 【Image Position】 Appears after checking【Original Size of Image】, you can select the position of the picture to be displayed. 【Color】 Set the background color of the current editing state. This setting item will appear if【Use Image】was not selected. 【Blink】 Set the blinking function for the background of the current editing state. There are four blinking speeds available to choose from: None, Slow, Medium and Fast. 【Remove Background】 Choose transparent color through【Choose Color】. 【Rotate】 Rotate the graph, includes CW 0 Degrees, CW 90 Degrees, CW 180 Degrees and CW 270 Degrees. 【Flip】 Flip the graph, includes No Flip, X-Axis and Y-Axis. 【Animation】 Check whether to enable animated effects. 【Mode】Choose whether to use static or dynamic control elements to flicker. 【Blink】Select the blinking mode, and use the numerical value to switch during dynamic control. 【Copy to All States】 Apply the settings of the background for the current editing state to all states.
【Border】	Set the object border. 【Color/Width】 Set the color and width of the border.

	【Type】 Set the type of the border. 【Copy to All States】 Apply the settings of the border for the current editing state to all states.

19.4.22 【Rotation Indicator】

【Rotation Indicator】is made up of multiple indicators arranged as a ring. Designers can set the rotation display mode or speed by the PLC register or HMI internal address.

19.4.22.1 【Setting】

The【Rotation Indicator】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

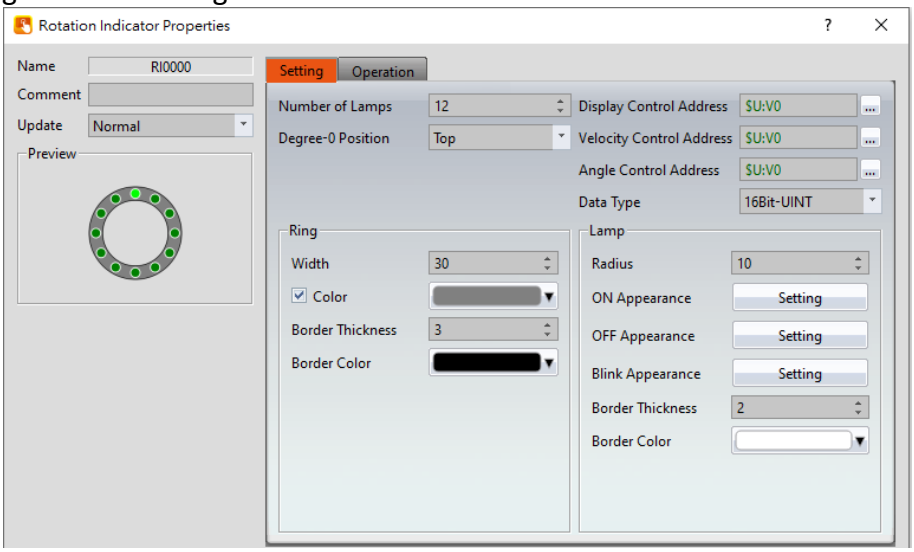


Figure 333【Setting】Screen of【Rotation Indicator】

Table 189【Setting】Properties of【Rotation Indicator】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Update】	Provide user can select a suitable speed to get the latest data under different situation, such as you would like to get the latest data or adjust the object on the screen to display first, etc. Provide three modes:

<table>
<tr><td></td><td>【once】: update once only when switch to this page or use the system tag【OP_UPDATE_SCREEN_OBJECTS】, update once when trigger once a time, it will keep update if the monitor address is internal address.
【normal】: normal update speed.
【fast】: the fastest update speed.</td></tr>
<tr><td>【Number of Lamps】</td><td>Set the number of indicators to display in the【Rotation Indicator】object. There can be 8 to 40 indications in multiples of 4.</td></tr>
<tr><td>【Degree-0 Position】</td><td>Set the zero degree position of【Rotation Indicator】which is the starting position when rotating, including top, bottom, left, and right.</td></tr>
<tr><td>【Display Control Address】</td><td>Set the display control address for the【Rotation Indicator】object.
HMI will reads the【Display Control Address】. When the range of read number is between 0 ~ 7,【Rotation Indicator】is displayed following the table below. If the range of reading number is not 0 ~ 7, the【Rotation Indicator】will retain the previous displayed mode.
<table><tr><th>Value</th><th>Display mode</th></tr><tr><td>0</td><td>All indicators will display OFF state.
HMI does not read the value of【Velocity Control Address】and【Angle Control Address】.</td></tr><tr><td>1</td><td>The【Rotation Indicator】displays the indicator clockwise to the zero degree position, following the specified angle of the【Angle Control Address】.
HMI does not read the value of【Velocity Control Address】.</td></tr></table></td></tr>
</table>

	2	The【Rotation Indicator】displays the indicator counterclockwise to the zero degree position, following the specified angle of the【Angle Control Address】. HMI does not read the value of【Velocity Control Address】.
	3	The indicator light rotates clockwise, and its velocity of the rotation speed depends on the value of the【Velocity Control Address】. HMI does not read the value of【Angle Control Address】.
	4	The indicator light rotates counterclockwise, and its velocity of rotation speed depends on the value of the【Velocity Control Address】. HMI does not read the value of【Angle Control Address】.
	5	The indicator display is set to the degree zero position. HMI does not read the value of【Velocity Control Address】or the【Angle Control Address】.
	6	All indicators will display the ON state. HMI does not read the value of【Velocity Control Address】or the【Angle Control Address】.
	7	Flashes all indicators. The blinking rate changes according to the value of the【Velocity Control Address】. HMI does not read the value of【Angle Control Address】.
【Velocity Control Address】	Sets the rotation speed or blinking rate for the【Rotation Indicator】object. If the value of 【Display Control Address】is 3 or 4, its range is 0 ~ 1000 at a multiple of 10ms. If the value of【Display Control Address】is 7, its range is 0 ~ 100 at a multiple of 100ms.	

【Angle Control Address】	Sets the angle for the【Rotation Indicator】object. Its range is 0 ~ 360. If the value is greater than 360,【Rotation Indicator】will retain the previously displayed mode.
【Data Type】	Set the data type of the【Rotation Indicator】.
【Ring】	【Width】 Sets the width of the ring for the【Rotation Indicator】. 【Color】 Sets the color of the ring for the 【Rotation Indicator】. If the color setting is not checked, it will be displayed as transparent. 【Border Thickness】 Sets the border width of the ring for the【Rotation Indicator】. 【Border Color】 Sets the border color of the ring for the【Rotation Indicator】.
【Lamp】	【Radius】 Sets the radius of the indicator for the【Rotation Indicator】. 【ON Appearance】 After clicking the setting, you can select the【Image】and【Color】when the lamp is on in the pop-up window. 【OFF Appearance】 After clicking the setting, you can select the【Image】and【Color】when the lamp is off in the pop-up window. 【Blink Appearance】 Sets the color or picture of the flashing state for the【Rotation Indicator】. If you check the “Use Image” option, the 【Image Selector】will appear for users to choose an

	image from【Image Library】 or from a file. 【Border Thickness】 Sets the border width of the lamp for the【Rotation Indicator】. 【Border Color】 Sets the border color of the lamp for the【Rotation Indicator】.

19.4.23 【Gif Display】

【Gif Display】can display .gif files as a dynamic image.

19.4.23.1 【Setting】

The【Gif Display】【Setting】page is a shown in the figure below. Each option is explained.

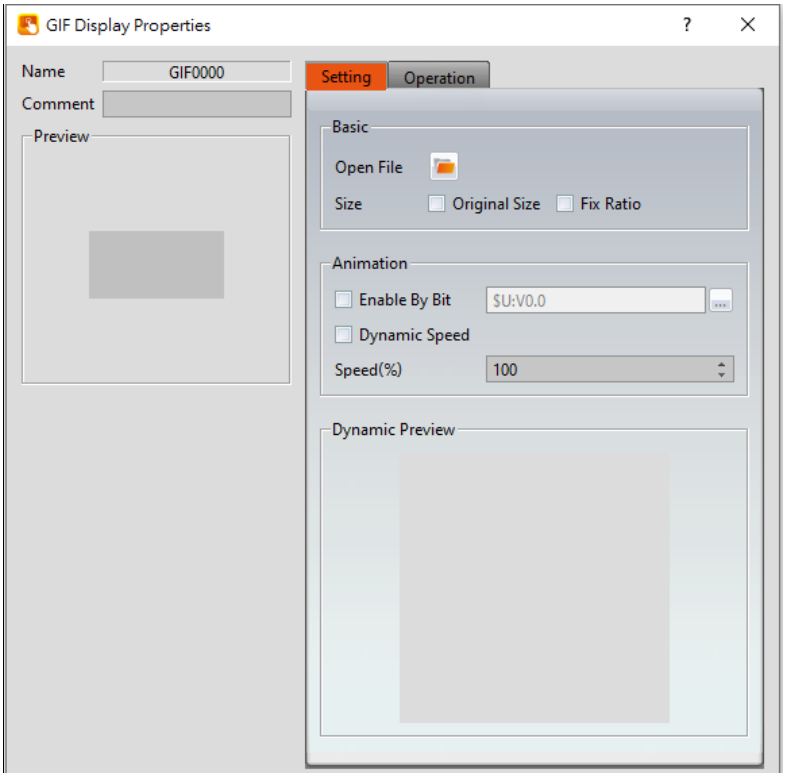


Figure 334 【Setting】Screen of【GIF Display】

Table 190【Setting】Properties of【GIF Display】

Property	Description

【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Basic】	【Open FIle】 Select a GIF format image on the computer. 【Size】 Select the size of the GIF image. 【Original Size】 Set the image to be its original size. The image size cannot be changed in the work space. If this option is not changed, the size is adjustable. 【Fixed Ratio】 The image size can be adjusted but its original aspect ratio will be maintained.
【Animation】	【Enable by Bit】 Set whether the GIF image is dynamically controlled by this bit. 【DynamicSpeed】 Set whether the change speed of the GIF dynamic graph is controlled by the register 【Speed】 Adjust the playback speed of the GIF. When 【DynamicSpeed】 is unchecked, you can set the constant value of the change dpeed, when check 【DynamicSpeed】, you can set register in this field.
【Dynamic Preview】	The GIF with the current settings applied is previewed here.

19.4.24 【Historic Trend】

【Historic Trend】is a curve object used to read the data in the Recording Buffer of the【Data Logger】, in which the X value is time and the Y value is the data captured by the【Data Logger】. Its functions are as follows:

- View the data of the【Data Logger】.
- Pause or start updating the data of the【Data Logger】through the【Sub Switch】, and clear the displayed data. It can also zoom or move the figure.

19.4.24.1 【General】

【Historic Trend】【General】setting paging as shown below, the meaning of each setting is as follows :

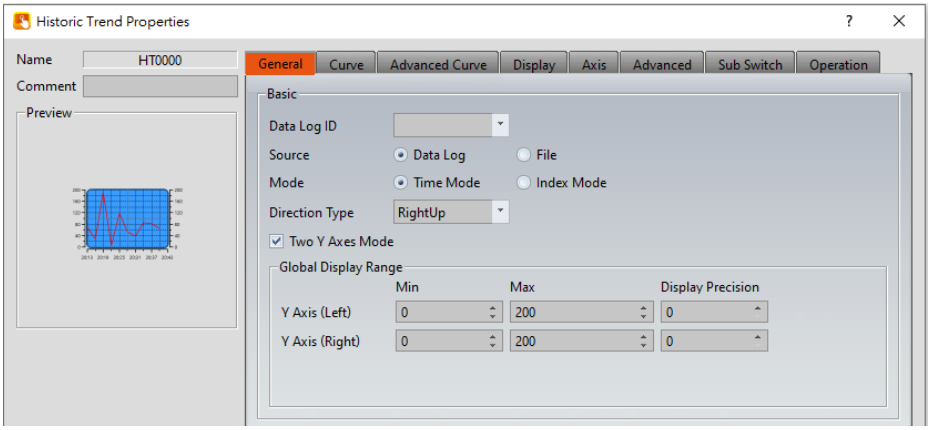
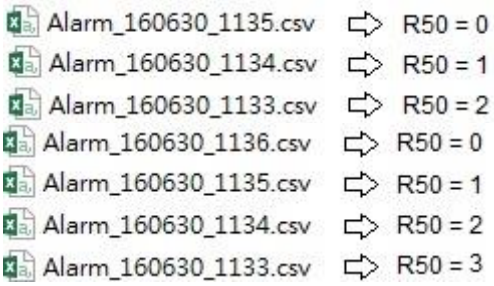


Figure 335【General】Setting Screen of【Historic Trend】

Table 191【General】Setting Properties of【Historic Trend】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Basic】	【Data Log ID】 Select the ID of the Data Log to track. 【Source】 Select the【Historic Trend】source:【Data Log】or【File】. 【Data Log】 Use【Data Log】as the source of the data. Refer to **Chapter 7 -Data Log**. 【File】

	Use an exported CSV or TXT file as the source of the data. When this option is selected, set the【File Address】. This register value corresponds to the position of the file in a path. For example, if the the register was R50, a 0 in R50 corresponds to the first file in the path, 1 corresponds to the second, and so on.  【Continue Files】 Supports only for PC model, this mode will read the export files continuously from the folder so the users no need to import files all the time when viewing old files. 【Mode】 Select the【Historic Trend】display mode:【Time Mode】or【Index Mode】. 【Time Mode】 Set the X-axis of the【Historic Trend】as time. 【Index Mode】 Set the X-axis of the【Historic Trend】as a specified index. 【Two Y Axes Mode】 Check whether to display two Y-axes on the graph. 【Refresh data automatically】 When source choose as【file】will appear this option, check this option, it will automatically refresh when new data comes.
【Global Display Range】	Represents the range that can be displayed. 【Min】 Set the minimum Global Range value for the Y-axis.

	【Max】 Set the maximum Global Range value for the Y-axis. **Note: The【Global Display Range】represents the range that can be displayed. If【Max】is 100 and【Min】is 0, data exceeding this range will not be able to be displayed.** 【Display Precision】 Set the number of decimal places represented for Y-axis values. 【X Axis (Index Points) Max】 If the【Index Mode】is set to【Index Mode】the maximum X-axis index point can be selected.

19.4.24.2 【Curve】

【Historic Trend】【Curve】setting paging as shown below, the meaning of each setting is as follows :

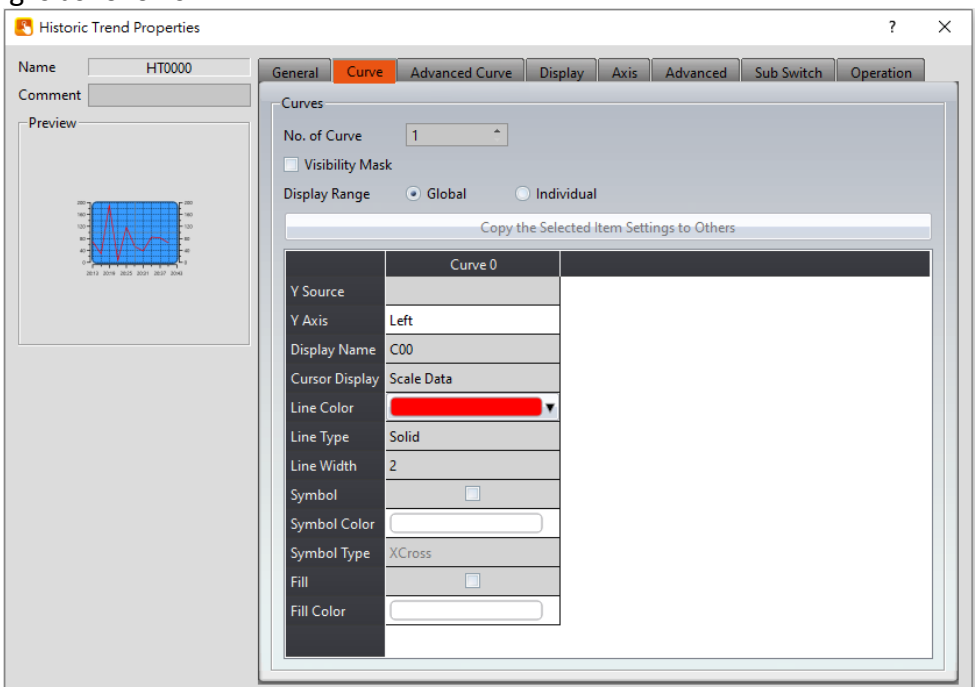


Figure 336【Curve】Setting Screen of【Historic Trend】

Table 192【Curve】Setting Properties of【Historic Trend】

Property	Description
【Curve】	【No. of Curve】 Select the number of curves. The maximum curve lines are

	up to 32. 【Visibility Mask】 Select whether to use visibility mask to control the visibility of the each curve. While selecting, use should assign the 32bit UINT register as the mask, in which the 0 bit control the display of the curve 0, and so on. 【Display Range】 Used to set the display mode for the display range of the curve. It is usually one of the two following types: ➢ 【Global】 The display ranges of all the curves are identical to the【Global Display Range】. ➢ 【Individual】 The display range of all the curves can be different from the【Global Display Range】. **Explanation: When to set【Display Range】as【Individual】- When the value ranges of the number of curves are different, for example when the value range of curve a is 0~10, and curve b is 0~1000, it can be discovered that the degree of changes for curve a will be difficult to observe if the two curves are placed in the same figure. This is when【Display Range】can be set as【Individual】and the display range of each curve can be defined. The system will automatically zoom the value of the curves according to the value in【Global Display Range】. Take this case for example, if the value in【Global Display Range】is 0~100, when the value of curve a is 5, the system will zoom it to 50 and when the value of curve b is 500, the system will also zoom it into 50, and so on.** **Another time to use-** **When【Global Display Range】is set to 0~100,【Display Precision】is set to 1, then the axis will display 0.0~100.0 at this time, and the value of curve a is 0~1000. When the curve A value is 500, it will be It is scaled to 50.0.** The curve property table is described below: 【Y Source】 Set the source for the Y value of the curve; the selection of the source depends on the setting of the【Data Logger】. 【Display Name】 Set the name of the curve.

【Y Max】
Set the maximum Individual Display Range value for the Y value of the curve, this option will appear if【Display Range】is【Individual】..

【Y Min】
Set the minimum Individual Display Range value for the Y value of the curve, this option will appear if【Display Range】is【Individual】..

【Cursor Display】
Four options are available: None, Scale Data, Original Data, and Both. For example, if the【Global Display Range】was set to 0~100, the【Display Range】was set to individual, 【Y Max】is set to 200 and【Y Min】is set to 0, when Y is 60, the cursor is set such that the scaled value of 30 is displayed. If the【Cursor Display】is set to orginal, the original value of 60 is displayed.

【Y Axis】
If【Two Y Axes Mode】is selected, the setting is used to decide the curve's reference y-axis.

【Line Color】
Set the line color of the curve.

【Line Type】
Set the line type of curve.

【Line Width】
Set the curve width.

【Symbol】
Check whether to display curve's symbol.

【Symbol Color】
Set the symbol color.

	【Symbol Type】 Set the symbol type. 【Fill】 Check whether to fill up the curve. 【Fill Color】 Set the fill color.

19.4.24.3 【Advanced Curve】

【Historic Trend】【Advanced Curve】setting paging as shown below, the meaning of each setting is as follows :

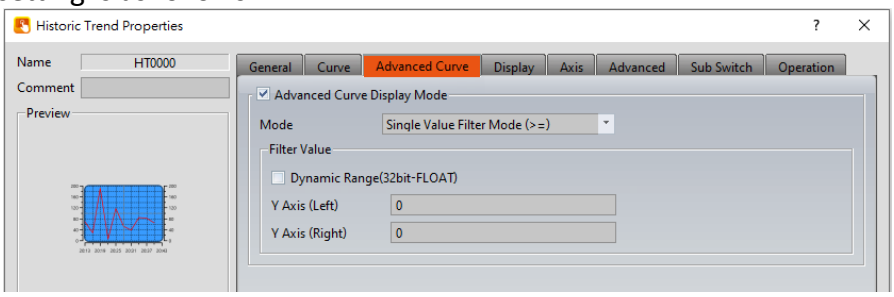
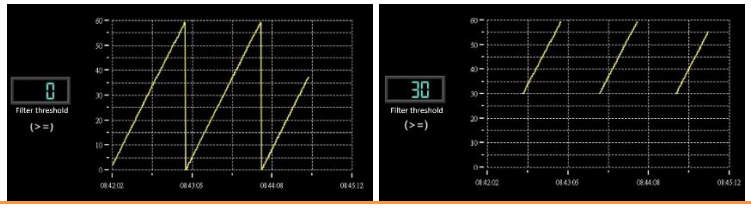


Figure 337【Advanced Curve】Setting Screen of【Historic Trend】

Table 193【Advanced Curve】Setting Properties of【Historic Trend】

Property	Description
【Advnaced Curve Display Mode】	Select to enable the advanced curve display mode. 【Mode】 There are four filter modes for setting the curve display, which are: 【Single Value Filter Mode (>=)】Display all curves greater than or equal to the filtered value. 【Single Value Filter Mode (>)】Display all curves greater than the filtered value. 【Single Value Filter Mode (<)】Display all curves less than the filtered value. 【Single Value Filter Mode (<=)】Display all curves less than or equal to the filtered value. The following is an example: Select the mode【Single Value Filter Mode (>=)】and set

	this value to 30. 
【Filter Value】	Set the filter value of the filter mode. 【Dynamic Range(32bit-FLOAT)】 Check whether the filter value can be changed according to the content of the specified address. The data type is 32-bit floating point. 【Y Axis (Left)】 Set the filter value of the left Y axis. 【Y Axis (Right)】 Set the right Y-axis filter value (this setting can only be set when【Two Y Axes Mode】is checked).

19.4.24.4 【Display】

【Historic Trend】【Display】setting paging as shown below, the meaning of each setting is as follows :

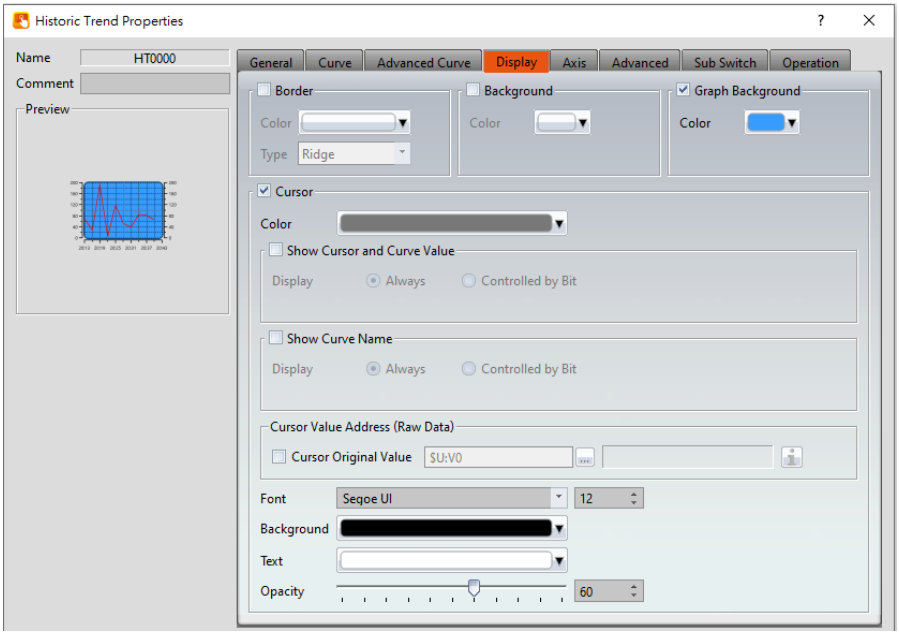


Figure 338【Display】Setting Screen of【Historic Trend】

Table 194【Display】Setting Properties of【Historic Trend】

Property	Description
【Border】	Select to display the border. 【Color】 Set the color of the border. 【Type】 Set the border type.
【Background】	Select to display the background. 【Color】 Set the color of the background.
【Graph Background】	Select to display the graph background. 【Color】 Set the color of the graph background.
【Cursor】	Select to display the cursor. 【Color】 Set the color of the cursor. 【Show Cursor and Curve Value】【Display】 Set the visibility of cursor values. If【Always】is set, the cursor and curve values are always shown. If【Controlled by Bit】is selected, the visibility of the values depends on a specified bit. 【Show Curve Name】【Display】 Set the visibility of the curve name. If【Always】is set, the curve name is always shown. If【Controlled by Bit】 is selected, the visibility of the curve name depends on the specified bit. 【Cursor Original Address (Raw Data)】 Display the original value where the cursor place. 【Font】 Set the font and size of cursor values. 【Background】 Set the background color of the cursor values.

	【Text】 Set the text color of the cursor values. 【Opacity】 Set the background opacity of the cursor values.

19.4.24.5 【Axis】

【Historic Trend】【Axis】setting paging as shown below, the meaning of each setting is as follows :

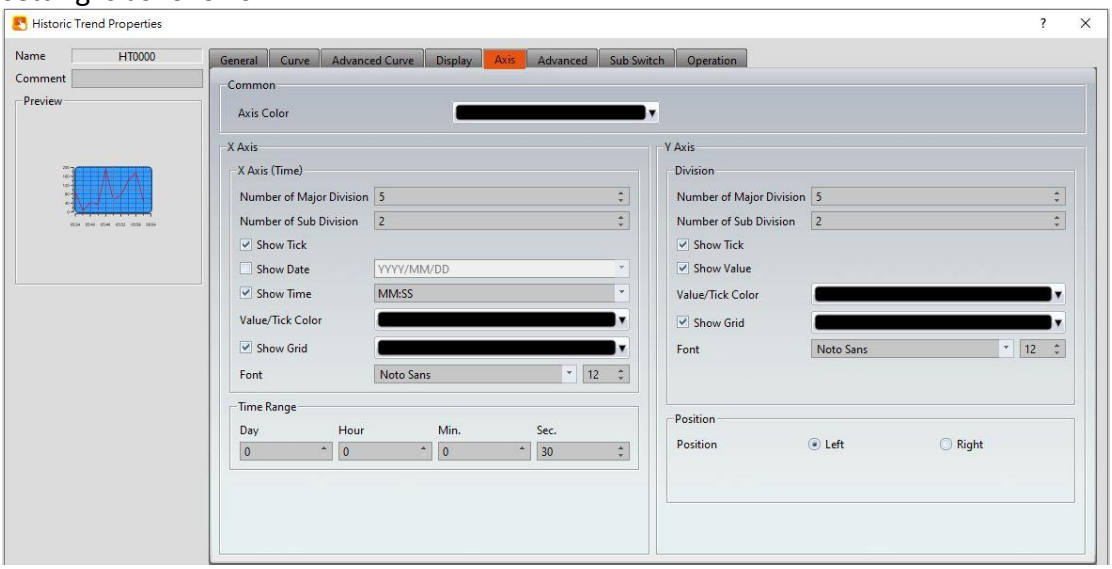


Figure 339【Axis】Setting Screen of【Historic Trend】

Table 195【Axis】Setting Properties of【Historic Trend】

Property	Description
【Common】	【Axis Color】 Set the color of the axis.
【Time Range】(Time Mode)	Set the time range of the X-axis 【Day】 Set the number of days. 【Hour】 Set the number of hours. 【Min.】 Set the number of minutes. 【Sec.】

	Set the number of seconds.
【X-axis (Time)】	【Number of Major Division】 Sets the number of major divisions on the X-axis. 【Number of Sub Division】 Sets the number of sub divisions on the X-axis. 【Show Tick】 Select to display the ticks. 【Show Value】(Index Mode) Select to display the value. 【Show Date】 Select to display the date on the X-axis, and sets the display format of the date. 【Show Time】 Select to display the time on the X-axis, and sets the display format of the time. 【Value/Tick Color】 Set the colors of the time and ticks. 【Show Grid】 Select to display vertical gridlines, and sets the color of the gridlines.
【Y-axis】 **【Division】**	【Number of Major Division】 Set the number of major divisions on the Y-axis. 【Number of Sub Division】 Set the number of sub divisions on the Y-axis. 【Show Tick】 Select to display the ticks on the Y-axis. 【Show Value】 Select to display the values on the Y-axis. 【Value/Tick Color】 Set the colors of the values and ticks.

	【Show Grid】 Select whether to display horizontal gridlines, and sets the color of the gridlines. 【Font】 Set the font and size of the scale
【Y-axis】 【Position】	【Position】 Set the Y-axis position:【Left】or【Right】

19.4.24.6 【Advanced】

【Historic Trend】【Advanced】setting paging as shown below, the meaning of each setting is as follows :

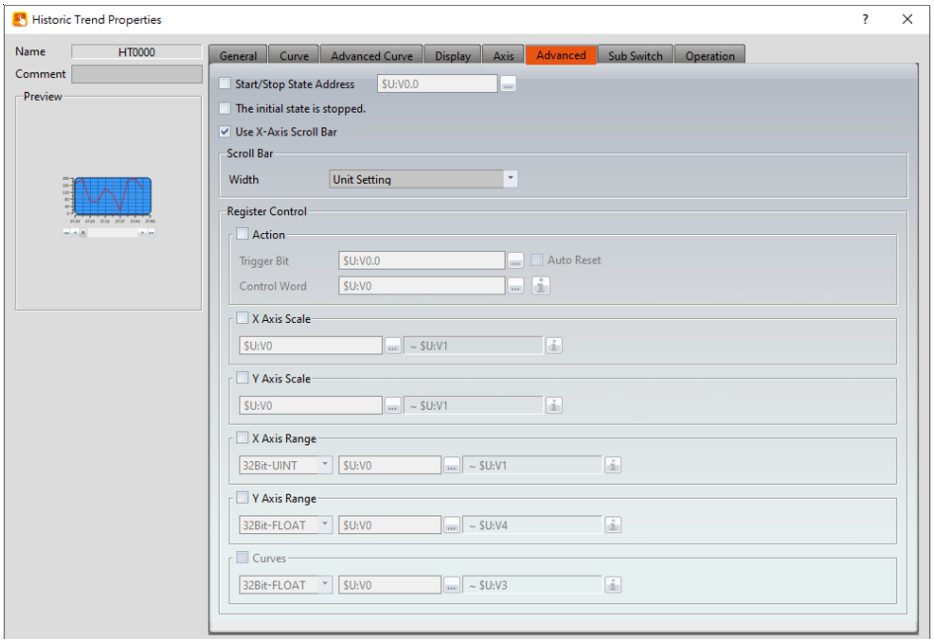


Figure 340【Advanced】Setting Screen of【Historic Trend】

Table 196【Advanced】Setting Properties of【Historic Trend】

Property	Description
【Advanced】	【Start/Stop State Address】 Set the【Data Block Graph】will start/stop at the specified address. Only the display unit's internal memory is supported. A value of 0 specifies the start state. A value of 1 specifies the stop state.

【The initial state is stopped】

Set the initial state of of the data to stop.

【Use X-Axis Scroll Bar】

Set to enable the X-axis scroll bar functionality. Allows for easy viewing of the historic trend curve.

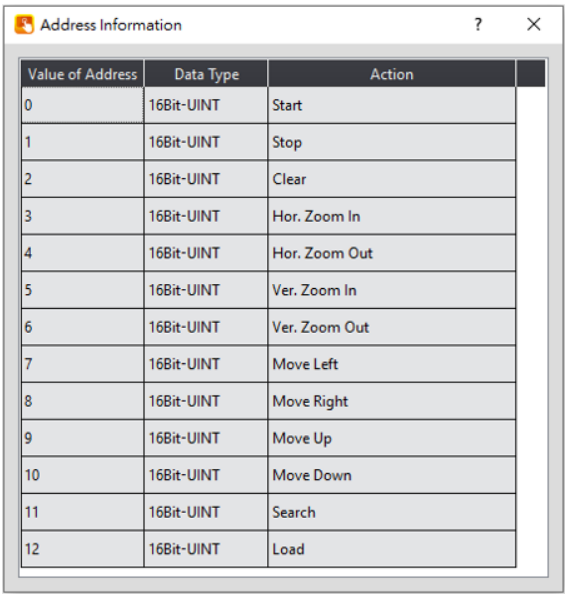
【Scroll Bar】

It appears when [Use X-axis scroll bar] is checked, and you can modify the [Width] item to make the slider zoom in or out.

【Register Control】

【Action】

After checking, you can set【Trigger Bit】and【Control Word】. The function is to use the register to execute the sub-switch to achieve automatic control.



Value of Address	Data Type	Action
0	16Bit-UINT	Start
1	16Bit-UINT	Stop
2	16Bit-UINT	Clear
3	16Bit-UINT	Hor. Zoom In
4	16Bit-UINT	Hor. Zoom Out
5	16Bit-UINT	Ver. Zoom In
6	16Bit-UINT	Ver. Zoom Out
7	16Bit-UINT	Move Left
8	16Bit-UINT	Move Right
9	16Bit-UINT	Move Up
10	16Bit-UINT	Move Down
11	16Bit-UINT	Search
12	16Bit-UINT	Load

【X Axis Scale】

X axis scale numbers can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, this register is in 16 Bit-UINT format, table as below.

Word	Description	Data Type	Min.	Max.
0	Number of Major Division	16Bit-UINT	1	30
1	Number of Sub Division	16Bit-UINT	1	30

【Y Axis Scale】

Y axis scale numbers can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, this register is in 16 Bit-UINT format, table as below.

Word	Description	Data Type	Min.	Max.
0	Number of Major Division	16Bit-UINT	1	30
1	Number of Sub Division	16Bit-UINT	1	30

【X Axis Range】

X axis range can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, table as below.

Word	Description	Data Type	Min.	Max.
0 & 1	Maximum of x axis.	32Bit-FLOAT	x	Greater than the minimum value.

【Y Axis Range】

Y axis range can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, table as below.

Word	Description	Data Type	Min.	Max.
0 & 1	The maximum of the Y-axis on the left side of the graph	32Bit-FLOAT	x	x
2 & 3	The minimum of the Y-axis on the left side of the graph	32Bit-FLOAT	x	x
4	Curve left side of the Y-axis value of the decimal point position	16Bit-UINT	0	5
5 & 6	The maximum of the Y-axis on the right side of the	32Bit-FLOAT	x	x

	graph			
7 & 8	The minimum of the Y-axis on the right side of the graph	32Bit-FLOAT	x	x
9	Curve right side of the Y-axis value of the decimal point position	16Bit-UINT	0	5

Note: maximum value should greater than minimum value.

【Curves】

If curve Y-axis display range use【individual】, check this option, each of the Y-axis curve can be specified by register, and will display the number of consecutive occupancy registers, table as below.

Word	Description	Data Type	Min.	Max.
0 & 1	Maximum value of curve 0	32Bit-FLOAT	x	x
2 & 3	Minimum value of curve 0	32Bit-FLOAT	x	x
4 & 5	Maximum value of curve 1	32Bit-FLOAT	x	x
6 & 7	Minimum value of curve 1	32Bit-FLOAT	x	x
8 & 9	Maximum value of curve 2	32Bit-FLOAT	x	x
10 & 11	Minimum value of curve 2	32Bit-FLOAT	x	x
⋮				
124 & 125	Maximum value of curve 31	32Bit-FLOAT	x	x
126 & 127	Minimum value of curve 31	32Bit-FLOAT	x	x

	Note: maximum value should greater than minimum value.

19.4.24.7 【Sub Switch】

【Historic Trend】【Sub Switch】setting paging as shown below, the meaning of each setting is as follows :

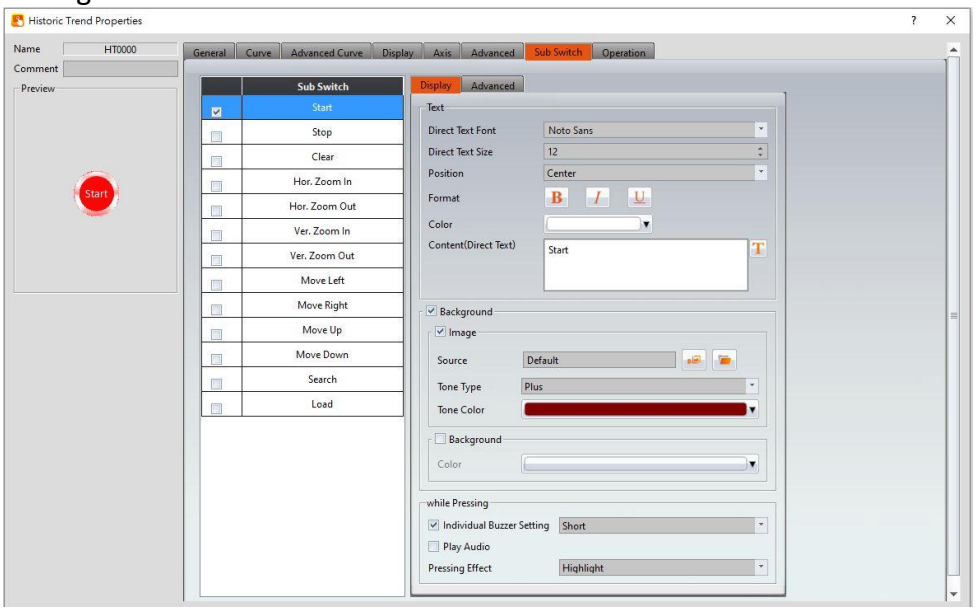
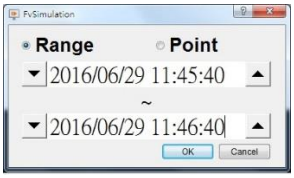


Figure 341【Sub Switch】Setting Screen of【Historic Trend】

Table 197【Sub Switch】Setting Properties of【Historic Trend】

Property	Description
【Sub Switch List】	【Sub Switch List】that can be selected for【Historic Trend】. Sub switches can be enabled after selecting them. Settings for the appearance of the selected sub switches will also appear on the right. When different sub switches are selected from the list, the appearance settings to the right will be updated according to the sub switches selected. In which the Sub Switches are divided into: ➢ 【Start】-Start updating the curve to display the data captured by the 【Data Logger】on the curve. ➢ 【Stop】-Stop updating the curve; which means stop updating the data captured by the【Data

	Logger】. ➢ 【Clear】-Clear the curve, but the data recorded in the【Data Logger】 will be retained. ➢ 【Hor. Zoom In】—Horizontal zoom in. ➢ 【Hor. Zoom Out】—Horizontal zoom out. ➢ 【Ver. Zoom In】—Vertical zoom in. ➢ 【Ver. Zoom Out】—Vertical zoom out. ➢ 【Move Left】—Move Left. ➢ 【Move Right】—Move Right. ➢ 【Move Up】—Move Up. ➢ 【Move Down】—Move Down. ➢ 【Search】—Perform a search of a time curve. When pressed a dialog window appears, allowing a selection of【Scope】or a【single point search】.  ➢ 【Load】—If the source of the【Historic Trend】is【File】, a dialog window will appear, displaying the file source.
【Display】【Text】	【Direct Text Font】 Set the text font of the sub switch currently selected. 【Direct Text Size】 Set the text size of the sub switch currently selected. 【Position】 Set the text position of the sub switch currently selected. 【Format】 Set the text format of the sub switch currently selected, including Bold, Italics and Underline. 【Color】 Set the text color of the sub switch currently selected. 【Content(Direct Text)】

	Set the text of the sub switch currently selected.
【Display】【Background】	Set the background of the sub switch currently selected. Check it to activate background settings, and the displayed background of the sub switch currently selected can be edited below. If this option is not checked, the background will be transparent. 【Use Image】 Set to use an image for the displayed background of the sub switch currently selected. When this option is checked, image selection settings will appear asking the user to select an image either from the【Image Library】or from a file. 【Background Color】 Set the background color of the sub switch currently selected. This setting will appear if【Use Image】was not selected.
【Display】【while Pressing】	【Individual Buzzer Setting】 Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short. 【Play Audio】 Select to play audio when the sub switch is pressed. An【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio Selector】can be pressed to play the audio selected. 【Pressing Effect】 Set the pressing effect of the sub switch currently selected. There are two effects available for selection:【None】and【Highlight】.
【Advanced】【Operation Control】	Operation control of sub switch, it can enabled by bit or security. 【Enable by Bit】 Check whether the sub switch operation is controlled by a bit 【Show Disabled Sign】

	Check if you want to display the forbidden symbol, it's valid when check【Enable by Bit】,【Enabled by Word】or【Enable by Security】. 【Address】 Set the address of the sub switch operation control bit. 【State】 Set the control bit as 1 or 0 to operate object. 【Enabled by Word】 Check whether the operation is controlled by word. 【Address】 Set the operation control word address. 【Condition】 Set the condition of word control and when it is true then the object can be controlled, when false not the object can not be controlled. The condition include' =',' !=', '>', '<', '>=', '<='. 【Enable by Security】 Select the sub switch whether controlled by user level. 【User Level Condition】 Set the level and condition of the object. 【Hold Time】 Check whether the operation is controlled by hold time. Hold time can be divided into two kinds: ➢ 【Press On】: press directly, according to the【Min. Hold Time】to confirm whether the operation is executed. ➢ 【Double Press】: quickly double press to confirm whether the operation is executed. 【Operator Confirm】 Check whether show comfirmation message window after checking the operation.

	【Max. Waiting Time】 When the confirmation message window is displayed, If the user does not reply within this time, the system will close the confirmation message window and cancel this operation

19.4.25 【Historic XY Scatter】

【Historic XY Scatter】 is a curve object used to read the【Recording Buffer】data of the【Data Log】, in which the X/Y values are both data captured by the【Data Log】. Its main functions are as follows:

- View the Recording Buffer data of the【Data Log】.
- Pause or start updating the data of the 【Data Log】through the【Sub Switch】and clear the displayed data.

19.4.25.1 【General】

【Historic XY Scatter】【General】setting paging as shown below, the meaning of each setting is as follows :

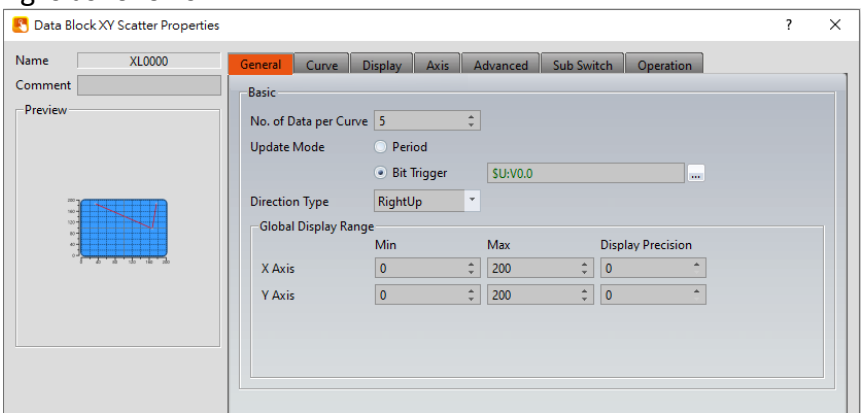


Figure 342【General】Setting Screen of【Historic XY Scatter】

Table 198【General】Setting Properties of【Historic XY Scatter】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Basic】	【Data Log ID】 Set the ID of the Data Log group to display.

【Global Display Range】	Set the range that can be displayed. 【Max】 Set the maximum Global Range value for the X-axis/Y-axis. 【Min】 Set the minimum Global Range value for the X-axis/Y-axis. **Note: The【Global Display Range】represents the range that can be displayed. If【Max】is 100 and【Min】is 0, data exceeding this range will not be able to be displayed.** 【Display Precision】 Set the number of decimal places represented for X/Y-axis values.

19.4.25.2 【Curve】

【Historic XY Scatter】【Curve】setting paging as shown below, the meaning of each setting is as follows :

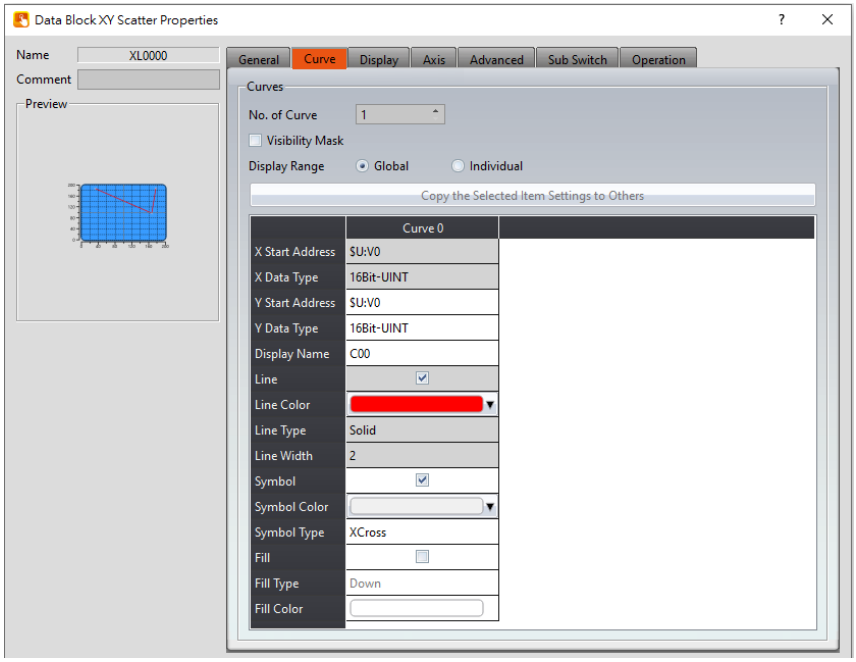


Figure 343【Curve】Setting Screen of【Historic XY Scatter】

Table 199【Curve】Setting Properties of【Historic XY Scatter】

Property	Description
【Curve】	【No. of Curve】 Select the number of curves up to a maximum of 32.

【Visibility Mask】

Select whether to use visibility mask to control the visibility of the each curve. While selecting, use should assign the 32bit UINT register as the mask, in which the 0 bit control the display of the curve 0, and so on.

【Display Range】

Used to set the display mode for the display range of the curve. It is usually one of the two following types:

- 【Global】

  The display ranges of all the curves are identical to the【Global Display Range】.

- 【Individual】

  The display range of all the curves can be different from the【Global Display Range】.

Explanation: When to set【Display Range】as【Individual】- Whenthe value ranges of the number of curves are different, for example when the value range of curve a is 0~10, and curve b is 0~1000, it can be discovered that the degree of changes for curve a will be difficult to observe if the two curves are placed in the same figure. This is when【Display Range】can be set as【Individual】and the display range of each curve can be defined. The system will automatically zoom the value of the curves according to the value in【Global Display Range】. Take this case for example, if the value in【Global Display Range】is 0~100, when the value of curve a is 5, the system will zoom it to 50 and when the value of curve b is 500, the system will also zoom it into 50, and so on.

【X/Y Source】

Set the source for the X/Y valuesX/ of the curve; the selection of the source depends on the setting of the【Data Logger】.

【Display Name】

Set the name of the curve.

【X/Y Max】

Set the maximum Individual Display Range value for the X/Y value of the curve, this option will appear if【Display Range】is【Individual】.

	【X/Y Min】 Set the minimum Individual Display Range value for the Y value of the curve, this option will appear if【Display Range】is【Individual】. 【Line】 Set to show the curve. 【Line Color】 Set the line color of the curve. 【Line Type】 Set the line type of curve. 【Line Width】 Set the curve width. 【Symbol】 Select to display the curve symbols. 【Symbol Color】 Set the color of the symbols. 【Symbol Type】 Set the symbol type. 【Fill】 Check whether to fill up the curve. 【Fill Type】 Set the fill type. 【Fill Color】 Set the fill color.

19.4.25.3 【Display】

【Historic XY Scatter】【Display】setting paging as shown below, the meaning of each setting is as follows :

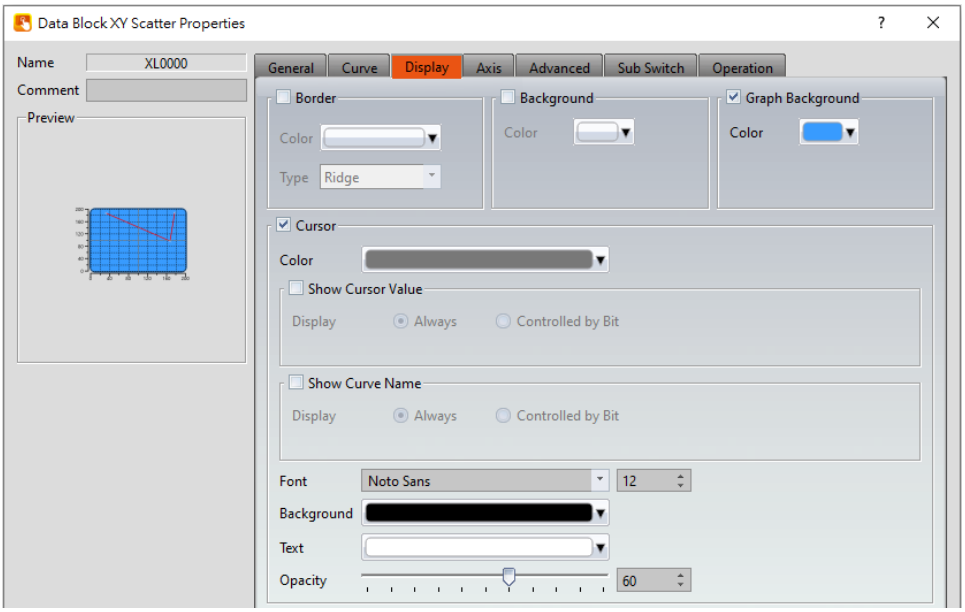


Figure 344【Display】Setting Screen of【Historic XY Scatter】

Table 200【Display】Setting Properties of【Historic XY Scatter】

Property	Description
【Border】	Select to display the border. 【Color】 Set the color of the border. 【Type】 Set the border type.
【Background】	Select to display the background. 【Color】 Set the color of the background.
【Graph Background】	Select to display the graph background. 【Color】 Set the color of the graph background.
【Cursor】	Select to display the cursor. 【Color】 Set the color of the cursor. 【Show Cursor Value】 Select to display the cursor value. 【Show Cursor Value】【Display】 Set the visibility of cursor values. If【Always】is set, the cursor values are always shown. If【Controlled by Bit】is

	selected, the visibility of cursor values depends on the specified bit. 【Show Curve Name】 Select to display the curve name. 【Show Curve Name】【Display】 Set the visibility of the curve name. If【Always】is set, the curve name is always shown. If【Controlled by Bit】 is selected, the visibility of curve name depends on the specified bit. 【Font】 Set the font type and size of cursor values. 【Background】 Set the background color of the cursor values. 【Text】 Set the text color of the cursor values. 【Opacity】 Set the background opacity of the cursor values.

19.4.25.4 【Axis】

【Historic XY Scatter】【Axis】setting paging as shown below, the meaning of each setting is as follows :

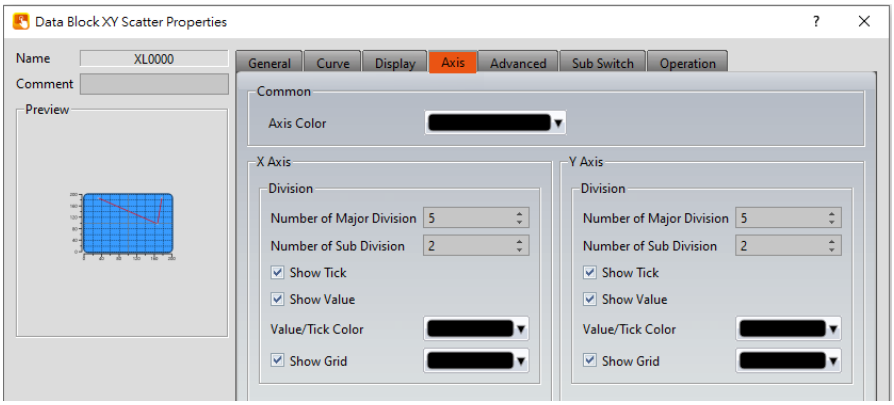


Figure 345【Axis】Setting Screen of【Historic XY Scatter】

Table 201【Axis】Setting Properties of【Historic XY Scatter】

Property	Description
【Common】	【Axis Color】 Set the color of the axis.
【X-axis】 **【Division】**	【Number of Major Division】 Set the number of major divisions of the X-axis. 【Number of Sub Division】 Set the number of sub divisions of the X-axis. 【Show Tick】 Select to display the ticks on the X-axis. 【Show Value】 Select to display the values on the X-axis. 【Value/Tick Color】 Set the color of the values and ticks. 【Show Grid】 Select to display vertical gridlines and set the color of the gridlines.
【Y-axis】 **【Division】**	【Number of Major Division】 Set the number of major divisions of the Y-axis. 【Number of Sub Division】 Set the number of sub divisions of the Y-axis. 【Show Tick】 Select to display the ticks on the Y-axis. 【Show Value】 Select to display the values on the Y-axis. 【Value/Tick Color】 Set the color of the values and ticks. 【Show Grid】 Select to display horizontal gridlines, and set the color of the gridlines.

19.4.25.5 【Advanced】

【Historic XY Scatter】【Advanced】setting paging as shown below, the meaning of each setting is as follows :

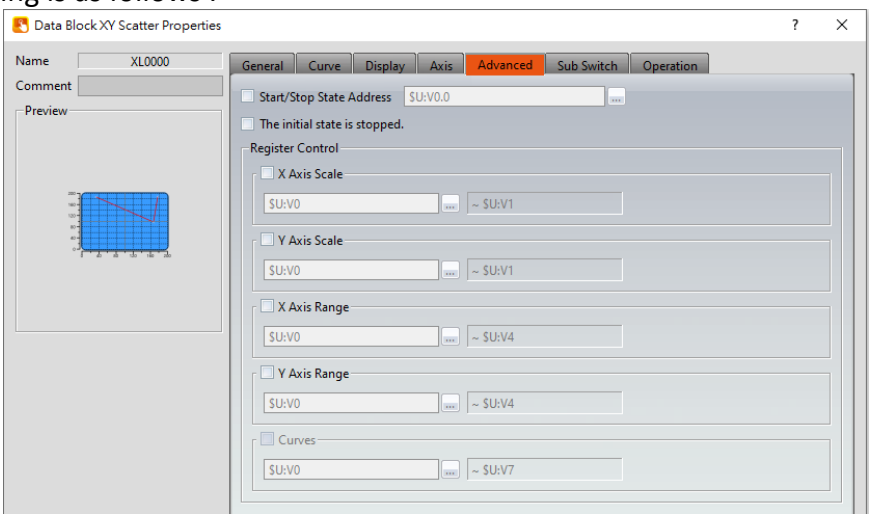


Figure 346【Advanced】Setting Screen of【Historic XY Scatter】

Table 202【Advanced】Setting Properties of【Historic XY Scatter】

<table>
<tr><th>Property</th><th>Description</th></tr>
<tr><td>【Advanced】</td><td>【Start/Stop State Address】
Set such that the【Data Block Graph】will start/stop at the specified address. Only the display unit's internal memory is supported.
A value of 0 specifies the start state. A value of 1 specifies the stop state.

【The initial state is stopped】
Set the initial state of of the data to stop.</td></tr>
<tr><td>【Register Control】</td><td>【X Axis Scale】
X axis scale numbers can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, this register is in 16 Bit-UINT format, table as below.
<table>
<tr><th>Word</th><th>Description</th><th>Data Type</th><th>Min.</th><th>Max.</th></tr>
<tr><td>0</td><td>Number of Major Division</td><td>16Bit-UINT</td><td>1</td><td>30</td></tr>
<tr><td>1</td><td>Number of Sub Division</td><td>16Bit-UINT</td><td>1</td><td>30</td></tr>
</table></td></tr>
</table>

【Y Axis Scale】

Y axis scale numbers can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, this register is in 16 Bit-UINT format, table as below.

Word	Description	Data Type	Min.	Max.
0	Number of Major Division	16Bit-UINT	1	30
1	Number of Sub Division	16Bit-UINT	1	30

【X Axis Range】

X axis range can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, table as below.

Word	Description	Data Type	Min.	Max.
0 & 1	Maximum of x axis.	32Bit-FLOAT	x	x
2 & 3	Minimum of x axis.	32Bit-FLOAT	x	x
4	The decimal point position of the X axis value	16Bit-UINT	0	5

Note: maximum value should bigger than minimum value.

【Y Axis Range】

Y axis range can be specified by register, it will appear register setting below after checked, and will display the number of consecutive occupancy registers, table as below.

Word	Description	Data Type	Min.	Max.
0 & 1	The maximum of the Y-axis on the left side of the graph	32Bit-FLOAT	x	x
2 & 3	The minimum of the Y-axis on the left side of the graph	32Bit-FLOAT	x	x

4	Curve left side of the Y-axis value of the decimal point position	16Bit-UINT	0	5
5 & 6	The maximum of the Y-axis on the right side of the graph	32Bit-FLOAT	x	x
7 & 8	The minimum of the Y-axis on the right side of the graph	32Bit-FLOAT	x	x
9	Curve right side of the Y-axis value of the decimal point position	16Bit-UINT	0	5

Note: maximum value should bigger than minimum value.

【Curves】

If curve Y-axis display range use【individual】, check this option, each of the Y-axis curve can be specified by register, and will display the number of consecutive occupancy registers, table as below.

Word	Description	Data Type	Min.	Max.
0 & 1	X-axis maximum value of curve 0.	32Bit-FLOAT	x	x
2 & 3	X-axis minimum value of curve 0.	32Bit-FLOAT	x	x
4 & 5	Y-axis maximum value of curve 0.	32Bit-FLOAT	x	x
6 & 7	Y-axis minimum value of curve 0.	32Bit-FLOAT	x	x
8 & 9	X-axis	32Bit-FLOAT	x	x

	maximum of curve 1.			
10 & 11	X-axis minimum of curve 1.	32Bit-FLOAT	x	x
12 & 13	Y-axis maximum value of curve 1.	32Bit-FLOAT	x	x
14 & 15	Y-axis minimum value of curve 1.	32Bit-FLOAT	x	x
⋮				
248 & 249	X-axis maximum of curve 31.	32Bit-FLOAT	x	x
250 & 251	X-axis minimum of curve 31.	32Bit-FLOAT	x	x
252 & 253	Y-axis maximum value of curve 31.	32Bit-FLOAT	x	x
254 & 255	Y-axis minimum value of curve 31.	32Bit-FLOAT	x	x

Note: maximum value should bigger than minimum value.

19.4.25.6 【Sub Switch】

【Historic XY Scatter】【Sub Switch】setting paging as shown below, the meaning of each setting is as follows :

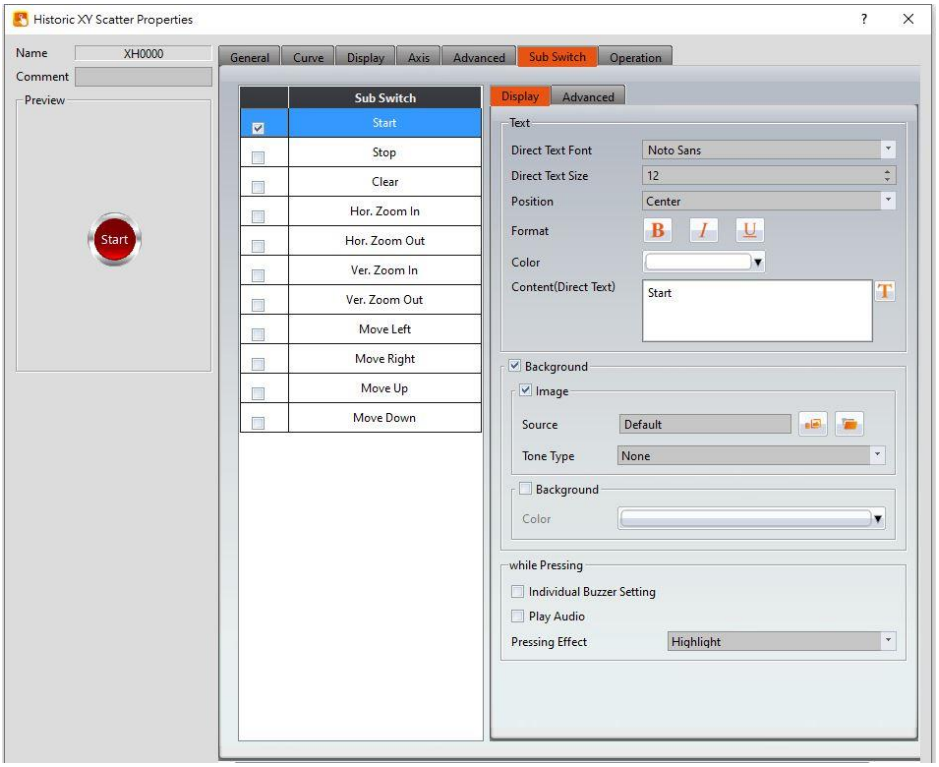


Figure 347【Sub Switch】Setting Screen of【Historic XY Scatter】

Table 203【Sub Switch】Setting Properties of【Historic XY Scatter】

Property	Description
【Sub Switch List】	【Sub Switch List】that can be selected for【Historic XY Scatter】. Sub switches can be enabled after selecting them. Settings for the appearance of the selected sub switches will also appear on the right. When different sub switches are selected from the list, the appearance settings to the right will be updated according to the sub switches selected. In which the【Sub Switches】are divided into: ➢ 【Start】—Start updating curve and displays the data captured by 【Data Log】on the curve. ➢ 【Stop】—Stop updating curve, which means stop updating the data captured by【Data Log】. ➢ 【Clear】—Clear the curve, but the data recorded in 【Data Log】will be preserved. ➢ 【Hor. Zoom In】—Horizontal zoom in. ➢ 【Hor. Zoom Out】—Horizontal zoom out.

	➢ 【Ver. Zoom In】—Vertical zoom in. ➢ 【Ver. Zoom Out】—Vertical zoom out. ➢ 【Move Left】—Move Left. ➢ 【Move Right】—Move Right. ➢ 【Move Up】—Move Up. ➢ 【Move Down】—Move Down.
【Display】【Text】	【Direct Text Font】 Set the text font of the sub switch currently selected. 【Direct Text Size】 Set the text size of the sub switch currently selected. 【Position】 Set the text position of the sub switch currently selected. 【Format】 Set the text format of the sub switch currently selected, including Bold, Italics and Underline. 【Color】 Set the text color of the sub switch currently selected. 【Content(Direct Text)】 Set the text of the sub switch currently selected.
【Display】 **【Background】**	Set the background of the sub switch currently selected. Check it to activate background settings, and the displayed background of the sub switch currently selected can be edited below. If this option is not checked, the background will be transparent. 【Use Image】 Set to use an image for the displayed background of the sub switch currently selected. When this option is checked, an image selection setting item will appear asking the user to select an image either from the【Image Library】or from a file. 【Background Color】 Set the displayed background color of the sub switch currently selected. This setting item will appear if【Use

	Image】was not selected.
【Display】【while Pressing】	【Individual Buzzer Setting】 Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short. 【Play Audio】 Select to play audio when the sub switch is pressed. An 【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the 【Audio Selector】can be pressed to play the audio selected. 【Pressing Effect】 Set the pressing effect of the sub switch currently selected. There are two effects available for selection:【None】and 【Highlight】.
【Advanced】【Operation Control】	Operation control of sub switch, it can enabled by bit or security. 【Enable by Bit】 Check whether the sub switch operation is controlled by a bit 【Show Disabled Sign】 Check if you want to display the forbidden symbol, it's valid when check【Enable by Bit】,【Enabled by Word】or 【Enable by Security】. 【Address】 Set the address of the sub switch operation control bit. 【State】 Set the control bit as 1 or 0 to operate object. 【Enabled by Word】 Check whether the operation is controlled by word. 【Address】 Set the operation control word address.

