

SIGNAL TRANSMITTER
(dual-output; field-configurable)

MODEL **M60SWVS**

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:**

Signal transmitter(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

■ **CONFORMITY WITH EU DIRECTIVES**

- The equipment must be mounted inside a panel.
- The actual installation environments such as panel configurations, connected devices, connected wires, may affect the protection level of this unit when it is integrated in a panel system. The user may have to review the CE requirements in regard to the whole system and employ additional protective measures to ensure the CE conformity.
- Install lightning surge protectors for those wires connected to remote locations.

■ **POWER INPUT RATING & OPERATIONAL RANGE**

- Locate the power input rating marked on the product and confirm its operational range as indicated below:
24V DC rating: 24V ±10%, 0.7W max.

■ **GENERAL PRECAUTIONS**

- Before you remove the unit or mount it, turn off the power supply and input 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 -20 to +55°C (-4 to +131°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

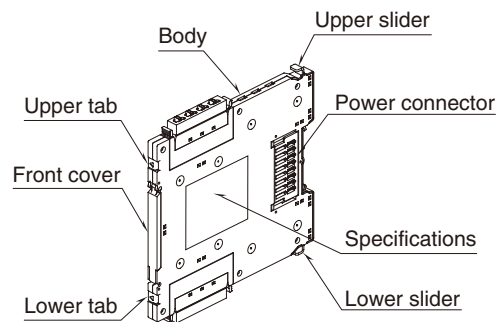
■ **WIRING**

- 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

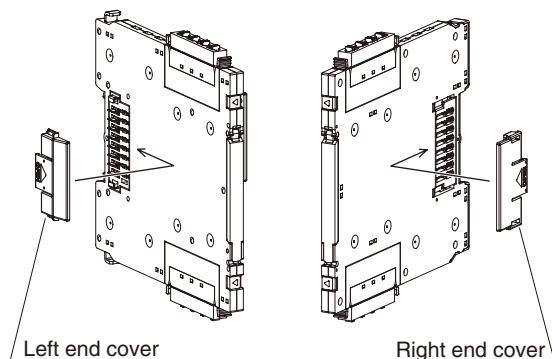


INSTALLATION

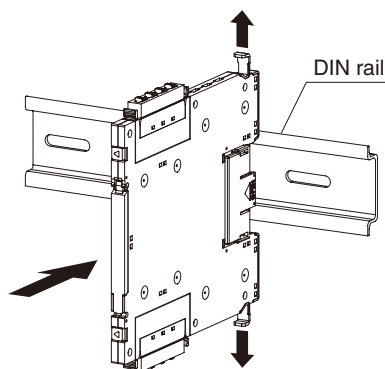
Mount the unit onto the DIN rail such that the terminals 1 through 4 are placed at the lower side.

■ MOUNTING SINGLE MODULE

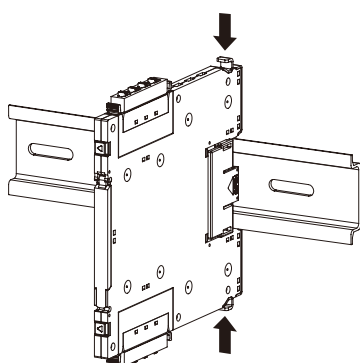
- 1) Attach the end cover to the power connector of each side.
(The unit is shipped with the both end covers attached.)



- 2) Pull out the upper and lower sliders from the body and attach the unit onto the DIN rail.

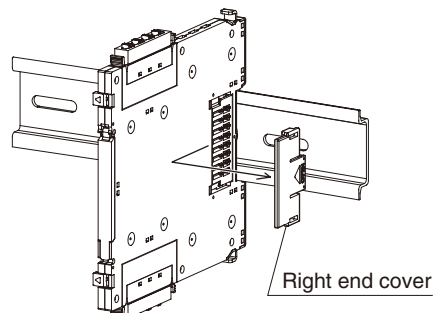


- 3) Push the sliders back into the body to fix the unit to the DIN rail.

