

**THERMOCOUPLE TRANSMITTER/RECEIVER**  
(fiber optics isolation)

MODEL **OTT2/OTR2**

**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 + CJC sensor).....(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  $\pm 2$  Hz, approx. 3VA  
**DC power:** Rating  $\pm 10\%$ , approx. 2.6W

■ **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  $140^{\circ}\text{F}$ ) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.

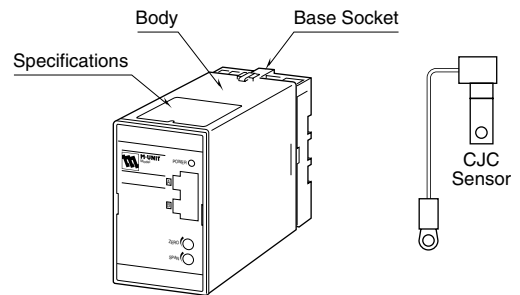
■ **WIRING**

- Do not install cables other than the fiber optics cable AM-PCP2 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.

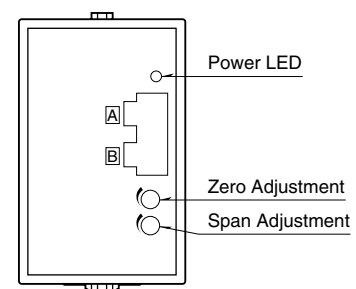
■ **AND ....**

- 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.
- With voltage output, do not leave the output terminals shortcircuited for a long time. The unit is designed to endure it without breakdown, however, it may shorten appropriate life duration.

**COMPONENT IDENTIFICATION**



■ **FRONT PANEL CONFIGURATIONS**

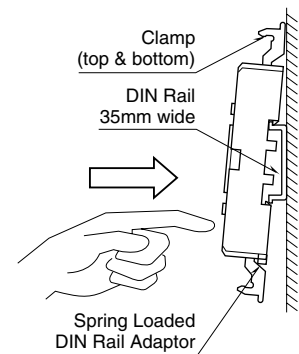


**INSTALLATION**

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."

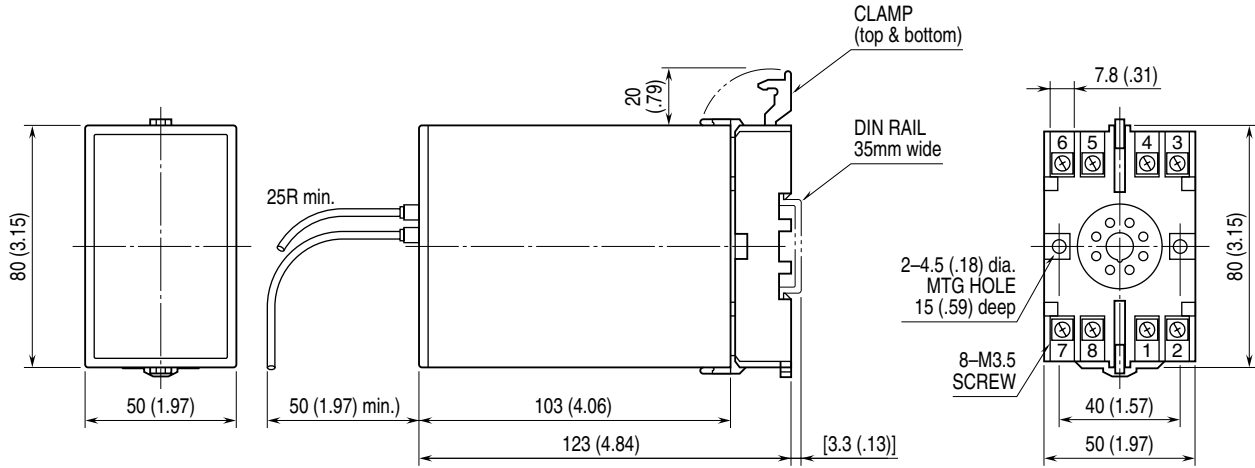
Shape and size of the base socket are slightly different with various socket types.

