PD6620 Series
Loop Leader Loop-Powered Rate/Totalizers

PD6624/28 Decimal Display with Bargraph

PD6622/26 Decimal Display

Loop Leader Series

ULus LISTED CE ⟨Ex⟩ **IECEx**

PD6626 & PD6628 only

LOOP-POWERED RATE/TOTALIZERS

- **4-20 mA Input**
- **Loop-Powered Flow Rate/Totalizer**
- **1.5 Volt Drop (4.5 Volt Drop with Backlight)**
- **Display Rate & Total Simultaneously**
- **Loop-Powered Backlight with Red Backlight for Alarm Conditions**
- **NEMA 4X, IP65 Front**
- **-40 to 167°F (-40 to 75°C) Safe Area Operating Temperature Range**
- **Free PC-Based USB Programming Software**
- **5-Digit Alphanumeric Top Line**
- **8-Digit Alphanumeric Bottom Line**
- **8-Digit Total & Grand Total Display, Up to 13 Digits Using Both Lines**
- **20-Segment Bargraph with Numeric Percent Indication**
- **Conformal Coated PCBs for Dust & Humidity Protection**
- **Two Open Collector Outputs Standard**
- **Dual-Line Display**
- **1/8 DIN Shallow Depth Case**
- **Optional Loop-Powered Solid-State Relays**
- **Optional 4-20 mA Analog Output**
- **UL & C-UL 61010 Listed for Electrical Safety**
- **UL & C-UL Listed as Intrinsically Safe and Nonincendive**
- **ATEX and IECEx Certified as Intrinsically Safe**

PRECISION DIGITAL CORPORATION

PRECISION DIGITAL

www.predig.com

8-Digit Alphanumeric Bottom Line for Total, Grand Total, and Predefined or Custom Units

Five (5) 0.7" Large Digits on Top Line for Rate

NEMA 4X, IP65 Front

Bargraph Numeric Percent Indication

8-Digit Total includes Commas for Easier Reading

Front Panel Buttons for Setup, Programming, and Operation

Showing Red Backlight for Alarm Indication

Bargraph for Visual Representation of Rate or Total Percentage

▲ PD6624/28 with Bargraph Shown

INTRODUCTION

These loop-powered 1/8 DIN flow rate/totalizers can be installed virtually anywhere to provide convenient and informative display of flow rate and total from a 4-20 mA signal. One of the most convenient features of these instruments is their ability to display both flow rate and total at the same time. For instance, flow rate is typically displayed on the 5-digit alphanumeric top line and flow total or grand total is typically displayed on the 8-digit alphanumeric bottom line.

Both of these lines use 14-segment, alphanumeric characters for clear indication of tags, units or alarm messages.

Further enhancing the display on these instruments is a 20-segment bargraph available on the PD6624/8 that also includes a numeric value of the percentage the bargraph represents.

These flow rate/totalizers can be installed virtually anywhere because they get their power from the 4-20 mA loop and therefore require no separate power source. And they only drop 1.5 V (4.7 V with backlight), so they add very little burden to the loop. Additional features that allow these instruments to be installed virtually anywhere include a NEMA 4X, IP65 front panel, an operating temperature range of -40 to 167°F (-40 to 75°C) (for safe area products), conformally coated PCBs, and a backlit LCD that can be read in bright sunlight or dimly lit areas. Finally, there are intrinsically safe and nonincendive versions of these instruments that can be installed in hazardous areas.

Free, PC-based, software that connects to the meter via a micro USB cable is available for programming and setup of the meters. In addition, the meter can be programmed, setup and operated via the four front panel buttons. Three of these buttons can be used as function keys. In addition, a digital input is standard and is particularly useful for remote reset of the total or to start/stop a timer/batch.

All models come equipped with two open collector outputs and are available with two solid state relays and 4-20 mA analog output options. The open collector outputs are useful for alarm indication or sending a pulse to indicate when a certain amount of total has been accumulated. The relays can be programmed for alarm indication, on/off control, sample taking, or simple batch control.

DISPLAY FEATURES

The Loop Leader's display provides multiple ways to help users understand and keep track of their processes. The most obvious is the dual line which typically allows the user to display both flow rate and total at the same time. There is also a bargraph that includes a numeric value of the percentage the bargraph represents. Finally, to alert users to an alarm condition, the display can turn red and flash an alarm message.