	【Condition】 Set the condition of word control and when it is true then the object can be controlled, when false not the object can not be controlled. The condition include' =',' !=', '>', '<', '>=', '<='. 【Enable by Security】 Select the sub switch whether controlled by user level. 【User Level Condition】 Set the level and condition of the object. 【Hold Time】 Check whether the operation is controlled by hold time. Hold time can be divided into two kinds: ➢ 【Press On】: press directly, according to the【Min. Hold Time】to confirm whether the operation is executed. ➢ 【Double Press】: quickly double press to confirm whether the operation is executed. 【Operator Confirm】 Check whether show comfirmation message window after checking the operation. 【Max. Waiting Time】 When the confirmation message window is displayed, If the user does not reply within this time, the system will close the confirmation message window and cancel this operation

19.4.26 【Historic Data Table】

【Historic Data Table】 is a table object used the read the Recording Buffer data of the【Data Log】. Its main functions are as follows:

- View the Recording Buffer data of the【Data Log】.
- Pause or start updating the data of the【Data Log】through the【Sub Switch】, and clear the displayed data.

19.4.26.1 【General】

【Historic Data Table】【General】setting paging as shown below, the meaning of

each setting is as follows :

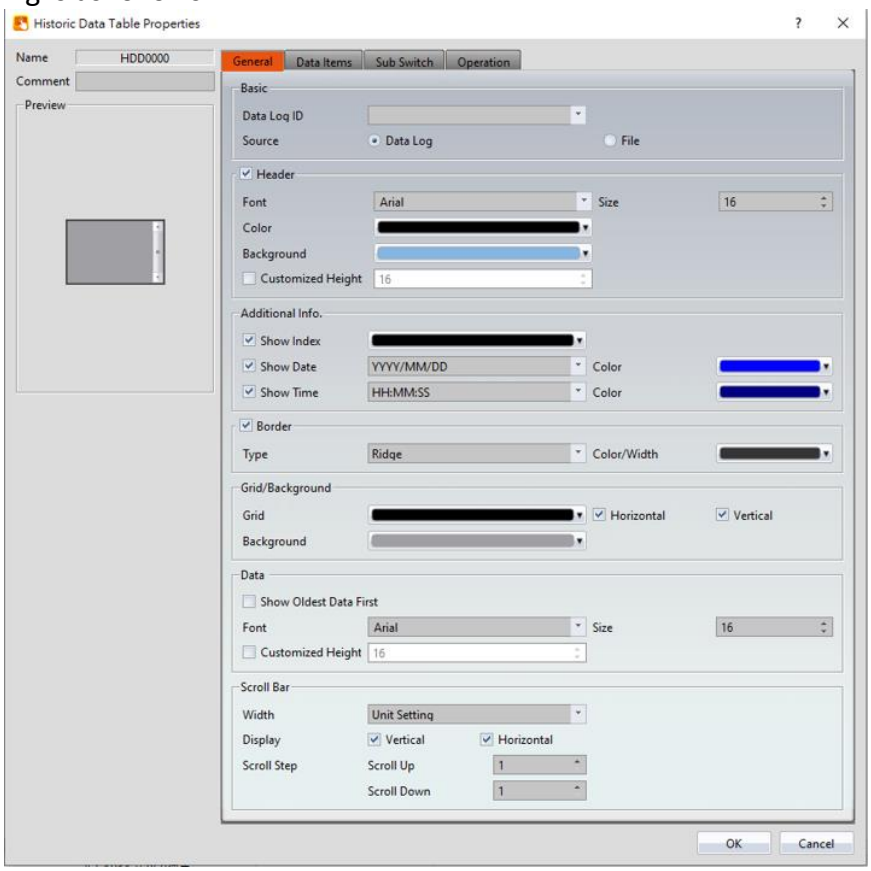
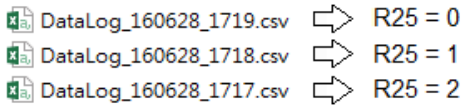
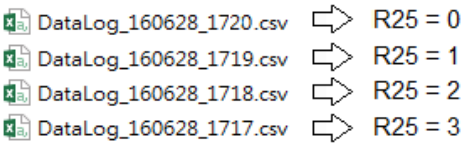


Figure 348【General】Setting Screen of【Historic Data Table】

Table 204【General】Setting Properties of【Historic Data Table】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Basic】	【Data Log ID】 Set the ID of the Data Log group to display. 【Source】 Set the source from the【Data Log】 or【File】. 【Data Log】 Use【Data Log】as the source of the data. Refer to **Chapter 7 -Data Log**.

	【File】 Display the CSV or TXT file exported by【Data Log】, or display the CSV or TXT file with the same format content as【Data Log ID】. After clicking the file, the corresponding address setting will appear at the back. This address will mainly Corresponding file order, for example, this address is set to R25, and there are 3 files under datalog\Group_1. At this time, R25 will correspond to the following values according to the order.  If one more file is added at this time, there are 4 files in total, and the corresponding values of R25 in this order will be as shown below.  So when R25 changes its content value, it also changes its displayed file. 【Continue Files】 Supports only for PC model, this mode will read the export files continuously from the folder so the users no need to import files all the time when viewing old files. 【Fresh data automatically】 Set under the【File】mode whether to automatically update the table display based on the stored data. 【Loaded File Name】 Show under the【File】mode,set an address which display the name of the file currently read by the data table.
【Header】	Select to display the header. 【Font】 Set the font of the header. 【Size】 Set the size of the header.

	【Color】 Set the color of the header. 【Background】 Set the background color of the header.
【Additional Info.】	【Show Index】 Select to display the index, and set its display color. 【Show Date】 Select to display the date, and set its display color and format. 【Show Time】 Select to display the time, and set its display color and format.
【Border】	Select to display the border. 【Type】 Set the border type. 【Color/Width】 Set the color and width of the border.
【Grid/Background】	【Grid】 Set the color of the grid. 【Horizontal】 Select to display horizontal gridlines. 【Vertical】 Select to display vertical gridlines. 【Background】 Set the color of the background.
【Data】	【Show Oldest Data First】 Set whether to display the oldest data in the top of the form, if unchecked then the oldest data will in the bottom of the form. 【Font】 Set the font of the data. 【Size】

	Set the size of the data. 【Customize Height】 Users can customize the field height.
【Scroll Bar】	【Width】 Adjust the right side scroll bar width, provides 5 widths. 【Display】 You can check whether to display the scroll bar. 【Scroll Step】 Set how many lines to switch at a time, use with sub-buttons.

19.4.26.2 【Data Items】

【Historic Data Table】【Data Items】setting paging as shown below, the meaning of each setting is as follows :

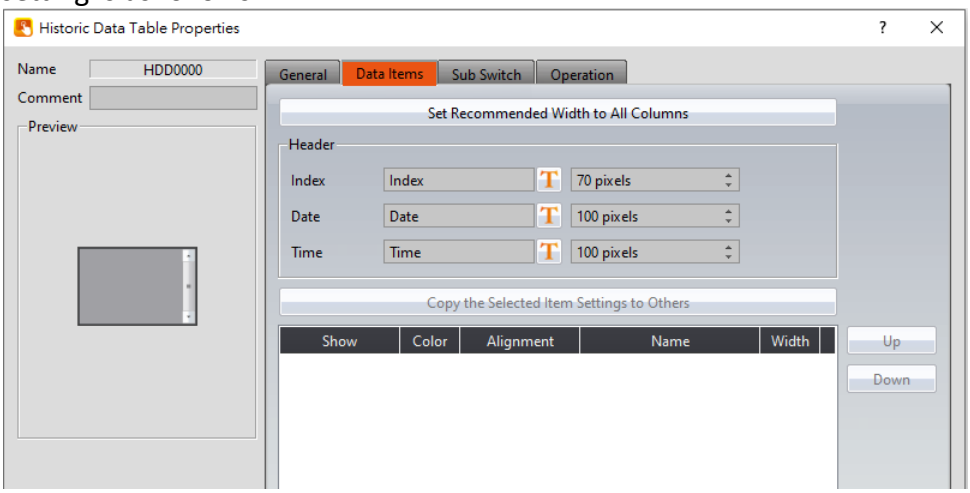


Figure 349【Data Items】Setting Screen of【Historic Data Table】

Table 205【Data Items】Setting Properties of【Historic Data Table】

Property	Description
【Set Recommended Width to All Columns】	When this button is pressed, the software calculates the required column width at the time of planning and sets its field width
【Header】	【Index】 Edit the【Index】entry of the header text. The text can be entered directly or selected from the text library, the width of

	the entry can be adjusted by incrementing or decrementing the pixel count. 【Date】 Edit the【Date】entry of the header text. The text can be entered directly or selected from the text library, the width of the entry can be adjusted by incrementing or decrementing the pixel count. 【Time】 Edit the【Time】entry of the header text. The text can be entered directly or selected from the text library, the width of the entry can be adjusted by incrementing or decrementing the pixel count.
【Data Items】	【Copy the Selected Item Settings to Others】 This button will be enabled when an entire row is selected. Users can use this button to copy the settings of the selected item into other items. This simplifies the setting process for the user. 【Up】 This button will be enabled when an entire row is selected; users can use this button to change the order of the item. 【Down】 This button will be enabled when an entire row is selected; users can use this button to change the order of the item. The items within the table are determined by the【Data Log】, in which the item settings include: ➢ 【Display】 Set the visibility of this item. ➢ 【Customized】 The color of the item. ➢ 【Alignment】 The alignment of the item. ➢ 【Name】 This is used to view the names set by the【Data Log】and cannot be set. Please go to the settings page of the【Data Log】to change the name of the

	item. ➢ 【Width】 Column width setting.

19.4.26.3 【Sub Switch】

【Historic Data Table】【Sub Switch】setting paging as shown below, the meaning of each setting is as follows :

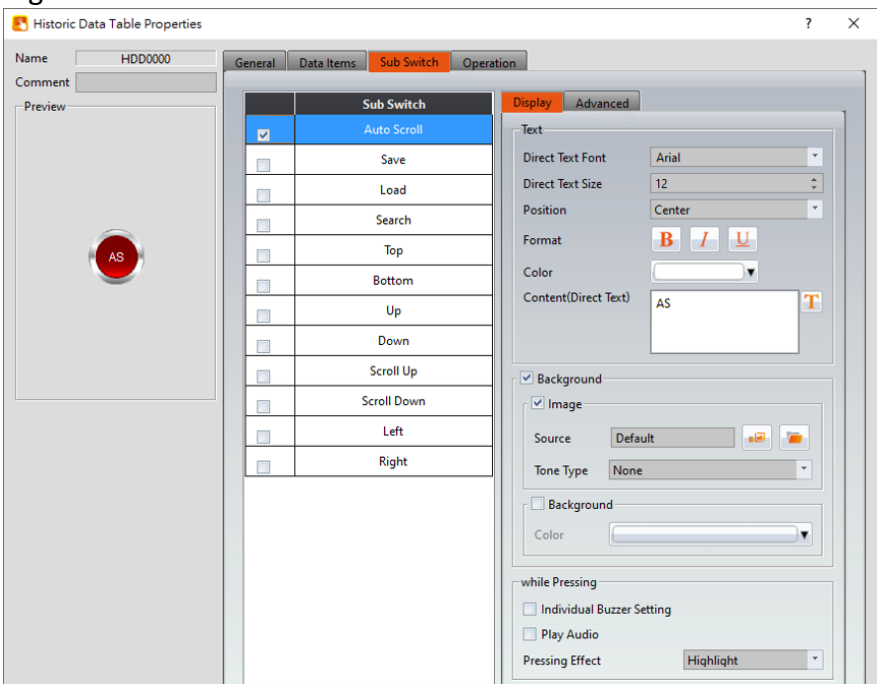
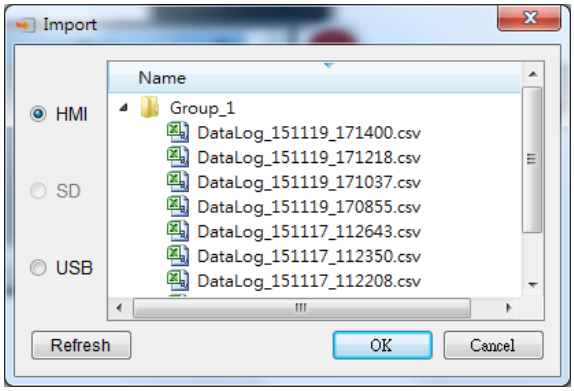
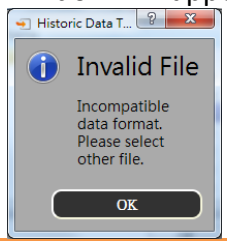
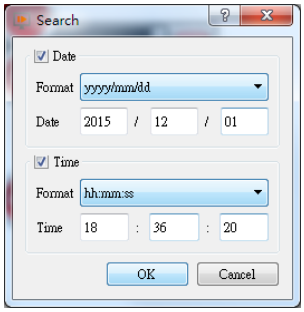
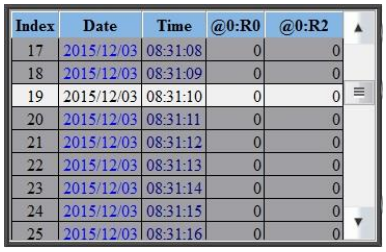


Figure 350【Sub Switch】Setting Screen of【Historic Data Table】

Table 206【Sub Switch】Setting Properties of【Historic Data Table】

Property	Description
【Auto Scroll】	Auto scroll on/off, this is invert switch. When new data is updated to the【Historical Data Table】, if auto-scroll is enabled, the table will automatically scroll to the latest data. Otherwise, the table will not scroll automatically.
【Save】	Click to save all the data in the【Data Log】buffer, The storage format, destination, naming, etc. will depend on the settings of【Data Log】.
【Load】	When【Source】is【File】, pressing this button will display the following dialog window. To allow the operator to choose which files in the【Historic Data Table】to display. These files can be from within the HMI, Micro SD card, or

	USB.  If import file format is not the same, the following dialog window will appear. 
【Search】	Allows the operator to search the data in【Historic Data Table】. Pressing this button will display following dialog windowand allows the operator to enter the date and time to search the data in the【Historic Data Table】.  After the search, the【Historic Data Table】will display the line and invert the colors of the result.  If searched data is not found in the【Historic Data Table】, the following dialog window will appear.

	 Note: When using the search, please note that the year is expressed as yy or yyyy. These are two different formats. If you choose the wrong one, you will not be able to search.
【Top】	Display the list to the top.
【Bottom】	Display the list to the bottom.
【Up】	Move the list up one column.
【Down】	Move the list down one column.
【Scroll Up】	Scroll up n columns, n can be set in the【General】.
【Scroll Down】	Scroll down n columns, n can be set in the【General】.
【Left】	Move the list one column to the left.
【Right】	Move the list one column to the right.
【File Print】	It can be used when the mode is【File】. Print out all the data in the file.
【Display】【Text】	【Direct Text Font】 Set the font of the sub switch currently selected. 【Direct Text Size】 Set the text size of the sub switch currently selected. 【Position】 Set the text position of the sub switch currently selected. 【Format】 Set the text format of the sub switch currently selected, including Bold, Italics and Underline. 【Color】 Set the text color of the sub switch currently selected. 【Content(Direct Text)】 Set the text of the sub switch currently selected.
【Display】 【Background】	Set the background of the sub switch currently selected. Check it to activate background settings, and the displayed background of the sub switch currently selected can be

	edited below. If this option is not checked, the background will be transparent. 【Use Image】 Set to use an image for the displayed background of the sub switch currently selected. When this option is checked, an image selection setting item will appear asking the user to select an image either from the【Image Library】or from a file. 【Background Color】 Set the background color of the sub switch currently selected. This setting will appear if【Use Image】was not selected.
【Display】【while Pressing】	【Individual Buzzer Setting】 Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short. 【Play Audio】 Select to play audio when the sub switch is pressed. An【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio Selector】can be pressed to play the audio selected. 【Pressing Effect】 Set the pressing effect of the sub switch currently selected. There are two effects available for selection:【None】and【Highlight】.
【Advanced】【Operation Control】	Operation control of sub switch, it can enabled by bit or security. 【Enable by Bit】 Check whether the sub switch operation is controlled by a bit 【Show Disabled Sign】 Check if you want to display the forbidden symbol, it's valid when check【Enable by Bit】,【Enabled by Word】or【Enable by Security】.

【Address】
Set the address of the sub switch operation control bit.

【State】
Set the control bit as 1 or 0 to operate object.

【Enabled by Word】
Check whether the operation is controlled by word.

【Address】
Set the operation control word address.

【Condition】
Set the condition of word control and when it is true then the object can be controlled, when false not the object can not be controlled. The condition include' =',' !=', '>', '<', '>=', '<='.

【Enable by Security】
Select the sub switch whether controlled by user level.

【User Level Condition】
Set the level and condition of the object.

【Hold Time】
Check whether the operation is controlled by hold time. Hold time can be divided into two kinds:

- 【Press On】: press directly, according to the【Min. Hold Time】to confirm whether the operation is executed.
- 【Double Press】: quickly double press to confirm whether the operation is executed.

【Operator Confirm】
Check whether show comfirmation message window after checking the operation.

【Max. Waiting Time】
When the confirmation message window is displayed, If the user does not reply within this time, the system will close

	the confirmation message window and cancel this operation

19.4.27 【Historic Data Selector】

The【Historic Data Selector】allows a user to select and view a【Data Log】that was exported into a CSV or TXT file. When the【Historic Data Selector】is accessed, a dropdown menu gives the user the files to view. Clicking on one of the files allows the user to view it.

19.4.27.1 【Setting】

【Historic Data Selector】【Setting】setting paging as shown below, the meaning of each setting is as follows :

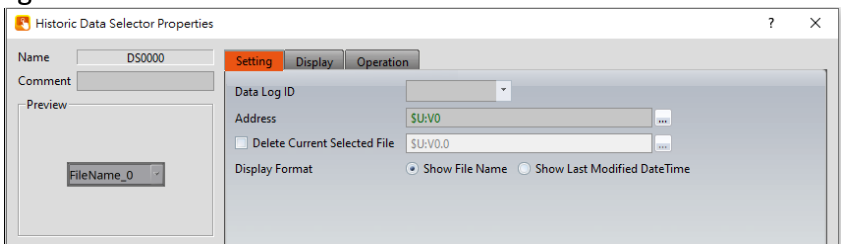


Figure 351【General】Setting Screen of【Historic Data Selector】

Table 207【General】Setting Properties of【Historic Data Selector】

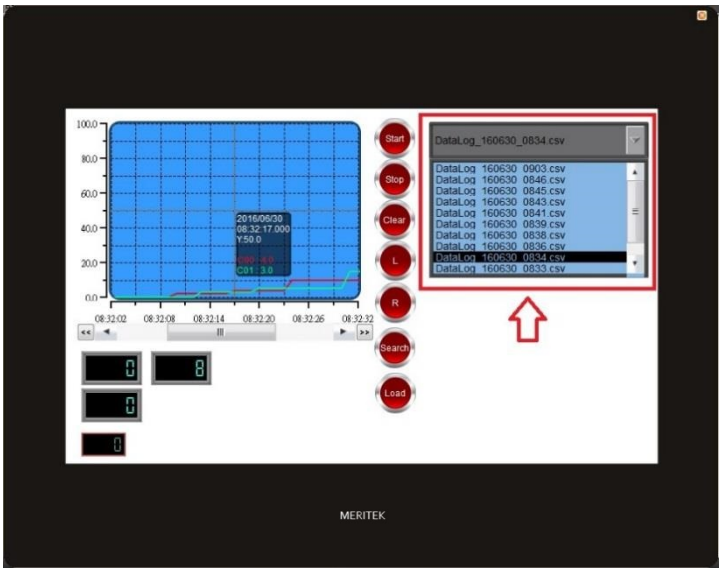
Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Basic】	【Data Log ID】 Set the ID of the Data Log group to display. 【Address】 Set up a register to control the displayed files. This address mainly corresponds to the order of the files. For example, this address is set to R25, and there are 3 files under datalog\Group_1. At this time, R25 will correspond to the values in the following order. Alarm_160630_1135.csv ⇨ R50 = 0 Alarm_160630_1134.csv ⇨ R50 = 1 Alarm_160630_1133.csv ⇨ R50 = 2 If one more file is added at this time, there are 4 files in total, and the corresponding values of R25 in this order will be as

shown below.

Alarm_160630_1136.csv ⇨ R50 = 0
Alarm_160630_1135.csv ⇨ R50 = 1
Alarm_160630_1134.csv ⇨ R50 = 2
Alarm_160630_1133.csv ⇨ R50 = 3

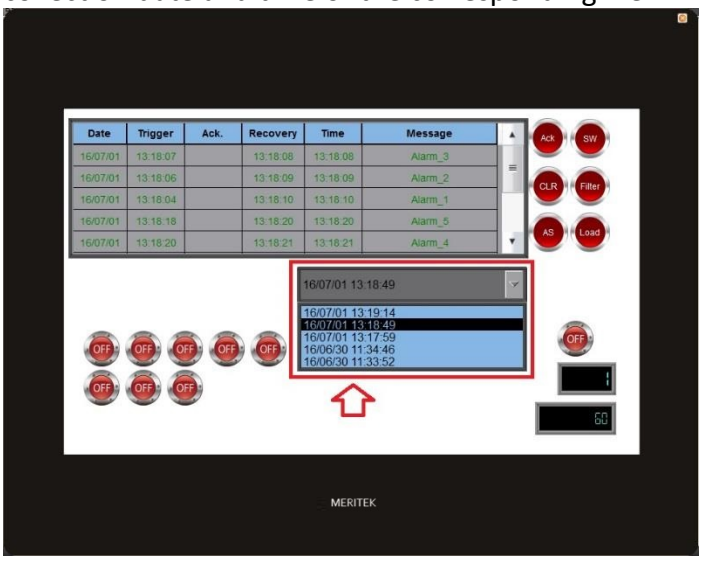
【Display Format】

Press the selector than will display the corresponding file name of the【Data Log ID】, and the display format can be selected from【Show File Name】or【Show Last Modified Date Time】.



【Show Last Modified DateTime】

When the Data Selector is accessed, it will display the data collection date and time of the corresponding file.



【Show Date】

Set whether to display the date of the file and set the display

	format, select【Show Last Modified DateTime】, this option will appear. 【Show Time】 Set whether to display the file time and set the display format, select【Show Last Modified DateTime】, this option will appear.

19.4.27.2 【Display】

【Historic Data Selector】【Display】setting paging as shown below, the meaning of each setting is as follows :

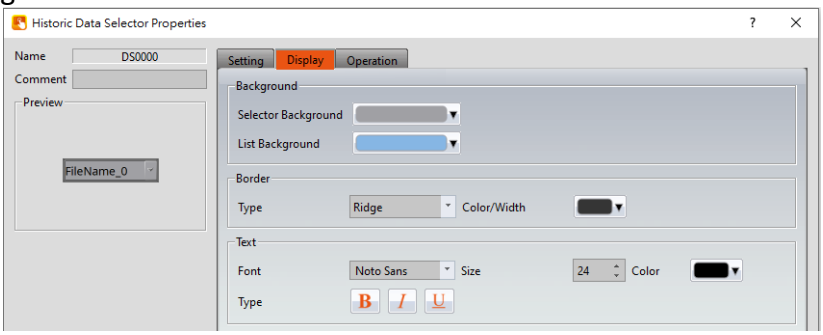


Figure 352【Display】Setting Screen of【Historic Data Selector】

Table 208【Display】Setting Properties of【Historic Data Selector】

Property	Description
【Background】	【Selector Background】 Set the color of the background. 【List Background】 Set the color of the list background
【Border】	【Type】 Set the border type. 【Color/Width】 Set the color of the border.
【Text】	【Font】 Set the font and size of cursor values. 【Size】 Set the size of the text.

	【Color】 Set the color of the text. 【Type】 Set the format of the text.

19.4.28 【Alarm Display】

【Alarm Display】is used to display the status of alarms that occurred during project execution. It can notify the operator of alarm related contents including alarm messages, levels occurrences, acknowledgement and recovery time etc.

19.4.28.1 【Setting】

The【Alarm Display】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

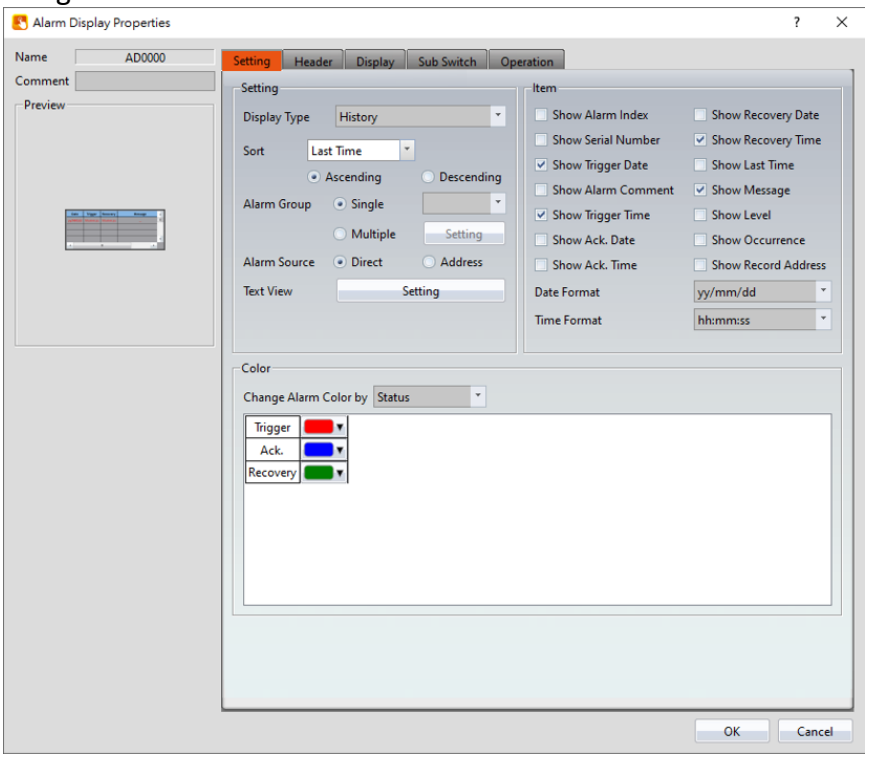


Figure 353【Setting】Screen of【Alarm Display】

Table 209【Setting】Properties of【Alarm Display】

Property	Description
【Preview】	Preview the appearance of this object.
【Comment】	Set the comment of the object.
【Name】	The default name of the object.

【Setting】	【Display Type】 Set the display type of the Alarm Display. When【History】is selected, the Alarm Display will give a complete display of alarm related messages. When【Log】is selected, the Alarm Display will display the various changes of alarm state entry by entry. When【Active】is selected, the Alarm Display will only display alarms that have not yet recovered. When【Load CSV File】is selected, the Alarm Display will display the contents of the specified CSV file. When【Database】is selected, the Alarm Display will read the data when connecting to the database. When selecting the database, all groups will be displayed forcibly, and the sub switch【Filter】cannot be used. 【New Alarm on Top】 Set to place new alarms on the top of the table. If not selected, new alarms will be added to the bottom of the table. 【Sort】 Set the sorting of the alarm display, you can choose to sort by the last time or serial number. 【Alarm Group】 Set the displayed Alarm Group of the Alarm Display. If the【Direct】option is selected, the Alarm Display will only display the alarm groups set below. If the【Address】option is selected, the alarm group displayed by Alarm Display will be determined by the numeric value of the address set below. 【Single】 Set the alarm display only display a alarm group. 【Multiple】 Set the alarm display can display multiple groups, you can select the group to be displayed at【Setting】, need to set the alarm group in the alarm function, click to select, If you set 2 alarm groups,click on the settings will appear as shown below 2 alarm groups to choose from.



【Alarm Source】

When【Direct】is selected, this display will be displayed according to the setting of【Alarm Group】.

When selecting【Address】, the user can set an address, and the data type is 16 UINT.

If the【Alarm Group】at this time selects【Single】, the displayed group can be switched through this address;

If the【Alarm Group】at this time selects【Multiple】, enter 0 to display all groups, and enter a number to display a single group.

【Enable File Control】

If the【Display Type】is seleted as【Load CSV File】, this option will be available. If selected, the file control can be done using a register. The value in the register corresponds to the file order inside the specified path. New CSV files are added to the top of the path, i.e position 0.

Alarm_160630_1135.csv ⇨ R50 = 0
Alarm_160630_1134.csv ⇨ R50 = 1
Alarm_160630_1133.csv ⇨ R50 = 2
Alarm_160630_1136.csv ⇨ R50 = 0
Alarm_160630_1135.csv ⇨ R50 = 1
Alarm_160630_1134.csv ⇨ R50 = 2
Alarm_160630_1133.csv ⇨ R50 = 3

【Enable File Control】(Load CSV File)

Set the bit to control whether to enable the file.

	【Refresh Data Automatically】(Load CSV File) Set under the【Load CSV file】mode whether to automatically update the table display based on the stored data. 【Loaded File Name】 Show under the【Load CSV file】mode,set an address which display the name of the file currently read by the data table. 【Text View】 Set the display position, size and function of the alarm text view.
【Item】	Set the display contents of the Alarm Display. 【Show Alarm Index】 Set to allow Alarm Display to display the index of the Alarm. 【Show Serial Number】 Set to allow Alarm Display to display the alarm's serial number. For all alarm groups, all automatically generated alarms have serial numbers that increment by 1 unless the serial number has been cleared. 【Show Trigger Date】 Set to allow Alarm Display to display the trigger date. 【Show Alarm Comment】 Set to allow Alarm Display to display the alarm comment. 【Show Trigger Time】 Set to allow Alarm Display to display the trigger time. 【Show Ack. Time】 Set to allow Alarm Display to display the alarm acknowledgement time. 【Show Recovery Time】 Set to allow Alarm Display to display the alarm recovery time.

	【Show Last Time】 Set to allow Alarm Display to display the last alarm event, including trigger time, confirmation time, and recovery time. 【Show Message】 Set to allow Alarm Display to display the alarm message. 【Show Level】 Set to allow Alarm Display to display the alarm level. 【Show Record Address】 Set to allow Alarm Display to display the saved numeric value of the alarm record address. 【Show Occurrence】 Set to allow Alarm Display to display the alarm occurrences. 【Date Format】 This option will appear if【Show Trigger Date】is selected. It can be used to select the display format of the date for the Alarm Display. 【Time Format】 This option will appear if【Show Trigger Time】,【Show Ack. Time】or【Show Recovery Time】is selected. It can be used to select the display format of the time for the Alarm Display.
【Color】	【Change Alarm Color by】 Set the condition for the displayed color change of the Alarm Display. When【Status】is selected, the Alarm Display will determine the display color according to the status of the alarm. When【Level】is selected, the Alarm Display will determine the display color according to the level of the alarm. When【Status + Level】is selected, the Alarm Display will determine the displayed color according to the status and level of the alarm.

19.4.28.2 【Header】

The【Alarm Display】【Header】page is as shown in the figure below, the displayed headers of the Alarm Display can be modified in this page.

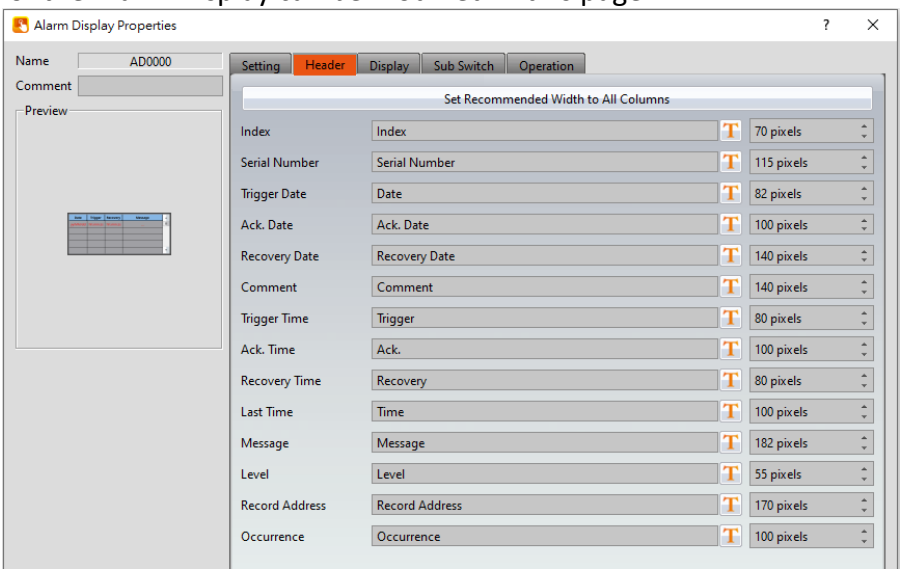


Figure 354【Display】Setting Screen of【Alarm Display】

Table 210【Header】Setting Properties of【Alarm Display】

Property	Description
【Set Recommended Width to All Columns】	When this button is pressed, the software calculates the required column width at the time of planning and sets its field width
【Header】	Select the displayed text for the alarm display. The text can be entered directly or selected from the Text Library. 【Width】 Set the width of each column.

19.4.28.3 【Display】

The【Alarm Display】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

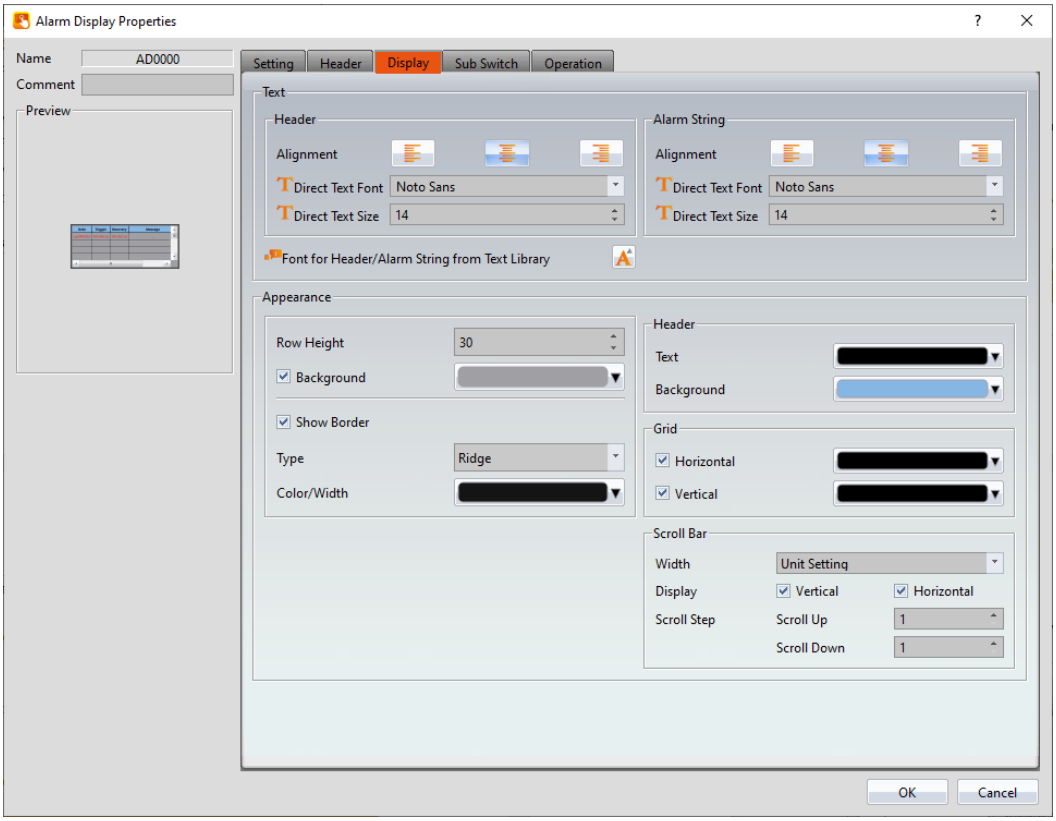


Figure 355【Display】Setting Screen of【Alarm Display】

Table 211【Display】Setting Properties of【Alarm Display】

Property	Description
【Text】	【Alignment】 Set the alignment of header or content. 【Direct Text Font】 Set the font of header or content. 【Direct Text Size】 Set the size of header or content. 【Font for Header/Alarm String from Text Library】 The font and size of the string can be set here.
【Appearance】	【Row Height】 Set the row height of the Alarm Display. 【Background】 Set the background color of the Alarm Display.

	【Show Border】 Set to display the border. When it is checked, the color, width and type of the border can be set. 【Type】 Set the border type of the Alarm Display. 【Color/Width】 Set the border color and thickness of the Alarm Display.
【Header】	Set the header appearance of the Alarm Display. It includes 【Text】to set the text color of the header and 【Background】to set the background color of the header.
【Grid】	Set to display the【Horizontal】and【Vertical】gridlines of the Alarm Display; if display is selected, the color of the gridlines can be set.
【Scroll Bar】	【Width】 Adjust the right side scroll bar width, provides 5 widths. 【Display】 Check whether to display the slider. 【Scroll Step】 Set how many lines to switch at a time, use with sub-switch.

19.4.28.4 【Sub Switch】

The【Alarm Display】【Sub Switch】page is as shown in the figure below, the meanings of each setting item are listed below:

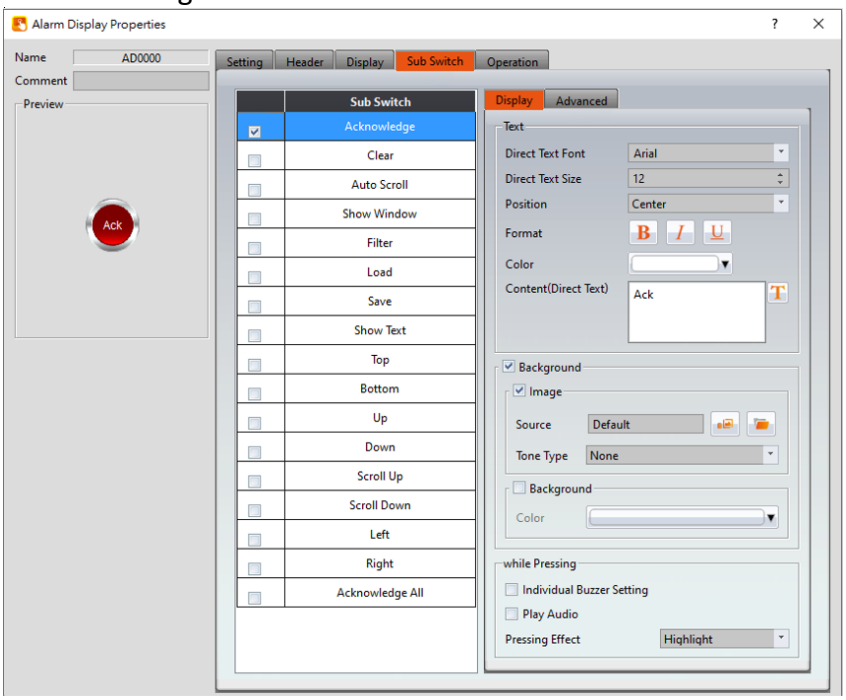
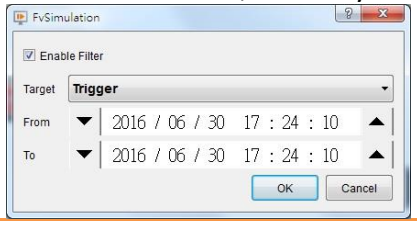
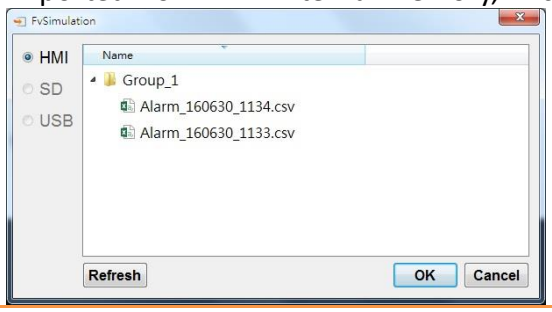


Figure 356【Sub Switch】Setting Screen of【Alarm Display】

Table 212【Sub Switch】Setting Properties of【Alarm Display】

Property	Description
【Acknowledge】	Change the status of the currently selected alarm to acknowledge.
【Clear】	Clear all alarms displayed on Alarm Display.
【Auto Scroll】	Set to enable the auto scroll function. If enabled, when a new alarm occurs, the Alarm Display will automatically scroll to the position of the newest alarm.
【Show Window】	When this switch is pressed, the system will display the【Window Screen】that corresponds to the currently selected alarm in the【Alarm】setting.
【Filter】	Apply a filter to the alarm time display in order to find the alert message. Filter options include trigger time, confirmation time, recovery and last time. 

【Load】	When the display time for the alarm display is set to【CSV File】, pressing the sub-button loads the specified CSV file. The operator can select where the CSV file should be imported from: HMI internal memory, Micro SD card, or USB. 
【Save】	Export the data on the display according to the export settings. If the filter is used, only the filtered data will be exported.
【Show Text】	Please refer to【Show Text View】in chapter 8.2.2-【Advanced Setting】
【Top】	Move the alarm list to the top.
【Bottom】	Move the alarm list to the bottom.
【Up】	Move the list up one column.
【Down】	Move the list down one column.
【Scoll Up】	Scroll up n columns, n can be set in the【Display】->【Scroll Step】.
【Scroll Down】	Scroll down n columns, n can be set in the【Display】->【Scroll Step】【Scroll Step】.
【Left】	Move the list one column to the left.
【Right】	Move the list one column to the right.
【Acknowledge All】	When multiple alarms are happening in the list, you can use this sub-switch to confirm all of them.
【Display】 【Text】	【Direct Text Font】 Set the text font of the sub switch currently selected. 【Direct Text Size】 Set the text size of the sub switch currently selected. 【Position】 Set the text position of the sub switch currently selected.

	【Format】 Set the text format of the sub switch currently selected, including Bold, Italics and Underline. 【Color】 Set the text color of the sub switch currently selected. 【Content(Direct Text)】 Set the text of the sub switch currently selected.
【Display】 【Background】	Set the background of the sub switch currently selected. Check it to activate background settings, and the displayed background of the sub switch currently selected can be edited below. If this option is not checked, the background will be transparent. 【Use Image】 Set to use an image for the displayed background of the sub switch currently selected. When this option is checked, an image selection setting item will appear asking the user to select an image either from the【Image Library】or from a file. 【Background Color】 Set the background color of the sub switch currently selected. This setting will appear if 【Use Image】was not selected.
【Display】 【while Pressing】	【Individual Buzzer Setting】 Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short. 【Play Audio】 Select to play audio when the sub switch is pressed. An【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio Selector】can be pressed to play the audio selected. 【Pressing Effect】 Set the pressing effect of the sub switch currently selected. There are two effects available for selection:【None】and【Highlight】.

【Advanced】 **【Operation Control】**	Operation control of sub switch, it can enabled by bit or security. 【Enable by Bit】 Check whether the sub switch operation is controlled by a bit 【Show Disabled Sign】 Check if you want to display the forbidden symbol, it's valid when check【Enable by Bit】,【Enabled by Word】or【Enable by Security】. 【Address】 Set the address of the sub switch operation control bit. 【State】 Set the control bit as 1 or 0 to operate object. 【Enabled by Word】 Check whether the operation is controlled by word. 【Address】 Set the operation control word address. 【Condition】 Set the condition of word control and when it is true then the object can be controlled, when false not the object can not be controlled. The condition include' =',' !=', '>', '<', '>=', '<='. 【Enable by Security】 Select the sub switch whether controlled by user level. 【User Level Condition】 Set the level and condition of the object. 【Hold Time】 Check whether the operation is controlled by hold time. Hold time can be divided into two kinds: ➢ 【Press On】: press directly, according to the【Min. Hold Time】to confirm whether the operation is executed. ➢ 【Double Press】: quickly double press to confirm whether the operation is executed.

	【Operator Confirm】 Check whether show comfirmation message window after checking the operation. 【Max. Waiting Time】 When the confirmation message window is displayed, If the user does not reply within this time, the system will close the confirmation message window and cancel this operation

19.4.29 【Alarm Scrolling Text】

Alarm Scrolling Text is used to display alarm states that occurred during project execution. The difference between Alarm Display and Alarm Scrolling Text is that Alarm Scrolling Text uses scrolling text to display the contents of the alarm currently occurring, including alarm messages, level, occurrences, acknowledgement and recovery time etc.

19.4.29.1 【Setting】

The【Alarm Scrolling Text】【Setting】page is as shown in the figure below, the meanings of each setting item are listed below:

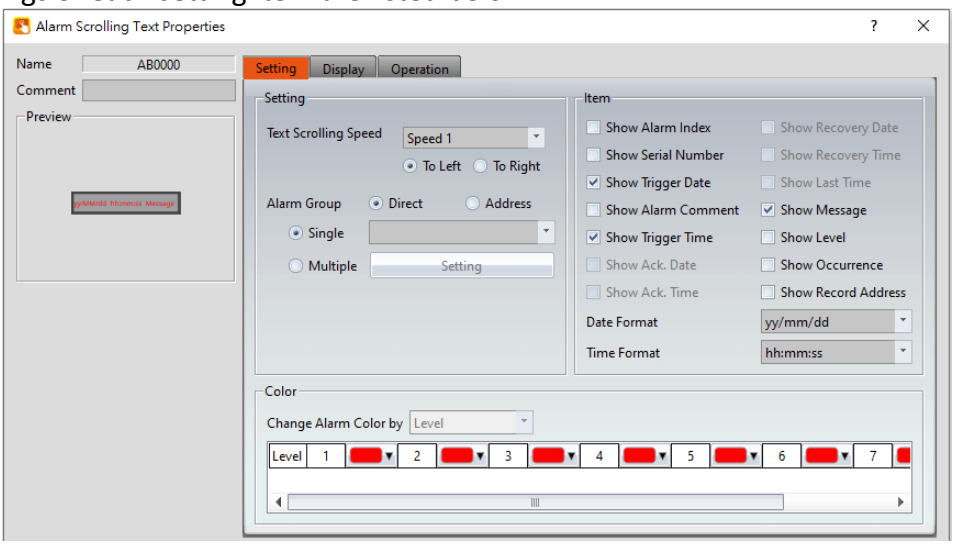
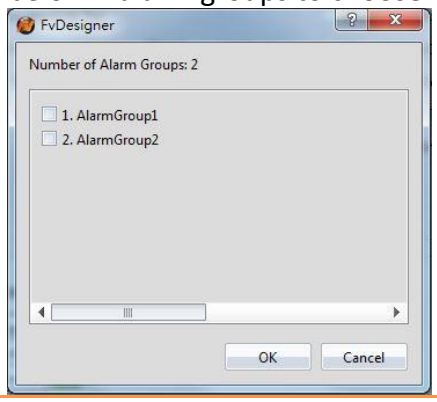


Figure 357【Setting】Screen of【Alarm Scrolling Text】

Table 213【Setting】Properties of【Alarm Scrolling Text】

Property	Description
【Preview】	Previews the appearance of this object.
【Comment】	Set the comment of the object.
【Name】	The default name of the object.

【Setting】	【Text Scrolling Speed】 Set the scrolling speed of Alarm Scrolling Text. There are four speeds that can be set from slow to fast:【Speed 1】to【Speed 4】. Also can set the text movement direction【To Left】or【To Right】. 【Alarm Group】 Set the Alarm Group of the Alarm Scrolling Text to display. If the【Direct】option is selected, the Alarm Scrolling Text will only display the alarm groups set below. If the【Address】option is selected, the alarm group displayed by Alarm Scrolling Text will be determined by the numeric value of the address set below. 【Single】 Set the alarm display only display a alarm group. 【Multiple】 Set the alarm display can display multiple groups, you can select the group to be displayed at【Setting】, need to set the alarm group in the alarm function, click to select, If you set 2 alarm groups,click on the settings will appear as shown below 2 alarm groups to choose from. 
【Item】	Set the display contents of Alarm Scrolling Text. 【Show Alarm Index】 Set to allow the Alarm Display to display the index of the Alarm. 【Show Serial Number】 Set to allow Alarm Display to display the alarm's serial

	number. For all alarm groups, all automatically generated alarms have serial numbers that increment by 1 unless the serial number has been cleared. 【Show Trigger Date】 Set to allow the Alarm Scrolling Text to display the trigger date. 【Show Alarm Comment】 Set to allow the Alarm Scrolling Text to display the alarm comment. 【Show Trigger Time】 Set to allow the Alarm Scrolling Text to display the trigger time. 【Show Message】 Set to allow the Alarm Scrolling Text to display the alarm message. 【Show Level】 Set to allow the Alarm Scrolling Text to display the alarm level. 【Show Record Address】 Set to allow the Alarm Scrolling Text to display the saved numeric value of the alarm record address. 【Show Occurrence】 Set to allow the Alarm Scrolling Text to display the alarm occurrences. 【Date Format】 This option will appear if【Show Trigger Date】is selected. It can be used to select the display format of the date for the Alarm Scrolling Text. 【Time Format】 This option will appear if【Show Trigger Time】is selected. It can be used to select the display format of the time for the Alarm Scrolling Text.
【Color】	【Change Alarm Color by】

	Set the condition for the displayed color change of the Alarm Scrolling Text. The Alarm Scrolling Text will determine the display color according to the level of the alarm.

19.4.29.2 【Display】

The【Alarm Scrolling Text】【Display】page is as shown in the figure below, the meanings of each setting item are listed below:

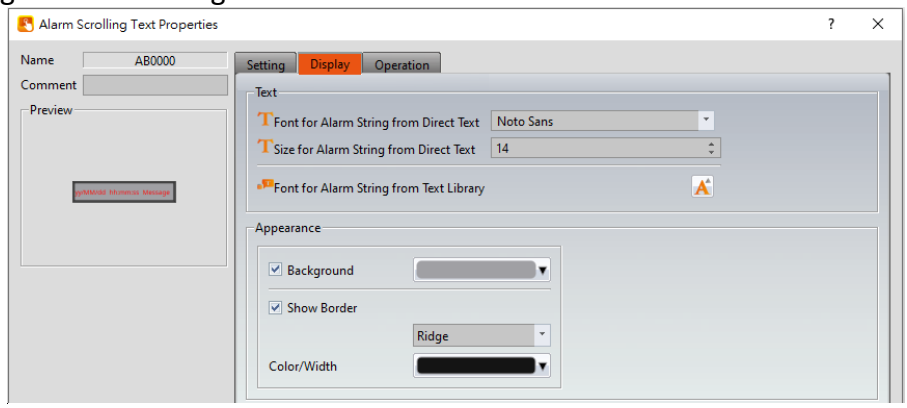


Figure 358【Display】Setting Screen of【Alarm Scrolling Text】

Table 214【Display】Setting Properties of【Alarm Scrolling Text】

Property	Description
【Text】	【Font for Alarm String from Direct Text】 The font of the alarm string can be set here. 【Size for Alarm String from Direct Text】 The size of the alarm string can be set here. 【Font for Alarm String from Text Library】 The font and size of the alarm string can be set here.
【Appearance】	【Background】 Set the background color of the Alarm Scrolling Text. 【Show Border】 Set to display the border. When it is checked, the color, width and type of the border can be set at the bottom. 【Type】 Set the border type of the Alarm Scrolling Text. 【Color/Width】 Set the border color and border thickness of the Alarm

	Scrolling Text.

19.4.30 【Alarm Data Selector】

The【Alarm Data Selector】allows a user to select and view an【Alarm】that was exported into a CSV file. When the【Alarm Data Selector】is accessed, a dropdown menu gives the user the files to view. Clicking on one of the files allows the user to view it.

19.4.30.1 【Setting】

【Alarm Data Selector】【Setting】setting paging as shown below, the meaning of each setting is as follows :

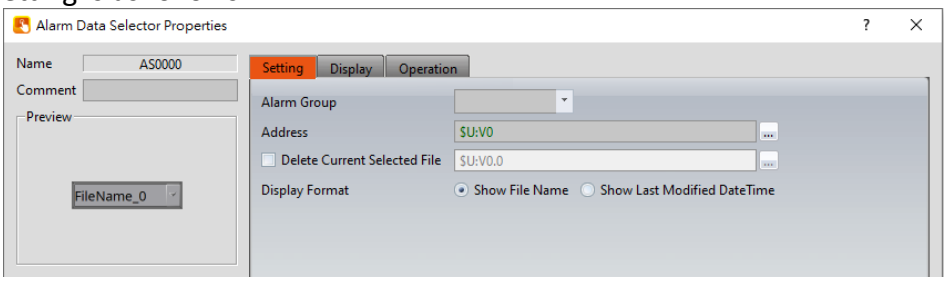


Figure 359【General】Setting Screen of【Alarm Data Selector】

Table 215【General】Setting Properties of【Alarm Data Table】

Property	Description
【Preview】	Preview the appearance of this object.
【Comment】	Set the comment of the object.
【Name】	The default name of the object.
【Basic】	【Alarm Group】 Set the ID of the alarm group to display 【Address】 Select the register to control the visibility of a file. This address corresponds to the file path of alarms. The value stored in the register corresponds to the file number in the path, with the topmost file at position 0. Alarm_160630_1135.csv ⇨ R50 = 0 Alarm_160630_1134.csv ⇨ R50 = 1 Alarm_160630_1133.csv ⇨ R50 = 2

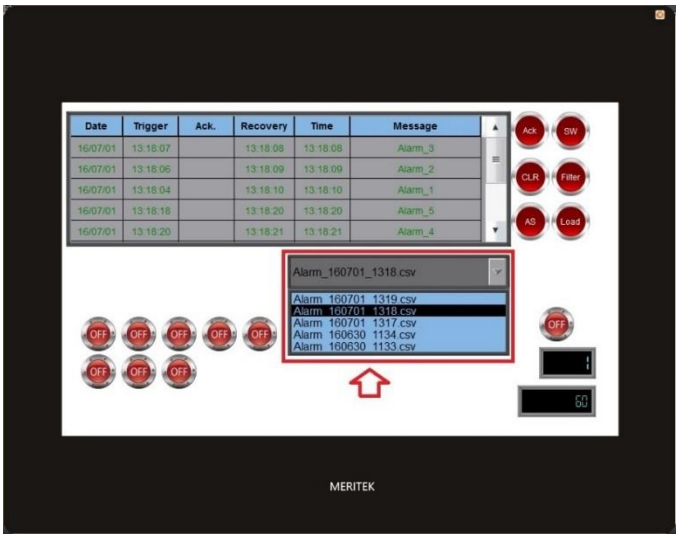
Alarm_160630_1136.csv ⇨ R50 = 0
Alarm_160630_1135.csv ⇨ R50 = 1
Alarm_160630_1134.csv ⇨ R50 = 2
Alarm_160630_1133.csv ⇨ R50 = 3

【Display Format】

Select how the alarm data files are displayed when the Alarm Data Selector is accessed. There are two options for【Display Format】:【Show File Name】and【Show Last Modified DateTime】.

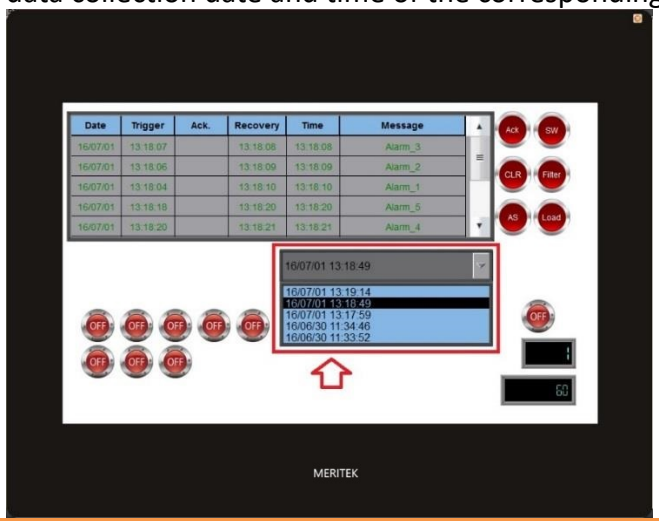
【Show File Name】

When the Alarm Data Selector is accessed, it will display the file names.



【Show Last Modified DateTime】

When the Alarm Data Selector is accessed, it will display the data collection date and time of the corresponding file.



	【Show Date】 Select to show the dates of the files when the Alarm Data Selector is accessed. The format of the date can be set. 【Show Time】 Select to show the times of the files when Alarm Data Selector is accessed. The fomat of the time can be set.

19.4.30.2 【Display】

【Alarm Data Selector】【Display】setting paging as shown below, the meaning of each setting is as follows :

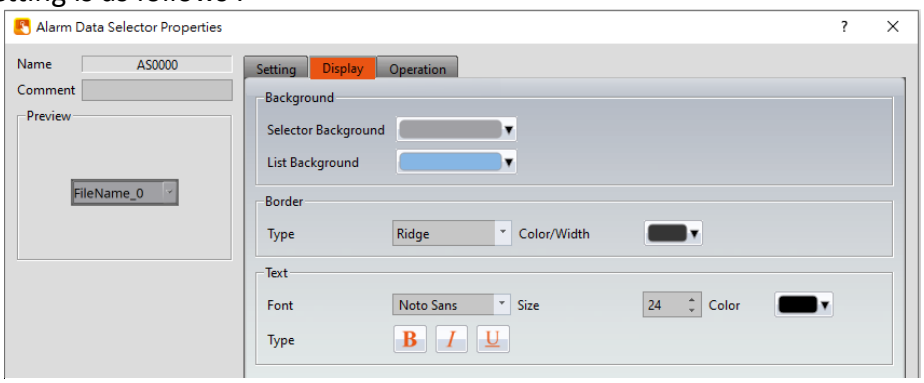


Figure 360【Display】Setting Screen of【Alarm Data Selector】

Table 216【Display】Setting Properties of【Alarm Data Table】

Property	Description
【Background】	【Selector Background】 Set the color of the background. 【List Background】 Set the color of the list background
【Border】	【Type】 Set the border type. 【Color/Width】 Set the color of the border.
【Text】	【Font】 Set the font and size of cursor values. 【Size】

	Set the size of the text. 【Color】 Set the color of the text. 【Type】 Set the format of the text.

19.4.31 【Recipe Selector】

【Recipe Selector】allows user to select a specific recipe in a recipe group during execution. Please refer to **Chapter 9–Recipe** for functions related to recipes.

19.4.31.1 【General】

【Recipe Selector】【General】setting paging as shown below, the meaning of each setting is as follows :

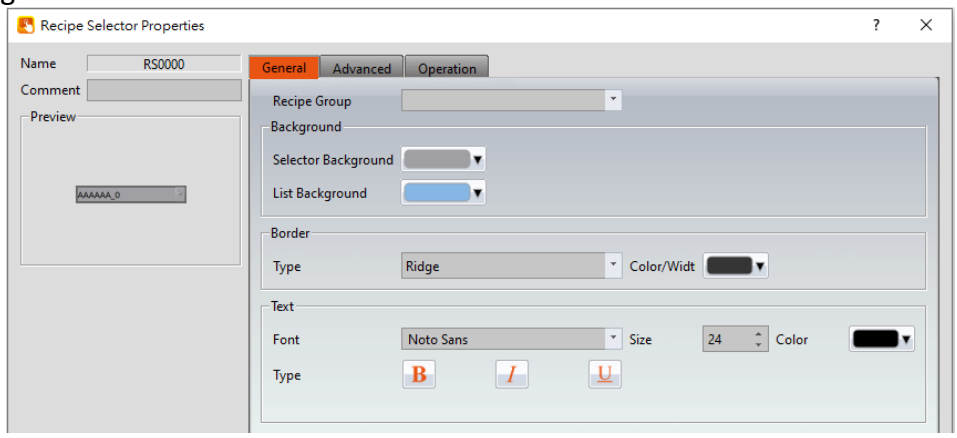


Figure 361【General】Setting Page of【Recipe Selector】

Table 217【General】Setting Properties of【Recipe Selector】

Property	Description
【Comment】	Set the comment of the object.
【Name】	The default name of the object.
【Preview】	Preview the appearance of this object.
【Recipe Group】	If the user adds a new recipe group in the recipe setting function, the ID and name of the recipe group will be displayed here. The user must select a recipe group before the【OK】button is pressed.
【Background】	【Selector Background】 Set the background color of the selector.

	【List Background】 Set the background color of the drop-down list.
【Border】	【Type】 Set the border type. 【Color/Width】 Set the border color and width.
【Text】	【Font】 Set the text font. 【Size】 Set the text font size. 【Color】 Set the text color. 【Type】 Set the format of the text.

19.4.31.2 【Advanced】

【Recipe Selector】【Advanced】setting paging as shown below, the meaning of each setting is as follows :

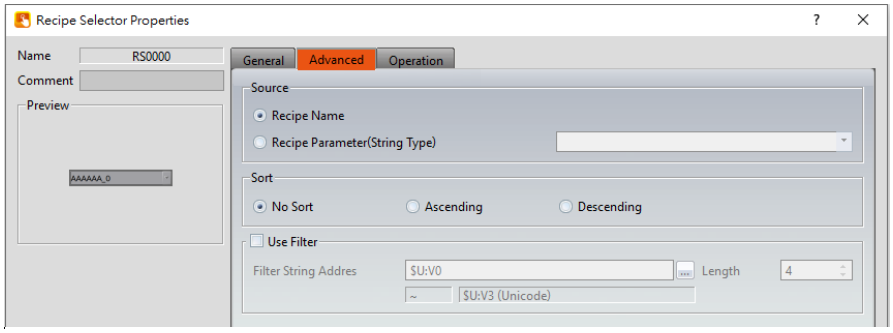


Figure 362【Advanced】Setting Page of【Recipe Selector】

Table 218【General】Setting Properties of【Recipe Selector】

Property	Description
【Source】	Set the source of recipe selector. 【Recipe Name】 Default value, use the recipe name as the data of recipe

	selector. 【Recipe Parameter(ASCII Type)】 When there is an ASCII String type in the recipe parameter
【Sort】	Set whether the recipe selector data is sorted by text. 【No Sort】 Default value, The recipe selector data is not sorted and displayed in the original order. 【Ascending】 The recipe selector data is sorted in positive order. 【Descending】 The recipe selector data is sorted in reverse order.
【Use Filter】	Is to use the filter in dynamic mode, by specifying the value or text of【Filter String Address】, filter the options required in the recipe selector, for example,【Filter String Address】=50, and R50=A, then the recipe selector only displays the recipe group name with the "A" text. 【Use Filter】 Set whether to enable filtering. 【Filter String Address】 Set the text address used for dynamic filtering, and the length of the text.

