ProtEX™ *FarVu*

- **Fully-Approved Stainless Steel Explosion-Proof 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**
- **Operating Temperature Range: -40 to 75°C (-40 to 167°F)**
- **Installation Temperature Range: -55 to 75°C (-67 to 167°F)**
- **Zero & Span Potentiometer Adjustments for Easy Field Scaling**
- **Conformal Coated PCBs for Dust and Humidity Protection**
- **CSA Certified for Explosion-Proof / Dust-Ignition Proof / Flame-Proof**
- **Wide Viewing Angle**
- **Flanges for Wall or Pipe Mounting**
- **Explosion-Proof, IP68, NEMA 4X 316 Stainless Steel Enclosure**
- **Two 3/4" NPT or M20 Conduit Openings**
- **2" U-Bolt Kit Available**
- **Stainless Steel Tag Available**
- **3-Year Warranty**

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PRECISION DIGITAL CORPORATION

PRECISION DIGITAL

**www.CABriggs.com**

WHY USE LOOP-POWERED METERS?

The most basic decision a user wishing to display a 4-20 mA signal on a digital display has to make is: should the meter be powered by line voltage or should it be powered by the 4-20 mA loop? The meters in this data sheet are powered by the 4-20 mA loop. The three main benefits of this are:

- No additional power required
- Easy wiring
- Additional digital displays can easily be added in the same loop

The diagram on the right illustrates how a loop-powered meter is wired. Notice there are only two connections made to the meter.
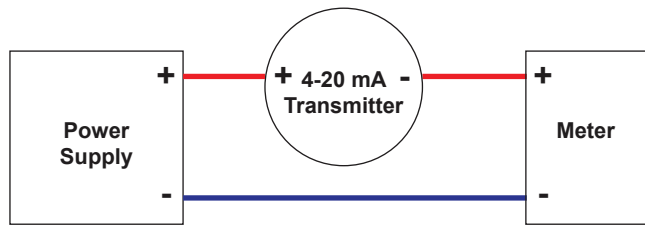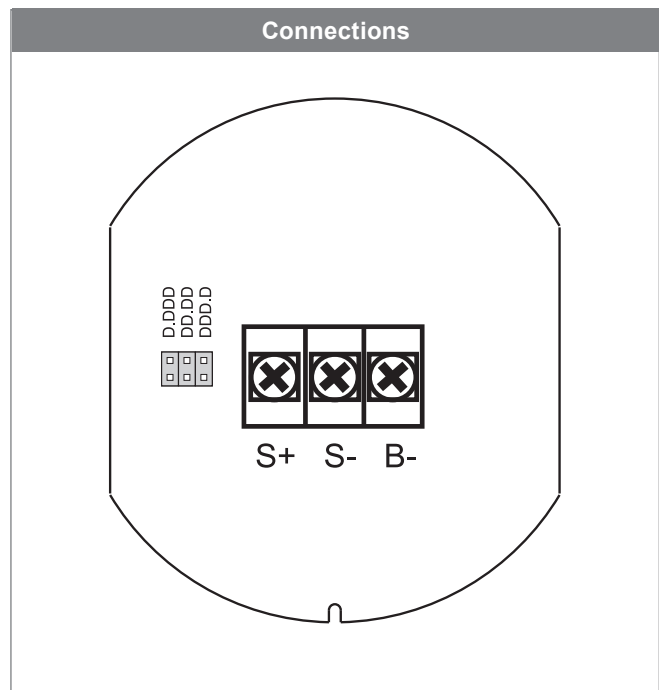
For more information on loop-powered meters, check out these white papers:

Fundamentals of Loop-Powered Devices

Loop-Powered vs Line-Powered Meters

OVERVIEW

Front

PD6870-SS
Stainless Steel Loop-Powered Meter

Connections

Hazardous Area Stainless Steel Loop-Powered Meter

The ProtEX-FarVu PD6870-SS is a rugged, stainless steel, explosion-proof, loop-powered meter with 1" display digits ideal for demanding applications in hazardous areas or in the harshest environmental conditions. It will operate down to -40°C and can be installed in areas where the temperature gets as cold as -55°C, however, the display will cease functioning. 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 backlight feature 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 backlight can be enabled or disabled via alternative wiring of terminal block.

