



Basic Main Units (MA/B)

Specification			Model		MBs-10MAR	MBs-10MAT/J	MBs-14MAR	MBs-14MAT/J	MBs-20MAR MBs-20MBR	MBs-20MAT/J MBs-20MBT/J	MBs-24MAR MBs-24MBR	MBs-24MAT/J MBs-24MBT/J
Digital Input	24VDC	High speed (100KHz)	2 points									
		Medium speed (20KHz)	2 points					4 points			6 points	
		Medium speed (Total 5KHz)	2 points			4 points			6 points			
Digital Output	Relay		4 points	—	6 points	—	8 points	—	10 points	—		
	Transistor	High speed (100KHz)	2 points									
		Medium speed (20KHz)	—	2 points	—	4 points	—	6 points	—	6 points	—	
		Low speed	—	—	—	—	—	—	—	—	2 points	
Communication Port		Built-in	1 port (Port0, USB or RS232)									
		Expandable	2 ports (Port1~2, RS485 or RS232 or Ethernet)									
Calendar			built-in									
Built-in power supply			SPW14-AC/D12/D24					SPW24-AC/D12/D24				
Wiring mechanism			7.62mm fixed terminal block									



Basic Main Units (MA/B)

Specification			Model	MBs-32MAR MBs-32MBR	MBs-32MAT/J MBs-32MBT/J	MBs-40MAR MBs-40MBR	MBs-40MAT/J MBs-40MBT/J	MBs-60MAR MBs-60MBR	MBs-60MAT/J MBs-60MBT/J
Digital Input	24VDC	High speed (100KHz)	2 points						
		Medium speed (20KHz)	6 points						
		Medium speed (Total 5KHz)	8 points						
		Medium low speed	4 points		8 points		20 points		
Digital Output	Relay		12 points	—	16 points	—	24 points	—	
	Transistor	High speed (100KHz)	2 points						
		Medium speed (20KHz)	—	6 points	—	6 points	—	6 points	
		Low speed	—	4 points	—	8 points	—	16 points	
Communication Port		Built-in	1 port (Port0, USB or RS232)						
		Expandable	2 ports (Port1~2, RS485 or RS232 or Ethernet)						
Calendar			built-in						
Built-in power supply			SPW24-AC/D12/D24						
Wiring mechanism			7.62mm fixed terminal block(MA), 7.62mm detachable terminal block (MB)						
Dimension			Figure 1						



Advanced Main Units

Specification			Model	MBs-10MCR	MBs-10MCT/J	MBs-14MCR	MBs-14MCT/J	MBs-20MCR	MBs-20MCT/J	MBs-24MCR	MBs-24MCT/J
Digital Input	24VDC	High speed (200KHz)	2 points					4 points			
		Medium speed (20KHz)	2 points					2 points		4 points	
		Medium speed (Total 5KHz)	2 points			4 points		6 points			
Digital output	Relay		4 points	—	6 points	—	8 points	—	10 points	—	
	Transistor	High speed (200KHz)	—	2 points	—	2 points	—	4 points	—	4 points	
		Medium speed (20KHz)	—	2 points	—	4 points	—	4 points	—	4 points	
		Low speed	—	—	—	—	—	—	—	2 points	
Communication Port	Built-in	1 port (Port0, USB or RS232)									
	Expandable	4 ports (Port1~4, RS485 or RS232 or Ethernet or GSM or ZigBee)									
Calendar			Built-in								
Built-in power supply			SPW14-AC/D12/D24					SPW24-AC/D12/D24			
Wiring mechanism			7.62mm fixed terminal block					7.62mm detachable terminal block			
Dimension			Figure 2					Figure 1			

