

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:
AC power: Rating $\pm 10\%$, 50/60 ± 2 Hz, approx. 2VA
DC power: Rating $\pm 10\%$, approx. 120mA

■ 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 +60°C (23 to 140°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

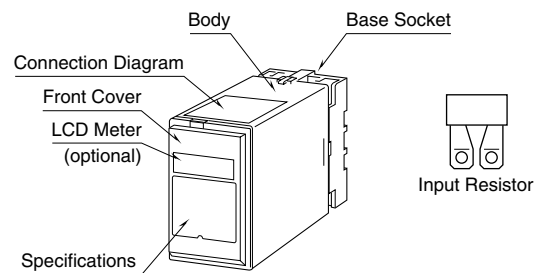
■ WIRING

- 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

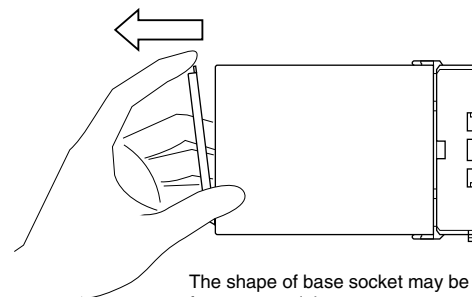
- The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

COMPONENT IDENTIFICATION



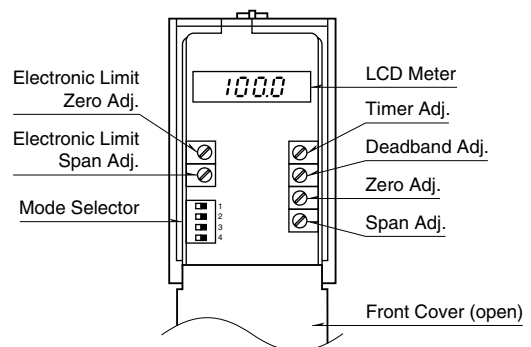
■ HOW TO OPEN THE FRONT COVER:

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 PANEL CONFIGURATION

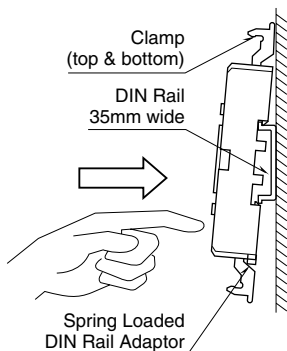


INSTALLATION

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.”

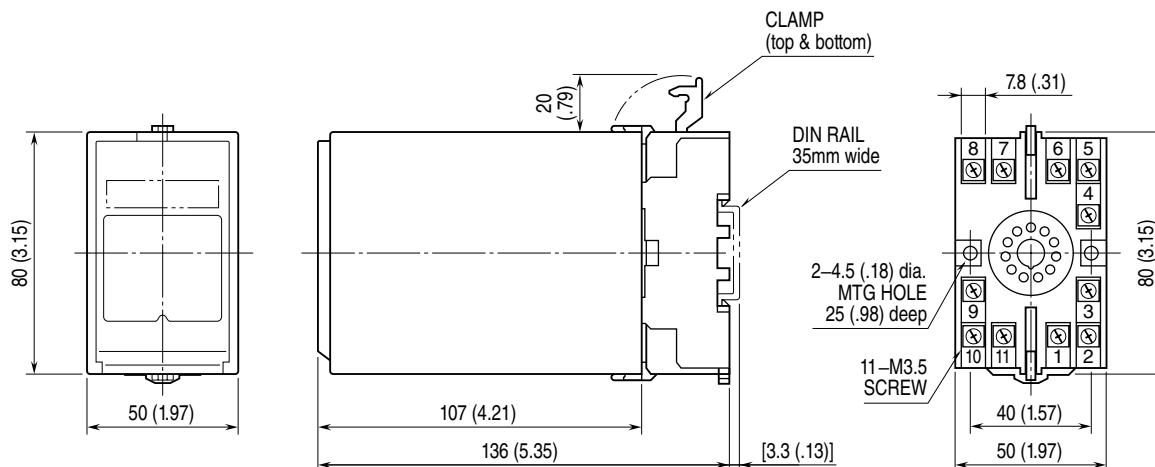
Shape and size of the base socket are slightly different with various socket types.

TERMINAL CONNECTIONS

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

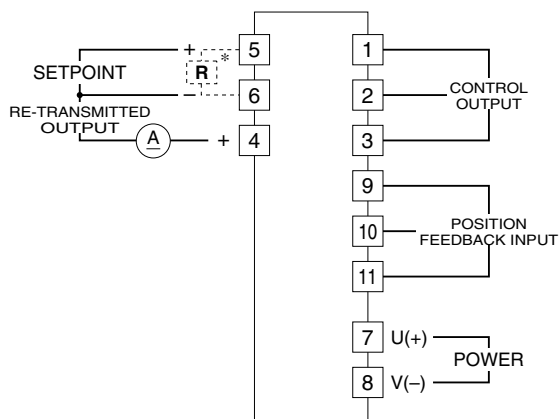
When an input resistor is provided with the module, attach it together with input wiring to the input screw terminals.

