INSTRUCTION MANUAL

ANALOG I/O MODULE
(Modbus; RS-485)

MODEL **61M**

BEFORE USE ....

Thank you for choosing us. Before use, please check contents of the package you received as outlined below.
If you have any problems or questions with the product, please contact our sales office or representatives.

■ PACKAGE INCLUDES:

Analog I/O module .....(1)
Terminating resistor (110 Ω, 0.25 W).....(1)

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

POINTS OF CAUTION

■ POWER INPUT RATING & OPERATIONAL RANGE

- Locate the power input rating marked on the product and confirm its operational range as indicated below:
  85 – 132V AC rating: 85 – 132V, 47 – 66 Hz, approx. 4VA
  24V DC rating: 24V ±10%, approx. 4W, approx. 160mA

■ GENERAL PRECAUTIONS

- Before you remove the unit or mount it, turn off the power supply, input signal and output signal for safety.

■ ENVIRONMENT

- Indoor use.
- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not subject the unit to physical impact.
- Environmental temperature must be within -5 to +55°C (23 to 131°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

■ WIRING

- Do not install cables close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

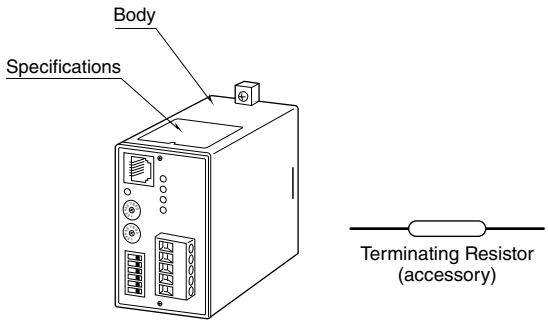
■ AND ....

- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

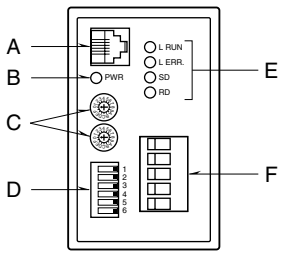
INSTALLATION

Use the Installation Base (model: MxBS2).

COMPONENT IDENTIFICATION



■ FRONT PANEL CONFIGURATION

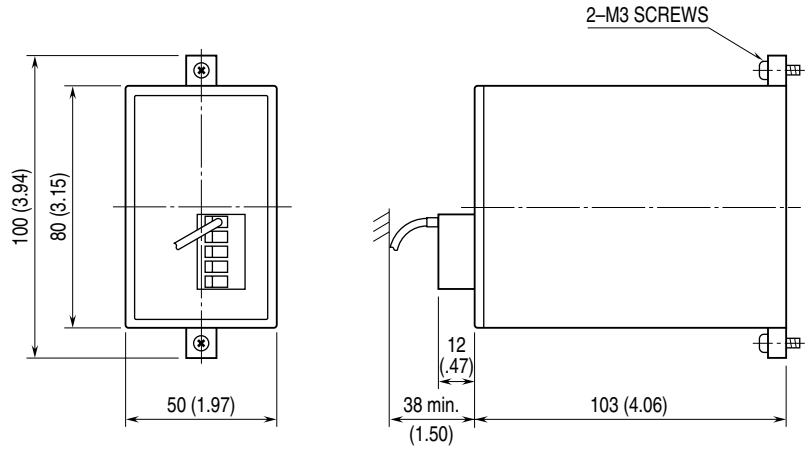


	NAME	FUNCTIONS					
A	Modular jack for factory calibration	Used only for factory calibration.					
B	Power indicator LED	green LED, ON when power is supplied.					
C	Node address setting	Selectable within 01 – F7. (factory set to: 00)					
D	Transmission setting	Baud rate	SW	BAUD RATE (bps)			
				38.4 k	19.2 k	9600	4800
			1	ON	OFF	ON	OFF
			2	ON	ON	OFF	OFF
			3	OFF	OFF	OFF	OFF
		Parity	SW	PARITY			
				NONE	ODD	EVEN	N/A
			4	ON	OFF	ON	OFF
			5	ON	ON	OFF	OFF
		Data	SW	DATA			
				RTU (Binary)		ASCII	
			6	ON		OFF	
E	Status indicator LED	MARKING (color)		FUNCTIONS			
		L RUN (red)		ON for 10 sec. when the modules receives data.			
		L ERR. (red)		ON at errors in parity, framing, overrun, CRC, LRC			
		SD (red)		ON when transmitting			
		RD (red)		ON when receiving			
F	Euro type connector terminal for Modbus	For wiring to Modbus					