Advanced Main Units



Specification			Model	MBs-32MCR	MBs-32MCT/J	MBs-40MCR	MBs-40MCT/J	MBs-60MCR	MBs-60MCT/J
Digital Input	24VDC	High speed (200KHz)	6 points					8 points	
		Medium speed (20KHz)	2 points					—	
		Medium speed (Total 5KHz)	8 points						
		Medium low speed (0.47ms)	4 points		8 points		20 points		
Digital output	Relay		12 points	—	16 points	—	24 points	—	
	Transistor	High speed (200KHz)	—	6 points	—	6 points	—	8 points	
		Medium speed (20KHz)	—	2 points	—	2 points	—	—	
		Low speed	—	4 points	—	8 points	—	16 points	
Communication Port	Built-in		1 port (Port0, USB or RS232)						
	Expandable		4 ports (Port1~4, RS485 or RS232 or Ethernet or GSM or ZigBee)						
Calendar			Built-in						
Built-in power supply			SPW24-AC/D12/D24						
Wiring mechanism			7.62mm detachable terminal block						
Dimension			Figure 1						

NC Positioning Main Units



Specification			Model	MBs-20MNR	MBs-20MNT/J	MBs-32MNR	MBs-32MNT/J	MBs-44MNR	MBs-44MNT/J	
Digital Input	5VDC Differential	Ultra high speed (920KHz)	2 points (1 axis)		4 points(2 axes)		8 points(4 axes)			
	24VDC	High speed (200KHz)	4 points		4 points		—			
		Medium speed (Total 5KHz)	6 points		8 points					
		Low speed	—		4 points		12 points			
Digital output	Relay		6 points	—	8 points	—	8 points	—		
	5VDC Differential	Ultra high speed (920KHz)	2 points (1 axis)		4 points (2 axes)		8 points(4 axes)			
	Transistor	High speed (200KHz)	—	6 points	—	4 points	—	—		
		Low speed	—	—	—	4 points	—	8 points		
Communication Port	Built-in		1 port (Port0, USB or RS232)							
	Expandable		4 ports (Port1~4, RS485 or RS232 or Ethernet or GSM or ZigBee)							
Calendar			Built-in							
Built-in power supply			SPW24-AC/D12/D24							
Wiring mechanism			7.62mm detachable terminal block							
Dimension			Figure 1							

Right Side Expansion Module



DIO Expansion Units

Specification			Model	MBs-24XYR	MBs-24XYT/J	MBs-40XYR	MBs-40XYT/J	MBs-60XYR	MBs-60XYT/J
Digital Input	24VDC	Low speed		14 points		24 points		36 points	
Digital output	Relay			10 points	—	16 points	—	24 points	—
	Transistor	Low speed		—	10 points	—	16 points	—	24 points
Built-in power supply				SPW24-AC/D12/D24					
Wiring mechanism				7.62mm fixed terminal block					
Dimension				Figure 1					

Power Supplies for Expansion Modules



Specification		Model	MBs-EPW-AC	MBs-EPW-D24
Capacity of output power	5VDC Bus power		400mA	
	24VDC Bus power		250mA	
	24VDC Sensor power		250mA	
Input voltage			100~240 VAC, -15%/+10%	24VDC, -15%/+20%
Maximum power consumption			21W	
Wiring mechanism			7.62mm fixed terminal block	
Dimension			Figure 4	

DIO Expansion



Specification		Model	MBs-8XYR	MBs-8XYT/J	MBs-8X	MBs-8YR	MBs-8YT/J	MBs-16XYR	MBs-16XYT/J	MBs-20X
Digital Input	24VDC	Low Speed	4 points		8 points	—	—	8 points		20 points
	Relay		4 points	—	—	8 points	—	8 points	—	—
Digital Output	Transistor	Low Speed	—	4 points	—	—	8 points	—	8 points	—
	Relay		—	—	—	—	—	—	—	—
Wiring mechanism			7.62 mm fixed terminal block							
Dimension			Figure 4					Figure 3		

(Continue)



Specification		Model	MBs-16XYR	MBs-16XYT/J	MBs-24X	MBs-24YT/J	MBs-24XYR	MBs-24XYT/J	MBs-40XYR
Digital Input	24VDC	Low Speed	—	—	24 points	—	14 points		24 points
	Relay		16 points	—	—	—	10 points	—	16 points
Digital Output	High density low speed		—	—	—	24 points	—	—	—
	Transistor	Low Speed	—	16 points	—	—	—	10 points	—
Wiring mechanism			7.62 mm fixed terminal block		30 pins header with latch		7.62 mm fixed terminal block		
Dimension			Figure 3		Figure 6		Figure 1		