The enclosure is provided with two conduit openings. The cast-in mounting flanges on the enclosure make it convenient for pipe or wall mounting.

PHYSICAL FEATURES

ProtEX-FarVu Stainless Steel Enclosures

Grounding Screw

Stainless Steel Tag
Attaching Loop

Cast-In Flanges for
Pipe Mounting

Cover Jam
Screw

Stainless Steel
NEMA 4X / IP68
Explosion-Proof

HI   LO

HI FINE   LO FINE

PRECISION DIGITAL

Two ¾" NPT or
M20 Conduit
Openings

Glass Window

Tamper-Proof
Protection

Optional
PDA-SSTAG
Stainless
Steel Tag

Slotted
Back for
Easier Pipe
Mounting

Two ¾" NPT or M20
Conduit Openings

The ProtEX-FarVu PD6870-0K0-SS comes with two 3/4" NPT conduit openings and the PD6870-0K0-SS-M20 comes with two M20 conduit openings.

Great for Cold Temperatures

The ProtEX-FarVu PD6870-SS will operate over a temperature range of -40 to 75°C (-40 to 167°F). Below -40°C, the display will cease functioning, however, the instrument is approved to be installed in locations where the temperature goes down to -55°C.

Wide Viewing Angle

The window and display module have been optimized to provide a wide viewing angle of approximately ±40°; nearly twice that of the competition.

Easy Pipe Mounting

The ProtEX-FarVu comes with cast-in mounting flanges. These allow easy mounting to walls or pipes using the PDA6846-SS Stainless Steel 2" U-Bolt Kit. A slot on the back of the enclosure makes it easy to center the unit on a pipe.

Rotatable Display Module

The display module can be rotated in 90° increments providing added mounting flexibility. Plus the various conduit connections allow a variety of installation options.

Tamper-Proof Capability

The instrument can be made tamper-proof by inserting a wire through the cast-in loop on the base of the enclosure and a hole in the lid of the enclosure and securing this wire with a lead seal.

Stainless Steel Tag Attaching Loop

The enclosure is equipped with a loop at the top to easily attach a PDA-SSTAG stainless steel tag.

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ACCESSORIES

PDA6846-SS 2" U-Bolt Kit

The PDA6846-SS stainless steel U-Bolt Kit provides a convenient way to mount the meter to 1.5" or 2" pipes.

Model	Description
PDA6846-SS	2" Stainless Steel U-Bolt Kit with One U-Bolt

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.

Model	Description
PDA-SSTAG	Stainless Steel Tag

24 VDC Transmitter Power Supply

The PDA1024-01 24 VDC power supply can be used for a variety of functions like powering 4-20 mA transmitters. It can be mounted on a PDA1002 DIN rail.

Model	Description
PDA1024-01	24 VDC Transmitter Power Supply
PDA1002	6" DIN Rail Mounting Kit

PDA1024-01 Specifications

Input Voltage	85-264 VAC; 120-370 VDC
Output Voltage	21.6-29 VDC; 1.5 A rated current.
Input Frequency	47-63 Hz
AC Current	115 VAC: 0.88 A; 230 VAC: 0.48 A
Connections	Screw terminals
Overload Protection	105-160% rated output power. Constant current limiting, recovers automatically after fault condition is removed
Operating Temperature	-30 to 60°C (-22 to 140°F)
Vibration	10-500 Hz, 2G 10 min./1 cycle, period for 60 min. each along X, Y, Z axes
Safety Standards	UL 508 Listed and UL Recognized Component
Dimensions	1.40" x 3.50" x 2.10" (35 mm x 90 mm x 54.5 mm) (W x H x D)
Warranty	1 year parts & labor

⚠ **WARNING**

• PDA1024-01 does not carry hazardous area approvals and is thus not suitable for location in hazardous areas. The use of additional protective devices may allow it to be installed in a safe area and connected to a device in a hazardous area. User should consult a professional engineer to determine suitability of these products for their specific application.