Display Flow Rate & Total at Same Time

One of the key features of the Loop Leader Flow Rate/Totalizers is their ability to display flow rate and total at the same time. In addition, the meter can toggle between the rate and total and their corresponding units as the following illustrates:

Display Flow Rate & Total and Toggle Between Units

Flow Rate on Top
Total Flow on Bottom

Rate Units on Top
Total Units on Bottom
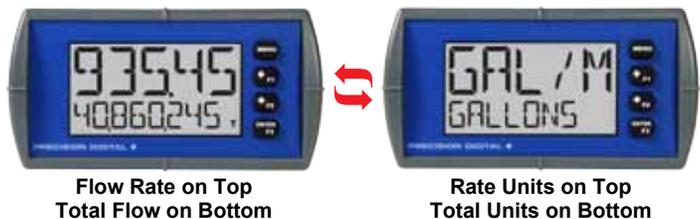
Wide Variety of Display Capabilities

In addition to the most common setup of flow rate on the top line and flow total on the bottom line, these meters can be set up for a variety of display configurations.

Display Flow Rate and Toggle Between Units & Tag

Flow Rate on Top
Rate Units on Bottom

Flow Rate on Top
Tag on Bottom
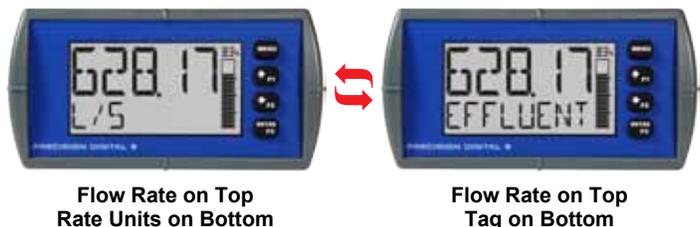
Display Flow Total and Toggle Between Units & Tag

**Total Flow on Top
Total Units on Bottom**

**Total Flow on Top
Tag on Bottom**

Display Flow Total & Flow Grand Total and Toggle Between Units

**Total Flow on Top
Grand Total Flow on Bottom**

**Total Units on Top
Grand Total Units on Bottom**
(note different units than Total)

The following table shows the items that can be displayed on the Top and Bottom lines:

Top (TOP) Line Can Display:	
Off (Blank)	Preset batch value
Rate	Stopwatch
Rate and its units alternating	Timers OC and relays
Total	Min
Total and its units alternating	Max
Tag	Min & max
Units	

Bottom (BOTTOM) Line Can Display:	
Off (Blank)	Units for value on top line
Total (with units or tag alternating)	Tag
Total, its units, and the rate and units alternating	Preset batch value
Grand total (with units or tag alternating)	Tag and rate units alternating
Grand total, units, and rate units alternating	Tag and total units alternating
Rate (with units or tag alternating)	Rate's percentage of max scale
Rate and the total's units alternating	mA input value
Rate or total units	mA output value

Commas on 8-Digit Totalizer for Easy Reading

It may seem like a simple thing, but adding commas to an eight-digit number makes it easier to read:

Bargraph Provides Quick Understanding

To help users get a quick understanding of where their process is at, certain Loop Leader models are available with a 20-segment bargraph. This bargraph also includes a numeric value of the percentage the bargraph represents. The bargraph can be programmed to represent either the rate or total or it can be disabled.

Bargraph Based on Rate   **Bargraph Based on Total**

Alarms Indicated by Flashing Red Messages

When an alarm occurs, the Loop Leader's display can be programmed to turn red and flash an alarm message along with the process variable and an alarm indicator (!). *(Alarm indicator symbols are not available on bargraph models)* The Loop Leader's flashing red alarm message can be activated even if no relay or open collector is connected.

Dual-Scale Display Feature

Users can use the Loop Leader's dual-scale feature when they want to show the same input in two different scales. For instance, the following example shows an application where the Loop Leader displays the input in gallons per minute and cubic feet per minute:

**Rate in GPM on Top
Rate in CFM on Bottom**

**GPM Units on Top
CFM Units on Bottom**

Max/Min Display

The max & min readings (peak & valley) reached by the process can be displayed either continuously or momentarily:

1. Display momentarily by pressing the F1 key (default) or assigning to any of the other function keys or to the digital input in the User menu. Press Enter to lock/unlock max/min display.
2. Display continuously by assigning either display line to max/min through the Display menu.