(Continue)



Specification		Model	MBs-40XYT/J	MBs-60XYR	MBs-60XYT/J
Digital Input	24VDC	Low Speed	24 points	36 points	
	Relay		—	24 points	—
Digital Output	Transistor	Low Speed	16 points	—	24 points
	Relay		—	—	—
Wiring mechanism			7.62 mm fixed terminal block		
Dimension			Figure 1		

Thumbwheel Switch Module



Specification	Model	MBs-32DGI
Refresh time for input		10mS max.
Input capability		8 words (32 digits/128 individual points)
Input method		1/8 duty multiplexing input scan
Wiring mechanism		30 pins header with latch
Dimension		Figure 6

Right Side Expansion Module

16/7 Segment LED Display Modules



Specification			Model		MBs-7SG1	MBs-7SG2
Display mode	Decoding display		4 bits to represent a character. It can display 16 kinds of pre-decoded character including 0 ~ 9, -, E, H, c, t and blank			
	Non-decoding display		Each segment controlled by 1 individual bit, one 7 segment digits needs 8 bits to control (including decimal), displayable any set of segments (EX: character and number display) or each LED display			
Display number of character (points)			1 channel, 7 segment 8 words / 16 segment 4 words or 64 points individual LED		2 channels, 7 segment 16 words/ 16 segment 8 words or 128 points individual LED	
Refresh time for display			10mS max.			
LED driving specification	Driving current		40mA / segment			
	Display method		1~8 duty multiplexing display			
	Driving voltage	Low voltage	5VDC (can be 10% up)			
		High voltage	7.5V, 10V, 12.5V selectable (can be 10% up)			
	Fine tune of voltage drop		0.6V, 1.2V, 1.8V selectable			
Over voltage driving indication			Each channel has individual Over Voltage (O.V.) driving LED indication (should be under Test Mode)			
Isolation method			Transformer (power) and optical (signal) isolation, 500VAC, 1 minute			
Power consumption			24VDC-15%/+20%, static consumption is-2W max., dynamic current is increased according to display			
Wiring mechanism			16 pins flat cable, 2.54mm header connector			
Dimension			Figure 4			



AIO Module

Specification		Model	MBs-6AD	MBs-4A2D	MBs-2DA	MBs-4DA
Input point			6 points	4 points	—	—
Output point			—	2 points	2 points	4 points
Input/Output value			-8192~8191 or 0~16383 (14-bit)			
Input/output Signal range	Bipolar		Voltage: -10~10V or -5~5V Current: -20~20mA or -10~10mA			
	Unipolar		Voltage: 0~10V or 0~5V Current: 0~20mA or 0~10mA			
Maximum resolution			Voltage: 0.3mV (5V/16384) Current: 0.61μA (10mA/16384)			
Accuracy			± 1%			
Conversion time			Conversion once for each scan			
Maximum input signal			Input voltage: ±15V Input current: ±30mA			—
Allowable load range			—	Output voltage: 500Ω~1MΩ Output current: 0~500Ω		
Input impedance			Input voltage: 63.2KΩ Input current: 250Ω			—
Isolation method			Transformer(power) and optical(signal) isolation, 500VAC, 1 minute, no isolation between each channel			
Power consumption			24VDC -15%/+20%, 3.2W max.			
Wiring mechanism			7.62 mm fixed terminal block			
Dimension			Figure 4			