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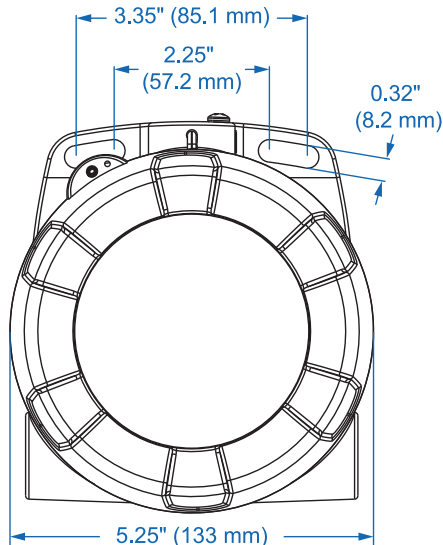622 Mary Street; Suite 101; Warminster, PA 18974
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USEFUL TOOLS

PD9501 Multi-Function Calibrator

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

Model	Description
PD9501	Multi-Function Calibrator

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.

Model	Description
PD9502	Low Cost Signal Generator
PDA1001	USB Power Bank

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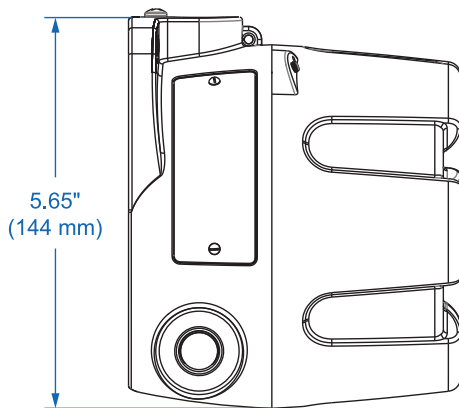Phone: 267-673-8117 - Fax: 267-673-8118
Sales@cabriggs.com - www.cabriggs.com

DIMENSIONS

Units: Inches (mm)

3.35" (85.1 mm)

2.25" (57.2 mm)

0.32" (8.2 mm)

5.25" (133 mm)

Front View

5.65" (144 mm)

Side View

4.80" (122 mm)
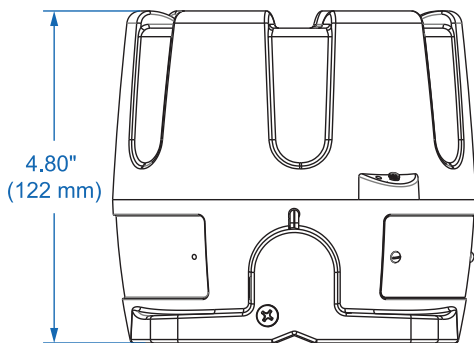
Top View

Download free 3-D CAD files of these instruments to simplify your drawings!
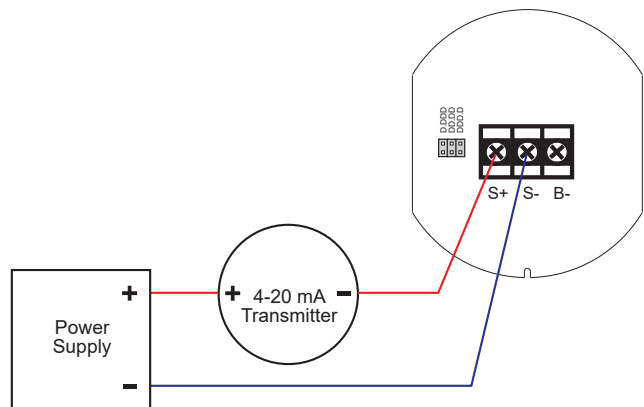
predig.com/documentation-cad