Any of the F1-F3 function keys (buttons) and the digital input can be programmed to reset the max & min readings.

Predefined and Custom Units

The meter has six available preprogrammed unit classes, *volume*, *height*, *temperature*, *pressure*, *weight*, and *rate*. When the desired unit class or unit of measure within a class is not available, a custom unit may be programmed by using the (CUSTOM) menu.

Change Between Units without Needing to Re-Scale the Meter

It is possible to change the display units within the selected unit class without the need to re-scale the meter. When selecting a new unit from within the DISPLAY menu (e.g. changing from gallons (GAL) to liters (L)), the meter will automatically convert the display values to display the new unit. If entering a custom unit (CUSTM), a custom conversion factor will need to be entered.

OUTPUTS

Loop Leaders are available with two open collector outputs as standard and two solid state relays and 4-20 mA output as options. The open collector outputs and relays generally operate in the same manner, with the major exception being the open collectors are not available for batch control or sampling and the relays are not available with pulse features. The open collectors and relays can be controlled either automatically or manually. The alarm status (with flashing red message) will show on the display even with no output wired.

Two Open Collector Outputs

The Loop Leader is equipped with two NPN open collector outputs that may be set up for pulse outputs, alarms, timed pulses, stopwatch on/off, or disabled. Pulse outputs can be set to transmit the rate, total or grand total. Output 2 may be used to generate a quadrature output based on the other open collector output. An output test mode is also selectable to generate pulses at a constant programmable frequency. The open collectors are commonly used to generate a pulse for every user-defined amount of flow that has been generated. For instance, the Loop Leader can be programmed to generate a pulse for every 100 gallons of flow.

Two Optional Solid State Relays

The meter is optionally equipped with two solid state relays that may be set up for alarms, timer, stopwatch on/off, sample or batch control. The relays are rated at 250 VAC/DC @ 1 A for resistive loads and 75 VA @ 0.6 A, 250 VAC/DC max (Safe Area only) for inductive loads. Alarms are available based on the rate, total, grand total, or digital input.

Resetting the Open Collectors and Relays

The open collectors and relays (alarms) may be programmed to reset in the following ways:

- **Automatic** (AUTO): Alarm will reset automatically once the alarm condition has cleared.
- **Automatic/Manual** (AUTOMAN): Alarm will reset automatically once the alarm condition has cleared but can also be reset using the Enter button (or whichever function key is set to acknowledge) at any time.
- **Latching** (LATCH): Alarm must be reset manually and can be done so at any time. Press the Enter (ACK) button at any time to clear the alarm.
- **Latching with Reset after Cleared** (L-CLEAR): Alarm must be reset manually and can only be done so after the alarm condition has cleared. Press the Enter (ACK) button after the alarm condition has cleared to reset the alarm.

Sampling Relay

A relay set to sample will trigger when the total or grand total value has incremented by a programmed amount. The relay can be programmed to stay on for a specified amount of time. For example: if a relay is set to sample the total with a COUNT of 1,000 and a TIME of 10 seconds, the relay will energize for 10 seconds each time the total increments by 1,000 (e.g. 1000, 2000, 3000).

Timer Function Application

Application Timers are used in everyday life; one of the most common examples is the microwave oven. Industrial timers are used in process control applications where certain events or actions need to be controlled by time. Examples include automatic and batch control applications, where the relay needs to be energized for a specific length of time.

The timer fuction is available on the open collector and relay outputs; which means that you can have up to four timers per meter. The start and stop actions can be triggered from the setup menu or by the function keys and digital input. The meter can be setup to display the off/on timer count down.

There are two modes of operation:

1. Continuous Timer (Interval)

At the start of the timer the output is off and turns on after the Off Delay elapses. The output remains on for the duration of the On Time. The cycle repeats until the user stops the timer either from the menu or a function key.