19.4.32 【Recipe Table】

【Recipe Table】is used to read recipe group data set in the【Recipe】function. Users can also dynamically change the data in the recipe table during execution. Please refer to **Chapter 9–Recipe** for functions related to recipes. Recipe Table has the following functions:

- To view the complete data of recipe group select【Show All】or select【Only Show Current Recipe】to show current recipe.
- Use the【Sub Switch】to load or save the recipe group file.

19.4.32.1 【General】

【Recipe Table】【General】setting paging as shown below, the meaning of each

setting is as follows :

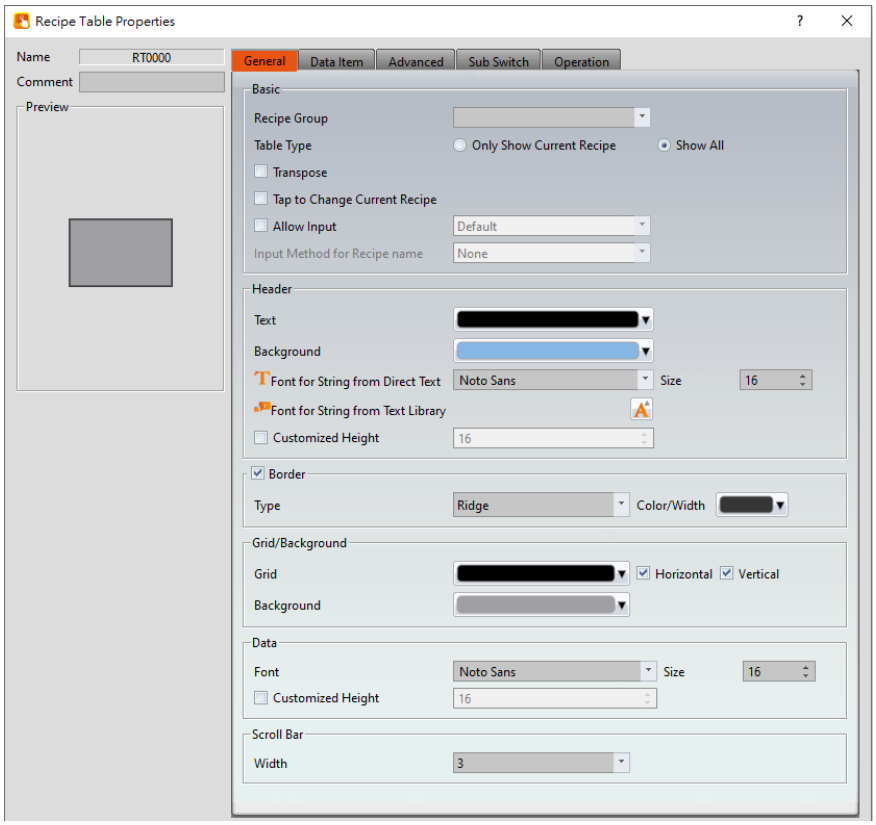


Figure 363【General】Setting Page of【Recipe Table】

Table 219【General】Setting Properties of【Recipe Table】

Property	Description
【Comment】	Set the comment of the object.
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Basic】	【Recipe Group】 If the user adds a new recipe group in the recipe setting function, the ID and name of the recipe group will be displayed here. The user must select a recipe group before the【OK】button is pressed. 【Table Type】 If【Only Show Current Recipe】is selected, the current recipe will be displayed according to the【Control Address of Recipe No.】in the recipe setting. If【Show All】is selected, all contents of the recipe group will be displayed.

【Transpose】

Reverse the rows and columns. For example, row 1 in the original table becomes column 1 in the transposed table.

	Parameter0	Parameter1	Parameter2	Parameter3	Parameter4
Recipe0	0	0	0	0	0
Recipe1	1	1	1	0	0
Recipe2	2	2	2	0	0
Recipe3	3	3	3	0	0

	Recipe0	Recipe1	Recipe2	Recipe3
Parameter0	0	1	2	3
Parameter1	0	1	2	3
Parameter2	0	1	2	3
Parameter3	0	0	0	0
Parameter4	0	0	0	0

【Tap to Change Current Recipe】

Users can change the current recipe group by clicking on during the execution period,【Control Address of Recipe No.】will also change.

【Allow Input】

The user will be able to dynamically change the parameters and the recipe names in the recipe table during execution if this option is selected.

【Input Method for Recipe name】

Select the input method for recipe name, inculde【None】and【Pinyin(Simplified Chinese)】two ways.

【None】

If【Input Method for Recipe name】select as【None】will show up the figure as below, provide user to modify or input recipe name through the following keypad.



【Pinyin(Simplified Chinese)】

	If【Input Method for Recipe name】select as【Pinyin(Simplified Chinese)】will show up the figure as below, provide user to modify or input recipe name through the following keypad, switch to English or Pinyin.  
【Header】	【Font Color】 Set the header font color. 【Background】 Set the header background color. 【Font for String from Direct Text】 Set the header font. 【Size】 Set the header font size. 【Font for String from the Text Library】 when the text is from library, can set the font and size. 【Customized Height】

	User can customized the height of the header field.
【Border】	【Type】 Set the border type. 【Color/Width】 Set the border color and width.
【Grid/Background】	【Grid】 Set the line color of the grid. 【Horizontal】 Select to display the horizontal grid lines. 【Vertical】 Select to display the vertical grid lines. 【Background】 Set the background color.
【Data】	【Font】 Set the data font. 【Size】 Set the data font size. 【Customized Height】 User can customized the height of the data field.
【Scroll Bar】	【Width】 Adjust the right side scroll bar width, provides 5 widths.

19.4.32.2 【Data Item】

【Recipe Table】【Data Item】setting paging as shown below, the meaning of each setting is as follows :

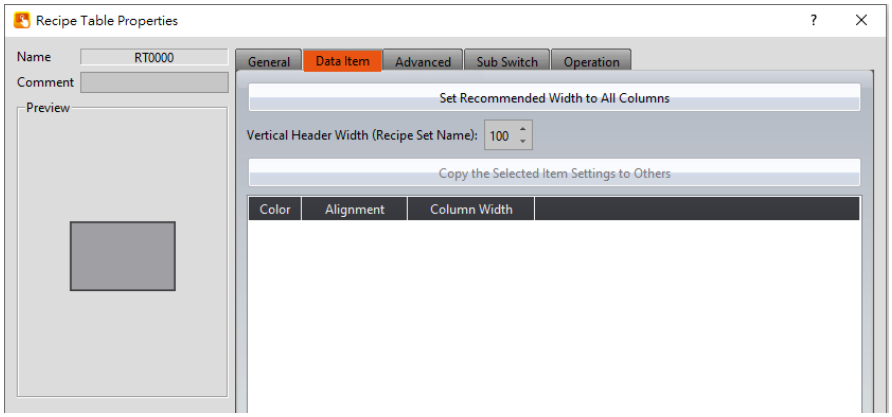


Figure 364【Data Item】Setting Page of【Recipe Table】

Table 220【Data Item】Setting Properties of【Recipe Table】

Property	Description
【Set Recommended Width to All Columns】	When this button is pressed, the software calculates the required column width at the time of planning and sets its field width.
【Vertical Header Width (Recipe Parameter Name)】	Set the column width of【Recipe Table】header. 【Column Width】 Set the column width of【Recipe Table】field, in addition to the left field, this【Transpose】option needs to be checked.
【Copy Width(Recipe Set Name)】	Select a parameter name from below, and then click this button to change the settings of other items to the same as the settings of the item selected.
【Color】	Set color of the parameter data.
【Alignment】	Determine the alignment of the parameter data.
【Column width】	Set the column width of recipe parameter.

19.4.32.3 【Advanced】

【Recipe Table】【Advanced】setting paging as shown below, the meaning of each setting is as follows :

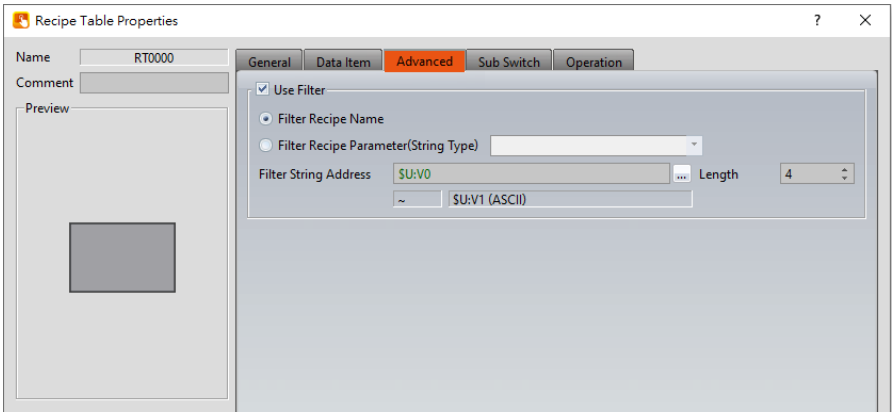
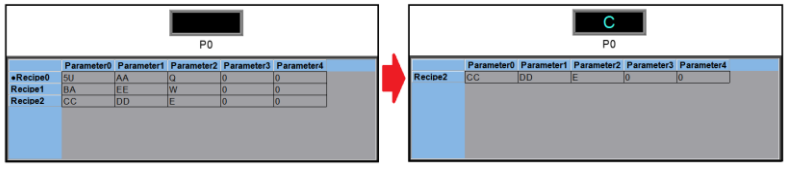
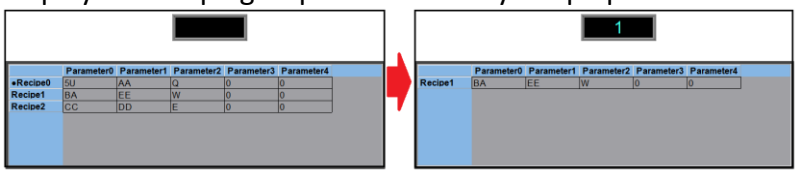


Figure 365【Advanced】Setting Page of【Recipe Table】

Table 221【Advanced】Setting Properties of【Recipe Table】

Property	Description
【Use Filter】	Check whether to enable this filter function or not.
【Filter Recipe Name】	Display the recipe group that is filter by recipe name. 
【Filter Recipe Parameter(String Type)】	Display the recipe group that is filter by recipe parameters. 
【Filter String Address】	Set the address for filtering the string.

19.4.32.4 【Sub Switch】

【Recipe Table】【Sub Switch】setting paging as shown below, the meaning of each setting is as follows :

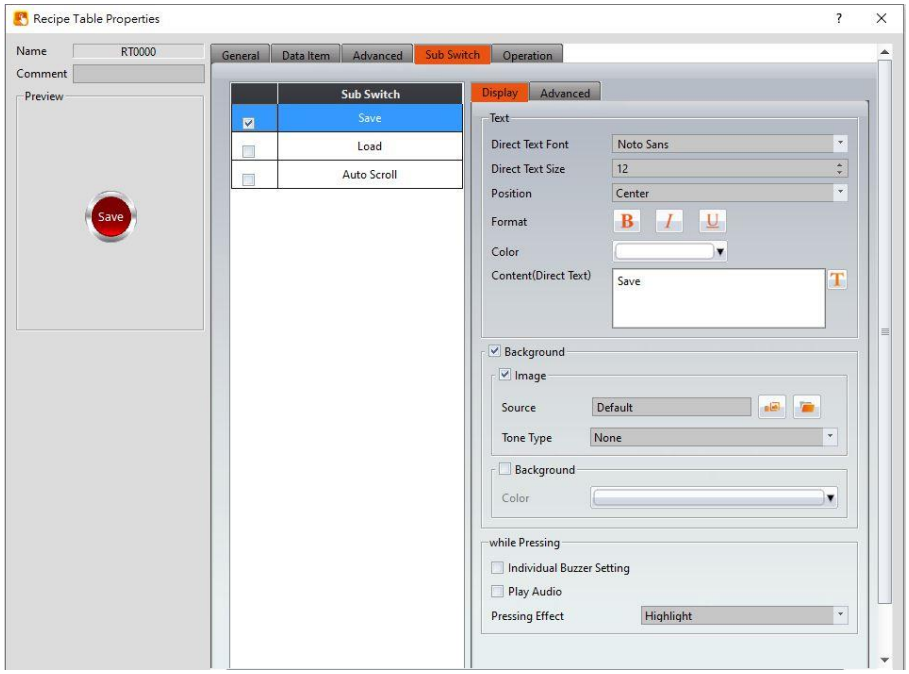


Figure 366【Sub Switch】Setting Page of【Recipe Table】

Table 222【Sub Switch】Setting Properties of【Recipe Table】

Property	Description
【Sub Switch List】	If the【Save】or【Load】button is selected from the table, corresponding buttons will also appear at the top-right side of the recipe table in the workspace after pressing the【OK】button. 【Save】 If the user presses this button during execution, the current parameter contents of the【Recipe Table】will be saved to the recipe group file configured in the recipe setting. 【Load】 If the user presses this button during execution, the contents of the recipe group file configured in the recipe setting will be loaded into the【Recipe Table】. 【Auto Scroll】 When the【Control Address of Recipe No.】has changed, the recipe table will jump to the corresponding recipe.
【Display】 【Text】	【Direct Text Font】 Set the text font of the sub switch currently selected.

	【Direct Text Size】 Set the text size of the sub switch currently selected. 【Position】 Set the text position of the sub switch currently selected. 【Format】 Set the text format of the sub switch currently selected, including Bold, Italics and Underline. 【Color】 Set the text color of the sub switch currently selected. 【Content(Direct Text)】 Set the text of the sub switch currently selected.
【Display】 【Background】	Set the background of the sub switch currently selected. Check it to activate background settings, and the displayed background of the sub switch currently selected can be edited below. If this option is not checked, the background will be transparent. 【Use Image】 Set to use an image for the displayed background of the sub switch currently selected. When this option is checked, an image selection setting item will appear asking the user to select an image either from the【Image Library】or from a file. 【Background Color】 Set the background color of the sub switch currently selected. This setting will appear if【Use Image】was not selected.
【Display】 【While Pressing】	【Individual Buzzer Setting】 Can individually setup buzzer setting. Includes 5 modes: Off, Short, Long, Short-Short, Long-Short. 【Play Audio】 Select to play audio when the sub switch is pressed. An【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the【Audio

	Selector】can be pressed to play the audio selected. 【Pressing Effect】 Set the pressing effect of the sub switch currently selected. There are two effects available for selection:【None】and【Highlight】.
【Advanced】【Operation Control】	Operation control of sub switch, it can enabled by bit or security. 【Enable by Bit】 Check whether the sub switch operation is controlled by a bit 【Show Disabled Sign】 Check if you want to display the forbidden symbol, it's valid when check【Enable by Bit】,【Enabled by Word】or【Enable by Security】. 【Address】 Set the address of the sub switch operation control bit. 【State】 Set the control bit as 1 or 0 to operate object. 【Enabled by Word】 Check whether the operation is controlled by word. 【Address】 Set the operation control word address. 【Condition】 Set the condition of word control and when it is true then the object can be controlled, when false not the object can not be controlled. The condition include' =', !=', '>', '<', '>=', '<='. 【Enable by Security】 Select the sub switch whether controlled by user level. 【User Level Condition】 Set the level and condition of the object. 【Hold Time】

	Check whether the operation is controlled by hold time. Hold time can be divided into two kinds: ➢ 【Press On】: press directly, according to the【Min. Hold Time】to confirm whether the operation is executed. ➢ 【Double Press】: quickly double press to confirm whether the operation is executed. 【Operator Confirm】 Check whether show comfirmation message window after checking the operation. 【Max. Waiting Time】 When the confirmation message window is displayed, If the user does not reply within this time, the system will close the confirmation message window and cancel this operation

19.4.33 【Operation Viewer】

【Operation Viewer】is an object used to read the Recording Buffer data of the【Operation Log】. Its main functions are as follows:

- View the Recording Buffer data of the【Operation Log】.
- Data filter function, which displays items that the user is only interested in.
- Pause or start updating the data of the Recording Buffer through the【Sub Switch】, and clear or save the data in the Recording Buffer.

19.4.33.1 【General】

【Operation Viewer】【General】setting paging as shown below, the meaning of each setting is as follows :

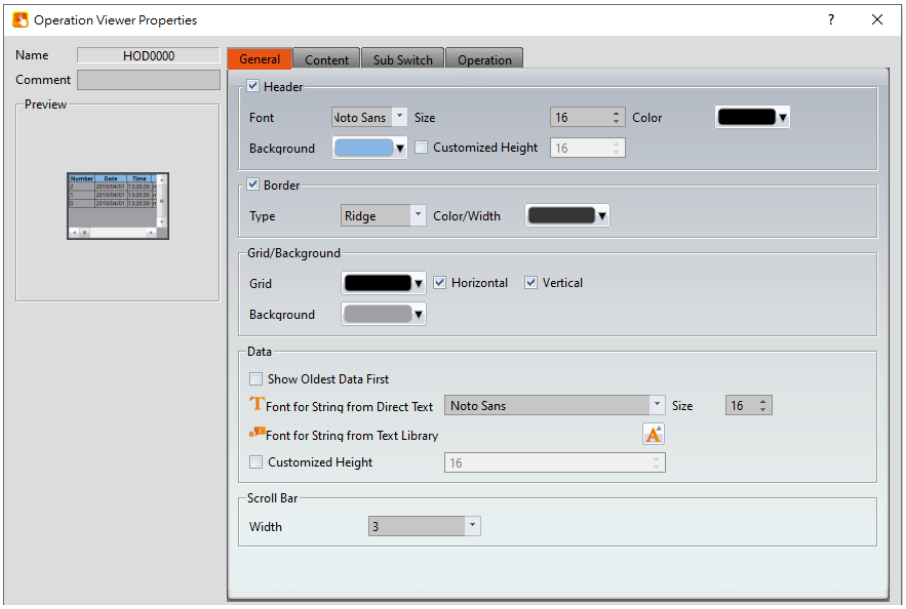


Figure 367【General】Setting Screen of【Operation Viewer】

Table 223【General】Setting Properties of【Operation Viewer】

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Header】	Select to display the header. 【Font】 Set the font of the header. 【Size】 Set the size of the header. 【Color】 Set the color of the header. 【Background】 Set the background color of the header. 【Customized Height】 User can customized the height of the header field.
【Border】	Select to display the border. 【Type】 Set the border type.

	【Color/Width】 Set the color and width of the border.
【Grid/Background】	【Grid】 Set the color of the grid. 【Horizontal】 Select to display horizontal gridlines. 【Vertical】 Select to display vertical gridlines. 【Background】 Set the color of the background.
【Data】	【Show Oldest Data First】 Set whether to display the oldest data in the top of the form, if unchech then the oldest data will in the bottom of the form. 【Font for String from Direct Text】 The font of the string can be set here. 【Size】 Set the font size for the direct text. 【Font for String from Text Library】 The font and size of the string can be set here. 【Customized Height】 User can customized the height of the data field.
【Scroll Bar】	【Width】 Adjust the right side scroll bar width, provides 5 widths.

19.4.33.2 【Content】

【Operation Viewer】【Content】setting paging as shown below, the meaning of each setting is as follows :

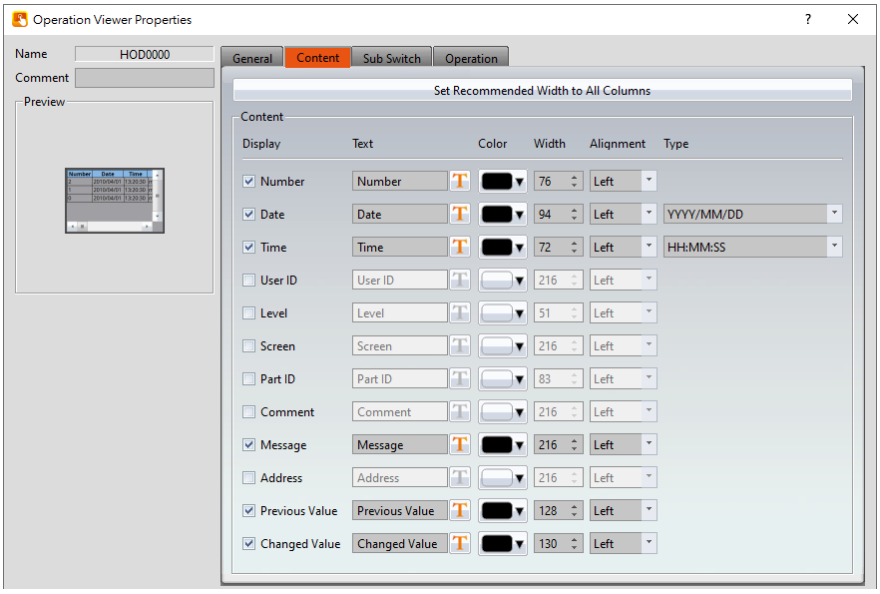


Figure 368【Content】Setting Screen of【Operation Viewer】

Table 224【Content】Setting Properties of【Operation Viewer】

Property	Description
【Set Recommended Width to All Columns】	When this button is pressed, the software calculates the required column width at the time of planning and sets its field width.
【Content】	Every Operation Log data entry includes information; users can choose to display the items they are interested in. The following are the descriptions of each item: ➢ 【Number】 Operation Log serial number. ➢ 【Date】 Operation Log date. Can select the format of the date in the right. ➢ 【Time】 Operation Log time. Can select the format of the time in the right. ➢ 【User ID】 The current user name; when【Security Manager】-> 【Mode】is【Level】, no information will be recorded in this field. When【Mode】is【User】, the current signer will display, however, if the security level is forced to change by address(【Security Level】address of 【Project Explorer】-> 【Unit Setting】-> 【Control

	Address】), the user ID will be displayed as "?" Until the next normal login, this field will show the current login. ➢ 【Level】 The level of the current user. ➢ 【Screen】 The screen the operating object is located. ➢ 【Part ID】 The ID of the operating object. ➢ 【Comment】 The comment of the operating object. ➢ 【Message】 The message of the operating object. ➢ 【Address】 The access address of the operating object. ➢ 【Previous Value】 The previous value of the access address content for the operating object. ➢ 【Changed Value】 The current value of the changed access address content for the operating object. The setting of the items can be divided into: ➢ 【Display】 Set the visibility of this item. ➢ 【Text】 Set the display text for the header. The text can be entered directly or selected from the text library. ➢ 【Color】 The color of this item. ➢ 【Column Width】 The column width of this item. ➢ 【Alignment】 The alignment method of this item. ➢ 【Type】 This setting is only available for【Date】 and 【Time】. It sets the display format.

19.4.33.3 【Sub Switch】

【Operation Viewer】【Sub Switch】setting paging as shown below, the meaning of each setting is as follows :

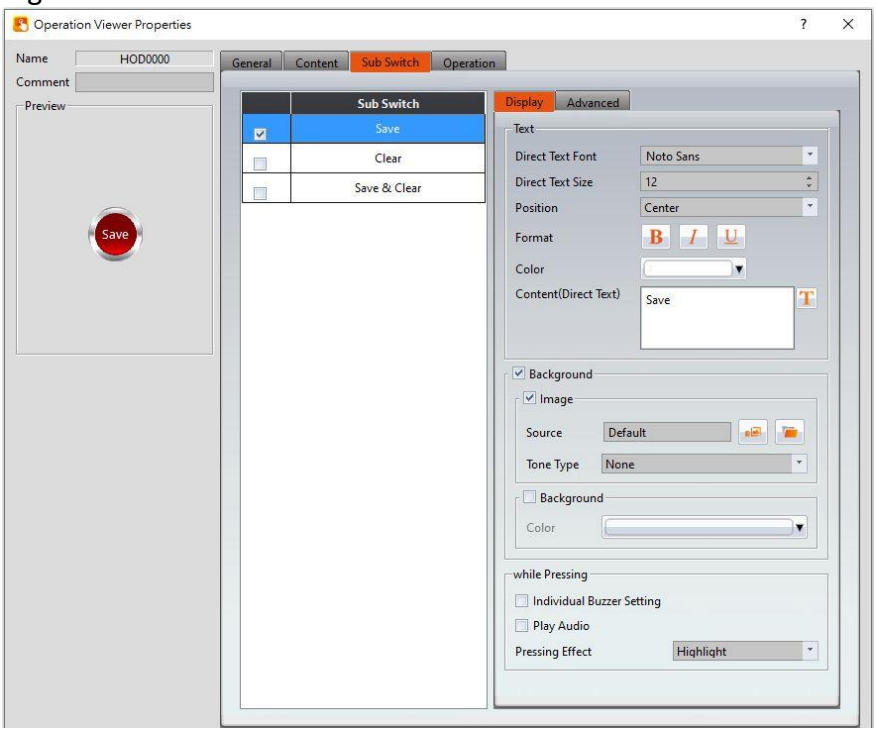


Figure 369【Sub Switch】Setting Screen of【Operation Viewer】

Table 225【Sub Switch】Setting Properties of【Operation Viewer】

Property	Description
【Sub Switch List】	【Sub Switch List】that can be selected for【Operation Viewer】. Sub switches can be enabled after selecting them. Settings for the appearance of the selected sub switches will also appear on the right. When different sub switches are selected from the list, the setting contents of the appearance setting items to the right will be updated according to the sub switches selected. In which the【Sub Switches】are divided into: ➢ 【Save】- Save the Recording Buffer data of the【Operation Log】into a CSV file. ➢ 【Clear】- Clear the Recording Buffer data of the【Operation Log】. ➢ 【Save & Clear】- Saves the Recording Buffer data

	of the【Operation Log】into a CSV file and then clears the data.
【Display】【Text】	【Direct Text Font】 Set the text font of the sub switch currently selected. 【Direct Text Size】 Set the text size of the sub switch currently selected. 【Position】 Set the text position of the sub switch currently selected. 【Format】 Set the text format of the sub switch currently selected, including Bold, Italics and Underline. 【Color】 Set the text color of the sub switch currently selected. 【Content(Direct Text)】 Set the text of the sub switch currently selected, the text can be entered directly or selected from the【Text Library】.
【Display】 【Background】	Set the background of the sub switch currently selected. Check it to activate background settings, and the displayed background of the sub switch currently selected can be edited below. If this option is not checked, the background will be transparent. 【Use Image】 Set to use an image for the displayed background of the sub switch currently selected. When this option is checked, an image selection setting item will appear asking the user to select an image either from the【Image Library】or from a file. 【Background Color】 Set the background color of the sub switch currently selected. This setting will appear if 【Use Image】was not selected.
【Display】【while	【Individual Buzzer Setting】 Can individually setup buzzer setting.

Pressing】	Includes 5 modes: Off, Short, Long, Short-Short, Long-Short. 【Play Audio】 Select to play audio when the sub switch is pressed. An 【Audio Selector】will appear on the right when enabled. The switch on the right of the【Audio Selector】can be pressed to select an audio and the switch on the left of the 【Audio Selector】can be pressed to play the audio selected. 【Pressing Effect】 Set the pressing effect of the sub switch currently selected. There are two effects available for selection:【None】and 【Highlight】.
【Advanced】 【Operation Control】	Operation control of sub switch, it can enabled by bit or security. 【Enable by Bit】 Check whether the sub switch operation is controlled by a bit 【Address】 Set the address of the sub switch operation control bit. 【State】 Set the control bit as 1 or 0 to operate object. 【Enabled by Word】 Check whether the operation is controlled by word. 【Address】 Set the operation control word address. 【Condition】 Set the condition of word control and when it is true then the object can be controlled, when false not the object can not be controlled. The condition include' =', !=', '>', '<', '>=', '<='. 【Enable by Security】 Select the sub switch whether controlled by user level.

	【User Level Condition】 Set the level and condition of the object. 【Show Disabled Sign】 Check if you want to display the forbidden symbol, it's valid when check【Enable by Bit】,【Enabled by Word】 or 【Enable by Security】. 【Hold Time】 Check whether the operation is controlled by hold time. Hold time can be divided into two kinds: ➢ 【Press On】: press directly, according to the【Min. Hold Time】to confirm whether the operation is executed. ➢ 【Double Press】: quickly double press to confirm whether the operation is executed. 【Operator Confirm】 Check whether show comfirmation message window after checking the operation. 【Max. Waiting Time】 When the confirmation message window is displayed, If the user does not reply within this time, the system will close the confirmation message window and cancel this operation

19.4.34 【Schedule Setting Table】

【Schedule Setting Table】is the object that used to read【Schedule】of 【Function】inside the【Project Exploer】, so need to plan the【Schedule】function first. In addition to its main function can show the start time of the schedule, the end time, the start date, etc., allows designers to quickly design, but also provides HMI operation to dynamically change the start time and end time of each schedule

19.4.34.1 【General】

【Schedule Setting Table】【General】setting paging as shown below, the meaning of each setting is as follows :

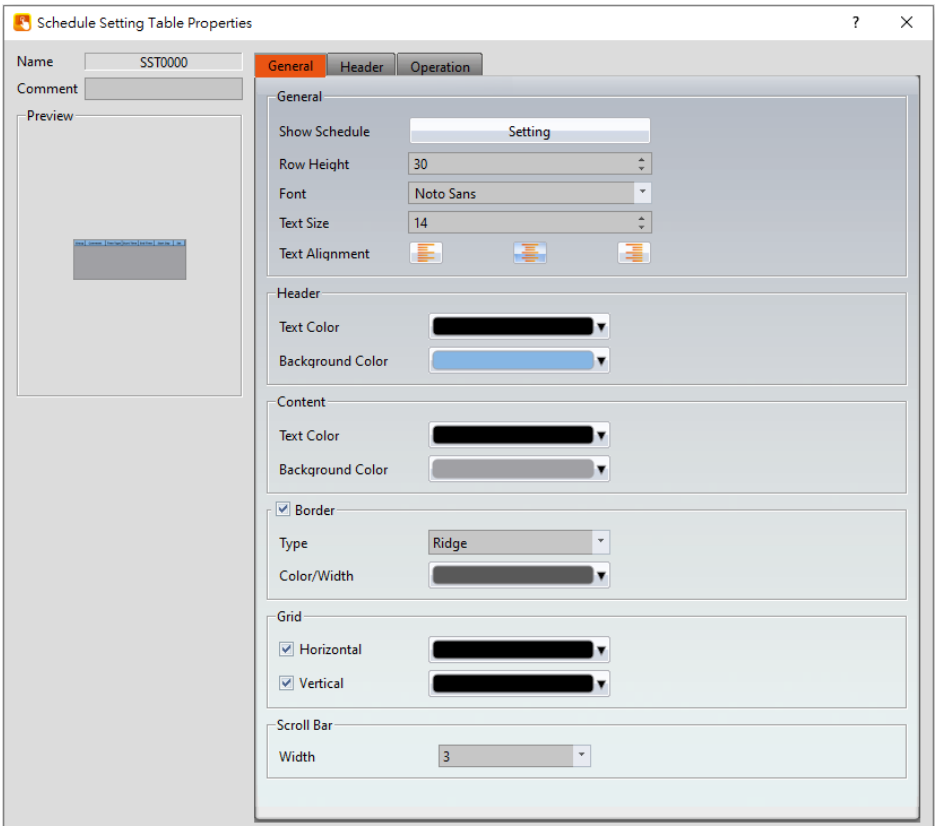


Figure 370【Schedule Setting Table】【General】setting paging

Table 226【Schedule Setting Table】【General】property setting

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【General】	【Show Schedule】 click【Setting】on the right, able to select scheduled schedule group number in the【Schedule】function. 【Row Height】 Set each of the row height in the table. 【Font】 Set the font of the text in the table. 【Text Size】 Set the text size in the table.

	【Text Alignment】 Set the alignment of the text in the table, including left, center, right and so on。
【Header】	【Text Color】 Set the text color of the header. 【Background Color】 Set the background color.
【Content】	【Text Color】 Set the text color of the content. 【Background Color】 Set the background color.
【Border】	【Type】 Set border type. 【Color/Width】 Set the color and width of the border.
【Grid】	【Horizontal】 Check whether you want to display the horizontal and set the horizontal color. 【Vertical】 Check whether you want to display the vertical and set the vertical color
【Scroll Bar】	【Width】 Adjust the right side scroll bar width, provides 5 widths.

19.4.34.2 【Header】

【Schedule Setting Table】【Header】setting paging as shown below, the meaning of each setting is as follows :

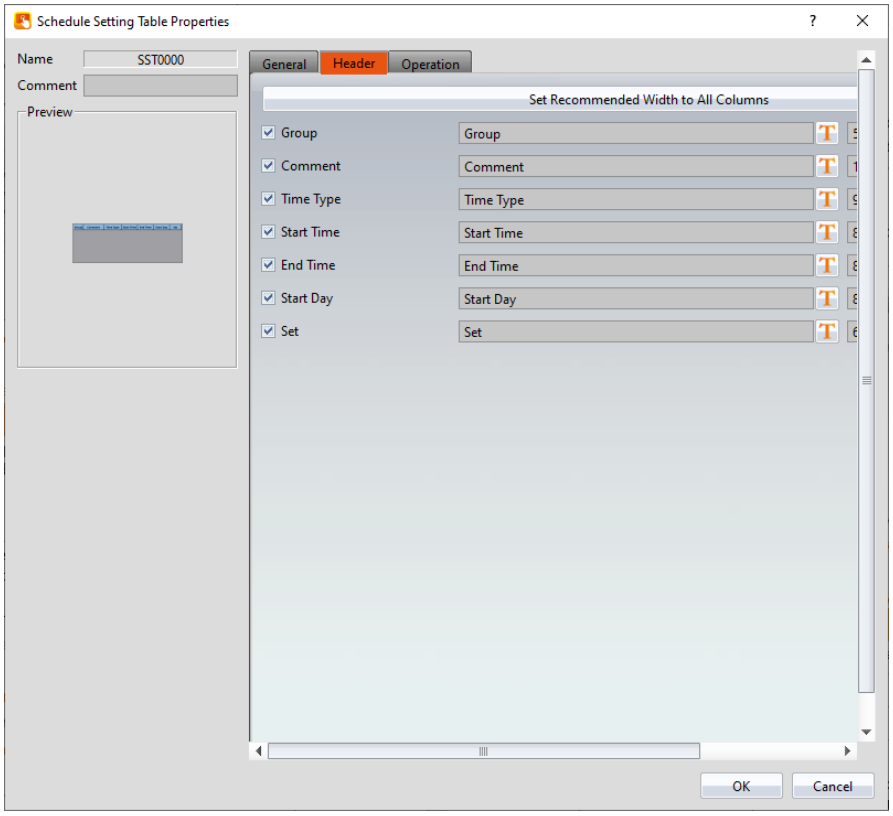


Figure 371【Schedule Setting Table】【Header】setting paging

Table 227【Schedule Setting Table】【Header】property setting

Property	Description
【Set Recommended Width to All Columns】	When this button is pressed, the software calculates the required column width at the time of planning and sets its field width.
【Content】	Each of the schedule includes multiple information, the user can select the item using the checklist and can change the title display text on the right, the following is a description of each item: ➢ 【Group】 The group serial number of the schedule. ➢ 【Comment】 Comment of the schedule. ➢ 【Time Type】 The type of the schedule is a constant or an address. ➢ 【Start Time】 Start time of the schedule. ➢ 【End Time】

	End time of the schedule. ➢ 【Start Day】 Start day of the schedule. ➢ 【Set】 Press to modify the start and end times of each schedule.

19.4.35 【Video Input Display】

【Video Input Display】can be used to display the video of the camera that connected to the HMI USB port, for the setting of USB camera image parameters, please refer to **Chapter3.3.3- Video** Input .

19.4.35.1 【Setting】

【Video Input Display】【Setting】setting paging as shown below, the meaning of each setting is as follows :

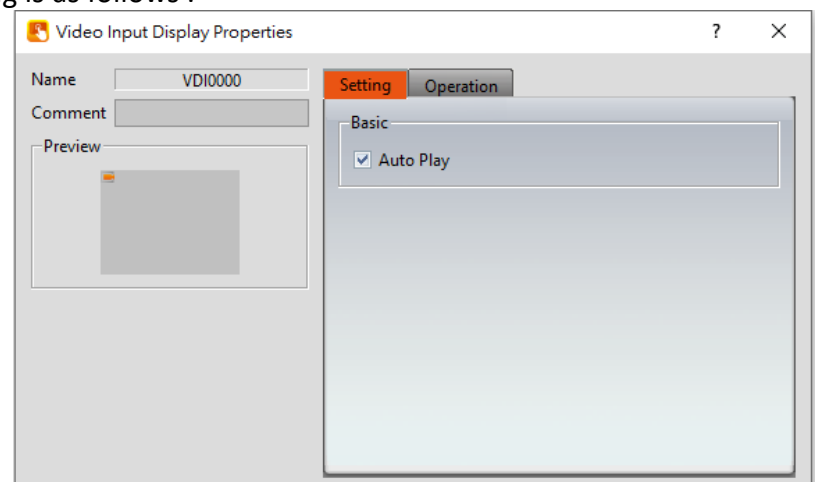


Figure 372【Video Input Display】【Setting】setting paging

Table 228【Video Input Display】【Setting】setting property

Property	Description
【Preview】	Preview the appearance of this object.
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Basic】	【Auto Play】 Set wether to auto play when swith to this page when the camera was not started yet.

19.4.36 【SQL Query Table】

Use【SQL Query Table】to display the execution results of【SQL Query】commands.

19.4.36.1 【General】

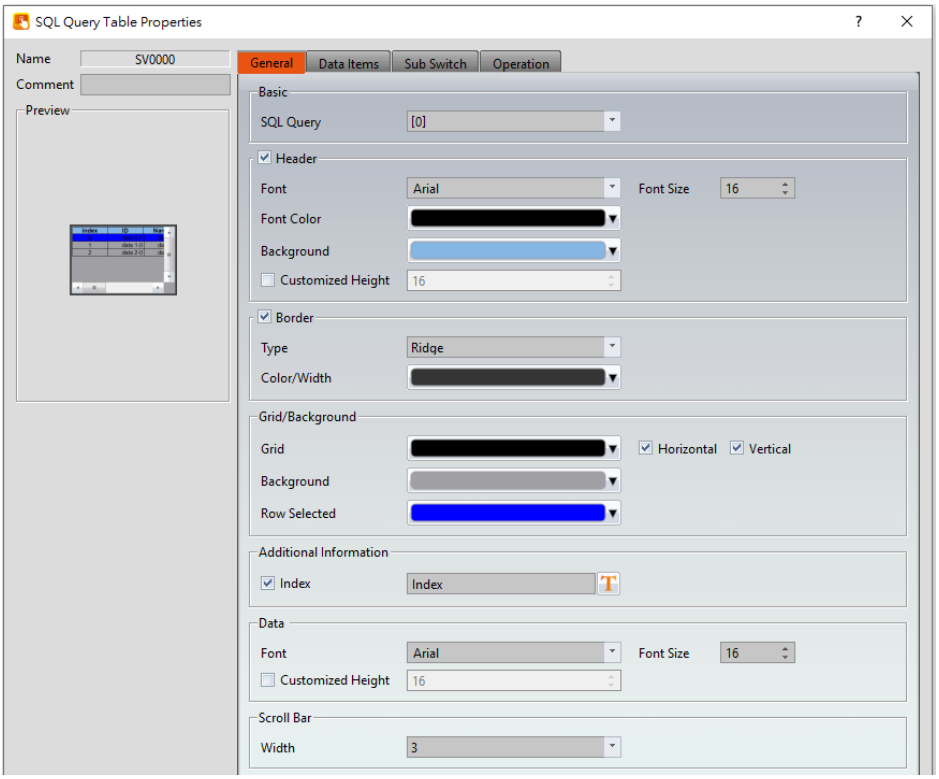


Figure 373【SQL Query Table】【General】setting paging

Table 229【SQL Query Table】【General】property setting

Property	Description
【Name】	The default name of the object.
【Comment】	Set the comment of the object.
【Preview】	Preview the appearance of this object.
【Basic】	【SQL Query】 If the user adds the SQL query setting to the database function, the SQL query list can be seen here. The selected SQL query execution result will be displayed on the table.
【Header】	Check whether to show header 【Font】 Set the header's font

	【Font Size】 Set the header's font size 【Font Color】 Set the header's font color 【Background】 Set the header's background
【Border】	【Type】 Set border type. 【Color/Width】 Set the color and width of the border.
【Grid/Background】	【Grid】 Set the grid's color 【Horizontal】 Check whether to display the horizontal line and set the color of the horizontal line 【Vertical】 Check whether to display the vertical line and set the color of the vertical line 【Background】 Set the color of the table background 【Row Selected】 Set the color to be displayed when you are elected to the specified row and column
【Additional information】	【Index】 Check whether to display index
【Data】	【Font】 Set the data's font 【Font Size】 Set the data's font size 【Customized Height】 The height of the data row can be set according to

	requirements
【Scroll Bar】	【Width】 Adjust the right side scroll bar width, provides 5 widths.

19.4.36.2 【Data Item】

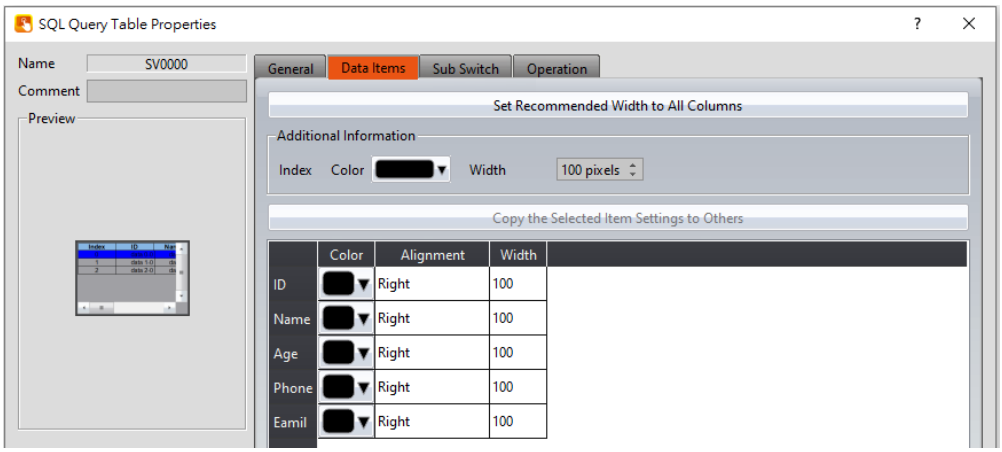


Figure 374【SQL Query Table】【Data Item】Setting Page

Table 230【SQL Query Table】【Data Item】Properties Setting

Property	Description
【Set Recommended Width to All Columns】	When this button is pressed, the software calculates the required column width at the time of planning and sets its field width.
【Additional Information】	Set the width and text color of the title in the left column of【Index】.
【Copy the Selected Item to Others】	Select one of the parameter names in the column below, and then click this button to change the settings of other items to be the same as the settings of the selected item.
【Color】	Set the color of the data.
【Alignment】	Decide how to align the data
【Width】	Set the field width of the data

19.4.36.3 【Sub Switch】

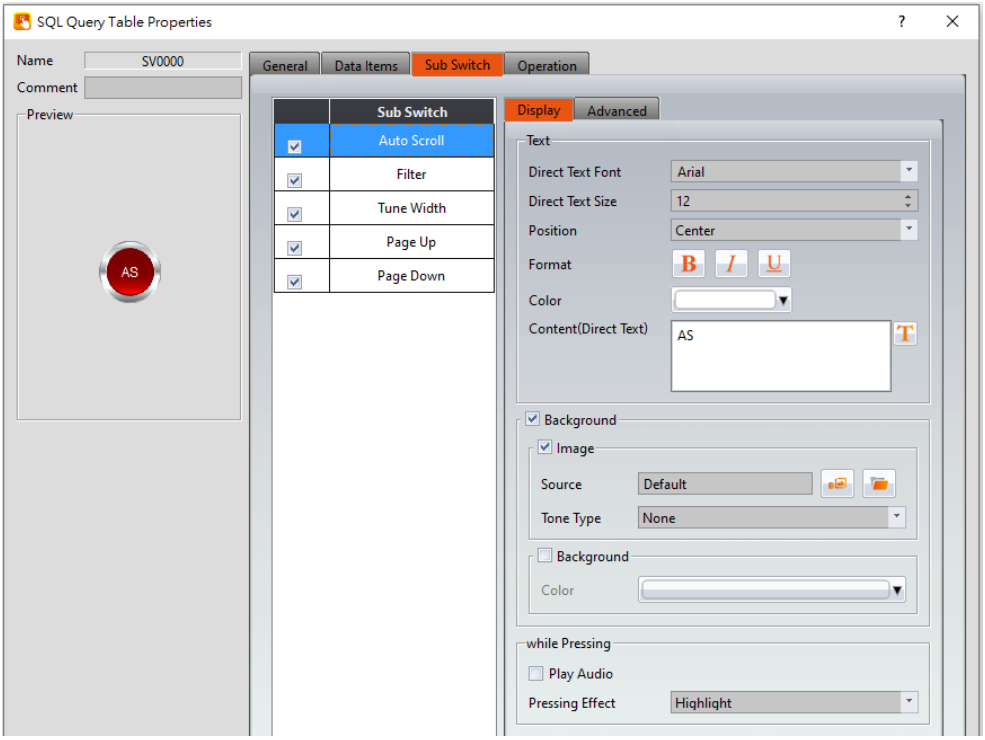
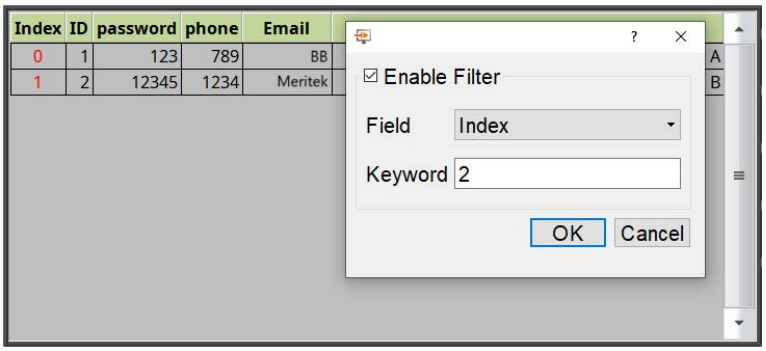


Figure 375【SQL Query Table】【Sub Switch】Setting Page

Table 231【SQL Query Table】【Sub Switch】Properties Setting

Property	Description
【Sub Switch】	【Auto Scroll】 Turn on/off the auto scrolling, this is a reverse switch. If is turned on, the table will automatically scroll to the row selection position of the SQL query. On the contrary, the form will not automatically scroll. 【Filter】 The displayed data can be filtered out based on fields and keywords  【Tune Width】 Automatically adjust the width of the fields in the table

	【Page Up】 The Read command of SQL query will only read 1000 data from the database at a time, and after pressing it, the first 1000 data will be read 【Page Down】 The Read command of the SQL query only reads 1000 data from the database at a time, and after pressing it, the next 1000 data will be read.

20. User Toolbox

Although the【Toolbox】provided by this software is able to meet the needs of most users, the objects provided in the 【Toolbox】are all pre-set and does not allow users to use objects that they changed on their own. The software also provides the【User Toolbox】function because not only does it allow users to access objects that they have modified, it also provides【Import】and【Export】functions so that the objects in the【User Toolbox】can be quickly transferred between different computers, speeding up development.

This chapter will explain【User Toolbox】related pages and their operating methods.

20.1 Basic Operations

Select the【User Toolbox】in the【View】page of the【Ribbon】and the【User Toolbox】will appear as shown in the figure below.

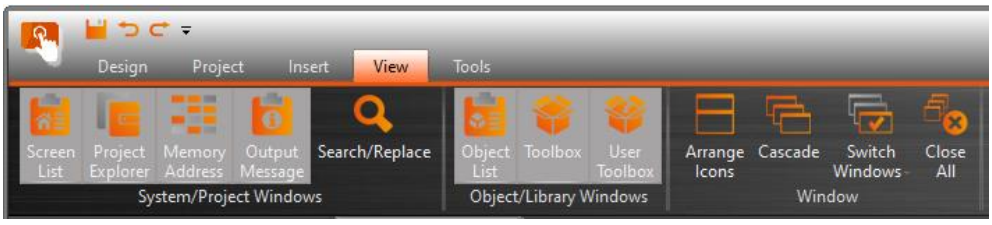


Figure 376 View page of the Ribbon

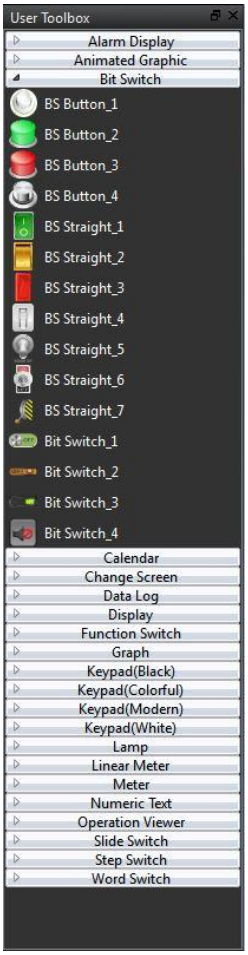


Figure 377 User Toolbox

The basic operations of the【User Toolbox】can be divided into three parts:

1. Adding objects to the【User Toolbox】.
2. Adding the objects in the【User Toolbox】to the【Work Space】.
3. Introduction to menu operations.

20.1.1 Adding objects to the User Toolbox

Move the mouse cursor over the object in the【Work Space】to add to the【User Toolbox】, then press the ctrl key and left mouse button to start dragging the object. Drag the object into the【User Toolbox】and then release the left mouse button. The object will be added to the【User Toolbox】according to the location where the mouse button was released, figure as shown below.

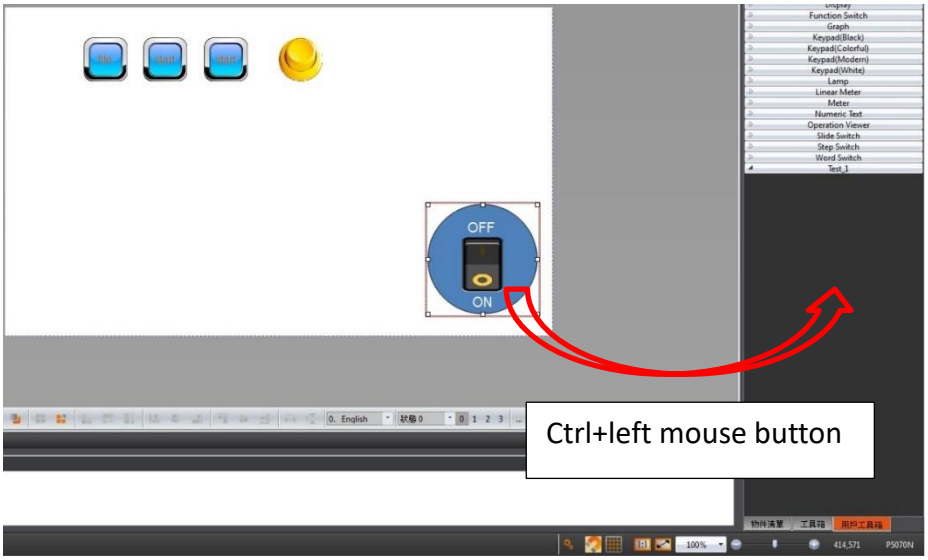


Figure 378 add object to【User Toolbox】

The default name of the added object is “category_number”, as shown in the figure below.

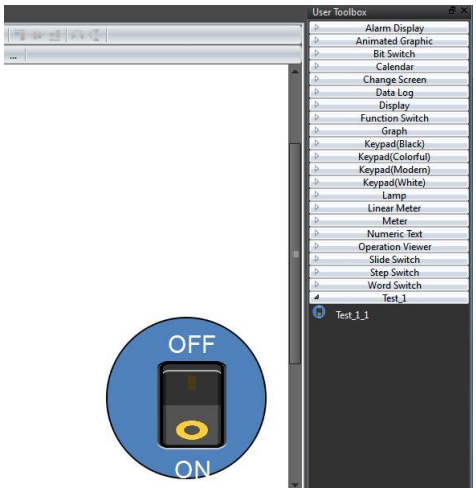


Figure 379 User Toolbox–Default name

If the left mouse button was released in the【Work Space】, the object will be added to the【Work Space】where the mouse button was released.

Note: The object names within the User Toolbox do not relate to the object names and comments in the work space.

20.1.2 Adding the objects in User Toolbox to the Work Space

Move the mouse cursor over the object in the【User Toolbox】to add to the【Work Space】, then press and hold the left mouse button to start dragging the object. Drag the object into the【Work Space】and then release the left mouse button at

the location to add the object. The object will be added to the【Work Space】at the location where the mouse button was released, figure as shown below.

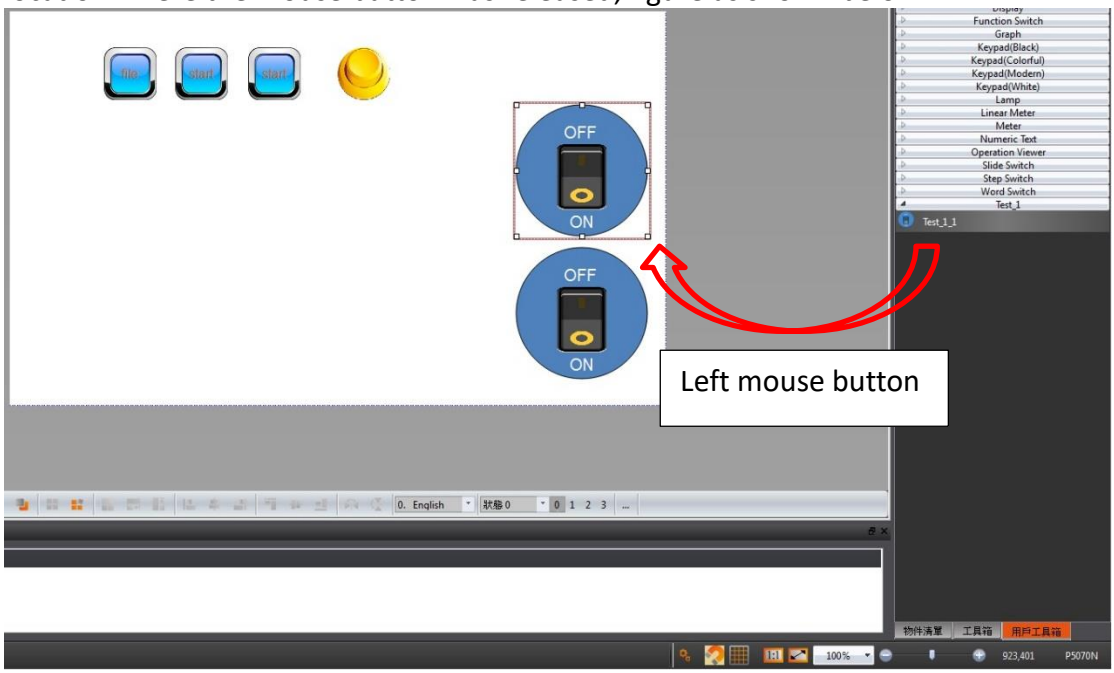


Figure 380 drag object from【User Toolbox】to【Work Space】

If the left mouse button was released in the【User Toolbox】, the object will be moved to the location where the mouse button was released so that the user can change the category the object belongs to and its location in the【User Toolbox】.

Note: If the text library, tag library or other settings are used by the objects in the User Toolbox, please remember to import the text library, tag library and other settings when adding the object in order to guarantee that the settings of the object during use are the same as the settings when it was added.

20.1.3 Menu Introduction

A【Menu】will appear when the right mouse button is pressed in the【User Toolbox】. The options within the menu changes according to the location where the right mouse button is pressed, as shown in the figure below. Options within the【Menu】are as listed in the table below.

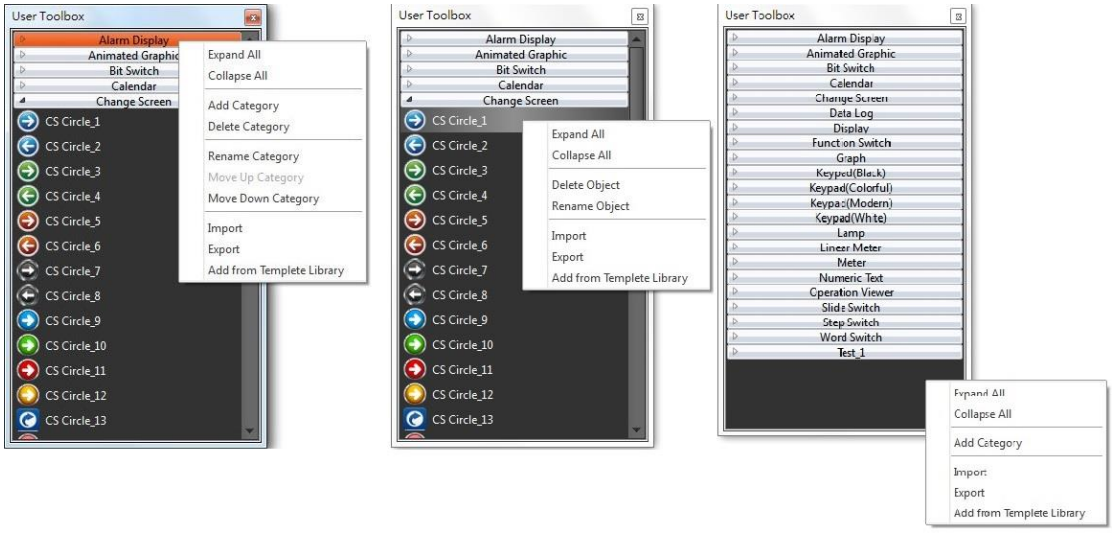
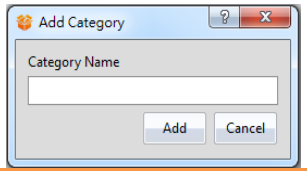
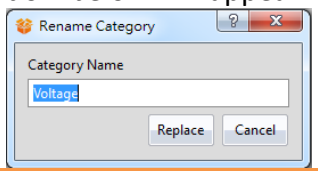
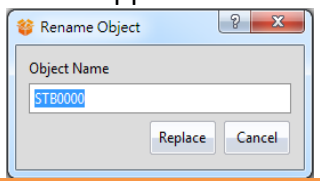


Figure 381 Menu–Mouse over category (Left); Mouse over object (Middle); Mouse not over category or object (Right)

Table 232 Options within the menu

Option	Description
【Expand All】	Expand all【Category】in the【User Toolbox】, allowing users to see all【Object】.
【Collapse All】	Collapse all【Category】in the【User Toolbox】so that users cannot see the【Object】, just the【Category】.
【Add Category】	Add a【Category】; the window below will appear. 
【Delete Category】	Delete the selected【Category】along with all the【Object】in the【Category】.
【Rename Category】	Change the name of the selected【Category】; the window below will appear. 
【Move Up Category】	Move the selected【Category】up a level.
【Move Down Category】	Move the selected【Category】down a level.
【Delete Object】	Delete the selected【Object】.

【Rename Object】	Change the name of the selected【Object】; The window below will appear. 
【Add from Template Library】	Add a new object from the built-in template library.
【Import】	Add the previously saved【User Toolbox】file (*.utf) into the current【User Toolbox】.
【Export】	Save the current【User Toolbox】into a file (*.utf).

20.2 Import and Export

In order for users to transfer the【User Toolbox】they are modified between the different computers, this software provides the【Import】and【Export】functions. This section will introduce how to use these functions.

20.2.1 Import

Press the right mouse button within the【User Toolbox】and select【Import】from the menu that pops up, as shown in the figure below.

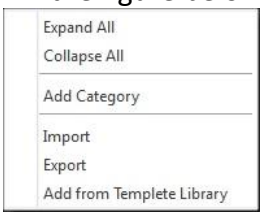


Figure 382 Menu–Import

The window below will appear. Select the file (*.utf) to import and then press【Open File】to import the file.

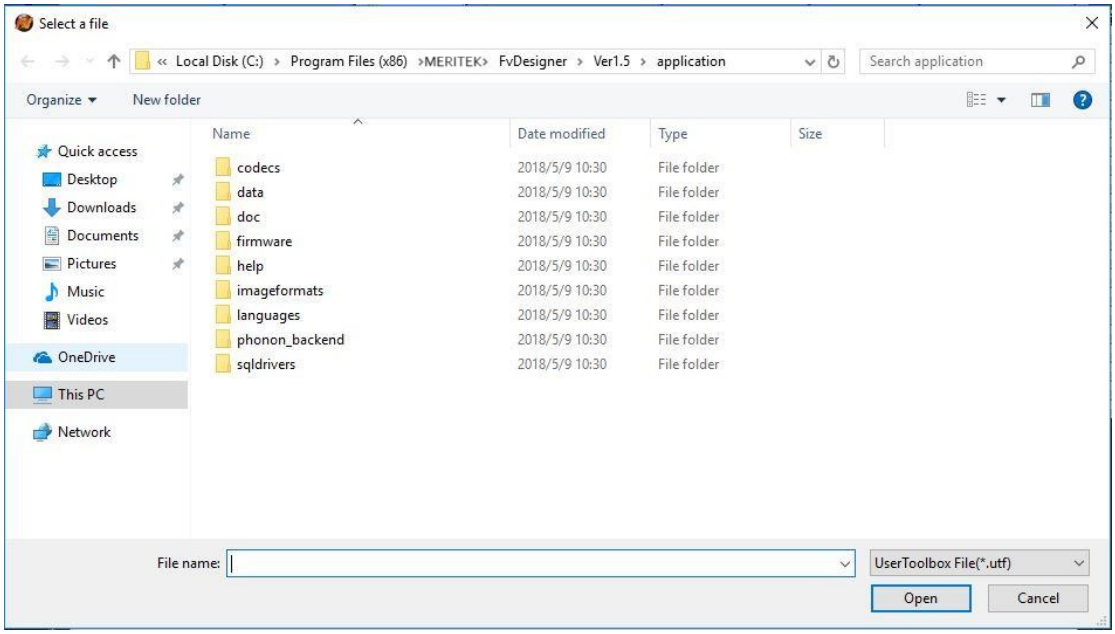


Figure 383 Select file to import

20.2.2 Export

Press the right mouse button within the【User Toolbox】and select【Export】from the menu that pops up, as shown in the figure below.

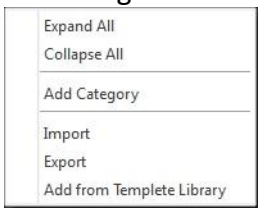


Figure 384 Menu–Export

The window below will appear; select the【Category】to export here, as shown in the figure below.