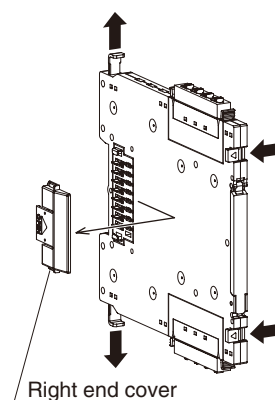


■ MOUNTING MULTIPLE MODULES

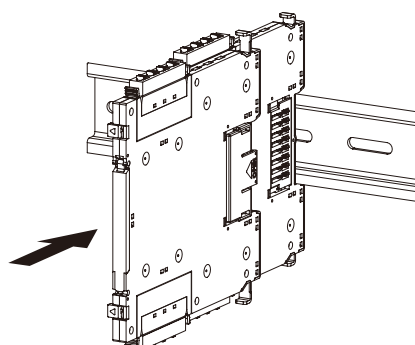
- 1) Slide the upper and lower tabs of the already mounted unit to the left, and remove the right end cover by sliding along the surface of the unit.



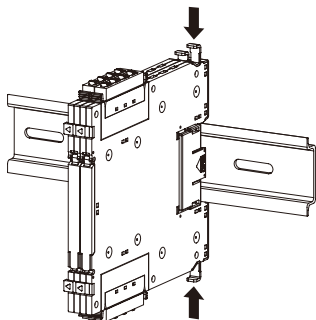
- 2) Remove the left end cover of the unit to be mounted next, pull out the upper and lower sliders, and slide the upper and lower tabs to the left.



- 3) Attach the unit to be mounted onto the DIN rail while sliding its male power connector along the female power connector of the already mounted unit so as to engage with each other. Confirm that the upper and lower tabs fit into the respective concave portions of the already mounted unit.



4) Push the sliders back into the body to fix the unit to the DIN rail.



5) Repeat the above procedure for the next unit(s).

■ DISMOUNTING SINGLE MODULE

Pull out the upper and lower sliders and pull out the unit.

■ DISMOUNTING MULTIPLE MODULES

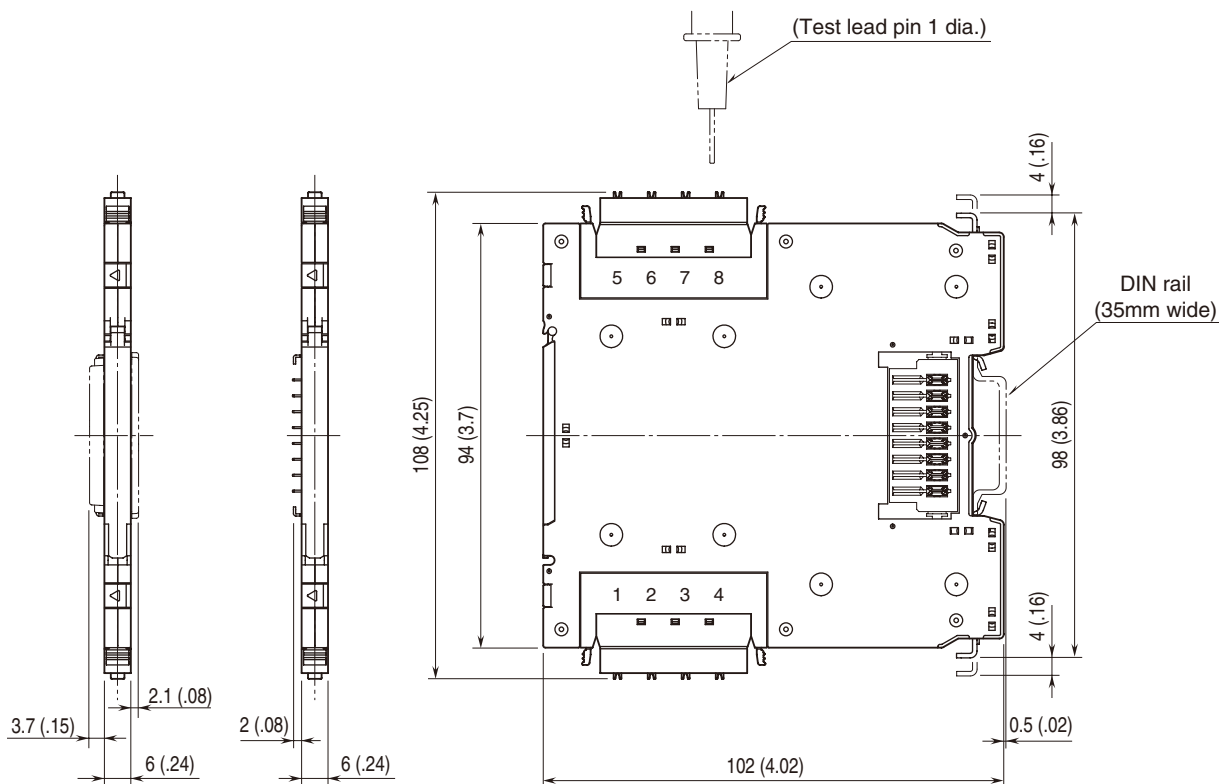
Remove the units one by one from the rightmost unit.

