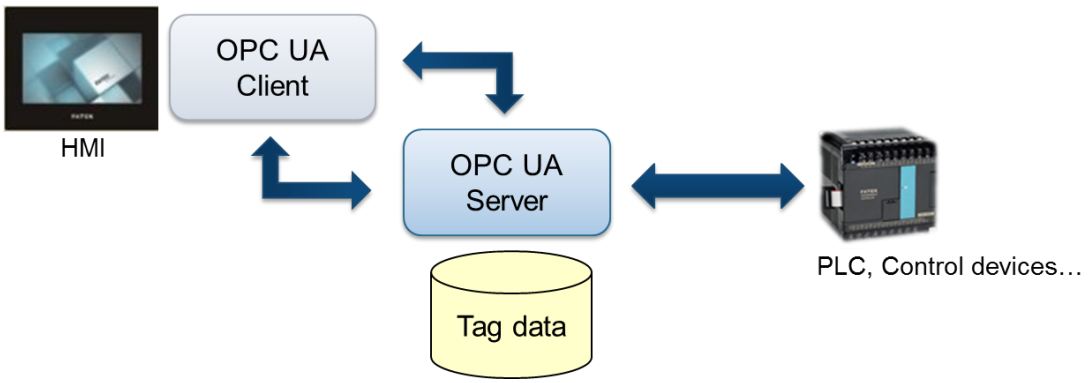
FvRT OPCUA Server User Manual

1. INTRODUCE

OPC UA (OPC Unified Architecture) is a communication standard designed for industrial automation, characterized by its cross-platform compatibility and standardized communication protocols. It is suitable for use in various communication environments for different types of machinery and devices, facilitating data exchange and remote monitoring needs.

With the "FvRT OPC UA Server", multiple node tags can be set up for data access. Clients can connect to the server to read and write data from these tags.