2. One-Shot Timer

At the start of the timer the output is off and turns on after the Off Delay elapses. The output remains on for the duration of the On Time. The timer stops and the cycle does not repeat.
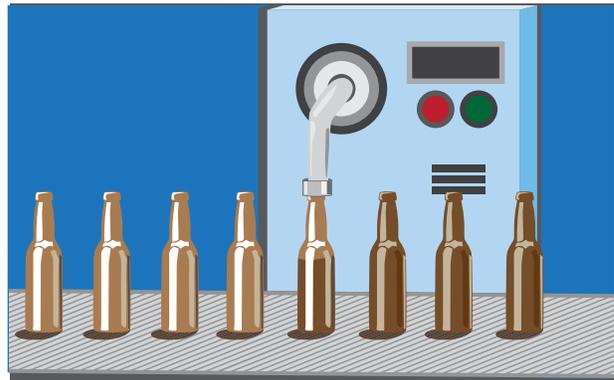
a. A sensor detects the bottle is in place and triggers the digital input to start the timer
b. The timer output controls the filling pump
c. The On Time is set according to the time needed to fill the bottle

Optional Isolated 4-20 mA Output

The isolated analog output signal can be configured to represent the rate, total or to retransmit the 4-20 mA signal input without the need to scale the output. While the output is nominally 4-20 mA, the signal will accurately accommodate under- and over-ranges from 1 to 23 mA. The output can be reverse scaled such that the meter's high calibration value outputs 4 mA and the meter's low calibration outputs 20 mA.

BATCH CONTROL

The Loop Leader, when ordered with the two solid state relays, can be used as a simple, one or two-stage batch controller. The user enters a preset and preclose value and sets the Loop Leader to either count up or count down. The top display will show the total and the bottom display will show the preset batch amount. The function keys are automatically changed so that **F1** starts a batch, **F2** opens the preset menu to allow the preset value to be changed, and **F3** pauses/stops the currently running batch. Batching can be either automatic or manual.

The following shows the Loop Leader performing a manual batch operation:

System Setup
Both valves are closed with an empty barrel in place. The batched total is displayed in the top display, the preset is selected for the bottom display.
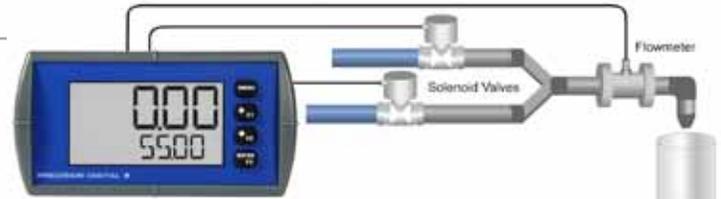
Batch Start
The **START button (F1)** is pressed. Both valves open. The barrel begins to fill.
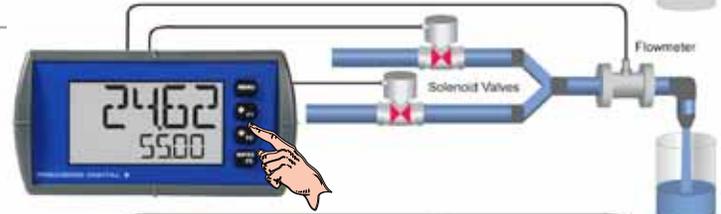
Preclose Valve
When the batch total reaches a value of 50.00 (Preset [55.00] – Preclose [5.00]) the full-flow valve closes. The fill rate of the tank slows as a result.
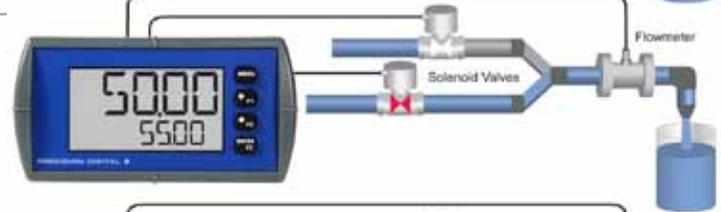
Completed Batch
When the batch total equals the preset amount, the restricted-flow valve closes. The barrel is now full.
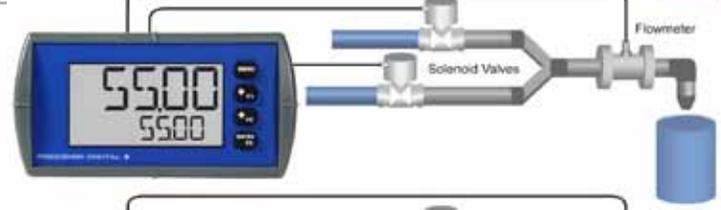
Change Preset
After placing a new, empty barrel, a new preset fill amount may be selected with the **Batch key (F2)**, while the process is stopped.
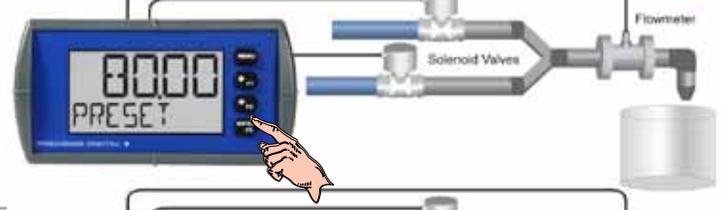
Begin New Batch
Press the **START key (F1)** and a new batch will begin. With both valves open, the process continues.
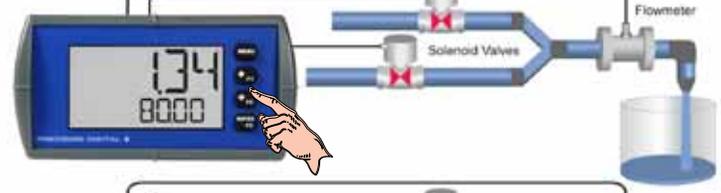
Pause/Stop
At any time, the **STOP button (F3)** may be pressed, once to Pause the process, or twice to cancel the batch, which stops the process.
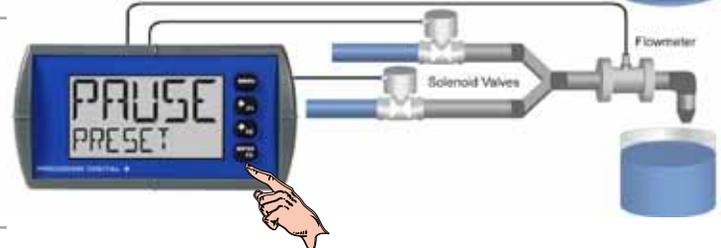
Intrinsically Safe Batch Controllers: The PD6626 and PD6628 are intrinsically safe batch controllers.