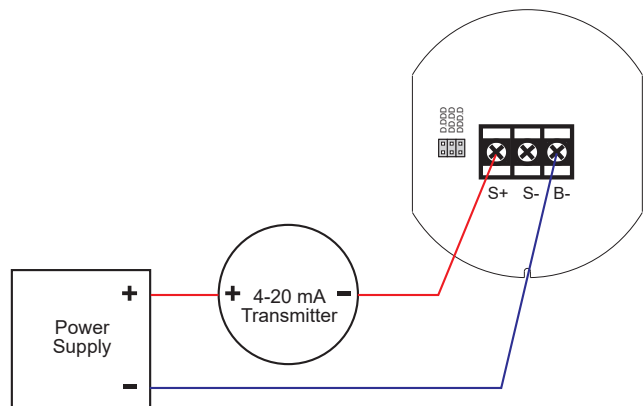## CONNECTIONS

Connectors Labeling

S+   S-   B-
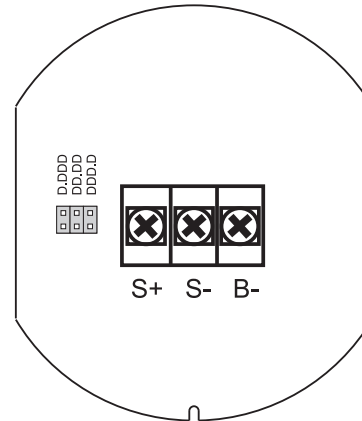
WIRING DIAGRAMS

For existing applications, one of the great benefits of loop-powered meters is that they get their power directly from the 4-20 mA loop and thus require no additional wiring. All a user has to do is break the existing loop and wire in the meter.

S+   S-   B-

Power Supply

+

4-20 mA Transmitter

−

4-20 mA Input Connection without Backlight

S+   S-   B-

Power Supply

+

4-20 mA Transmitter

−

4-20 mA Input Connection with Backlight

SPECIFICATIONS

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

General

Display	3½ digit LCD 1" (25.4 mm); -1000 to 1999
Display Orientation	Display may be mounted at 90° increments up to 270° from default orientation.
Display Update Rate	2.5 Updates/Second
Backlight	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.
Display Overrange	Display reads ⌐ on the left most digit
Programming Method	Four (coarse and fine for zero and span) potentiometers accessed when the cover is removed.
Recalibration	Recalibration is recommended at least every 12 months.
Normal Mode Rejection	60 dB rejection ratio
Environmental	Operating temperature range: -40 to 75°C Storage temperature range: -55 to 75°C Installation temperature range: -55 to 75°C Relative humidity: 0 to 90% non-condensing Printed circuit boards are conformally coated.
Connections	Screw terminals accept 12 to 22 AWG wire
Mounting	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 Dimensions on page 6.
Overall Dimensions	5.25" x 5.65" x 4.80" (133 mm x 144 mm x 122 mm) (W x H x D)
Weight	8.7 lbs (139 oz, 3.95 kg)
Warranty	3 years parts and labor. See Warranty Information and Terms & Conditions on www.predig.com for complete details.

Input

Input	4-20 mA
Accuracy	±0.1% of full span ±1 count

Maximum Voltage Drop & Equivalent Resistance	Without Backlight	With Loop Powered Backlight
	1 VDC @ 20 mA	4 VDC @ 20 mA
	50 Ω @ 20 mA	200 Ω @ 20 mA

Temperature Drift	150 PPM/°C from -40 to 75°C ambient
Decimal Point	User selectable decimal point
Calibration Range	4 mA input: -1000 to +1000; 20 mA between 20 and 2000 counts greater than 4 mA display. Two point linear display span.
Input Overload	Over current protection to 2 A max.
HART Transparency	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.

