



TID

Temperature Input Display
USER'S MANUAL

November 1990

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Introduction

Moore Industries' Temperature Input Display (TID) is a compact, panel-mount meter that converts the input from a J- or K-type thermocouple, or an RTD, into a digital readout in degrees Celsius or Fahrenheit.

The TID is factory-configured to user specifications and requires no field calibration prior to installation. It is ready to install upon receipt.

This manual contains descriptive, installation, and maintenance information for the TID.

Description

The TID accepts its input from a J- or K-type thermocouple, or a 100-ohm platinum RTD. It processes the input signal and converts it to a digital readout that is proportional to the input. Each unit is factory-configured to accept a particular type input and to display the readout in either degrees Celsius ($^{\circ}\text{C}$) or Fahrenheit ($^{\circ}\text{F}$).

The digital display is a 3.5-digit, 7-segment, LED array. It is made of large, bright digits for improved readability.

The TID is packaged in a sturdy, light-weight thermo-plastic housing that mounts directly on an instrument panel in a user-provided cutout. Mounting hardware is provided with each unit.

The TID is powered by a 110- or 220-Vac power source, which is applied to an internal power supply that produces the operating voltages for the TID.

The user-specifications used to configure the TID are shown in the unit's model number. The model number of each unit identifies the unit's configuration as it originally shipped from the factory.

Table 1 contains the equipment specifications for the TID.

Serial Number. A complete history is kept on every product Moore Industries sells and services. This information is keyed to the unit's serial number. Whenever service information is required on a particular product, it is necessary to provide the factory with the unit's serial number. The serial number for the TID is located on a label affixed to the top of the housing.

Model Number. Moore Industries' model numbers identify the type of instrument, functional characteristics, and the housing type of the unit. The TID model number identifies how a unit is configured at the factory prior to shipment. The model number for the TID is located on the same label as the serial number, which is affixed to the top of the unit.

The example below identifies the significance of each field in the TID model number.

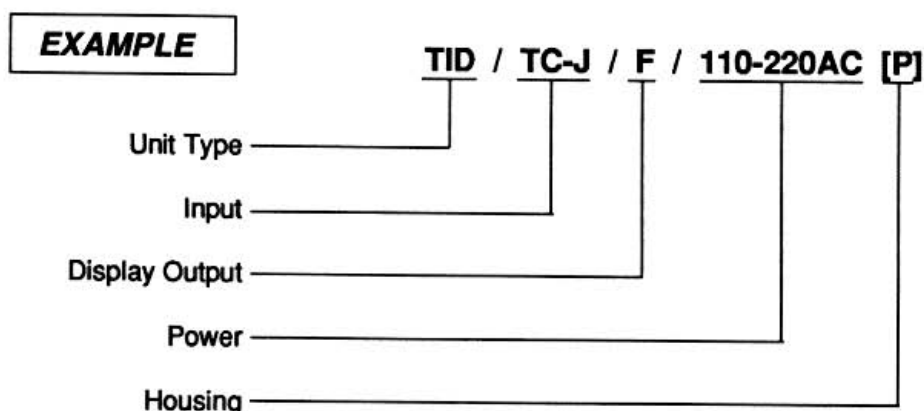


Table 1. TID Equipment Specifications

Characteristic	Specification
Input Range	Thermocouple: J- or K-type RTD: 100-ohm platinum
Display Range	-328 to 1999 (for specific ranges based on input type see table 2)
Power Requirements	110/220 Vac ($\pm 10\%$), 60/50 Hz
Accuracy	Varies based on input type, see table 2
Noise Rejection	Normal Mode Rejection Ratio (NMRR): <40 dB @ 50/60 Hz, ± 0.1 Hz Common Mode Rejection Ratio (CMRR): 130 dB with 250 Ω unbalance, typical
Isolation	From analog input terminals to AC or ACC terminals, 1500 Vdc or Vac (peak)
Overload Protection	Voltage: Across input terminals, up to 300 Vac (rms) for 1 minute
Input Impedance	J and K Thermocouples: 100 M Ω , nominal
Display	3.5-digit; seven segments per digit, red/orange LED; 14.2 mm (0.56 in.) high
Environmental Ratings	Operating: 0 to 50 $^{\circ}$ C (32 to 122 $^{\circ}$ F) Humidity: $\leq 85\%$ relative humidity (non-condensing)
Weight	454 grams (1 lb.)
NOTE: Refer to the Installation Section for physical dimensions.	

