

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 conditioner (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:

AC power: Rating $\pm 10\%$, 50/60 ± 2 Hz, approx. 2VA

DC power: Rating $\pm 10\%$, approx. 80mA

■ GENERAL PRECAUTIONS

- Before you remove the unit from its base socket 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 -5 to $+60^{\circ}\text{C}$ (23 to 140°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

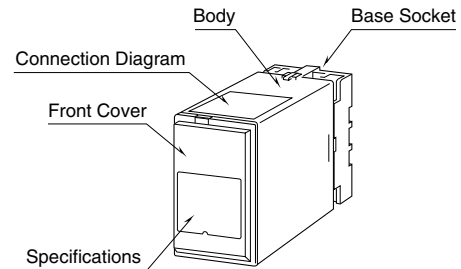
■ WIRING

- 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

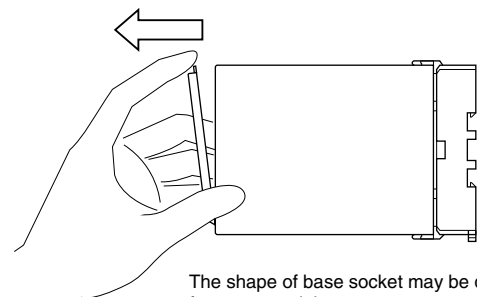
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

COMPONENT IDENTIFICATION



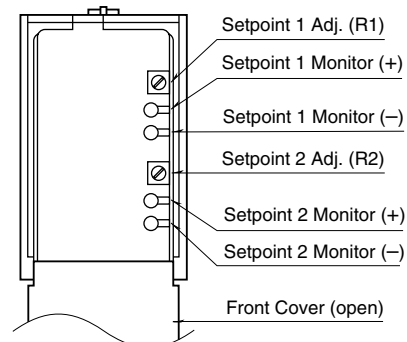
■ HOW TO OPEN THE FRONT COVER:

Hang your finger on the hook at the top of the front cover and pull.



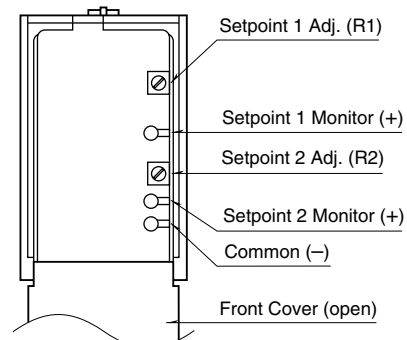
The shape of base socket may be different for some models.

■ FRONT VIEW (current output; with cover open)



* When monitor terminal is in use, connect a load to the output terminal or short across the output terminal.

■ FRONT VIEW (voltage output; with cover open)

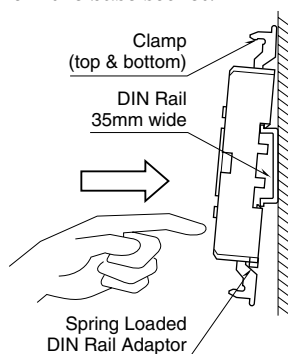


INSTALLATION

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

■ DIN RAIL MOUNTING

Set the base socket so that its DIN rail adaptor is at the bottom. Hang 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