Enclosure

Material	ASTM A743 CF8M investment-cast 316 stainless steel
Gasket (O-Ring)	Fluoroelastomer
Rating	NEMA 4X, IP68 Explosion-proof
Color	Silver
Window	Borosilicate glass
Conduits	PD6870-0K0-SS: Two 3/4" NPT conduit openings PD6870-0K0-SS-M20: Two M20 conduit openings
Flanges	Two built-in flanges provided for wall and pipe mounting.
Tamper-Proof Seal	Cover may be secured with tamper-proof seal.
ATEX & IECEx (enclosure only)	Flameproof protection ⟨Ex⟩ II 2GD Ex db IIC Gb Ex tb IIIC Db IP66/IP68 Tamb: -55°C to +85°C Certificate No.: Sira 19ATEX1252U Certificate No.: IECEx SIR 19.0075U
CSA (enclosure only)	Class I, Division 1, Groups A, B, C, D Class II, Division 1, Group E, F, G Class III Ex db IIC Gb Ex tb IIIC Db Class I, Zone 1, AEx db IIC Gb Zone 21, AEx tb IIIC Db IP66/IP68/TYPE 4X Tamb: -55°C to +85°C Certificate No.: 80011200
UL (enclosure only)	Class I, Division 1, Groups A, B, C, D Class II, Division 1, Groups E, F, G Class III Class I, Zone 1, AEx db IIC Gb Zone 21, AEx tb IIIC Ex db IIC Gb Ex tb IIIC Db IP66/IP68/TYPE 4X Tamb: -55°C to +85°C Certificate Number: E518920

Note: The above approvals are for the enclosure only. See next page for approval on the entire instrument.

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General Compliance Information

Electromagnetic Compatibility

Emissions	EN 61326-1 Safety requirements for measure-ment, control, and laboratory use – Industrial Group 1 Class A ISM emissions requirements
Radiated Emissions	Class A
Immunity	EN 61326-1 Safety requirements for measure-ment, control, and laboratory use
ESD	±4 kV contact, ±8 kV air
RFI – Amplitude Modulated	80-1000 MHz @ 10 V/m, 1.4-2.0 GHz @ 3 V/m, 2.0-2.7 GHz @ 1 V/m, 80% AM (1 kHz)
EFT	±2 kV DC mains, ±1 kV other
Telco Surge	±1 kV
CRFI	3 V, 0.15-80 MHz, 1 kHz 80% AM

Compliance Information

Hazardous Area Approvals

CSA	Explosion-proof for use in: Class I, Division 1, Groups B, C and D Dust-ignition proof for use in: Class II/III, Division 1, Groups E, F and G; T6 Flame-proof for use in: Zone 1, Ex d IIC T6 Ta = -55 to 75°C. Enclosure: Type 4X & IP66/IP68. Certificate number: 2325749

ORDERING INFORMATION

ProtEX-FarVu PD6870-SS Explosion-Proof Process Meter	
Model	**Description**
PD6870-0K0-SS	Stainless Steel Explosion-Proof Loop-Powered Process Meter with Backlight and Two 3/4" Conduit Openings
PD6870-0K0-SS-M20	Stainless Steel Explosion-Proof Loop-Powered Process Meter with Backlight and Two M20 Conduit Openings

Accessories

General Accessories	
Model	**Description**
PDAPLUG75	3/4" NPT 316 Stainless Steel Conduit Plug with Approvals
PDAPLUGM20	M20 316 Stainless Steel Conduit Plug with Approvals
PDAREDUCER-75M-M20F	M-3/4" NPT to F-M20 Reducer with Approvals
PDAREDUCER-75M-50F	M-3/4" NPT to F-1/2" NPT Reducer with Approvals
PD9501	Multi-Function Calibrator
PD9502	Low-Cost Signal Generator
PDA1001	USB Power Bank
PDA1002	6" DIN Rail Mounting Kit
PDA1024-01	24 VDC Power Supply for DIN Rail
PDA-SSTAG	Stainless Steel Tag

Note: Unless otherwise specified, the above accessories do not carry hazardous area approvals and are thus not suitable for location in hazardous areas.

Pipe Mounting Kit	
Model	**Description**
PDA6846-SS	2" Stainless Steel U-Bolt Kit with One U-Bolt

⚠️ **WARNING**

Cancer and Reproductive Harm - **www.P65Warnings.ca.gov**

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