Table 2. Display Specifications

Input Type	Display Units	Display Range	Display Accuracy
J T/C	$^{\circ}$ C	-200 to 754 $^{\circ}$ C	± 1.5 $^{\circ}$ C of displayed value
	$^{\circ}$ F	-328 to 1390 $^{\circ}$ F	± 3 $^{\circ}$ F of displayed value
K T/C	$^{\circ}$ C	-200 to 1200 $^{\circ}$ C	± 2.4 $^{\circ}$ C of displayed value
	$^{\circ}$ F	-328 to 1999 $^{\circ}$ F	± 4 $^{\circ}$ F of displayed value
RTD	$^{\circ}$ C	-200 to 850 $^{\circ}$ C	± 1.7 $^{\circ}$ C of displayed value
	$^{\circ}$ F	-328 to 1562 $^{\circ}$ F	± 3 $^{\circ}$ F of displayed value

Installation

Every TID is configured and calibrated at the factory to user specifications before shipment. There are no field adjustments to be made or calibration procedures to complete. The TID is ready for installation upon receipt.

Installing the TID consists of physically mounting the unit and completing the required electrical connections. Each of these tasks are described in the following subsections.

Mounting the TID

The TID is designed for mounting in a flat instrument panel cutout. Figure 1 shows the outline dimensions of the TID. Figure 2 contains the cutout dimensions required to mount one, two, three, or four panel-mount meters in cutouts of varying heights. Mounting hardware is supplied with each unit.

If only one meter is to be mounted, the single cutout dimensions should be used. However, if stacking meters in a vertical arrangement is desirable, then a double, triple, or larger cutout is required. Regardless

of how many TID's are mounted in a single panel cutout, the maximum panel thickness must not exceed 5 mm (0.2 inch) for the unit to be mounted securely with the hardware provided.

After selecting and making the appropriate cutout, perform the following steps to physically mount the TID.

1. Using a small Phillips-head screwdriver, remove mounting bracket from unit by removing two screws at rear of unit securing bracket to housing.
2. From front of mounting panel, slide unit through cutout until flange around front panel is against edge of cutout. (Ensure unit is right-side-up.)
3. Reposition mounting bracket on rear of meter and secure with two Phillips-head screws.

CAUTION

Over-tightening bracket screws or mounting the meter in a panel that is too thick may cause the housing to distort or crack.

4. If meters are being stacked vertically, repeat steps 1 through 3 for each meter. Place first meter at lowest point of cutout.