- 1) Pull out the upper and lower sliders of the rightmost unit and pull out the unit from the DIN rail while sliding toward you.
- 2) Attach the left (and right) end cover(s) to the removed unit and return the upper and lower tabs to the original positions.
- 3) Repeat the above procedure for the next unit(s)
- 4) Attach the right end cover to the rightmost unit among the remaining units.

TERMINAL CONNECTIONS

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

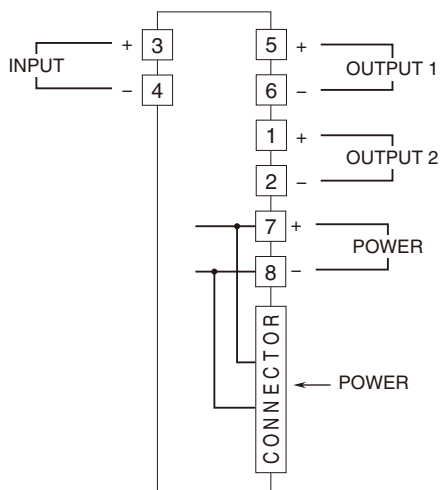
■ EXTERNAL DIMENSIONS unit: mm (inch)



● With the end cover attached

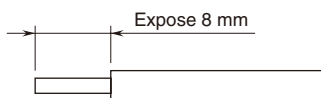
• Capable of High-density mounting

■ CONNECTION DIAGRAM



■ WIRING INSTRUCTIONS

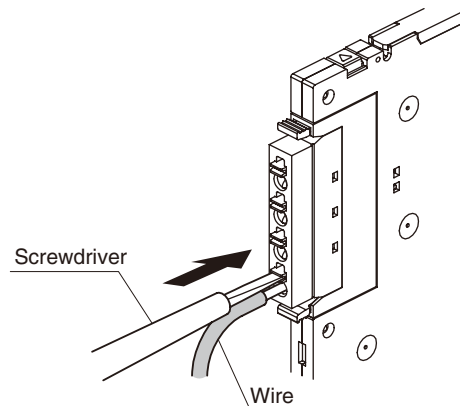
- Applicable wire size
 - Solid: 0.2 to 1.5 mm² (0.55 to 1.35 dia.)
 - Stranded: 0.2 to 1.5 mm² (Tinning wire ends may cause contact failure and thus is not recommended.)
 - Ferruled: 0.2 to 1.5 mm² (0.55 to 1.35 dia.)
 - Recommended wire: Phoenix Contact; AI0,25-8YE to AI0,75-8GY
- Expose wire conductors by 8 mm (0.31").



■ HOW TO CONNECT WIRES

• Solid or stranded wire

- 1) Insert a minus screwdriver into the groove of the insertion lever and push in the lever.
- 2) Insert a wire into the wire entry opening.
- 3) Confirm that the wire tip hits the bottom and pull out the screwdriver while holding the wire in position. Confirm that the wire's insulation tube is not caught in the clamp.



• Ferruled wire

Simply insert the wire into the wire entry opening.

■ HOW TO DISCONNECT WIRES

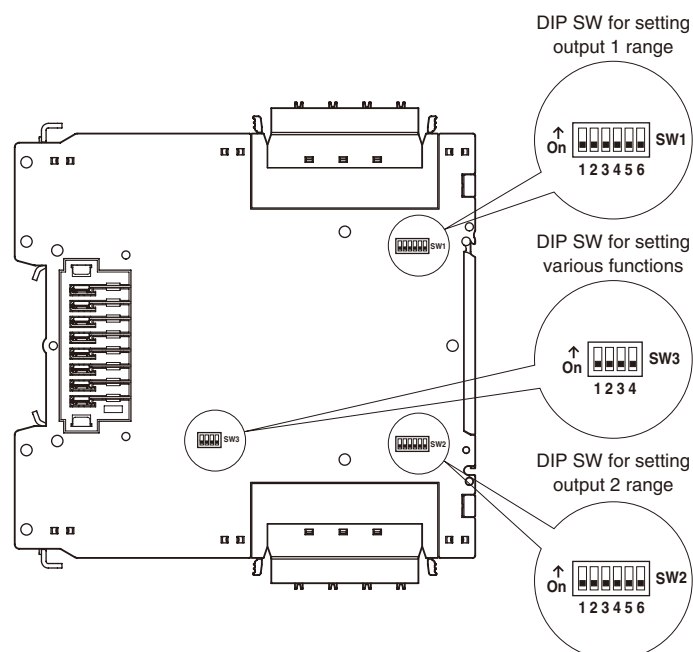
Insert a minus screwdriver into the groove of the insertion lever, and pull out the wire while pushing in the lever.

