

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:

Valve positioner
 (body + base socket + input resistor).....(1)
 Input resistor is provided only with current input type.

■ 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. 4 – 7VA excluding meter consumption

■ GENERAL PRECAUTIONS

- Before you remove the unit from its base socket or mount it, turn off the power supply and power to a motor 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.

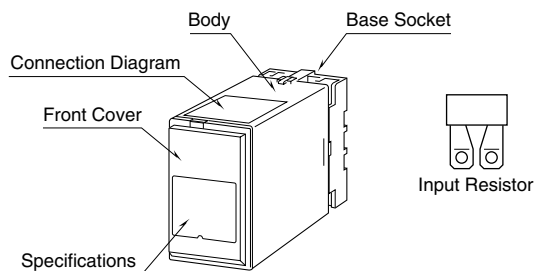
■ WIRING

- 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

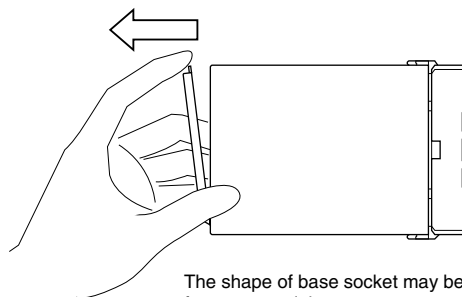
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

COMPONENT IDENTIFICATION



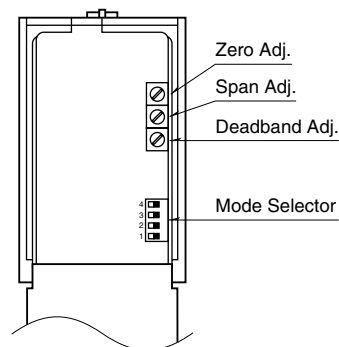
■ HOW TO OPEN THE FRONT COVER:

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 PANEL CONFIGURATION

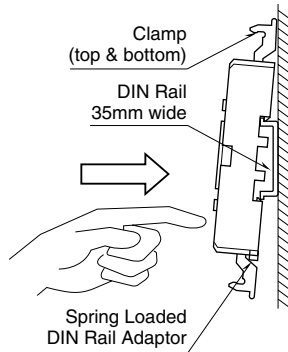


INSTALLATION

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."

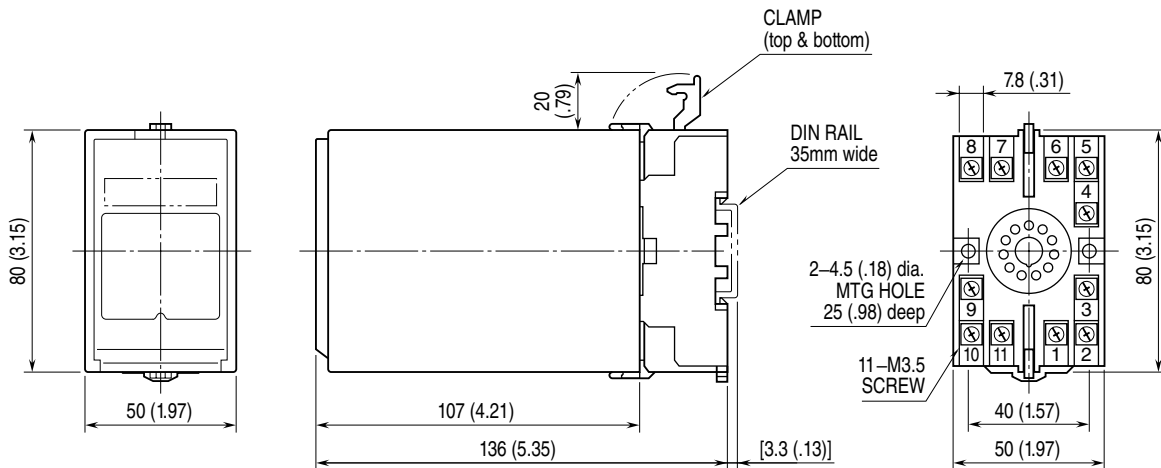
Shape and size of the base socket are slightly different with various socket types.

TERMINAL CONNECTIONS

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

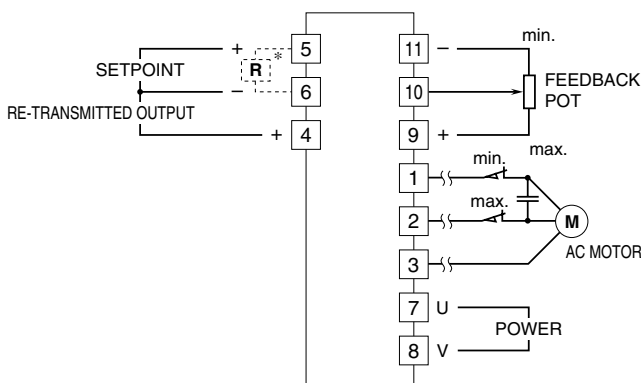
When an input resistor is provided with the module, attach it together with input wiring to the input screw terminals.

