5 DIGIT LOOP-POWERED PANEL METERS
WITH LOOP-POWERED BACKLIGHT

Loop Leader™
+ - Series

Model PD683 General Purpose

Model PD688 Hazardous Area

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⬦ FM ⬦
C   US
APPROVED

CSA ®

Model PD688 Only

- 4-20 mA Input
- 5 Digit LCD, 0.6" (15.2 mm) High
- FM Type 4X, IP65 Front
- Shallow Depth Case 3.2" Behind Panel
- 2 V Drop (5.7 V with Backlight)
- Loop-Powered Backlight Standard
- Custom Engineering Units & Bargraph
- Linear, Square Root, or Programmable Exponent
- Maximum & Minimum Display
- Operating Temperature Range -30 to 65°C
- Intrinsically Safe & Non-Incendive
- HART Protocol Transparent

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- **Trend Arrow**
- **5 Digits, 0.6" High**
- **Bargraph**
- **Engineering Notation**
- **Custom Engineering Units**
- **Backlight is Standard**

KEY FEATURES

Through significant innovation in technology and design, we developed the Loop Leader™ Series of loop-powered indicators, which are loaded with standard features and built for tough industrial environments.
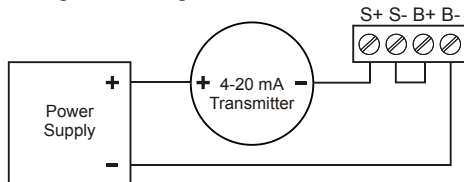
Full Featured

There's nothing stripped down or bare bones about these indicators; they're designed for demanding process control applications. Standard features include a full 5 digit backlit display with bargraph, on-screen custom engineering units, and max/min display capabilities
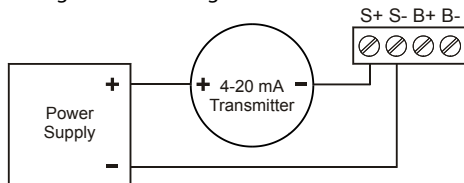
Install Just About Anywhere

Indoors, outdoors, bright sunlight, dimly lit plant, wet, dirty, hot or cold- these indicators go just about anywhere. Their shallow-depth case, FM Type 4X front, loop-powered backlighting, and wide operating temperature range are all standard features. And the PD688 with its FM Approval and CSA Certification can be installed in just about any hazardous location.
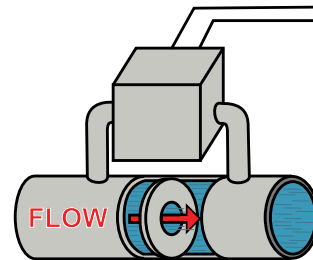
4-20 mA Input Connections

Wiring with Backlight

Wiring without Backlight
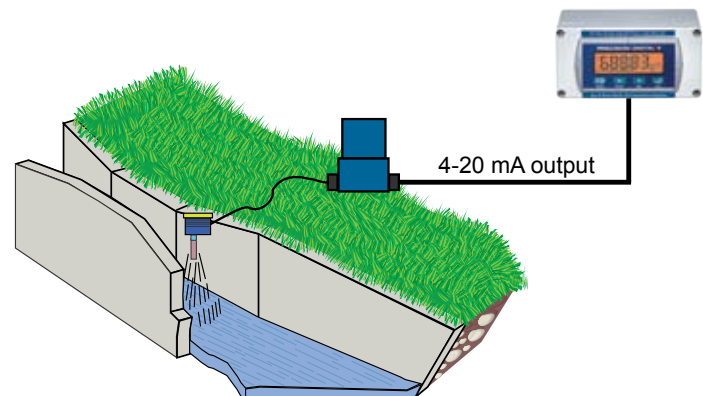

Square Root Function

The square root extraction feature displays flow rate by extracting the square root from a differential pressure transmitter signal. The user selectable low-flow cutoff feature gives a reading of zero when the flow rate drops below a user selectable value.

- Displays Flow Rate
- User Selectable Low-Flow Cutoff
- Only 2 Calibration Points Required

Programmable Exponent

The programmable exponent function is used to linearize the level signal in open channel flow applications using weirs and flumes and display flow rate in engineering units.
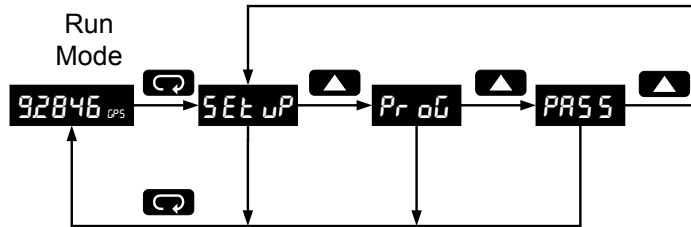