Use a minus screwdriver with the tip width of 2.5 mm or less, and the tip thickness of around 0.4 mm.

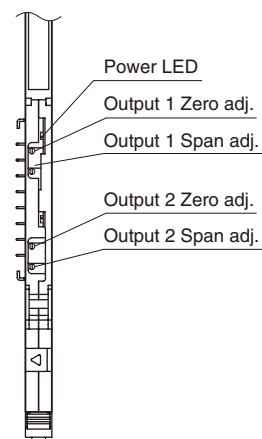
Recommended driver: Phoenix Contact; SZS 0,4X2,5

EXTERNAL VIEW

LEFT SIDE VIEW



FRONT VIEW (with the front cover removed)



DIP SWITCH SETTING

Input type unmatched with the setting or input exceeding the maximum value of each input range may damage the unit. Be sure to confirm the setting range before applying input signals.

Input / output range setting accuracy: $\pm 0.2\%$

(*) Factory setting

Output 1 Range

OUTPUT RANGE	SW1					
	1	2	3	4	5	6
4 – 20 mA (*)	ON	ON	OFF	OFF	ON	OFF
0 – 20 mA	OFF	ON	OFF	OFF	ON	OFF
0 – 5 V	OFF	OFF	ON	ON	ON	ON
1 – 5 V	ON	OFF	ON	ON	ON	ON

Output 2 Range

OUTPUT RANGE	SW2					
	1	2	3	4	5	6
4 – 20 mA (*)	ON	ON	OFF	OFF	ON	OFF
0 – 20 mA	OFF	ON	OFF	OFF	ON	OFF
0 – 5 V	OFF	OFF	ON	ON	ON	ON
1 – 5 V	ON	OFF	ON	ON	ON	ON

Input Range

INPUT RANGE	SW3		
	1	2	3
4 – 20 mA (*)	OFF	ON	OFF
0 – 20 mA	ON	ON	OFF
0 – 10 V	ON	OFF	OFF
2 – 10 V	OFF	OFF	OFF
0 – 5 V	ON	OFF	ON
1 – 5 V	OFF	OFF	ON

Response Time

RESPONSE TIME	SW3-4
Standard Response (*)	ON
Fast Response	OFF

CHECKING

- 1) Terminal wiring: Check that all cables are correctly connected according to the connection diagram.
- 2) Confirm that the wire insulation tubes are not caught in the clamp.
- 3) Power input voltage: Check voltage across the terminal 7 – 8 with a multimeter.
- 4) Input: Check that the input signal is within 0 – 100% of the full-scale.
- 5) Output: Check that the load resistance meets the described specifications.

ADJUSTMENT PROCEDURE

This unit is calibrated at the factory to the default setting (4 – 20mA input; 4 – 20mA output).

No calibration is required unless the ranges need to be changed.

The unit is designed to maintain the described I/O range setting accuracy ($\pm 0.2\%$) even after I/O ranges have been changed.

If these I/O errors need to be compensated, or for matching the signal to a receiving instrument, or when performing regular calibration, adjust the output as explained below.

■ HOW TO CALIBRATE OUTPUT SIGNAL

Use a signal source and measuring instruments of sufficient accuracy level. Turn the power supply on and warm up for more than 10 minutes.

- 1) ZERO: Apply 0% input and adjust output to 0%.
- 2) SPAN: Apply 100% input and adjust output to 100%.
- 3) Check ZERO output again with 0% input.
- 4) When ZERO output value is deviated, repeat the above procedure 1) – 3).
- 5) Repeat the above procedure for Output 2.

MAINTENANCE

Perform calibration regularly as explained below.

■ CALIBRATION

Warm up the unit for at least 10 minutes.

Apply 0%, 25%, 50%, 75%, and 100% input signal.

Check that the output signals for the respective input signals remain within accuracy described in the data sheet. When the output is out of tolerance, recalibrate the unit according to the “ADJUSTMENT PROCEDURE” explained earlier.

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.