Temperature Measurement

Specification	Model	MBs-2TC	MBs-6TC	MBs-16TC	MBs-6RTD	MBs-16RTD	MBs-6NTC
Number of input points		2 points	6 points	16 points	6 points	16 points	6 points
Sensor type and temperature measurement range		Thermocouple Sensor: J (-200~1200°C) E (-190~1000°C) K (-190~1300°C) T (-190~380°C) R (0~1800°C) B (350~1800°C) S (0~1700°C) N (-200~1000°C)			3-wire RTD sensor (JIS or DIN) Pt100(-200~850°C) Pt1000(-200~600°C)		NTC sensor 10 KΩ at 25°C, B optional -20~100°C
Temperature compensation		Built-in cold junction compensation			—	—	—
Resolution		0.1°C					
Temperature refresh time		1 or 2 seconds	2 or 4 seconds	3 or 6 seconds	1 or 2 seconds	2 or 4 seconds	2 or 4 seconds
Overall Precision		± (1%+1°C)			± 1%		±1% of full scale at 25°C
Isolation method		Transformer(power) and optical(signal) isolation, 500VAC, 1 minute, isolation between each channel			Transformer(power) and optical(signal) isolation, 500VAC, 1 minute, no isolation between each channel		
Power consumption		24VDC -15%/+20%, 2W max.					
Wiring mechanism		3.81 mm european terminal block			7.62 mm fixed terminal block		
Dimension		Figure 4		Figure 1	Figure 4	Figure 1	Figure 4

AI+Temperature Measurement Combo Modules



Specification	Model	MBs-2A4TC	MBs-2A4RTD
Analog input (AI) points		2 points / 14-bit	
Temperature measurement input points		4 points (thermocouple)	4 points (RTD)
Analog input specification		Same as MBs-6AD	Same as MBs-6AD
Temperature input specification		Same as MBs-6TC	Same as MBs-6RTD
Power consumption		24VDC-15%/+20%, 2W max.	
Wiring mechanism		7.62 mm fixed terminal block	
Dimension		Figure 4	

Voice Module



Specification	Model	MBs-VOM
Number of recorded messages		245 messages
Sound storage device		Internal memory or external SD memory card
Maximum sound storage capacity	Internal memory	1MB, can play up to 2 minutes of sound recordings.
	External SD memory card	Maximum 4 GB memory card, up to 8000 minutes of sound recordings can be played.
Applicable sound encoding format		Mono 8 bit 8KHz sample
Power consumption		Internal 5V, 500mA (@2W output)
Dimension		Figure 4

Load Cell Module



Specification	Model	MBs-1LC	MBs-2LC	MBs-2LCH	MBs-2LCHR
Number of channel		1 channel	2 channel	2 channel	2 channel
Resolution		16-bit (including sign bit)	16-bit (including sign bit)	16-bit (including sign bit)	24-bit (including sign bit)
Occupied I/O points		1 IR (input register) and 8 points DO	1 IR (input register) and 8 points DO	4 IR (input register) and 8 points DO	4 IR (input register) and 8 points DO
Conversion Rate		5/10/25/30/60/80 Hz optional	1/3/5/8 Hz optional	5/60/High Speed Hz optional	5/10/25/30 Hz optional
Non-linearity degree		0.01% full scale @25°C			
Zero drift		0.2 μ V/ °C			
Gain drift		10 ppm/°C			
Excitation voltage		5V, maximum load is 250 Ω			
Level of sensitivity		2mV/V, 5mV/V, 10mV/V, 20mV/V			
Filters		Moving averages			
Isolation method		Transformer and optical isolation			
Power consumption		24VDC, -15%/+20%, 2W			
Wiring mechanism		7.62 mm fixed terminal block			
Dimension		Figure 4			

Synchronous Serial Interface Module



Specification	Model	MBs-3SSI
Number of channel		3 channels
Clock Frequency		~200KHz
Data Update Rate		less than 2ms
Input Data Bit		MSB first, 12~32 bit length selectable
Input Data Encoding Format		Binary or Gray Code
System Capability		up to 4 MBs-3SSI modules
Error Indication		Signal or wiring error
Isolation method		Output: None Input: Opto-coupler
Internal Power Consumption		5V, 100mA
Wiring mechanism		7.62 mm fixed terminal block
Dimension		Figure 4

Angular Resolver Decoder Module



Specification	Model	MBs-RZR
Angle resolution		1 part of 1440 (0.25 degree)
Resolver excitation frequency		10 KHz
System interface		RS485 serial communication
Data update rate		Around 600 Hz
Program interface		Interrupt or scanning, executes the HSCIO interrupt subroutine if interrupt mode is enabled.
Installation capability		One RZR module per PLC system
Internal Power Consumption		5V, 100mA
Wiring mechanism		7.62 mm fixed terminal block
Dimension		Figure 4

