

BEFORE USE

Thank you for choosing M-System. 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 M-System's Sales Office or representatives.

■ PACKAGE INCLUDES:

Analog I/O module(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.

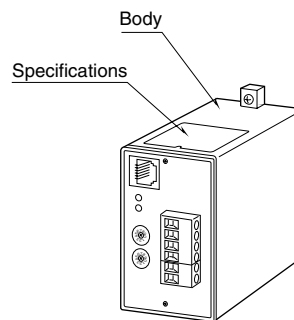
■ WIRING

- 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.

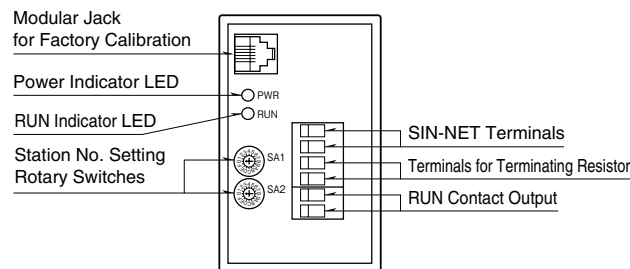
■ AND

- 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.

COMPONENT IDENTIFICATION



■ FRONT PANEL CONFIGURATION



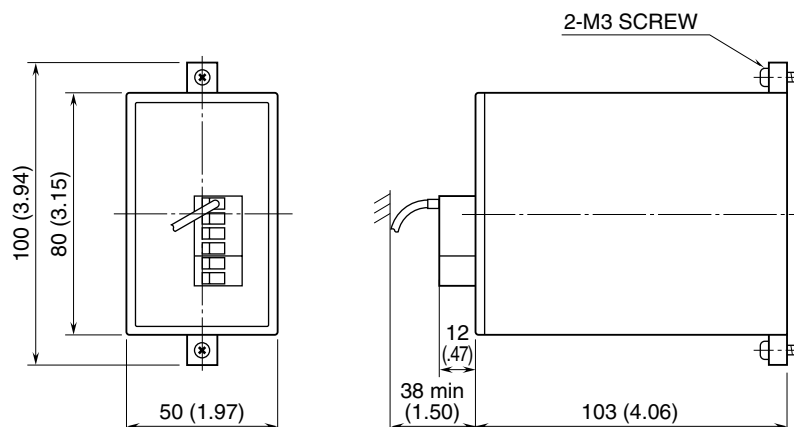
INSTALLATION

Use the Installation Base (model: MxBS2).

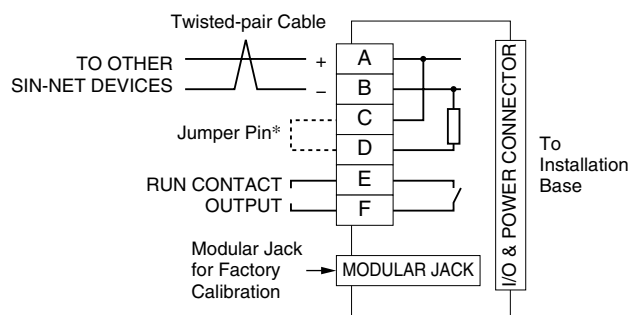
TERMINAL CONNECTIONS

Connect the unit as in the diagram below.

EXTERNAL DIMENSIONS unit: mm (inch)



CONNECTION DIAGRAM



*When the unit is located at the end of transmission line via twisted-pair cable (= no cross-wiring), short across the terminals C – D with the jumper pin (or wire) provided with the unit. Remove the jumper pin for the one not located at the end.

WIRING INSTRUCTIONS

EURO TYPE CONNECTOR TERMINAL (SIN-NET, RUN Contact Output)

Applicable wire size: 0.2 to 2.5 mm² (AWG24 to 12)

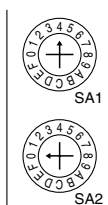
Stripped length: 7 mm

INSTALLATION PROCEDURE

- 1) Assign and set station addresses to all 61S modules.
- 2) Connect power supply.
- 3) Connect transmission cables.
- 4) Connect all other external I/O devices.

1. How to set an SA

The 2-digit SA number is set at the front with two 16-position rotary switches (SA1 and SA2) for values from 00H up to FFH for a total of 256 different combinations. The upper switch (SA1) adjusts the first digit of an SA number.



2. How to assign SA for each unit

An output-only module (model: 61S-162-x) receives signals from an input-only module (model: 61S-161-x) with the same address.

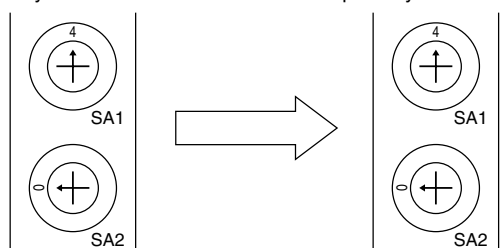
Identical addresses can be given to several receiving (output-only) modules. A transmitting (input-only) address can be assigned only to one module.

Therefore, when input from one module is distributed to two or more output modules, all receiving modules' SA must be identical to the SA of the transmitting module.

[Example]

Input-only Unit : SA = 40H

Output-only Unit : SA = 40H



3. Terminal block

Transmission lines (twisted-pair cables) and RUN contact output lines are all connected with DIN terminals.

The connector can be unplugged from the base. Connect cables to the screw terminals on the connector.