TOTALIZER CAPABILITIES

Loop Leader flow rate/totalizers can be programmed for a wide variety of totalizer applications. They can display total, grand total, or non-resettable grand total; the rate can be displayed with a time base of seconds, minutes, hours or days. The user can program a totalizer conversion factor, a non-resettable grand total, password protection, and several total reset methods.

8-Digit Total & Grand Total Display, Up to 13 Digits Using Both Lines

The Loop Leader flow rate/totalizer can be programmed to show eight full digits of total on the bottom display or 13 digits of total using both the top and bottom displays. In both cases, the display can be programmed to include commas to make it easier to read the very large numbers; ie 44,987,356

In 13-digit mode, the bottom line shows the least significant digits and the top line shows the most significant digits. The meter is not capable of displaying commas on the top line, so this number is actually 1,211,230,379. The comas can be removed from bottom if desired. See sample on bottom, right.

8 Digits of Total on Bottom   **In 13-Digit Mode**

Totalizer Conversion Factor & Multiplier

The user can enter a totalizer conversion factor that allows the meter to display total in different units than the rate. For instance, a customer could measure flow rate in gallons per minute and total in hundredths of acre-feet. A multiplier may be selected to automatically display the value in kGAL, MGAL, etc.

Totalizer Password Protection

The total and grand total can be password protected so they can be reset only by authorized personnel.

Non-Resettable Grand Total

The user can set up the grand total to be non-resettable by selecting YES for PERMLOCK in the Advanced - Grand Total - Reset menu. Once this is done, the grand total can never be reset.

Remote Total Reset

The total can be reset via an external contact closure on the digital input.

Front Panel Total Reset

The three front panel function keys can be programmed to reset the total and grand total. This makes it possible for the user to reset either the total or the grand total by pressing the appropriate function key. Of course, if the total or grand total is password protected, they will not reset when the function key is pressed unless the password is entered.

Low-Flow Cutoff

The user may program the meter for a low-flow cutoff such that the meter displays zero below this point, regardless of the input value.

Total Alarms

The Loop Leader's two relays can be set up to alarm when the total reaches a user-defined set point. A variety of reset modes are available and the user can also program time delays and fail-safe operation.

EASY PROGRAMMING AND SETUP

Loop Leaders can be programmed and setup either by using the front panel buttons or free, PC-based software with USB interface.

