

# PD6770 Field-Mount Loop-Powered Process Meter

## Instruction Manual



- NEMA 4X, IP66 Field-Mount Loop-Powered Process Meter
- 4-20 mA Input
- 1 Volt Drop (4 Volt Drop with Backlight)
- 1.0" (25.4 mm) 3½ Digits LCD Display; -1000 to 1999
- Display Mountable at 0°, 90°, 180°, & 270°
- HART® Protocol Transparent
- Loop-Powered Backlight Option
- Operating Temperature Range: -40 to 75°C (-40 to 167°F)
- Zero & Span Potentiometer Adjustments for Easy Field Scaling
- Conformal Coated PCBs for Dust and Humidity Protection
- Wide Viewing Angle
- Flanges for Wall or Pipe Mounting
- Tag or Tamper Seal Loop
- Three 3/4" NPT Threaded Conduit Openings (Two Plugs Provided)
- 2" U-Bolt Kits Available
- Stainless Steel Tag Available
- 3-Year Warranty

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The information contained in this document is subject to change without notice. Precision Digital Corporation makes no representations or warranties with respect to the contents hereof; and specifically disclaims any implied warranties of merchantability or fitness for a particular purpose.

**CAUTION**

- Read complete instructions prior to installation and operation of the meter.

**WARNINGS**

- Risk of electric shock or personal injury.
- This product is not recommended for life support applications or applications where malfunctioning could result in personal injury or property loss. Anyone using this product for such applications does so at his/her own risk. Precision Digital Corporation shall not be held liable for damages resulting from such improper use.
- Failure to follow installation guidelines could result in death or serious injury. Make sure only qualified personnel perform the installation.

**WARNING**  
Cancer and Reproductive Harm - [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

**Limited Warranty**

Precision Digital Corporation warrants this product against defects in material or workmanship for the specified period under "Specifications" from the date of shipment from the factory. Precision Digital's liability under this limited warranty shall not exceed the purchase value, repair, or replacement of the defective unit. See Warranty Information and Terms & Conditions on [www.predig.com](http://www.predig.com) for complete details.

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**Introduction**

The Vantageview PD6770 is a rugged, loop-powered meter with 1" display digits. The plastic NEMA 4X and IP66 field mountable enclosure is designed for demanding applications in the harshest environmental conditions. The meter derives all of its power from the 4-20 mA loop with a small 1 volt drop for easy installation in almost any system.

The meter is programmed using four easy to access front-mounted potentiometers with no complex or difficult to read programming menus necessary for setup. The numeric display will read from -1000 to 1999 over a 2000 count user adjustable scaling span. The back-light option lets you see the display under any lighting condition and is powered from the 4-20 mA loop with no additional power supply required.

The enclosure is provided with three threaded conduit holes and integrated pipe or wall mounting slotted flanges.

**Ordering Information**

Model	Description
PD6770-0L0	Field-Mount Loop-Powered Process Meter
PD6770-0K0	Field-Mount Loop-Powered Process Meter with Backlight

**Accessories**

Model	Description
<a href="#">PDAPLUG75P</a>	3/4" NPT Plastic Conduit Plug
<a href="#">PDA1024-01</a>	24 VDC Power Supply for DIN Rail
<a href="#">PDA6846</a>	Steel 2" U-Bolt Kit. All Material: Zinc Plated Steel; (1) U-Bolt for 2" Pipe with (2 each) Washers, Lock Washers, and Nuts.
<a href="#">PDA6846-SS</a>	Stainless Steel 2" U-Bolt Kit. All Material: Stainless Steel; (1) U-Bolt for 2" Pipe with (2 each) Washers, Lock Washers, and Nuts.
<a href="#">PDA-SSTAG</a>	Custom Stainless Steel Tag (see website for convenient ordering form)

## Accessories

### PDA1024-01 24 VDC Power Supply



The [PDA1024-01](#) is a DIN rail mounted 1.5 A, 24 VDC power supply that can be used to power the 4-20 mA transmitter.

