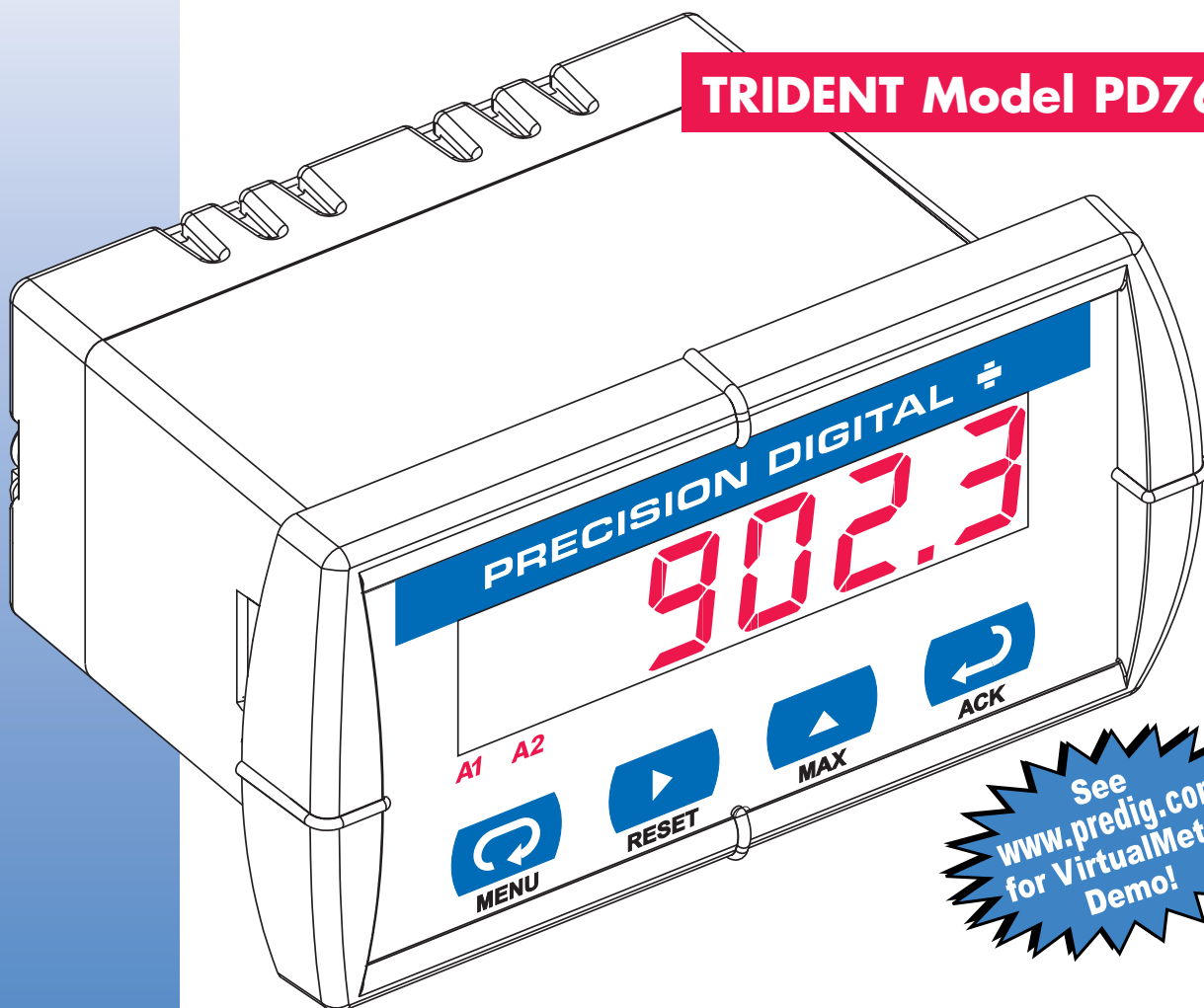


PROCESS & TEMPERATURE UNIVERSAL INPUT METER

TRIDENT Model PD765



See
www.predig.com
for VirtualMeter
Demo!

