TC & RTD TEMPERATURE PANEL METER

MODEL PD750, PD751, & PD752

PRECISION DIGITAL ÷

750F

ENTER

ACK

c(UL)us
LISTED
(Select Models)

- **Thermocouple & RTD inputs**
- **Type J,K,T,E,R,S TC & 100 ohm platinum RTD**
- **10 ohm copper RTD**
- **120 ohm nickel RTD**
- **Factory calibrated for all Inputs**
- **Display °C or °F**
- **NEMA 4X, IP65 front**
- **115 VAC, 230 VAC, or 24 VDC power**
- **2 or 4 relays & 4-20 mA output option**

PRECISION DIGITAL CORPORATION

PRECISION DIGITAL ÷
www.predig.com

GENERAL FEATURES

Precision Digital Temperature Meters handle temperature displaying, alarming and re-transmitting applications with simplicity, accuracy and reliability. These meters are available with up to 4 relays, isolated 4-20 mA output, and are factory calibrated for easy field selection of the thermocouple or RTD type. Just select your input type (J,K,T,E,R,S thermocouple, 100 ohm RTD, 10 ohm copper, or 120 ohm nickel), and either Fahrenheit or Celsius and connect the sensor.

Easy Setup with One Button

These meters can be completely programmed using only one button. And you only do one thing with that one button: press it once when the meter displays what you want. For example, press the ENTER button to initiate an automatic scan of the various programming routines: CAL ib, tYPE, F or C, ALArS. To enter one of these routines, press the ENTER button as the routine name is displayed. Once in the routine, press the ENTER button when the meter reads the desired value. It's that simple!

Setup with One Button

PRECISION DIGITAL ÷

tYPE

ENTER   ACK
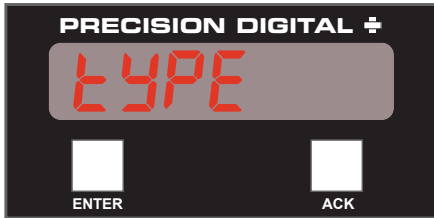
To Select Input Type: Press **ENTER** when meter reads tYPE.

PRECISION DIGITAL ÷

F or C

ENTER   ACK

To Select Scale: Press **ENTER** when meter reads F or C.

PRECISION DIGITAL ÷

ALArS

ENTER   ACK

To Program Alarms: Press **ENTER** when meter reads ALArS.

NEMA 4X, IP65 Front Panel

Wet, dirty and dusty environments don't bother the NEMA 4X, IP65 front panel which allow these meters to be installed in almost any panel in the plant. That means plant operators can have the important information right where they need it most, on the shop floor.

Big Bright Steady Display

These meters are great for displaying high temperatures because the steady and quick responding display can display 4½ digits of data. This allows thermocouples to be displayed above 2000°F and RTDs above 200.0° with a 0.1° resolution.
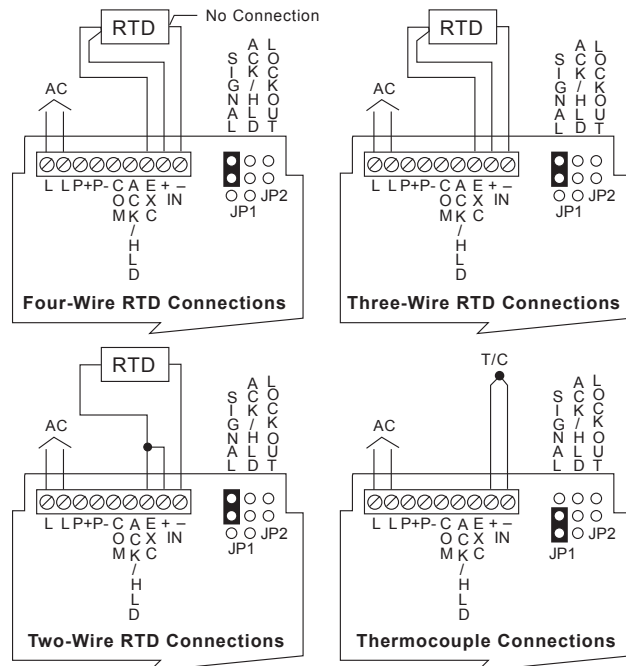
Calibration

The PD750 is shipped pre-calibrated for 6 types of thermocouples and 2 types of 100 ohm RTD sensors with 0.1° or 1° resolution. Although initial calibration is not necessary, these 8 input ranges may be re-calibrated in the field to improve accuracy (calibrator required.)