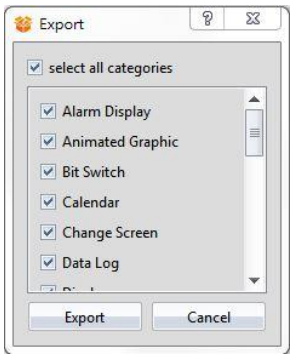


Figure 385 Select category to export

The window below will appear. Press【Save】after selecting the name and location of the file (*.utf) to export the file.

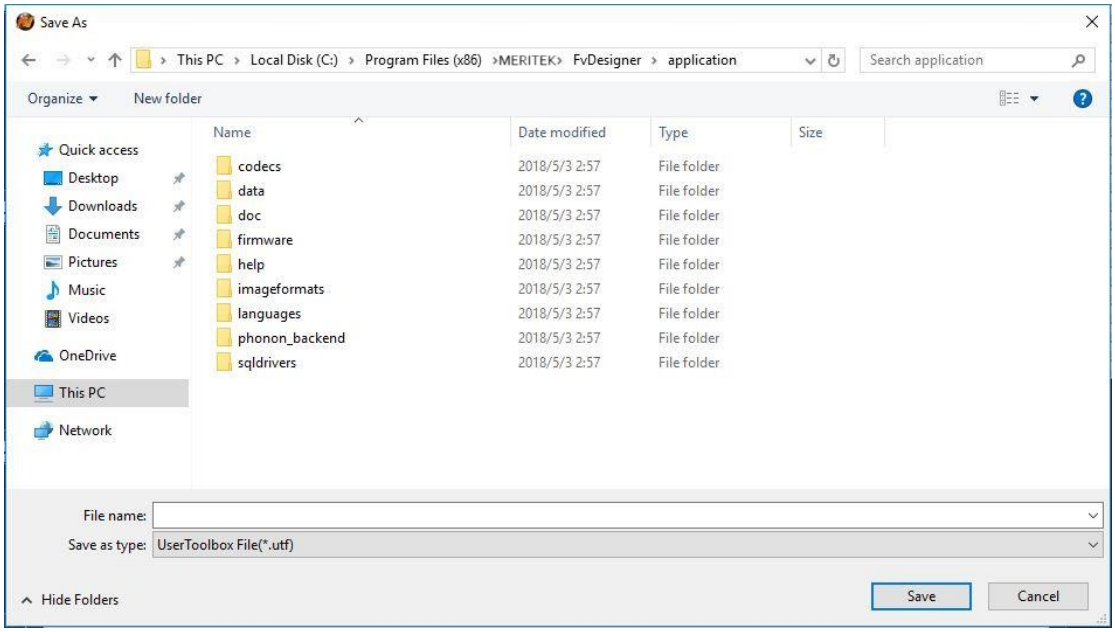


Figure 386 Select the name and location for the file export

20.3 Name Conflicts

Identical【Category Names】are not allowed in the【User Toolbox】in order to prevent the users from getting confused. Similarly, identical【Object Names】are also not allowed within the same【Category】. Therefore, when conflicts occur due to repeated names, the【Category Name Conflict】window or the【Object Name Conflict】window will appear according to the situation to help users solve this problem. This section will now introduce the pages related to the【Category Name Conflict】and【Object Name Conflict】windows.

Note: Identical object names are allowed if used in different categories.

20.3.1 Category Name Conflict

Occurs when there are identical【Category Name】during【Rename Category】or【Import】.

The following window will appear if they occurred during the【Rename Category】, notifying the user that this name has already been used, as shown in the figure below.



Figure 387 Repeated category name warning

The following window will appear if they occurred during【Import】, allowing the user to select what action to take next, as shown in the figure and table below.

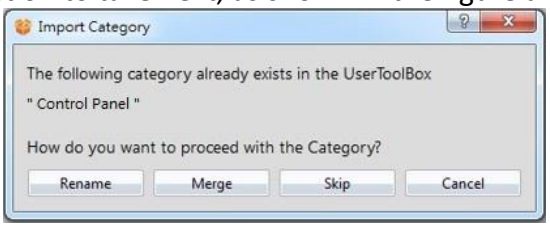


Figure 388 Category Name Conflict selection window

Table 233 Category Name Conflict options

Option	Description
【Rename】	Change the name of the category to import and then add it to the【User Toolbox】.
【Merge】	Merge the category to import with the category within the【User Toolbox】.
【Skip】	Skip and do not process this category import.
【Cancel】	Cancel this import.

20.3.2 Object Name Conflict

Occurs when there are identical【Object Name】during the【Rename Object】or【Import】.

The following window will appear if they occurred during【Rename Object】, reminding the user that this name has already been used, as shown in the figure below.



Figure 389 Repeated object name warning

The following window will appear if they occurred during【Import】, allowing the user to select what action to take next, as shown in the figure and table below.

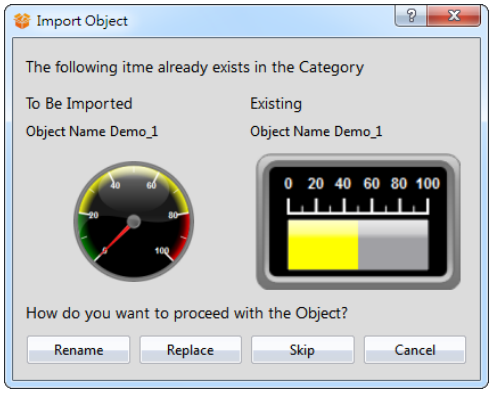


Figure 390 Object Name Conflict selection window

Table 234 Object Name Conflict options

Option	Description
【Rename】	Change the name of the object to import and then add it to the current【Category】.
【Replace】	Replace the object in the current【Category】with the object to import.
【Skip】	Skip and do not process this object import.
【Cancel】	Cancel this import.

21. Build Running Package and Simulation

21.1 【Download Current Project】

When a running package (.cfrp) has been successfully built and had no errors during simulation, it is ready to be downloaded to the HMI. Meritek provides diverse download methods. Users can download the running package from the PC to the HMI through a serial port connection, Ethernet connection or by using a USB cable.

21.1.1 Download the running package and operating system from a PC

The download function can be found in the【Project】function tab on the ribbon taskbar on top of the FvDesigner. Click on【Download Current Project】and a dialog window will open and enter the【Download Manager】setting screen.

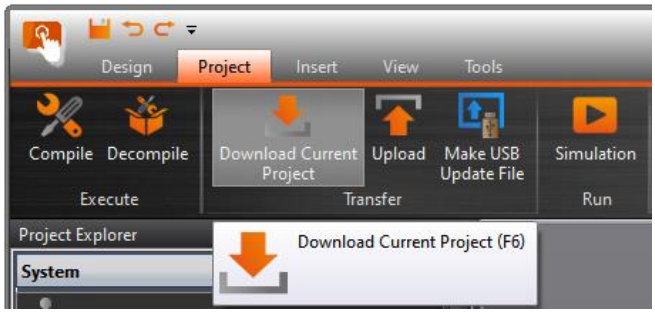


Figure 391 Open download function

The following are detailed descriptions for the【Download Manager】.

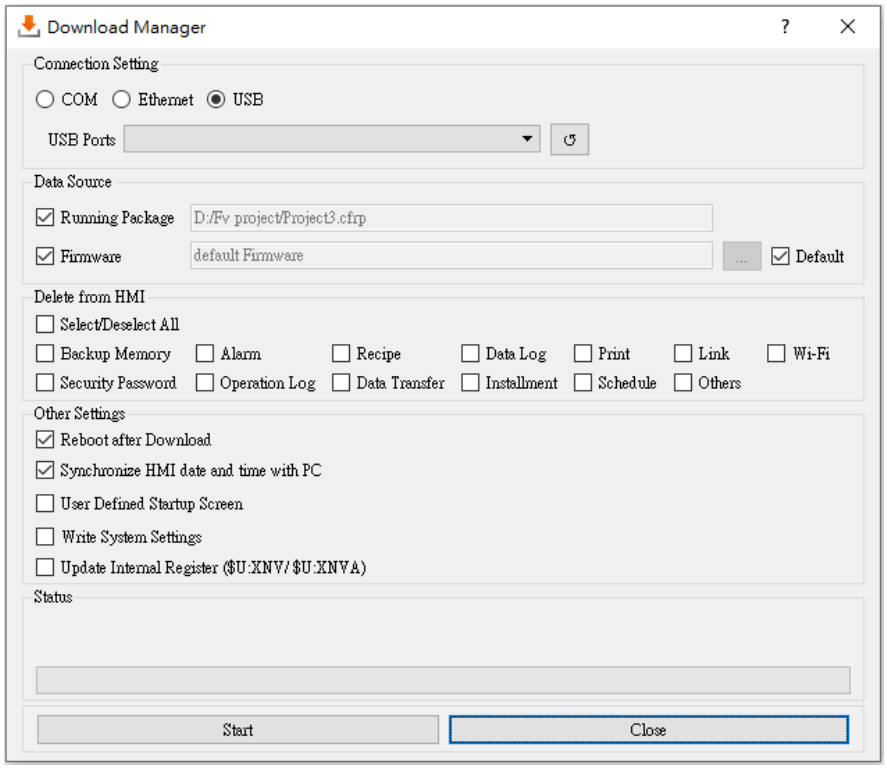
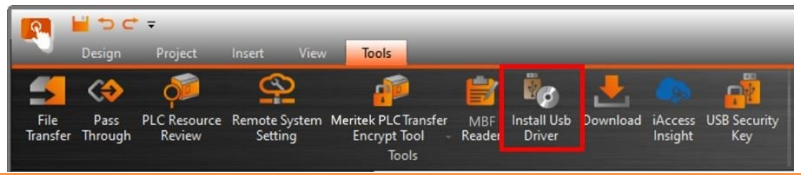


Figure 392 Download Manager function interface

Table 235 Download Manager–related parameters

Property	Description
【Connection Setting】	【COM】 Select to perform download through the serial port; the port number used for downloading must also be specified when this option is selected. 【Ethernet】 Select to perform download through the Ethernet. The IP address of the target HMI must also be specified when this option is selected. Press【Scan】on the right to acquire the HMI IP addresses and device names currently online. Users can also manually enter the IP address of the target HMI to perform download. **Note: The Scan button may have no effect under certain network environments (usually when the DHCP server cannot accurately configure the IP addresses). In this case, the command prompt can be opened to execute the following commands in sequence to restore the function.** **1. netsh winsock reset** **2. netsh interface ipv4 reset** **3. ipconfig /flushdns** **Please re-start the computer when completed for the settings to take effect.**

	【USB】 Perform download through USB. The default path of USB Driver is under C:\Program Files\Meritek\FvDesigner\Ver1.6\usb driver The USB drivers can be installed by clicking【Install USB Driver】in the【Tools】tab. 
【Data Source】	【Running Package】 Download the current rinning package, if want to download other running package, go to the Tools page to do download. 【Firmware】 The HMI firmware will be downloaded once this option is selected. The default path of【Firmware】is under (Under 64-bit Windows) C:\Program Files (x86)\MERITEK\FvDesigner\Ver1.6 \application \firmware\FvFirmwareC.frt (Under 32-bit Windows) C:\Program Files\MERITEK\FvDesigner\Ver1.6\application \firmware\FvFirmwareC.frt
【Delete on Target】	This field determines whether to clear the existing data saved on the HMI: 【Select/Deselect All】 After checked, all the following options will be checked. If not checked, all items below will be unchecked. 【Backup Memory】 If this option is selected, the NV and XNV registers on the HMI will be cleared when the download process begins. 【Alarm】 If this option is selected, the existing alarm log on the HMI will be deleted when the download process begins. The HMI will clear all files under /internal/alarm/. 【Recipe】 If this option is selected, the existing recipe files on the HMI will

	be deleted when the download process begins. The HMI will clear all files under /internal/recipe/. 【Data Log】 If this option is selected, the existing data log on the HMI will be deleted when the download process begins. The HMI will clear all files under /internal/datalog/. 【Print】 If this option is selected, the screenshots saved in the HMI internal memory will be deleted when the download process begins. The HMI will clear all files under /internal/hardcopy/. 【Link】 If this option is selected, the program will start the deletion of the original link parameters and replace them with the new link parameters. 【Security Password】 If this option is selected, the password table on the HMI will be deleted when the download process begins. If this option is selected, the original password table will be retained. 【Operation Log】 If this option is selected, the existing operation log on the HMI will be deleted when the download process begins. The HMI will clear all files under /internal/operationlog/. 【Data Transfer】 If this option is selected, the data transfer files on the HMI will be deleted when the download process begins. The HMI will clear all files under /internal/datatransfer/. 【Installment】 If this option is selected, the download process will delete the original installment information and the previously entered records. 【Schedule】 If this option is selected, the download process will delete the original data that has been modified through the【Schedule】on the HMI, so the schedule will based on the project; if not checked, the original data that has been modified through the

	【Schedule】on HMI will be retained. 【Others】 If this option is selected, all other files on the HMI will be deleted when the download process begins. The HMI will clear all files under /internal/ not including the options detailed above.
【Other Settings】	【Reboot after Download】 Set to reboot HMI after downloading project is complete. 【Synchronize HMI date and time with PC】 Set to synchronize the date and time of HMI with PC after downloading project is complete. 【User Defined Startup Screen】 Allows designers to define their own HMI boot screen, such as the title of the company, etc., after the option is checked, you can choose a picture on the PC. After the project download is complete, the HMI boot screen will be changed. Meritek HMI factory boot screen, default location: (Under 64-bit Windows) C:\Program Files (x86)\MERITEK\FvDesigner\Ver1.6\startup screen (Under 32-bit Windows) C:\Program Files\MERITEK\FvDesigner\Ver1.6\startup screen 【Write System Setting】 Providing parameters that can be set to the HMI at the same time when the project downloads, can reduce the tedious setting work, especially when the same project is downloaded to multiple HMI, each of the HMI does not need to enter the system settings screen settings, after checked, select the *.fscfg file on the right, or press the Edit button on the right to edit the *.fscfg file. For details, refer to **chapter21.1.2-Write System Setting** . 【Update Internal Register($U:XNV/$U:XNVA)】 Download XNV/XNVA register data to HMI, refer to **chapter 24.2.10.5-【Backup】** .

【Status】	Displays the current download status and download progress. 【Start】 Press this switch to start downloading once setting configuration is complete. 【Close】 Press this switch to end downloading and close the download window.

Note:
If the HMI has been updated to a new version of firmware or the program has update, the files associated with the old version of sotware cannot be used.

21.1.2 Write System Setting

Providing parameters that can be set to the HMI at the same time when the project downloads, can reduce the tedious setting work, especially when the same project is downloaded to multiple HMI, each of the HMI does not need to enter the system settings screen settings, after checked, select the *.fscfg file on the right, or press the Edit button on the right to edit the *.fscfg file. Pressing the【Edit】button on the right will bring up the system setting configuration window as shown in the figure below.

21.1.2.1【Basic】

【System Setting Configure】【Basic】setting paging as shown below, the meaning of each setting is as follows :

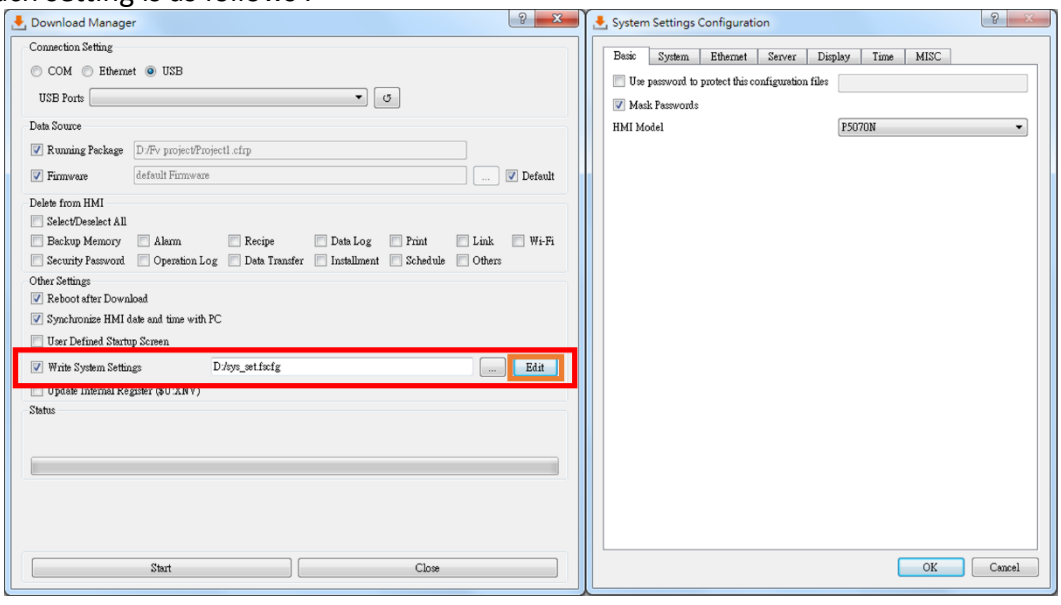
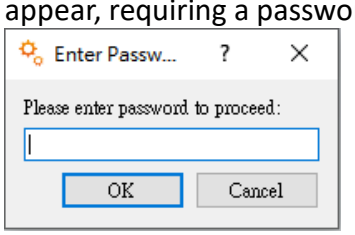


Figure 393【System Setting Configure】【Basic】setting page

Table 236 【System Setting Configure】【Basic】properties setting

Properties	Description
【Basic】	【Use password to protect this configuration files】 Check if you want to set a password to protect this configuration file. If you select it, you can set the password on the right. When you press the【Edit】button on the right again to edit the *.fscfg file, the following figure will appear, requiring a password to continue editing.  【Mask Passwords】 Mask the password of【Use password to protect this configuration files】, default is checked . 【HMI Model】 Select the model you want to set.

21.1.2.2【System】

【System Setting Configure】【System】setting paging as shown below, the meaning of each setting is as follows :

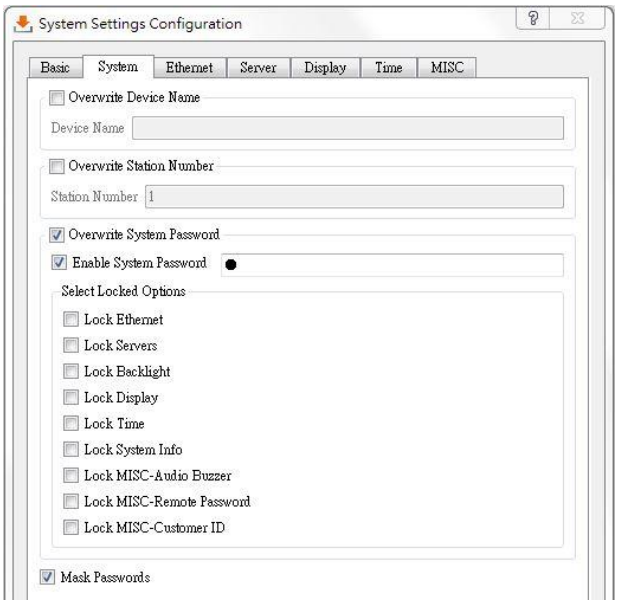


Figure 394【System Setting Configure】【System】setting page

Table 237 【System Setting Configure】【System】properties setting

Properties	Description
【System】	【Overwrite Device Name】 Check whether to overwrite the name of the HMI. After checked, the name of the HMI can be edited under【Device Name】. 【Overwrite Station Number】 Check whether to overwrite the station number of the HMI. After checked, the station number of the HMI can be edited under【Station Number】. 【Overwrite System Password】 Check whether to overwrite the system password of the HMI. After checked, the system password of the HMI can be edited under【Enable System Password】. 【Enable System Password】 Check whether to enable the system password of the HMI. After checked, the system password of the HMI can be edited on the right. 【Select Locked Options】 After checked【Enable System Password】, can check the items to be locked in the system settings of the HMI at the bottom, includes【Lock Ethernet】、【Lock Servers】、【Lock Backlight】、【Lock Display】、【Lock Time】、【Lock System Info】、【Lock MISC-Audio Buzzer】、【Lock MISC-Remote Password】and【Lock MISC-Customer ID】. 【Mask Passwords】 Mask the password of【Use password to protect this configuration files】, default is checked .

21.1.2.3【Ethernet】

【System Setting Configure】【Ethernet】setting paging as shown below, the meaning of each setting is as follows :

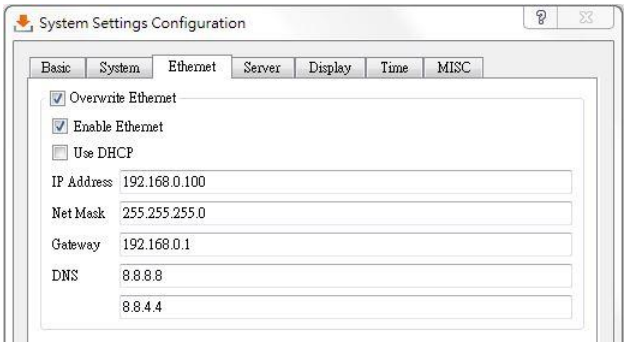


Figure 395【System Setting Configure】【Ethernet】setting page

Table 238 【System Setting Configure】【Ethernet】properties setting

Properties	Description
【Ethernet】	【Overwrite Ethernet】 Check whether to overwrite the ethernet setting of the HMI. After checked, the ethernet setting of the HMI can be edited under【Enable Ethernet】. 【Enable Ethernet】 Check whether to enable【Ethernet】on the HMI. After checked, the ethernet IP address or【DHCP】of the HMI can be edited under【Enable Ethernet】. 【Use DHCP】 Check whether to use【Use DHCP】, if【Use DHCP】is checked, the four options of【IP Address】、【Net Mask】、【Gateway】and【DNS】will be turned off and set by the system.

21.1.2.4【Sever】

【System Setting Configure】【Server】setting paging as shown below, the meaning of each setting is as follows :

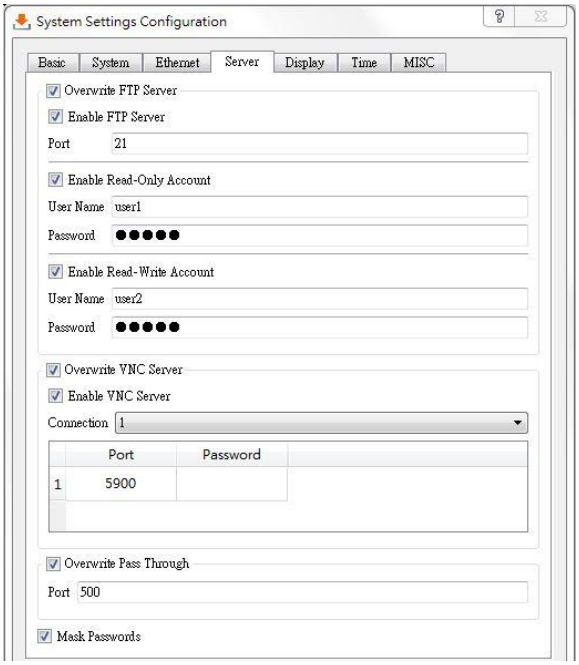


Figure 396【System Setting Configure】【Sever】setting page

Table 239 【System Setting Configure】【Sever】properties setting

Properties	Description
【Overwrite FTP Server】	Check whether the HMI FTP server settings are overwritten or not. After checked, select【Enable FTP Server】below and edit other FTP-related settings. 【Enable FTP Server】 Check whether to enable the【Enable FTP Server】function of the HMI. If select it, you can edit the FTP port, user name and password below. 【Port】 Select the port of FTP server to use. 【Enable Read-Only Account】 Check whether to enable read-only account. After checked,you can set the user's name and password below. 【Enable Read-Write Account】 Check whether to enable read-write account. After checked,you can set the user's name and password below.

【Overwrite VNC Server】	Check whether the HMI VNC server settings are overwritten or not. After checked, select【Enable VNC Server】below and edit other VNC-related settings. 【Enable VNC Server】 Check whether to enable the【Enable VNC Server】function of the HMI. If select it, you can edit the VNC port, and password below. 【Connection】 Set the number of VNC clients that can be connected to this VNC server at the same time. The maximum number of supported devices will vary depending on the model. 【Port】 To set the VNC connection port, you can only set the connection line for the first client. The second line will automatically increase. For example, the first setting is 5900, and the second line is 5901. 【Password】 Enter the password of VNC server.
【Overwrite Pass Through】	Check whether to overwrite port of the pass through setting. 【Port】 Set the port the pass through.
【Mask Passwords】	【Mask Passwords】 Mask the password of【FTP Server】and【VNC Server】that user edited.

21.1.2.5【Display】

【System Setting Configure】【Display】setting paging as shown below, the meaning of each setting is as follows :

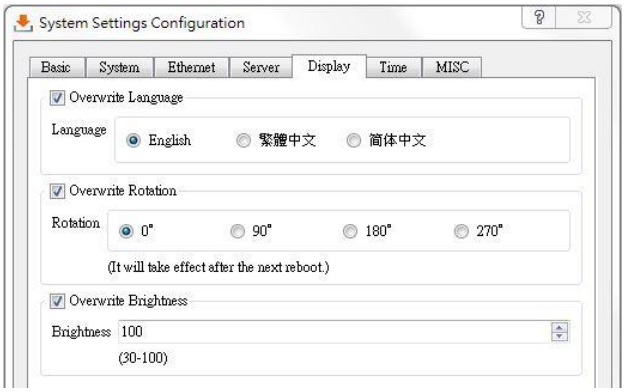


Figure 397【System Setting Configure】【Display】setting page

Table 240 【System Setting Configure】【Display】properties setting

Properties	Description
【Overwrite Language】	Check whether to overwrite the language setting of the HMI 【Language】 Select language to overwrite
【Overwrite Rotation】	Check whether to overwrite the rotation setting of the HMI 【Rotation】 Select rotation to overwrite **Note: Changes will not take effect until the next reboot.**
【Overwrite Brightness】	Check whether to overwrite the backlight brightness of the HMI. 【Brightness】 Set the backlight brightness of the HMI.

21.1.2.6【Time】

【System Setting Configure】【Time】setting paging as shown below, the meaning of each setting is as follows :

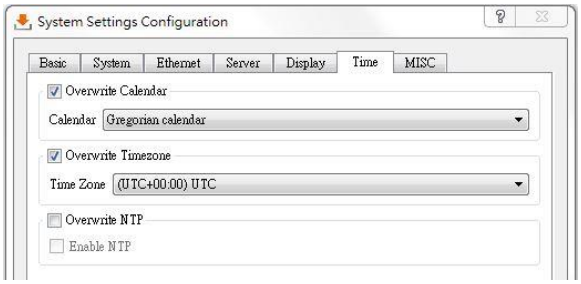


Figure 398【System Setting Configure】【Time】setting page

Table 241 【System Setting Configure】【Time】properties setting

Properties	Description
【Overwrite Calender】	Check whether to overwrite the calender setting of the HMI. 【Calender】 Select calender to overwrite.
【Overwrite TImezone】	Check whether to overwrite the time zone of the HMI. 【Time Zone】 Select time zone to overwrite.
【Overwrite NTP】	Check whether to overwrite the NTP of the HMI. 【Enable NTP】 Check whether to enable NTP.

21.1.2.7 【MISC】

【System Setting Configure】【MISC】setting paging as shown below, the meaning of each setting is as follows :

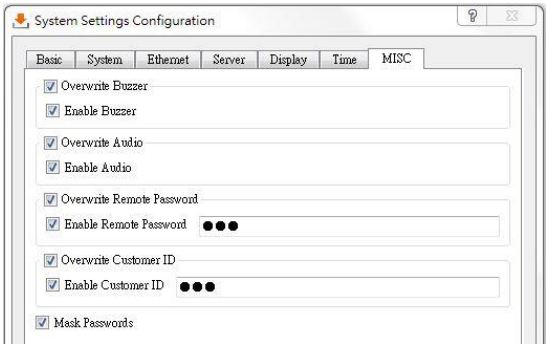


Figure 399【System Setting Configure】【MISC】setting page

Table 242 【System Setting Configure】【MISC】properties setting

Properties	Description
【Overwrite Buzzer】	Check whether to overwrite the buzzer setting of the HMI. 【Enable Buzzer】 Check whether to enable buzzer.
【Overwrite Audio】	Check whether the audio setting of the HMI. 【Enable Audio】 Check whether to enable audio.

【Overwrite Remote Password】	Check whether to overwrite the remote password setting of the HMI. 【Enable Remote Password】 Check whether to enable remote password, set the password on the right.
【Overwrite Customer ID】	Check whether to overwrite the customer ID setting of the HMI. 【Enable Customer ID】 Check whether to enable customer ID, set the password on the right.
【Mask Passwords】	【Mask Passwords】 Mask the password of【Remote Password】and 【Customer ID】that user edited.

21.1.3 Download Security

If system password is set, HMI will ask user for this password to proceed before downloading. If the project has a set download password, you must enter the correct input cfrp download password to continue to download, if the error is entered, the download will be terminated.

21.1.4 Download Project by USB Flash Drive

The user can make the project into a file that can be downloaded with a USB flash drive, so that the HMI can be easily transplanted to the same type of HMI.
This is very helpful for expanding the same plant but the network or computer equipment is underdeveloped.

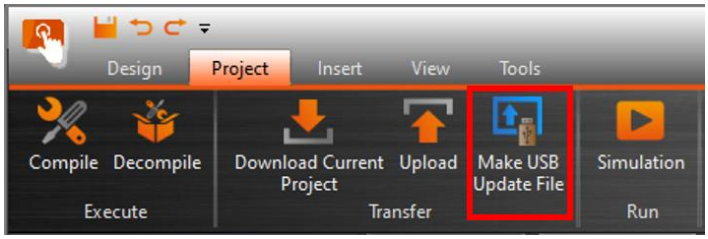


Figure 400 Make USB Update File Function

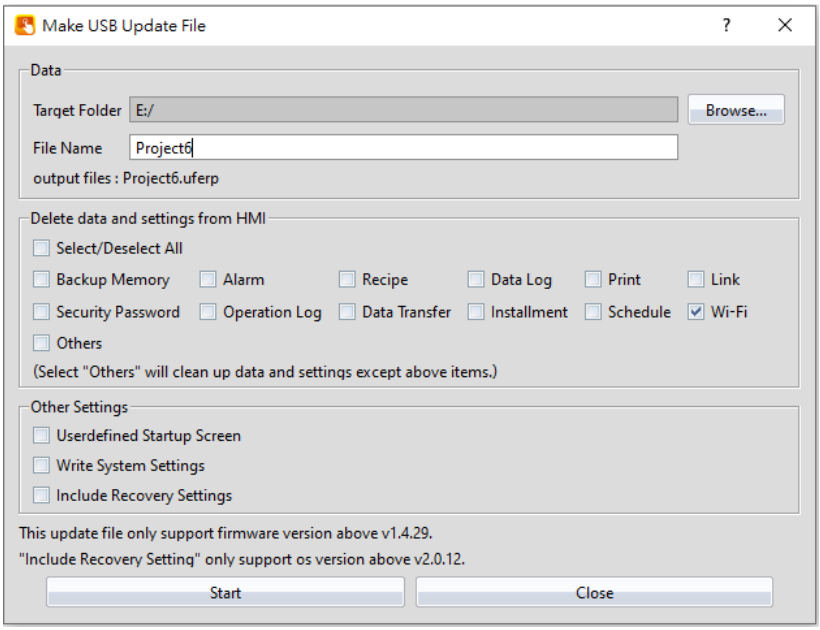


Figure 401 Make USB Update File

There are some points that need to be attended at the follow:

1. If the USB size is larger, wait a while, and then the Project Update Question Dialog will appear

2. In order to improve the software performance, we have done some software changes, if you are using FvDesigner V1.3.29 previous versions, please pay attention to the use of USB drive ufrp file upgrade project, it may encounter instability, solution please use FvDesigner V1.3.29 or V1.4.7 later to re-download the software, and then use USB drive update project

3. V1.3.29 or V1.4.7 later version, the production of USB drive update file, the filename extension is ufrp2, if you do not use FvDesigner V1.3.29 or V1.4.7 or later version of the software downloaded the HMI will not be able to identify V1.3.29 or V1.4.7 or later version, make the USB drive update file, the solution please use FvDesigner V1.3.29 or V1.4.7 later version of the software to re-download

Table 243 Make USB Flash Drive Update File

File	Build Version	HMI-supported firmware version		
UFRP	?-v1.3.28 v1.4.0-v1.4.6	?~v1.3.x	v1.4.0-v1.4.x	v1.5.0-v1.5.x *OS v1.0 only
UFRP+ UENV	v1.3.29-v1.3.x	v1.3.29-v1.3.x	v1.4.7-v1.4.x	v1.5.0-v1.5.x *OS v1.0 only
UFRP2v1 +UENV	v1.4.7-v1.4.x	v1.3.29-v1.3.x	v1.4.7-v1.4.x	v1.5.0-v1.5.x
UFERP	v1.5.3-v1.5.x		v1.4.29-v1.4.x	v1.5.3-v1.5.x

Table 244 properties of making USB drive upgrade file

Options	Description
【Data】	【Target Folder】 File storage path, you can browse to select the storage path. 【File Name】 Set the file name of the USB drive update file 【output files】 The filename of the output file is .uferp2
【Delete from HMI】	This column determines whether to clear the data originally stored in the HMI. In addition to produce the update file of USB drive, you can choose to clear the original data stored in HMI, through the operation of HMI, insert the USB drive will appear USB project update list dialog, you can also select from delete item, once selected, it will delete the select item when the project download complete. 【Select All】 After checked,【Backup Memory】、【Alarm】、【Recipe】、【Data Log】、【Print】、【Link】、【Security Password】、【Operation Log】、【Data Transfer】、【Installment】、【Schedule】and【Others】all of them will be selected. 【Backup Memory】 After checked, it will delete the HMI internal data after USB drive updated HMI file. 【Alarm】 After checked, it will delete the HMI origin alarm record after USB drive updated HMI file. That is, all files under the HMI / internal / alarm / 【Recipe】 After checked, it will delete the HMI origin recipe file after USB drive updated HMI file. That is, all files under the HMI / internal / recipe / 【Data Log】 After checked, it will delete the HMI original data log record

	after USB drive updated HMI file. That is, all files under the HMI / internal / datalog / 【Print】 After checked, it will delete the HMI origin print data after USB drive updated HMI file. That is, all files under the HMI / internal / hardcopy / 【Link】 After checked, it will delete the HMI original parameters through the system parameters set communication after USB drive updated HMI file. That is, the controller communication reset the parameter accordind to the connection on the software 【Security Password】 After checked, after USB drive updated HMI file will delete the HMI origin password table, at this point, if the project has set the password table, the password table will be the main in the project; if unchecked will retain the origin password table that on the HMI. 【Operation Log】 After checked, it will delete the HMI origin operation log after USB drive updated HMI file. That is, all files under the HMI / internal / operationlog / 【Data Transfer】 After checked, it will delete the HMI origin transfer data after USB drive updated HMI file. That is, all files under the HMI / internal / datatransfer / 【Installment】 After checked, and after the USB flash drive update the HMI file then the origin installment data will be deleted. For example, if there are 3 periods and 2 periods have been entered, then the record will be deleted if the intallment option is checked. 【Schedule】 After checked, it will delete the original schedule information on the HMI after USB flash drive updates the HMI data. Such as the project originally set start at 8:00:00, change to start at 9:00:00 during the HMI executing. If didn't check this

	option, it will remain startup from 9:00:00, if did check this option, it will delete the modified record, and stratup from 8:00:00. 【Others】 After checked, except the above files on the HMI will be deleted after update the HMI file. Indicates that all the files under other folders on the HMI internal path /internal/ will be deleted.
【Other Settings】	【Userdefined Startup Screen】 Allows user to set the HMI start up screen. A start up screen could be the company logo, a log in screen, etc. Once the USB update is complete, the HMI boot screen will be changed. The Meritek HMI boot screen is in the given location: (under 64bit windows) C:\Program Files (x86)\MERITEK\FvDesigner\Ver1.5\startup screen (under 32bit windows) C:\Program Files\MERITEK\FvDesigner\Ver1.5\startup screen 【Write System Setting】 This allows designers after update HMI via USB flah drive, whether to modify the HMI system setting at the same time, so that it is not necessary for each HMI to enter the system setting adjustment when updating multiple HMIs. For more details, please refer to chapter21.1.2-Write System Setting. 【Include Recovery Settings】 When checked, the needed data to recovery the system will be packaged into the USB flash drive to update the file, so that the user can use the USB flash drive to repair the HMI. For details, please refer to chapter 21.1.2-Write System Setting. Note: If the user selects this option, select it in【Project Information】【Security】at the same time【Enable Download Password】will fail to package.
	【Start】 When finished adjusting your settings, press start to begin the update. 【Close】 Press this button to end and close the window.

When plugging the USB flash drive into the HMI with the .uferp file, the HMI will display the following dialogue. Select the file to update.

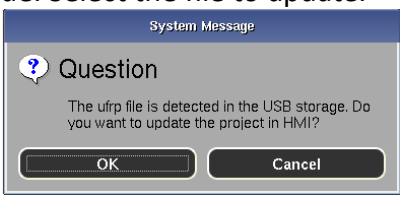


Figure 402 Project Update Question Dialog

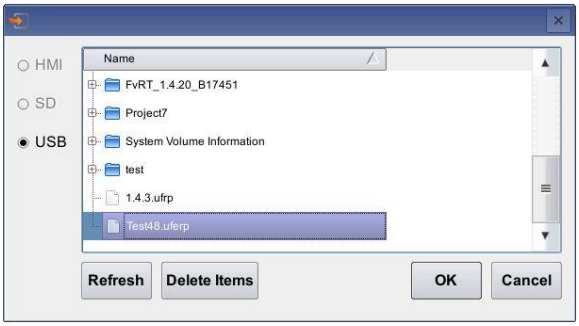


Figure 403 USB Update List

21.2 【Upload】

Users can upload the running package (.cfrp) saved on the HMI, which includes the project, recipes, fonts, etc. onto the computer so that users can easily transfer the running package onto different HMIs. This is helpful in situations such as when expanding similar plants, where network or computer equipment is limited.

21.2.1 Uploading running package to a computer from the HMI

The upload function can be found in the 【Project】function tab on the ribbon taskbar on top of the FvDesigner. Click on 【Upload】and a dialog window will open and enter the 【Upload Manager】setting screen.

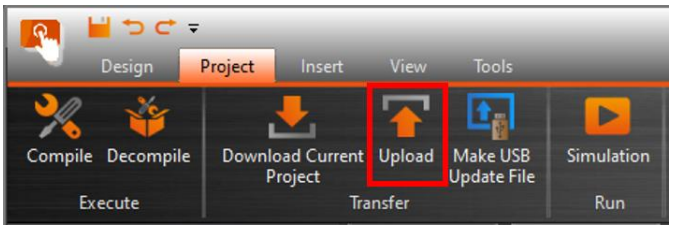


Figure 404 Open the upload function

The following are detailed descriptions for the 【Upload Manager】.

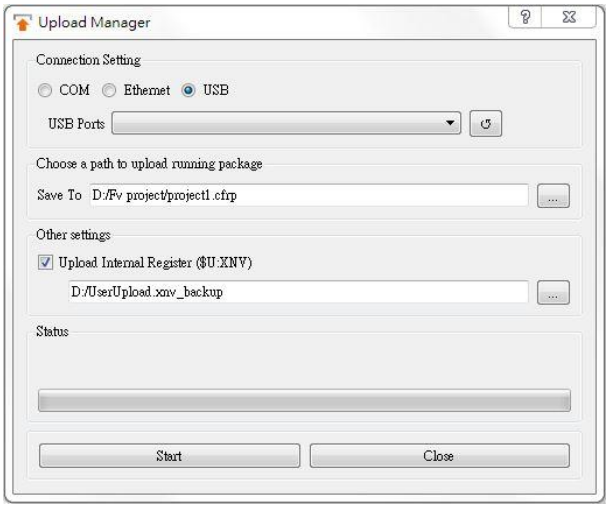
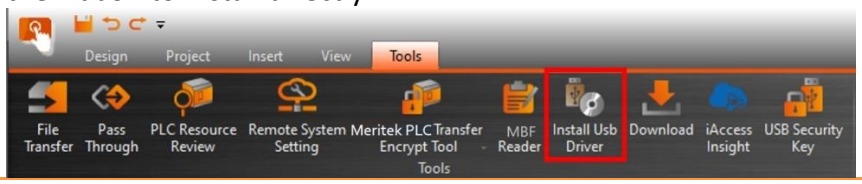


Figure 405 Upload Manager function interface

Table 245 Upload Manager-related parameters

Properties	Description
【Connection Setting】	【COM】 Select to perform the upload through the serial port. The port number used for uploading must also be specified when this option is selected. 【Ethernet】 Select to perform the upload through the Ethernet. The IP address of the target HMI must also be specified when this option is selected. Press【Scan】on the right to acquire the HMI IP addresses and device names currently online. Users can also manually enter the IP address of the target HMI to perform the upload. **Note: The Scan button may have no effect under certain network environments (usually when the DHCP server cannot accurately configure the IP addresses). In this case, the command window can be opened to execute the following commands in sequence to restore the function.** **1. netsh winsock reset** **2. netsh interface ipv4 reset** **3. ipconfig /flushdns** **Please re-start the computer when completed for the settings to take effect.** 【USB】 Perform the upload through USB. The USB Driver is under the FvDesigner installation path. The default USB Driver is under the C:\Program Files\Meritek\FvDesigner\Ver1.6\usb driver data file. You can also click on【Install USB Driver】in the【Tools】tab of

	the ribbon to install directly. 
【Choose a path to upload running package】	【Save To】 Specify the storage path after the running package is uploaded.
【Other settings】	【Upload Internal Register ($U:XNV)】 Upload HMI's XNV register data as well.
【Status】	Displays the current upload status and upload progress. 【Start】 Press this switch to start uploading once setting configuration is completed. 【Close】 Press this switch to end uploading and close the upload window.

21.2.2 Upload Step

The upload step example will using mini-USB:

Step 1: Switch to Project(P), then click "Upload"

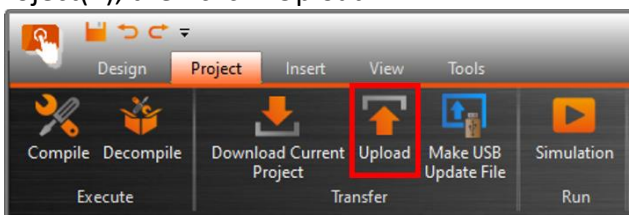


Figure 406 Upload Step 1

Step 2: Connection Setting select "USB", if the drop-down menu didn't show any COM port, click the refresh button.

Set the storage path. After uploading, a file with a .cfrp extension will be generated, so you need to set the path of the storage file here. After the setting is completed, press Start to see the progress bar running, and "Please use decompile to get your project" will appear after the end function to get the project.

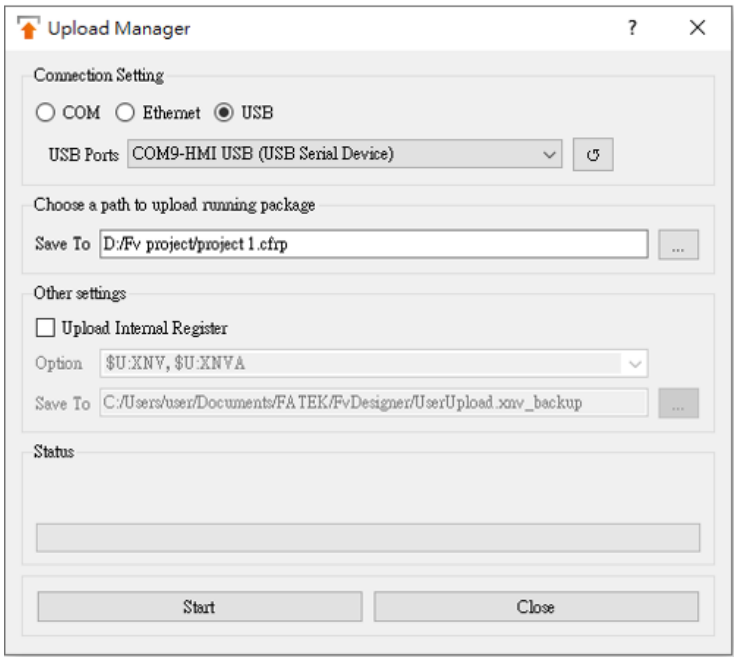


Figure 407 Upload Step 2

Step 3: Go back to the menu on the top row, select decompile, click the browse of the project source to confirm whether the file exists, and then click decompile, and the project file (.fpj) will appear in the folder after the execution is completed.
Note: If the decompiled software version is older than the firmware version of the HMI, it will fail. Please use the latest version of the software.

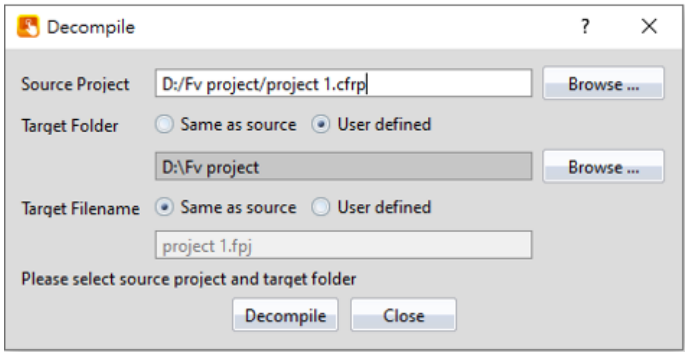


Figure 408 Upload Step 3

21.2.3 Upload Security

If system password is set, HMI will ask user for this password to proceed before uploading. If the project has a set upload password, you must enter the correct input cfrp uppassword to continue to upload, if the error is entered, the upload will be terminated.

21.2.4 Upload Project by USB Flash Drive

When there's no computer on your hand, but want to get the project from the HMI, you can use USB flash drive to get it.

First, add a folder and named upload, then plug it into the HMI and will ask the user

whether to upload the project.

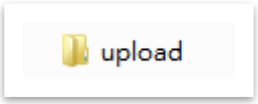


Figure 409 Add upload folder

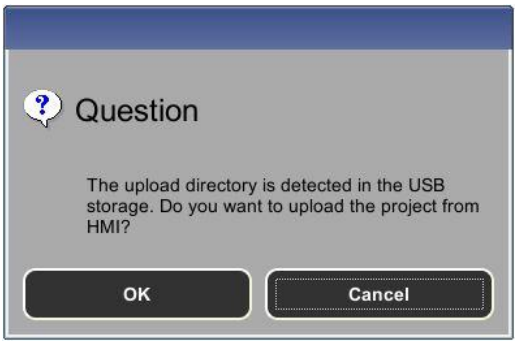


Figure 410 HMI upload asking dialogue

21.3 【Compile】

21.3.1 Compile Introduction

Compile is used to confirm the accuracy of the current plan and also converts the HMI plan project into a running package that can be placed into the HMI. The running package includes settings and the converted language required for the HMI. The compiling running packages includes the two parts: (1) Starting compilation (2) Checking for errors after compilation is complete. The introduction to these two parts are as follows.

21.3.2 Start compiling running packages

To start compiling, press the【Compile】switch in the【Project】section of the HMI toolbar.

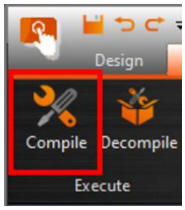


Figure 411 Perform compile from the toolbar above

21.3.3 Ending compile and error check

When the compilation ends, the compile process will be displayed in the【Output Message】below, and a running package (with file extension cfrp, which is short for Compress MERITEK Running Package) to be used on the HMI will be generated. This

running package can be placed in the HMI for use.

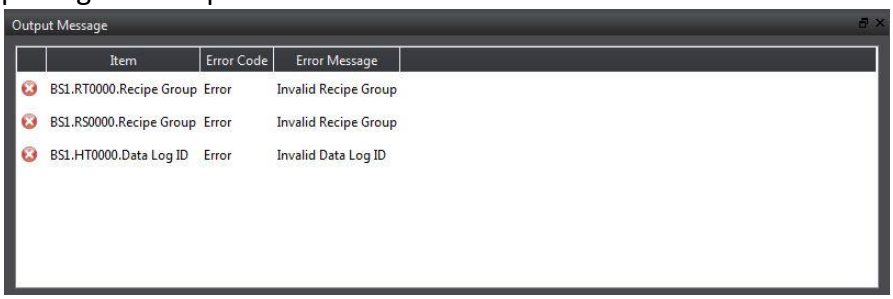


Figure 412 Compilation process illustration

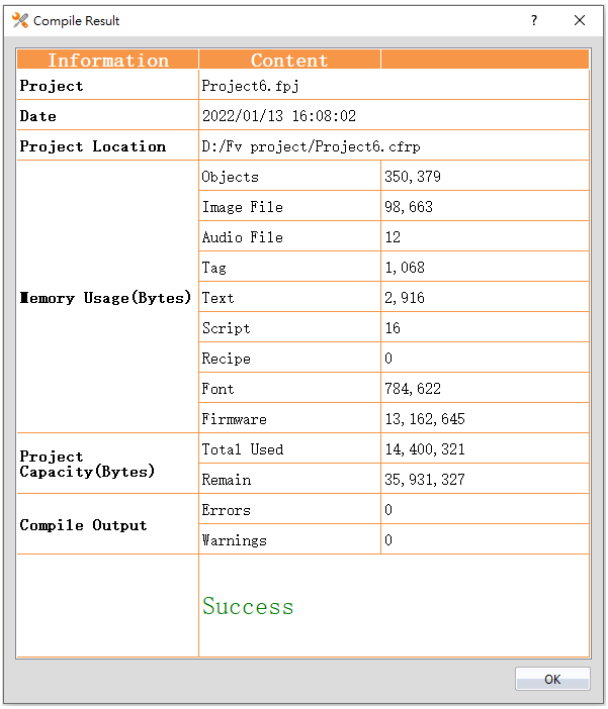


Figure 413 Compilation results illustration

If any errors were generated during the compilation, it will be displayed in the 【Output Message】. The error information will include the (1) component, (2) success or error code and (3) compile message as shown in Figure 412. Users can click on the message once to move to the object or double-click on the message to open the error screen and focus on the component setting screen of the error, allowing the user to quickly debug the error.

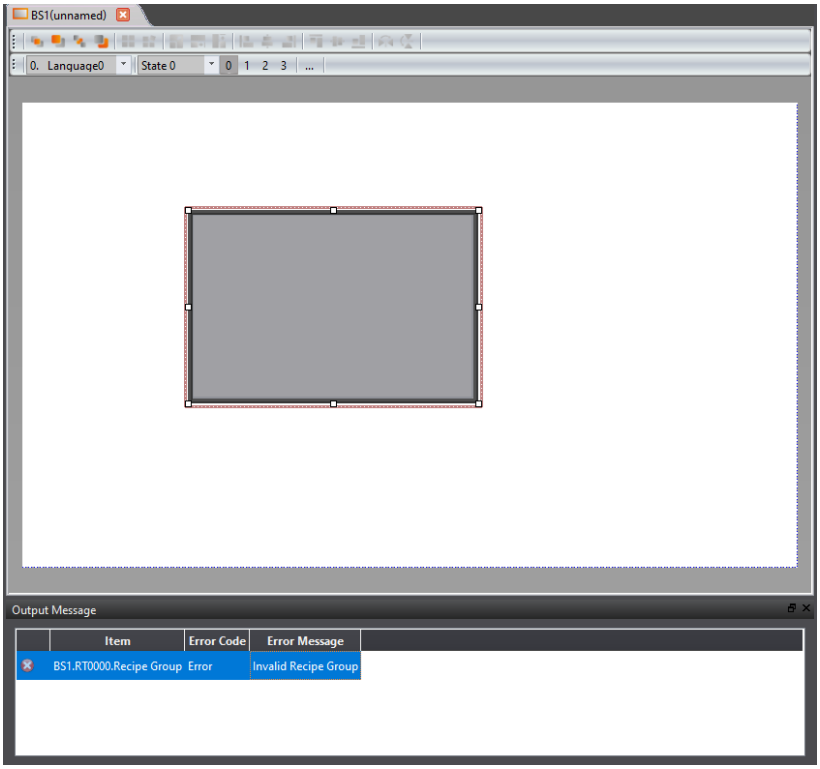


Figure 414 Single click on the compile failure message window to jump to the component

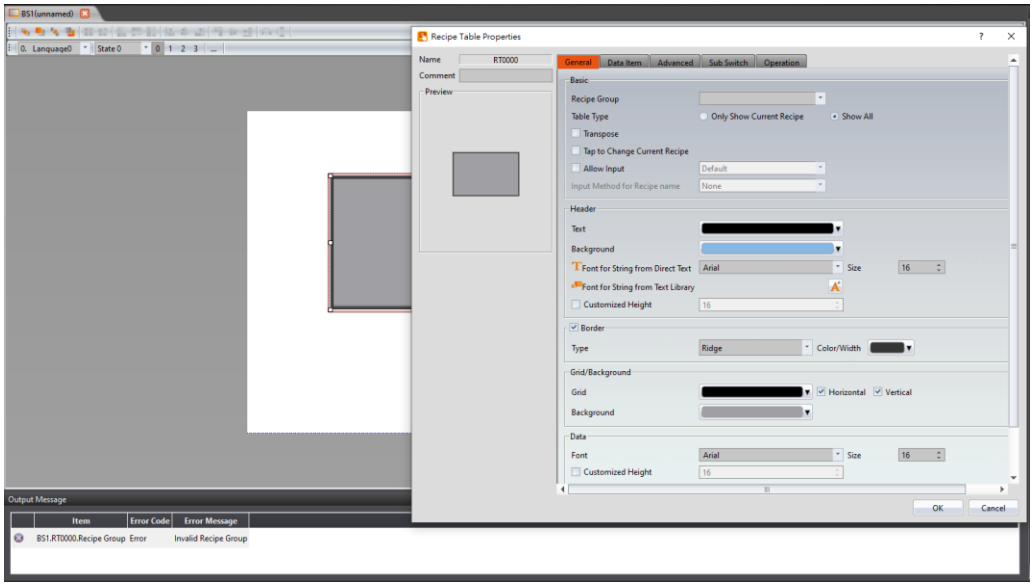


Figure 415 Double click on the compile failure message to open the screen setting

21.3.4 Decompile

The main purpose of the decompile function is to copy the project (.cfrp) from the HMI to the computer or the compiled project (.cfrp) and restore it to the file format (.fpj) so that the FvDesigner software can edit it.

To start the【Decompile】function, press the【Decompile】icon in the Project tab.

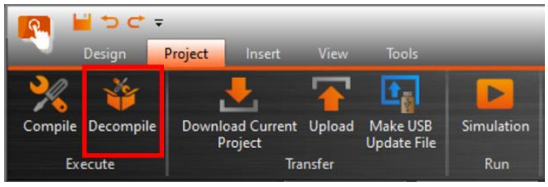


Figure 416 Decompile Function

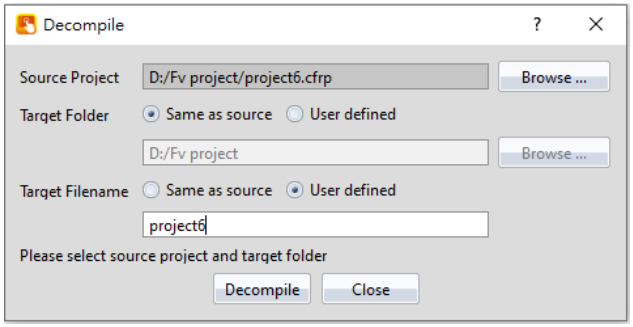


Figure 417 Decompile dialog window

Table 246 Decompile dialog window settings

Field	Description
【Source Project】	Specify the path and file for the project source
【Target Folder】	Specify the destination path for the generated file from the project decompilation.
【Target Filename】	Select whether the file name generated after the decompilation is the same as the project source or determined by the user.

21.4 【Simulation】

21.4.1 Simulation Introduction

【Simulation】is used to perform preliminary tests before downloading the running package to the HMI in order to reduce the likelihood of finding errors after being downloaded into the HMI. Running simulations can verify the accuracy of the project plan. The simulation function can be run on the PC to simulate how the running package will run on the HMI. Simulations provided by Meritek are divided into【Offline Simulation】and【Online Simulation】. The simulation setting window can be used to determine whether to start the Offline or Online Simulation.

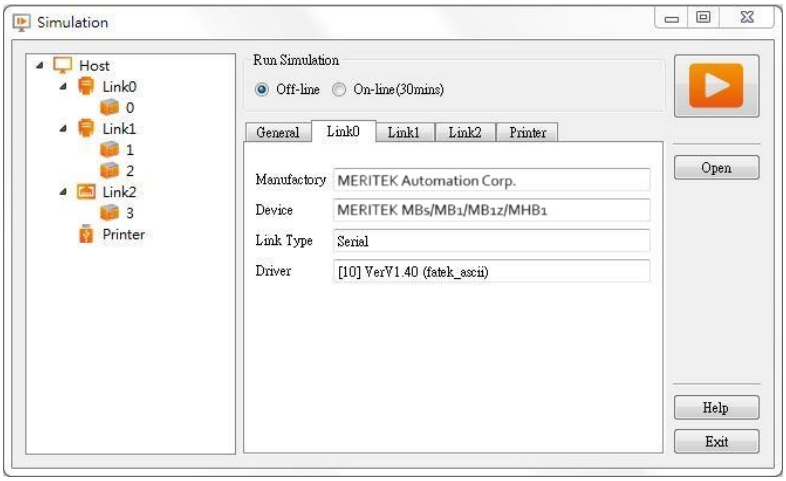


Figure 418 Simulation setting window

21.4.2 Starting Simulation

Users can start【Simulation】by opening the simulation setting window from【Project】, and then selecting whether to perform【Offline Simulation】or【Online Simulation】.

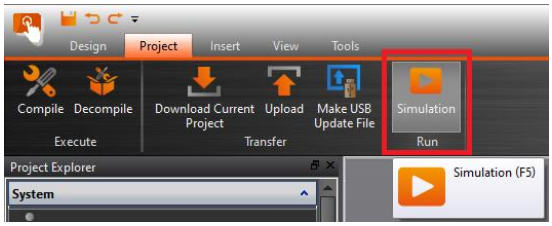


Figure 419 Starting simulation

21.4.3 Offline Simulation

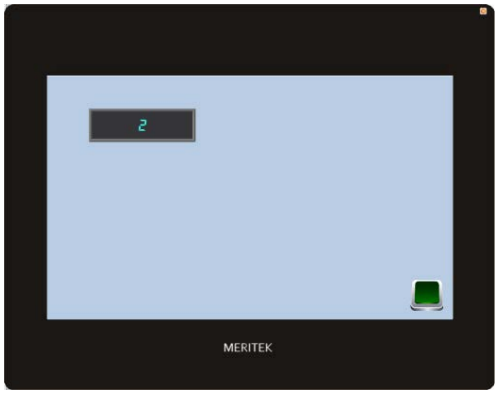


Figure 420 Offline Simulation

【Offline Simulation】is as shown in Figure 420. A simulator will open on the PC and create a virtual PLC that is connected to the HMI in the memory of the PC. Therefore, no communication errors will be generated during the simulated connection. The simulated connection is used to verify the accuracy of the screen and logic.

21.4.4 Online Simulation

The difference between【Online Simulation】and【Offline Simulation】is that the PLC to connect (serial or network connection) can be set. As shown below, Online Simulation can be started when the setting is complete.

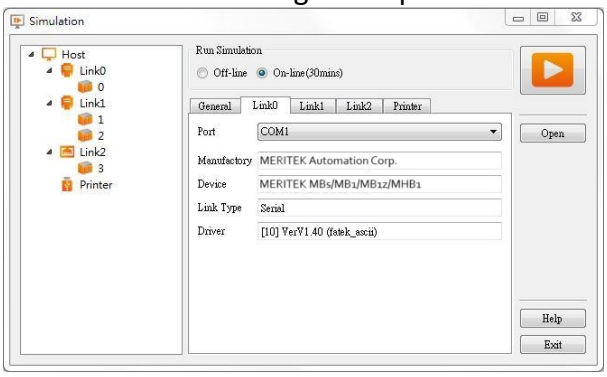


Figure 421 Online simulation connection setting

【Online Simulation】is as shown in Figure 421 Similar to【Offline Simulation】, a simulator is opened on the PC. However, the PC will communicate with the PLC. Therefore, if there is no PLC connected to the PC, the PLC is not responding, or there is a PLC connection setting error, communication error message will be generated. Online Simulation not only can verify the accuracy of the screen/logic, but it can also verify the accuracy of the communication.

Note: Online Simulation

1) **It can only be run for 30 minutes.**
2) **If serial port configuration of project is different from the PC, you have to configure the serial port number before running an Online Simulation.**

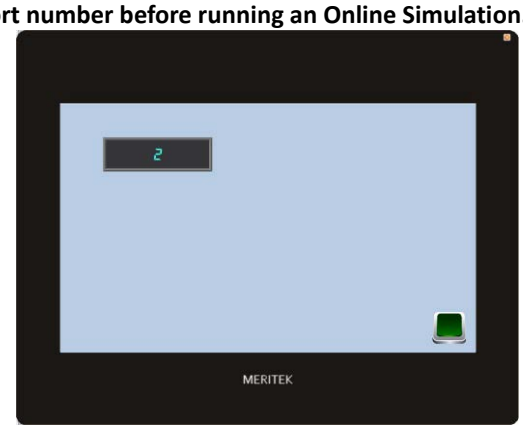


Figure 422 Online simulation illustration

22. Tool

22.1 【File Transfer】

【File Transfer】allows the user to transfer files from the computer to the HMI or vice versa via USB connection. To use the【FTP Transmission Function】, please refer to Chapter 4.1 -【FTP Server】for instructions.

The operation flow of【File Transfer】will be described in detail below.

You can open the file transfer function window by clicking File Transfer on the Tools tab of the FvDesigner taskbar.



Figure 423【File Transfer】

Click【File Transfer】, the window that pops up is the file transfer function.

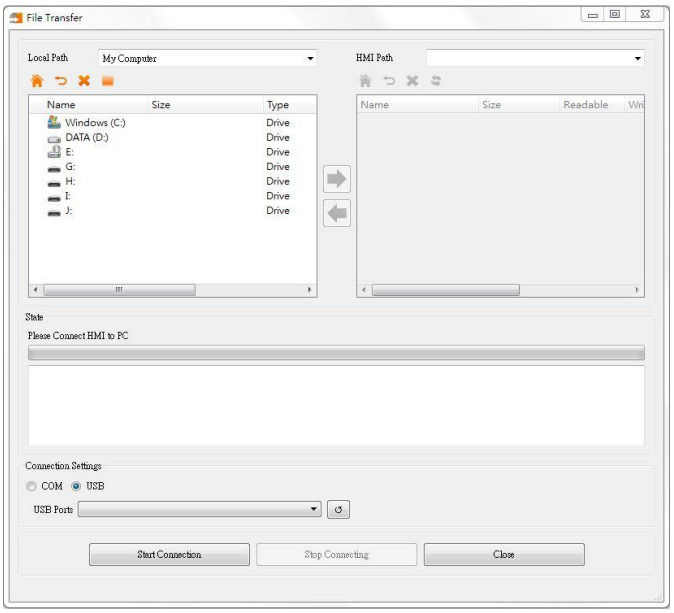


Figure 424【File Transfer】Window

Tabel 247【File Transfer】Button descriptions

Field	Description
【Connection Settings】	【COM】 Do the file transfer through COM port.