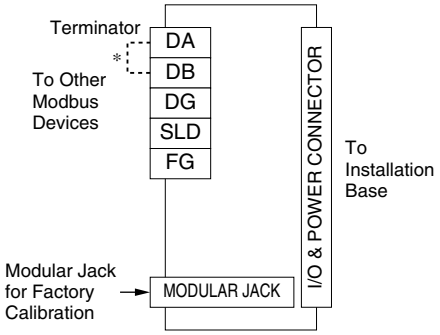
TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

■ EXTERNAL DIMENSIONS unit: mm (inch)



■ CONNECTION DIAGRAM



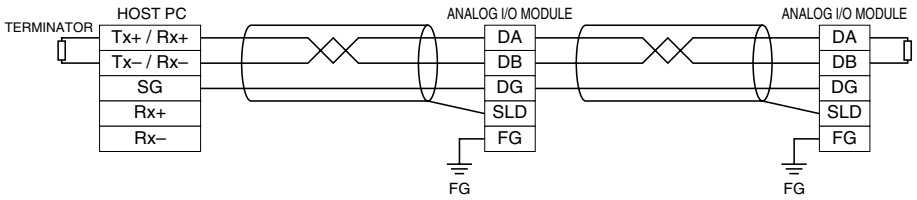
*Attach the terminating resistor when the module is at the termination of a transmission line.

WIRING INSTRUCTIONS

■ EURO TYPE CONNECTOR TERMINAL (Modbus)

Applicable wire size: 0.2 to 2.5 mm² (AWG24 to 12)
Stripped length: 7 mm

COMMUNICATION CABLE CONNECTIONS



MODBUS FUNCTION CODES & SUPPORTED CODES

■ Data and Control Functions

CODE	NAME		
01	Read Coil Status	X	Digital output from the slave
02	Read Input Status	X	Status of digital inputs to the slave
03	Read Holding Registers	X	General purpose register within the slave
04	Read Input Registers	X	Collected data from the field by the slave
05	Force Single Coil	X	Digital output from the slave
06	Preset Single Registers	X	General purpose register within the slave
07	Read Exception Status		
08	Diagnostics	X	
09	Program 484		
10	Poll 484		
11	Fetch Comm. Event Counter		Fetch a status word and an event counter
12	Fetch Comm. Event Log		A status word, an event counter, a message count and a field of event bytes
13	Program Controller		
14	Poll Controller		
15	Force Multiple Coils	X	Digital output from the slave
16	Preset Multiple Registers	X	General purpose register within the slave
17	Report Slave ID		Slave type / 'RUN' status
18	Program 884/M84		
19	Reset Comm. Link		
20	Read General Reference		
21	Write General Reference		
22	Mask Write 4X Register		
23	Read/Write 4X Register		
24	Read FIFO Queue		

■ Exception Codes

CODE	NAME		
01	Illegal Function	X	Function code is not allowable for the slave
02	Illegal Data Address	X	Address is not available within the slave
03	Illegal Data Value	X	Data is not valid for the function
04	Slave Device Failure		
05	Acknowledge		
06	Slave Device Busy		
07	Negative Acknowledge		
08	Memory Parity Error		

■ Diagnostic Subfunctions

CODE	NAME		
00	Return Query Data	X	Loop back test
01	Restart Comm. Option	X	Reset the slave and clear all counters
02	Return Diagnostic Register	X	Contents of the diagnostic data (2 bytes)
03	Change ASCII Input Delimiter	X	Delimiter character of ASCII message
04	Force Listen Only Mode	X	Force the slave into Listen Only Mode

MODBUS I/O ASSIGNMENTS

	ADDRESS	61M TYPE		DATA TYPE	DATA
		1	2		
Coil (0X)	1 – 16	X			Averaging SW *
	17 – 32	X			Sampling rate SW **
Inputs (1X)	1 – 16	X	X		Analog channel status (active channel)
	17 – 32	X	X		Analog status (out of range)
Input Registers (3X)	1 – 16	X		I	Analog input
	17 – 48	X		F	Analog input
Holding Registers (4X)	1 – 16		X	I	Analog output
	17 – 48		X	F	Analog output
	49 – 80	X	X	F	Full scale
	81 – 112	X	X	F	Zero scale

■ 61M Type

1: Analog input
2: Analog output

■ Data Type

F: Floating
I : Int 0 – 10000 (0 – 100%)

* Averaging SW
1: 4 samples
2: 2 samples
3: None

** Sampling rate SW
17: 400 millisec.
18: 240 millisec.
19: 160 millisec.

LIGHTNING SURGE PROTECTION

We offer a series of lightning surge protectors for protection against induced lightning surges. Please contact us to choose appropriate models.