The PD751 is pre-calibrated for 10 ohm copper RTD sensors and the PD752 is pre-calibrated for 120 ohm nickel RTD sensors.

Precalibrated Ranges

PD750 Type	Range	Accuracy
J	-328° to 1382°F, -200° to 750°C	±2°F, ±1°C
K	-328° to 2498°F, -200° to 1330°C	±2°F, ±1°C
T	-330° to 760°F, -200° to 404°C	±2°F, ±1°C
T (0.1°)	-330.0° to 760.0°F, -200.0° to 404.0°C	±2°F, ±1°C
E	-328° to 1832°F, -200° to 1000°C	±2°F, ±1°C
R	32° to 3213°F, 0° to 1767°C	±5°F, ±3°C
S	40° to 3214°F, 4° to 1768°C	±6°F, ±3°C
100 Ω Pt RTD	-328.0° to 1382.0°F, -200.0° to 750.0°C	±0.7°F, ±0.4°C
PD751	**Range**	**Accuracy**
10 Ω Cu RTD	-328° to 500°F, -200° to 250°C	±0.2°F, ±0.1°C
PD752	**Range**	**Accuracy**
120 Ω Ni RTD	-112° to 608°F, -80° to 320°C	±0.2°F, ±0.1°C

Signal & Power Connections

Four-Wire RTD Connections

Three-Wire RTD Connections

**Two-Wire RTD Connections**

Thermocouple Connections

4 Visual Alarms Standard

Every temperature meter comes with 4 visual independent alarms. Each alarm is easily programmed for high or low set point and 0-100% deadband adjustment. Front panel LEDs assist in set point/reset point programming and are perfect for visual-indication-only applications. Options are available with 2 and 4 relays.

Alarm/Relay Programming

Pressing the ENTER button when the display reads RLRrS initiates a scan of the alarm set and reset points. First, the display flashes Alarm #1 Set Point and indicates this by illuminating the #1 LED and the "S" LED. This Set Point may be changed using the ENTER button. Next the display flashes Alarm #1 Reset Point and indicates this by illuminating the #1 LED and the "R" LED. This Reset Point may also be changed using the ENTER button. The remaining Set and Reset Points are programmed in a similar fashion.
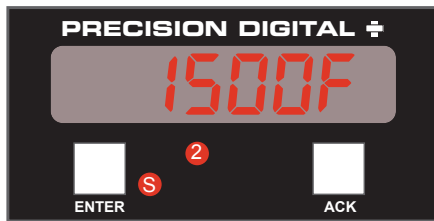
Alarm #2 Set Point set at 1500°F
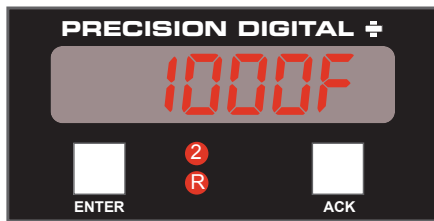
Alarm #2 Reset Point set at 1000°F

Alarm Status Indication

When an alarm occurs, an LED will illuminate to indicate which alarm has tripped. This LED will stay illuminated until the signal returns to the non-alarm state.

LED illuminated indicating that Alarm #2 is in alarm condition.

OPTIONS

These Universal Temperature Meters can be equipped with options for 2 or 4 relay contacts and isolated 4-20 mA transmitter output. These options may be combined in any configuration to satisfy a wide variety of applications. In fact, a fully loaded model PD750-3-18 includes 4 relays and isolated 4-20 mA transmitter output.