	【USB】 Do the file transfer through mini-USB port.
【Start Connection】	When the computer is connected to the HMI via USB, the user can press start connection to start the file transfer.
【Stop Connecting】	To end the file transfer, press【Stop Connecting】.
【Close】	Same function as【Stop Connecting】,but also close the window afterwards.

Open【Remote System Setting】and connect to your HMI device. Click MISC, enable the remote password setting, and set a password. Now, when performing the【File Transfer】function, the user will be prompted to enter the password in order to complete the transfer.

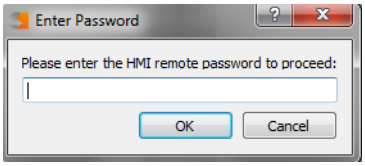


Figure 425【File Transfer】Password Prompt Window

After connecting to the HMI successfully, you will see the following window.

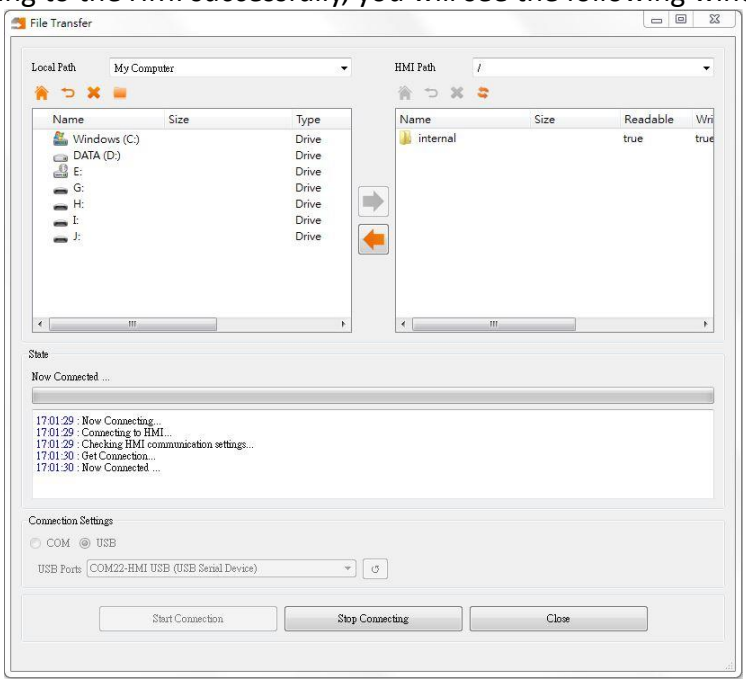
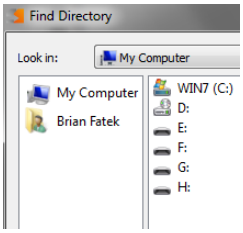
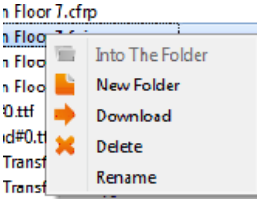
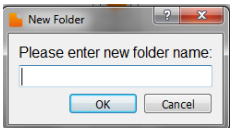
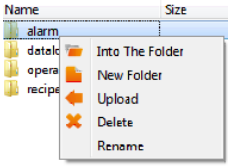
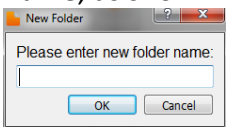


Figure 426【File Transfer】Successful Connection Window

Table 248【File Transfer】After Connecting

Field	Description

【Local】	【Local Path】 Displays current computer path 【Home】 Click this icon to return to My Computer(home page). 【Previous Page】 Click this icon to return to the previous path. 【Delete】 Click this icon to delete the local archive. 【Select Location】 Click this icon to jump out of the window and easily select the desired local folder.  Press the right mouse button on a file to to display the menu below  【Enter Folder】 Click this icon enter the currently selected folder. 【Add New Folder】 Click this icon to create a new folder in the selected location.  【Download】 Click this icon to download selected files to the HMI.

	【Delete】 Click this icon to delete the selected file. 【Rename】 Click rename to change the name of a file or folder.
【HMI】	【HMI Path】 Displays current HMI path. 【Home】 Click this icon to go back to the home page. 【Previous Page】 Press this icon to go back to the previous path. 【Delete】 Click this icon to delete the selected HMI file. 【Refresh】 Click this icon to refresh the current server-side folder information. Press the right mouse button to view the menu below.  【Open Folder】 Click this icon to open the selected folder. 【Add a new folder】 Click this icon to add a new folder and enter the folder name, as shown in the window below.  【Upload】 Click this icon to upload the selected file to the local directory.

	【Delete】 Click this icon to delete the HMI file. 【Rename】 Click rename to change the selected folder name.
【Transmission】	【Download】 Click this icon to download the selected files to the HMI. 【Upload】 Click this icon to upload the selected files to the local directory (computer). You can also perform these two tasks by simply dragging the desired item to the other directory.

After successfully connecting the computer and the HMI, the files are ready to be transferred. A datalog transfer will be similar to the image below.

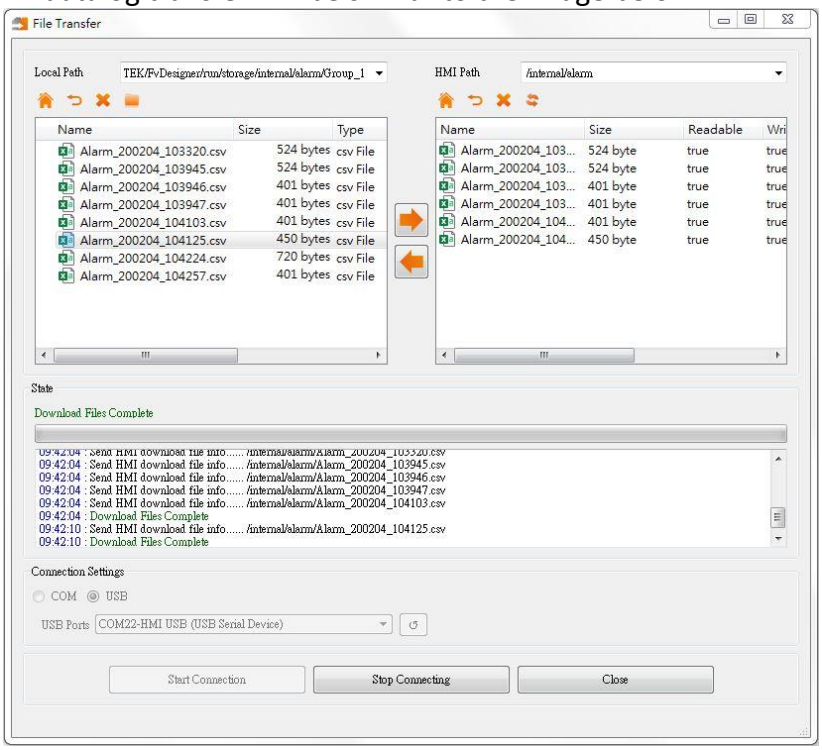


Figure 427【File Transfer】Download File Complete

22.2 【Pass Through】

Pass Through is communication between a PLC and PC through the HMI.

Generally, when the PC wants to perform serial communications with the PLC, related application programs such as WinProLadder (Meritek PLC programming software), is used on the PC and communicates directly with the PLC through the 【Ethernet】or the COM port/USB on the PC. However, under some circumstances, the PC cannot connect to the PLC directly or connection information with the PLC cannot be acquired directly. The【Pass Through Function】is provided for such conditions so that the PC can perform serial communications with the PLC indirectly, and also acquire the register data of the device. The communication mode is as shown in Figure 428 Pass Through architecture.

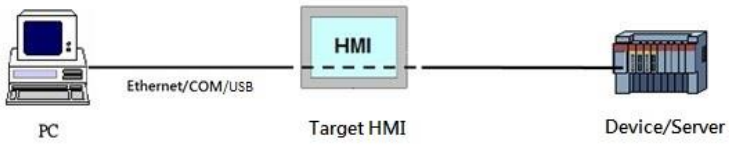


Figure 428 Pass Through architecture

22.2.1 Setting Pass Through

To use pass through, users must first use the FvDesigner to connect to the HMI that they want to pass through and switch it to【Pass Through Mode】. The goal of this action is to tell the HMI to change its operating mode in preparation to be used for 【Pass Through】. After successfully setting the HMI to the pass through mode, the HMI will be able to transfer all data coming from the specific port of the PC to the specified PLC.

After the setup, users can use the WinProLadder or other related applications to specify the same port to communicate with the HMI. Although the PC is not directly connected to the PLC, the HMI will transfer all data received from the specified port to the PLC. Therefore in terms of behavior, the result will be the same as connecting directly to the PLC. When the task is complete, FvDesigner can be used again to switch HMI back to the normal operation mode.

The following are detailed descriptions of the【Pass Through】operating process.

The Pass Through function can be launched by clicking on the【Pass Through】icon in the【Tools】function tab of the FvDesigner task bar to open the function window.



Figure 429【Pass Through】

The dialog that appears after pressing【Pass Through】is the main operating interface of the【Pass Through】function. Parameters that can be set include three major categories that correspond to the individually related parameters of PC, HMI and PLC, respectively. For the PC side, the serial port to be used by the HMI can be set (can only be set when the serial port communication is selected). For the HMI side, its IP address, the input COM used to receive data from the PC side and the output COM used to send the data to the PLC side can be set. For the PLC side, related parameters used can be set for the serial communication between the PLC and the HMI.

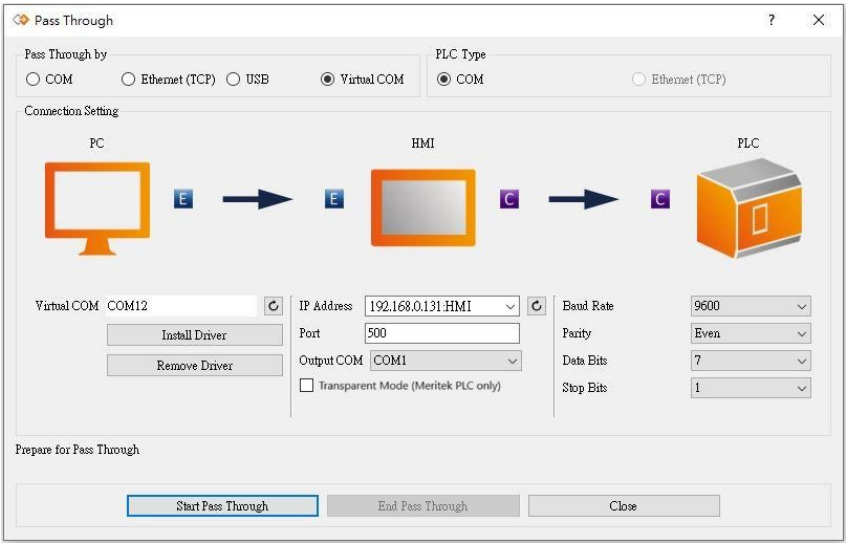


Figure 430 Pass Through parameter setting page

Detailed descriptions of each parameter are as follows:

Table 249 Pass Through related parameters

Property	Description
【Pass Through by】	【COM】 Use the serial port to communicate between the PC and the HMI. 【Ethernet (TCP)】 Use Ethernet to communicate between the PC and the HMI. 【USB】 Use USB to communicate between the PC and the HMI. 【Virtual COM】 Before the computer and the HMI communicated through the network, the HMI and the terminal device communicated through the serial port.
【PLC Type】	【COM】 Use the serial port to communicate between the HMI and

	the PLC. 【Ethernet (TCP)】 Use Ethernet to communicate between the HMI and the PLC.
【Connection Setting】	【PC】 1. 【Output COM】: When【COM】or【USB】is selected for【Pass Through by】, this field will be enabled to specify the serial port to use for the PC output. On the other hand when the【Ethernet (TCP)】is selected, this field is disabled. 【HMI】 1. 【IP Address】: Specifies the IP address of the target HMI to pass through; when the【Ethernet (TCP)】is selected for【Pass Through by】, all IP addresses of HMIs in the local area network will automatically be scanned for the user to select the target HMI for pass through. User can press the【↻】button after this field to refresh IP address list or manually input an IP address. 2. 【Input COM】: When【COM】is selected for【Pass Through by】, press the button【↻】to get all available serial ports on the target HMI. When the【Ethernet (TCP)】is selected for【Pass Through by】, this field will be locked and unavailable for use. 3. 【Output COM】: Press the button【↻】to get all available serial ports on the target HMI; The scan results will be displayed in this pull-down menu. 4. 【Transparent Mode (MERITEK PLC only)】: Users can do the operation on the HMI at the same time. 【PLC】 1. 【Baud Rate】: This field can be used to set the baud rate of the target device to pass through. 2. 【Stop Bits】: This field can be used to set the stop bits of the target device to pass through. 3. 【Parity Check Bits】: This field can be used to set

	the parity check bits of the target device to pass through. 4. 【Data Bits】: This field can be used to set the data bits of the target device to pass through. 5. 【IP Address】: Specifies the IP address of the target PLC to pass through; when the【Ethernet (TCP)】is selected for【PLC Type】, all IP addresses of PLCs in the local area network will automatically be scanned for the user to select the target PLC for pass through. User can press the 【  】button after this field to refresh IP address list or manually input an IP address. 6. 【Port】: Set the port while using the【Ethernet (TCP)】.
	【Start Pass Through】 After setting the【Connection Setting】related parameters, press【Start Pass Through】to perform pass through. 【End Pass Through】 To end pass through, press【End Pass Through】on the PC or HMI. 【Close】 This function is the same as【End Pass Through】; It will also close the dialog window after ending pass through.

22.2.2 Pass Through Example

The following shows a simple example for performing pass through Ethernet using WinProLadder (Meritek PLC programming software).

As described in the previous section of this chapter, FvDesigner must be used to connect to the HMI to pass through in order to use the HMI. Its operating mode must be switched to【Pass Through Mode】so that the HMI can transfer the data received from the specified port to the specified Output COM. In order to achieve this goal, first open the FvDesigner and click on the【Pass Through】function,

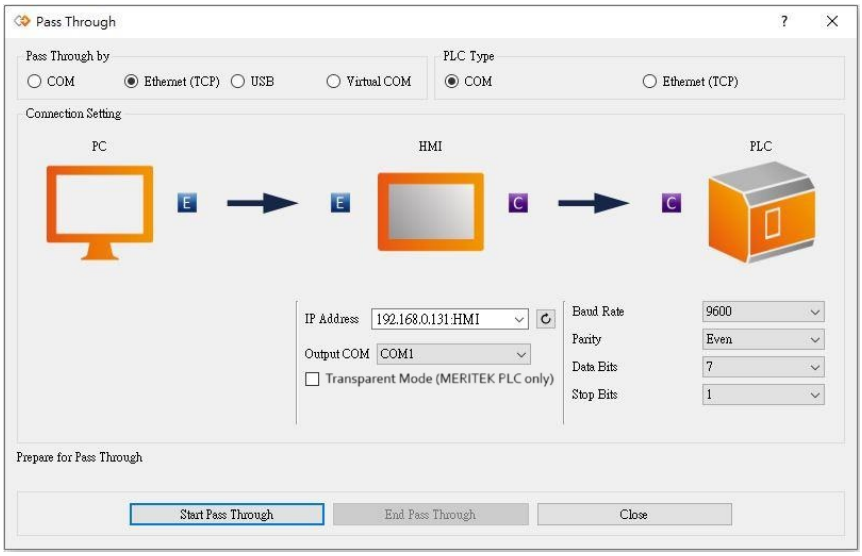


Figure 431 Pass Through parameter setting interface

then select the【Ethernet】as the connection method since the PC will not be connected to the HMI through the serial port. The HMI【Output COM】must still be set.

The user must first press the【 】after the【IP Address】field to get all HMI IP address on the network those are available for pass through, or enter an IP manually. The user must know which serial port is used by the HMI to connect to the PLC, else the pass through function will not be able to operate.

Next, the user must set the related parameters of the serial port used with the PLC. Please note that if the parameters set here are not correct for this PLC, it is likely for unexpected communication failures to occur.

After setting all the parameters, press【Start Pass Through】to switch the target HMI to pass through mode to facilitate the follow-up actions. If the HMI was successfully switched to pass through mode, the status of the operating inter-face will change as shown in the figure below. The status field will show that the HMI was successfully changed to pass through mode.

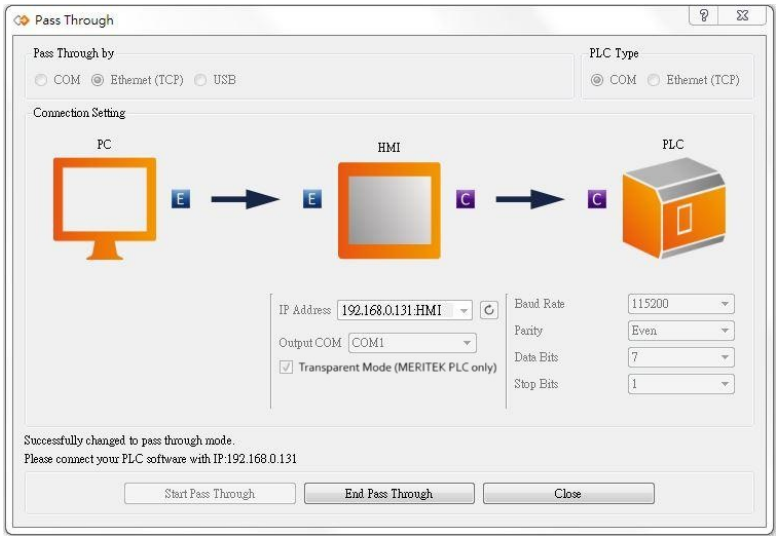


Figure 432 Successfully switched HMI to Pass Through mode

At this time all pre-procedures are completed and the HMI is ready to transfer data between the PC and PLC at any time. User can open the WinProLadder and select 【PLC】→【Connect】

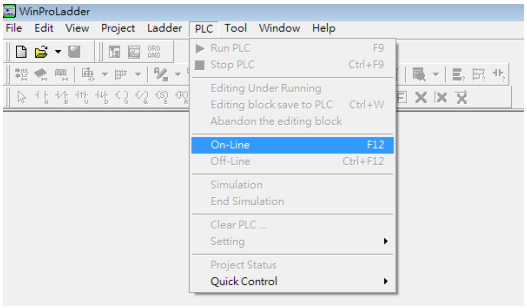


Figure 433 Open WinProLadder connection settings

Connection-related options will appear after clicking. The communication between the PC side and the HMI side in this pass through is through the 【Ethernet】. Therefore, select MERITEK-TCP for the connection name.

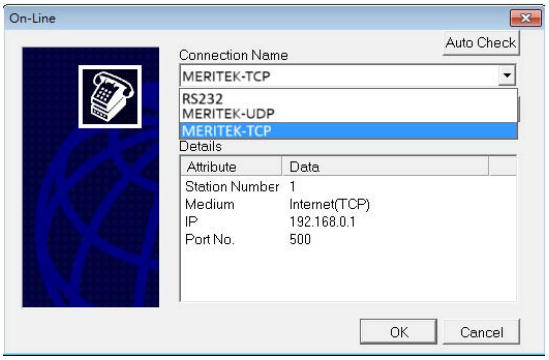


Figure 434 Selecting the communication protocol

The TCP connection-related parameters can be set after pressing Edit, as shown in the figure below:

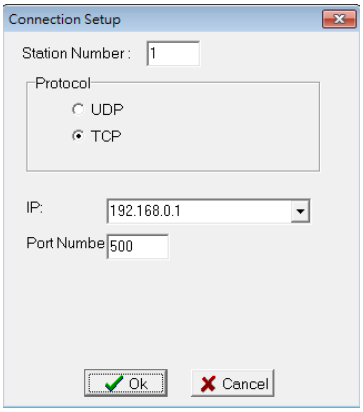


Figure 435 Setting the WinProLadder Ethernet communication parameters

Users need to specify IP address of the HMI, which is going to pass through to the PLC. After configuration is completed, the user can press the OK button to perform pass through.

Note: When using Pass Through function, if the PLC is Meritek MHB1, and HMI communicates with the PLC via PLC Port, the baud rate needs to set at 115200 in WinProLadder. .

22.2.3 Virtual COM Passthrough Setting

For the needs of connecting devices that want to passthrough to the serial port through the network, we provide a virtual COM function so that users can choose to use the serial port for connection on the PLC software. Currently, this function supports Windows 7 (including) operating systems and above.
The following picture shows the screen of selecting virtual COM.

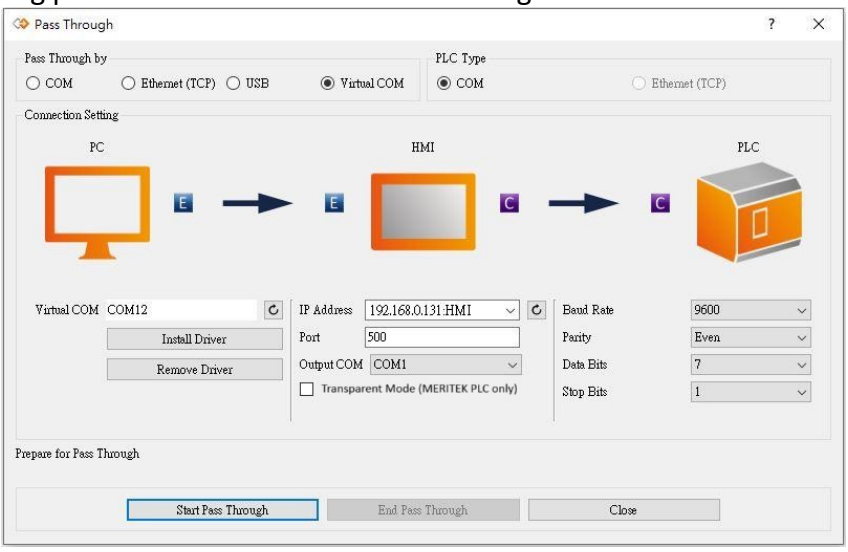


Figure 436 Virtual COM

The driver of the virtual COM will be installed when FvDesigner is installed, and the passthrough communication tool will automatically detect the location of the com port. If it is not detected or there is a need to remove and reinstall, you can press Install Driver or Remove Driver to operate.

It should be noted that the setting of the port should be the same as the passthrough

communication port on the HMI, as shown in the figure below

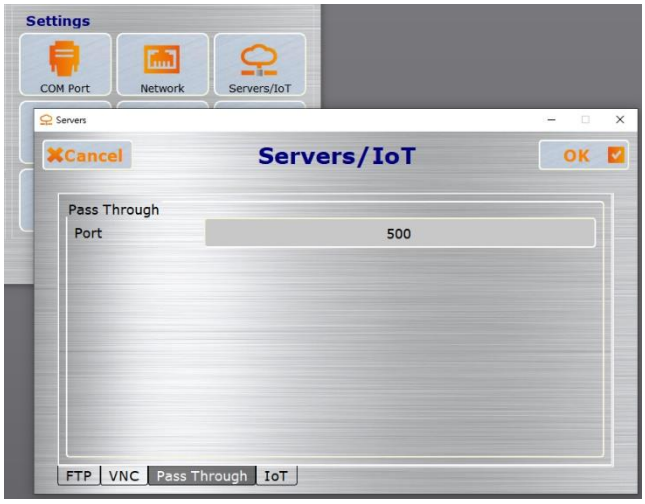


Figure 437 HMI Passthrough Port

22.3 【PLC Resource Review】

The【PLC Resource Review】function can be used if the user needs information on the PLC driver versions supported by FvDesigner or internal PLC single point and register information. The【PLC Resource Review】function allows users to find related information.

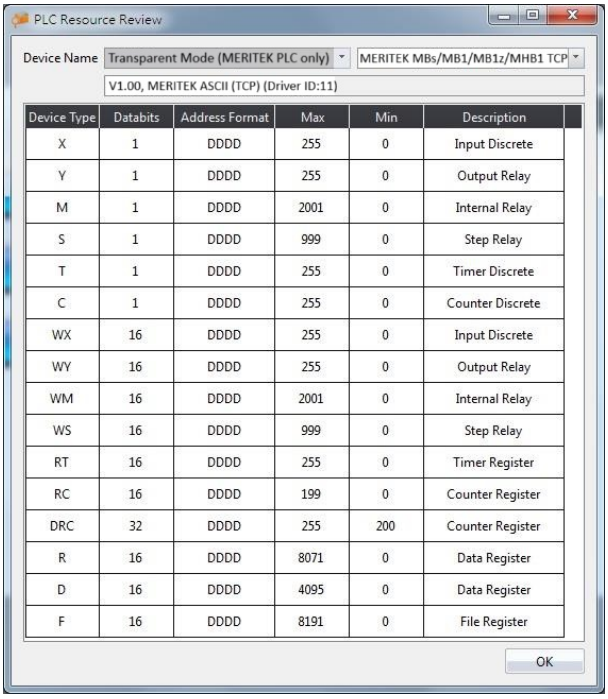
This chapter will explain【PLC Resource Review】related pages and the usage.

22.3.1 Usage Methods

Select【PLC Resource Review】in the【Tools】page of the【Ribbon】and the following window will appear.



Figure 438【PLC Resource Review】



Device Type	Databits	Address Format	Max	Min	Description
X	1	DDDD	255	0	Input Discrete
Y	1	DDDD	255	0	Output Relay
M	1	DDDD	2001	0	Internal Relay
S	1	DDDD	999	0	Step Relay
T	1	DDDD	255	0	Timer Discrete
C	1	DDDD	255	0	Counter Discrete
WX	16	DDDD	255	0	Input Discrete
WY	16	DDDD	255	0	Output Relay
WM	16	DDDD	2001	0	Internal Relay
WS	16	DDDD	999	0	Step Relay
RT	16	DDDD	255	0	Timer Register
RC	16	DDDD	199	0	Counter Register
DRC	32	DDDD	255	200	Counter Register
R	16	DDDD	8071	0	Data Register
D	16	DDDD	4095	0	Data Register
F	16	DDDD	8191	0	File Register

Figure 439 PLC Resource Review

The PLC manufacturer and series model can be selected at the top half of the【PLC Resource Review】as shown in the figure below.

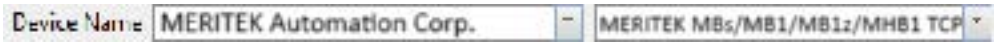


Figure 440 PLC Resource Review–Select PLC manufacturer and series model

Information on the supported PLC driver versions, internal PLC single point, and registers is available for access will appear when the selection is complete, as shown in the figure below.



Figure 441 Information of supported PLC driver versions

Device Type	Databits	Address Format	Max	Min	Description
X	1	DDDD	255	0	Input Discrete
Y	1	DDDD	255	0	Output Relay
M	1	DDDD	2001	0	Internal Relay
S	1	DDDD	999	0	Step Relay
T	1	DDDD	255	0	Timer Discrete
C	1	DDDD	255	0	Counter Discrete
WX	16	DDDD	255	0	Input Discrete
WY	16	DDDD	255	0	Output Relay
WM	16	DDDD	2001	0	Internal Relay
WS	16	DDDD	999	0	Step Relay
RT	16	DDDD	255	0	Timer Register
RC	16	DDDD	199	0	Counter Register
DRC	32	DDDD	255	200	Counter Register
R	16	DDDD	8071	0	Data Register
D	16	DDDD	4095	0	Data Register
F	16	DDDD	8191	0	File Register

Figure 442 Information on internal PLC single point and registers available for access

Introduction to the internal PLC single point and registers available for access is as shown in the table below.

Table 250 Introduction to internal single point and register information

Name	Description
【Device Type】	Represent the code of the single point or register in the PLC.
【Data Bits】	Represent the number of bits occupied by the data of this 【Device Type】.
【Address Format】	Represent the address format that must be used to access this【Device Type】.
【Max】	Represent the maximum value of the address range available for access for this【Device Type】.
【Min】	Represent the minimum value of the address range available for access for this【Device Type】.
【Description】	Describe the function and usage of the【Device Type】.

22.4 【Remote System Setting】

Users can remote the HMI's system setting to modify the settings.



Figure 443【Remote System Setting】

22.4.1 Usage Method

Users need to set up the HMI's IP before doing connection. After connect successfully users can directly modify the settings, but【Link】and【Calibration】were unable to do. More details please refer to **ch24-HMI System** Settings.



Figure 444【Remote System Setting】setting page

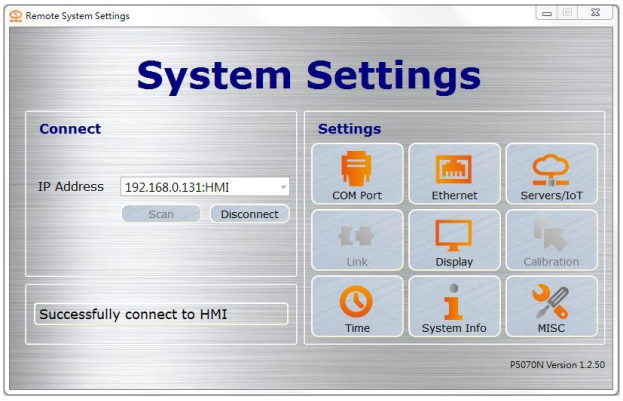


Figure 445【Remote System Setting】successfully connect to HMI

22.5 【MERITEK PLC Transfer Encrypt Tool】

This function is that when the user uses the HMI's USB storage device to update the linked MERITEK PLC ladder diagram program, the operation can be protected, thereby protecting the PLC ladder diagram program and intellectual property planned by the designer. More details please refer to **ch27.3-【MERITEK PLC Transfer Encrypt Tool】**



Figure 446【MERITEK PLC Transfer Encrypt Tool】

22.6 【MBF Reader】

【MBF Reader】is used when reading the *.MBF file of the MERITEK's own format or when converting a *.MBF file to another file format. It can be converted to a *.TXT file, *.CSV file, or *.PDF file. For how to generate *.MBF files, please refer to **chapter7.2.3-【Export Data】** .

The following will explain in detail the operation flow of【MBF Reader】.

MBF Reader function Click【MBF Reader】on the【Tools】tab on the ribbon to open the function window.



Figure 447【MBF Reader】

After selecting【MBF Reader】, the popup dialog box is the main operation interface of【MBF Reader】function, as shown below.

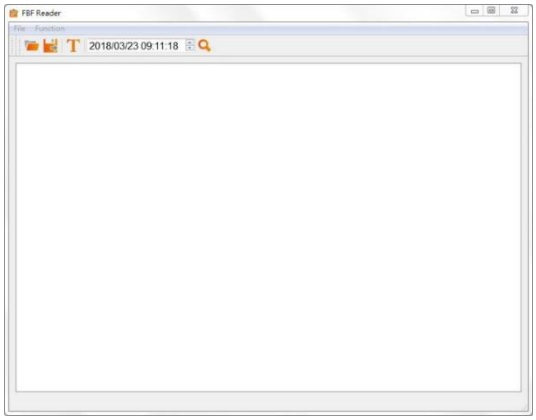
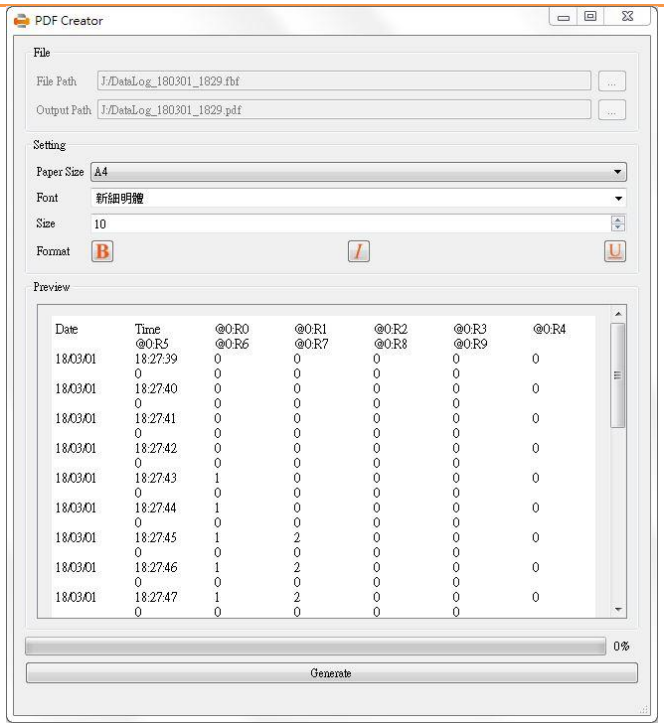


Figure 448【MBF Reader】function dialog

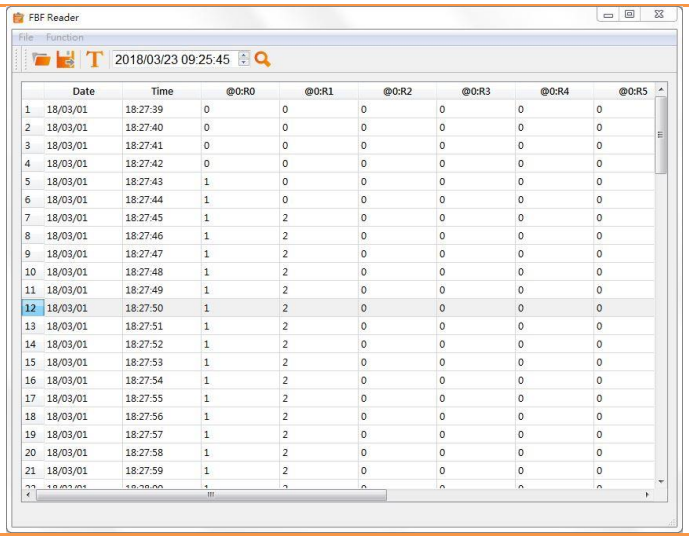
Tabel 251【MBF Reader】menu descriptions

Properties	Description
【File】	【Open】 Open MERITEK's own format *.MBF file. 【Save as】 After reading MERITEK's own format *.MBF file, save as *.TXT file, *.CSV file or *.PDF file, etc. Save as new file if choose to save as PDF, the following dialog will appear, you can set the font type, size and format. Press the【Generate】button to convert the *.MBF file to a PDF file.

	 【Quit】 Leave and close the MBF Reader.
【Function】	【Font Setting】 Adjust the font size to the display *.MBF file in MERITEK's own format.

Tabel 252【MBF Reader】tool bar descriptions

Icon	Description
	【Open】 Open MERITEK's own *.MBF file.
	【Save as】 After reading MERITEK's own format *.MBF file, save as *.TXT file, *.CSV file or *.PDF file, etc.
	【Font Setting】 Adjust the font size to the display *.MBF file in MERITEK's own format.
 	Set the date and time to search for MBF files.
	Search, set the date and time to search the MBF file and press this button, the cursor will be displayed in this column, as shown below.



22.7 【Install USB Driver】

The FvDesigner can do the connection with HMI by using mini-USB cable, to install the driver to make sure the function work.



Figure 449【Install USB Driver】

22.8 【Download】

The download function in【Tools(T)】is the same as the download function in【Project(P)】. For detailed operations, please refer to chapter 21.1.1-Download the running package and operating system from a PC . In【Tools(T)】,the download can choose the running package (.cfrp)



Figure 450【Download】

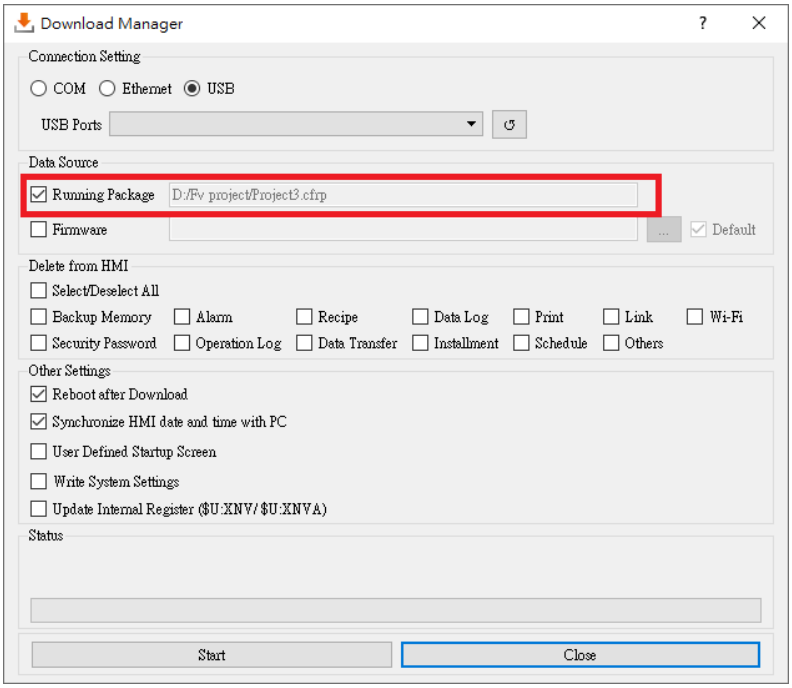


Figure 451【Download】setting page

22.9 【iAccess insight】

This function needs to login to the MERITEK cloud, provides project upload, download, and remote.



Figure 452【iAccess】

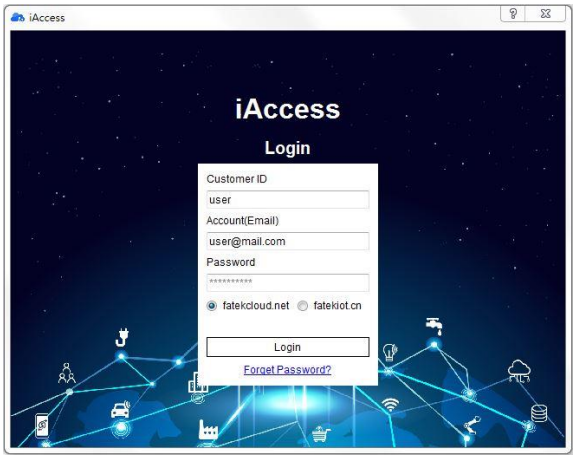


Figure 453【iAccess】login page

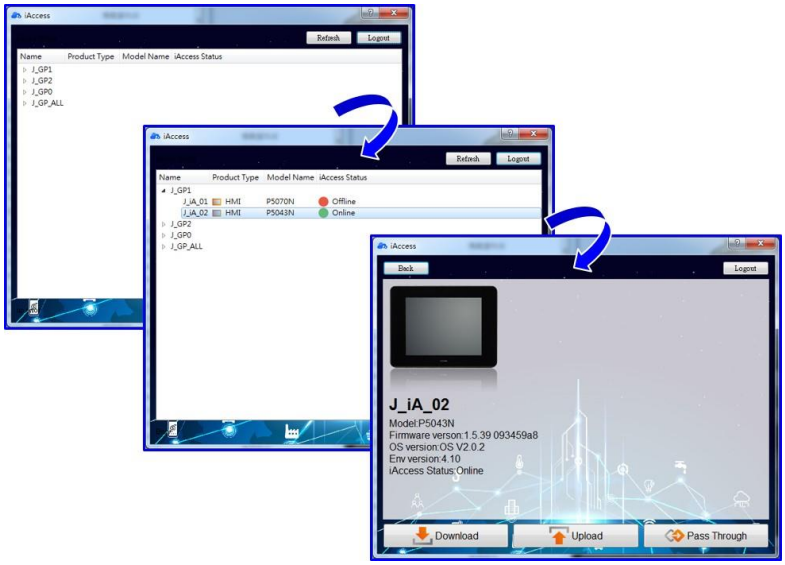


Figure 454【iAccess】operation page

23. Address Registers

The FvDesigner provides various kinds of registers. Except for the external registers of PLC, the HMI also provides some space for using, introduce as follows.

23.1 Internal Address Register Range

【$U:V】 Volatile Memory Registers

The V memory will not be saved when the system power is cut; all the data

on the V memory will be reset to 0 once power is reconnected, 512KB.

【$U:XNV】 Non-real-time Preservation Memory Registers

All of the data on the XNV memory will be backup automatically every minute.
The total capacity of XNV varies between series. The size used as the internal registers $U:XNV is 1MB.

【$U:XNVA】 Non-real-time Preservation Memory Registers

All of the data on the XNVA memory will be backup automatically every minute.
The total capacity of XNVA varies between series. The size used as the internal registers $U:XNV is 2KB.

Table 253 Internal Registers Address Range

Register	Maximum Capacity	Address Range (Characters)	Format
Volatile Memory Registers 【$U:V】	512KB	0 ~ 262143	Word $U:V1 Bit $U:V1.0
Non-real-time Preservation Memory Registers 【$U:XNV】	1MB	0 ~ 524287	Word $U:XNV3 Bit $U:XNV3.0
Non-real-time Preservation Memory Registers 【$U:XNVA】	120KB (default 2KB)	0 ~ 61439 (default 0~1023)	Word $U: XNVA4 Bit $U: XNVA4.0

To adjust the range of the non-volatile register, you can modify the usage of the internal register in the【Memory Address】tab. After modification, it will be reflected in the memory address table.
In addition, half of the set value will be reserved for system use, the setting is 2048Byte in the figure below, but the actual usable address is 0~1023.

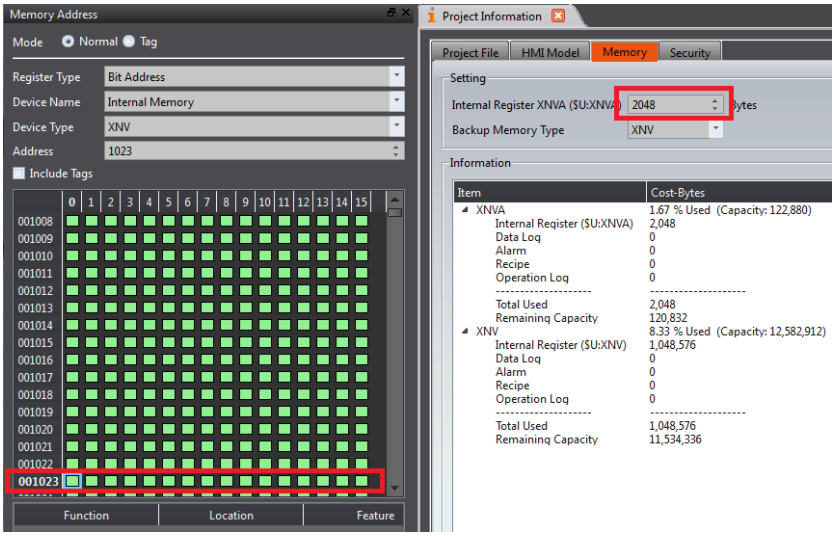


Figure 455 Adjust the memory size

※Note: The internal register and capacity available for different models will be slightly different, please set according to the actual display

To set the backup memory, check the【Backup Memory】in the function, the system will calculate the usage and display it in the【Information】of the【Memory】tab.

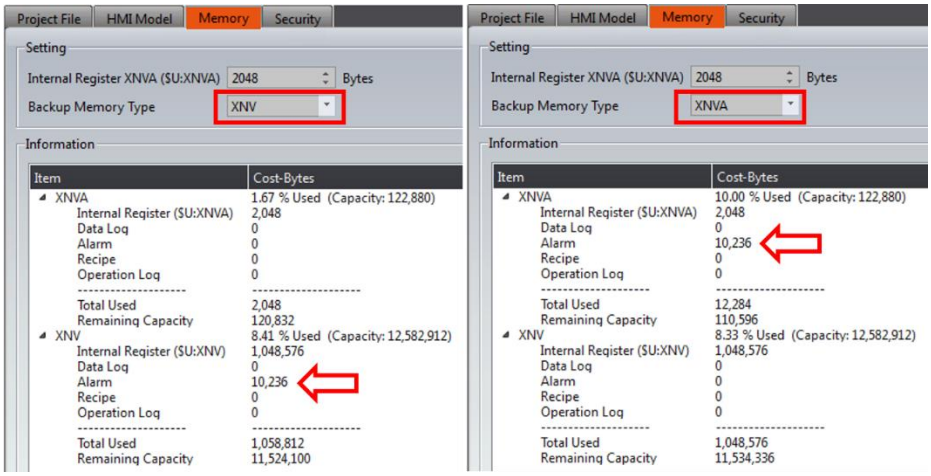


Figure 456 Use different backup memory types

23.2 Index Register

Index Register is used to change address register in run-time. When operating on HMI, the address register configuration of object does not be changed, user could access register value of object according to different address conveniently. And it makes it easy and flexible to transfer data between different regions.

23.2.1 Usage

The following example explains how to use Index Register.

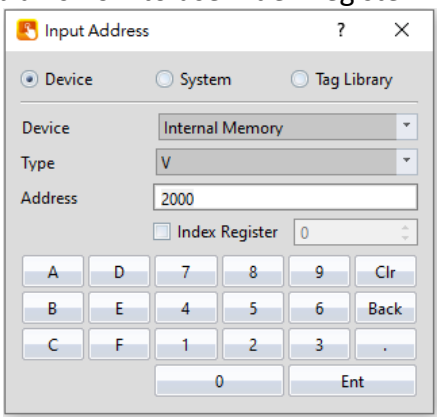


Figure 457 Input Address Dialog-Device Register

Click the check box Index Register and select number 0. The device will use Index Register 0 for that address as the input address.

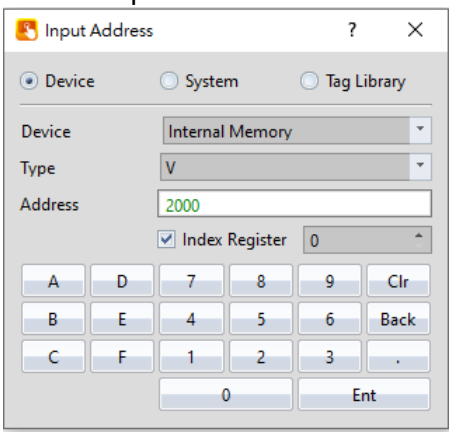


Figure 458 Input Address Dialog-Use Index Register 0

If user would like to setup Index Register to change its value. Index Register can be chosen in System Tags.

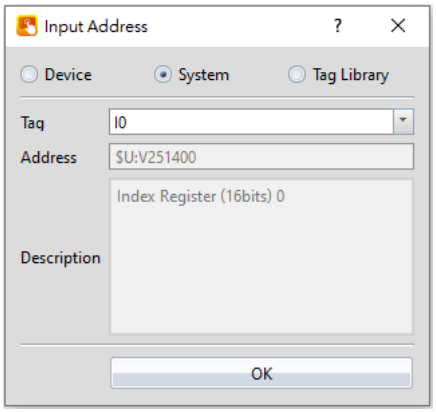


Figure 459 Input Address Dialog-System Tags-Index Register

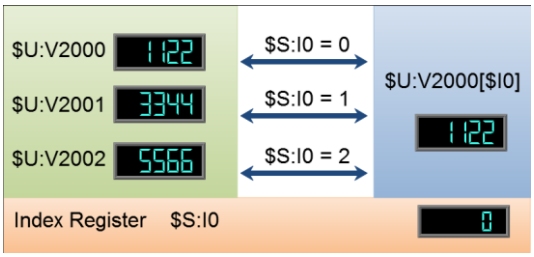


Figure 460 Index Register Example

$U:V2000

Value of internal volatile-memory register V2000, example value: 1122.

$U:V2001

Value of internal volatile-memory register V2001, example value: 3344.

$U:V2002

Value of internal volatile-memory register V2002, example value: 5566.

$U:V2000[$I0]

Value of internal volatile-memory register
V(2000+value of index register 0)

$S:I0

Value of index register 0

By modifying the value of index register 0, the value of **$U:V2000[$I0]** also changes.

Value of index register-0 is 0

$U:V2000[$I0] = $U:V2000

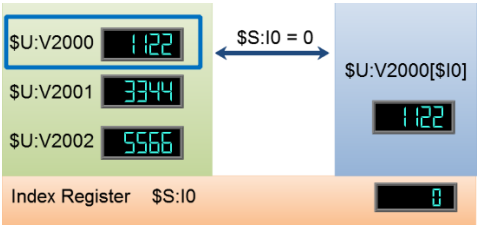


Figure 461 Index Register Example $S:I0 = 0

Value of index register-0 is 1

$U:V2000[$I0] = $U:V2001

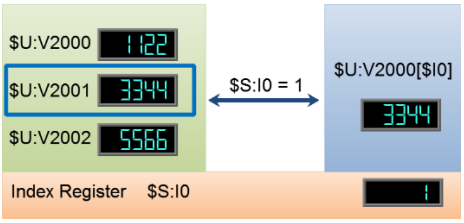


Figure 462 Index Register Example $S:I0 = 1

Value of index register-0 is 2
$U:V2000[$I0] = $U:V2002

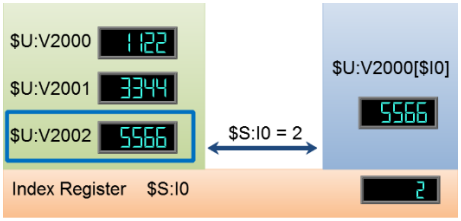


Figure 463 Index Register Example $S:I0 = 2

23.3 Special System Tags

23.3.1 Operations

Name	Address ($U:V)	Description	Read/Write
OP_REBOOT	250010.0	(1b)Reboot HMI device.	Read/Write
OP_BUZZER	250011.0	(1b)Open (1)/ Close (0) buzzer output.	Read/Write
OP_AUDIO	250011.1	(1b)Open (1) / Close (0) audio output.	Read/Write
OP_DIMMER_EN	250030.0	(1b)Open (1) / Close (0) backlight energy-saving function.	Read/Write
OP_SCREEN_SAVER_EN	250030.1	(1b)Open (1) / Close (0) screen saver function.	Read/Write
OP_UPDATE_SCREEN _OBJECTS	250030.2	(1b) Set to (1) update the status of the object. After updating the system, this signal will be automatically changed to (0)	Read/Write
OP_FW_VER_MAJOR	250101	(16b)Firmware major version information.	Read Only
OP_FW_VER_MINOR	250102	(16b)Firmware minor version information.	Read Only
OP_FW_VER_REVISION	250103	(16b)Firmware revision information.	Read Only
OP_BATTERY_LEVEL	250110	(16b) Battery Level (Low1~High5).	Read Only
OP_BASE_SCREEN_ID	250500	(16b) Current Base Screen ID.	Read Only
OP_BACKLIGHT_LEVEL	251002	(16b)Current brightness level of the backlight.	Read/Write
OP_BACKLIGHT_TIME	251003	(16b)Backlight power saving time.	Read/Write

OP_SCREEN_SAVER_TIME	251004	(16b)Screen saver time.	Read/Write

23.3.2 Save File

Name	Address ($U:V)	Description	Read/Write
SS_HMI_WARNING	250021.0	(1b)HMI internal user storage free space insufficiency warning.	Read/Write
SS_SD_STATUS	250020.3	(1b)HMI has detected SD card(1)/HMI does not detect SD card(0)	Read
SS_USB_STATUS	250020.4	(1b)HMI has detected USB(1)/HMI does not detect a USB(0)	Read
SS_FORCE_BACKUP_XNV	250021.0	(1b)Force the data in the XNV memory to be backed up in the HMI using a file format.	Read/Write
SS_RESET_XNV	250022.0	(1b)ClearXNV memory data and clear all XNV files.	Read/Write
SS_HMI_FREE_SPACE	251300	(32b)Current free space on HMI.	Read
SS_SD_FREE_SPACE	251302	(32b)Available storage space in SD card, units in bytes.	Read
SS_USB_FREE_SPACE	251304	(32b)Available USB storage space, units in bytes.	Read

23.3.3 Time

Name	Address ($U:V)	Description	Read/Write
TIME_SYSTEM_TIME	251100	(32b)System time (0.1sec).	Read/Write
TIME_SYSTEM_AMPM	251102	(16b)Time information AM:0, PM: 1.	Read/Write
TIME_LOCAL_HOUR12	251103	(16b)Local time (12-hour format)	Read/Write
TIME_LOCAL_SECOND	251104	(16b)Local time (Second)	Read/Write
TIME_LOCAL_MINUTE	251105	(16b)Local time (Minute)	Read/Write
TIME_LOCAL_HOUR	251106	(16b)Local time (Hour)	Read/Write
TIME_LOCAL_DAY	251107	(16b)Local time (Day)	Read/Write
TIME_LOCAL_MONTH	251108	(16b)Local time (Month)	Read/Write
TIME_LOCAL_YEAR	251109	(16b)Local time (Year)	Read/Write
TIME_LOCAL_WEEK	251110	(16b)Local time (Day of week)	Read/Write
TIME_CALENDER_TYPE	251111	(16b)Calender type: Gregorian calendar: 0, Persian calendar: 1	Read

23.3.4 Touch Control Positions

Name	Address ($U:V)	Description	Read/Write
TOUCH_DOWN_X	251008	(16b) Position of X for touch control	Read Only
TOUCH_DOWN_Y	251009	(16b) Position of Y for touch control	Read Only
TOUCH_UP_X	251010	(16b) Position of X when exiting	Read Only
TOUCH_UP_Y	251011	(16b) Position of Y when exiting	Read Only
CURSOR_POS_X	251012	(16b) X position of the mouse cursor	Read Only
CURSOR_POS_Y	251013	(16b) Y position of the mouse cursor	Read Only

23.3.5 Network Information

Name	Address ($U:V)	Description	Read/Write
NET_IP0	251201	(16b) HMI IP0 address.	Read Only
NET_IP1	251202	(16b) HMI IP1 address.	Read Only
NET_IP2	251203	(16b) HMI IP2 address.	Read Only
NET_IP3	251204	(16b) HMI IP3 address.	Read Only
NET_GATEWAY0	251205	(16b) HMI Default gateway GATEWAY0 address.	Read Only
NET_GATEWAY1	251206	(16b) HMI Default gateway GATEWAY1 address.	Read Only
NET_GATEWAY2	251207	(16b) HMI Default gateway GATEWAY2 address.	Read Only
NET_GATEWAY3	251208	(16b) HMI Default gateway GATEWAY3 address.	Read Only
NET_MASK0	251209	(16b) HMI Subnet mask MASK0 address.	Read Only
NET_MASK1	251210	(16b) HMI Subnet mask MASK1 address.	Read Only
NET_MASK2	251211	(16b) HMI Subnet mask MASK2 address.	Read Only
NET_MASK3	251212	(16b) HMI Subnet mask MASK3 address.	Read Only
NET_MAC0	251213	(16b) HMI Physical address MAC0.	Read Only
NET_MAC1	251214	(16b) HMI Physical address MAC1.	Read Only
NET_MAC2	251215	(16b) HMI Physical address MAC2.	Read Only
NET_MAC3	251216	(16b) HMI Physical address MAC3.	Read Only
NET_MAC4	251217	(16b) HMI Physical address MAC4.	Read Only
NET_MAC5	251218	(16b) HMI Physical address MAC5.	Read Only

23.3.6 Index Registers (16Bit)

Name	Address ($U:V)	Description	Read/Write
I0	251400	(16b) Address index register 0	Read/Write
I1	251401	(16b) Address index register 1	Read/Write
I2	251402	(16b) Address index register 2	Read/Write
I3	251403	(16b) Address index register 3	Read/Write

I4	251404	(16b) Address index register 4	Read/Write
I5	251405	(16b) Address index register 5	Read/Write
I6	251406	(16b) Address index register 6	Read/Write
I7	251407	(16b) Address index register 7	Read/Write
I8	251408	(16b) Address index register 8	Read/Write
I9	251409	(16b) Address index register 9	Read/Write
I10	251410	(16b) Address index register 10	Read/Write
I11	251411	(16b) Address index register 11	Read/Write
I12	251412	(16b) Address index register 12	Read/Write
I13	251413	(16b) Address index register 13	Read/Write
I14	251414	(16b) Address index register 14	Read/Write
I15	251415	(16b) Address index register 15	Read/Write
I16	251416	(16b) Address index register 16	Read/Write
I17	251417	(16b) Address index register 17	Read/Write
I18	251418	(16b) Address index register 18	Read/Write
I19	251419	(16b) Address index register 19	Read/Write
I20	251420	(16b) Address index register 20	Read/Write
I21	251421	(16b) Address index register 21	Read/Write
I22	251422	(16b) Address index register 22	Read/Write
I23	251423	(16b) Address index register 23	Read/Write
I24	251424	(16b) Address index register 24	Read/Write
I25	251425	(16b) Address index register 25	Read/Write
I26	251426	(16b) Address index register 26	Read/Write
I27	251427	(16b) Address index register 27	Read/Write
I28	251428	(16b) Address index register 28	Read/Write
I29	251429	(16b) Address index register 29	Read/Write
I30	251430	(16b) Address index register 30	Read/Write
I31	251431	(16b) Address index register 31	Read/Write
I32	251432	(16b) Address index register 32	Read/Write
I33	251433	(16b) Address index register 33	Read/Write
I34	251434	(16b) Address index register 34	Read/Write
I35	251435	(16b) Address index register 35	Read/Write
I36	251436	(16b) Address index register 36	Read/Write
I37	251437	(16b) Address index register 37	Read/Write
I38	251438	(16b) Address index register 38	Read/Write
I39	251439	(16b) Address index register 39	Read/Write
I40	251440	(16b) Address index register 40	Read/Write
I41	251441	(16b) Address index register 41	Read/Write
I42	251442	(16b) Address index register 42	Read/Write
I43	251443	(16b) Address index register 43	Read/Write
I44	251444	(16b) Address index register 44	Read/Write
I45	251445	(16b) Address index register 45	Read/Write
I46	251446	(16b) Address index register 46	Read/Write
I47	251447	(16b) Address index register 47	Read/Write

I48	251448	(16b) Address index register 48	Read/Write
I49	251449	(16b) Address index register 49	Read/Write
I50	251450	(16b) Address index register 50	Read/Write
I51	251451	(16b) Address index register 51	Read/Write
I52	251452	(16b) Address index register 52	Read/Write
I53	251453	(16b) Address index register 53	Read/Write
I54	251454	(16b) Address index register 54	Read/Write
I55	251455	(16b) Address index register 55	Read/Write
I56	251456	(16b) Address index register 56	Read/Write
I57	251457	(16b) Address index register 57	Read/Write
I58	251458	(16b) Address index register 58	Read/Write
I59	251459	(16b) Address index register 59	Read/Write
I60	251460	(16b) Address index register 60	Read/Write
I61	251461	(16b) Address index register 61	Read/Write
I62	251462	(16b) Address index register 62	Read/Write
I63	251463	(16b) Address index register 63	Read/Write

23.3.7 Index Registers (32Bit)

Name	Address ($U:V)	Description	Read/Write
I64	251464	(32b) Address index register 64	Read/Write
I65	251466	(32b) Address index register 65	Read/Write
I66	251468	(32b) Address index register 66	Read/Write
I67	251470	(32b) Address index register 67	Read/Write
I68	251472	(32b) Address index register 68	Read/Write
I69	251474	(32b) Address index register 69	Read/Write
I70	251476	(32b) Address index register 70	Read/Write
I71	251478	(32b) Address index register 71	Read/Write
I71	251480	(32b) Address index register 72	Read/Write
I73	251482	(32b) Address index register 73	Read/Write
I74	251484	(32b) Address index register 74	Read/Write
I75	251486	(32b) Address index register 75	Read/Write
I76	251488	(32b) Address index register 76	Read/Write
I77	251490	(32b) Address index register 77	Read/Write
I78	251492	(32b) Address index register 78	Read/Write
I79	251494	(32b) Address index register 79	Read/Write
I80	251496	(32b) Address index register 80	Read/Write
I81	251498	(32b) Address index register 81	Read/Write
I82	251500	(32b) Address index register 82	Read/Write
I83	251502	(32b) Address index register 83	Read/Write
I84	251504	(32b) Address index register 84	Read/Write
I85	251506	(32b) Address index register 85	Read/Write
I86	251508	(32b) Address index register 86	Read/Write

I87	251510	(32b) Address index register 87	Read/Write
I88	251512	(32b) Address index register 88	Read/Write
I89	251514	(32b) Address index register 89	Read/Write
I90	251516	(32b) Address index register 90	Read/Write
I91	251518	(32b) Address index register 91	Read/Write
I92	251520	(32b) Address index register 92	Read/Write
I93	251522	(32b) Address index register 93	Read/Write
I94	251524	(32b) Address index register 94	Read/Write
I95	251526	(32b) Address index register 95	Read/Write
I96	251528	(32b) Address index register 96	Read/Write
I97	251530	(32b) Address index register 97	Read/Write
I98	251532	(32b) Address index register 98	Read/Write
I99	251534	(32b) Address index register 99	Read/Write
I100	251536	(32b) Address index register 100	Read/Write
I101	251538	(32b) Address index register 101	Read/Write
I102	251540	(32b) Address index register 102	Read/Write
I103	251542	(32b) Address index register 103	Read/Write
I104	251544	(32b) Address index register 104	Read/Write
I105	251546	(32b) Address index register 105	Read/Write
I106	251548	(32b) Address index register 106	Read/Write
I107	251550	(32b) Address index register 107	Read/Write
I108	251552	(32b) Address index register 108	Read/Write
I109	251554	(32b) Address index register 109	Read/Write
I110	251556	(32b) Address index register 110	Read/Write
I111	251558	(32b) Address index register 111	Read/Write
I112	251560	(32b) Address index register 112	Read/Write
I113	251562	(32b) Address index register 113	Read/Write
I114	251564	(32b) Address index register 114	Read/Write
I115	251566	(32b) Address index register 115	Read/Write
I116	251568	(32b) Address index register 116	Read/Write
I117	251570	(32b) Address index register 117	Read/Write
I118	251572	(32b) Address index register 118	Read/Write
I119	251574	(32b) Address index register 119	Read/Write
I120	251576	(32b) Address index register 120	Read/Write
I121	251578	(32b) Address index register 121	Read/Write
I122	251580	(32b) Address index register 122	Read/Write
I123	251582	(32b) Address index register 123	Read/Write
I124	251584	(32b) Address index register 124	Read/Write
I125	251586	(32b) Address index register 125	Read/Write
I126	251588	(32b) Address index register 126	Read/Write
I127	251590	(32b) Address index register 127	Read/Write

