

# Dual Temperature Gage

## MDTM89 Series

FW Murphy's model MDTM89 is an electronic, dual-temperature monitor. It monitors two thermocouples, displays the temperature of the thermocouple selected and has adjustable trip points for each input. A toggle switch provides for selection of the thermocouple to be displayed and/or the temperature trip point to be checked/adjusted. If either trip point is reached, the associated output turns on and can be used as a control signal or to initiate alarms and/or shutdown. A Push to Read button, located below the selector switch, allows the operator to check the trip point and to see its value as adjustments are made. Two potentiometers, one on each side of the thermocouple selector switch, are provided for field adjustment of the trip points.

There are two basic models. One of the models is powered by capacitor discharge ignition and an FET output. One model operates from 12- or 24-VDC and has an FET output. Standard display is in degrees Fahrenheit; degrees Celsius is optional.

### Applications

Applications include the following:

- Compressor suction/discharge temperature
- Engine/compressor jacket water temperature
- Engine exhaust temperature
- Compressor cylinder temperature
- After cooler temperature
- Bearing temperature

### Thermocouple Type

Either J or K type UNGROUNDED THERMOCOUPLE is accepted. Specify type in part number for each MDTM89 unit (see How to Order).

Order thermocouples as a separate item.

### Continuous & Trip Point Display

The selector switch is used to choose the thermocouple or trip point temperature to be displayed. The selected temperature is continuously displayed during normal operation. Depressing the push button displays the trip point temperature of the selected thermocouple.

### Open Thermocouple Input

An open thermocouple input forces the monitor into upscale overrange. The monitor indicates an overrange by displaying the numeral 1 in the left most digit of the display. An overrange will turn on the high trip point output.



<sup>1</sup> When used with approved ignition or 12-24 VDC, contact FW Murphy for details.

<sup>2</sup> Approved for CD ignition, 80–250 VDC

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### Trip Point Operation

Monitored trip points are independent of the thermocouple selector switch. Both set points are always active.

When the thermocouple temperature reaches the trip point temperature, the MDTM89 is triggered. After approximately 0.5 seconds the trip point output turns on.

Trip points are set by depressing the push button while rotating a trip point potentiometer until the desired trip point temperature is displayed.

### Automatic Cold Junction

Cold junction reference point compensation is an integral feature of the monitor. The compensator circuit monitors case temperature and automatically compensates for changes in ambient temperatures. Compensation will allow maximum of 2 degrees change in the temperature reading from 32° to 122° F (0° to 50° C).

# Specifications

## Power Requirements (Operating Voltages):

**MDTM89-A:** 100 to 350\* VDC, CD ignition, negative ground (FET outputs)

**MDTM89-C:** 12 to 24+ VDC, negative ground, 15 milliwatts (FET outputs)

**Power Consumption:** CD ignition: 350  $\mu$ a @ 100V; 120 VAC: 0.6 watts; 24 VDC: 0.5 watts

## Outputs:

**Models A and C:** output turns on above trip point; output turns off below trip point; two (2) isolated FET outputs, 0.5 amp @ 250 VDC

**Ambient Cold Junction Compensation Range:** 32° to 122° F (1° C from 0° to 50° C)

**Operating Temperature:** -4° to 158° F (-20° to 70° C)

**Storage Temperature:** -40° to 300° F (-40° to 150° C)

**Case:** Die cast aluminum

**Reset Differential:** FET models: Decreases 3° (° F or ° C). SCR model: turn input power off to reset.

**Measurement Range:** Monitor Range 0°-1999° F or ° C (specify F or C in part number)

**Accuracy:** With J-type thermocouple: from 150°-1200° F (66°-649° C)  $\pm$ 1.5% of reading. With K-type thermocouple: from 400°-2000° F (204°- 1076° C)  $\pm$ 1.5% of reading. At calibration temperature.