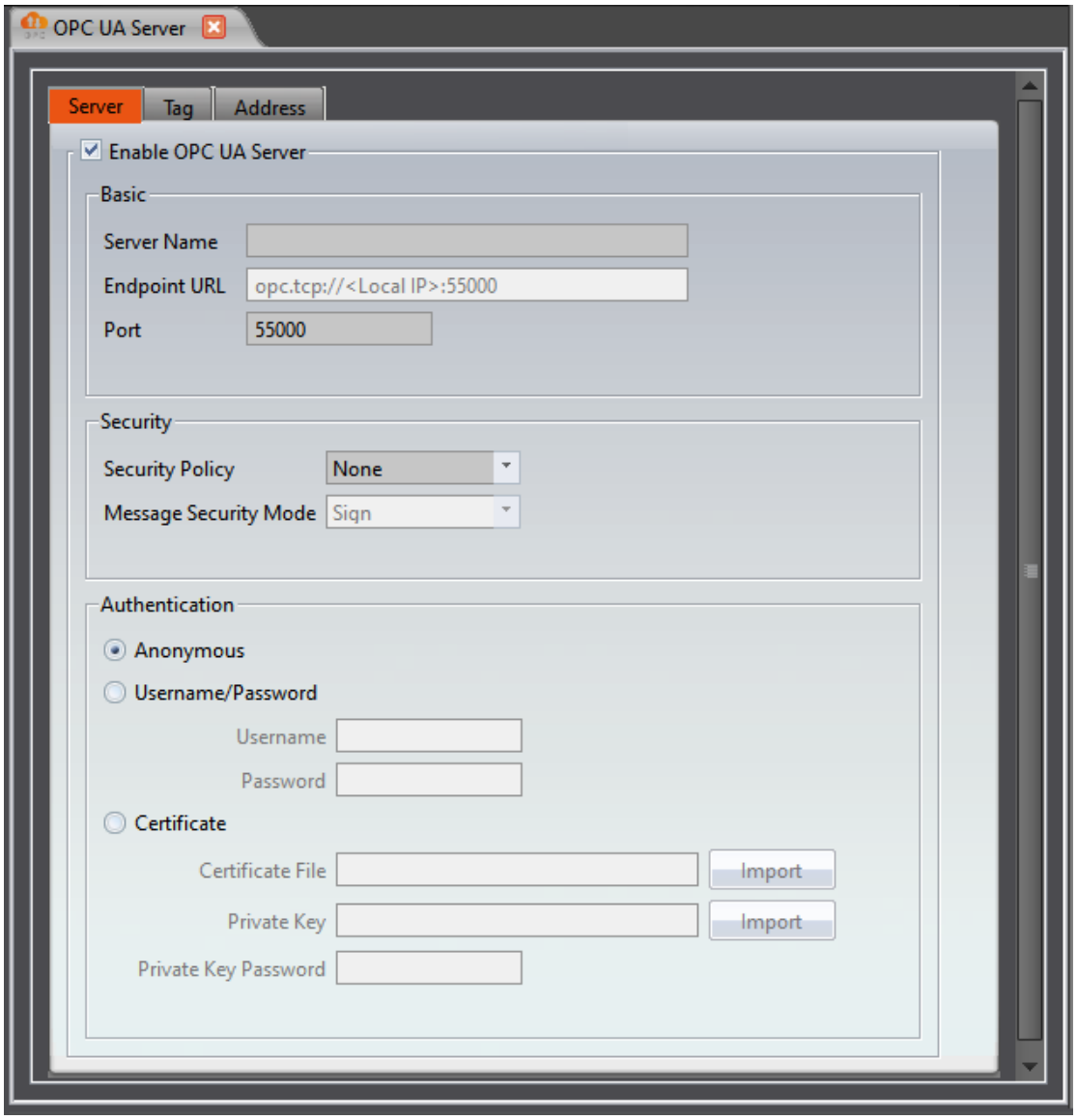


The main features and advantages of the【FvRT OPC UA Server】include:

- Simple and quick establishment of OPC UA server data structures.
- Support for folder structures, allowing grouping and categorization of related data.
- Support for remote browsing and access.
- Support for read and write functions, enabling access to PLC register data.
- Real-time display of server connection status on the execution screen.
- Includes OPC UA Client Tool for real-time viewing of information and values for each tag on the server.

2. Interface

2.1 Server settings

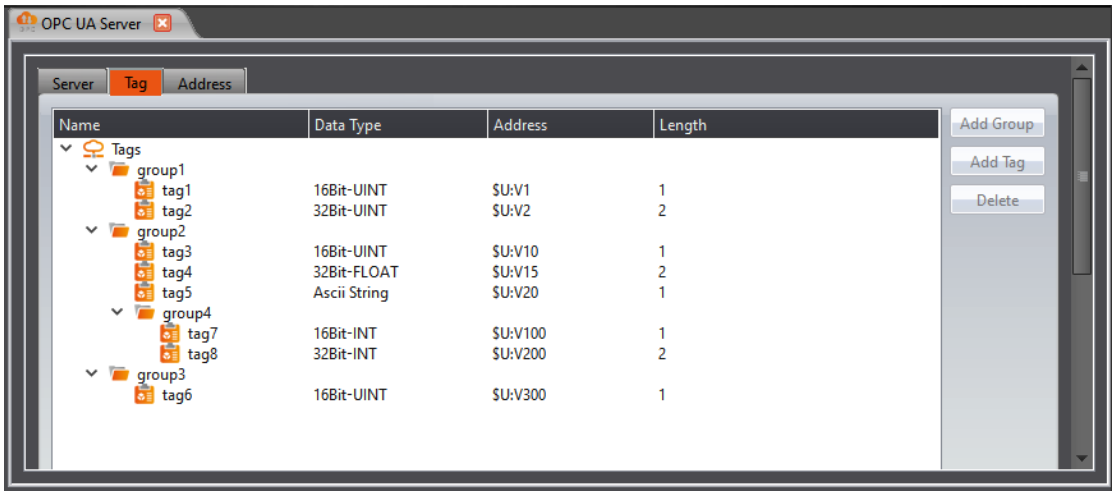


Item	Describe
【Enable OPC UA Server】	Check the box to enable the 【OPC UA Server】. Once enabled, detailed fields can be configured, and the related 【Tags】 and 【Addresses】 page will appear.
【Basic】	【Server Name】 Set the name of the server, which functions similarly to a description.