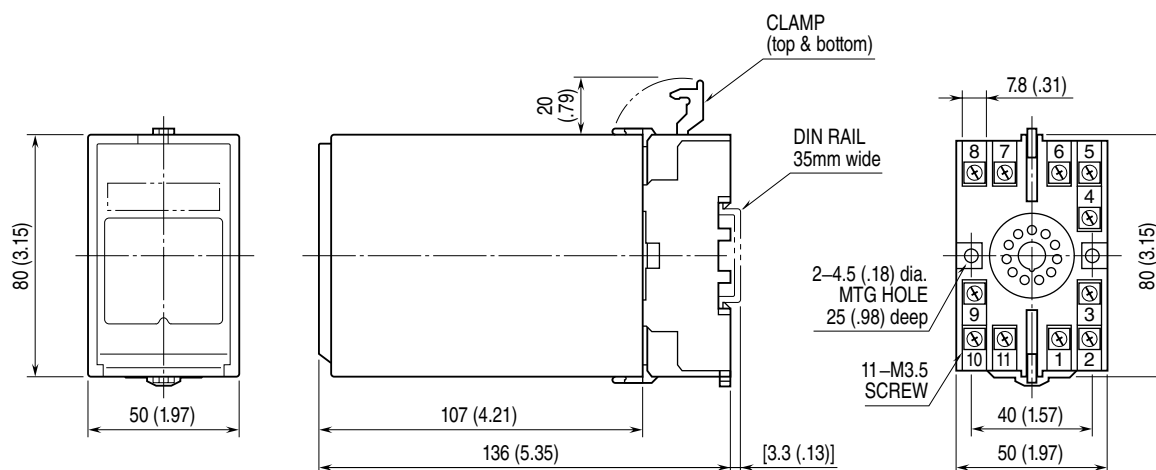
Refer to "EXTERNAL DIMENSIONS."

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

TERMINAL CONNECTIONS

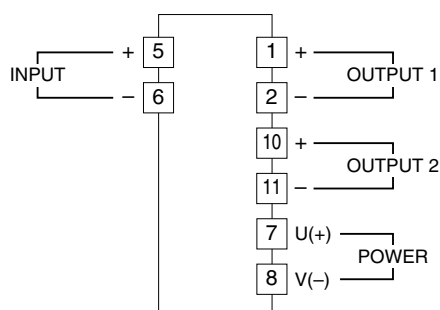
Connect the unit as in the diagram below or refer to the connection diagram on the top of the unit.

■ EXTERNAL DIMENSIONS unit: mm (inch)



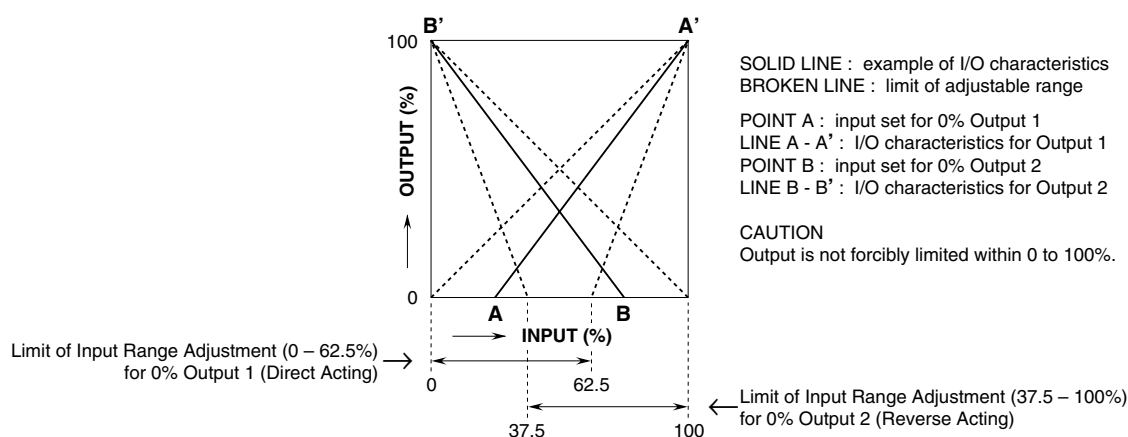
• When mounting, no extra space is needed between units.