Standard leadwire size

Multi-strand : AWG #14

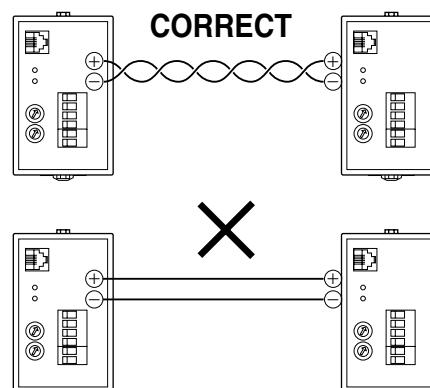
Solid : 1.4 mm dia. max.

When using multi-strand cables, do not solder their core cables.

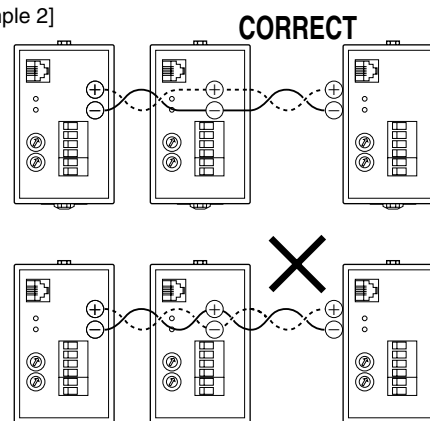
4. Transmission (twisted-pair) cables

Use wires 0.9 mm dia. or larger. (CPEV 0.9 ϕ recommended)
Connect LINE terminals (+) to (+) and (-) to (-) between modules. Transmission will be impossible with even one module's transmission lines reversed.

[Example 1]



[Example 2]

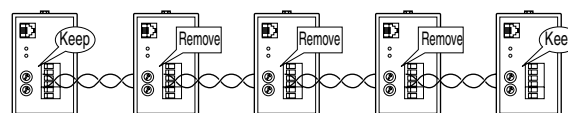


5. Jumper connections

The module is factory-equipped with a jumper across the terminals for terminating resistor in order to close the circuit and thereby prevent transmission-line waveform reflections.

With systems of 3 or more modules, remove these jumpers from all modules except those at the ends of a transmission line.

[Example]



DESCRIPTIONS

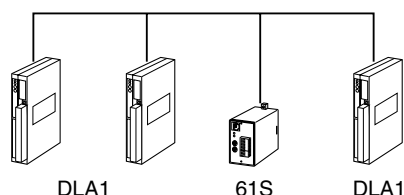
■ TRANSMISSION LINE CONFIGURATION

The multi-drop transmission line containing 22LA1, DLA1 and 61S modules should meet the following conditions.

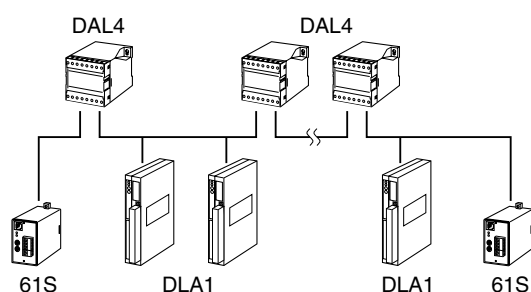
Contact M-System's sales office or representatives when designing.

A) 10 kilometers at maximum in total system.

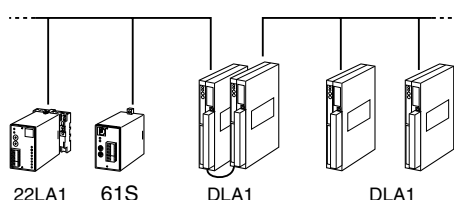
B) 61S module plus DLA1 units: One multitransmission line containing a 61S module can consist of a maximum of 16 units within the total distance of 500 m.



C) 61S modules, DLA1 units plus Repeater (model: DAL4): DAL4 units can expand the total distance. (6 DAL4 units max.)



D) 61S module, 22LA1 module plus DLA1 units: The total distance of a section consisting of 61S and 22LA1 modules is less than 500 meters. They can be connected to DLA1 units via a DLA1-7 unit. (Eight DLA1-7 units max.)



■ AVAILABLE MODELS

	Model Numbers	Note
61S-161-x (Ai 16 points)	61S-162-x (Ao 16 points)	—
	DLA1- xM1 (Ao 32 points)	Use only first 16 points out of Ao 32 points.

LIGHTNING SURGE PROTECTION

M-System offers a series of lightning surge protectors for protection against induced lightning surges. Please contact M-System to choose appropriate models.

■ STATION NUMBER (ADDRESS)

A) 1 input module and X output modules: Match the address for input and output modules.

B) Computer interface: Set address numbers to correspond with the computer as output module.

■ TRANSMISSION TIME

Integrate all the transmission time for each process input module in the system.

- Analog input 16 points (model: 61S-161-x) : 24.0 msec.

An analog module does not transmit all its signals in serial but does 1 point per each cycle. For example, when 1 contact input module (DLA1, 32 points) and 1 analog input module (16 points) are connected, 32 point contact signal and 1 point analog signal are transmitted in turn. One cycle time is therefore calculated as:

$$32 \text{ points} \times 1.5 \text{ msec.} + 24 \text{ msec.} = 72 \text{ msec.}$$

This method is beneficial for giving a priority to contact signals which vary rapidly.