INSTRUCTION MANUAL

ANALOG I/O MODULE
(Multiplex Transmission System)

MODEL **60S**

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 (body + base socket) .....(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 DC ±10%, approx. 4W

■ GENERAL PRECAUTIONS

- Before you remove the unit from its base socket 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.

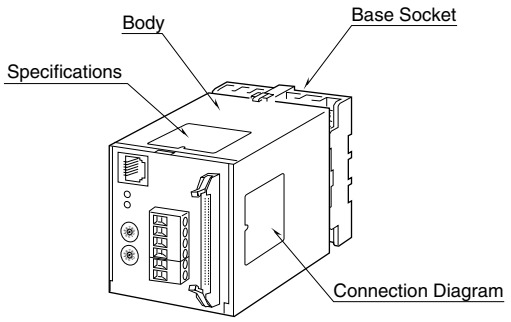
■ WIRING

- 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.

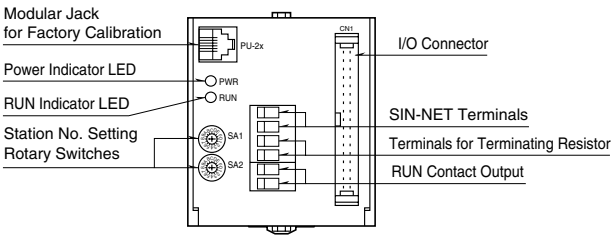
■ AND ....

- 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.

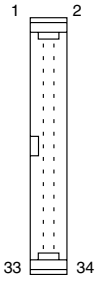
COMPONENT IDENTIFICATION



■ FRONT PANEL CONFIGURATION



■ PIN ASSIGNMENTS

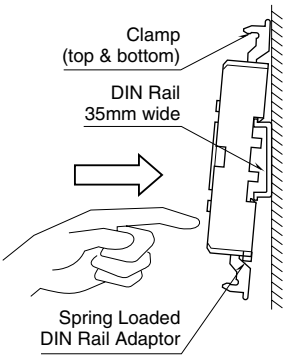


INSTALLATION

Detach the yellow clamps located at the top and bottom of the unit to separate the body from the base socket.

■ DIN RAIL MOUNTING

Set the base socket so that its DIN rail adaptor is at the bottom. Position the upper hook at the rear side of base socket on the DIN rail and push in the lower. When removing the socket, push down the DIN rail adaptor utilizing a minus screwdriver and pull.



■ WALL MOUNTING

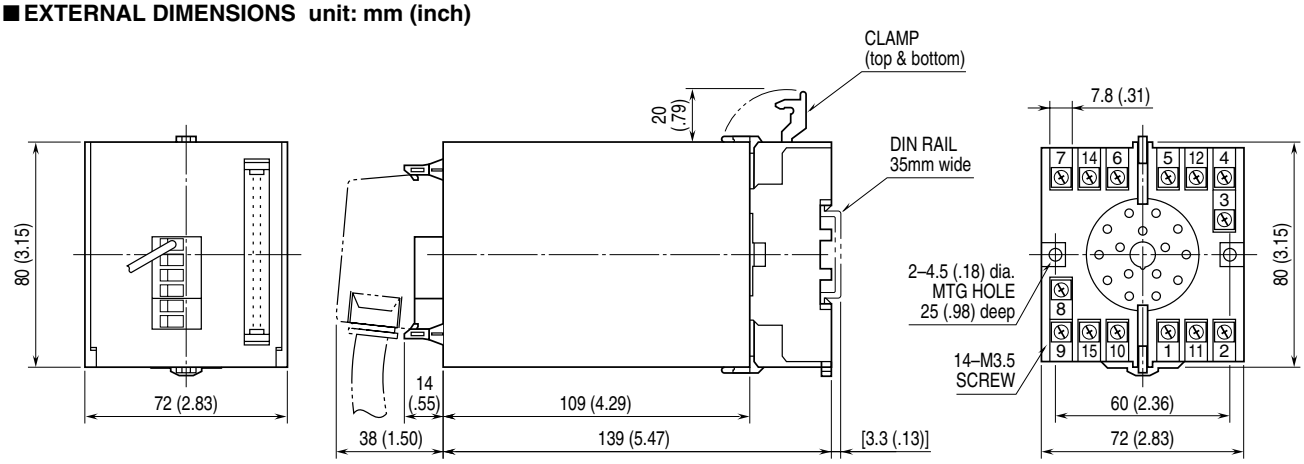
Refer to "EXTERNAL DIMENSIONS."

Shape and size of the base socket are slightly different with various socket types.