■ CONNECTION DIAGRAM



CONFIGURATION

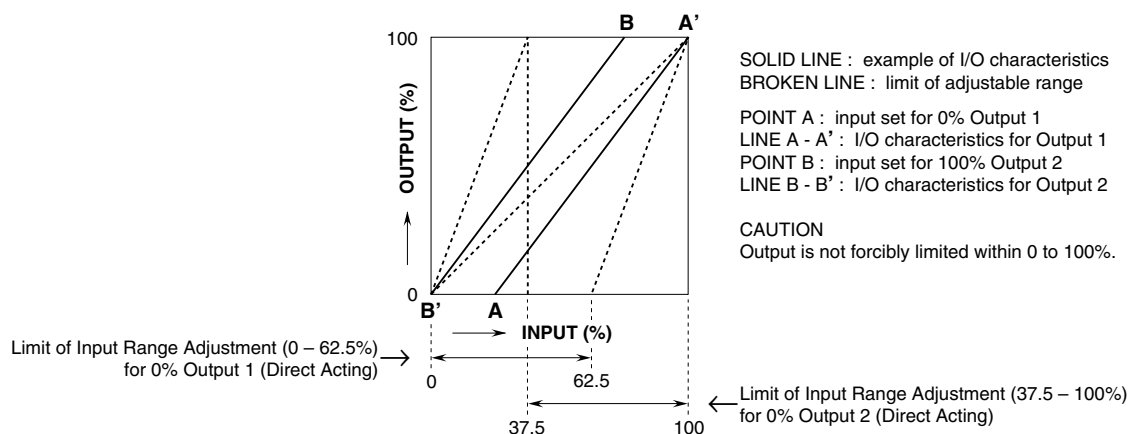
■ V-SHAPE CHARACTERISTICS (model: MFS-V)



•Input Range Adjustment

1. For current output, connect an ammeter to output 1 monitor terminals.
Current signal is measured at both ends of a diode inserted in series to the output 1 driver.
Input resistance of the ammeter must be 10Ω at the maximum to ensure accurate measurement.
For voltage output, connect a voltmeter across the common and output 1 monitor (+) terminals.
2. Apply an input signal desired for 0% output. (within 0 – 62.5%)
3. Turn output 1 adjustment until 0% output is monitored.
4. Adjust output 2 the same way as output 1. Allowable input range for 0% output is 37.5 – 100%.
Input signals for 100% output are fixed to 100% for output 1, 0% for output 2.

■ PARALLEL CHARACTERISTICS (model: MFS-P)

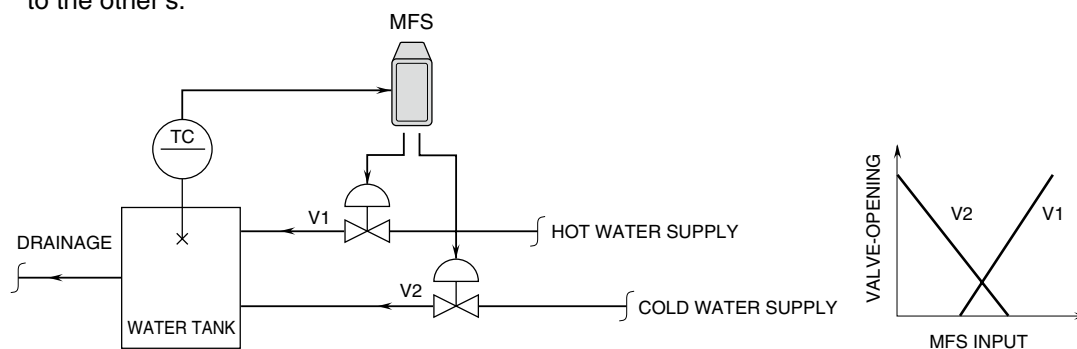


•Input Range Adjustment

1. For current output, connect an ammeter to output 1 monitor terminals.
Current signal is measured at both ends of a diode inserted in series to output 1 driver.
Input resistance of the ammeter must be 10Ω at the maximum to ensure accurate measurement.
For voltage output, connect a voltmeter across the common and output 1 monitor (+) terminals.
 2. Apply an input signal desired for 0% output. (within 0 – 62.5%)
 3. Turn output 1 adjustment until 0% output is monitored.
- Proceed to output 2 adjustment.
4. Connect an ammeter or voltmeter to output 2 monitor terminal.
 5. Apply input signal required for 100% output. (within 37.5 – 100%)
 6. Turn output 2 adjustment until 100% output is monitored.
- For output 1, input signal for 100% output is fixed to 100%, while for output 2, input signal for 0% output is fixed to 0%.