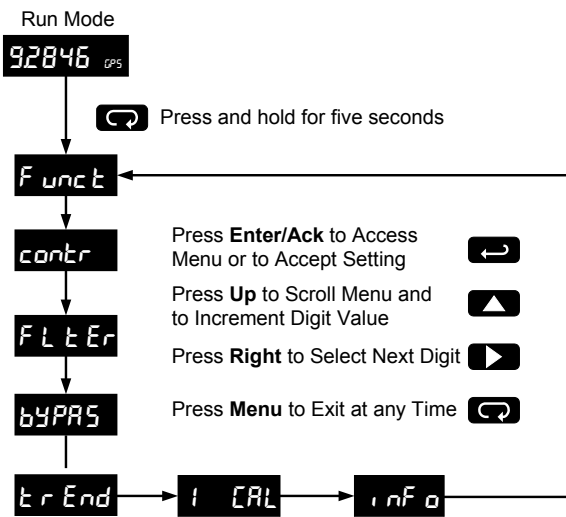4-20 mA output

SETUP & PROGRAMMING

Easy Setup

Even with all the features packed into these meters, they're still easy to setup and get running. Everything is programmed from the front panel buttons with no pots or jumpers to deal with. In fact, these meters can be scaled without a signal source for even quicker setup.

Main Menu

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 Menu button for five seconds to access the advanced features of the meter.
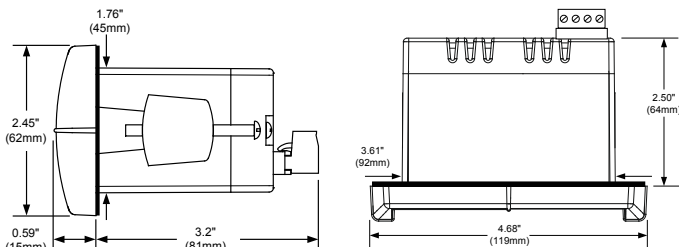

Press **Enter/Ack** to Access Menu or to Accept Setting

Press **Up** to Scroll Menu and to Increment Digit Value

Press **Right** to Select Next Digit

Press **Menu** to Exit at any Time

INSTALLATION

There is no need to remove the meter from its case to complete the installation, wiring, and setup of the meter.

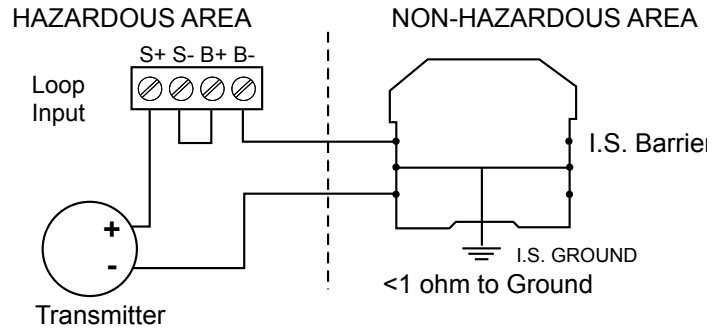## Mounting Dimensions

Units: Inch (mm)

Notes:
1. Panel cutout required: 3.622 x 1.772 (92 x 45)
2. Panel thickness: 0.040 – 0.250 (1.0 – 6.4)
3. Mounting brackets lock in place for easy mounting

PD688 Intrinsically Safe Wiring
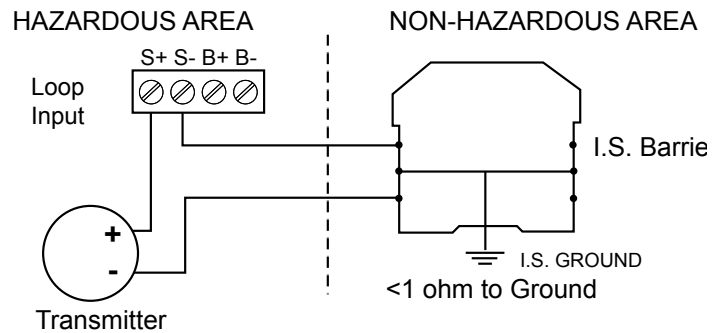
Installation must be performed in accordance with Control Drawing LIM688-2.