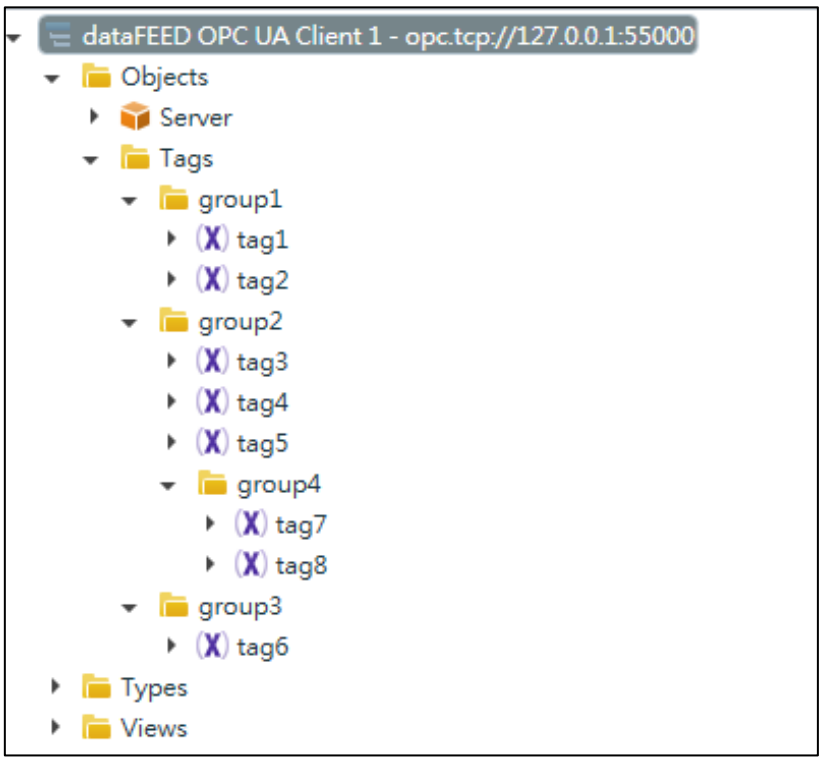
	【Endpoint URL】 The server address will be automatically set to the IP address of the hos. This field is for display purposes only and cannot be manually changed. 【Port】 Set the server's port number. The default is 55000.
【Security】	【Security Policy】 Specify the security mode, choosing either 【None】or one of the following options: ● Basic128Rsa15 ● Basic256 ● Basic256Sha256 【Message Security Mode】 Specify the encryption mode, choosing either 【None】or one of the following options: ● Sign ● Sign & Encrypt
【Authentication】	【Anonymous】 No authentication required. 【Username/Passwird】 Enter the username and password for authentication. 【Certificate】 Import certificate files and private keys, and enter the corresponding private key password. Passwords will be masked for confidentiality after input.

2.2Group and Tags

Clicking the【Add Group】button on the right allows, you can add a new group, while clicking the【Add Tag】button adds a new tag. Groups and tags are organized in a tree structure: you can add new groups and tags under a group. Clicking the【Delete】button removes the selected group or tag. Double-clicking an item allows you to directly edit the field settings for the selected group or tag.