■ EXTERNAL DIMENSIONS unit: mm (inch)



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

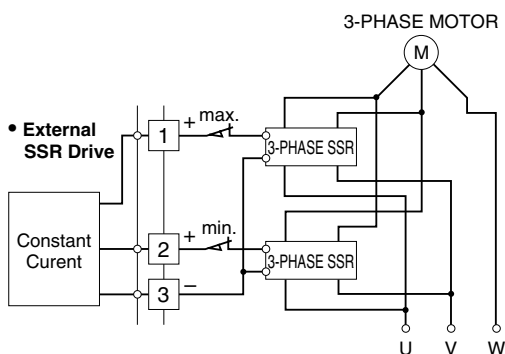
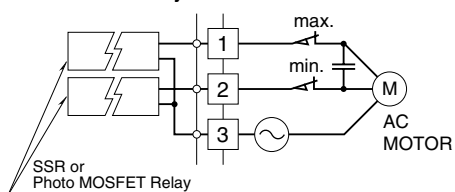
■ **TERMINAL CONNECTION**



*Input shunt resistor attached for current input.

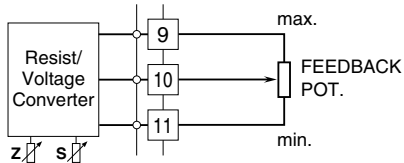
Control Output Examples

- Incorporated SSR
- 24V AC Dry Contact

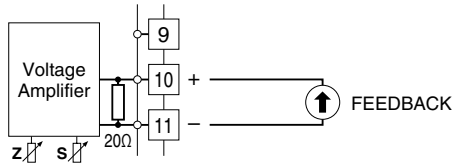


Position Feedback Input Examples

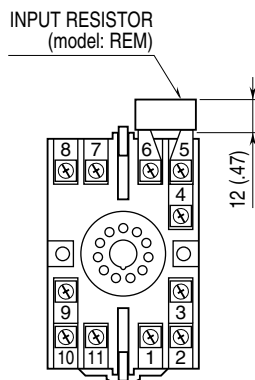
- Potentiometer Feedback



- Current Feedback



■ **TERMINAL ASSIGNMENTS** unit: mm (inch)



Input shunt resistor attached for current input.

INSTALLATION & ADJUSTMENT PROCEDURE

■ LIMIT SWITCH

• Micro Switches

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

If you choose the model with Operation Mode Selector, electronic limits are equipped as standard. They are activated approx. 10% outside of the full span. Install micro switches inside these electronic limits.

• Electronic Limits

If you choose the model with Operation Mode Selector, electronic limits are equipped as standard. Read Electronic Limits section referred in later pages.

■ CONNECTING MOTOR / ACTUATOR AND THE MEX-F

- 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 each of two cables other than common one among 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.

See the following table.

	SP INPUT	OUTPUT
Reverse Action	0%	Fully Closed
	100%	Fully Open
Direct Action	0%	Fully Open
	100%	Fully Closed

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

■ FEEDBACK SIGNAL

• Potentiometer Feedback

- 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 = Rx)
- 3) Set the potentiometer wiper to the middle point (where resistance across the pin No. 1 to No.2 [wiper] = Rx/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 decreases in either side of the wiper, that side is minimum, and the other side is maximum.
- 5) Connect the MEX-F with the potentiometer according to the connection diagram in the previous page.

• Current Feedback

- 1) Set manual output stem of the actuator at the approximate center (50%) position of the full span.
- 2) Operate the actuator manually in measuring current feedback signal and check that the signal decreases.
- 3) Connect the MEX-F with the potentiometer according to the connection diagram in the previous page.

■ OPERATION MODE SELECTOR

Set SW1 through SW4 according to your needs.

• Failsafe Operation When There Is No Position Input Signal (fully open, fully closed or stop)

MODE	SW1	SW2
Fully Closed	OFF	OFF
Stop	----	ON
Fully Open	ON	OFF

• Direct or Reverse Re-Transmitted Output

Reverse action is defined as such that the valve is fully closed with 4mA output.

MODE	SW3
Reverse Action	OFF
Direct Action	ON

• Direct or Reverse Control Action

Reverse action is defined as such that the valve is fully closed with 0% setpoint input.

Zero/span adjustment, electronic limit zero/span adjustments are independent from the valve action direction. Switching direct/reverse direction will not switch zero and span.

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

MODE	SW4
Reverse Action	OFF
Direct Action	ON

• Output Zero/Span, Deadband and Timer

- 1) Turn the Timer potentiometer fully counterclockwise.
- 2) Apply 0% input for reverse action, or 100% for direct action.
- 3) Turn the front zero adjustment until the actuator stem reaches a desired fully closed position.
- 4) Apply 100% input for reverse action, or 0% for direct action.
- 5) Turn the front span adjustment until the actuator stem reaches a desired fully open position.
- 6) When the actuator stem does not stop steady at the setpoint, adjust deadband via the front potentiometer adjustment. When huntings occur, widen the deadband. Turn the adjustment clockwise. For narrowing the error or increasing the resolution, narrow the deadband. Turn the adjustment counterclockwise.

• Electronic Limits (operation mode selector type)

- 1) Turn the Electronic Limit Zero potentiometer fully clockwise and Electronic Limit Span fully counterclockwise. (Operational range is 5 – 95% at this point.)
- 2) Apply -10% input for reverse action, or 110% for direct action.
- 3) Turn the Zero adjustment until the actuator stem reaches a desired closed limit.
- 4) Apply 110% input for reverse action, or -10% for direct action.
- 5) Turn the Span adjustment until the actuator stem reaches a desired open limit.

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) Position feedback input: Check that the position sensor is fixed securely. Check also that the potentiometer rating meets required specification.
- 4) Output: Check current across the motor.

LIGHTNING SURGE PROTECTION

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