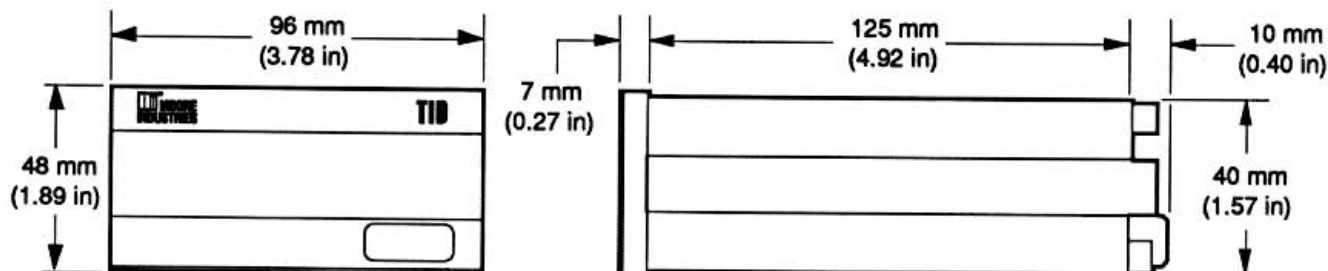


Figure 5. TID Outline Dimensions

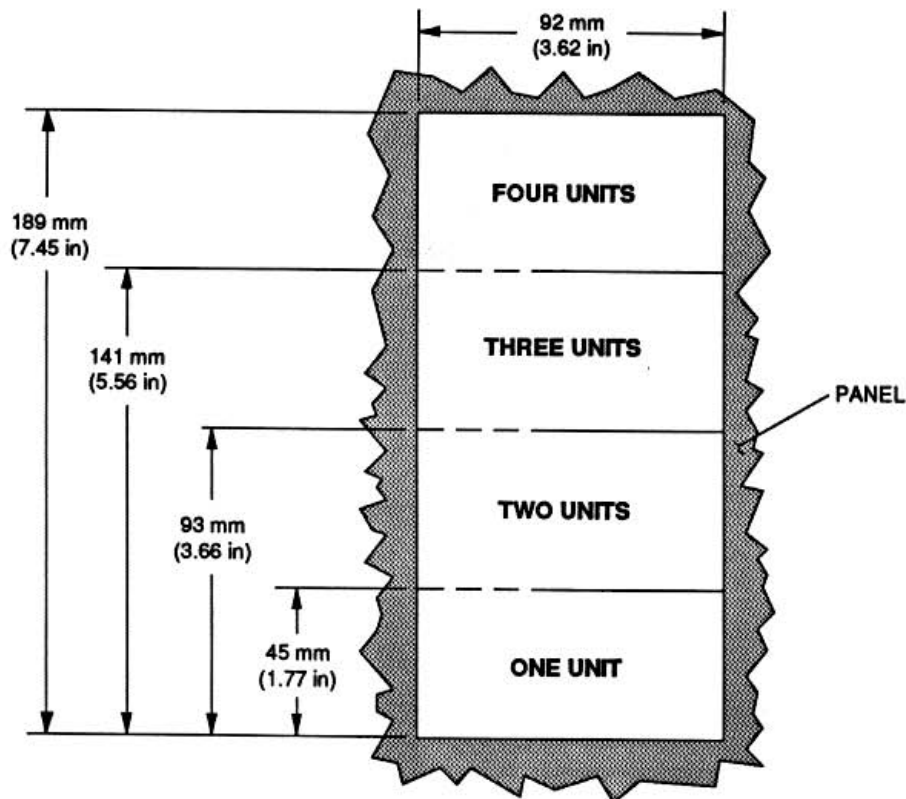


Figure 2. Panel Cutout Dimensions

Electrical Connections

The TID electrical connections are made to an 8-location terminal strip at the rear of the unit. Figure 3 shows the electrical connections required for the TID to operate properly.

Terminal lugs may be used to complete the electrical connections, but are not supplied nor are they required. The same type thermocouple wire used by the thermocouple being monitored should be used for extension wire to the TID.

Ensure that ac power is removed from the unit while electrical connections are being made. Input signal connections to the TID should be completed before supplying ac power.

Maintenance

Field maintenance for the TID is limited to keeping the electrical terminals clean and secure. Each unit should be visually inspected at least once every six months to ensure the terminals are free of dirt and oxidation, and the electrical wires are in good condition.

For reliable operation, frayed wires should be replaced as soon as possible with appropriate electrical wire and lugs (if used).

Each terminal should be checked to ensure that the connections have not become loose over time. When inspecting the terminals, always remove ac power before touching the terminal strip.

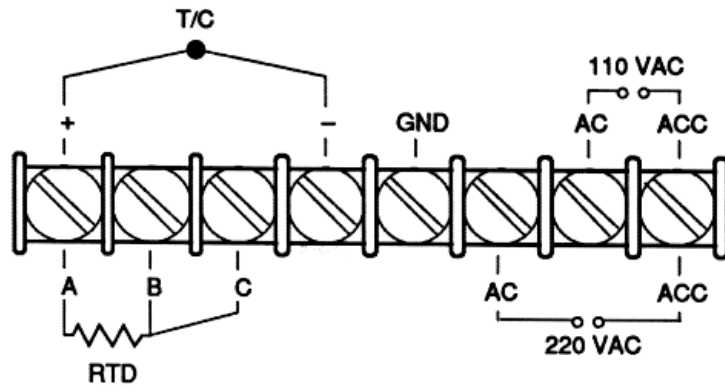


Figure 3. DCD Terminal Electrical Connections

RETURN PROCEDURES

To return equipment to Moore Industries for repair, follow these four steps:

1. Call Moore Industries and request a Returned Material Authorization (RMA) number.

Warranty Repair –

If you are unsure if your unit is still under warranty, we can use the unit's serial number to verify the warranty status for you over the phone. Be sure to include the RMA number on all documentation.

Non-Warranty Repair –

If your unit is out of warranty, be prepared to give us a Purchase Order number when you call. In most cases, we will be able to quote you the repair costs at that time. The repair price you are quoted will be a "Not To Exceed" price, which means that the actual repair costs may be less than the quote. Be sure to include the RMA number on all documentation.

2. Provide us with the following documentation:
 - a) A note listing the symptoms that indicate the unit needs repair
 - b) Complete shipping information for return of the equipment after repair
 - c) The name and phone number of the person to contact if questions arise at the factory
3. Use sufficient packing material and carefully pack the equipment in a sturdy shipping container.
4. Ship the equipment to the Moore Industries location nearest you.

The returned equipment will be inspected and tested at the factory. A Moore Industries representative will contact the person designated on your documentation if more information is needed. The repaired equipment, or its replacement, will be returned to you in accordance with the shipping instructions furnished in your documentation.

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For a period of thirty-six (36) months from the date of shipment, and under normal conditions of use and service, Moore Industries ("The Company") will at its option replace, repair or refund the purchase price for any of its manufactured products found, upon return to the Company (transportation charges prepaid and otherwise in accordance with the return procedures established by The Company), to be defective in material or workmanship. This policy extends to the original Buyer only and not to Buyer's customers or the users of Buyer's products, unless Buyer is an engineering contractor in which case the policy shall extend to Buyer's immediate customer only. This policy shall not apply if the product has been subject to alteration, misuse, accident, neglect or improper application, installation, or operation. THE COMPANY SHALL IN NO EVENT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.



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