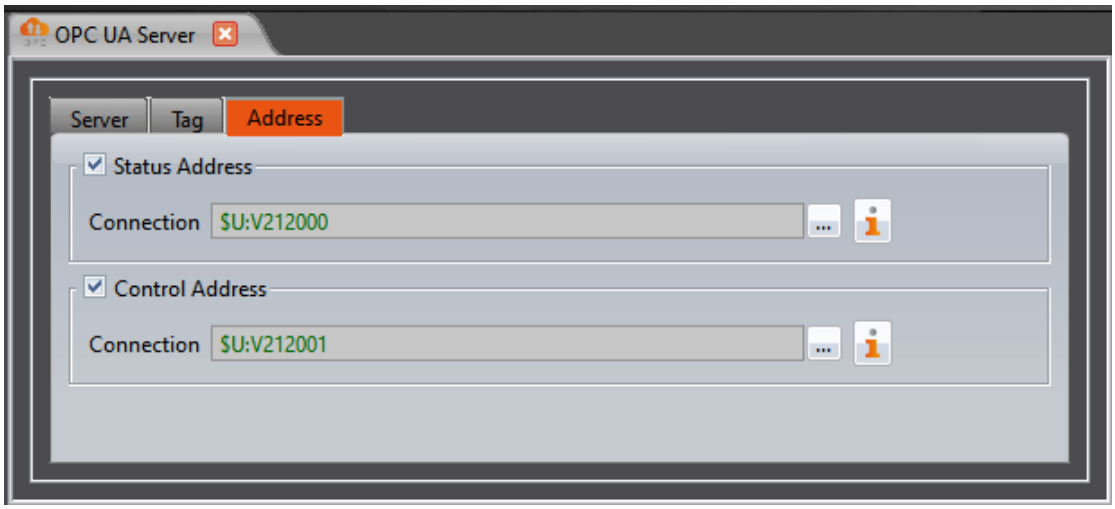
The OPC UA server specification supports the OPC Foundation's Embedded UA Server Profile 1.03. In the OPC UA client, temporary register tags are stored in the 「Objects/Tags」 folder, while other tags contain default server information.



Item	Describe
【Group】	【Name】 Set the group name, which will be visible to the client when reading, click to modify.
【Tag】	【Name】 Set the tag name, click to modify. 【Data Type】 【Bit】、【16Bit-INT】、【16Bit-UINT】、【32Bit-INT】、【32Bit-UINT】、【32Bit-FLOAT】、【Ascii-String】。 【Address】 Users can set the address corresponding to each tag based on the data type. 【Length】 If the data type is 16-bit, it will occupy 1 word; if 32-bit, it will occupy 2 words. For Ascii-String, users can decide how many words this tag will occupy. Each word can accommodate 2 characters.

2.3Address

The【Addresses】page allows you to configure addresses for real-time monitoring or dynamic control of the OPC UA server's connection and operation. You can use【Status Address】to monitor the connection status of the OPC UA server, and【Control Address】to control the connection and operation status of the OPC UA server.



Item	Describe
【Status Address】	【Connection】 Set the status address of the OPC UA server. Below is the status definition table. You can also click on the icon for details:
【Control Address】	【Connection】 Set the Control address of the OPC UA server. Below is the status definition table. You can also click on the icon for details:

Item	Value(16Bit-INT)	Definition
1	0	Disable
2	1	Stopped
3	2	Running
4	-1	Error

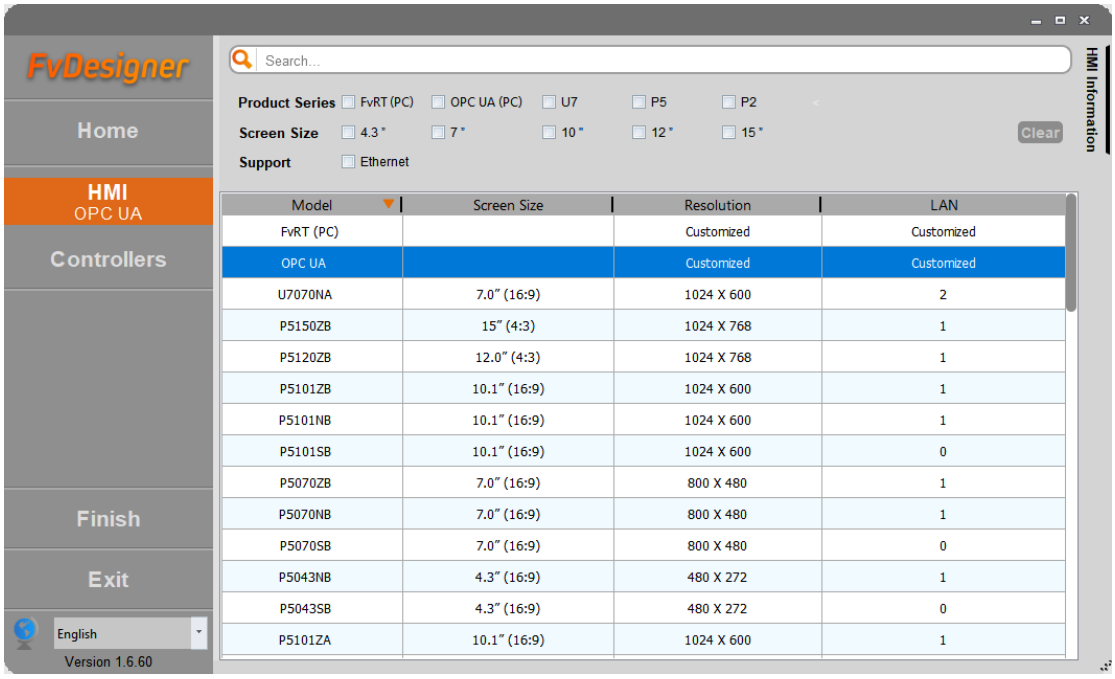
Item	Value(16Bit-INT)	Definition
1	0	None
2	1	Stop
3	2	Start