### PDA6846 2" U-Bolt Kits



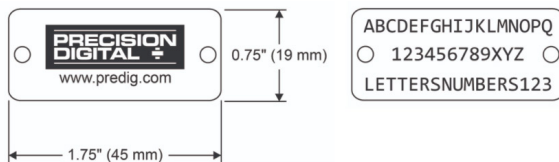
The [PDA6846](#) U-Bolt Kits provides a convenient way to mount the PD6770 to 1.5" or 2" pipes. They are available in steel and stainless steel.

### PDA-SSTAG Stainless Steel Tag



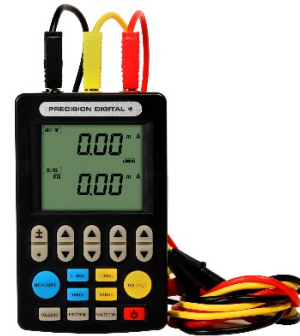
The [PDA-SSTAG](#) is a laser etched stainless steel tag that can be customized with three lines of text. Each tag comes with a stainless steel wire and lead seal for easy mounting wherever you need.

## Dimensions



## Useful Tools

### PD9501 Multi-Function Calibrator



This [PD9501](#) Multi-Function Calibrator has a variety of signal measurement and output functions, including voltage, current, thermocouple, and RTD.

### PD9502 Low-Cost Signal Generator



The [PD9502](#) is a low-cost, compact, simple to use 4-20 mA or 0-10 VDC signal generator. It can easily be set for 0-20 mA, 4-20 mA, 0-10 V or 2-10 V ranges. Signal adjustment is made with a one-turn knob. A 15-27 VDC wall plug is provided with the instrument. Optional USB power bank is available.

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## Specifications

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

### General

<b>Display</b>	3 ½ digit LCD 1" (25.4 mm); -1000 to 1999
<b>Display Orientation</b>	Display may be mounted at 90° increments up to 270° from default orientation.
<b>Display Update Rate</b>	2.5 Updates/Second
<b>Backlight</b>	White; Loop-powered. Backlight can be enabled or disabled via alternative wiring of terminal block. Loop-powered backlight brightness will increase as the input signal current increases.
<b>Display Overrange</b>	Display reads <i>f</i> on the left most digit
<b>Programming Method</b>	Four (coarse and fine for zero and span) potentiometers accessed when the cover is removed.
<b>Recalibration</b>	Recalibration is recommended at least every 12 months.
<b>Normal Mode Rejection</b>	60 dB rejection ratio
<b>Environmental</b>	Operating temperature range: -40 to 75°C Storage temperature range: -40 to 75°C Relative humidity: 0 to 90% non-condensing Printed circuit boards are conformally coated.
<b>Connections</b>	Screw terminals accept 12 to 22 AWG wire
<b>Enclosure</b>	NEMA 4X, IP66 plastic field enclosure, polycarbonate with UV stabilizer. Color: grey. Window: Clear polycarbonate with UV stabilizer. Three ¾" NPT threaded conduit openings. Two ¾" NPT plastic conduit plugs included.
<b>Tag or Tamper Seal Loop</b>	Loops molded into base and cover of enclosure for tamper wire or tags.
<b>Mounting</b>	May be mounted directly to conduit. Two slotted flanges for wall mounting or NPS 1½" to 2½" or DN 40 to 65 mm pipe mounting. See <i>Dimensions</i> on page 7.
<b>Overall Dimensions</b>	5.67" x 5.25" x 4.18" (W x H x D) (144 mm x 133 mm x 106 mm)
<b>Weight</b>	1.65 lbs (26.4 oz, 0.75 kg)
<b>Warranty</b>	3 years parts and labor. See Warranty Information and Terms & Conditions on <a href="http://www.predig.com">www.predig.com</a> for complete details.