- Current, Voltage, Thermocouple, & RTD Inputs
- Shallow Depth Case 3.6" Behind Panel
- NEMA 4X, IP65 Front
- Universal Power Supply 85-265 VAC
- Two Relays Option
- 4-20 mA Analog Output Option
- 24 VDC @ 200 mA Transmitter Power Option
- RS-232, RS-422/485 Serial Communication Options
- 3 Year Warranty

**PRECISION
DIGITAL** 

PRECISION DIGITAL CORPORATION

www.predig.com

TRIDENT DOES IT ALL

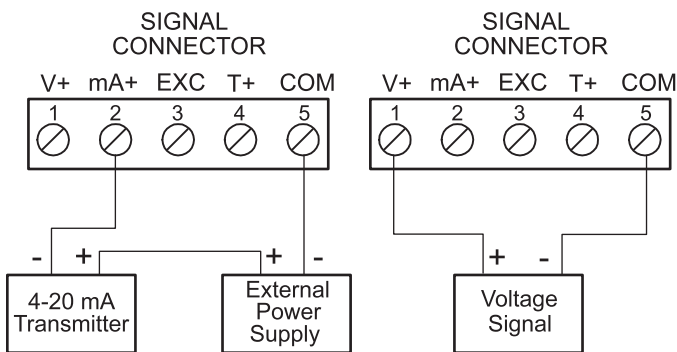
- Process & Temperature
- High & Low Alarms
- Latching or Non-Latching Relays
- Pump Alternation Control
- Time Delay & Fail-Safe Relays
- Maximum & Minimum Readings
- Serial Communication
- Data Acquisition with MeterView Software
- Meter Copy Feature

PROCESS & TEMPERATURE INPUTS

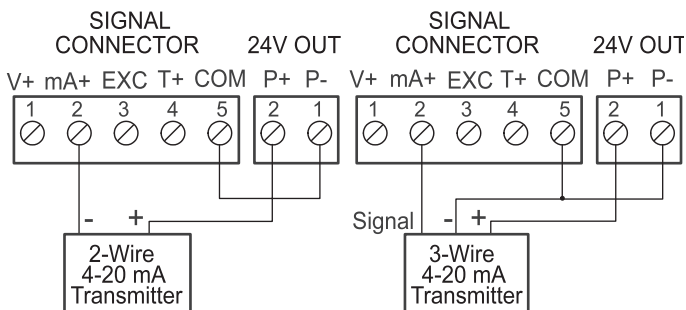
The Trident is factory calibrated to accept 4-20 mA, -10 to +10 VDC, Types J,K,T,E thermocouples and 100 Ω platinum RTDs. Process inputs can be scaled with or without applying an input for virtually any engineering units. Temperature inputs can be programmed to display in degrees Fahrenheit or Celsius and the type K thermocouple can display up to 2300 °F.

Current and Voltage Inputs

Setting up the meter to accept a current or voltage input could not be easier. All setup is performed through software and there are no switches or jumpers to deal with.



Transmitter Powered by External Supply



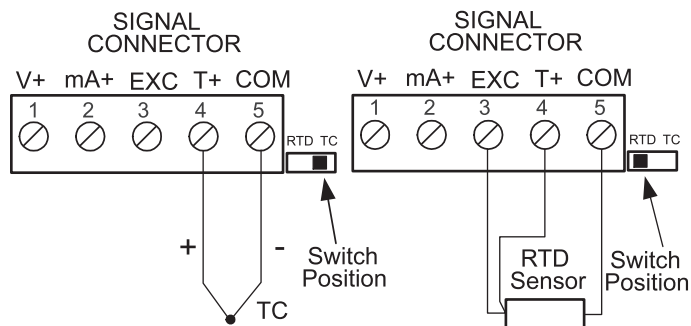
Transmitters Powered by Internal Supply (Optional)

Current Overload Protection

To protect the instrument from unexpected current overload the current input circuit contains a resettable fuse. The fuse limits the current to a safe level when it detects a fault condition, and automatically resets itself when the fault condition is removed.