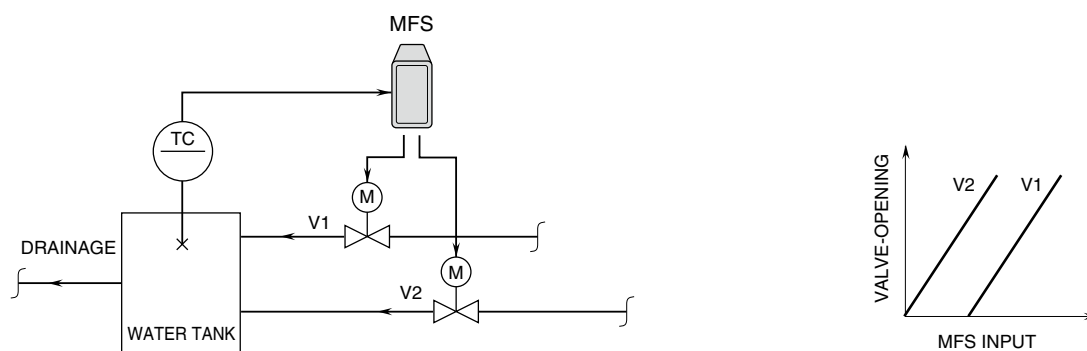
■ V-SHAPE CHARACTERISTICS (model: MFS-V)

- When the relation between control signal and valve-opening for one valve has the opposite characteristic to the other's:

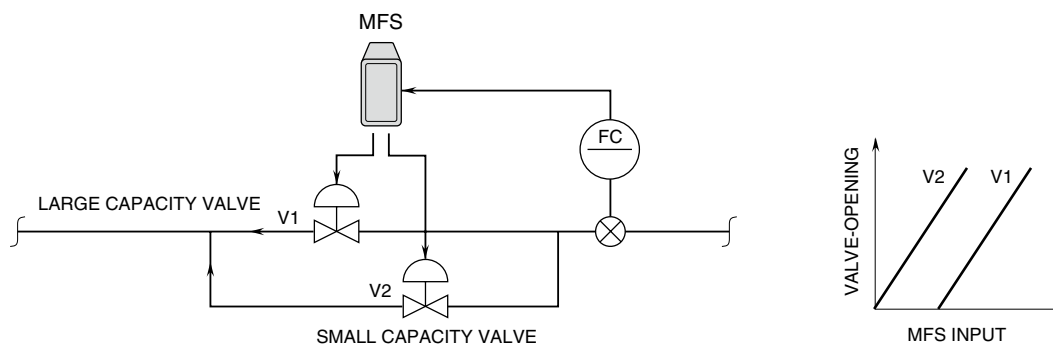


■ PARALLEL CHARACTERISTICS (model: MFS-P)

- When the relation between control signal and valve-opening for both valves has the same characteristic:



- To control wide flow range with two valves of different capacities:



CHECKING

- 1) Terminal wiring: Check that all cables are correctly connected according to the connection diagram.
- 2) Power input voltage: Check voltage across the terminal 7 – 8 with a multimeter.
- 3) Input: Check that the input signal is within 0 – 100% of the full-scale.
- 4) Output: Check that the load resistance meets the described specifications.

MAINTENANCE

Regular calibration procedure is 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 signal for the respective input signal remains within accuracy described in the data sheet.

LIGHTNING SURGE PROTECTION

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