### Input

<b>Input</b>	4-20 mA	
<b>Accuracy</b>	±0.1% of full span ±1 count	
<b>Maximum Voltage Drop &amp; Equivalent Resistance</b>	<b>Without Backlight</b>	<b>With Loop-Powered Backlight</b>
	1 VDC @ 20 mA 50 Ω @ 20 mA	4 VDC @ 20 mA 200 Ω @ 20 mA
<b>Temperature Drift</b>	150 PPM/°C from -40 to 75°C ambient	
<b>Decimal Point</b>	User selectable decimal point	
<b>Calibration Range</b>	4 mA input: -1000 to +1000; 20 mA between 20 and 2000 counts greater than 4 mA display. Two point linear display span.	
<b>Input Overload</b>	Over current protection to 2 A max.	
<b>HART Transparency</b>	The meter does not interfere with existing HART communications; it displays the 4-20 mA primary variable and it allows the HART communications to pass through without interruption.  The meter is not affected if a HART communicator is connected to the loop. The meter does not display secondary HART variables.	

## Safety Information

### ⚠ WARNINGS

- Read complete instructions prior to installation and operation of the meter.
- Installation and service should be performed only by trained service personnel. Service requiring replacement of internal components must be performed at the factory.
- If the meter is installed in a high voltage environment and a fault or installation error occurs, high voltage may be present on any lead.

## Tag and Tamper Seal Loop



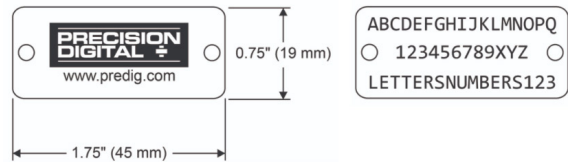
The PD6770 comes with tag and tamper seal loops molded into the plastic enclosure. One loop is located on the cover of the enclosure and the other one is on the base of the enclosure. These are used for inserting a stainless steel wire through the holes and attaching a lead seal to prevent unauthorized removal of the enclosure cover. A custom stainless steel tag (PDA-SSTAG) can also be attached to the wire.

## PDA-SSTAG Stainless Steel Tag



The PDA-SSTAG is a laser etched stainless steel tag that can be customized with three lines of text. Each tag comes with a stainless steel wire and lead seal for easy mounting wherever you need.

### Dimensions



### Ordering Guide

<a href="#">PDA-SSTAG</a>	Custom Stainless Steel Tag (see website for convenient ordering form)
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When ordering custom tags, enter your custom text in the available form located at [predig.com/PDA-SSTAG](http://predig.com/PDA-SSTAG) or [click here to download the Stainless Steel Tag Order Form](#).

## Installation

All controls and wiring connections are located on the display module that is accessed by removing the enclosure cover. The controls can be accessed without removing the display module. The wiring connections can be accessed by removing the display module which is secured to the enclosure by two captive screws.

### **WARNING**

- Installation and service should be performed only by trained service personnel.

## Unpacking

Remove the meter from box. Inspect the packaging and contents for damage. Report damages, if any, to the carrier.

If any part is missing or the meter malfunctions, please contact your supplier or the factory for assistance.

## Conduit Plugs

The PD6770 is supplied with two IP68 rated conduit plugs for installations that require the use of only one conduit entry. The conduit/stopping plugs have 1.29" wrenching flats and a screwdriver slot.

## Mounting

The PD6770 has two slotted mounting flanges that may be used for pipe mounting or wall mounting. Alternatively, the unit may be supported by the conduit using the conduit holes provided.

Refer to *Figure 1* and *Figure 2*.

### **WARNING**

- Do not attempt to loosen or remove flange bolts while the meter is in service.

## Dimensions

All units: inches (mm)

