TDX6 Temperature Scanner/Pyrometer

Installation and Operation Instructions

Please read the following instructions and warnings before installation. Visually inspect the product for any damage that may have occurred during shipping. It is your responsibility to have a qualified person install this unit and make sure it conforms to NEC and local codes.

WARNING

Before beginning installation of this product:

- Disconnect all electrical power to the machine
- Make sure the machine cannot operate during installation
- Follow all safety warnings of the machine manufacturer
- Read and follow all installation instructions

Description

The TDX6 is an advanced design 6-point temperature scanner and pyrometer. It continually scans six grounded[tt] or ungrounded thermocouples, displays the temperature of the thermocouple selected and has adjustable trip points for each input. A trip point read/scan knob provides for display and check/adjustment of the thermocouple temperature trip point. If any trip point is reached, its output turns ON and can be used as a control signal or to initiate alarms and/or shutdown.

Specifications

Power Requirements (Operating Voltages): 120 VAC or 80-250 VDC, CD ignition or 24 VDC

Outputs:

Models TDX6-B and TDX6-D:
Six (6) isolated Field-Effect Transistor (F.E.T.) outputs; 0.1 A@ 250 VDC; *switches on (applies ground) above trip point and switches off (removes ground) below trip point*

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

Storage Temperature: -40 to 300° F (-40 to l50° C)

Case: ABS 1/4 DIN (90 x 90 mm)

Scanning Speed: Complete scan in 30 seconds

Reset Differential:

F.E.T. Models: Decreases 3° F or (C)

Display Update Time: Updates temperature every 0.3 seconds

Start-up Time Delay: Unit is locked out for 10 seconds after ignition voltage is sensed

Ambient Cold Junction Compensation Range:
2° F from 32° F to 122° F (1° C from 0° C to 50° C)

Measurement Range: Monitor Range 0-1999° F or (C)

Accuracy:

With J-type thermocouple: from 50-150° F (J0-66° C) +3° F (+2° C), from 150-1200° F (66-649° C) ±1.0% of reading

With K-type thermocouple: from 400-2000° F (204-1076° C) ±1.0% of reading

Trip Point Accuracy: ±3° F (±2° C) of reading

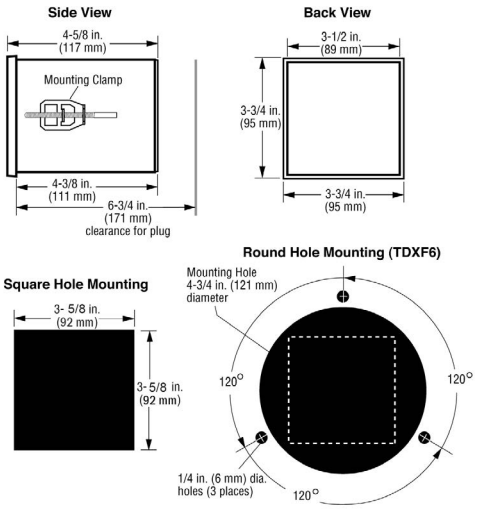
Trip Point Adjustment Range: 0-1999 Degrees

Open Thermocouple Input: A number 1 appears in the display to the right of the channel number and the trip point operates

TDX6 Interface Capabilities

Model	Power Source	Rating
LCDT	CD Ign., 120 VAC, 12/24 VDC C	C1.I, Div.1, Gr. D, Haz. areas*
S5101	120 VAC, 12/24 VDC	C1.I, Div.1, Gr. D, Haz. areas*
TTD™	CD Ign., negative ground, 12/24 VDC	C1.1, Div.2, Gr. D, Haz. areas**
TATTLETALE®	CD Ign., 120 VAC, 12/24 VDC	Non-Hazardous areas
PLC's and various annunciators not listed, contact factory		

Dimension



* *An isolation barrier is needed between the TDX6 and an Annunciator rated for Class I, Division I, Group D, Hazardous Areas.*

** *When used with approved ignition. Contact FW Murphy Production Controls for details.*

t *When power requirements are used as stated in Specifications section.*

tt *Using grounded thermocouples introduces the risk of odd currents or voltages being imposed on the thermocouple signal which can affect the accuracy of the reading. This is an inherent problem of grounded thermocouples, and the reason why we prefer ungrounded thermocouples.*

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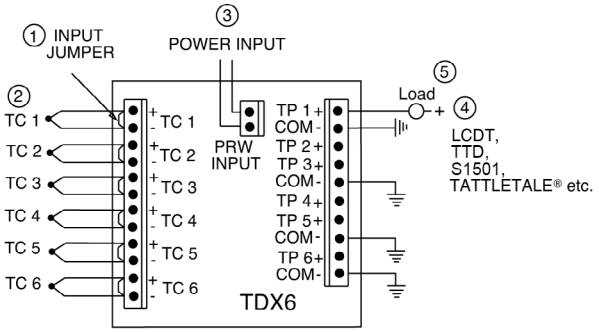
Wiring

Even though the TDX6 is a six-channel temperature monitor, it will monitor and display from 1 to 6 thermocouples with equal results. When monitoring less than six temperature channels, always jumper the unused thermocouple terminals on the back of the TDX6 with the factory-installed jumper provided. The unused channel will display approximate ambient temperature.