3. Quick start

3.1 Create project

To create a new project with the functionality of the【FvRT OPC UA Server】using FvDesigner, follow these steps:

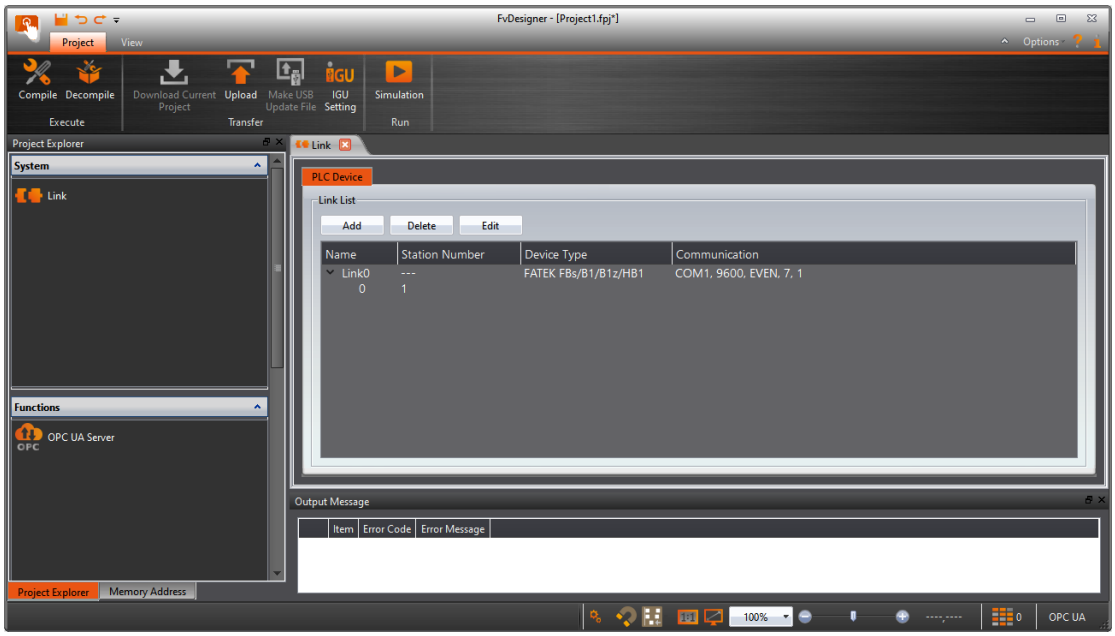
1. Open the project window in FvDesigner.
2. Click on "New" on the left side of the project window.
3. Select "OPC UA" from the options.
4. Click "Finish" to create a new project.