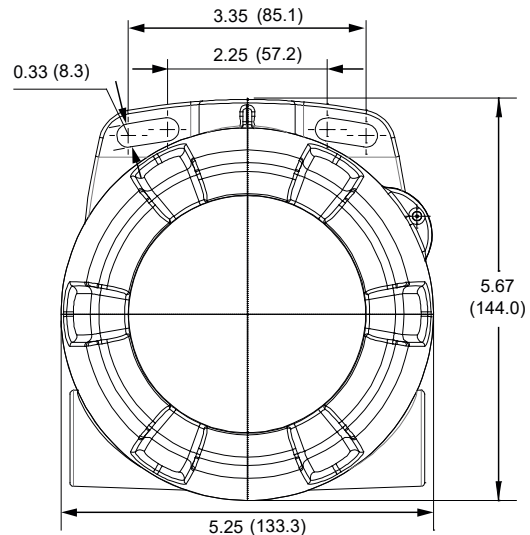


Figure 1. Enclosure Dimensions – Front View

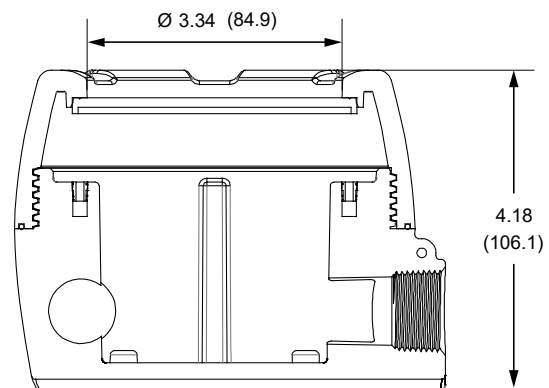


Figure 2. Enclosure Dimensions – Side Cross Section View

**Note:** The supplied conduit plug may extend up to 0.21 in [5.3 mm] from the conduit opening when installed.



Download free 3-D CAD files of these instruments to simplify your drawings!

[predig.com/documentation-cad](http://predig.com/documentation-cad)

## Connections

To access the wiring connections, remove the enclosure cover and unscrew the two captive screws that fasten the display module. Remove the display module. Signal connections are made to a three-terminal connector on the rear of the display module.

<b>S+</b>	4-20 mA signal positive terminal connection
<b>S-</b>	4-20 mA signal return/negative terminal connection
<b>B-</b>	4-20 mA signal return/negative terminal when using the installed loop-powered backlight option.

Refer to *Figure 3* for terminal positions.

### ⚠ WARNINGS

- Observe all safety regulations. Electrical wiring should be performed in accordance with all agency requirements and applicable national, state, and local codes to prevent damage to the meter and ensure personnel safety.
- Static electricity can damage sensitive components.
- Observe safe handling precautions for static-sensitive components.
- If the meter is installed in a high voltage environment and a fault or installation error occurs, high voltage may be present on any lead or terminal.

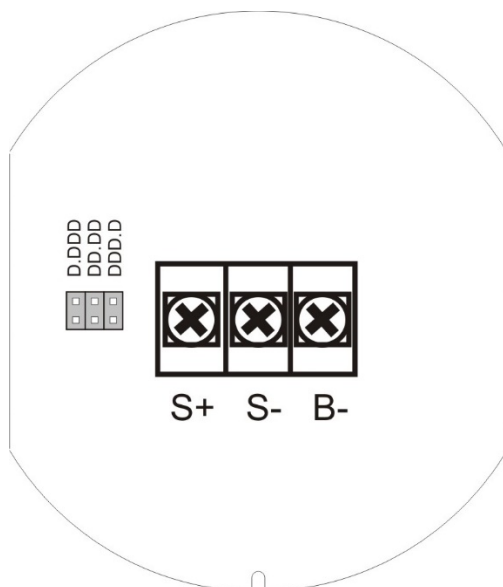


Figure 3. Connector Board

## Wiring Diagrams

Signal connections are made to a three-terminal connector mounted on the rear of the display module.

The 4-20 mA input with no backlight has a maximum voltage drop of 1 V and is wired as shown in *Figure 4*.

The loop-powered backlight configuration requires a total maximum voltage drop of 4 V. The backlight option is recommended for dim lighting conditions and is enabled when wired as shown in *Figure 5*.