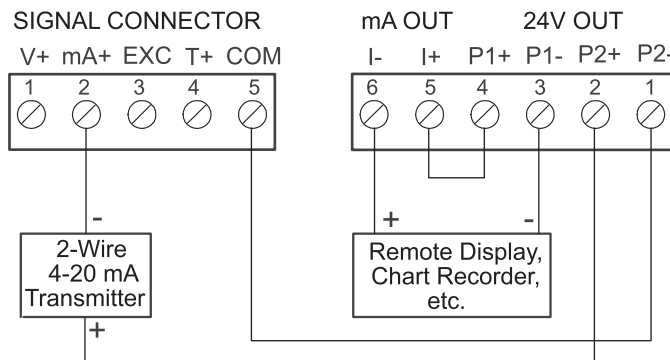
Thermocouple and RTD Inputs

Setting up the Trident to accept a thermocouple or RTD input is simply a matter of setting a switch at the rear of the case and selecting the input type from the menu.

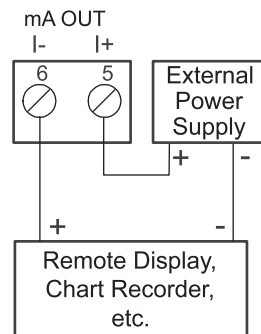


The meter accepts J,K,T, or E type thermocouples as well as two, three, or four-wire 100 Ω platinum RTDs.

Isolated 4-20 mA Analog Output



4-20 mA Output & Input Signal Powered by Meter

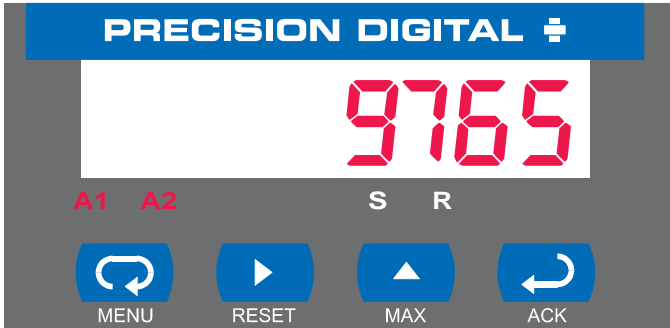


4-20 mA Output Powered Externally

EASY SETUP & PROGRAMMING

The Trident is easy to setup and program and everything is done using the simple four-button programming method. There is only one switch on the entire meter, no jumpers, and no need to ever open the case. The meter can also be programmed using a PC and Precision Digital's MeterView software or "cloned" with the Copy function.

Front Panel Buttons



User Friendly Menu Structure

To simplify programming, the Trident's setup functions are divided into two menus. A main menu handles all the basic setup functions. An advanced features menu handles the special functions not commonly used. See www.predig.com for an interactive demonstration of how the Trident is programmed.

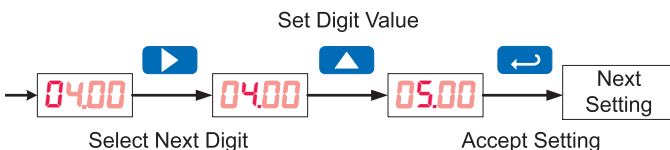
- Press the **Menu** button to enter or exit the Programming Mode at any time.
- Press the **Right** arrow button to move to the next digit during digit programming.
- Press the **Up** arrow button to scroll through the menus, decimal point, or to increment the value of a digit.
- Press the **Enter/Ack** button to access a menu, accept a setting, or to acknowledge relays.

Setting Numeric Values

The numeric values are set using the **Right** and **Up** arrow buttons. Press **Right** arrow to select next digit and **Up** arrow to increment digit value.

The digit being changed is displayed brighter than the rest.