3.2Set the PLC device

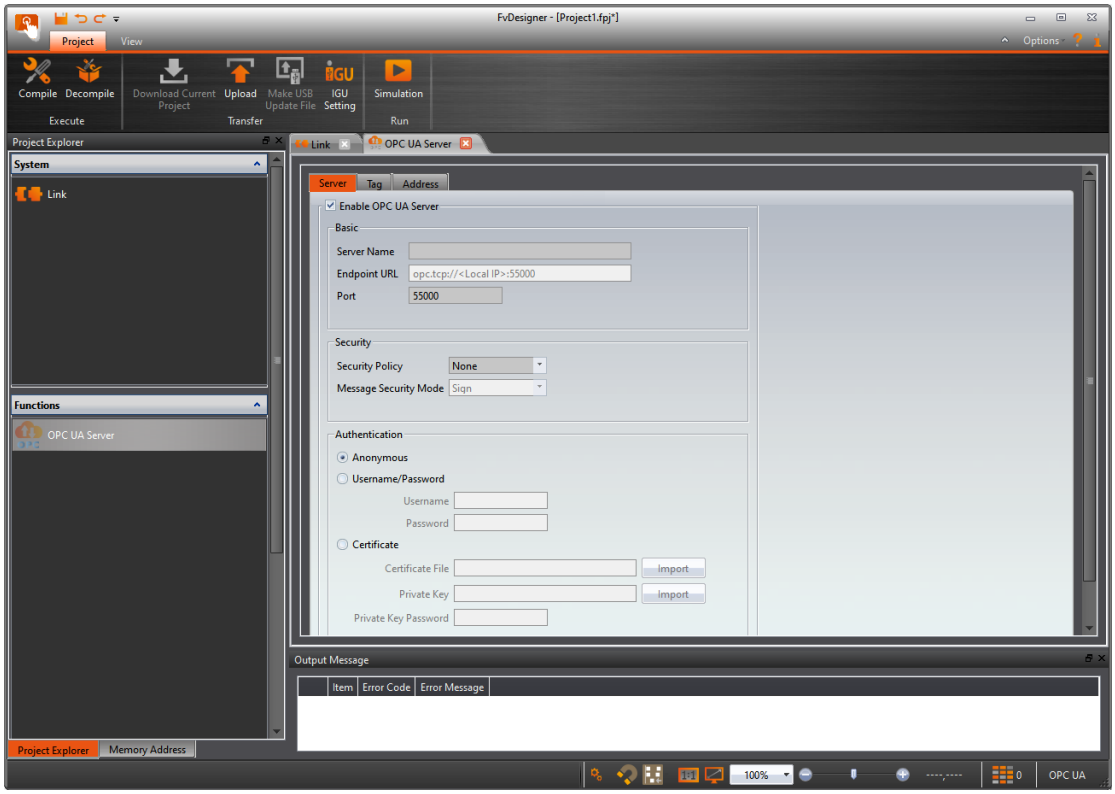
In the【Project Explorer】section on the left, click on【System】window, then select【Link】to enter the connection setup page. This page can be used to configure the PLC devices that OPC UA will access.

Only compatible with MERITEK PLC.



3.3Configure servers and Tags

In the left select【OPC UA Server】. Check the【Enable OPC UA Server】option to configure the server. There are three configuration pages:【Server】,【Tags】, and【Address】.