Loop Input with Backlight

Loop Input without Backlight

OPTIONAL ENCLOSURES

PDA2801 low-cost NEMA 4X enclosure for one PD683 meter

NEMA 4X enclosures are available in plastic, steel, & stainless steel for one to six PD683 meters

**Go to
www.predig.com
for complete details**

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SPECIFICATIONS

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

General

Display: 5 digit LCD (-99999 to 99999), 0.60" (15.2 mm) high, 7-segment, automatic lead zero blanking.
Engineering Units: 0.25" (6.4 mm) high, 14-segment
Bargraph: 20-segment, 0-100% indication
Trend Arrows: Up and down trend indication
Backlight: Bright orange LED (intensity varies with signal)
Front Panel: FM Type 4X, IP65; panel gasket provided
Display Update Rate: 2.5/second
Overrange: Display flashes 99999
Underrange: Display flashes -99999
Programming Method: Four front panel buttons
Noise Filter: Programmable from 1 to 199
Recalibration: Recommended at least every 12 months
Max/Min Display: Max/min readings reached by the process are stored until reset by the user or until power to the meter is turned off.
Password: Programmable password restricts modification of programmed settings.
Non-Volatile Memory: All programmed settings are stored in non-volatile memory for a minimum of ten years if power is lost.
Voltage Drop: 2.0 V max w/o backlight, 5.7 V max with backlight
Equivalent Resistance: 125 Ω @ 20 mA without backlight, 315 Ω @ 20 mA with backlight.
Normal Mode Rejection: 64 dB at 50/60 Hz
Operating Temperature Range: -30 to 65°C
Allowable Temperature Range: -40 to 65°C* (see note below)
Storage Temperature Range: -40 to 85°C
Relative Humidity: 0 to 90% non-condensing
Connections: Screw terminals accept 12 to 22 AWG wire
Enclosure: 1/8 DIN, high impact plastic, UL 94V-0, color: gray
Mounting: 1/8 DIN panel cutout required. Two panel mounting bracket assemblies provided.
Tightening Torque: 4.5 lb-in (0.5 Nm) Screw terminal connectors
Overall Dimensions: 4.68" x 2.45" x 3.79" (119 x 62 x 96 mm)
Weight: 5.7 oz (162 g)
Warranty: 3 years parts and labor
Extended Warranty: 1 or 2 years, refer to Price List for details

* Below -30°C the LCD becomes less readable. See application note AN-1005.

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YOUR LOCAL DISTRIBUTOR IS:

Input

Input Range: 4-20 mA
Accuracy: ±0.03% of span ±1 count, square root and programmable exponent: 10-100% FS.
Calibration: Scale without signal or calibrate with signal source
Calibration Range: User programmable over entire range of meter
Minimum Span: 0.40 mA between input 1 and input 2
Note: An Error message will appear if input 1 and input 2 signals are too close together.
Input Overload: Over current protection to 2 A maximum
Decimal Point: Up to 4 places (d.dddd, dd.ddd, ddd.dd, dddd.d, or ddddd)
Function: Linear, square root, or programmable exponent
Low-Flow Cutoff: -99999 to 99999 (-99999 disables cutoff function)
Temperature Drift: 50 PPM/°C from -40 to 65°C ambient

PD688 Approvals for Hazardous Locations

FM Approved & CSA Certified as intrinsically safe with entity for use in Class I, Div 1, Groups ABCD; Class II, Div 1, Groups EFG; Class III, Div 1; Class I, Zone 0, Group IIC; T-code = T4.
Non-incendive: Suitable for use in Class I, Div 2, Groups ABCD; Class II, Div 2, Groups FG; Class III, Div 2.
Entity Parameters: U_i: 30 V; I_i: 175 mA; C_i: 0; L_i: 0; P_i: 1.0 W

Note: Installation must be performed in accordance with Control Drawing LIM688-2

Loop Leader™ Series

ORDERING INFORMATION

Model	Description	
PD683-0K0	Loop Leader™ PLI	Panel Meter for Safe Area
PD688-0K0	Loop Leader™ PIH	Panel Meter FM & CSA

Enclosures

Model	Meters	Description	Mounting
PDA24XX	1 - 4 *	Plastic NEMA 4X	Inside Cover
PDA26XX	1 - 6 *	Stainless Steel NEMA 4X	Through Door
PDA27XX	1 - 6 *	Steel NEMA 4X	Through Door
PDA2801	1	Low-cost NEMA 4X	Through Cover

Note: XX = the last two digits of the model number.
* Go to www.predig.com to find individual model numbers

Services

Model	Description
PDN-CAL	2-Point Calibration
PDN-CERTCAL	Certificate of Calibration
PDN-CERTCAL2	Certificate of Calibration with Data
PDN-LTCAL	Lifetime Annual Recertification (shipped back same day)
PDN-LTCAL2	Lifetime Annual Recertification (shipped back next day)
PDN-LTCAL5	Lifetime Annual Recertification (shipped back within 5 days)
PDN-CERTCON	Certificate of Conformance
PDN-CSETUP	Custom Setup
PDN-ONEDAYRTN	One-Day Turnaround Service
PDN-EXTWRNTY1-0	Extended Warranty 1 Year
PDN-EXTWRNTY2-0	Extended Warranty 2 Years

PRECISION DIGITAL CORPORATION

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

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