23.3.8 Communication Parameter Settings

<table>
<tr><th>Name</th><th>Address($U:V)</th><th>Narrative</th><th>Read/Write</th></tr>
<tr><td>LINK_COM1_BAUDRATE</td><td>251250</td><td>COM1's transfer rates,<table><tr><th>Transmission rate</th><th>Register Value</th></tr><tr><td>1200</td><td>0</td></tr><tr><td>2400</td><td>1</td></tr><tr><td>4800</td><td>2</td></tr><tr><td>9600</td><td>3</td></tr><tr><td>19200</td><td>4</td></tr><tr><td>38400</td><td>5</td></tr><tr><td>57600</td><td>6</td></tr><tr><td>115200</td><td>7</td></tr><tr><td>187500</td><td>8</td></tr><tr><td>921600</td><td>9</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM1_PARITY</td><td>251251</td><td>COM1's check bits,<table><tr><th>Check</th><th>Register Value</th></tr><tr><td>None</td><td>0</td></tr><tr><td>Odd</td><td>1</td></tr><tr><td>Even</td><td>2</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM1_DATABITS</td><td>251252</td><td>COM1's data bits,<table><tr><th>Data Bits</th><th>Register Value</th></tr><tr><td>5</td><td>5</td></tr><tr><td>6</td><td>6</td></tr><tr><td>7</td><td>7</td></tr><tr><td>8</td><td>8</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM1_STOPBITS</td><td>251253</td><td>COM1's stop bits,<table><tr><th>Stop Bits</th><th>Register Value</th></tr><tr><td>1</td><td>0</td></tr><tr><td>1.5</td><td>1</td></tr><tr><td>2</td><td>2</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM1_TIMEOUT</td><td>251254</td><td>COM1's time in milliseconds(ms).</td><td>Read/Write</td></tr>
<tr><td>LINK_COM1_COMMAND_DELAY</td><td>251255</td><td>COM1's command delay time in milliseconds(ms).</td><td>Read/Write</td></tr>
<tr><td>LINK_COM1_RETRY_COUNT</td><td>251256</td><td>COM1's retry count.</td><td>Read/Write</td></tr>
<tr><td>LINK_COM2_BAUDRATE</td><td>251257</td><td>COM2's transfer rates,<table><tr><th>Transmission rate</th><th>Register Value</th></tr><tr><td>1200</td><td>0</td></tr><tr><td>2400</td><td>1</td></tr><tr><td>4800</td><td>2</td></tr><tr><td>9600</td><td>3</td></tr><tr><td>19200</td><td>4</td></tr></table></td><td>Read/Write</td></tr>
</table>

<table>
<tr><td></td><td></td><td><table><tr><td>38400</td><td>5</td></tr><tr><td>57600</td><td>6</td></tr><tr><td>115200</td><td>7</td></tr><tr><td>187500</td><td>8</td></tr><tr><td>921600</td><td>9</td></tr></table></td><td></td></tr>
<tr><td>LINK_COM2_PARITY</td><td>251258</td><td>COM2’s check bits,<table><tr><th>Check Bits</th><th>Register Value</th></tr><tr><td>None</td><td>0</td></tr><tr><td>Odd</td><td>1</td></tr><tr><td>Even</td><td>2</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM2_DATABITS</td><td>251259</td><td>COM2’s databits,<table><tr><th>Data Bits</th><th>Register Value</th></tr><tr><td>5</td><td>5</td></tr><tr><td>6</td><td>6</td></tr><tr><td>7</td><td>7</td></tr><tr><td>8</td><td>8</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM2_STOPBITS</td><td>251260</td><td>COM2’s stop bits,<table><tr><th>Stop Bits</th><th>Register Value</th></tr><tr><td>1</td><td>0</td></tr><tr><td>1.5</td><td>1</td></tr><tr><td>2</td><td>2</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM2_TIMEOUT</td><td>251261</td><td>COM2’s time in milliseconds(ms).</td><td>Read/Write</td></tr>
<tr><td>LINK_COM2_COMMAND_DELAY</td><td>251262</td><td>COM2’s command delay time in milliseconds(ms).</td><td>Read/Write</td></tr>
<tr><td>LINK_COM2_RETRY_COUNT</td><td>251263</td><td>COM2’s retry count.</td><td>Read/Write</td></tr>
<tr><td>LINK_COM3_BAUDRATE</td><td>251264</td><td>COM3’s transfer rates,<table><tr><th>Transmission rate</th><th>Register Value</th></tr><tr><td>1200</td><td>0</td></tr><tr><td>2400</td><td>1</td></tr><tr><td>4800</td><td>2</td></tr><tr><td>9600</td><td>3</td></tr><tr><td>19200</td><td>4</td></tr><tr><td>38400</td><td>5</td></tr><tr><td>57600</td><td>6</td></tr><tr><td>115200</td><td>7</td></tr><tr><td>187500</td><td>8</td></tr><tr><td>921600</td><td>9</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM3_PARITY</td><td>251265</td><td>COM3’s check bits,<table><tr><th>Check Bits</th><th>Register Value</th></tr><tr><td>None</td><td>0</td></tr><tr><td>Odd</td><td>1</td></tr><tr><td>Even</td><td>2</td></tr></table></td><td>Read/Write</td></tr>
</table>

<table>
<tr><td>LINK_COM3_DATABITS</td><td>251266</td><td>COM3’s data bits,<table><tr><th>Data Bits</th><th>Register Value</th></tr><tr><td>5</td><td>5</td></tr><tr><td>6</td><td>6</td></tr><tr><td>7</td><td>7</td></tr><tr><td>8</td><td>8</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM3_STOPBITS</td><td>251267</td><td>COM3’s stop bits<table><tr><th>Stop Bits</th><th>Register Value</th></tr><tr><td>1</td><td>0</td></tr><tr><td>1.5</td><td>1</td></tr><tr><td>2</td><td>2</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM3_TIMEOUT</td><td>251268</td><td>COM3’s time in milliseconds(ms).</td><td>Read/Write</td></tr>
<tr><td>LINK_COM3_COMMAND_DELAY</td><td>251269</td><td>COM3’s command delay time in milliseconds(ms).</td><td>Read/Write</td></tr>
<tr><td>LINK_COM3_RETRY_COUNT</td><td>251270</td><td>COM3</td><td>Read/Write</td></tr>
<tr><td>LINK_COM4_BAUDRATE</td><td>251271</td><td>COM4’s transfer rates,<table><tr><th>Transmission Rate</th><th>Register Value</th></tr><tr><td>1200</td><td>0</td></tr><tr><td>2400</td><td>1</td></tr><tr><td>4800</td><td>2</td></tr><tr><td>9600</td><td>3</td></tr><tr><td>19200</td><td>4</td></tr><tr><td>38400</td><td>5</td></tr><tr><td>57600</td><td>6</td></tr><tr><td>115200</td><td>7</td></tr><tr><td>187500</td><td>8</td></tr><tr><td>921600</td><td>9</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM4_PARITY</td><td>251272</td><td>COM4’s check bits,<table><tr><th>Check Bits</th><th>Register Value</th></tr><tr><td>None</td><td>0</td></tr><tr><td>Odd</td><td>1</td></tr><tr><td>Even</td><td>2</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM4_DATABITS</td><td>251273</td><td>COM4’s data bits,<table><tr><th>Data Bits</th><th>Register Value</th></tr><tr><td>5</td><td>5</td></tr><tr><td>6</td><td>6</td></tr><tr><td>7</td><td>7</td></tr><tr><td>8</td><td>8</td></tr></table></td><td>Read/Write</td></tr>
<tr><td>LINK_COM4_STOPBITS</td><td>251274</td><td>COM4’s stop bits,<table><tr><th>Stop Bits</th><th>Register Value</th></tr><tr><td>1</td><td>0</td></tr><tr><td>1.5</td><td>1</td></tr><tr><td>2</td><td>2</td></tr></table></td><td>Read/Write</td></tr>
</table>

<table>
<tr><td>LINK_COM4_TIMEOUT</td><td>251275</td><td>COM4’s time in milliseconds(ms).</td><td>Read/Write</td></tr>
<tr><td>LINK_COM4_COMMAND _DELAY</td><td>251276</td><td>COM4’s command delay time in milliseconds(ms).</td><td>Read/Write</td></tr>
<tr><td>LINK_COM4_RETRY _COUNT</td><td>251277</td><td>COM4’s retry count.</td><td>Read/Write</td></tr>
<tr><td>LINK_PLC_PORT _BAUDRATE</td><td>251278</td><td>PLC PORT’s transfer rates can only be read,<table><tr><th>Transmission rate</th><th>Register Value</th></tr><tr><td>1200</td><td>0</td></tr><tr><td>2400</td><td>1</td></tr><tr><td>4800</td><td>2</td></tr><tr><td>9600</td><td>3</td></tr><tr><td>19200</td><td>4</td></tr><tr><td>38400</td><td>5</td></tr><tr><td>57600</td><td>6</td></tr><tr><td>115200</td><td>7</td></tr><tr><td>187500</td><td>8</td></tr><tr><td>921600</td><td>9</td></tr></table></td><td>Read</td></tr>
<tr><td>LINK_ PLC_PORT _PARITY</td><td>251279</td><td>PLC PORT’s check bits can only be read,<table><tr><th>Check Bits</th><th>Register Value</th></tr><tr><td>None</td><td>0</td></tr><tr><td>Odd</td><td>1</td></tr><tr><td>Even</td><td>2</td></tr></table></td><td>Read</td></tr>
<tr><td>LINK_ PLC_PORT _DATABITS</td><td>251280</td><td>PLC PORT’s data bits can only be read,<table><tr><th>Data Bits</th><th>Register Value</th></tr><tr><td>5</td><td>5</td></tr><tr><td>6</td><td>6</td></tr><tr><td>7</td><td>7</td></tr><tr><td>8</td><td>8</td></tr></table></td><td>Read</td></tr>
<tr><td>LINK_ PLC_PORT _STOPBITS</td><td>251281</td><td>PLC PORT’s stop bits can only be read,<table><tr><th>Stop Bits</th><th>Register Value</th></tr><tr><td>1</td><td>0</td></tr><tr><td>1.5</td><td>1</td></tr><tr><td>2</td><td>2</td></tr></table></td><td>Read</td></tr>
<tr><td>LINK_ PLC_PORT _TIMEOUT</td><td>251282</td><td>PLC PORT’s time in milliseconds(ms) can only be read.</td><td>Read</td></tr>
<tr><td>LINK_ PLC_PORT _COMMAND_DELAY</td><td>251283</td><td>PLC PORT’s command delay time in milliseconds(ms) can only be read.</td><td>Read</td></tr>
<tr><td>LINK_ PLC_PORT _RETRY _COUNT</td><td>251284</td><td>PLC PORT’s retry count can only be read.</td><td>Read</td></tr>
</table>

23.3.9 VNC Information

Name	Address($U:V)	Description	Read/ Write
OP_VNC_CONNECT _STATUS0	250600.0	(1b) Bit ON when VNC client No.1 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS1	250600.1	(1b) Bit ON when VNC client No.2 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS2	250600.2	(1b) Bit ON when VNC client No.3 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS3	250600.3	(1b) Bit ON when VNC client No.4 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS4	250600.4	(1b) Bit ON when VNC client No.5 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS5	250600.5	(1b) Bit ON when VNC client No.6 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS6	250600.6	(1b) Bit ON when VNC client No.7 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS7	250600.7	(1b) Bit ON when VNC client No.8 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS8	250600.8	(1b) Bit ON when VNC client No.9 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS9	250600.9	(1b) Bit ON when VNC client No.10 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS10	250600.10	(1b) Bit ON when VNC client No.11 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS11	250600.11	(1b) Bit ON when VNC client No.12 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS12	250600.12	(1b) Bit ON when VNC client No.13 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS13	250600.13	(1b) Bit ON when VNC client No.14 is connected to the VNC server, Bit OFF when it's not connected.	Read

OP_VNC_CONNECT _STATUS14	250600.14	(1b) Bit ON when VNC client No.15 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS15	250600.15	(1b) Bit ON when VNC client No.16 is connected to the VNC server, Bit OFF when it's not connected.	Read
OP_VNC_CONNECT _STATUS	250600	(16b) Status of VNC client connected to VNC sever.	Read

24. HMI System Settings

When the user needs to change the system settings of the HMI, such as IP, buzzer, and system time, users can enter to the【System Setting】to modify. The【System Setting】function can be used directly on the HMI, or can be modified remotely through the network connection with the【Remote System Setting】tool.

24.1 How To Enter System Setting

Press and hold down the right side of the screen during the HMI start-up process to enter the【System Setting】screen in order to change the system settings of the HMI.

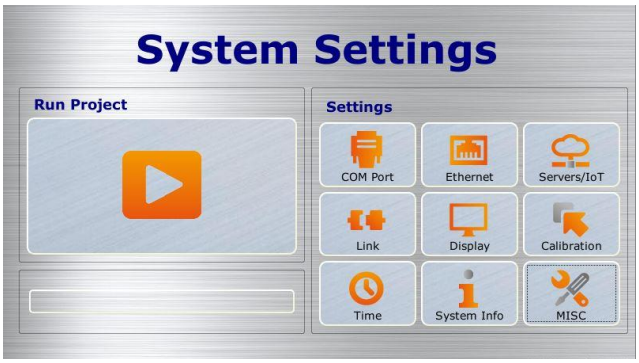


Figure 464 System Setting home page for HMI

24.2 【System Setting】Options

24.2.1 Run Project

The system will automatically detect the current firmware, integrity, and compatibility of the project on the HMI when entering the【System Setting】. If the system determines that the firmware and project versions are compatible and the file is complete with no corruptions, it will enable the【Run Project】and the user can execute the project on the HMI. If the system determines that the version is incompatible or that the file is corrupted, 【Run Project】will be locked, refer to chapter24.3-System Booting Sequence.

24.2.2 【COM Port】

The【COM Port】data page will appear after pressing the【COM Port】block, as shown in the figure below. This is where the COM Port details for the DB-9 male/terminal adapter of the HMI can be found. Pressing【OK】on the top-right

corner or【Cancel】on the top-left corner will exit this page.

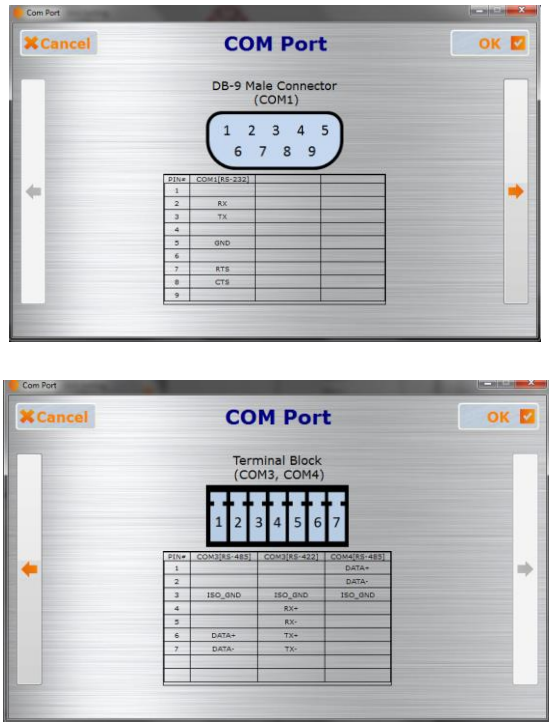


Figure 465 COM Port data page

24.2.3 【Network】

The【Network】settings will appear after pressing the【Network】block, the setting page is divided into【General】,【DNS】,【Access Control】, and【Wi-Fi】paging. When the setting is complete, press the【OK】button on the top-right corner to save the settings and exit this page or the【Cancel】button on the top-left corner to discard the changes and exit this page.

24.2.3.1 【Ethernet】

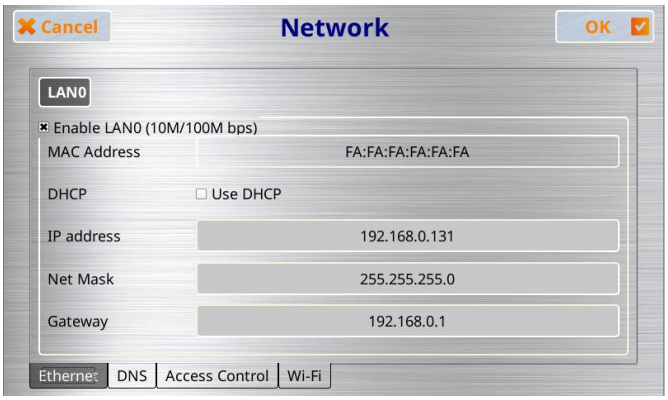


Figure 466【Network】【Ethernet】paging

Table 254【Network】【Ethernet】paging options

Option	Description
【Enable LAN0】	Select to enable【Network】: Selecting【Enable】will allow users to continue setting the follow-up options; selecting【Cancel】will close the follow-up options and they cannot be set.
【MAC Address】	The MAC address of the HMI is displayed here.
【DHCP】	Select whether to enable【Enable DHCP】.
【IP Address】	Set the IP address of the HMI here.
【Net Mask】	Set the sub-net mask of the HMI here.
【Gateway】	Set the gateway of the HMI here.

24.2.3.2 【DNS】



Figure 467【Network】【DNS】paging

Table 255【Network】【DNS】paging options

Option	Description
【DNS】	Can set 2 DNS settings

24.2.3.3【Access Control】

【Access Control】function can provide users to filter the connection IP or MAC address.

Note: This function only supports P5 series. The required operating system version is OS 2.0.13 or later.

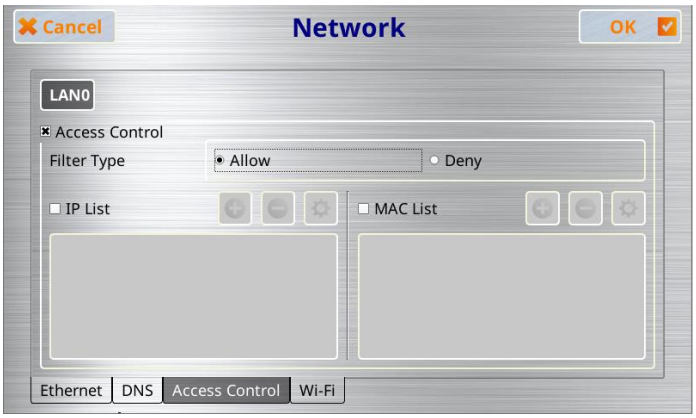


Figure 468【Network】【Access Control】paging

Table 256【Network】【Access Control】paging options

Option	Description
【Access】	Select whether to enable the【Access Control】function.
【Filter Type】	Allow: Allow connection list Deny: Deny connection list
【IP List】	Check to enable IP filtering list, up to 10 groups can be set. When adding an IP list, you will enter the【Filter Address】page. There are 3 rules to choose: 【Singal】: Enter a set of IP addresses to be filtered 【Subnet (CIDR Format)】: Enter a set of IP addresses and subnet mask to be filtered 【Range】: Enter two sets of IP, the IP within the range will be filtered
【MAC List】	Check to enable MAC filtering list, up to 10 groups can be set.
	Add item
	Remove the selected item

	Modify the selected item

24.2.3.4【Wi-Fi】

HMI can use Wi-Fi Dongle for wireless Internet access, please notice that the HMI firmware version: 1.5.74 / OS version: OS 2.0.14 or above are only supported.

Supported Dongle are:

1. ASUS USB-AC53NANO AC1200
2. TP-Link Archer T3U | AC1300 MU-MIMO
3. D-Link DWA 182(D)

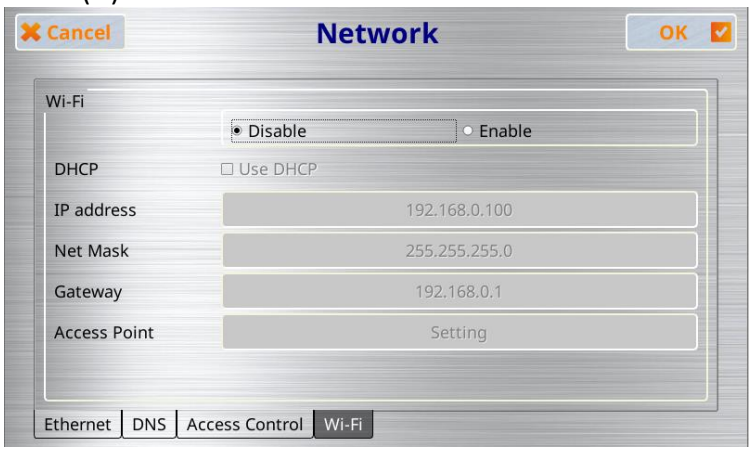


Figure 469【Network】【Wi-Fi】paging

Table 257【Network】【Wi-Fi】paging options

Option	Description
【Wi-Fi】	Select whether to enable the【Wi-Fi】function.
【Access Point】	Select the access point to connect.

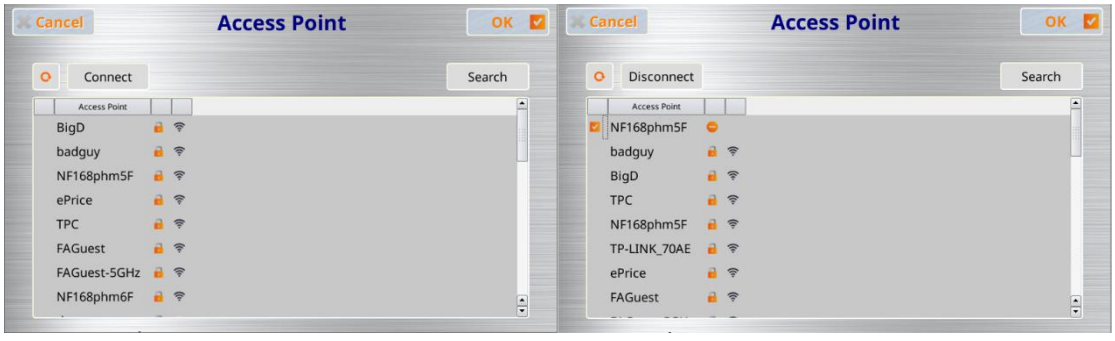


Figure 470【Wi-Fi】【Access Point】setting paging

Click the icon to read the searched access point. The reading time takes a few seconds. After the searching is completed, you can select the access point to connect, click Connect and enter the password, or click Search to search the specified access point that it does not exist on the list, and when a checkmark appears in

front of the access point, it means the connection is successful.

24.2.3.5【4G Dongle】

HMI can use 4G SIM card for wireless Internet access, please note that HMI firmware version: 1.5.32 / OS version: OS 2.0.4 or above is supported
No special settings are required to use the 4G SIM card to access the Internet.
Only supports the model: D-Link DWM-222 (please contact us if you need it)
Hardware Spec: A1
Firmware Spec: V2.0.6

24.2.4 【Servers/IoT】

The【Servers/IoT】settings will appear after pressing the【Servers/IoT】block as shown in the figure below. The settings page are be divided into three paging:【Enable FTP Server】,【Enable VNC Server】,【Pass Through】,and【IoT】.

When configuration is complete, press the【OK】button on the top-right corner to save the settings and exit this page or the【Cancel】button on the top-left corner to discard the changes and exit this page.

24.2.4.1【FTP】

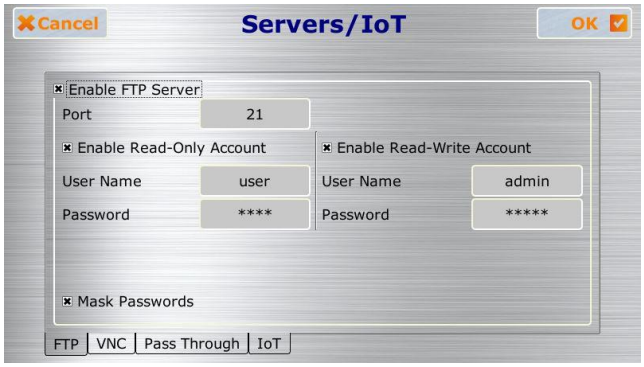


Figure 471【Servers/IoT Setting】【FTP】paging

Table 258 Options of【Servers/IoT Setting】【FTP】to Enable FTP Server in the Server page

Option	Description
【Enable FTP Server】	Select to【Enable FTP Server】. Selecting this option will allow users to continue setting the follow-up options. If this option is not selected, the follow-up options will be closed and cannot be set. **Note: If the Enable FTP Server is selected, please remember to set【Read-Only Account】or【Read-Write Account】, or else the setting cannot be completed.**

【Port】	Select the port used by FTP Server.
【Enable Read-Only Account】	Select to enable a read-only account. The user account and password can be set below once this option is selected.
【Enable Read-Write Account】	Select to enable a read-write account. The user account and password can be set below once this option is selected.
【Mask Password】	The password will be masked once this option is selected.

24.2.4.2 【VNC】

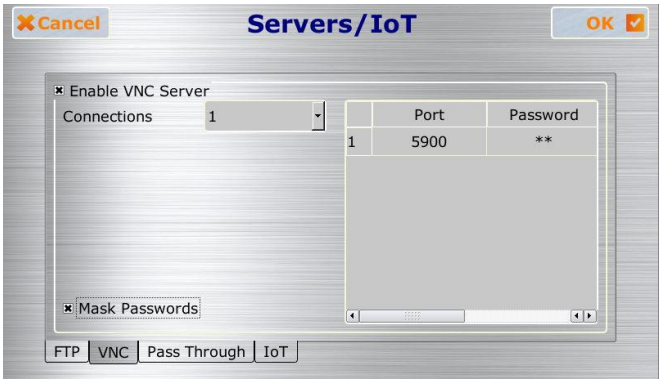


Figure 472【Servers/IoT Setting】【VNC】paging

Table 259 Options of【Servers/IoT Setting】【VNC】to Enable VNC Server in the Server page

Option	Description
【Enable VNC Server】	Select to【Enable VNC Server】. Selecting this option will allow users to continue setting the follow-up options. If this option is not selected, the follow-up options will be closed and cannot be set.
【Connections】	Set how many VNC clients can be connected to this VNC server, the maximum number of support will vary depending on the model.
【Mask Password】	The password will be masked if this option is selected.
【Port】	Set the port of the VNC, only the first client's port can be set, the second one will automatically increase, for example, the first one set 5900, then the second one will be 5901.
【Password】	Enter the password for the VNC server.

24.2.4.3 【Pass Through】

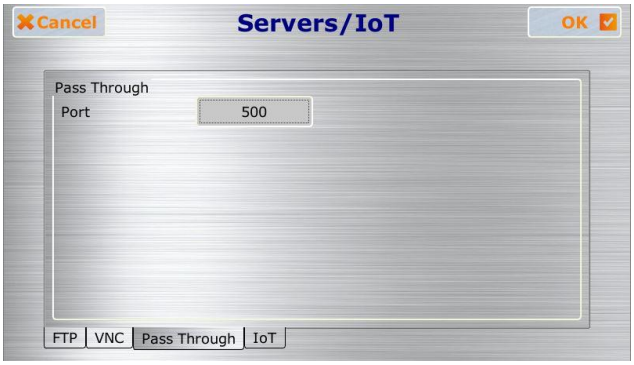


Figure 473【Servers/IoT Setting】【Pass Through】paging

Table 260【Servers/IoT Setting】【Pass Through】paging

Option	Description
【Pass Through Port】	Set the port used for pass through.

24.2.4.4【IoT】

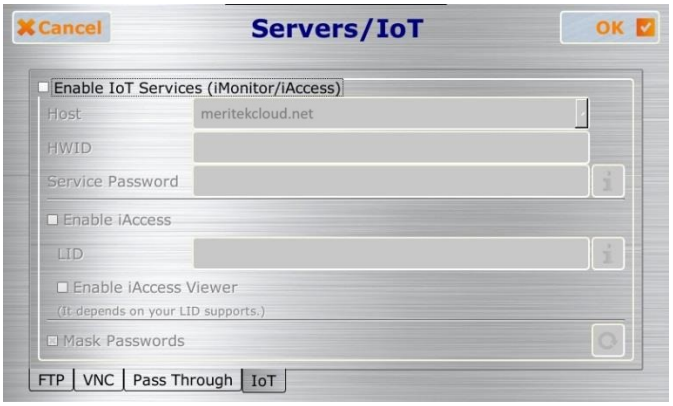


Figure 474【Servers/IoT Setting】【IoT】paging

Table 261【Servers/IoT Setting】【IoT】paging

Option	Description
【Enable IoT Services (iMonitor/iAceess)】	【Host】 Set the server to connect, including worldwild version(meritekcloud.net) and China version(meritekiot.cn). 【HWID】 HMI's hardware ID, is unique and cannot be modified. 【Service Password】 When planning the IoT configuration on the IoT website, it needs this password to connected to HMI.

【Enable iAceess】	【LID】 Key to activate the iAccess function.
	【Button Check】 After entering the【Service Password】or【LID】, press this button to connect to the server for validity verification.
	It will turn green after verification, and red if verification fails. Press the button behind【Service Password】, it will display check is valid or invalid Press the button behind【LID】to display whether the check is valid or invalid. If it is valid, it will display the available functions

The cloud user manul can be download from the official website:
http://www.meritek.com/zh-tw/download.php?act=list&cid=16

24.2.5 【Link】

The【Link】settings will appear after pressing the【Link】block, as shown in the figure below. Introductions to the options are as listed in the table below. When configuration is complete, press the【OK】button on the top-right corner to save the settings and exit this page or the【Cancel】button on the top-left corner to discard the changes and exit this page.

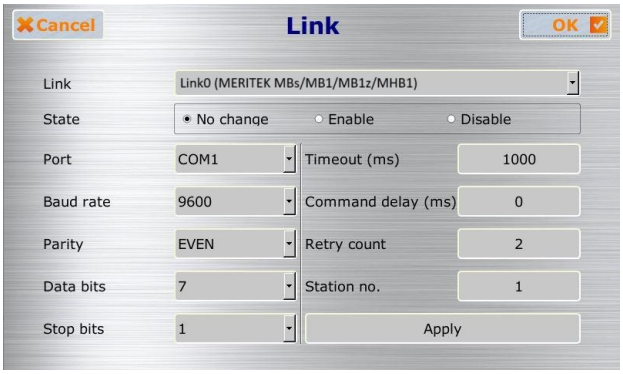


Figure 475【Link】setting page

Table 262【Link】setting page options

Option	Description
【Link】	Selet the link to modify.
【State】	This option is only to control the link status, parameter setting is not included. 【No Change】

	The latest link state will not change. 【Enable】 The link-state will be enabled(connecting) when running the project. 【Disable】 The link-state will be disabled(close) when running the project.
【Apply】	After modifying each setting, you must press【Apply】and then【OK】a and【Execute Project】will record the modified content, if you only press OK, it will not be changed.

Here only introduce the settings only in the HMI, other communication parameter please refer to chapter3.3-Link.

24.2.6 【Display】

The【Display】settings will appear after pressing the【Display】block, as shown in the figure below. Introductions to the options are as listed in the table below. When configuration is complete, press the【OK】button on the top-right corner to save the settings and exit this page or the【Cancel】button on the top-left corner to discard the changes and exit this page.

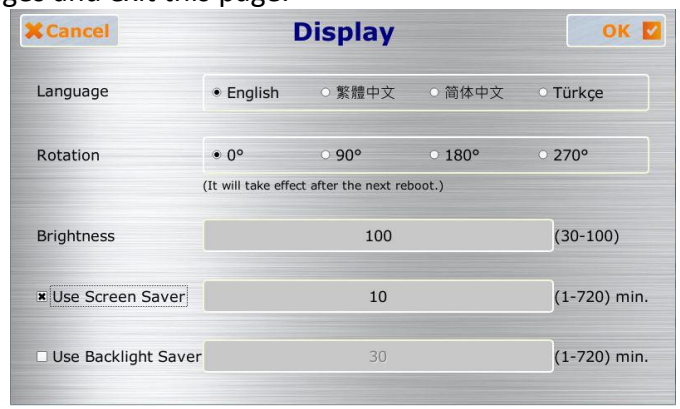


Figure 476【Display】setting page

Table 263【Display】setting page options

Option	Description
【Language】	Select the language displayed in【System Setting】. The available language selections is English, Traditional Chinese, Simplified Chinese, and Türkçe.
【Rotation】	Select the rotation of the HMI display screen. Changes will take take effect after the system is rebooted.

【Brightness】	Set the needed brightness, the selectable range is 30-100, and the default is 100.
【Use Screen Saver】	Set whether to enable the screen saver, set the time if the function is enabled.
【Use Backlight Saver】	Set whether to enable the backlight saver, set the time if the function is enabled.

24.2.7 【Calibration】

The【Calibration】settings will appear after pressing the【Calibration】block. After entering the calibrations screen, follow the instructions to complete the calibration. Do not turn off the power before finishing the calibration.

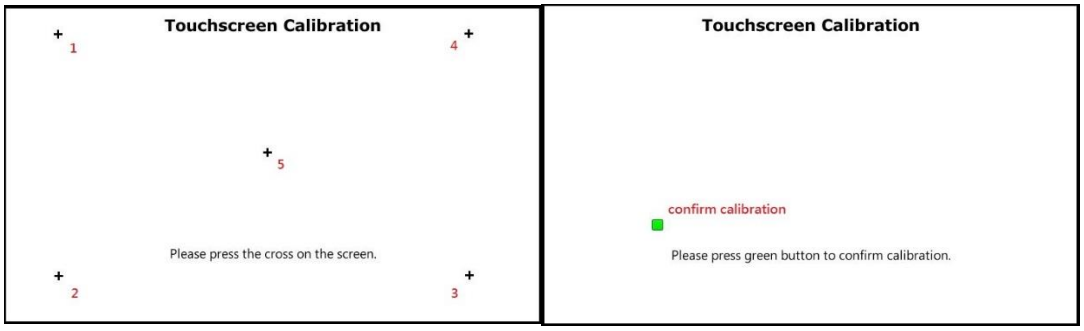


Figure 477【Calibration】page

There are 5 cross-calibration points. After pressing them in sequence, a green square will appear to confirm whether the calibration is successful. If failed for 3 times, you will need to do the calibration again.

If the error detected for the touch panel is too great resulting in users unable to properly click this【Calibration】block, users can then press and hold any point under the system setting page for ten seconds to enter the calibration mode.

24.2.8 【Time】

The【Time】settings will appear after pressing the【Time】block, as shown in the figure below. Introductions to the options are as listed in the table below. When configuration is complete, press the【OK】button on the top-right corner to save the settings and exit this page or the【Cancel】button on the top-left corner to discard the changes and exit this page.

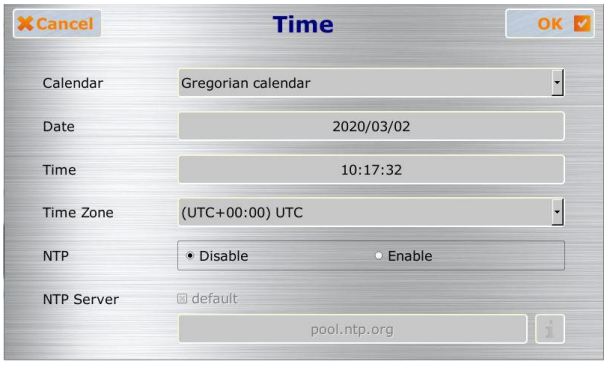


Figure 478【Time】setting page

Table 264【Time】setting page options

Option	Description
【Calender】	Select the calender of the HMI, includes Gregorain calender and Persian calender.
【Date】	The system date of the HMI can be set here.
【Time】	The system time of the HMI can be set here.
【Time Zone】	The time zone of the HMI can be set here.
【NTP】	Here you can choose whether to enable network time synchronization (NTP time synchronization), enabling this feature requires setting time zone and DNS in order to effectively use.
【NTP Server】	Users can connect to their own server or any other servers or the default server to synchronize the time.

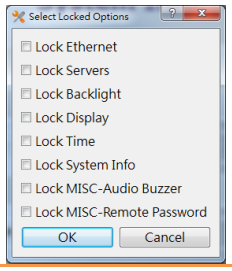
24.2.9 【System Info】

The【System Info】settings will appear after pressing the【System Info】block, as shown in the figure below. Introductions to the options are as listed in the table below. When configuration is complete, press the【OK】button on the top-right corner to save the settings and exit this page or the【Cancel】button on the top-left corner to discard the changes and exit this page.



Figure 479【System Info】setting page

Table 265【System Info】setting page options

Option	Description
【Device Name】	The device name of the HMI can be set here.
【Station Number】	The station number of the HMI can be set here.
【System Password】	Select to enable【System Password】here. If【System Password】is enabled, the password must be set below. This password must be entered in order to set the locked option once【System Password】is enabled. Select the locked option, select the options which need enter【System Password】 
【OS Version】	Information on the operating system version can be viewed here.
【Firmware Version】	Information on the firmware version can be viewed here.
【Last Update Time】	Display the last update time for the Project, Firmware, and Environment Package.

24.2.10 【MISC】

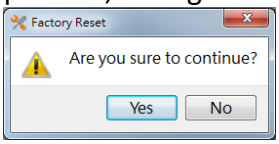
The【MISC】settings will appear after pressing the【MISC】block, as shown in the figure below. Introductions to the options are as listed in the table below. When configuration is complete, press the【OK】button on the top-right corner to save the settings and exit this page or the【Cancel】button on the top-left corner to discard the changes and exit this page.

24.2.10.1 【General】



Figure 480【MISC】【General】setting page

Table 266【MISC】【General】settings page options

Option	Description
【Factory Reset】	The system setting of the HMI can be re-set to the factory settings here. The following window will appear after this option is pressed, asking whether to continue.  Selecting【OK】will restore the HMI to factory settings and selecting【Cancel】will cancel this operation.
【Buzzer】	This option enables the buzzer. Close will turn the buzzer off.
【Audio】	Audio can be played back if this option is enabled, otherwise it will be closed.
【Cursor Mode】	Here you can choose whether to display the cursor in the【System Setting】screen. (Note: This function only supports display during system settings) 【Show】 Display cursor 【Hide】 Do not show the cursor 【According to the mouse】 The mouse will not be displayed without the mouse, and it will be displayed when the mouse is inserted.

24.2.10.2 【Security】

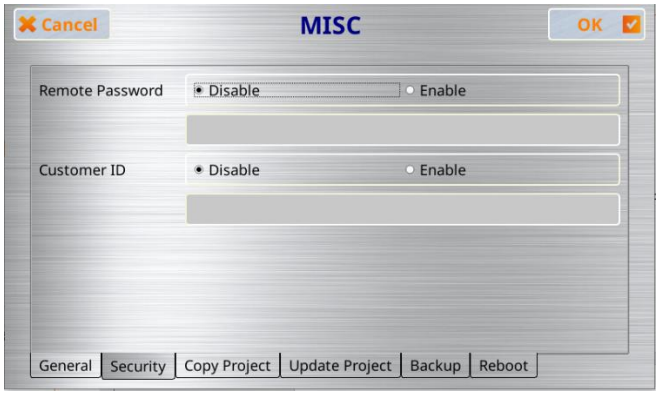


Figure 481【MISC】【Security】setting page

Table 267【MISC】【Security】settings page options

Option	Description
【Remote Password】	Set here whether to enable【Remote Password】, if you choose to enable【Remote Password】, you must continue to set the password below. After selecting enable【Remote Password】,【Remote Setting】needs to enter【Remote Password】or【System Password】to enter【System Setting】.
【Customer ID】	Set here whether to enable【Customer ID】. If you choose to enable【Customer ID】, you must continue to set the password below. When the project is executed, it will check whether the password set here is the same as the password of【Security】in【Project Information】. If they are the same, it will enter the customer planning project screen. If they are not the same, the HMI will stay on the boot screen and a prompt message indicating that the customer ID does not match will appear. At this time, the touch function, serial port, USB port and Ethernet port communication functions will be turned off. Cannot communicate with the PLC, and the customer cannot download through computer software. If the customer needs to download the project again, he must enter the HMI【System Setting】screen to download again.

24.2.10.3 【Copy Project】

Before the connection, please follow chapter 2.2.2.5-Make USB Flash Drive Update File, put the generated .uferp under HMI Internal folder file through【File Transfer】.

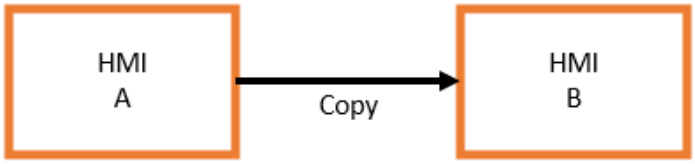


Figure 482【MISC】【Copy Project】schematic

Step

1. The path to put the project's USB update file (uferp) into the HMI A is: internal/Project.uferp
2. Select the connection method from the system setting page of HMI A and press the start button
3. Enter the project download password (if have) in HMI A
4. Wait for the copying to complete, HMI B will update the project

Note 1: When generating the .uferp file, the 'delete other' option cannot select, otherwise the update will fail.

Note 2: The two HMI models must be the same to copy the project.

Note 3: The file name must be Project.uferp otherwise the system can't find it.

Note4: If the download passwords of HMI A and HMI B are different, A will ask for the password; if they are the same, it will not be asked.



Figure 483【MISC】【Copy Project】setting page

Table 268【MISC】【Copy Project】settings page options

Option	Description
【Connection】	Select the connection way for the HMI to copy the project.
【COM Port】	Select the COM port to use.
【Keep Update file on target device】	Select whether to keep the .uferp file on the updated HMI.
【Copy Project】	Press the button to start to copy the project.
【Delete Update file】	Delete the .uferp file under the Internal folder.

24.2.10.4 【Update Project】

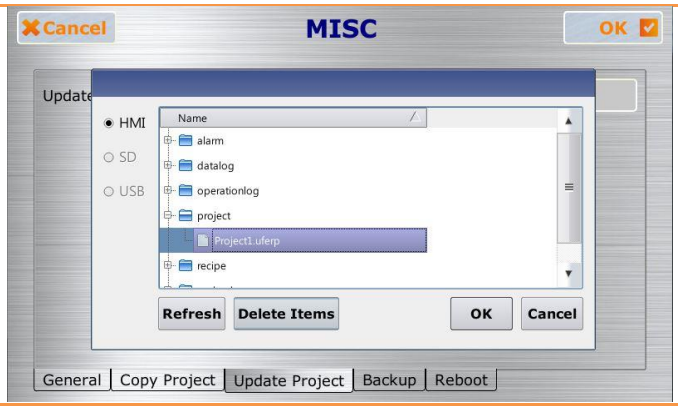
User can update project without using computer.



Figure 484【MISC】【Update Project】setting page

Table 269【MISC】【Copy Project】settings page options

Option	Description
【Update Project】	Update the .uferp file from HMI internal space, SD card, or USB flash disk.



24.2.10.5 【Backup】

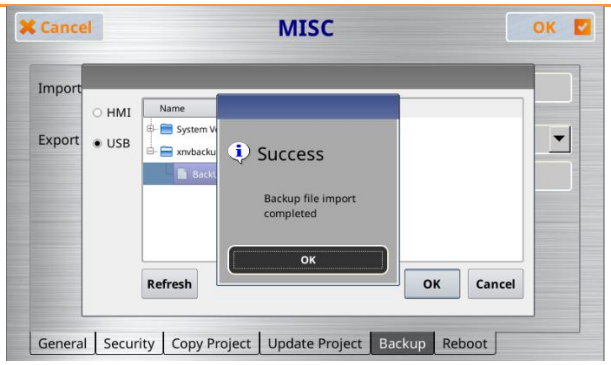
Backup the data that stores in the $U:XNV register into a package so that it can easily copy to another HMI.



Figure 485【MISC】【Backup】setting page

Table 270【MISC】【Backup】settings page options

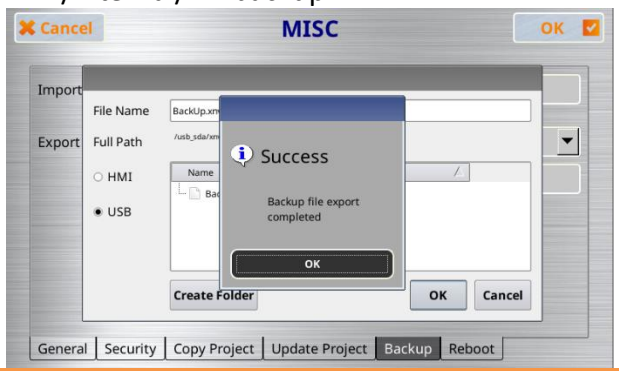
Option	Description
【$U:XNV register】	【Import】 Import the .xnv_backup file from the folder HMI/internal/xnvbackup.



【Export】

According to the HMI model and select the register type you want to export.

The export .xnv_backup file will store under the folder HMI/internal/xnvbackup.



24.2.10.6 【Reboot】

Reboot the HMI.

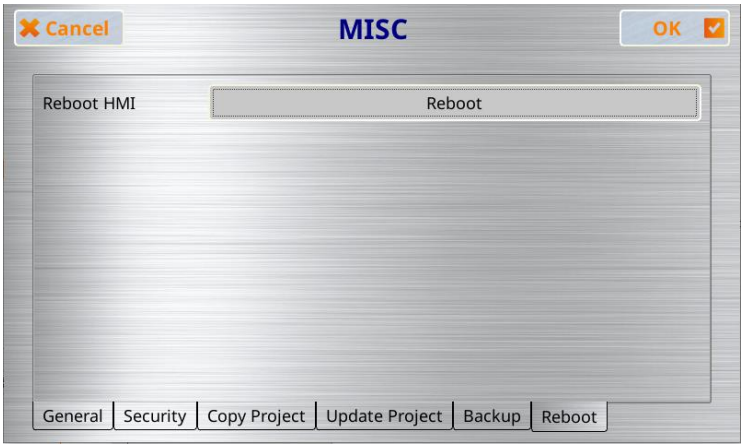


Figure 486【MISC】【Reboot】setting page

24.3 System Booting Sequence

The system will automatically detect the current firmware, integrity, and compatibility of the project on the HMI when starting up. If the system detected that

the version is incompatible or that the file is corrupted resulting in the HMI being unable to start up properly, the system will automatically enter the【System Setting】and lock the【Run Project】switch. This is when users should use the download function of the FvDesigner to sequentially download the firmware and project.

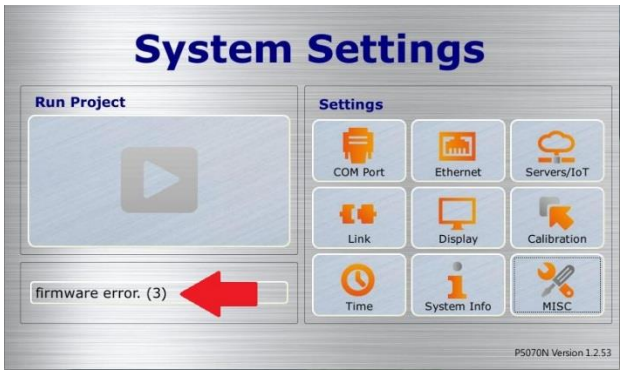


Figure 487 project error detection

If the firmware and project were both enabled normally, the system will skip the【System Setting】during start-up and run the project immediately. In this case, the user must press and hold the right side of the HMI screen during the start-up until it enters the System Setting screen if the user wants to adjust the system settings.

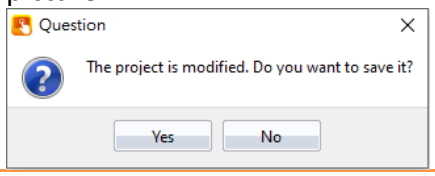
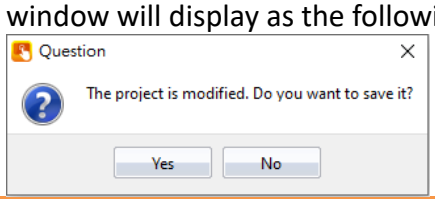
25. HotKeys

When designers use FvDesigner to program HMI project, they often use some functions, such as【Compile】、【Download】and【Simulation】etc.. In order to operate FvDesigner easily, it provides a variety of【HotKey】for each function. This chapter will explain the combination of【HotKey】and usage.

25.1 Project and File

The following table describes the【HotKey】definition for operating Project and File. When the mouse hovers over the icon of Ribbon menu, the tooltip of HotKey will also display on the screen.

Table 271【HotKeys】related to Project and File

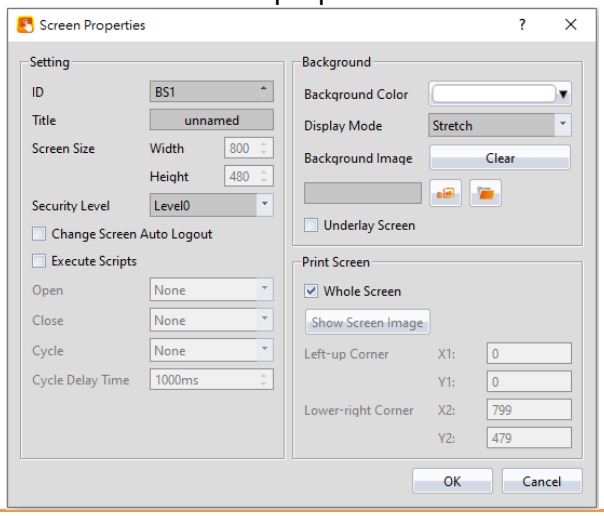
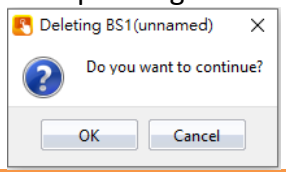
HotKey/ Keyboard shortcut	Description	Target
F5	Launch【Simulation】application.	Project
F6	Launch【Download Manager】for download process.	Project
Ctrl + Shift + C	Compile the project. If the project does not be saved, the question dialog window will display as the following picture. 	Project
Ctrl + Shift + D	Display【Decompile】dialog window for decompiling project file.	Project
F12	Display【Save As】dialog window for saving file.	File
Ctrl + Q	Exit the FvDesigner application. If the project does not save, the question dialog window will display as the following picture. 	File

25.2 Screen List

The following table describes the【HotKey】definitions for operating【Screen List】.

These【HotKey】only work on【Screen List】.

Table 272【HotKeys】related to【Screen List】

HotKey/ Keyboard shortcut	Description	Target
Ctrl + C	Copy screen to clipboard.	Screen List
Ctrl + V	Paste the copied screen on【Screen List】. The【Screen Properties】dialog window will display after pressing this hotkey for designers to define the screen properties. 	Screen List
Delete	Delete the selected screen. The confirmation dialog window will display after pressing this hotkey. 	Screen List
Ctrl + Shift + B	Add a new【Base Screen】, the【Screen Properties】dialog window will display after pressing this hotkey.	Screen List
Ctrl + Shift + W	Add a new【Window Screen】, the【Screen Properties】dialog window will display after pressing this hotkey.	Screen List

Ctrl + Shift + K	Add a new【Keypad Screen】, the【Screen Properties】dialog window will display after pressing this hotkey.	Screen List
↑	Pressing the UP key can move the【Current Selection Box UP. It will not display the screen on the【Work Space】of FvDesigner.	Screen List
↓	Pressing the Down key can move the【Current Selection Box】Down. It will not display the screen on the【Work Space】of FvDesigner.	Screen List
Enter	Press【Enter】on the【Screen List】, and the screen selected by【Current selection box】will be displayed in the work space. After moving through the keyboard up/down keys, the screen can be displayed in the work space through this hot key.	Screen List

26. Modbus Gateway Server

The Modbus gateway server feature uses a HMI to serve as a gateway linked to a computer using SCADA software, HMI, or other Modbus devices. Through a Modbus (master) TCP protocol or a serial link to a HMI, along with the HMI link to a PLC, inverter, servo motors, temperature controllers or other equipment, a computer can easily read data from the equipment. To achieve data collection, the user has to fill in the Modbus address mapping table.

Currently three Modbus drivers are supported: Modbus TCP, Modbus RTU, and Modbus ASCII.

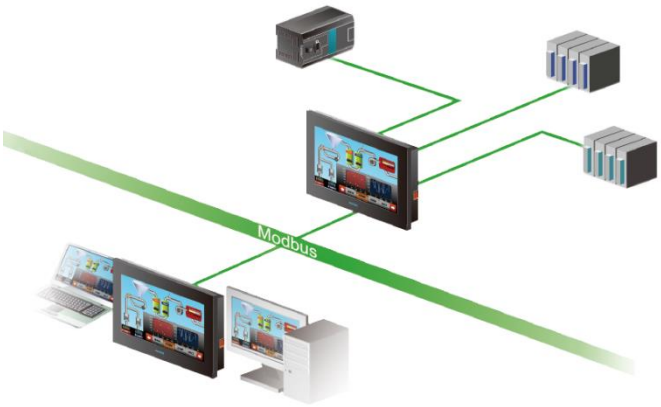


Figure 488 Gateway Server Application Diagram

This section describes settings and applications of Modbus gateway servers.

26.1 Modbus Gateway Server Settings

When the selected driver in the new link property settings is selected as Modbus Slave (ASCII), or Modbus Slave (RTU), under the【Interface Settings】, a new options tab will be present. The options tab contains【Address Mapping Table】settings, as shown in the figure below.

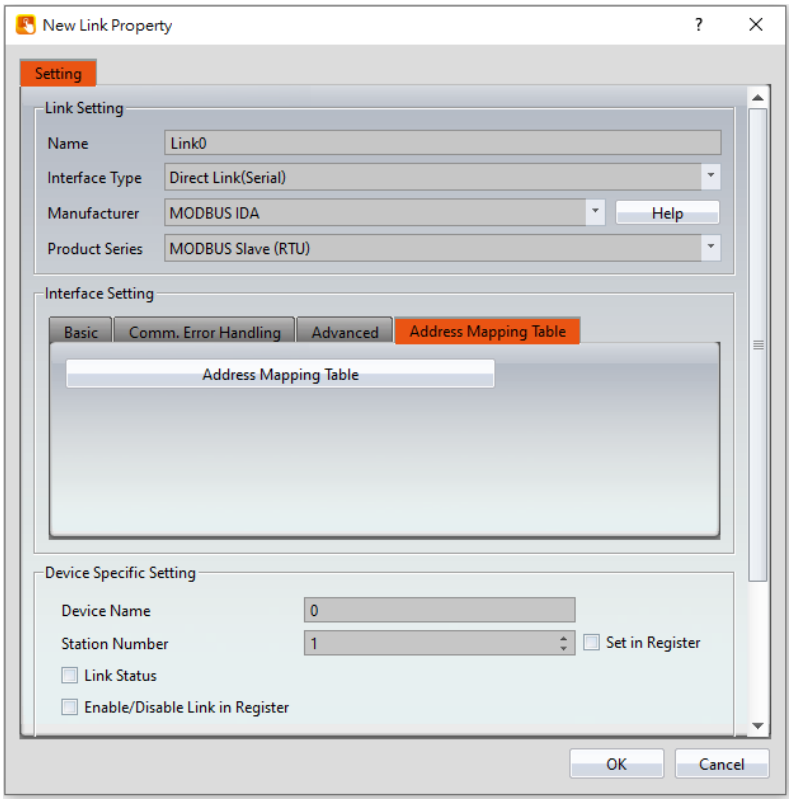


Figure 489【Address Mapping Table】Settings Screen

【Address Mapping Table】settings screen is in the below figure. Each setting is detailed in the table.

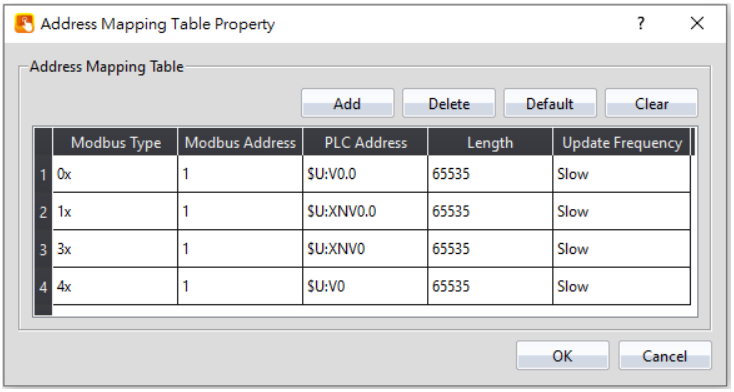


Figure 490【Address Mapping Table】Settings Screen

Table 273【Address Mapping Table】Settings and Related Files and Shortcuts

Option	Description
【Address Mapping Table】	【Add】 Create a new row in the【Address Mapping Table】. 【Delete】 Remove the selected row from the【Address Mapping

	Table】. 【Default】 Returns the【Address Mapping Table】to the preset rows and configurations. 【Clear】 Deletes all entries from the【Address Mapping Table】. 【Modbus Type】 Currently supports four types: 0x, 1x, 3x, and 4x. 0x has read and write permissions for a bit. 1x is a read only bit. 3x is a read only word. 4x has read and write permissions for a word. 【Modbus Address】 Specify the return target address for a PLC or other Modbus devices. 【PLC Address】 Specified source address for PLC or other equipment. 【Length】 Set the length of the data. 【Update Frequency】 Set the transmission frequency speed. There are three settings: fast, normal, and low.

26.2 Modbus Gateway Server Applications

In the following example, a HMI has a MERITEK MBs PLC connected through the COM1 port and a Mistsubishi FX3U PLC connected through the COM3 port as shown in the figure below. On demand data can be uploaded via Ethernet to a computer and collected by SCADA (or modScan) software.

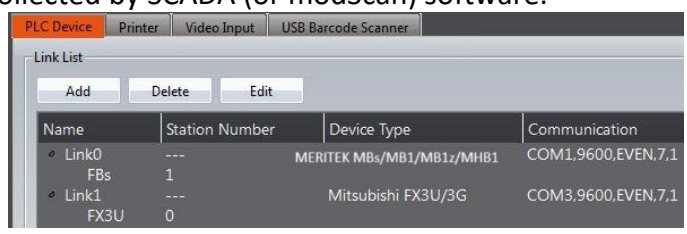


Figure 491 HMI Connection Page

The user wishes to monitor register R100 data and output point Y0 on the MERITEK MBs

PLC and D200 and Y1 on the Mistubishi FX3U. The MERITEK PLC address should be uploaded to Modbus address 4x1 and 0x1 respectively. The Mistubishi FX3U address should be uploaded to Modbus addresses 4x2 and 0x2 respectively. The PC will then recieive the data via Ethernet.

Step 1: New Modbus Slave (TCP) driver.

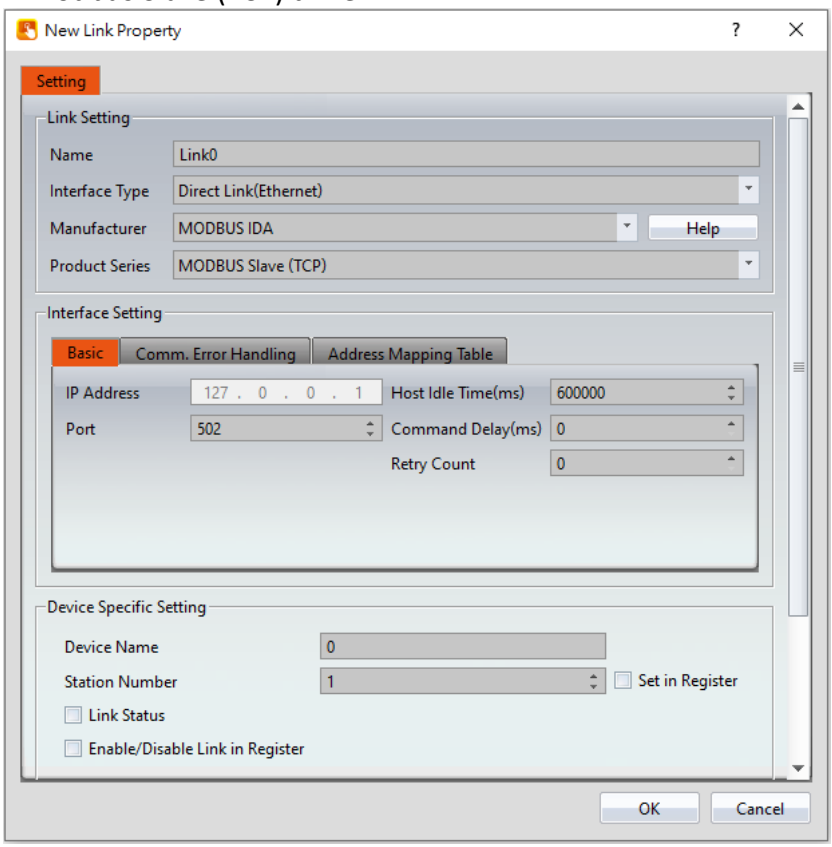


Figure 492 New Modbus Slave (TCP) Driver

Step 2: Click the【Address Mapping Table】settings.

Step 3: Set the【Address Mapping Table】in accordance to Figure 491.
The first row is the MERITEK MBs PLC Y0 output. This is transferred to Modbus address 0x1.
The second row is the Mistubishi FX3U PLC Y1 output. This is transferred to Modbus address 0x2.
The third row is the MERITEK MBS PLC R100 register. This is transferred to Modbus address 4x1.
The fourth row is the Mistubishi FX3U PLC D200 register. This is transferred to Modbus address 4x2.

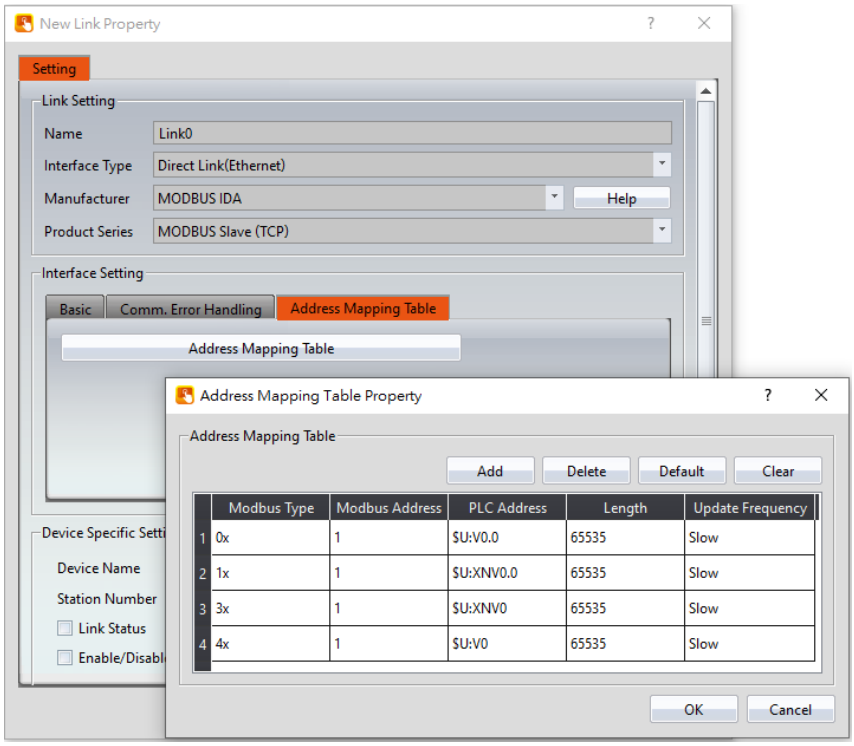


Figure 493【Address Mapping Table】Configuration

Note: If the SCADA software reads an address not defined in the Address Mapping Table, the HMI will return a MODBUS exception error in response to the read attempt by the SCADA software.