Potential Meter Module



Specification	Model	MBs-4PT
Number of channel		4 channels
Resolution		14 or 12 bits
Occupied I/O points		4 IR (input registers) and 1 unused OR (output register)
Conversion time		Conversion once for each scan
Accuracy		±1%
Potential meter impedance		1K~10K Ω
Voltage Input Range		0~10V
Potential meter voltage		10V
Filters		Moving averages
Isolation method		Transformer and optical isolation, 500VAC, 1 minute
Power consumption		24VDC, -15%/+20%, 2W
Wiring mechanism		7.62 mm fixed terminal block
Dimension		Figure 4

Left Side Expansion Module

General Communication



Specification / Model	MBs-CB2	MBs-CB22	MBs-CB5	MBs-CB55	MBs-CB25
RS232 Port	1 port (Port2)	2 ports (Port1, Port 2)	—	—	1 port (Port1)
RS485 Port	—	—	1 port (Port2)	2 ports (Port1, Port 2)	1 port (Port2)
Indicators	Each Port has its own TX, RX LED indicators				
Wiring mechanism	DB9F	DB9F	3 pins spring terminal		DB9F, 3 pins spring terminal
Installation position	Expansion slot of main unit				



(Continue)

Specification / Model	MBs-CM22	MBs-CM55	MBs-CM25
RS232 Port	2 ports (Port3, Port4)	—	1 port (Port3)
RS485 Port	—	2 ports (Port3, Port4)	1 port (Port4)
Indicators	Each Port has its own TX, RX LED indicators		
Wiring mechanism	DB9F	3 pins spring terminal	DB9F, 3 pins spring terminal
Installation position	Figure 5		

Ethernet Communication Boards/Modules



Specification / Model	MBs-CBEH	MBs-CBES	MBs-CM25E	MBs-CM55E
Network interface	10/100 Base T		10 Base T	
Network protocol	TCP/UDP/IP, ICMP, ARP			
Application protocol	MERITEK client and server mode, Modbus-TCP client or server mode	MERITEK client and server mode, Modbus-TCP server mode		
PLC interface	Port1, Port2		Port4	
PLC communication speed	307.2 Kbps		9.6K / 19.2K / 38.4K / 57.6K / 115.2Kbps / 230.4Kbps	
Expansion communication interface	N/A		RS232 (Port3), RS485 (Port4)	RS485 (Port3, Port4)
Application IP port number	MERITEK port number 500, Modbus-TCP 502 or customized			
Security protection	IP based access control			
IoT Ready	—	O	—	—
Wiring mechanism	RJ-45		DB9F, spring terminal block 4-pin x1, 3-pin x1	Spring terminal block 4-pin x1, 3-pin x1
Dimension (Installation position)	Expansion slot of main unit		Figure 5	

CANopen® Communication



Specification / Model	MBs-CBCANH
Communication standard	CAN 2.0A , DS301 V4.02
PDO number	RPDO/TPDO Max.60/Max.60
Number of SDO channels	Client -1, Server-1
Communication speed	20K / 50K / 125K / 250K / 500K / 1Mbps
Application parameter object	Max. 1000
Sync master	Configurable Sync time
NMT master	Available through EasyCANH opener and NMT task
Time stamp	Consumer
Error control	Heartbeat
Wiring mechanism	3-pin spring terminal block
Vendor ID	2EF(Hexadecimal)
Dimension	Expansion slot of main unit

ZigBee™ Communication



Specification / Model	MBs-CMZBR
Standards	IEEE 802.15.4 and ZigBee™ standard
Network topology	Mesh, Star, and Cluster-tree
Frequency	2.4GHz, Unlicensed ISM Band
Modulation	QPSK
Data rate	250 Kbps
RF channels	16(5MHz)
Data encryption	AES(option)
Transmit power	-7~18dBm
Transmission distance	1200m (LOS)
Nodes	Maximum 65535
Communication interface	—
Power consumption	24VDC, -15%/+20%, 2W
Dimension	62 x 54 x 29 (mm)