Press the **Enter/Ack** button, at any time, to accept a setting or **Menu** button to exit without saving changes.

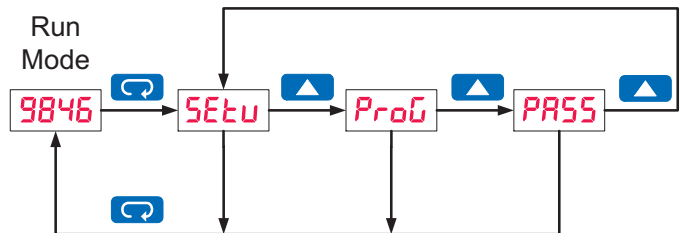


Main Menu

The main menu consists of the three most commonly used functions: *Setup*, *Program*, and *Password*. Press **Menu** button to enter the Programming Mode then press **Up** arrow button to scroll main menu.

The *Setup* menu is used to select the input signal, decimal point, °F or °C, and relay setup. The *Program* menu is used to calibrate or scale the meter. The *Password* menu is used to program a password.

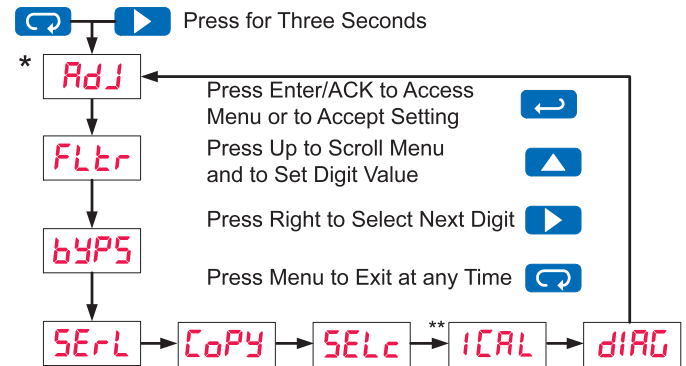
The display moves to the next menu only after the **Enter/Ack** button is pressed.



Advanced Features Menu

To simplify the setup process, functions not needed for most applications are located in the *Advanced* features menu.

Press and hold the **Right** arrow and the **Menu** buttons, for three seconds, to access the Advanced features of the meter.



* Available for temperature inputs only

** Available for process inputs only

Offset Adjustment (AdJ)

This function allows the user to select an offset adjustment to the temperature being displayed. This value can be either positive or negative and can be any number within +/-19.9°.

Noise Filter (FLtR)

This function averages any minor or quick changes in the input signal and displays the reading with greater stability.

Noise Filter By-Pass (bYP5)

The meter can be programmed to filter small input changes (with noise filter function), but allow larger input changes to be displayed immediately by setting the noise filter by-pass function accordingly. If the change in input signal exceeds the by-pass value, no filtering will occur and the new value will be displayed immediately.

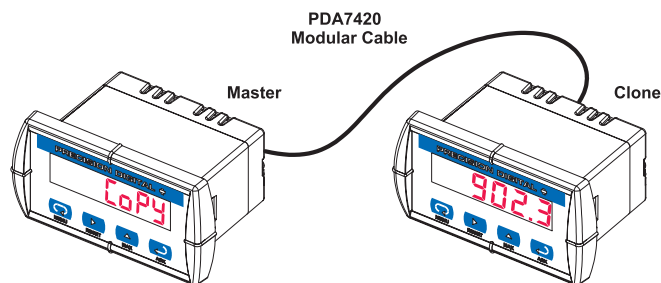
Serial Communication (SErL)

This function is used to program a unique address for each meter when used in a multi-drop mode. The address may be programmed from 00 to 99.

Meter Copy (COpy)

The Copy function is used to copy (or clone) all the settings from one meter to other meters – in less than 5 seconds!

The Copy function is a standard feature on all meters and does not require a serial communication adapter.



Diagnostic Menu (d iAG)

The Diagnostic function aids in troubleshooting by providing a convenient way to review all setup and programming parameters.