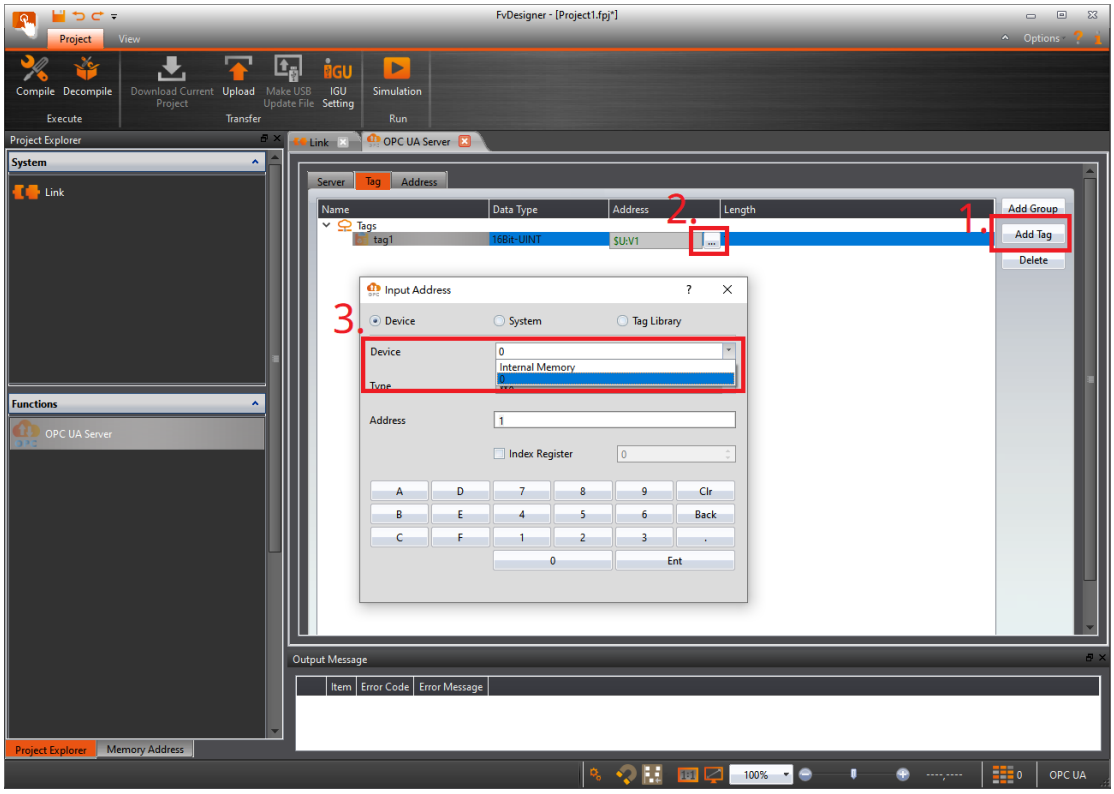


(The default port for the OPC UA server is 55000, and it can be freely changed.)

In the【Tags】page create tags to access data from the PLC registers.

steps:

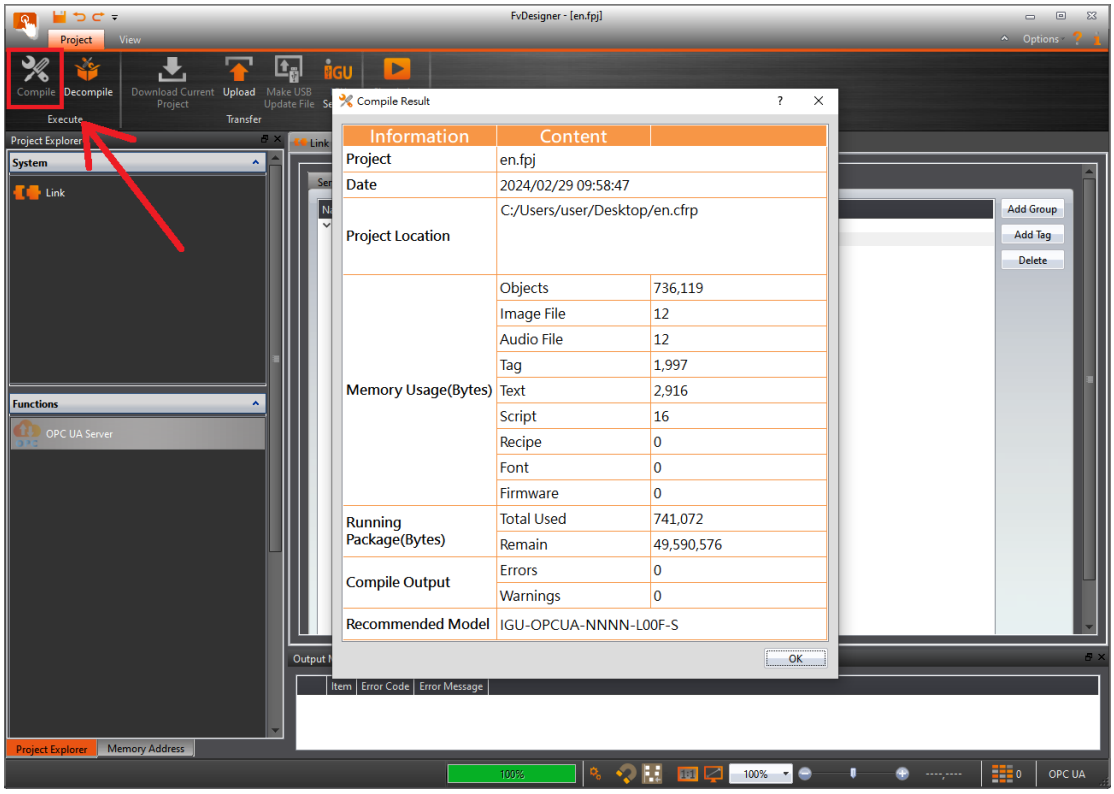
1. clicking the【Add Tag】button to add a new tag,
2. clicking on the【Input Address】
3. Input the PLC address from the connection settings