Option Card Pin-Outs

	Pin:	Function:	
J1	1	Transmitter +	PD175
	2	Transmitter -	
J2	1	Relay #1 Common	
	2	Relay #1 NC	PD176
	3	Relay #1 NO	
	4	Relay #2 Common	PD174
	5	Relay #2 NC	
	6	Relay #2 NO	PD178
J3	1	Relay #3 Common	PD177
	2	Relay #3 NC	
	3	Relay #3 NO	
	4	Relay #4 Common	
	5	Relay #4 NC	
	6	Relay #4 NO	

Relay Options

These meters are available with 2 or 4 relays. The SPDT relays are rated 2 amp @ 250 VAC and can be programmed for automatic or automatic + manual reset. The relays can be programmed for 0-100% deadband adjustment.

Isolated 4-20 mA Output Option

Equipped with an isolated 4-20 mA output signal option, these meters can be programmed to produce a 4-20 mA output signal for virtually any temperature input. The 4-20 mA output signal can be powered either by the internal or an external power supply. The 4-20 mA output provides 500 VDC or peak AC, input-to-output or input/output-to-power isolation.

The isolated 4-20 mA output signal option transforms these meters into linearized, cold-junction compensated, temperature transmitters with a digital display.

PDA2446 explosion-proof enclosure shown with two PD765 Meters.

SPECIFICATIONS

Except where noted all specifications apply to operation at +25°C.

General

Inputs: PD750: Field selectable: type J, K, T, E, R, S thermocouples with 1° resolution; type T to 0.1°; 100 Ω platinum RTD (0.00385 or 0.00392 curve) to 1° or 0.1° resolution.
PD751: 10 Ω copper RTD, PD752: 120 Ω nickel RTD
Display: 0.56" (14.2 mm) red LED, 4½ digits; F or C may be switched on to indicate Fahrenheit or Celsius.
Accuracy: See Precalibrated Ranges table in right column
Cold Junction Reference: Automatic
Front Panel: NEMA 4X, IP65; panel gasket provided
Sensor Break: All relays and alarm status LEDs go to alarm state; open sensor circuit indicated by display flashing "*OPEn*".
Hold Reading: Connect switch to ACK/HLD and COM terminals
Lockout: Jumper JP2 restricts modification programmed settings
Input Impedance: Greater than 100 kΩ
Power Options: 115 VAC ±10%, 230 VAC ±10%, 50/60 Hz, 10 VA; or 18-36 VDC, 6 W maximum.
Isolation: AC power: 1500 VAC; DC power: 500 VDC
Normal Mode Rejection: 64 dB at 50/60 Hz
Operating Temperature: 0 to 60°C
Storage Temperature: -40 to 85°C
Relative Humidity: 0 to 90% non-condensing
Enclosure: 1/8 DIN, high impact plastic, UL 94V-0, color: black
Weight: 19.7 oz (559 g) (including options)
Connections: Removable screw terminals accept 12 to 22 AWG
Alarm Points: 4, any combination of high or low alarms
Alarm Status Indication: Front panel LED
Alarm Deadband: 0-100% FS, user selectable
UL File Number: E160849; 508 Industrial Control Equipment
(PD750 AC Powered Units Only)
Warranty: 2 years parts & labor
Extended Warranty: 1 or 2 years, refer to Price List for details.

Relays

Rating: 2 or 4 Form C (SPDT); rated 2 A @ 30 VDC or 2 A @ 250 VAC resistive load; 1/14 HP @ 125/250 VAC inductive loads.
Reset: User selectable
1. Automatic when the input passes the reset point.
2. Automatic plus manual (via front panel ACK button or user supplied switch). Manual reset resets all manually resettable relays.
Fail-Safe Operation: Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state. To disable fail-safe operation remove jumper J2 located on the options board.
Auto Initialization: When power is applied to the meter, the relays will always reflect the state of the input to the meter.
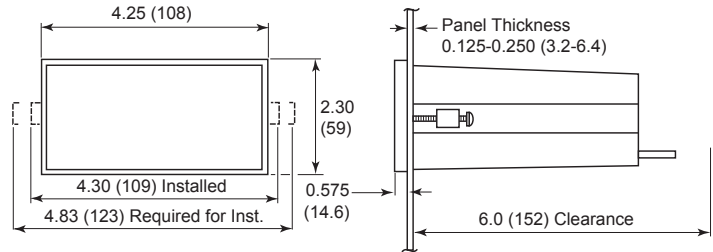**Deadband:** 0-100%, user selectable