VERSATILE OPERATION

Look to the Trident meter for the key features and options you want and don't worry about getting bogged down in a confusing array of things you don't need. The Trident's Max/Min function, 2 relays, and serial communication options provide all the utility you need to handle all the common applications.

Powerful Relay Functionality

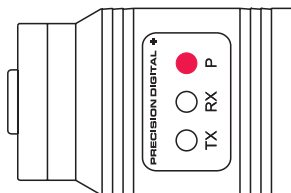
All relay functions are set up from the front panel or from a PC running MeterView software.

- Automatic reset only
- Automatic or manual reset
- Latching or non-latching relays
- Pump alternation control
- On and off time delays from 0 to 199 seconds
- Fail-safe operation

Maximum/Minimum Readings

To display the maximum and minimum readings since the last reset/power-up, use the **Up** arrow/**Max** button

Serial Communication Adapters

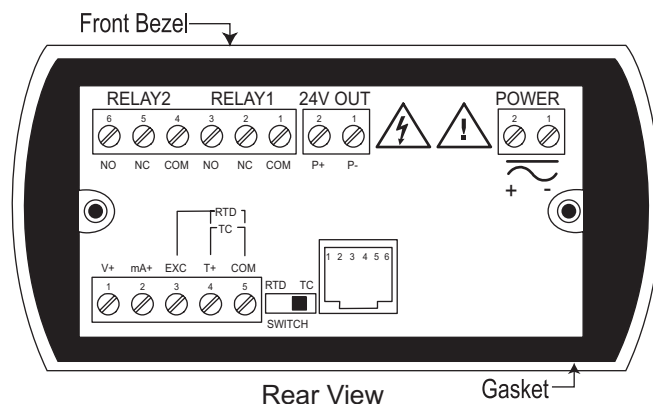


The Trident can be used as a data acquisition device, with the added benefit of a digital display, by connecting an optional RS-232 or RS-422/485 serial communication adapter. Precision Digital also provides the software needed for simple data acquisition and to program the meter.

QUICK INSTALLATION

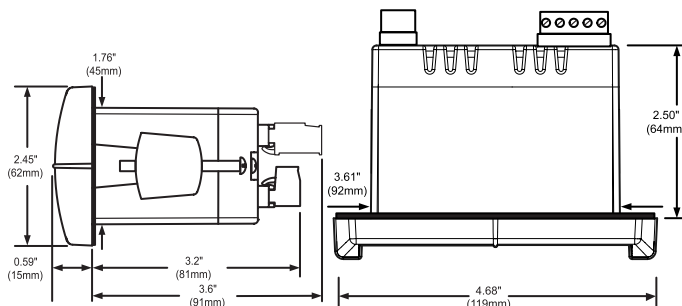
The Trident is housed in a shallow-depth case that is designed for easy installation and servicing. The extra large front bezel is rated NEMA 4X, IP65. The mounting brackets are locked in place to make it easy to mount the meter in the panel. Removable screw terminal connectors make for easy and convenient wiring.

Connectors Location



Meter with Relays Option

Mounting Dimensions



Notes:

1. Panel cutout required: 1.772" x 3.622" (45mm x 92mm)
2. Panel thickness: 0.04" – 0.25" (1.0mm – 6.4mm)
3. Mounting brackets locked in place for easy mounting

FIELD ENCLOSURES

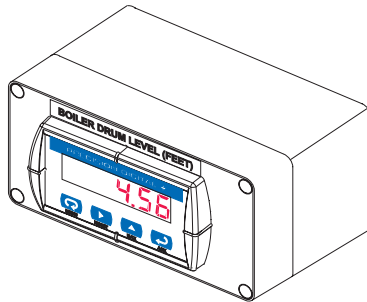
The Trident is available with a wide variety of NEMA 4, NEMA 4X, and explosion-proof enclosures.