Step 4: Download the project to the HMI and connect the MERITEK PLC, Mistubishi PLC, and SCADA (or modScan) software.
Step 5: As shown in Figure 351, the MERITEK PLC R100 and Y0 addresses as well as the Mistubishi D200 and Y1 address can be viewed. Through the SCADA (or modScan) software, the Modbus address of 4x1, 4x2, 0x1, and 0x2 can be controlled.

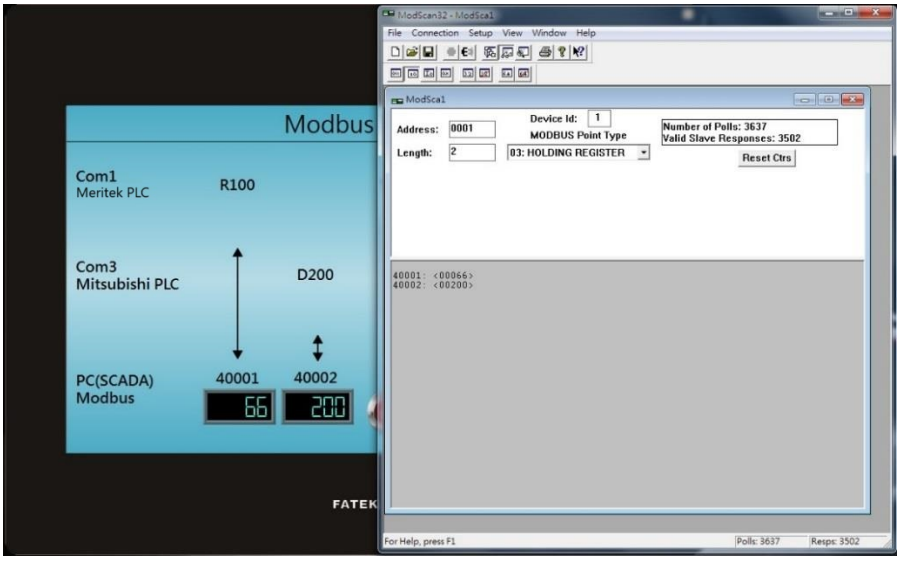


Figure 494 Results of the Gateway Server

27. PLC Integration

【PLC Integration】provides designers or users in pratical applications of HMI and PLC to achieve closer integration. For example, in practical applications users can show or view the current connection of **WinProladder** through HMI, no need to link PLC to PC to view Ladder diagram program of **WinProladder,** let users easy to use and debug.

Currently 【PLC Integration】includes【Show Ladder Viewer】,【Update MERITEK PLC Project From USB】,【Show Ethernet Module Configuration】



Figure 495 HMI show PLC Ladder Diagram Program illustration

27.1 Show Ladder Viewer

This section will explain how to show Ladder Diagram Program of PLC (MERITEK PLC) on HMI and show the interface of PLC Ladder Diagram Program which includes the meaning of options and settings.

Note 1 : The 4.3-inch HMI does not support the display of the Ladder Viewer function, such as P5043S or P5043N.

Note 2 : MERITEK FBe PLC does not support

27.1.1 【Show Ladder Viewer】Applications and Settings

For example, use MERITEK P5 series HMI connted with MERITEK MBs series PLC, and hope in the P5 series HMI display and view the MBs series PLC ladder diagram program, Set the following steps:

Step 1:【Toolbox】【Lamp/Switch】drag a【Function Switch】to windows，as shown below.

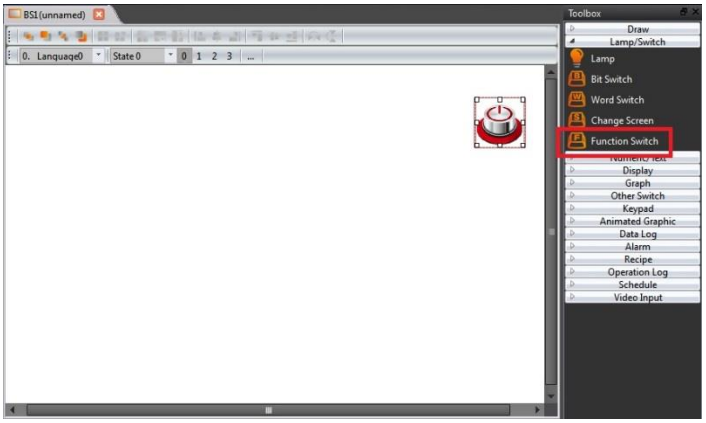


Figure 496 drag a【Function Switch】to window

Step 2: double click Function Switch to enter Function Switch Properties, and in this dialog window by the "function" drop-down menu, select 【PLC: Show ladder viewer】, as shown below.

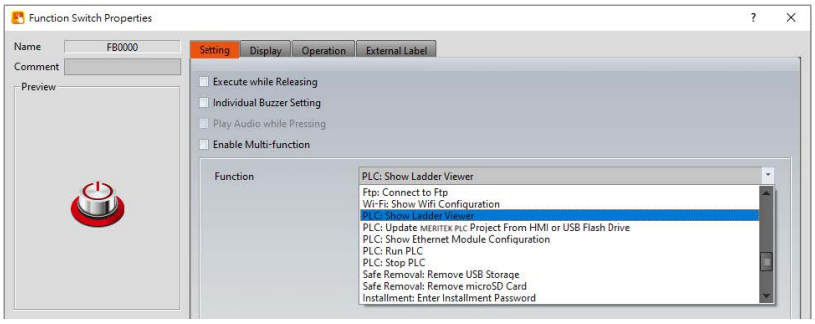


Figure 497 select【PLC: Show ladder viewer】dialog

Step 3: set the connection of HMI and PLC, then compile and download to HMI, through the connection, press the 【Function Switch】【PLC: Show ladder viewer】, will appear link device dialog, as show below, the device name is the name of the device in the software link setting.



Figure 498 The menu dialog of the linked device

Note: in off-line simulation, press【Function Switch】will not appear link device dialog, but will appear in HMI interface, microSD or USB storage devices, choose the PLC project(*.pdw) loading dialog window.

Step 4: choose the device, then it will load the PLC ladder diagram program, as shown below.

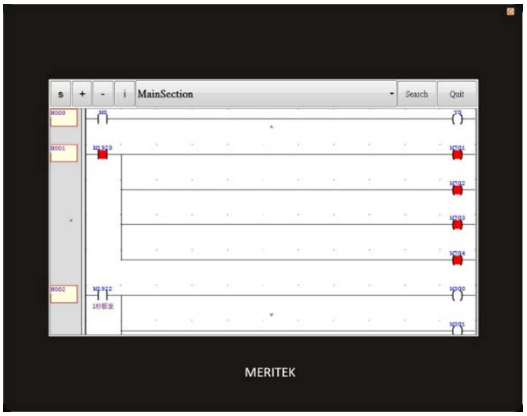


Figure 499 show PLC ladder diagram program

27.1.2 HMI display the interface of PLC ladder diagram program

The interface of the PLC ladder program is displayed on the HMI, as shown below. The meaning of each settings, as shown in the table below.

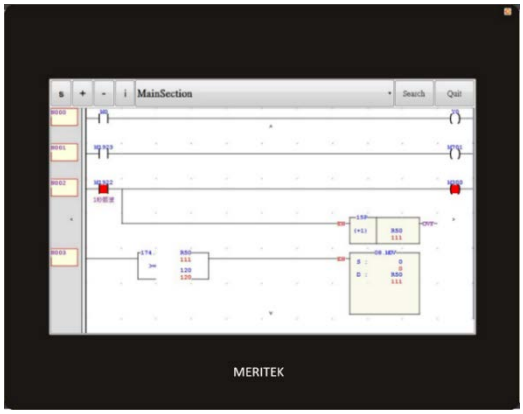
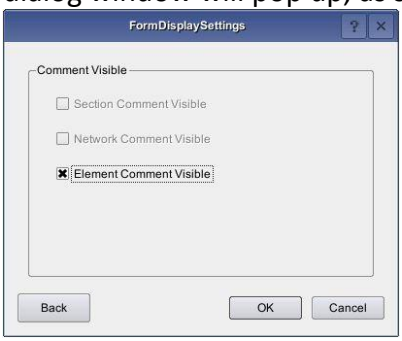
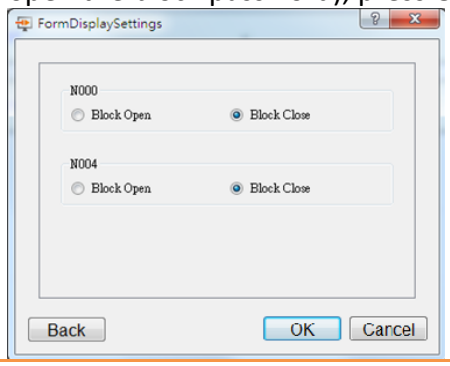
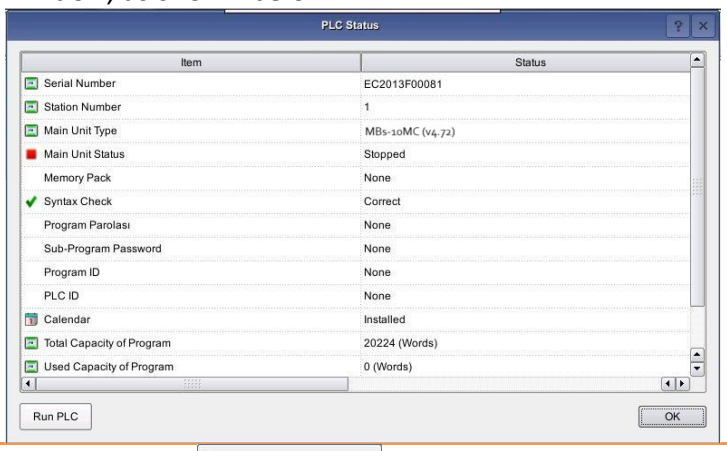


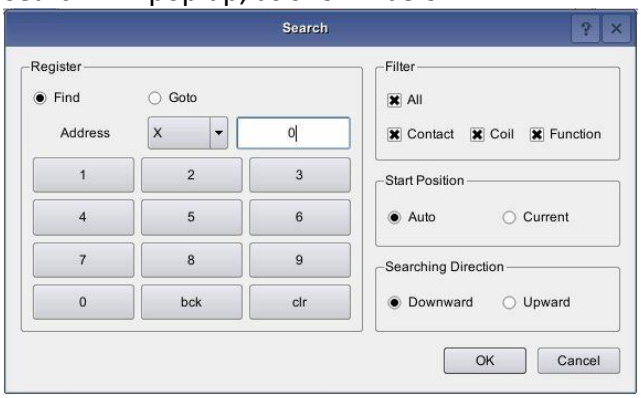
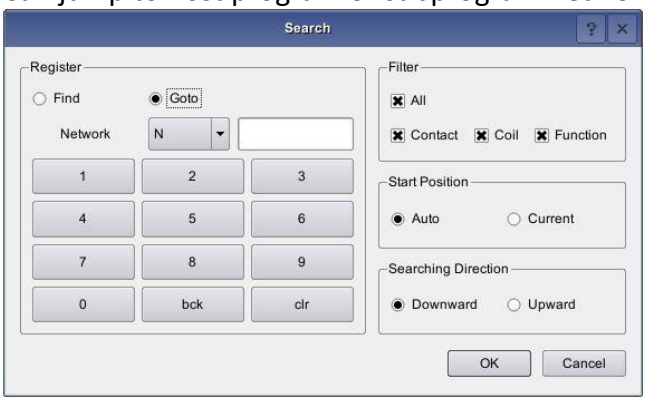
Figure 500 The interface of the PLC ladder diagram is displayed on the HMI

Table 274 shows the attributes of the PLC ladder diagram interface on the HMI

Property	Description
【Display Settings】	Press this icon S, will display the settings dialog window, as shown below.

	
【Comment】	【Comment】 Click on the box that says “Comment” and the following dialog window will pop up, as show below.  【Comment Visible】 Set whether the comments in the ladder diagram are displayed. 【Section Comment Visible】 Set whether the program area comments in the ladder program is displayed. The current preset is disabled and cannot be checked. 【Network Comment Visible】 Set whether the network comment in the ladder program is displayed. The current preset is disabled and cannot be checked. 【Element Comment Visible】 Set whether the element comment in the ladder program is displayed.
【Language】	【Language】 In this window, you can select the language of your comments in the ladder program. Languages include English, Traditional Chinese, Simplified Chinese, Other Language, and so on. Selectable languages should be added from【Font Library】.

	
【Block Open/ Close】	This option is mainly for the WinProLadder block close and block open function(Need to cooperate with Fun199). Click on the button and the following dialog window will pop up, the HMI will activity to search the ladder diagram that those networks are block closed then list it, operators can choose which networks are open or close(If the original close block has a set password, need to enter password to open the block password), press OK to see ladder diagram. 
【Reload】	【Reload】 Reload the ladder program.
【Zoom in】	Press this icon +, will zoom in on the HMI ladder diagram.
【Zoom out】	Press this icon -, will zoom out on the HMI ladder diagram.
【PLC Status Information】	Press this icon i, will pop up PLC status information window, as shown below. 
【Switch between the MainSection	Press this icon MainSection, switch between the

and the SubSection program】	MainSection and the SubSection program.
【Search】	Press this icon  , the dialog window for the address search will pop up, as shown below.  【Find】 Search type and address. 【Goto】 Can jump to host program or subprogram network number  【Register Type/Network Number】 Enter the type and address you want to search for or jump to the host or subprogram network number 【Filter】 Filter the type of search, including contacts, coils, functional instructions, and all, etc. 【Start Position】 Start position, including automatic and current location. 【Searching Direction】

	Searching Direction, including move up and move down, etc.
【Quit the ladder diagram window】	Press this icon Quit, will quit the ladder diagram window.
【Move up】	Press this icon ^, the ladder diagram will be viewed above.
【Move down】	Press this icon v, the ladder diagram will be viewed below.
【Move right】	Press this icon >, the ladder diagram will be viewed right.
【Move left】	Press this icon <, the ladder diagram will be viewed left.
【Network No.】	This icon N000 is Network No. for the ladder diagram.

27.2 Update MERITEK PLC Project From HMI or USB Flash Drive

This section will explain how to update the linked MERITEK PLC ladder program through the HMI internal storage or USB storage device for easy user use.
For example, use MERITEK P5 series HMI connted with MERITEK MBs series PLC, update ladder diagram program of MBs PLC through USB storage device of HMI, Set the following steps:

Step 1:【Toolbox】【Lamp/Switch】drag a【Function Switch】to windows，as shown below.

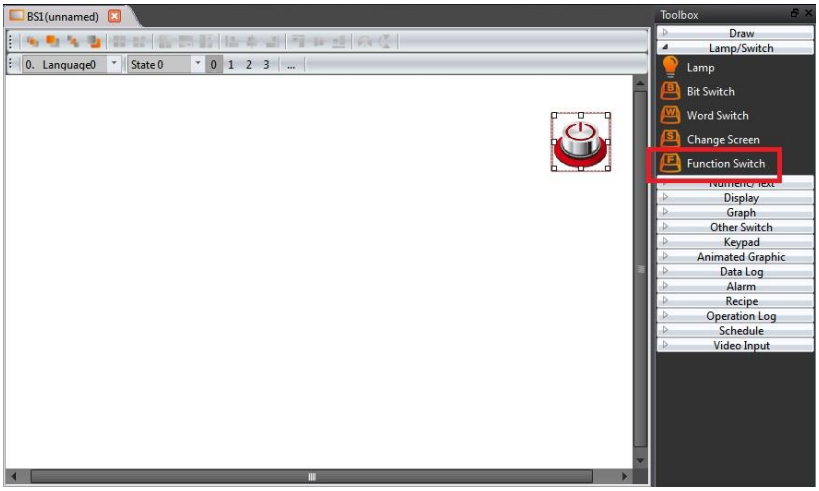


Figure 501 drag a【Function Switch】to window

Step 2: double click Function Switch to enter Function Switch Properties, and in this dialog window by the "function" drop-down menu, select 【PLC: Update MERITEK PLC Project From USB】, as shown below.

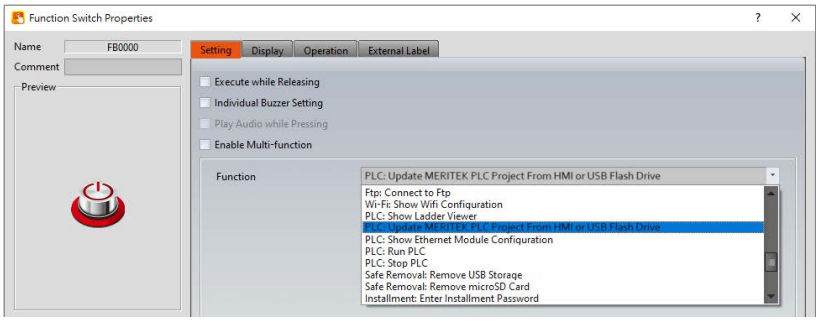


Figure 502 select【PLC: Update MERITEK PLC Project From HMI or USB Flash Drive】 dialog

Step 3: set the connection of HMI and PLC, then compile and download to HMI.
Step 4: copy the PLC project to USB storage, then insert into HMI.

Step 5: In the HMI and PLC connection operation, press【Function Switch】【PLC: Update MERITEK PLC Project From HMI or USB Flash Drive】, a dialog window appears to update the PLC project, as shown below.

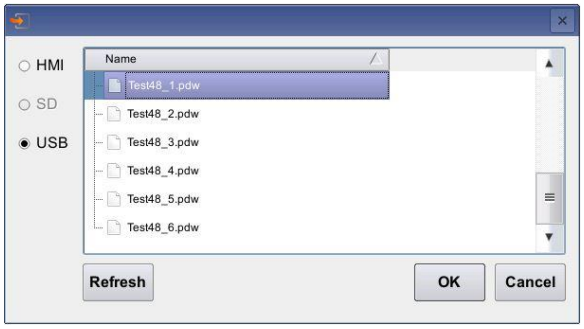


Figure 503 Select the dialog window to update the project

Step 6: after successfully update PLC project will appear link device dialog window, as shown below, where the link device name that is in the software link settings in the device name.



Figure 504 The menu dialog of the linked device

Step 7: if want to download PLC program while PLC is running, will first ask whether to stop PLC running and then continue to update the PLC program dialogue window, figure as shown below.

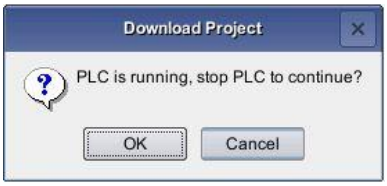


Figure 505 ask whether to stop PLC running

Step 8: after updating PLC project, will appear



Figure 506 download success than ask whether start the PLC dialog window

The way to update form HMI internal storage is also the same, in step 5, select 'HMI' then choose the .pdw file to update.

Note: under off-line simulation, press【Function Switch】, will not have any action

27.3 【MERITEK PLC Transfer Encrypt Tool】

This chapter explains how to use the USB storage device of HMI to update the connected MERITEK PLC ladder diagram program, how to protect the operation flow, and protect the designer's planned PLC ladder diagram program and intellectual property, etc.
Use the USB storage device of HMI to update the connected MERITEK PLC ladder diagram program divide it into 2 parts.
The first part, if you do not need to protect the PLC project, you can directly copy the PLC project (*.pdw) planned by MERITEK PLC software to the USB storage device, microSD card, or through FTP function transfer the PLC project to the HMI internal storage, and follow-up will be able to update the MERITEK PLC project according to chapter 27.2-Update MERITEK PLC Project From HMI or USB .
In the second part, if the PLC project needs to be protected, it is necessary to follow the follow-up instructions to generate the designer's all transfer password or single pass password and conversion file, etc., so that the designer's planned PLC ladder diagram program can be protected. The following describes how to set and use transfer passwords, single passwords, and conversion files.

27.3.1 【MERITEK PLC Transfer Project Generator】

This chapter will explain how to use the USB storage device HMI to update the connected MERITEK PLC ladder diagram program, and the PLC project needs to be protected. How to set the【Transfer Password】and convert the file, etc. This can be

achieved through the【MERITEK PLC Transfer Encrypt Tool】provided by FvDesigner.

If only set【Transfer Password】, it's available for unlimited downloads, in other words, you can update the connected MERITEK PLC ladder diagram program for an unlimited number of times.

【MERITEK PLC Transfer Project Generator】can be found on the Tools tab on the FvDesigner ribbon, after select the【MERITEK PLC Transfer Encrypt Tool】drop-down

menu then click【MERITEK PLC Transfer Project Generator】options to do the setting.



Figure 507【MERITEK PLC Transfer Project Generator】option

The【MERITEK PLC Transfer Project Generator】page is shown in the figure below. The meaning of each setting option is as follows:

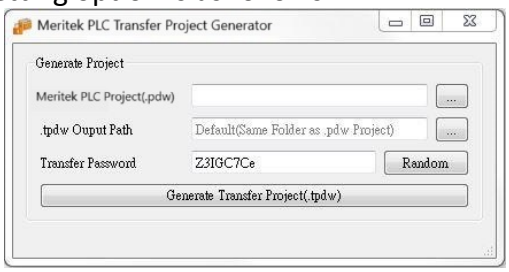


Figure 508【MERITEK PLC Transfer Project Generator】setting

Table 275【MERITEK PLC Transfer Project Generator】properties

Properties	Description
【Generate Project】	With this tool, you can convert the original MERITEK PLC project (*.pdw) into an encrypted file *.tpdw and generate all the transfer passwords for the designer. 【MERITEK PLC Project(.pdw)】 Set the path and file location of the original MERITEK PLC project (*.pdw). 【.tpdw Output Path】 Set the path of *.tpdw to be generated. If it is not set, the default path is same as the original MERITEK PLC project (*.pdw), and the converted files can no longer be opened with MERITEK PLC's software WinProLadder. 【Transfer Password】 The transfer password generated by the system can update to the connected MERITEK PLC ladder diagram program for an unlimited number of times. 【Random】 After pressing this button, the system will provide a new set of transfer passwords again.

	【Generate Transfer Project(.tpdw)】 Press this button to generate *.tpdw file and save it in the set path.

After setting the transfer password, you can update the MERITEK PLC project according to the chapter27.2-Update MERITEK PLC Project From HMI or USB , but when selecting the MERITEK PLC project, select the *.tpdw file, as shown below.

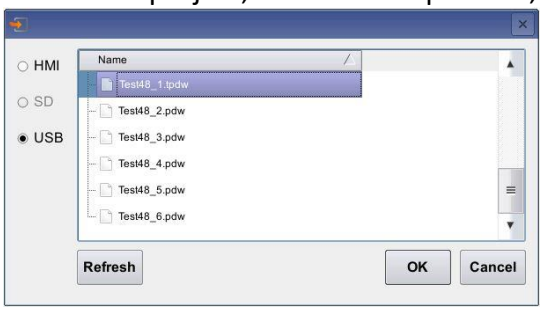


Figure 509 select to update the PLC project

Select the file, press OK, it will display ‘’Please enter password’’ dialogue window, as shown below, please enter the transfer password.



Figure 510 select the transfer password

After entering the transfer password, press OK, the ‘’Select Device’’ dialog window will appear, as shown below.



Figure 511 select device

If the PLC wants to download the PLC program during operation, it will first ask whether to stop the PLC operation first, and then continue to update the dialogue window of the PLC program, as shown below.

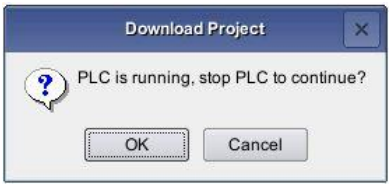


Figure 512 ask whether to stop the running PLC

After finish updating the PLC project, there will be a dialogue window to start the

PLC, as shown below.



Figure 513 download success and ask whether to start PLC immediately

27.3.2 【Single Pass Password Generator】

The chapter will explain how to set【Single Pass Password】,【Single Pass Password】can only be used once. The user will generate a set of passwords from the HMI due to the operation and provide it to the designer. The designer then generates new password through the【Single Pass Password Generator】to enter to the HMI to update the connected MERITEK PLC Ladder Diagram program.

【Single Pass Password Generator】function can be selected in【Tools】function tab on the FvDesigner ribbon, select【MERITEK PLC Transfer Encrypt Tool】drop-down menu, and click【Single Pass Password Generator】option to open function setting window.



Figure 514【Single Pass Password Generator】option

The【Single Pass Password Generator】page is shown in the following figure. The meaning of each setting option is as follows:

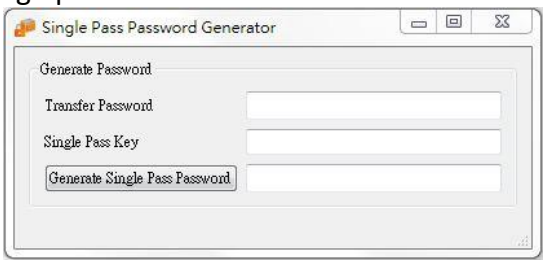


Figure 515【Single Pass Password Generator】setting window

Table 276【Single Pass Password Generator】properties setting

Properties	Description
【Generate Password】	Single pass password can be generated through this tool.

	【Transfer Password】 Enter the original transfer password. 【Single Pass Key】 Enter the single pass key generated from the HMI. 【Generate Single Pass Password】 Pressing this button will generate a single pass password, which will be provided to the user for input to the HMI to update the connected MERITEK PLC Ladder diagram program.

After setting the transfer password, you can update the MERITEK PLC project according to the chapter 27.2-Update MERITEK PLC Project From HMI or USB, but when selecting the MERITEK PLC project, select the *.tpdw file, as shown below.

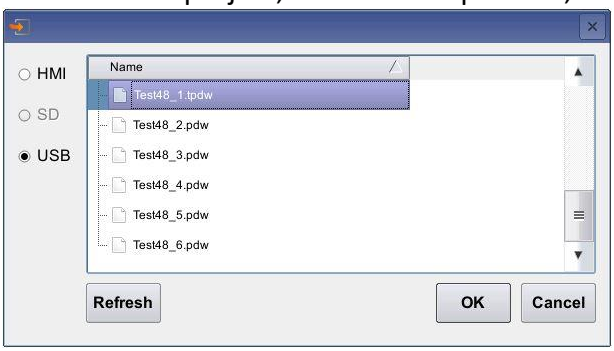


Figure 516 select to update the PLC project

Select the file, press OK, the dialog box for entering the transfer password will be displayed, and click【Single Pass Password】, as shown below.



Figure 517 select single pass password

Provide the【Single Pass Key】to the designer. After the designer enters【Transfer Password】and【Single Pass Key】in【Single Pass Password Generator】, press【Generator Single Pass Password】as shown in the figure below.

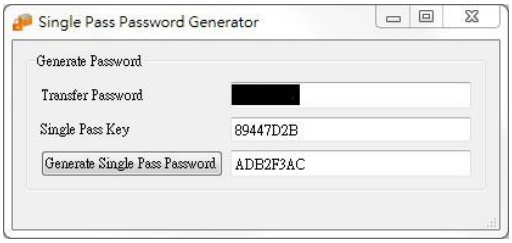


Figure 518【Single Pass Password Generator】window

The generated【Single Pass Password】provide to user to enter to the HMI, as shown in the figure below.



Figure 519 enter single pass password window

After entering the single pass password, press OK, the ''Select Device'' dialog window will appear, as shown below.



Figure 520 select device

If the PLC wants to download the PLC program during operation, it will first ask whether to stop the PLC operation first, and then continue to update the dialogue window of the PLC program, as shown below.



Figure 521 ask whether to stop the running PLC

After finish updating the PLC project, there will be a dialogue window to start the PLC, as shown below.

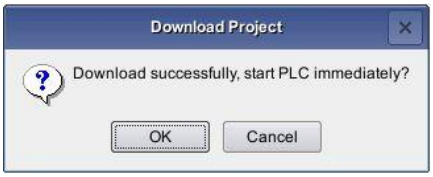


Figure 522 download success and ask whether to start PLC immediately

27.4 Show Ethernet Module Configuration

This section will explain how to set up the ethernet module configuration and options and settings of MERITEK PLC on the HMI display ethernet so that the user can easily use it.

27.4.1 【Ethernet Module Configuration】Application and Settings

For example, use MERITEK P5 series HMI, Show Ethernet Module Configuration, Set the following steps:

Step 1: 【Toolbox】【Lamp/Switch】drag a【Function Switch】to windows，as shown below.

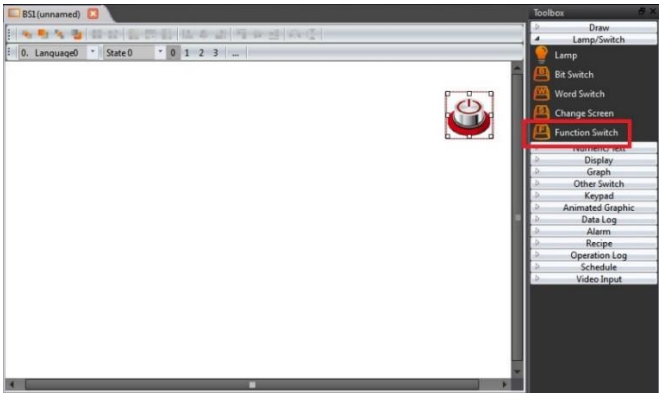


Figure 523 drag a【Function Switch】to window

Step 2: double click Function Switch to enter Function Switch Properties, and in this dialog window by the "function" drop-down menu, select 【PLC: Show Ethernet Module Configuration】, as shown below.

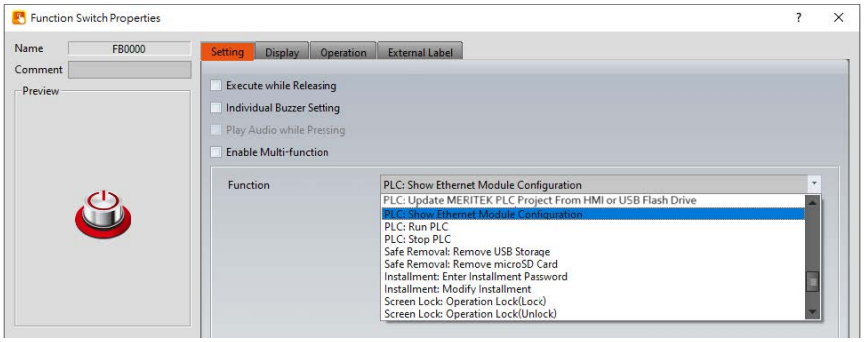


Figure 524 select【PLC: Show Ethernet Module Configuration】dialog

Step 3: set the connection of HMI and PLC, then compile and download to HMI.

Step 4: In the HMI and PLC connection operation, press【Function Switch】【PLC: Show Ethernet Module Configuration】, a dialog window appears to update the PLC project, as shown below.

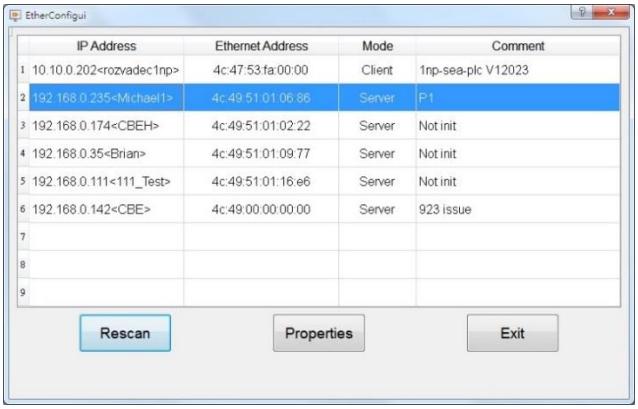


Figure 525 dialog of MERITEK PLC on ethernet

Note: after pressing the【Function Switch】, as a result of the search on the network MERITEK PLC network module will be delayed some time.

Table 277 properties of MERITEK PLC ethernet configuration dialog

Options	Description
【IP Address】	IP Address of ethernet configuration
【Ethernet Address】	Ethernet Address of ethernet configuration
【Mode】	Mode of ethernet configuration
【Comment】	Annotations can be used to specify more detailed module information, up to 21 characters.
【Rescan】	Rescan ethernet configuration on line, the detected module will be displayed in the middle of the window.
【Properties】	Touch to display or set the module data, press this button to enter the module configuration window.
【Exit】	Exit the dialog of ethenet configuration.

27.4.2 General Settings of Ethernet Module

General properties of ethernet module on HMI, as shown below.

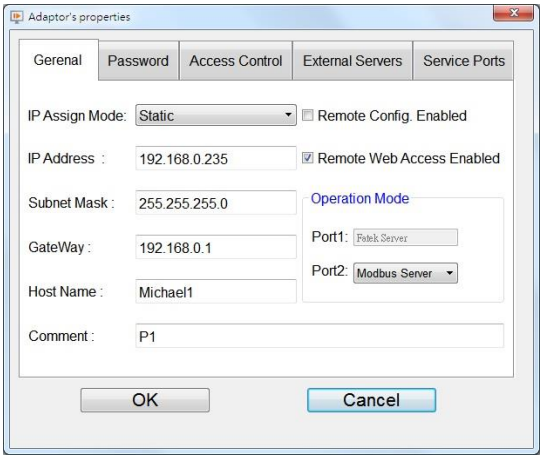


Figure 526 General properties of ethernet module

Table 278 properties of ethernet module settings

Optios	Description
【IP Assign Mode】	IP Assign Mode, including static and dynamic and acquisition by the registor of PLC
【IP Address】	IP Address of ethernet module.
【Subnet Mask】	Subnet Mask of ethernet module.
【GateWay】	GateWay of ethernet module.
【Host Name】	Host Name, can be used to identify different module.
【Comment】	Annotations can be used to specify more detailed module information, up to 21 characters.
【Remote Config Enabled】	Check to allow Ether_Config settings to be made remotely via the Internet.
【Remote Web Access Enabled】	Check to allow remote through the Internet for Web pages operation.
【Operation Mode】	Port1 is fixed to MERITEK Server, Port2 can select the working mode according to the demand

27.4.3 Password Setting Page of Ethernet Module

Display password setting page of ethernet module on HMI, as shown below.
The meaning of each option is as follows, as shown in the following table, please refer to the PLC network Ethernet communication module operating instructions manual

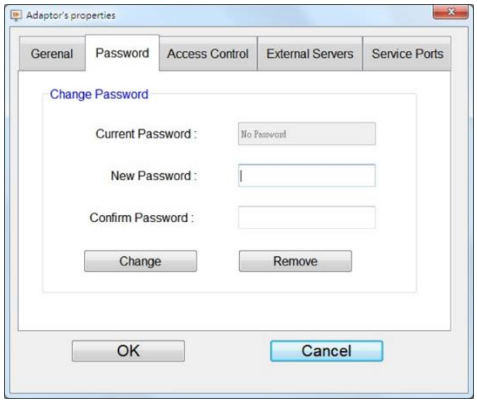


Figure 527 password setting page of ethernet module

Table 279 properties of password setting page of ethernet module

Options	Description
【New Password】	To change the new password.
【Confirm Password】	Confirm new password.
【Change】	Press this button will complete the change setting.
【Remove】	Cancle the password.

27.4.4 Access Control Setting Page of Ethernet Module

Display access control setting page of ethernet module on HMI, as shown below. The meaning of each option is as follows, as shown in the following table, please refer to the PLC network Ethernet communication module operating instructions manual

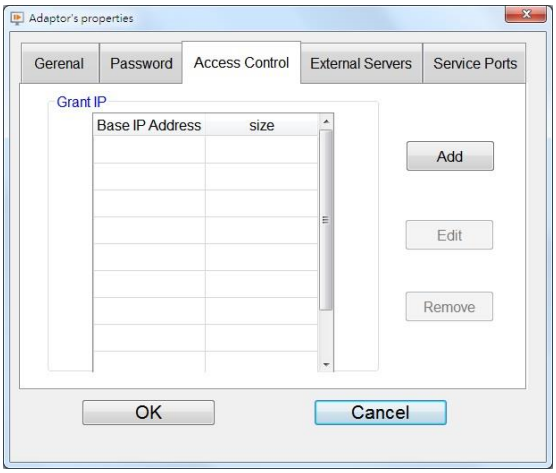


Figure 528 Access Control setting page of ethernet module

Table 280 properties of Access Setting Control page of ethernet module

Options	Description
【Base IP Address】	The smallest IP Address.

【Size】	Continuous quantity.
【Add】	Add an Authorization information.
【Edit】	Edit an Authorization information
【Remove】	Delete an Authorization information

27.4.5 External Severs Setting Page of Ethernet Module

External Severs Setting Page of Ethernet Module on HMI, as shown below.
The meaning of each option is as follows, as shown in the following table, please refer to the PLC network Ethernet communication module operating instructions manual

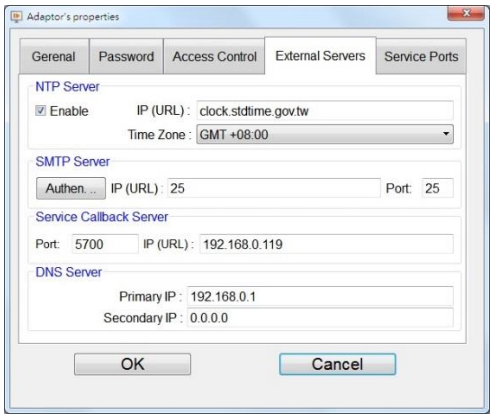


Figure 529 External Severs setting page of ethernet module

Table 281 properties of External Severs setting page of ethernet module

Options	Description
【NTP Server】	Network automation calibration time function. 【Enable】 Enable Network automation calibration time function. 【IP(URL)】 URL of NTP Sever 【Time Zone】 Location of the Time Zone
【SMTP Server】	Function of sending Email 【IP(URL)】 URL of sending email sever.
【Service CallBack	Automatic maintenance callback function.

Server】	【Port】 Maintenance Center port number. 【IP(URL)】 Maintenance Center network address or domain name.
【DNS Server】	Domain name sever 【Primary IP】 Primary DNS Server. 【Secondary IP】 Secondary DNS Server.

27.4.6 Service Port Setting Page of Ethernet Module

Display service port setting page of ethernet module on HMI, as shown below. The meaning of each option is as follows, as shown in the following table, please refer to the PLC network Ethernet communication module operating instructions manual

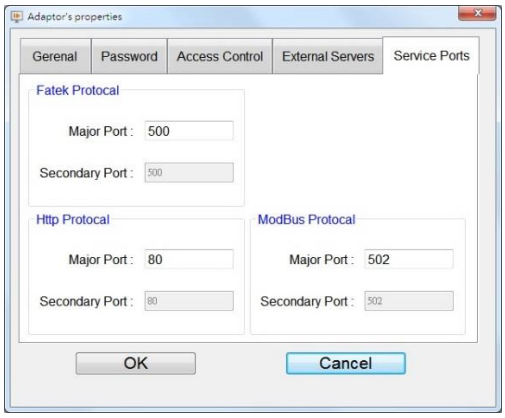


Figure 530 service port setting page of ethernet module

Table 282 properties of service port setting page of ethernet module

Option	Description
【MERITEK Protocol】	MERITEK communication protocol service port NO.
【Http Protocol】	Http communication protocol service port NO.
【Modbus Protocol】	Modbus communication protocol service port NO.

27.5 Control PLC run/stop from HMI

This chapter will introduce how to control the PLC run or stop operation from HMI.

This function only supports for the MERITEK PLC, it cannot use without MERITEK PLC in the 【Link】.

27.5.1 Setting the PLC run/stop function

Step1: drag a【Function Switch】from【Toolbox】【Lamp/Switch】to the screen.

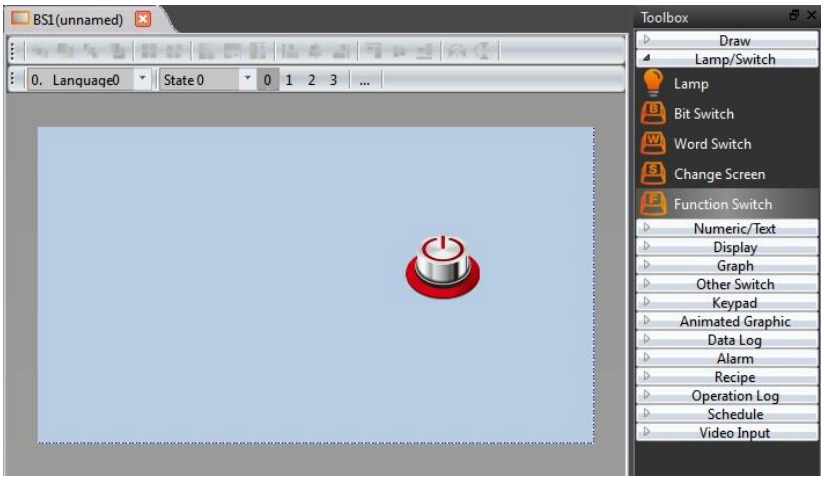


Figure 531 drag a【Function Switch】to the screen

Step2: double click the object to enter the properties setting page, select the【PLC: Run PLC】or【PLC: Stop PLC】option.

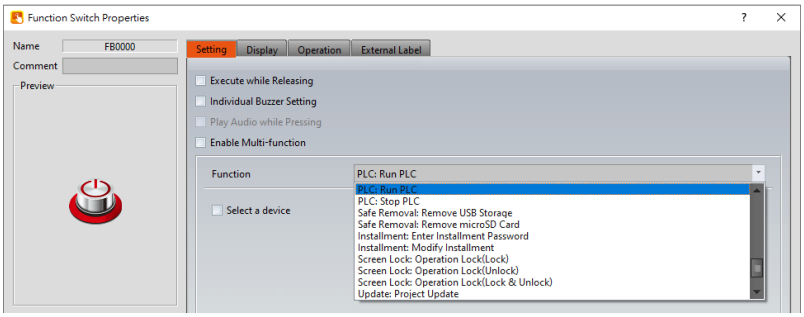


Figure 532 select run/stop PLC function

【Select a device】can use to directly control the specified PLC. If this option is not selected, then it will show the MERITEK PLC link list to let the user choose which PLC to control.

27.5.2 PLC run/stop operation steps

If didn't set the【Select a device】, then it will appear the following screen when pressing the button.



Figure 533 select the PLC device

Click the list and select the PLC to control.

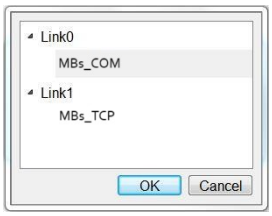


Figure 534 select the target PLC

Note: If using the PLC M1912 to stop the PLC, then cannot use this function switch to reboot the PLC.

27.6 Enable and Disable PLC from HMI

When the user wants to adjust the on-site equipment, but is not convenient to use the computer, you can plan the enabling and disabling points in the project in advance, so as to avoid false actions during the test. The following describes how to control from the HMI.

As shown in the figure below, when Y0 is disabled, we can't get the signal from Y0 if we trigger M1.

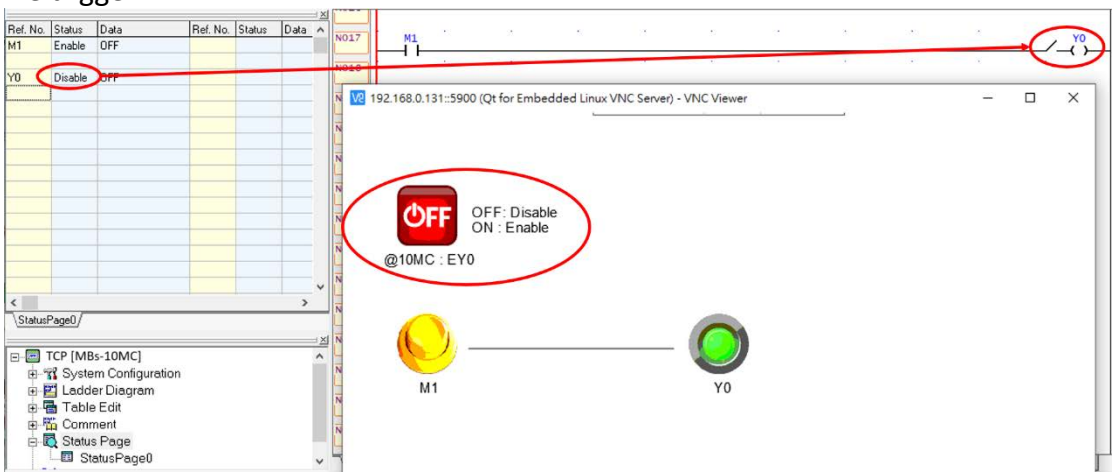


Figure 535 Disable illustration

On the contrary, when enabled, the output can get the signal

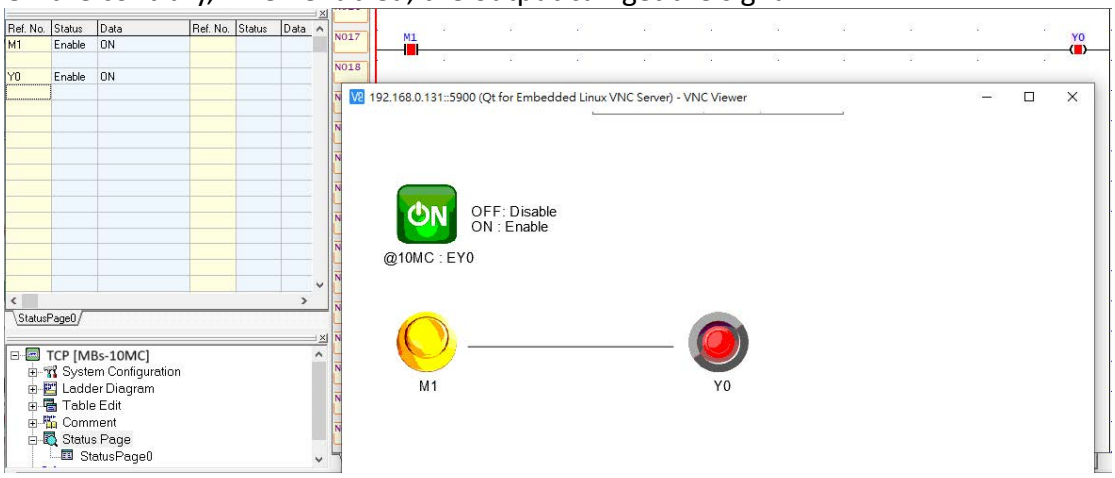


Figure 536 Enable illustration

The controlled address only supports X, Y, M, and S. It is supported the type start with E in the bit switch【Input Address】. The example is written as: @0:EY0

28. User-defined Protocol

【User-defined Protocol】function is the consulation mainly to provide the designer to connect the device according they need, define your own communication code, then communicate with the device, read or write to the device, generally can be used in simple communication connections,or in the case of a driver that is not currently supported in the software link. In addition, this【User-defined Protocol】function provide designers simple interface definition, no need to write a huge program, making it easier for designers to use, to achieve the purpose of communication with its equipment.

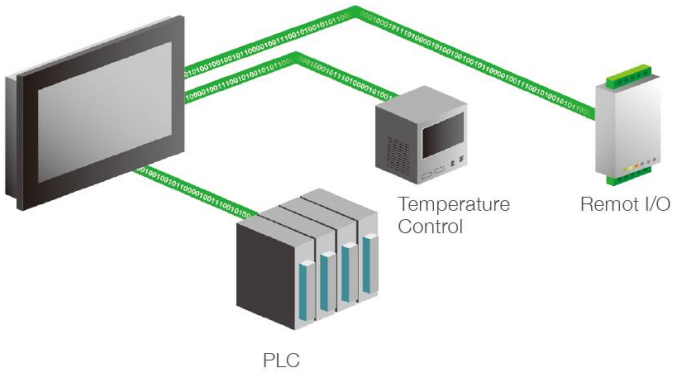


Figure 537 user-defined protocol illustration

28.1 【User-defined Protocol】Interface

Description

This section describes the interface of the【User-defined Protocol】function that includes options and settings

【User-defined Protocol】function can add a link from【Project Explorer】【Link】, choose【User-defined Protocol】at【Manufacturer】, and choose【User-defined Protocol】at【Product Series】, as shown below.

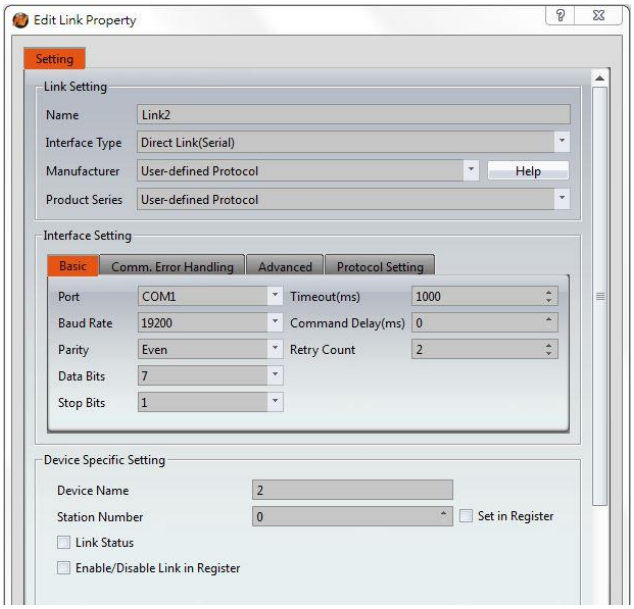


Figure 538 choose【User-defined protocol】

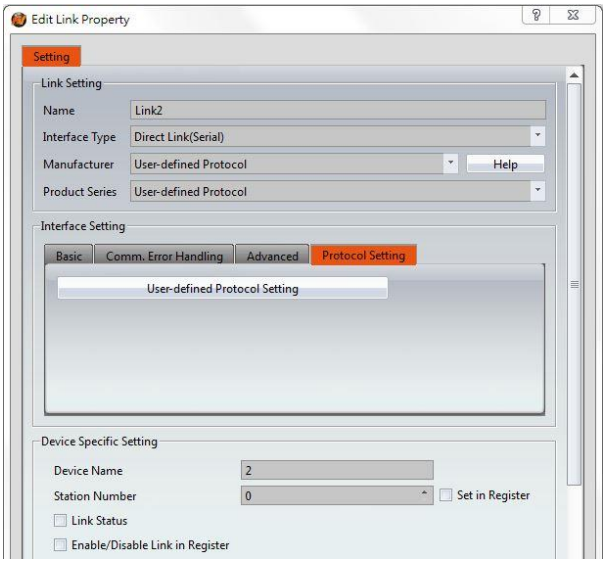


Figure 539 choose【Protocol Setting】

Then choose【User-defined Protocol Setting】, you can enter the instruction list set by User-defined Protocol Setting, as shown below, which set the meaning of the options, as shown in the table below.

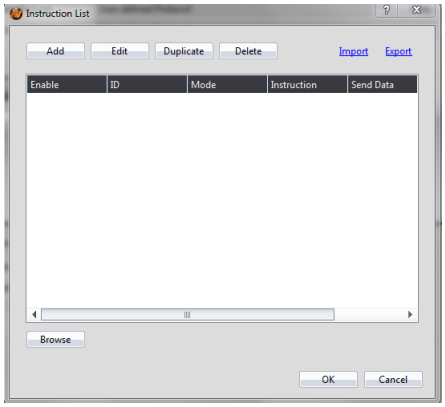


Figure 540【User-defined Protocol】instruction list

Table 283 properties of【User-defined Protocol】instruction list settings

Properties	Description
【Add】	Add a communication instruction
【Edit】	Edit the communication instruction
【Duplicate】	Duplicate the communication instruction
【Delete】	Delete the communication instruction
【Import】	Import all the instructions from CSV file
【Export】	Export all the instructions to CSV file
【Browse】	Display all the instructions in HEX
【Enable】	You can select the enable instruction
【ID】	ID number of ID
【Mode】	Display instructions on read and write mode.
【Instruction】	Display the contents of instructions
【Send Data】	Display the instructions are read or write information
【Return Info.】	Display information such as the return data address.

28.1.1 Protocol Setting

Click【Add】can add a new communication instruction, enter the main edit interface of user-defined protocol, as shown below, each meaning of the setting, as the table shown below.

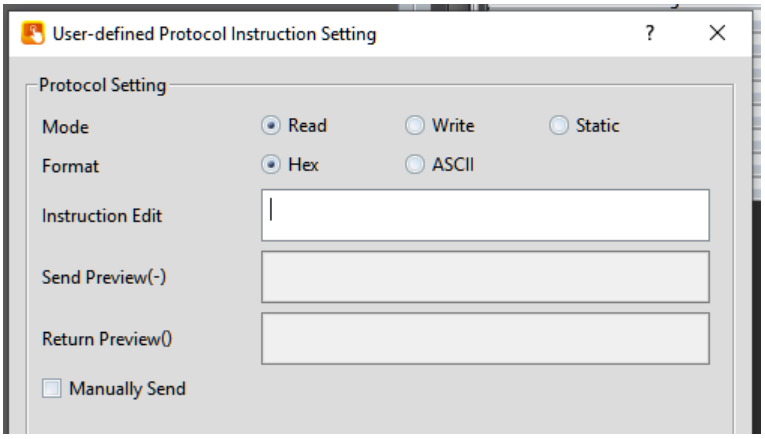


Figure 541【User-defined Protocol】main operation interface

Table 284 properties of【User-defined Protocol】main operation interface settings

Options	Description
【Mode】	【Read】means to read instruction 【Write】means to write instruction 【Static】to send a fixed content data, enabling this will force the activation of 【Manually Send】, When triggered, it will send static data.
【Format】	You can choose【Hex】or【ASCII】two kinds of formats
【Instrution Edit】	Edit the instruction you want to send. When the format is in HEX, can only enter 0-9/a-f/A-F, when you click on the other location in the screen will be automatically arranged into two numbers / letters for a group, and lowercase are converted into capital. If the format is ASCII, there is no such restriction.
【Send Preview】	Preview window of sending instruction
【Return Preview】	Preview window of returning instruction
【Protocol Setting】	Manually send the instruction, when the Bit is set to On, it is in a waiting state. It will send when the command content changes, and will automatically reset after sending.

28.1.2 Instruction

Below the 【User-defined Protocol Setting】dialog, you can choose【Instruction】paging, as shown belown, each meaning of the setting, as the table shown below.

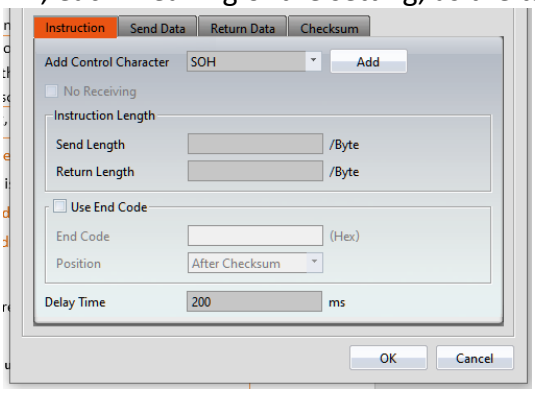


Figure 542【User-defined Protocol Setting】instruction paging

Table 285 properties of【User-defined Protocol Setting】instruction paging setting

Options	Description
【Add Control Character】	You can choose special character add into instruction edit dialog,
【No Receiving】	Set whether or not to return the instructions, this function will appear when the mode set 【Write】.
【Send Length】	Set the length of the return instruction request, in bytes.
【Return Length】	Set the length of the received return data. Reception of the end code will stop the reception of return messages.
【Use End Code】	Checking this option means using the end code to determine the end position of the return message. Once checked, 【Return Length】will change to 【Max Return Length】. If the termination character is not received, the reception will stop at the length set in this field. 【End code】the end code to be used, must be filled in hexadecimal format, for example, 0D 0A. 【Position】the selected end code will force the checksum position to be set to the end. The sequence of checksum and termination character settings is as follows: 【After Checksum】reception of the return message stops upon receiving the end code, and the remaining message is not received. 【Before Checksum】after receiving the end code

	of the return message, a checksum will be received, and the remaining message is not received.
【Delay Time】	After sending the set of instruction, delay how many times to send the next instruction, the amount of reading and writing will affect this time.

28.1.3 Send Data

Below the 【User-defined Protocol Setting】dialog, you can choose【Send Data】paging, as shown belown, each meaning of the setting, as the table shown below.

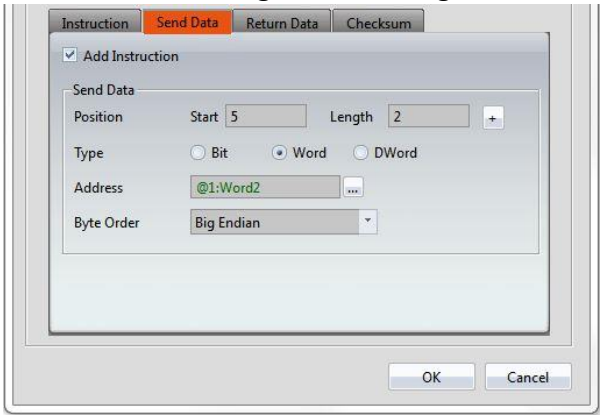


Figure 543【User-defined Protocol Setting】send data paging

Table 286 properties of【User-defined Protocol Setting】send data paging setting

Options	Description
【Add Instruction】	When【Mode】choose in【Read】, it can be checked. Let the user set the command to variable.
【Position】	It can set the position of sending data in the sending instruction, and set it through【Start】and【Length】, for easy to use, you also can set start position and length
【Type】	Set the type of writing, including bit, word, double word.
【Address】	When【Mode】is【Read】or【Write】, the command sent includes the storage address of the variable. When【Manually Send】 is not checked, it will be sent according to the 【Delay Time】. When 【Manually Send】 is checked and the Bit is On, data will only be sent when there is a change. When【Mode】is【Static】or【Write】, this function annot be used here. **Note : PLC addresses cannot be used here; only internal HMI addresses or addresses specific to the driver can be used.**

【Byte Order】

【Bit】

When【Type】is【Bit】,

Bit(Assume that the starting position is Bit0)

Assume Data Length = 5, then will insert 5 bytes, except that the first Byte depends on Bit0, the remaining Bytes are 0.

Ex.

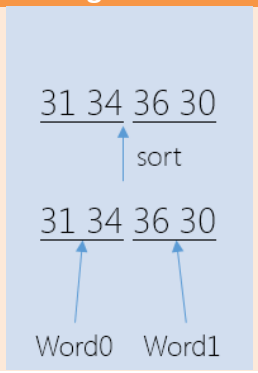
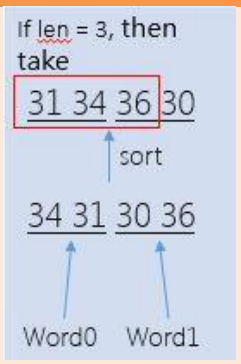
Append $\begin{cases} 01\ 00\ 00\ 00\ 00 & if\ Bit0 = true \\ 00\ 00\ 00\ 00\ 00 & if\ Bit0 = false \end{cases}$

【Byte Order】

When【Type】is【Word】or【DWord】, can choose【Big Endian】or【Little Endian】to sort.

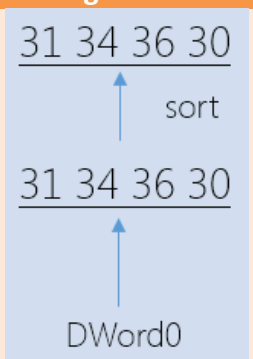
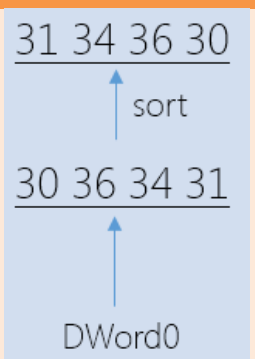
Word

With 2 Bytes as a unit

Big Endian	Little Endian
	

DWord

With 4 Bytes as a unit

Big Endian	Little Endian
	

28.1.4 Return Data

Below the【User-defined Protocol Setting】dialog you can choose【Return Data】paging, as shown belown, each meaning of the setting, as the table shown below.

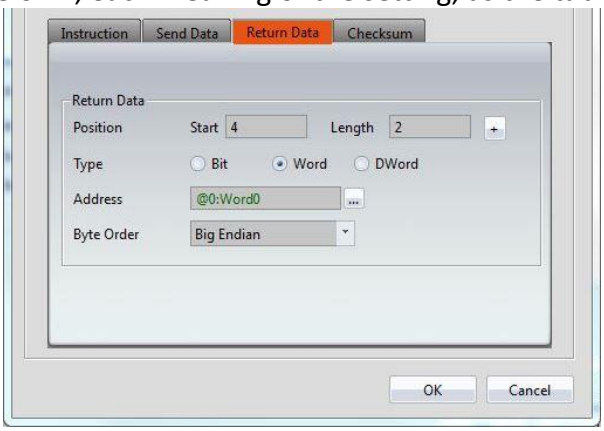
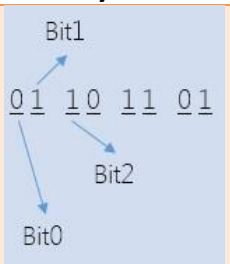


Figure 544【User-defined Protocol Setting】returndata paging

Table 287 properties of【User-defined Protocol Setting】return data paging setting

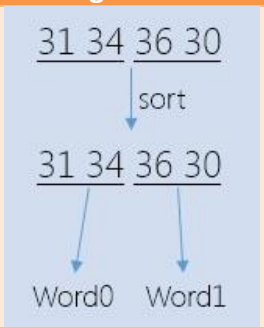
Option	Description
【Position】	Set the position of the received return data within the command using 【Start】and 【Length】. In the 【Instruction】, you need to set the 【Return Length】.
【Type】	Set the type of store, include bit, word, double word
【Address】	When【Mode】is【Read】or【Write】, the command sent includes the storage address of the variable. When【Mode】is【Static】or【Write】, this function annot be used here. **Note : PLC addresses cannot be used here; only internal HMI addresses or addresses specific to the driver can be used.**
【Byte Order】	【Bit】 When【Type】is【Bit】,

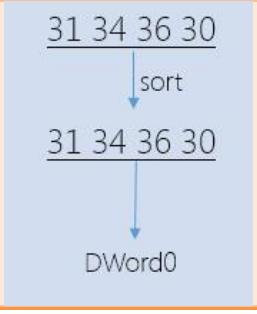
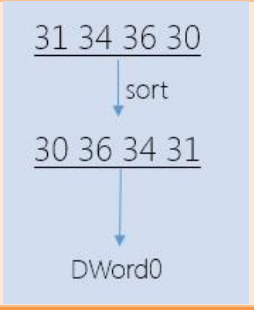
Bit	
1 Byte for 1 Bit	1 Byte for 2 Bits
Turn each byte to one bit	**Turn each byte to 2 bits**
	

【Byte Order】

When【Type】is【Word】or【DWord】, can choose【Big Endian】or【Little Endian】to sort.