TERMINAL CONNECTIONS

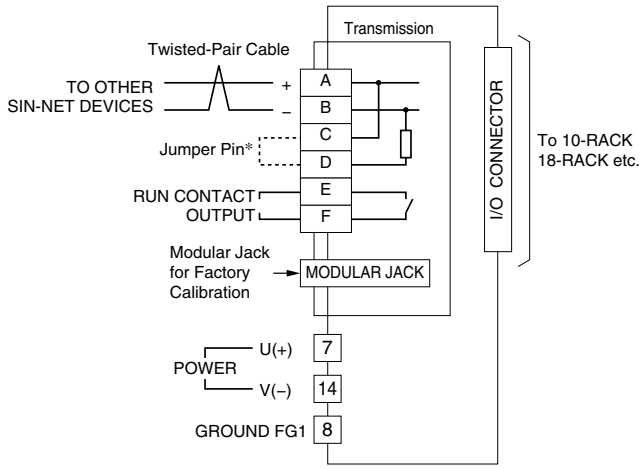
Connect the unit as in the diagram below or refer to the connection diagram on the side of the unit.

■ EXTERNAL DIMENSIONS unit: mm (inch)



•When mounting, no extra space is needed between units.

■ 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.

I/O CONNECTOR PIN ASSIGNMENTS (34 PINS)

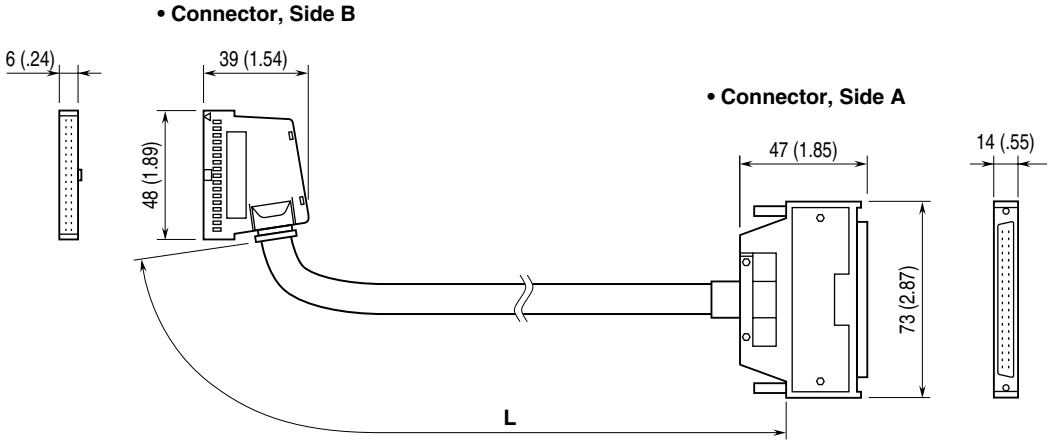
■ INPUT CONNECTOR

PIN NO.	ASSIGNMENT	PIN NO.	ASSIGNMENT
1	Input 1	2	COM
3	Input 2	4	COM
5	Input 3	6	COM
7	Input 4	8	COM
9	Input 5	10	COM
11	Input 6	12	COM
13	Input 7	14	COM
15	Input 8	16	COM
17	Input 9	18	COM
19	Input 10	20	COM
21	Input 11	22	COM
23	Input 12	24	COM
25	Input 13	26	COM
27	Input 14	28	COM
29	Input 15	30	COM
31	Input 16	32	COM
33	No connection	34	No connection

■ OUTPUT CONNECTOR

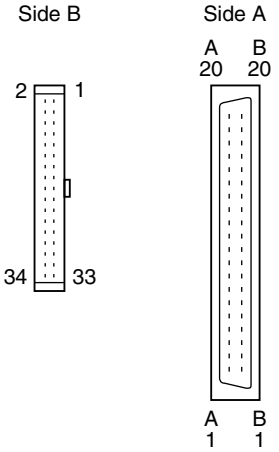
PIN NO.	ASSIGNMENT	PIN NO.	ASSIGNMENT
1	Output 1	2	COM
3	Output 2	4	COM
5	Output 3	6	COM
7	Output 4	8	COM
9	Output 5	10	COM
11	Output 6	12	COM
13	Output 7	14	COM
15	Output 8	16	COM
17	Output 9	18	COM
19	Output 10	20	COM
21	Output 11	22	COM
23	Output 12	24	COM
25	Output 13	26	COM
27	Output 14	28	COM
29	Output 15	30	COM
31	Output 16	32	COM
33	No connection	34	No connection

CABLE (MODEL: MCN34) PIN ASSIGNMENTS

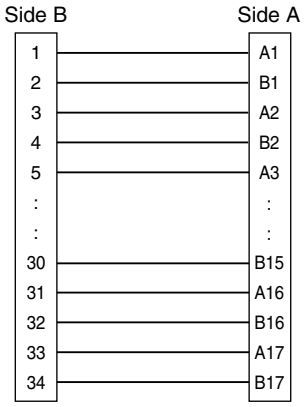


	MCN34-03	MCN34-05	MCN34-10	MCN34-30
L	30 cm (11.8 in.)	50 cm (19.7 in.)	1 m (3.3 ft.)	3 m (9.8 ft.)

■ CONNECTOR PIN ASSIGNMENT



■ WIRING DIAGRAM



Pins No. A18 – B20 on Side A are not connected.

WIRING INSTRUCTIONS

■ SCREW TERMINAL

Torque: 0.8 N·m

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

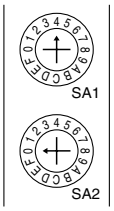
Applicable wire size: 0.2 to 2.5 mm² (AWG24 to 12)
Stripped length: 7 mm

INSTALLATION PROCEDURE

1) Assign and set station addresses to all 60S 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.