You can create a hierarchical data structure by adding multiple【Groups】and【Tags】according to your requirements.

3.4Compile and Simulation

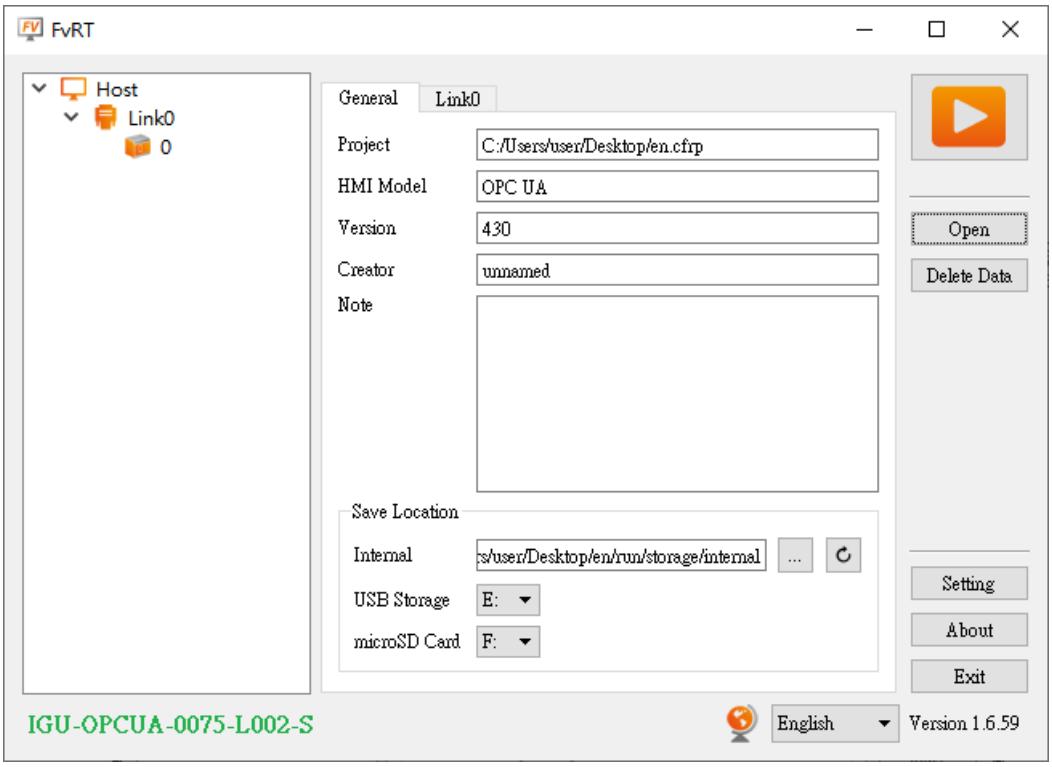
After completing , click on【Compile】at the top. Upon successful compilation, a【.cfrp】file will be generated, and the Compilation Result will display .



After the compilation is completed, you can click【Simulation】to perform functional testing first, and then execute it on【FvRT】after the test passes.

3.5 Start OPC UA server

Plug in the【OPCUA USB Dongle】to your computer, open the【FvRT】software, and click on the【Open】to Select the OPC UA server project (.cfrp), then click on the【Run】to start running the OPC UA server.



The operational status of the server is displayed on the running interface of the【FvRT OPC UA Server】.