4G Communication Converter



Specification	Model	MBs-CMWLC
Connection		4G LTE Dongle
Callback		3G/4G network
Logging		Micro SD
Remote control		SMS
Access control		White list
Application protocol		MERITEK
Firmware upgrade		Mini-USB/Micro SD
PLC interface		Port3, Port4
Power Consumption		DC 24V, 200mA
Dimension		39(W)x90(H)x80(D) mm (without connector)

Wifi Communication Converter



Specification	Model	MBs-W2C
Connection		Wifi
Wi-Fi Protocols		802.11 b/g/n
Frequency Range		2.4 GHz
Antenna Gain		2 dBi
Host Interface		RS232
Attached PLC port		Port0
Antenna type		on-board PCB antenna
RF Certification		FCC
Power Consumption		1.3W
Dimension		19(W) x 45(H) x 30 (D) mm (with plug)
Dimension		19(W) x 45(H) x 12 (D) mm (without plug)

Bluetooth Communication Converter



Specification	Model	MBs-B2C
Connection		Bluetooth
Bluetooth standard		V2.0
Radio power		2.5mW(Class 2)
Radio coverage		10M(Line of sight condition)
Attached PLC port		Port0
PLC baud rate sync.		Auto sync., no DIP switch
Power consumption		5V, 35mA
Dimension		18.3(W)x41.3(H)x26.6(D) mm (with plug)
Dimension		18.3(W)x41.3(H)x8.1(D) mm (without plug)

GSM Communication Module



Specification	Model	MBs-CMGSM
Function		SMS, GPRS, and dial up data transfer (CSD), and etc
Frequencies		850/900/1800/1900MHz
RF power		2W
Communication interface		Port3
Dimension		Figure 5

General Purpose Communication Modules



Specification	Model	MBs-CM25C	MBs-CM5R	MBs-CM5H
Function		General purpose RS232 to RS485 bi-directional signal converter	General purpose RS485 repeater	General purpose 1 to 3 RS485 HUB
Indicators		Each port has its own independent TX, RX LED indicator		
External power		24VDC, -15%/+20%		
Wiring mechanism		DB9F, 3.81mm European terminal block	3 pins spring terminal block	7.62mm fixed terminal block
Dimension		Figure 5		
		Figure 4		

AIO Boards



Specification	Model	MBs-B2DA	MBs-B4AD	MBs-B2A1D
Input point		—	4 points	2 points
Output point		2 points	—	1 point
Input / Output value		0~16380 (14-bit representation, valid 12-bit)		
Input / Output polar		Unipolar		
Input / Output counting range		0~10V		
Conversion time		Conversion once for each scan		
Accuracy		±1%		
Isolation method		Non-isolation		
Wiring mechanism		3.81 mm European terminal block		
Installation position		The expansion slot of main unit		

Precision Load Cell Module



Specification	Model	MBs-1HLC
Number of channels		1 channel
Resolution		0.10 μ V/1D (24-bit AD)
Filters		Digital filter, sampling rate 6.25~120Hz
Measurement range		-1~39mV
Sensor voltage		5VDC $\pm$ 5%
No. of sensor connections		350 Ω sensor x 8
Isolation Method		Transformer (power) and optical (signal) isolation, 500VAC, 1 minute
Power consumption		24VDC, -15%/+20%, 2W
Wiring mechanism		7.62mm fixed terminal block
Dimension		Figure 4

Handheld Programming



Specification	Model	MP-08
Main function		Program editor (Mnemonic language), status monitoring, parameters setup, program/parameter import and recording, etc.
Max. of power consumption		5V/100mA
Keyboard		48 silicon rubber keys
Display		Two rows 16 characters, dot matrix LCD display, with LED backlight
Recording device		MBs-PACK read/write
Communication port		RS232 serial communication port
Connectors		DB9F, Mini-DIN
Dimension		Figure 7