NEMA 4 & NEMA 4X Enclosures

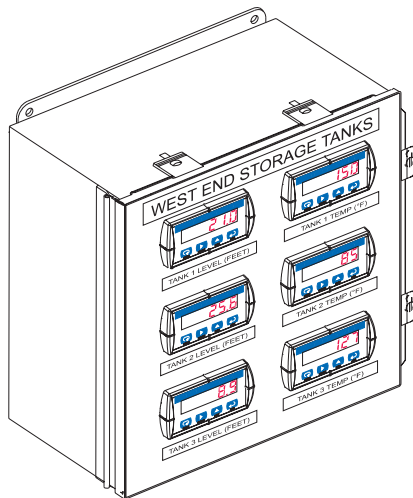
The NEMA 4 and NEMA 4X enclosures are available in stainless steel, steel, and plastic and come with pre-punched 1/8 DIN cutouts for one, two, three, four, five, or six meters. The meters are mounted in the enclosure door so they can be programmed without opening the enclosure. Options include 2" pipe mounting kits and engraved plastic labels. See NEMA 4 & NEMA 4X Enclosures for Trident Meters data sheet for complete details.

Low-Cost Plastic NEMA 4X Enclosure

The PDA2801 is a low-cost, compact, plastic NEMA 4X enclosure that will house one Trident.



Plastic, Steel & Stainless Steel



These NEMA 4 & 4X enclosures house one through six meters and feature a hinged door. Enclosures and meters are ordered as separate items.

Explosion-Proof Enclosures

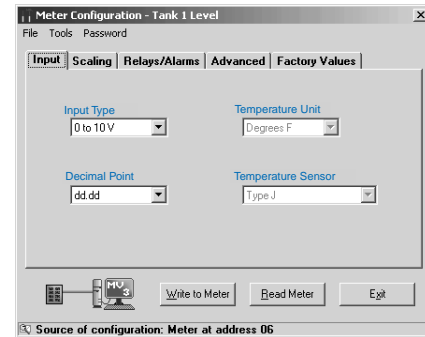
These explosion-proof enclosures house one or two Tridents and are UL & C-UL Classified as NEMA 7 & 9 for location in Class I Groups C & D, Class II, Groups E,F,G and Class III. Enclosures and meters are ordered as separate items.

METERVIEW SOFTWARE

Precision Digital's MeterView software allows the Trident to be programmed from a PC and to act as a data logger.

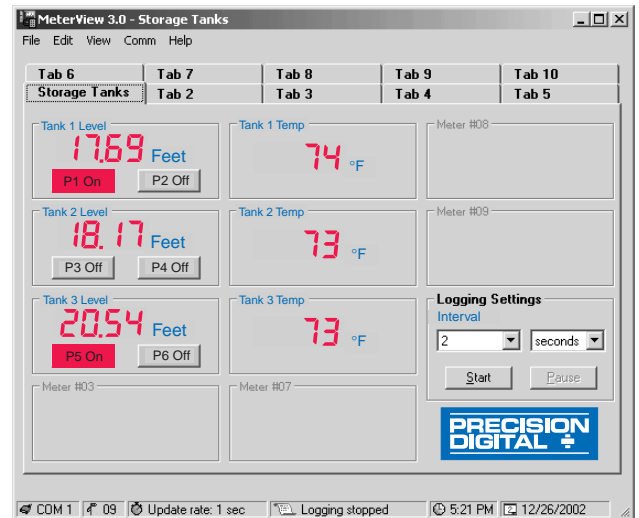
Remote Programming

MeterView software allows all setup parameters to be programmed from a PC and saved to a file for reporting or programming other meters.



Data Acquisition

MeterView software provides a convenient way to collect the data generated by the Trident's serial output. The user can select the logging time interval and the engineering units that will be displayed on the computer screen. Data is written to a file that could then be imported into a spreadsheet or other application.



