

<b>THERMOCOUPLE TRANSMITTER</b>	MODEL	<b>M5TS</b>
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**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 + 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**

**■ CONFORMITY WITH EU DIRECTIVES**

- The equipment must be mounted inside a panel.
- Insert a noise filter for the power source, input and output connected to the unit. COSEL Noise Filter Model NAC-06-472, TDK Noise Filter Model ZCAT 3035-1330 or equivalent is recommended.
- 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.

**■ POWER INPUT RATING & OPERATIONAL RANGE**

- Locate the power input rating marked on the product and confirm its operational range as indicated below:  
 85 – 264V AC rating: 85 – 264V, 47 – 66 Hz, approx. 2 – 3VA  
 24V DC rating: 24V ±10%, approx. 2W

**■ 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 -5 to +55°C (23 to 131°F) with relative humidity within 0 to 90% RH in order to ensure adequate life span and operation.

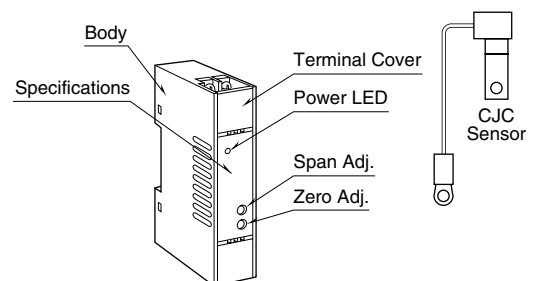
**■ WIRING**

- 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.
- Install lightning surge protectors for those wires connected to remote locations. For 24V DC power supply line, choose a surge protector with its maximum surge voltage 40V or less between lines. Recommended M-System model: MDP-D24.

**■ AND ....**

- The unit is designed to function as soon as power is supplied, however, a warm up for 20 minutes is required for satisfying complete performance described in the data sheet.

**COMPONENT IDENTIFICATION**

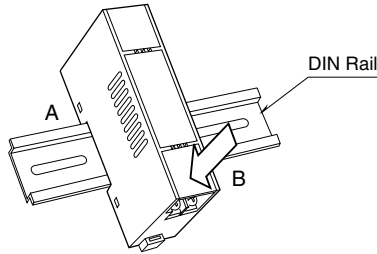


## INSTALLATION

Set the unit so that its DIN rail adaptor is at the bottom.

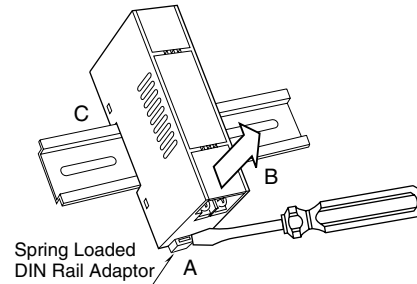
### ■ MOUNTING THE UNIT ON A DIN RAIL

- A) Hang the upper hook at the rear side of unit on the DIN rail.
- B) Push in the lower in keeping pressing the unit to the DIN rail.



### ■ REMOVING THE UNIT

- A) Push down the DIN rail adaptor using a minus screwdriver.
- B) Pull out the lower part of the unit.
- C) Remove the upper part from the DIN rail.

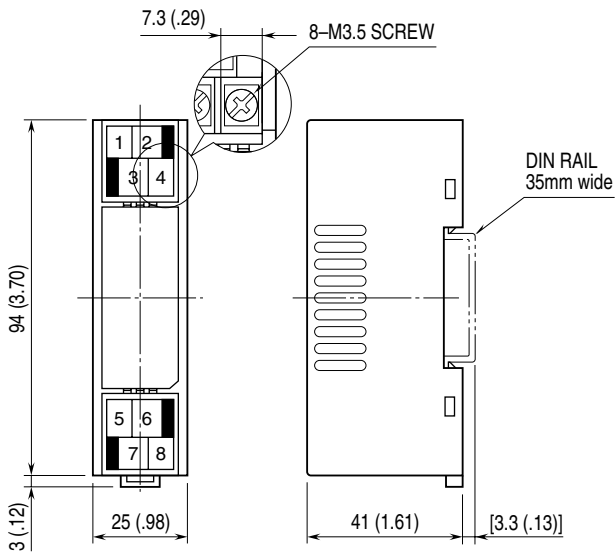


## TERMINAL CONNECTIONS

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

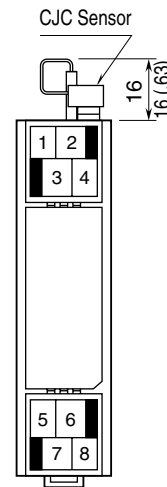
Attach the CJC sensor together with input wiring to the input terminals. The CJC sensor is not interchangeable. Check that its serial number is the same as that of the unit.

### ■ EXTERNAL DIMENSIONS unit: mm (inch)

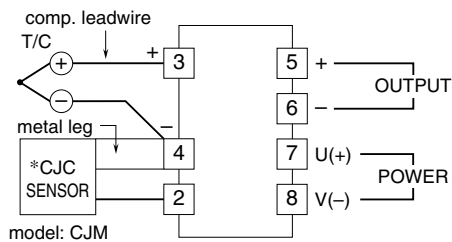


- When mounting, no extra space is needed between units.

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



### ■ CONNECTION DIAGRAM



\*Deleted with B thermocouple

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## WIRING INSTRUCTIONS

### ■ SCREW TERMINAL

Torque: 0.8 N·m

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## 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.

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## 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.

### ■ 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 20 minutes.

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

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## MAINTENANCE

Regular calibration procedure is explained below:

### ■ CALIBRATION

Warm up the unit for at least 20 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.

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## 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.