Grounded or Ungrounded Thermocouples

NOTE: *We prefer ungrounded thermocouples. Using grounded thermocouples introduces the risk of odd currents or voltages being imposed on the thermocouple signal which can affect the accuracy of the reading.*

1. Connect the thermocouple leads to the thermocouples. (See Using Thermocouple Extension Wire for details if extension wire is needed.) NOTE: Attach wire markers to each thermocouple lead identifying polarity and thermocouple number.
2. Remove factory-installed jumper on the TDX6 for each thermocouple to be installed.
3. Connect positive lead of thermocouple TCI to the positive (+) terminal of terminal strip TCI (see wiring diagram below).
4. Connect negative lead of thermocouple TCI to the negative (-) terminal of terminal strip TCI.
5. Repeat steps 2 thru 4 with each thermocouple to be monitored.



NOTES:

① Remove input jumper when the thermocouple is connected to input.

② Thermocouple input

③ Power input 120 VAC, 80-250 VDC, CD ignition or 24 VDC, positive or negative ground.

④ Interfaced components must meet area classification requirements.

⑤ When using the TDX6 with inductive loads, we recommend installing a suppression diode across all coils.

Connecting Power Wires

1. Be sure power is OFF.
2. Connect the power input leads to the small terminal block located on back of the TDX6. (TDX6 connections have no polarity.)

Operation Test

Perform the Operation Test after the TDX6 is installed and wired appropriately.

1. Slowly rotate each trip point potentiometer clockwise until detent is felt.
2. Apply power to the monitor.
3. Verify that the TRIP POINT READ knob is in the SCAN mode. The left side of the display will show the thermocouple number. The right side of the display will show the temperature of that thermocouple.

NOTE: *When the TRIP POINT READ knob is in the SCAN mode, depressing the THERMOCOUPLE READ push button will stop the scan sequence at the next channel and display the thermocouple number and its reading. Scanning will resume approximately 3 seconds after the push button is released. With TRIP POINT READ knob selecting a number, the push button should not be depressed.*

4. Set the TRIP POINT READ knob to the number 1 setting. On the right side of the display window, you will see the trip point reading of the TCI thermocouple. The left side of the display will continue to scroll 1 to 6 indicating that the unit is still scanning all channels.
5. Rotate the TPl trip point potentiometer counterclockwise until trip point TPI turns on and trips the shutdown device or alarm. Verify by observation.
6. Rotate the trip point potentiometer TPl clockwise several turns to tum off TPl.
7. Reset alarm or shutoff device.
8. Set TRIP POINT READ knob to the TP2 position to display the TP2 temperature trip point.
9. Repeat steps 4 thru 7 with each thermocouple to be tested.

Trip Point Adjustment

1. Apply power to the temperature monitor.
2. Set TRIP POINT READ knob to the 1 position.
3. Rotate the trip point adjustment potentiometer TPI until the display indicates the desired trip point temperature for TPI.
4. Repeat steps 2 and 3 for each thermocouple to be set. Turn TRIP POINT READ knob to SCAN position to resume operations.

Using Thermocouple Extension Wire

CAUTION: The use of non-thermocouple wire will cause inaccurate temperature sensing and erratic operation. KEEP ALL HIGH VOLTAGE WIRING SUCH AS SPARK PLUG OR IGNITION WIRES AWAY FROM THERMOCOUPLES AND EXTENSION WIRING.

If the thermocouple leads are not long enough, you will need to use thermocouple extension wire. Thermocouple extension wire must be of the same material as the thermocouple lead wires (see chart). Metallic-shielded thermocouple wire is recommended. It provides electrical shielding as well as protection against wear and abrasion.

Thermocouple Extension Wire Color Code Chart

Thermocouple Wire		Color Code / Material	
Type P/N	**Extension P/N**	**Positive Lead**	**Negative Lead**
J (I 0-00-0526)	Jx (00-00-3271)	White/Iron	Red/Constantan
K (I 0-00-0527)	Kx (00-00-3272)	Yellow/Chromel	Red/Alumel

To prevent problems of interference from electrical noise, DO NOT route thermocouple wires in the same conduit or within 12 in. (305 mm) of ignition wires or alternating current conductors. When connecting the thermocouple leads, twist the wire connections, then install wire nuts, such as ceramic, which have no metal insert.

FW MURPHY PRODUCTION CONTROLS

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TULSA, OK 74135

MANUFACTURING
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ROSENBERG, TX 77471

5757 FARINON DRIVE
SAN ANTONIO, TX 78249

DOMESTIC SALES & SUPPORT

FW MURPHY PRODUCTS
PHONE: 918 957 1000
EMAIL: INFO@FWMURPHY.COM
WWW.FWMURPHY.COM

FW MURPHY CONTROL SYSTEMS & SERVICES
PHONE: 281 633 4500
EMAIL: CSS–SOLUTIONS@FWMURPHY.COM

INTERNATIONAL SALES & SUPPORT

CHINA
PHONE: +86 571 8788 6060
EMAIL: INTERNATIONAL@FWMURPHY.COM

LATIN AMERICA & CARIBBEAN
PHONE: +1 918 770 8775
EMAIL: INTERNATIONAL@FWMURPHY.COM

SOUTH KOREA
PHONE: +82 70 7951 4100
EMAIL: INTERNATIONAL@FWMURPHY.COM

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FM 668576 (San Antonio, TX - USA)
FM 668933 (Rosenberg, TX - USA)

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