# TERMINAL CONNECTIONS

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

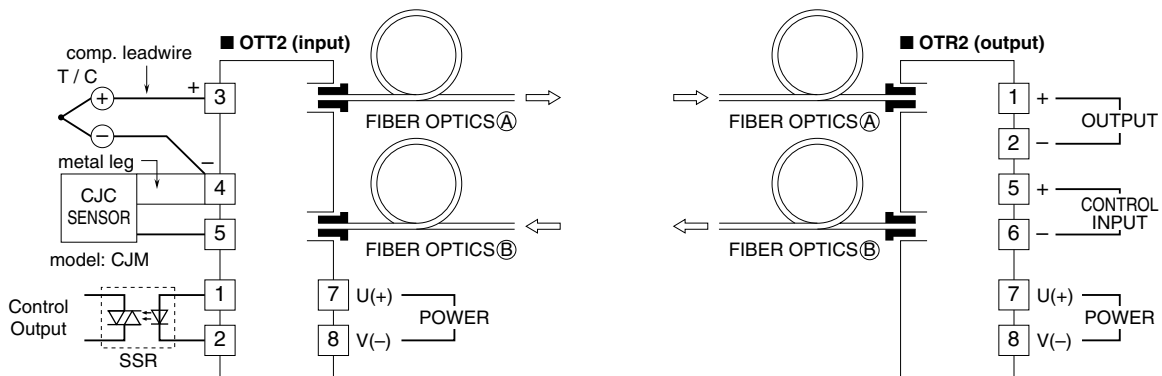
Attach the CJC sensor together with input wiring to the input terminals. The CJC sensor is not interchangeable. Check that its serial number is identical to that of the unit.

## EXTERNAL DIMENSIONS unit: mm (inch)

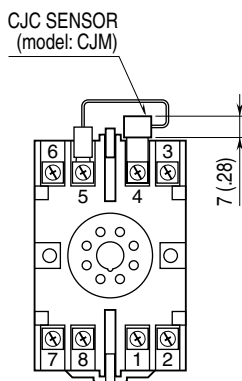


• When mounting, no extra space is needed between units.

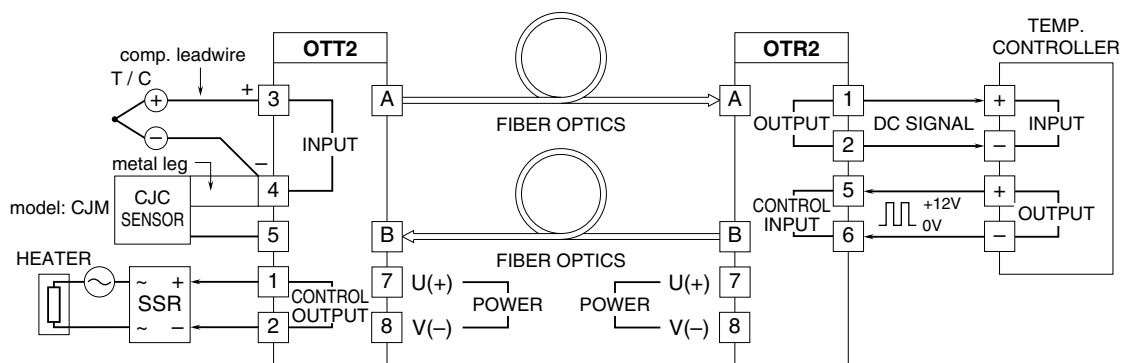
## CONNECTION DIAGRAM



## TERMINAL ASSIGNMENTS unit: mm (inch)



## OPERATION DESCRIPTIONS



The OTT2 unit converts mV input signals from a thermocouple into light pulse reflections, and transmits them to the OTR2 unit via fiber optics cable (A), while the OTR2 converts the light pulse reflections into analog signals and output them to a temperature controller.

The OTR2 transmits also ON-OFF control signals from the controller in the same manner via fiber optics cable (B), to the OTT2 unit while produces voltage pulse signals for driving the SSR for the heater.

The SSR must accept a DC input and have zero-cross function.

## 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 voltage is within 0 – 100% of full-scale.

If the thermocouple or its extension wires are broken, the output goes over 100% (below 0% with downscale) due to burnout function. Check leadwires in such a case.

- 4) Output: Check that the load resistance meets the described specifications.

## ADJUSTMENT PROCEDURE

This unit is calibrated at the factory to meet the ordered specifications, therefore you usually do not need any calibration.

For matching the signal to a receiving instrument or in case of regular calibration, adjust the output as explained in the following.

Calibration can be conducted either at the OTT2 or at the OTR2 unit.

### ■ HOW TO CALIBRATE THE 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 to the OTT2 and adjust output at the OTR2 to 0%.
- 2) SPAN: Apply 100% input to the OTT2 and adjust output at the OTR2 to 100%.
- 3) Check ZERO adjustment again with 0% input to the OTT2.
- 4) When ZERO value at the OTR2 is changed, repeat the above procedure 1) – 3).

## 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. 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 protector for protection against induced lightning surges. Please contact M-System to choose appropriate models.