Sample File Generated by MeterView

PD765 Log File						
Name: C:\MV3\Logfile.htm			Created: 12/26/2002 5:34:12 PM			
Serial Port: COM 1			Connection speed: 2400 Baud		Logging rate: 1 update every 10 seconds	
Date & Time	Tag Number	Address	Display	Units	Relay 1	Relay 2
12/26/2002 5:34:12 PM	Tank 1 Level	06	17.70	Feet	P1 On	P2 Off
12/26/2002 5:34:12 PM	Tank 2 Level	07	18.18	Feet	P3 Off	P4 Off
12/26/2002 5:34:12 PM	Tank 3 Level	08	20.54	Feet	P5 On	P6 Off
12/26/2002 5:34:12 PM	Tank 1 Temp	09	74	°F	Off	Off
12/26/2002 5:34:12 PM	Tank 2 Temp	10	72	°F	Off	Off
12/26/2002 5:34:12 PM	Tank 3 Temp	11	72	°F	Off	Off

SPECIFICATIONS

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

General

DISPLAY: 0.56"(14.2 mm) red LEDs. Four digits (-1999 to 9999)

FRONT PANEL: NEMA 4X, IP65. Panel gasket provided.

PROGRAMMING METHODS: Four front panel push buttons, PC and MeterView software, or cloning with Copy feature.

NOISE FILTER: Programmable between 2 and 199 (0 will disable filter).

DISPLAY UPDATE RATE: Process/RTD: 3.7-5/sec; T/C: 1.8-2.5/sec

OVERRANGE: Display flashes 9999

UNDERRANGE: Display flashes -1999

RECALIBRATION: All inputs are calibrated at the factory.

MAX/MIN DISPLAY: Stored until reset by user or meter is turned off.

NON-VOLATILE MEMORY: All programmed settings are stored in non-volatile memory for a minimum of ten years if power is lost.

POWER: AC: 85 - 265 VAC, 50/60 Hz, 20 VA; DC: 90-265 VDC, 20 W

Option: 12-36 VDC or 12-24 VAC

FUSE: Recommended external fuse: 1 A, 250 V slow blow

NORMAL MODE REJECTION: 64 dB at 50/60 Hz

ISOLATION: 4 kV

ENVIRONMENTAL: Operating temperature range: 0 to +65°C

Storage temperature range: -40 to +85°C

Relative humidity: 0 to 90% non-condensing

CONNECTIONS: Power & Signal: removable screw terminal blocks accept 12 to 26 AWG. Serial: RJ11 header, standard on all meters.

ENCLOSURE: 1/8 DIN, high impact plastic, 94V-0, color; gray

WEIGHT: 8 oz (2.27 g) (no options)

WARRANTY: 2 years parts and labor

EXTENDED WARRANTY: Warranty may be extended an additional 12 months by returning the Product Registration Form within 2 months from date of purchase. Go to www.predig.com for online registration.

Process Inputs

INPUTS: Field selectable: ±20 mA DC and ±10 VDC

ACCURACY: ±0.05% of calibrated span ±1 count, square root: 10-100% F.S.

LOW-FLOW CUTOFF: 0 to 9999 (0 disables cutoff function).

DECIMAL POINT: Up to three decimal places: d.ddd, dd.dd, ddd.d, or dddd

CALIBRATION: Internal or external signal or with PC

CALIBRATION RANGE: User Programmable over entire range of meter

INPUT IMPEDANCE: Voltage range: greater than 1 MΩ

Current range: 50-100 Ω

INPUT OVERLOAD: Protected by automatically resettable fuse

TEMPERATURE DRIFT: ±50 PPM/°C

TRANSMITTER SUPPLY: Isolated, one or two transmitter supplies (Optional)

P1: 24 VDC ±10% @ 200 mA max. (-1 option)

P1 & P2: 24 VDC ±10% @ 200 mA & 40 mA max. (-2 option)

Temperature Inputs

INPUTS: Factory calibrated, field selectable: type J, K, T, or E thermocouples and 100 Ω platinum RTD (0.00385 or 0.00392 curve)

RESOLUTION: 1°; type T, 1° or 0.1°

COLD JUNCTION REFERENCE: Automatic

TEMPERATURE DRIFT: ±2°C maximum; 0 to 65°C ambient temperature

OFFSET ADJUSTMENT: Programmable to ±19.9°. This parameter allows the user to apply an offset value to the temperature being displayed.