Difference shown as below

Word	
Big Endian	Little Endian
	

DWord	
Big Endian	Little Endian
	

28.1.5 Checksum

Below the【User-defined Protocol Setting】dialog, you can choose【Checksum】paging, as shown belown, each meaning of the setting, as the table shown below.

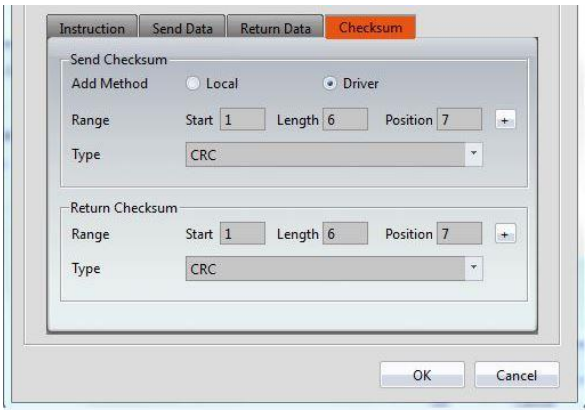
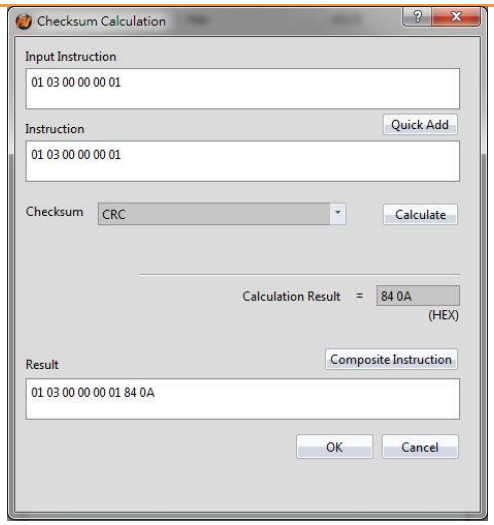


Figure 545【User-defined Protocol Setting】checksum paging

Table 288 properties of【User-defined Protocol Setting】checksum paging setting

Option	Description
【Checksum】	Provides an automatic calculation of the checksum.
【Send Checksum】	Under add method of【Send Instruction】, provides【Local】and【Driver】two methods. 【Local】 When choose【Local】, indicates that the checksum needs to be entered manually in the 【Send Instruction】, the following will have a 【Setting】option to facilitate the use of designers to calculate. 【Setting】 It will appear【Check Calculation】dialog after click setting, as shown below



【Input Instruction】

Data of the【Instruction Edit】on the main operation interface.

【Quick Add】

Click the botton then will copy the value form【Input Instruction】to the【Instruction】field

【Instruction】

An instruction of using to calculate checksum

【Checksum】

The way to calculate checksum, includes none, CRC, SUM(BYTE), SUM(WORD), XOR, AND, OR, LRC, SUM Complement, SUM Radix-Minus-One Complement, etc.

【Calculate】

Calculate checksum，the results will display on【Calculate Result】。

【Calculate Result】

Except LRC, other instructions converted to HEX format to be calculated.

【Composite Instruction】

Combine the calculation result and the origin instruction, the value will show up in【Result】

【OK】

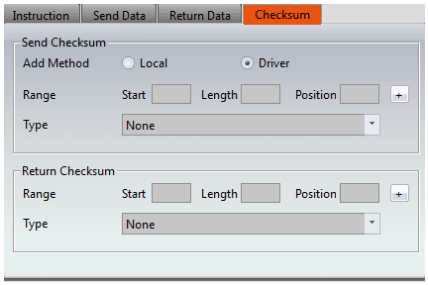
Store the value of【Result】to the data of the main operation interface【Instruction Edit】

【Cancel】

Leave this dialog, it won't change anything.

【Driver】

When choose【Driver】, indicates that the checksum will be automactically calculated and generated by the driver, the system will calculate checksum from【Start】, bytes of【Length】checksum, and insert it into【Position】,as shown below.



【Range】

set the range of checksum calculation.

【Start】

Set the position where the checksum starts to calculate

【Length】

Set the length of the checksum calculation, in bytes

【Position】

Set the position where the checksum calculation result is inserted

【Automatically fill in】

For easy to use, you can also select the starting position and length in the【Send Preview】window, when you press the【+】button next to【Length】, you can fill in the【Start】and【Length】fields automatically.

	【Type】 Choose the type of checksum calculation, includes none, CRC, SUM(BYTE), SUM(WORD), XOR, AND, OR, LRC, SUM Complement, SUM Radix-Minus-One Complement, etc.
【Return Checksum】	When it has return instruction, you can set whether to verify the return data in the checksum. 【Range】 set the range of checksum calculation. 【Start】 Set the position where the checksum starts to calculate. 【Length】 Set the length of the checksum calculation, in bytes. 【Position】 Set the position where the checksum calculation result is inserted 【Automatically fill in】 For easy to use, you can also select the starting position and length in the【Return Preview】window, when you press the【+】button next to【Length】, you can fill in the【Start】and【Length】fields automatically. 【Type】 Choose the type of checksum calculation, includes none, CRC, SUM(BYTE), SUM(WORD), XOR, AND, OR, LRC, SUM Complement, SUM Radix-Minus-One Complement, etc.

28.2 【User-defined Protocol】Application examples

This section explains how to apply the【User-defined Protocol】function, communicate with the Modbus device, and read and write Modbus address data For example, HMI connected with MERITEK MBs PLC through COM1, and connected with Modbus of station no.1 through COM4 of user-defined protocol, then read and write

the data of 40001 address, as shown below, setting steps as follows.

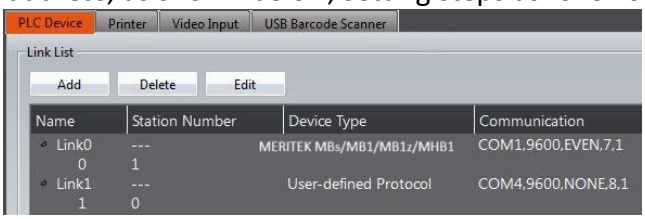


Figure 546 HMI COM1 and COM4 connection page

Step 1: Build a new project and add link 0, choose Meritek MBs/MB1/MB1z/MHB1 driver, Please refer to other relevant sections for this section.

Step 2: Add link 1, interface type select【direct link(serial)】, manufacturer select【User-define Protocol】, product series select【User-define Protocol】, because the example use COM4 to connect with Modbus, the port selection【COM4】, 【Baud Rate】, 【None】, 【Data Bits】, 【Stop Bits】and other communication parameters need to set the same and Modbus devices, this example is 9600, None, 8,1, as shown below.

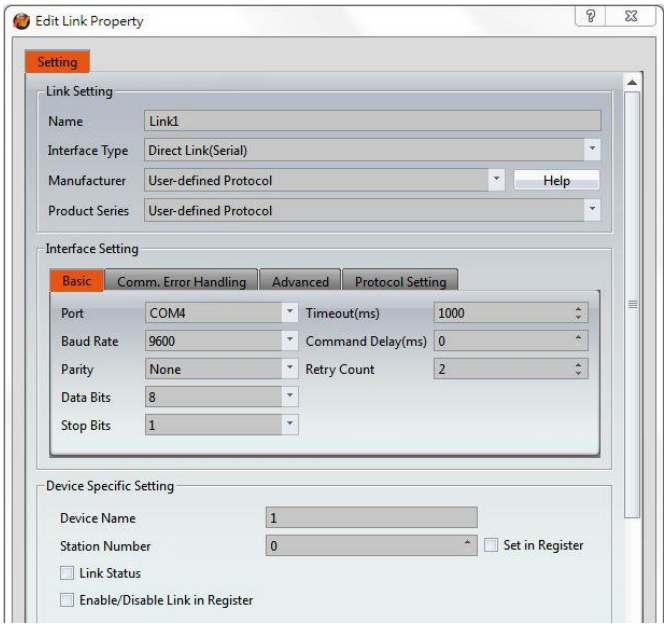


Figure 547 set User-define protocol communication format

Step 3: Switch to【Protocol Setting】paging, click【User-defined Protocol Setting】, will appear【Instruction List】dialog, as shown below.

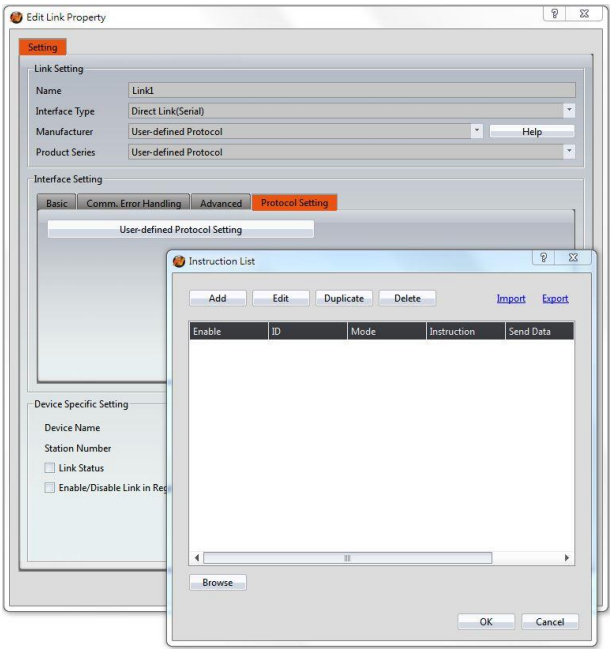


Figure 548【Instruction List】dialog

Step 4: Click【Add】, will appear【User-defined Protocol Setting】dialog, select【Mode】as【Read】, select【Format】as【Hex】,as shown below.

Step 5: This example wants to read the Modbus device of station number 1, please enter 01 03 00 00 00 01 in the instruction edit field, as shown below, for more detail about Modbus please refer to the protocol information provided by the Modbus Association. Enter 7 in【Return Length】field.

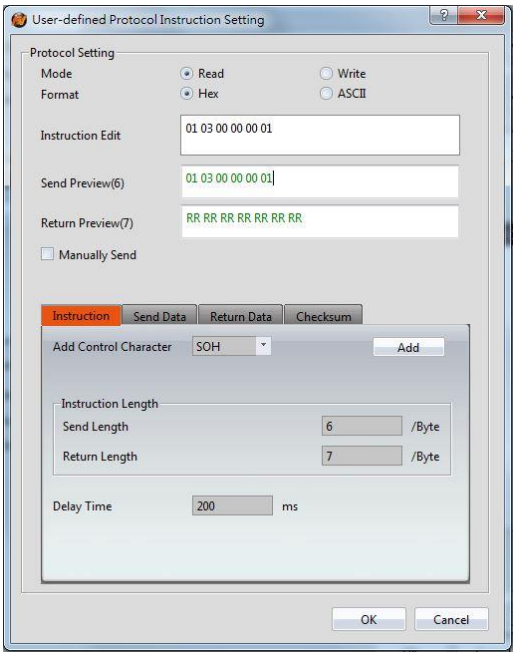


Figure 549【User-defined Protocol Setting】dialog

Step 6: Switch to【Checksum】paging, as shown below.

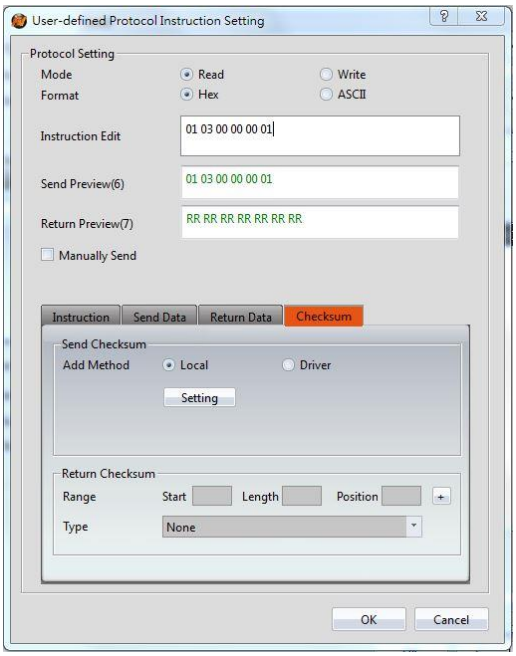


Figure 550【Checksum】paging dialog

Step 7: Click【Setting】button, will show up checksum calculation dialog, the data in【Input Instruction】field will display the same as in【Instruction Edit】, click【Quick Add】button will copy the field from【Input Instruction】to【Instruction】,【Checksum】select【CRC】, then press【Calculate】button, the【Calculate Result】field will display 84 0A, press【Composite Instruction】button, as shown below, for more detail about Modbus please refer to the protocol information provided by the Modbus Association.

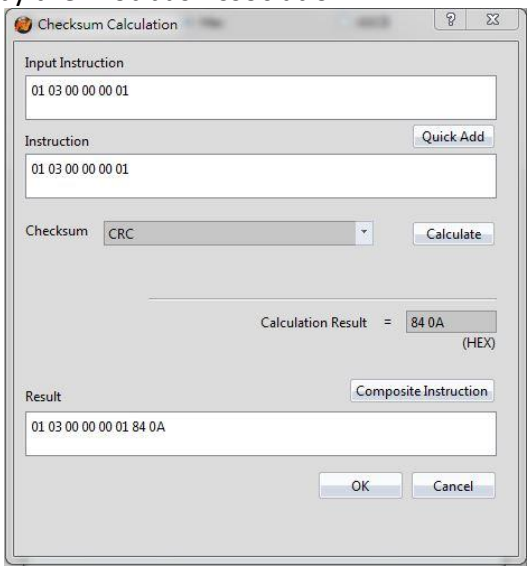


Figure 551【Checksum Calculation】dialog

Step 8: Click【OK】button, will copy from【Composite Instruction】to【Instruction Edit】, and fill 1 in the【Start】of【Return Checksum】, fill 5 in【Length】, select crc in【Type】, as shown below.

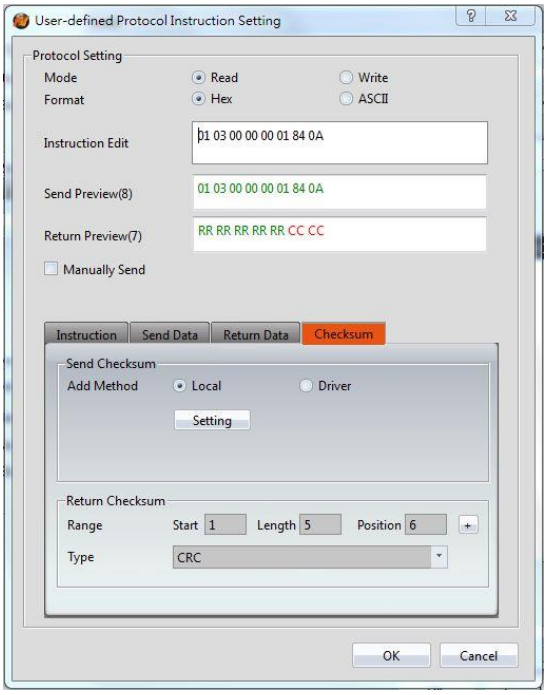


Figure 552 composite result dialog

Step 9: Switch to【Return Data】paging, fill 4 in【Start Position】of【Return Data】, fill 2 in【Length】,【Type】select【Word】,【Address】set to @1:Word0,【Bite Order】set to Big Endian, as shown below.

Note: Addresses can only use the address provided by the user-defined protocol driver

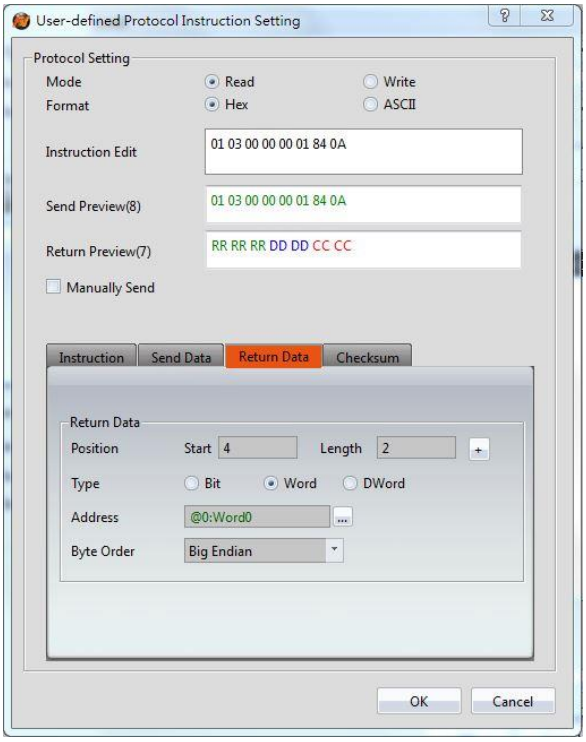


Figure 553 return data dialog

Step 10: Planning a new【Numeric Input/Display】object, 【Monitor Adderss】set as @1:Word0, as shown below,you can read the station number 1 Modbus device 40001 address value.

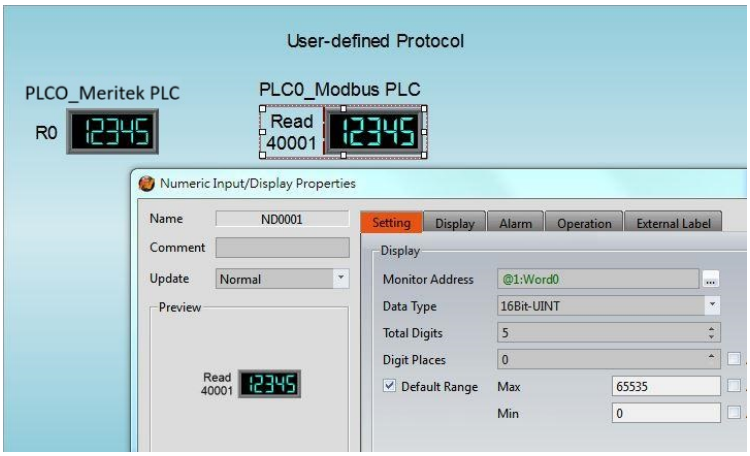


Figure 554 planning Numeric Input/Display object

The above is an example for reading, for writing the following steps,

Step 11: in【Instruction List】dialog, click【Add】, will appear【User-defined Protocol Setting】dialog, 【Mode】selected as【Write】, 【Format】selected as【HEX】, as shown below.

Step 12: This example wants to write the Modbus device of station number 1, please enter 01 06 00 00 in the instruction edit field, as shown below, for more detail about Modbus please refer to the protocol information provided by the Modbus

Association. Enter 8 in【Return Length】field.

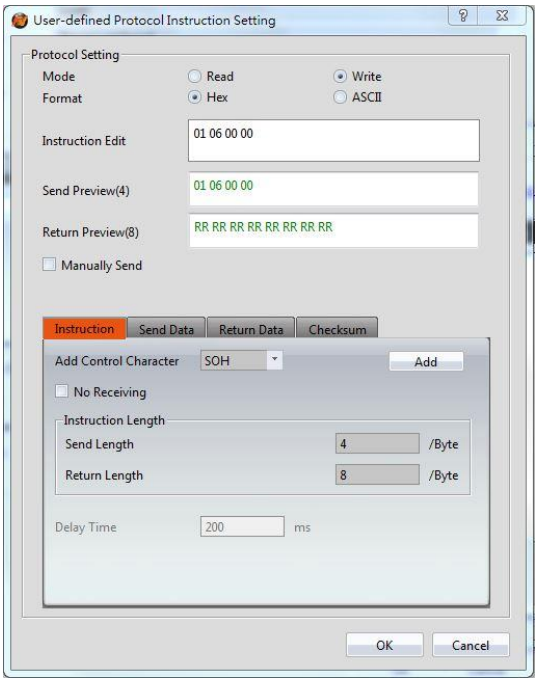


Figure 555【User-defined Protocol Setting】dialog

Step 13: Switch to【Send Data】paging, fill 5 in【Start】of【Send Data】, fill 2 in【Length】,【Type】select【Word】,【Address】set to @1:Word2,【Bite Order】set to Big Endian, as shown below.

Note: Addresses can only use the address provided by the user-defined protocol driver

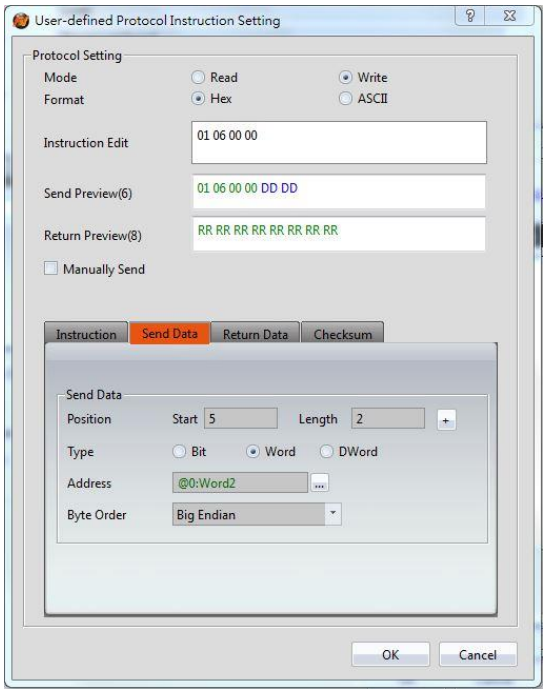


Figure 556 switch to【Data】paging dialog

Step 14: Switch to【Checksum】paging,【Send Checksum】【Add Method】choose【Driver】, fill 1 in the【Start】, fll 6in【Length】, select crc in【Type】, fill 1 in the【Start】of【Return Checksum】, fill 6 in【Length】, select crc in【Type】, as shown below.

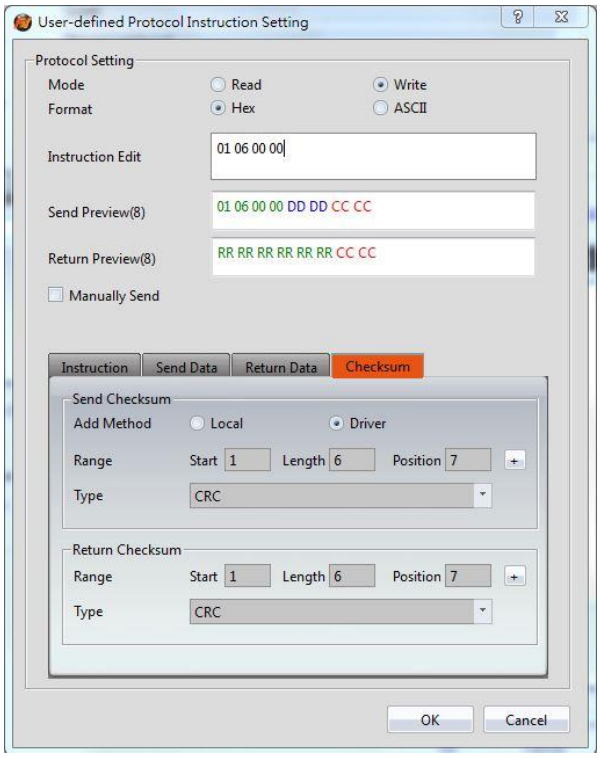


Figure 557 switch to【Checksum】paging dialog

Step 15: Planning a new【Numeric Input/Display】object,【Monitor Adderss】set as @1:Word2, as shown below,you can write the station number 1 Modbus device 40001 address value.

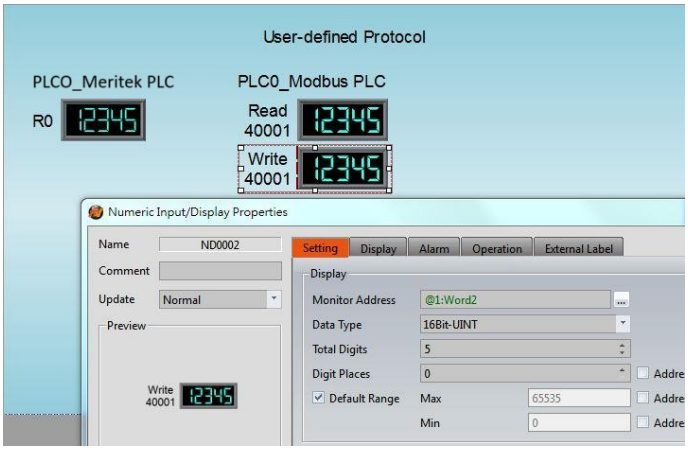


Figure 558 planning Numeric Input/Display object

28.3 【User-defined Protocol】use Script Application Example

This section explains how to use the【User-defined Protocol】function of the script, communicate with the Modbus device, and read the data of Modbus address, for example, HMI connect with MERITEK MBs PLC through COM1, then connect with Modbus device of station number 1 through COM4 by using user-defined protocol, read the data of address 40001 through the script, as shown below.

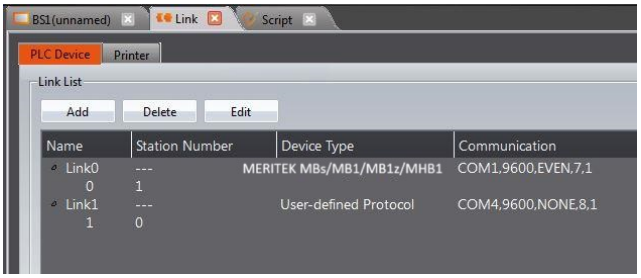


Figure 559 HMI COM1 and COM4 connection page

28.3.1 Communication Instructions in Script

Use the function【User-defined Protocol】in script, will mainly use the【io write and read】and【Checksum】instruction, as shown below, each meaning of the setting as shown below, as the table below.

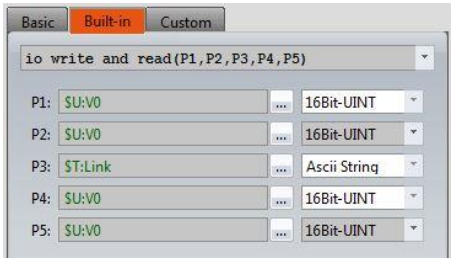


Figure 560 communication instruction in script

Table 289 properties of communication instruction in script settings

Options	Io write and read insruction description
【P1】	The start address to send instruction.
【P2】	Send the length of the instruction.
【P3】	Device name.
【P4】	The start address to return instruction.
【P5】	Return the length of the instruction.

<table>
<tr><th>Options</th><th>Checksum instrunction description</th></tr>
<tr><td>【P1】</td><td>Calculation method.
<table>
<tr><th>Value is</th><th>Calculation method description</th></tr>
<tr><td>1</td><td>CRC</td></tr>
<tr><td>2</td><td>SUM(BYTE)</td></tr>
<tr><td>3</td><td>SUM (WORD)</td></tr>
<tr><td>4</td><td>XOR</td></tr>
<tr><td>5</td><td>AND</td></tr>
<tr><td>6</td><td>OR</td></tr>
<tr><td>7</td><td>LRC</td></tr>
<tr><td>8</td><td>SUM Complement</td></tr>
<tr><td>9</td><td>SUM Radix-Minus-One Complement</td></tr>
</table></td></tr>
<tr><td>【P2】</td><td>Calculate start address.</td></tr>
<tr><td>【P3】</td><td>Calculate words.</td></tr>
<tr><td>【P4】</td><td>Result store start address, starting with 1 or 2 consecutive words, depending on the calculation method</td></tr>
</table>

28.3.2 Communication Instruction in Script Application Example

Read the data of address 40001 of Modbus device through script, setting steps as follow.

Step 1: Build a new project and build link 0, select Meritek MBs/MB1/MB1z/MHB1 driver, build link 1, select【User-define Protocol】driver, about the communication parameter settings are same as Modbus device, please refer to other relevant sections for this section.

Step 2: Build 2 tags at Tag library, as shown below.

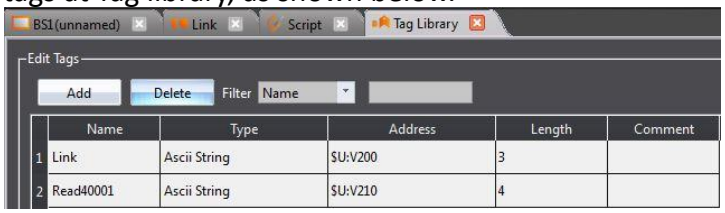


Figure 561 communication instruction in script

Step 3: Write script, as shown below.

- First row specifies the name of the device to be read
- Second row is to set the instruction to be send.
- Third row is to turn ASCII string into INT

- Fourth row is to calculate checksum
- Fifth row is to copy the checksum to send instruction
- Sixth row is to copy the checksum to send instruction
- Seventh row is to excute io_write_and_read instruction, send out the send instruction, and read the return data stored in $ U: V240 start of the seven consecutive addresses
- eighth to eleventh rows are convert read back data and store it in $ U: V300

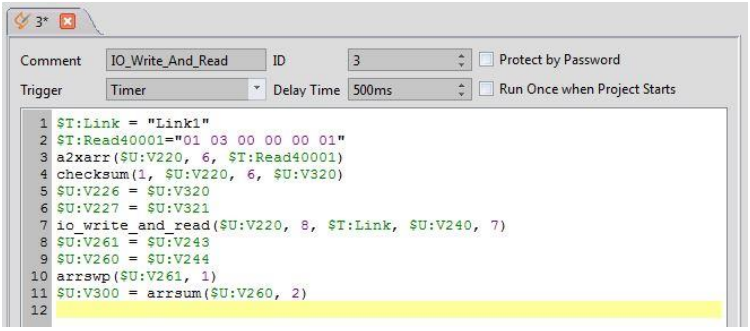


Figure 562 Read the 40001 address data script for the Modbus device

Step 4: Planning a new【Numeric Input/Display】object,【Monitor Adderss】set as $U:V300, as shown below, you can read the station number 1 Modbus device 40001 address value.

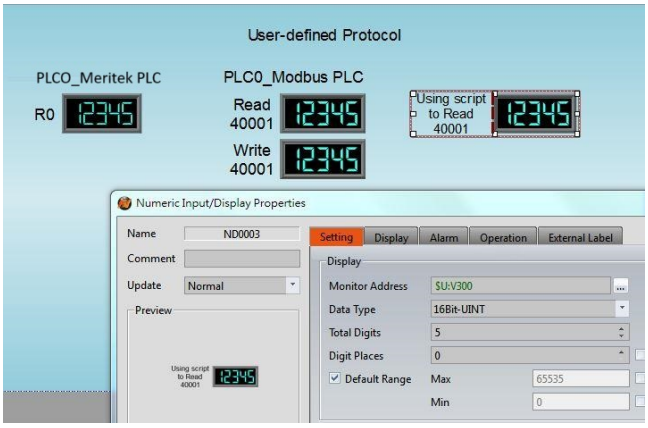


Figure 563 Planning a new【Numeric Input/Display】object

29. Multi-Link

【Multi-Link】function is to build multi-link master on MERITEK HMI, other multi-link slaves on HMI can communicate with multi-link master, communicate with the 【Destination Link】device which connect to the multi-link master. That is, the multi-link master communicate with【Destination Link】device it link with, multi-link slave connect with multi-link master, and get the data they need to display or setting through multi-link master. On the use of a multi-link master corresponding to a link to the【Destination Link】device; According the way to communicate with multi-link slave, multi-link master fall into two parts,【Multi-Link Master(Ethernet)】and 【Multi-Link Master(Serial)】;【Multi-Link Master(Ethernet)】support【IP Address Filter】and【Operation Lock】functions

Specification and setting and other related information of the multi-link master please refer to the following.

Table 290 multi-link support number od slaves

Options	Multi-Link Master (Ethernet)	Multi-Link Master (Serial)
Support the number of slaves	32	8
Others	support【IP Address Filter】function support【Operation Lock】function	

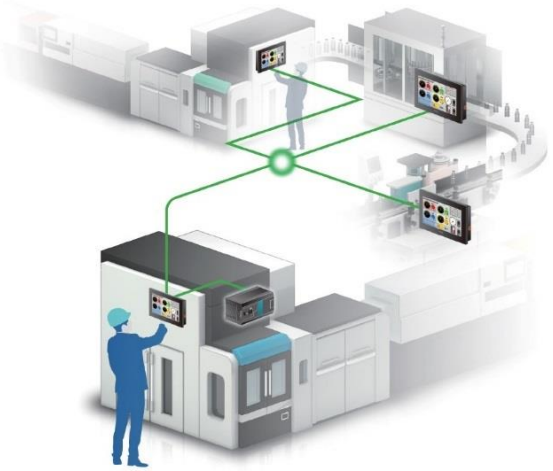


Figure 564 multi-link application diagram

29.1 【Multi-Link】 Setting

29.1.1 Serial

【Multi-Link】function support serial port to communicate with each other between master and slave. The following sections describe the settings for the master and slave serial ports.

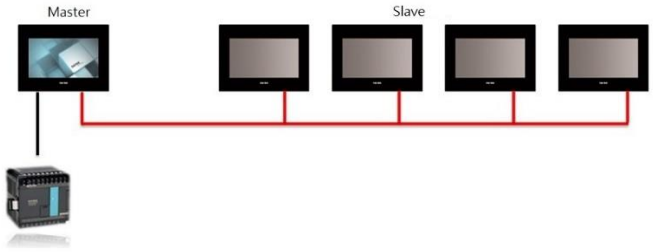


Figure 565 Multi-Link(Serial) connection diagram

Note : The connection between master and slave must be 422/485 in order to support more than 2 slaves. If 232 only support one

29.1.1.1 Multi-Link Master(Serial) setting

The serial port setting of the multi-link master, need to select【Interface Type】【Multi-Link Master(Serial)】in【New Link Property】dialog, as shown below, the setting meaning are as follows.

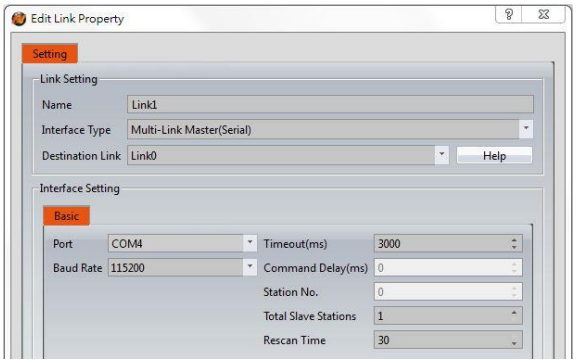


Figure 566【Multi-Link Master(Serial)】setting page

Table 291 properties of【Multi-Link Master(Serial)】

Options	Description
【Link Setting】	【Name】 Name of multi-link master 【Interface Type】 Interface Type of multi-link master 【Destination Link】 The destination link for the multi-link master, that is, the name of the PLC device to which the multi-link master is

	connected
【Interface Setting】	【Port】 The port that multi-link master connect with, this port needs to connect with slave. 【Baud Rate】 Baud rate of multi-link master port, baud rate between multi-link master and slave needs to be the same, only support 38400, 57600 and 115200, etc. 【Timeout(ms)】 The waiting time before the connection is terminated when the communication between the multi-link master and slave is abnormal. 【Total Stations】 Number of slaves supported by multi-link master. 【Rescan Time】 Multi-link master excute scanning the interval time of online slaves.

29.1.1.2 Multi-Link Slave(Serial) Setting

The serial port setting of the multi-link slave, need to select【Interface Type】【Multi-Link Slave(Serial)】in【New Link Property】dialog, as shown below, the setting meaning are as follows.

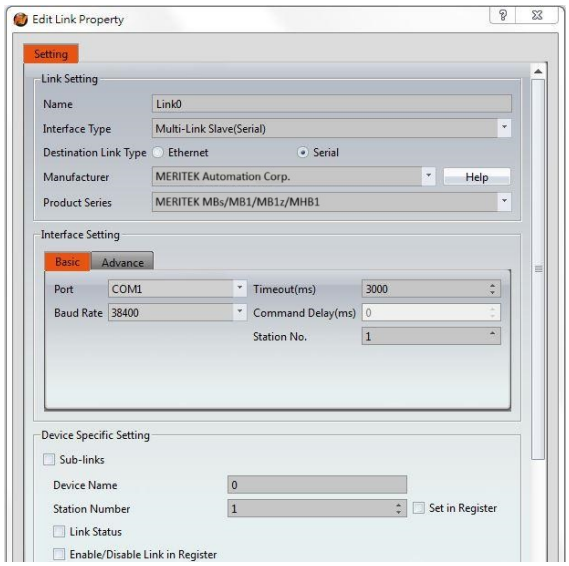


Figure 567【Multi-Link Slave(Serial)】setting page

Table 292 properties of【Multi-Link Slave(Serial)】

Options	Description
【Link Setting】	【Name】 Name of multi-link slave 【Interface Type】 Interface Type of multi-link slave 【Destination Link Type】 The destination link type of multi-link slave corresponding to the multi-link master 【Manufacturer】 The destination link manufacturer of multi-link slave corresponding to the multi-link master 【Product Series】 The destination link product series of multi-link slave corresponding to the multi-link master
【Interface Setting】	【Port】 The port that multi-link slave connect with, this port needs to connect with master. 【Baud Rate】 Baud rate of multi-link master port, baud rate between multi-link master and slave needs to be the same, only support 38400, 57600 and 115200, etc. 【Timeout(ms)】 When a communication error occurs, wait time before terminating the connection and generating an error 【Station No.】 Station No. of multi-link slave.

29.1.2 Ethernet

【Multi-Link】function support ethernet to communicate with each other between master and slave. The following sections describe the settings for the master and slave ethernet.

29.1.2.1 Multi-Link Master(Ethernet) setting

The serial port setting of the multi-link master, need to select【Interface Type】【Multi-Link Master(Ethernet)】in【New Link Property】dialog, as shown below, the setting meaning are as follows.

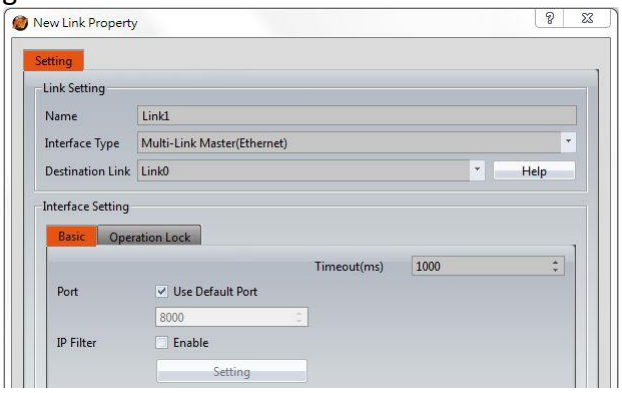
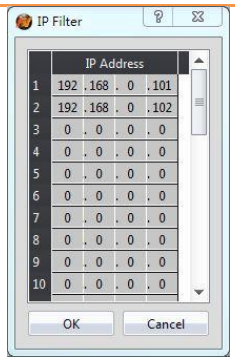


Figure 568【Multi-Link Master(Ethernet)】setting page

Table 293 properties of【Multi-Link Master(Ethernet)】setting

Options	Description
【Link Setting】	【Name】 Name of multi-link master 【Interface Type】 Interface Type of multi-link master 【Destination Link】 The destination link for the multi-link master, that is, the name of the PLC device to which the multi-link master is connected
【Interface Setting】	【Port】 The port that multi-link master connect with, the port setting needs to be the same with the slave; default port is 8000 【IP filter】 When enable, the multi-link master will only allow the IP of the slaves that on the list to connect with the master When enable, click【Setting】will appear dialog as shown below, set the IP Address in【IP Filter】of the slave that you want to connect with.

	 【Timeout(ms)】 The waiting time before the connection is terminated when the communication between the multi-link master and the slave is abnormal.

29.1.2.2 Multi-Link Slave(Ethernet) setting

The serial port setting of the multi-link slave, need to select【Interface Type】【Multi-Link Slave(Ethernet)】in【New Link Property】dialog, as shown below, the setting meaning are as follows.

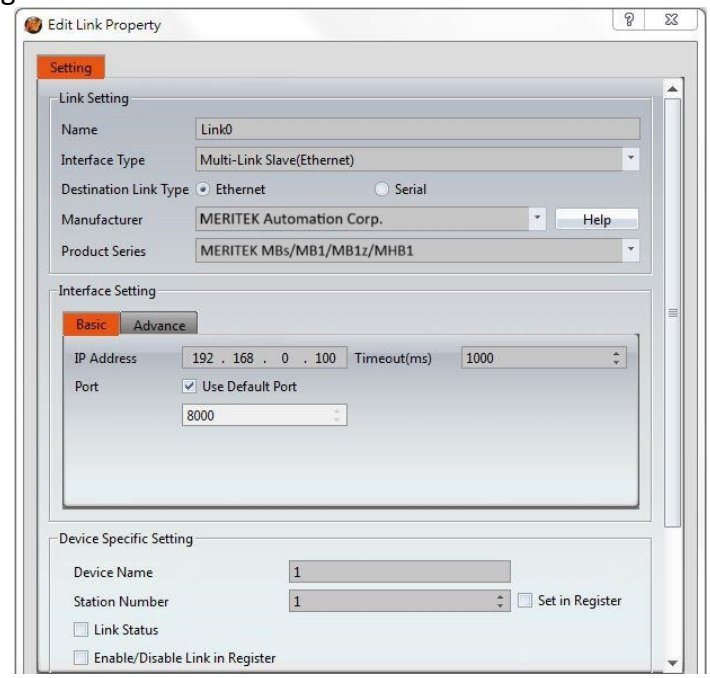


Figure 569【Multi-Link Slave(Ethernet)】setting page

Table 294 properties of【Multi-Link Slave(Ethernet)】setting

Options	Description
【Link Setting】	【Name】 Name of multi-link slave.

	【Interface Type】 Interface Type of multi-link slave. 【Destination Link Type】 The destination link type of multi-link slave corresponding to the multi-link master 【Manufacturer】 The destination link manufacturer of multi-link slave corresponding to the multi-link master 【Product series】 The destination link product series of multi-link slave corresponding to the multi-link master
【Interface Setting】	【IP Address】 IP Address of the slave that want to connect with the master. 【Port】 Multi-link slave connect to the ethernet port of the master 【Timeout(ms)】 When communication error occur, wait time before terminating and the connection and generating an error
【Device specific setting】	The setting of this part needs to be the same with the device setting of the destination link of the multi-link master.

29.2 Operation Lock

When the communication between the master and the slave of the【Multi-Link】function is used,【Operation Lock】function can be used on MERITEK HMI, lock the other unused screen of MERITEK HMI, to prevent the operation from the other MERITEK HMI,to avoid the unexpected situation occurred.

29.2.1 Operation Lock Description

【Operation Lock】function need to be enabled at【Operation Lock】of the【Multi-Link Master(Ethernet)】link setting page, as shown Figure 568 below, there are two conditions to trigger【Operation Lock】, touch the HMI screen and press

the【Function Switch】of the【Operation Lock(Unclock)】or【Operation Lock(Lock&Unclock)】; there are also two ways to unlock, it will automactically unlocked after the countdown is complete and press the【Function Switch】of the【Operation Lock(Unclock)】or【Operation Lock(Lock&Unclock)】, the setting options are as follows:

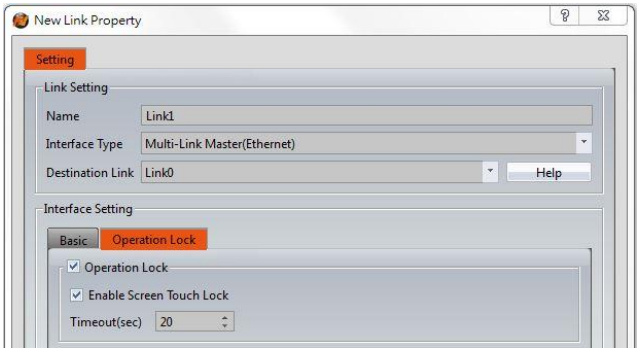


Figure 570 setting page【Operation Lock】

Table 295 properties of【Operation Lock】setting

Options	Description
【Operation Lock】	【Enable Screen Touch Lock】 When enabled, touch the HMI screen to enable【Operation Lock】, the other multi-link HMI will go into the screen lock status. 【Timeout(sec)】 After HMI in screen lock status, if the enable【Operation Lock】HMI doesn't operate exceed the setting time, then the other multi-link HMI in the screen lock status will automactically unlock the screen.

29.3 Multi-Link Eaxmple

This section explains how to build multi-link, and multi-link master communication with MERITEK PLC, communication with slave by using serial, in this example the master use P5070N, the salve use P5043N, setting steps as follows.

Step 1: Build the new project of the master and build link 0, select Meritek MBs/ MB1/MB1z/MHB1 driver, please refer to other relevant sections for this section.

Step 2: Add link 1,【Interface Type】choose multi-link master(serial),【Destination

Link】choose link 0,【Port】choose COM4(COM4 RS485 of the P5070N) and link with the multi-link slave,【Baud Rate】choose 115200,【Total Stations】choose 1 link with a slave, figure as shown below.

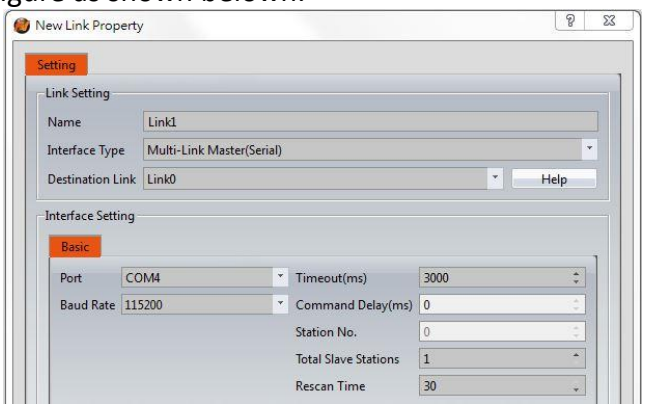


Figure 571 setting page of multi-link master

Step 3: Planning 6【Numeric Input/Display】objects on the master screen,【Monitor Address】set as @0:R0 ~ @0:R5.

Step 4: build a new project of the slave,【Interface Type】choose multi-link slave(serial),【Destination Link Type】choose serial,【Port】choose COM3(COM3 RS485 of the P5043N) and link with the multi-link slave,【Baud Rate】choose 115200,【Total Stations】choose 1, figure as shown below.

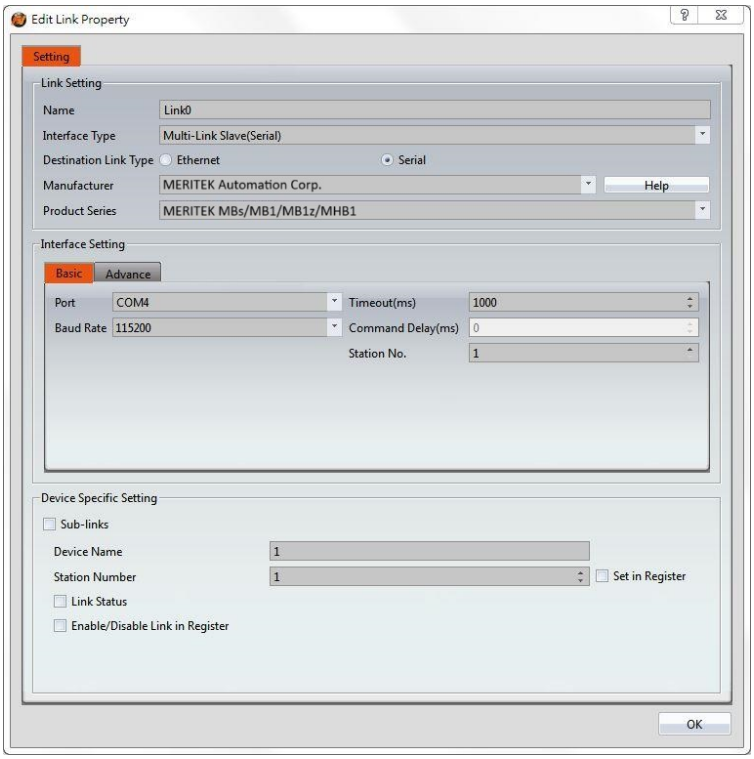


Figure 572 setting page of multi-link slave

Step 5: Planning 6【Numeric Input/Display】objects on the master screen, 【Monitor Address】set as @1:R0 ~ @1:R5.

Step 6: Download the project to master and slave HMI, and link with the MERITEK PLC master and master COM4(RS485) and slave COM3(RS485), input the value in master and the slave will synchronize update, or input the value in slave and the master will synchronize update.

30. Search/Replace

The【Search/Replace】function is to provide designers with more efficient and time-saving tools for planning projects. For example, when the designer is planning a project, it is uncertain whether those PLC addresses or internal addresses of the HMI are used , or on which items or functions to use, can search through the entire project, screen or function to search for the desired address, avoid using the same address and affect the function of the operation; Or in a project that has already been planned, it is hoped that the address of the modified part will have multiple consecutive addresses. At this time, you can also use this auxiliary function to modify batches at once, instead of spending a huge amount of time and effort, opening items one by one to make changes, etc.

30.1 The Use of Search/Replace

This section explains how to use the【Search/Replace】feature and how to set the window.【Search/Replace】function can click on the  icon in the status bar on any screen, or press the【Ctrl+F】key on the keyboard to open【Search/Replace】function dialog window



Figure 573 status bar

The options for opening the【Search/Replace】function dialog window are shown in the following figure. The meaning of each option is as follows:

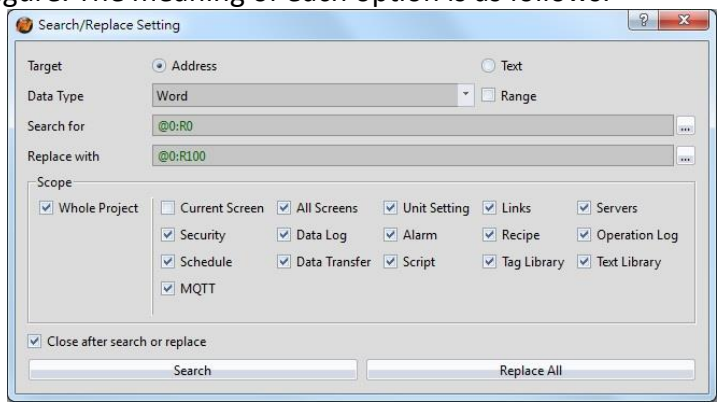
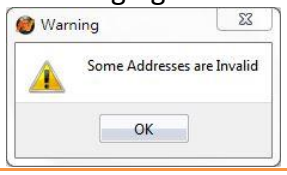


Figure 574【Search/Replace】function window

Table 296【Search/Replace】function properties setting

Properties	Descriptions
【Target】	To search for or replace the address or text used in the project.

	【Address】 Choose to search or replace the address used in the project. 【Text】 Choose to search or replace text used in a project.
【Data Type】	The address to be searched for or replaced in the project is【Bit】or【Word】, etc. When the target is selected as【Address】this option will be displayed.
【Range】	Select the range of addresses to search for or replace in the project. When the target is selected as【Address】this option will be displayed.
【Case Sensitive】	Select whether to search for or replace the text in the project is case-sensitive. When the target is selected as【Text】this option will be displayed.
【Whole Words Only】	Select if you want to search or replace the text in the project if all text is the same. When the target is selected as【Text】this option will be displayed.
【Search for】	Fill in the address or text to be searched. When【Range】is checked, you can set the start address and end address. If there is an error in the search address or text, the following figure shows the designer. 
【Replace with】	Fill in the address or text to be replaced. When【Range】is checked, you can set the start address and end address.
【Scope】	You can check the range you want to search for or replace, including【Whole Project】,【Current Screen】,【All Screens】,【Unit Setting】,【Links】,

	【Servers】, 【Security】, 【Data Log】, 【Alarm】, 【Recipe】, 【Operation Log】, 【Schedule】, 【Data Transfer】, 【Script】, 【Tag Library】and 【Text Library】, etc. When the target is selected as 【Text】, the 【Script】option will not provide selection.
【Close after search or replace】	Close the window after search or replace.
【Search】	Press to execute searching the address or text used in the project.
【Replace All】	Press to execute replacement address or text used in the project.

30.2 The Result of Search/Replace

Search results using the 【Search/Replace】function will be displayed in the Search/Replace results window, as shown in the following Figure 573.

The options for the 【Search/Replace】results window are shown in Figure 573 below, where the options are as follows:

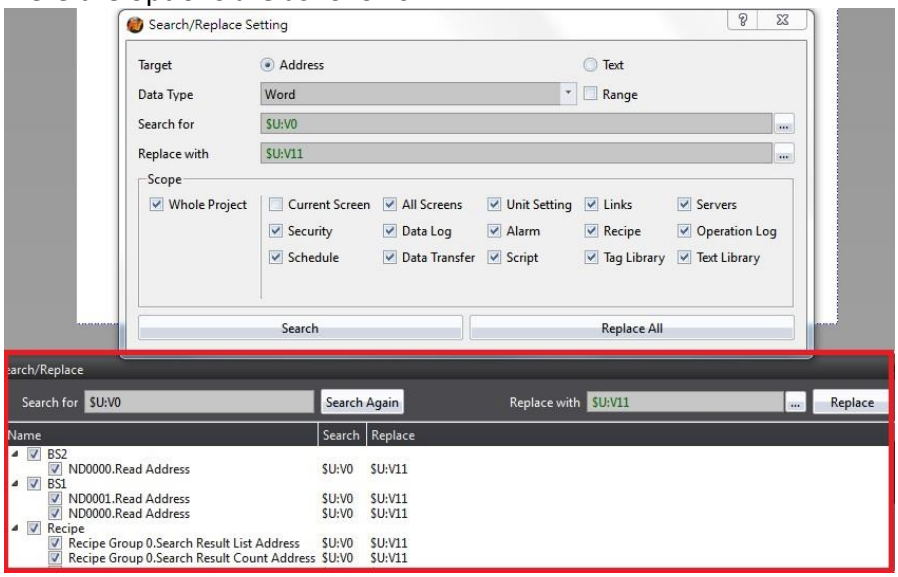


Figure 575 【Search/Replace】result function window

Table 297 【Search/Replace】function properties setting

Properties	Description
【Search for】	This field only provides an address for execute search function cannot be entered.

	【Search Again】 Search again for the address or text used in the project.
【Replace with】	This field can be entered to replace the address or text in the project. 【Replace】 Replace the address or text in the project with the set address or text.
【Search Result】	Display the searched address and text, you can use the check box to select the item you want to replace. Double-click the left mouse button on the searched object to display the screen where the object is located in the window area. At the same time, the object properties will be displayed for the designer to edit. The content will contain the following fields. 【Name】 Display the name of the searched object and the screen where the object is located. 【Search】 The searched address. 【Replace】 The replaced address.

In addition, on the【View】tab of the FvDesigner ribbon, click【Search/Replace】to also enable or disable the【Search/Replace】result window.

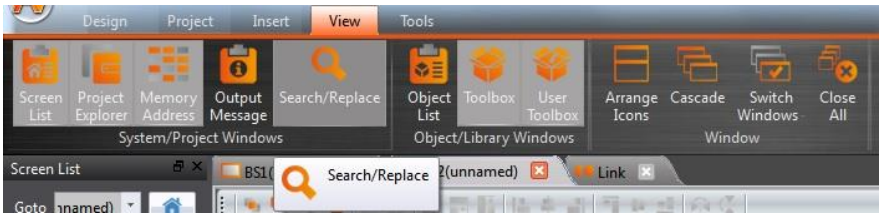


Figure 576【Search/Replace】option in【View】

31. Communication Error Codes

The following table will detailed description the HMI and PLC or other devices occurred error when communicating, each meaning of the code:

Table 298 description of the communication error code

Error Code	Description
0x00000001	Com Port Not Open
0x00001001	Dcc Illegal Parameters
0x00001002	Dcc Stop
0x00001003	Dcc Failed Set Read Back
0x00001004	Dcc Failed
0x00002000	DccErr Link Init
0x00002001	Dcc Link Pending
0x00002002	Dcc Screen Change
0x00003001	Multilink Timeout
0x00003002	Multilink Master and Slave use different PLC driver
0x10010001	ComPort Error
0x10010002	ComPort Open Fail
0x10010003	ComPort Send Fail
0x10010004	ComPort Receive Fail
0x10020001	Socket Null
0x10020002	Socket Connect Fail
0x10020003	Socket Invalid IP
0x10020004	Socket Send Fail
0x10020005	Socket Receive Fail
0x1002FFFF	Socket Unknown
0x20010001	Protocol Invalid Head
0x20010002	Protocol Invalid End
0x20010003	Protocol Invalid Length
0x20010004	Protocol Invalid Data
0x20010005	Protocol Invalid Error Check
0x20010006	Protocol Invalid Parameter
0x20010007	Protocol Invalid Password
0x200A0000	Protocol Exception
0x200Axxxx	When the first 4 error codes are 200A, it means that the HMI get error from PLC, and the last 4 error codes are from PLC. Please refer to different brand PLC's manual
0x400A0000	Command Timeout
0x400A0001	Command Send Failed
0x400A0002	Command Receive Failed
0x400B0001	Command Nack
0x400B0002	Command Unknown
0x400B0003	Command Not Support
0x400C0001	API Parameter Error
0x400CFFFF	Internal Error

32. Elimination of HMI Abnormal Conditions

32.1 System Consistency Protection is Enabled

If the screen shows as below while using the HMI:



Figure 577 System Integrity Protection

32.1.1 Repairing File by Using Mini-USB Cable

Step 1: Connect PC and HMI by using mini-USB cable

Step 2: Open FvDesigner download function

Step 3: Check the【Firmware】to do update

Step 4: Make sure the HMI has enter to the system setting page then can download【Running Package】normally.

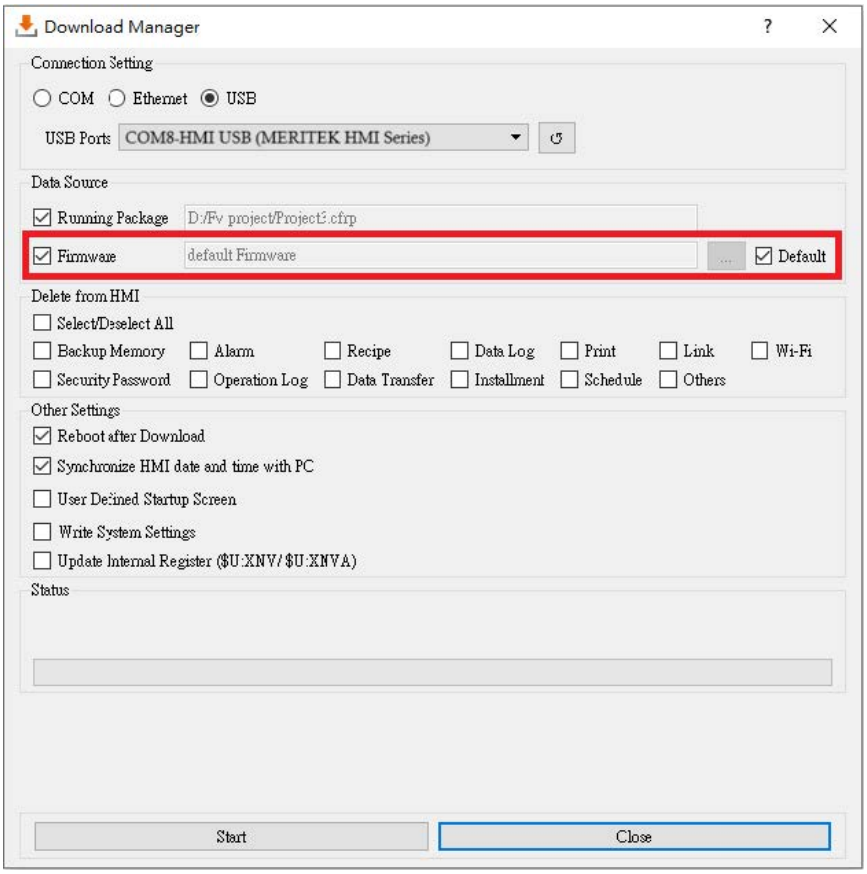


Figure 578 Using mini-USB cable download to repair system integrity protection

32.1.2 Repairing File by Using USB Flash Disk

Step 1: Open FvDesigner and make a USB update file

Step 2: Check the “Include Recovery Settings” option then press “Start”

Step 3: Store the.uferp file into the USB flash disk

Step 4: Plug the USB flash disk into the HMI when the HMI is under recovery mode then it will start repairing automatically after a few seconds.

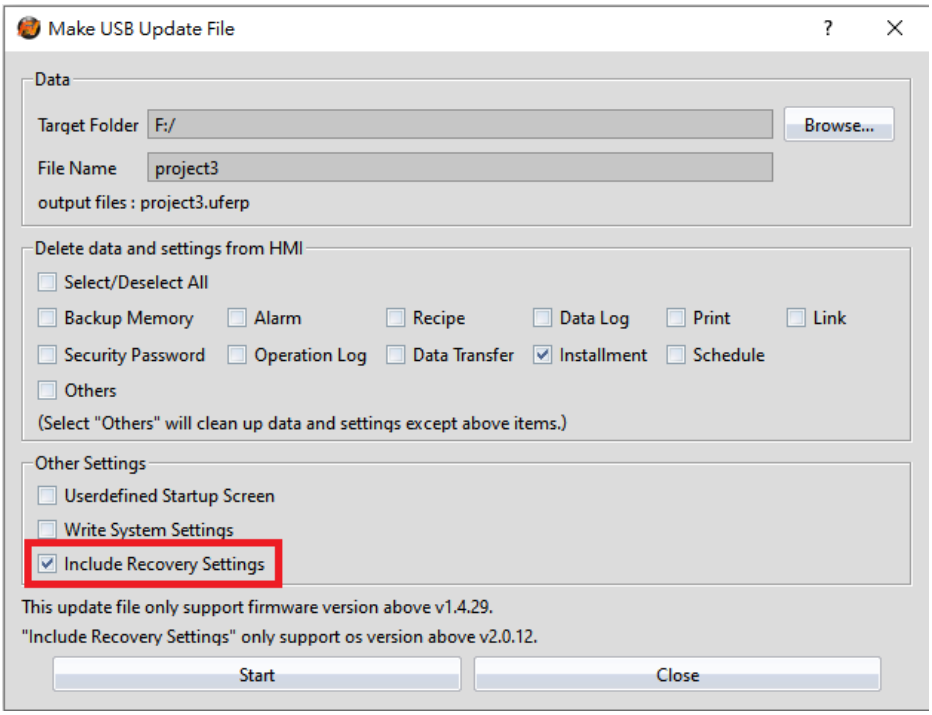


Figure 579 Using USB flash disk to download repair system integrity protection

To repair file by using USB flash disk, need to notice the following points:

1. The HMI OS version need to be 2.0.12 or above
2. When the HMI and FvDesigner are doing other functions by using the mini-USB cable, then the update will stop.
3. If the USB flash disk has no .uferp or more than one .uferp files, then the update will stop.