Isolated 4-20 mA Transmitter Output

Scaling Range: Anywhere in range of meter, 501 count minimum span; reverse scaling allowed.
Accuracy: ±0.1% FS ±0.004 mA
Transmitter Supply: Isolated 24 VDC ±5% @ 20 mA

Power supply	Loop Resistance	
	Minimum	Maximum
24 VDC	10 Ω	600 Ω
35 VDC (external)	600 Ω	1000 Ω

Isolation: 500 V input-to-output or input/output-to-24 VDC supply
External Loop Power Supply: 35 VDC maximum

MOUNTING DIMENSIONS

4.25 (108)
4.30 (109) Installed
4.83 (123) Required for Inst.
2.30 (59)
0.575 (14.6)
Panel Thickness 0.125-0.250 (3.2-6.4)
6.0 (152) Clearance

Notes:
1. Panel cutout required: 1.772″ x 3.622″ (45 mm x 92 mm) 1/8 DIN
2. Panel thickness: 0.125″ - 0.250″ (3.2 mm - 6.4 mm)
3. Clearance: allow 6 inches (152 mm) behind the panel

ORDERING INFORMATION

	115 VAC Model	230 VAC Model	24 VDC Model	Options Installed	Option Card**
Thermocouple 100 Ω Pt RTD	PD750-3-N*	PD750-4-N	PD750-2-N	None	
	PD750-3-14*	PD750-4-14	PD750-2-14	2 Relays	PD174
	PD750-3-15*	PD750-4-15	PD750-2-15	4-20 mA Output	PD175
	PD750-3-16	PD750-4-16	PD750-2-16	2 Relays + 4-20 mA Out	PD176
	PD750-3-17	PD750-4-17	PD750-2-17	4 Relays	PD177
	PD750-3-18	PD750-4-18	PD750-2-18	4 Relays + 4-20 mA Out	PD178
10 Ω Copper	PD751-3-N	PD751-4-N	PD751-2-N	None	
	PD751-3-14	PD751-4-14	PD751-2-14	2 Relays	PD174
	PD751-3-15	PD751-4-15	PD751-2-15	4-20 mA Output	PD175
	PD751-3-16	PD751-4-16	PD751-2-16	2 Relays + 4-20 mA Out	PD176
	PD751-3-17	PD751-4-17	PD751-2-17	4 Relays	PD177
	PD751-3-18	PD751-4-18	PD751-2-18	4 Relays + 4-20 mA Out	PD178
120 Ω Nickel	PD752-3-N	PD752-4-N	PD752-2-N	None	
	PD752-3-14	PD752-4-14	PD752-2-14	2 Relays	PD174
	PD752-3-15	PD752-4-15	PD752-2-15	4-20 mA Output	PD175
	PD752-3-16	PD752-4-16	PD752-2-16	2 Relays + 4-20 mA Out	PD176
	PD752-3-17	PD752-4-17	PD752-2-17	4 Relays	PD177
	PD752-3-18	PD752-4-18	PD752-2-18	4 Relays + 4-20 mA Out	PD178

*Quick Shipment Program product, shipped within 2 working days.

**Part numbers for Option Cards when purchased separately. Listed models include the corresponding described option.

YOUR LOCAL DISTRIBUTOR IS:

PRECISION DIGITAL CORPORATION
19 Strathmore Road • Natick MA • 01760 • USA • Tel: (800) 343-1001 • Fax: (508) 655-8990

PRECISION DIGITAL
www.predig.com