■ EXTERNAL DIMENSIONS unit: mm (inch)



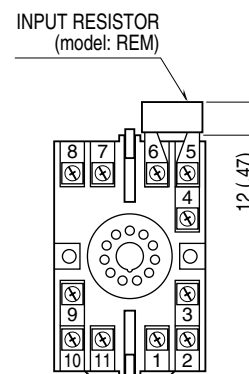
• When mounting, no extra space is needed between units.

■ TERMINAL CONNECTION



*Input shunt resistor attached for current input.

■ TERMINAL ASSIGNMENTS unit: mm (inch)



Input shunt resistor attached for current input.

INSTALLATION & ADJUSTMENT PROCEDURE

• Necessary Instruments & Tools

Signal generator, screwdriver, multimeter, and other general tools.

1. Mode Selector Switch (DIP SW1 – SW4 on the front panel)

• Failsafe operation (full-open, full-closed or stop) when there is no position input signal: SW1, SW2

| MODE | SW1 | SW2 |
|----------------------------|---------|---------|
| Full-closed (minimum side) | OFF (*) | OFF (*) |
| Stop | ---- | ON |
| Full-open (maximum side) | ON | OFF |

Minimum side means full-closed valve position, maximum side means full-open valve position.

• Direct/reverse re-transmitted output: SW3

| MODE | SW3 |
|-------------------|---------|
| Reverse operation | OFF (*) |
| Direct operation | ON |

• Direct/reverse control action: SW4

| MODE | SW4 |
|-------------------|---------|
| Reverse operation | OFF (*) |
| Direct operation | ON |

Zero/span adjustments, electronic limit zero/span adjustments are independent from the valve operation direction. Switching direction does not switch zero and span.

Likewise, the direction of re-transmitted output is not reversed.

(*) Factory setting

2. Limit Switches

Operate actuator manually and adjust both of the limit switches to desired positions (slightly outside of the fully opened position or of the fully closed position).

3. Connecting motor/actuator and the MEX-M1

- 1) Mount motor to the actuator.
- 2) Set manually output stem of the actuator at the approximate center position of the full span.
- 3) Connect a capacitor across two cables other than common one of the three from the motor.
- 4) Check polarity of these two cables.

Apply 100V AC across one of the two cables and the common one.

When the actuator goes to open, that cable should be connected as the “maximum” side, and the other as the “minimum” side.

When the actuator goes to close, the maximum/minimum sides are reversed.

- 5) Connect the MEX-M1 with the motor according to the connection diagram in the previous page.

4. Feedback Potentiometer

- 1) Set manual output stem of the actuator at the approximate center (50%) position of the full span.
- 2) Measure full-scale resistance across the pin No.1 to No.3. (Full-scale resistance = R_x)
- 3) Set the potentiometer wiper to the middle point (where resistance across the pin No. 1 to No.2 [wiper] = $R_x/2$), and fix it to the actuator.
- 4) Operate the actuator manually in measuring resistance between the pin No.2 and No.1, between No.2 and No.3. When the resistance decreased in either side of the wiper, that side is minimum, and the other side is maximum.
- 5) Connect the MEX-M1 with the potentiometer according to the connection diagram in the previous page.
- 6) Check again that the potentiometer is secured to the proper position.

5. Zero and Span Adjustments (operational range of the output stem)

- 1) Make all other wirings (power supply, setpoint input and re-transmitted output).
- 2) Apply 20mA for direct action and 4mA for reverse action.
- 3) Turn the front zero adjustment until the actuator stem reaches a desired fully closed position.
- 4) Apply 4mA for direct action and 20mA for reverse action.
- 5) Turn the front span adjustment until the actuator stem reaches a desired fully opened position.

6. Deadband Adjustments (only if necessary)

When the actuator stems does not stop steady at the setpoint, adjust deadband via the front screwdriver adjustment.

- 1) When huntings occur, widen the deadband. Turn the adjustment clockwise.
- 2) For narrowing the error or increasing the resolution, narrow the deadband. Turn the adjustment counterclockwise.

LOCK PROTECTION TIMER

When the deviation between the setpoint signal and the feedback does not remain inside deadband for longer than 2 minutes, the MEX-M1 stops power supply to the motor for possible motor malfunction.

In order to recover from this status, turn off and on the power supply or change setpoint input from 0% to 100% and then back to 0% again.

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) Feedback potentiometer: Check voltage across the terminals 9 – 11 to show approx. 4V and 10 – 11 within 0 to approx. 4V.
- 4) Output: Check voltage across the output terminals.

LIGHTNING SURGE PROTECTION

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