**Laboratory Approvals:** CSA† and Factory Mutual\* approved for Class I, Division 2, Group D, hazardous locations).

**Thermocouple Lead Length:** 150 ohm lead resistance affects monitor accuracy less than 1°

**Trip Point Accuracy:**  $\pm$ 3° F ( $\pm$ 2° C) of reading

**Trip Point Adjustment Range:** 0-1999 Degrees

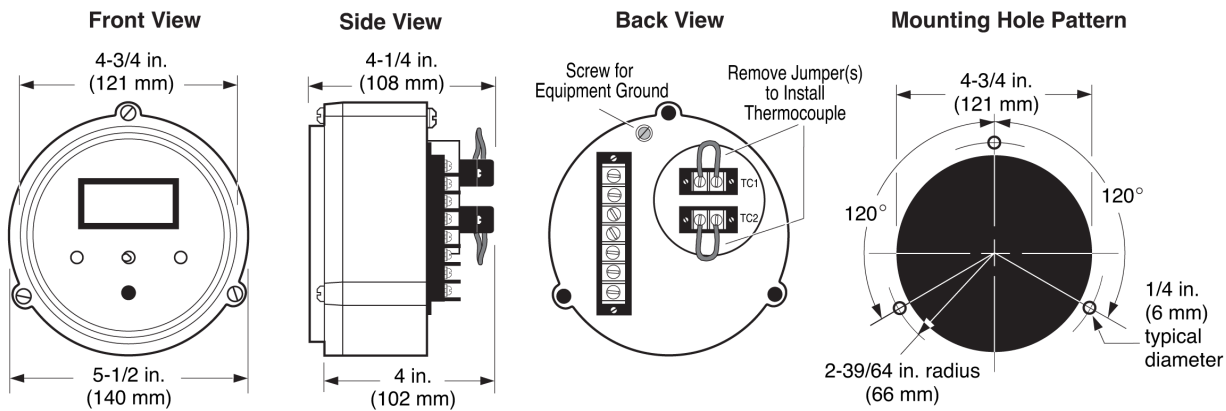
**Shipping Weight:** 48 oz. (1.4 kg)

**Shipping Dimensions:** 10 x 9-1/2 x 6 in. (254 x 241 x 152 mm)

\* Approved for CD ignition, 80–250 VDC.

† When used with approved ignitions or 12-24 VDC. Contact FW Murphy for details.

# Dimensions

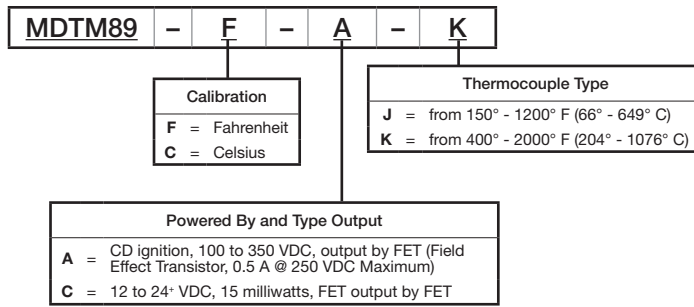


# MDTM89 Interface Capabilities

Model	Power Source	Rating
LCDT	CD Ign., 120 VAC, 12/24 VDC	Cl.I, Div. 1, Gr. D, Haz areas*
S1501	120 VAC or 12/24 VDC	Cl.I, Div. 1, Gr. D, Haz areas*
TTD™	CD Ign., 12/24 VDC	Cl.I, Div. 2, Gr. D, Haz areas**
TATTLETALE®	CD Ign., 120 VAC, 12/24 VDC	Non-Hazardous areas
PLCs, various non-FW Murphy annunciators - contact FW Murphy.		
* An isolation barrier is needed between the <b>MDTM89</b> and an <b>Annunciator</b> rated for Class I, Division 1, Group D, Hazardous areas.		
** When used with approved ignition. Contact FW Murphy for details.		

# How to Order

Options listed below. All configurations may not be available. Call your sales representative or FW Murphy for more information.



Approximate Shipping Weight and Dimensions		
Model	Weight	Dimension
MDTM89	48 oz. (1.4 kg)	10 x 9-1/2 x 6 in. (254 x 241 x 152 mm)