INPUT IMPEDANCE: Greater than 100 kΩ

SENSOR BREAK: All relays and alarm status LEDs go to alarm state.

Type	Range	Accuracy	Range	Accuracy
J	-58° to 1382°F	±2°F	-50° to 750°C	±1°C
K	-58° to 2300°F	±2°F	-50° to 1260°C	±1°C
T	-292° to 700°F	±2°F	-180° to 371°C	±1°C
E	-58° to 1578°F	±2°F	-50° to 870°C	±1°C
RTD	-328° to 1382°F	±1°F	-200° to 750°C	±1°C

Relays

RATING: 2 SPDT (form C); rated 3 amps @ 30 VDC or 3 amps @ 250 VAC resistive load; 1/14 HP @ 125/250 VAC for inductive loads

DEADBAND: 0-100% of full scale, user selectable

HIGH OR LOW ALARM: User may program any alarm for high or low.

RELAY OPERATION:

1. Automatic (non-latching) 2. Latching 3. Pump alternation control

RELAY RESET: User selectable via front panel buttons or PC

1. Automatic reset only (non-latching)

2. Automatic + manual reset at any time (non-latching)

3. Manual reset only, at any time (latching)

4. Manual reset only after alarm condition has cleared (latching)

Automatic reset: Relays reset when the input passes the reset point.

Manual reset: Front panel ACK button.

TIME DELAY: 0 to 199 seconds, on and off delays; programmable.

FAIL-SAFE OPERATION: Programmable, independent for each relay.

AUTO INITIALIZATION: When power is applied to the meter, relays will reflect the state of the input to the meter.

FAIL-SAFE OPERATION: relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state.

Isolated 4-20 mA Transmitter Output

OUTPUT RANGE: 1.00 to 23.00 mA typical

CALIBRATION: Factory calibrated for 4-20 mA

SCALING RANGE: 0.00 to 23.99 mA, see output range above

ACCURACY: ±0.1% F.S. ±0.004 mA

TEMPERATURE DRIFT: 50 PPM/°C from 0 to 65°C ambient

Note: Analog output drift is separate from input drift

ISOLATION: 500 V input-to-output or output-to-P1/P2 supplies; 4 kV output-to-power line

EXTERNAL POWER: 35 VDC maximum

OUTPUT LOOP RESISTANCE:

Power supply	Loop Resistance	
	minimum	maximum
24 VDC	10 Ω	700 Ω
35 VDC (external)	100 Ω	1200 Ω

ORDERING INFORMATION

85-265 VAC** Model	12-36 VDC** Model	Description
PD765-6R0-0*	PD765-7R0-0	No Options
PD765-6R0-1*		24 VDC Transmitter Supply
PD765-6R2-0*	PD765-7R2-0	2 Relays
PD765-6R2-1*		2 Relays & 24 VDC Transmitter Supply
PD765-6R3-0	PD765-7R3-0	4-20 mA Output
PD765-6R3-1		4-20 mA Output & 24 VDC Transmitter Supply
PD765-6R3-2		4-20 mA Output & Dual 24 VDC Supplies

*Quick Shipment Product, shipped within 2 working days.

**All models may be powered from AC or DC.

Accessories

Model	Description
PDA7420	Standard Modular Cable, 7' (2.1 m) included w/adapters
PDA7232	RS-232 Serial Adapter, PDA7420 included
PDA7422	RS-422/485 Serial Adapter, PDA7420 included
PDA7503-1	MeterView Version 3.0 Software for 1 Meter
PDA7503-2	MeterView Version 3.0 Software for 1-10 Meters
PDA7503-3	MeterView Version 3.0 Software for 1-100 Meters

LDS765_D 01/03