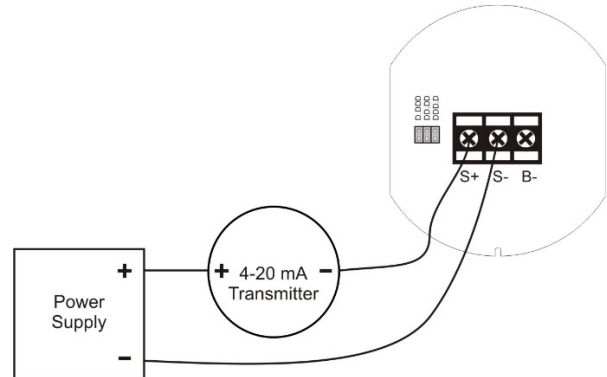


Figure 4. Connections without Backlight

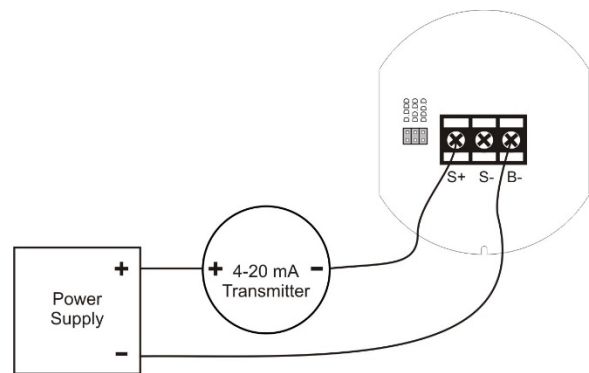


Figure 5. Connections with Loop-Powered Backlight



## Setup

### Overview

Setting the 4-20 mA input for the desired display is done using a calibrated 4-20 mA signal source and the four potentiometers located on the front of the display module. The cover must be removed to access these potentiometers. There is also a jumper array for setting the decimal point.

### Scaling Controls and Display



Control	Description
LO	4 mA display adjust.
LO FINE	4 mA precision display adjust.
HI	20 mA display adjust.
HI FINE	20 mA precision display adjust.

## Setting Up the Meter

### Setting the Decimal Point

A decimal point may be set using a three-position jumper array located on the rear of the display module. To access the jumper array, unscrew the two captive screws that fasten the display module. Remove the display module and place the jumper on the desired pins as indicated on the board for decimal point locations of D.DDD, DD.DD, DDD.D, or remove it if no decimal point is desired.

### Minimum & Maximum Input Span

A minimum input span of 20 counts is required between the 4 mA and 20 mA inputs. A maximum input span of 2000 counts may be setup between the 4 mA and 20 mA input.

The meter will not calibrate properly if these minimum and maximum span ranges are not maintained during scaling.

### Calibrating the Meter

The meter is provided factory calibrated to display -50.0 at 4 mA and 150.0 at 20 mA.

Apply a 4 mA signal and adjust the LO potentiometers (coarse and fine) to display the desired reading. Apply a signal between 16 and 20 mA and adjust the HI potentiometers (coarse and fine) to display the desired reading. Complete the calibration procedure by making minor adjustments to the LO and HI fine potentiometers as necessary.

## Factory Default & User Settings

The following table shows the factory setting for most of the programmable parameters on the meter. Next to the factory setting, the user may record the new setting for the particular application.

Model: \_\_\_\_\_

S/N: \_\_\_\_\_

Date: \_\_\_\_\_

Parameter	Default Setting	User Setting
<i>Decimal point</i>	1 place	
<i>Calibration Settings</i>		
<i>Input 1</i>	4.00 mA	
<i>Display 1</i>	-50.0	
<i>Input 2</i>	20.00 mA	
<i>Display 2</i>	150.0	

## Troubleshooting

The rugged design and the user-friendly interface of the meter should make it unusual for the installer or operator to refer to this section of the manual. If the meter is not working as expected, refer to the recommendations below.

### Troubleshooting Tips

Symptom	Check/Action
No display	Check input signal connections.
Display unsteady during calibration	Adjust LO FINE or HI FINE controls to fine-tune the display.
Meter displays <i>!</i> on the left most digit location	Check signal level is not over range. Dial down the HI control and recalibrate at 20 mA.
Display is faded	Check input signal is not under 1 mA.
Backlight does not appear	Verify backlight is installed. Check signal connections are as shown in <i>Figure 5</i> on page 8.
Other symptoms not described above	Call Technical Support for assistance.

## Contact Precision Digital

### Technical Support

Call: (800) 610-5239 or (508) 655-7300

Fax: (508) 655-8990

Email: [support@predig.com](mailto:support@predig.com)

### Sales Support

Call: (800) 343-1001 or (508) 655-7300

Fax: (508) 655-8990

Email: [sales@predig.com](mailto:sales@predig.com)

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