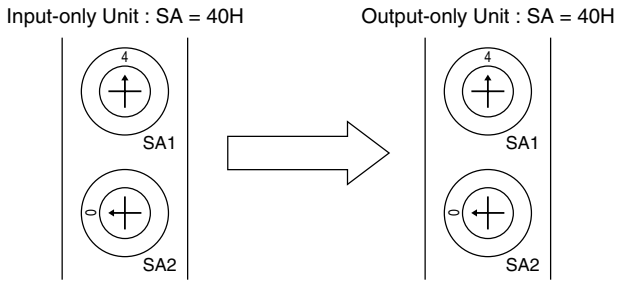


[Example]
SA = 40H

2. How to assign SA for each unit

An output-only module (model: 60S-162-x) receives signals from an input-only module (model: 60S-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]



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

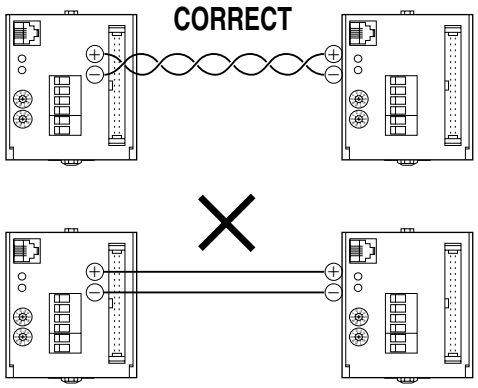
Multi-strand : AWG #14
Solid : 1.4 mm dia. max.

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

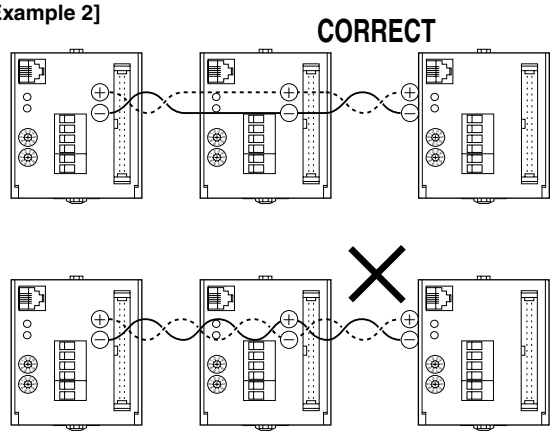
4. Transmission (twisted-pair) cables

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

[Example 1]



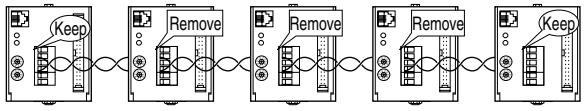
[Example 2]



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]



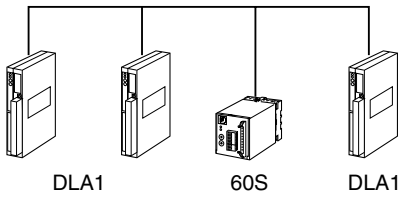
DESCRIPTIONS

■ TRANSMISSION LINE CONFIGURATION

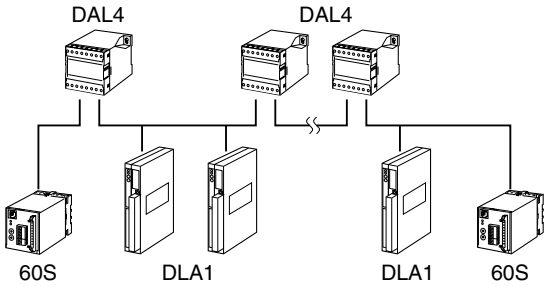
The multi-drop transmission line containing 22LA1, DLA1 and 60S modules should meet the following conditions.
Contact our sales office or representatives when designing.

A) 10 kilometers at maximum in total system.

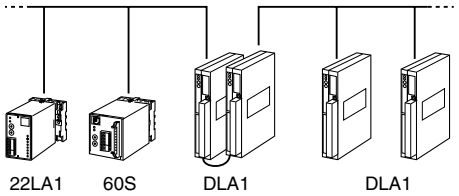
B) 60S module plus DLA1 units: One multitransmission line containing a 60S module can consist of a maximum of 16 units within the total distance of 500 m.



C) 60S modules, DLA1 units plus Repeater (model: DAL4): DAL4 units can expand the total distance.
(6 DAL4 units max.)



D) 60S module, 22LA1 module plus DLA1 units: The total distance of a section consisting of 60S 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.)



■ 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: 60S-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 points × 1.5 msec. + 24 msec. = 72 msec.
  This method is beneficial for giving a priority to contact signals which vary rapidly.

■ AVAILABLE MODELS

	Model Numbers	Note
60S-161-x (Ai 16 points)	60S-162-x (Ao 16 points)	----
	DLA1- xM1 (Ao 32 points)	Use only first 16 points out of Ao 32 points.

LIGHTNING SURGE PROTECTION

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