Front Panel Buttons for Easy Setup, Programming, and Other Functions

Loop Leader process meters include four front panel buttons for setup and programming. The front panel buttons along with the dual-line display makes the Loop Leader easy to set up & program. Three of these buttons are also function keys that can be programmed to trigger certain events (i.e. acknowledge alarms, reset max and/or min, disable/enable output relays, or hold current relay states), provide direct menu access points, and more.

One feature that makes the Loop Leaders particularly easy to set up and program is that they can be scaled without applying a calibrated or known input. The user simply enters the desired values for Input 1 and Input 2 (for instance 4.000 and 20.00 mA) and the corresponding display values for these inputs (for instance 0.0 and 2000.0)

Input 1 is set to 4 mA   **Display 1 is set to 0.0**

Multi-Point Linearization

Meters are set up at the factory for linear function with 2-point linearization. Up to 32 linearization points can be selected for the scaled value under the linear function. Multi-point linearization can be used to linearize the display for non-linear signals to convert level to flow using weirs and flumes with complex exponent.

Password Protection

A password can be set for programming security to prevent unauthorized changes to the programmed parameter settings. There are three password types available: Main, Total, and Grand Total. The Main password prevents access to the meter Programming Mode. Total and Grand Total passwords prevent resetting the total and grand total, respectively.

APPROVALS

All versions of these instruments are CE marked. The hazardous area versions of these instruments are UL and C-UL Listed as intrinsically safe and nonincendive and ATEX and IECEx Certified for Intrinsic Safety in Hazardous Areas (Gas Atmospheres). These versions are also UL and C-UL Listed under the UL 61010-1 General Safety Standard.

One of the most useful aspects of the hazardous area approvals is that these instruments are approved by UL as nonincendive so they can be installed in Division 2 areas with no additional protective devices needed.


II 1G
Ex ia IIC T4 Ga
Ta = -40°C to +70°C

IECEx
Ex ia IIC T4 Ga
Tamb = -40°C to +70°C

CE 0518

Class I, Division 1, Groups A, B, C and D T4
Class I, Division 2, Groups A, B, C and D T4
Ex ia IIC T4 (Canada); Class I Zone 0, Zone 1,
AEx ia IIC T4 (U.S.)
Class I Zone 2, Group IIC T4 (U.S.)
PROCESS CONTROL EQUIPMENT FOR USE
IN HAZARDOUS LOCATIONS

For Complete Details See Control Drawing LIM6600-2 at www.predig.com/PD6626

APPLICATIONS

The Loop Leader, in combination with an ultrasonic level transmitter, makes for an economical way to measure and display open channel flow rate and total and take periodic samples in most weirs and flumes. All the user needs to do is enter the exponent for the weir or flume into the Loop Leader and the meter automatically raises the input signal to that power. Sampling can be based on the total flow or the grand total. For instance, to display open channel flow rate and total from a 3 inch Parshall flume and take a one pint sample every 100,000 gallons, the user would program the Loop Leader as follows:

Open Channel Flow
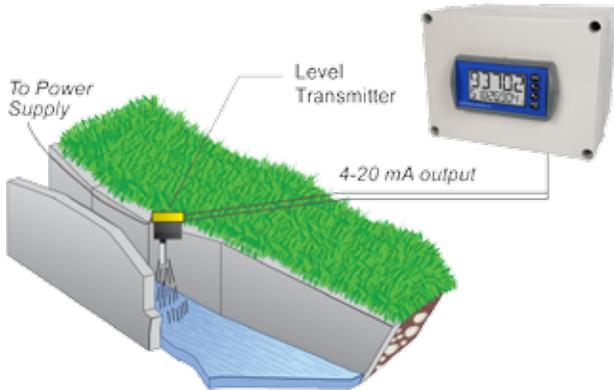
Function	Desire	Programming
Open Channel Flow	3" Parshall flume	Set Programmable Exponent to 1.547
Flow Rate	Millions of Gallons per Day (MGD)	Set 4 mA = 0 & 20 mA = 3.508 Time base = Day
Total	Millions of Gallons	Set Totalizer Conversion Factor = 1 (password protect total reset)
Non-Resettable Grand Total	Program meter so grand total can never be reset	Set non-resettable grand total
Display	Display Flow Rate and Total at the same time	Set upper display for Grand Total and lower display to toggle between rate and total.
Sampling	Take a 1 pint sample every 100,000 gallons	Set up relay for sampling and to trip every 0.1 million gallons. Set up sampling time such that 1 pint is sampled.

Total Relay Sampling Operation
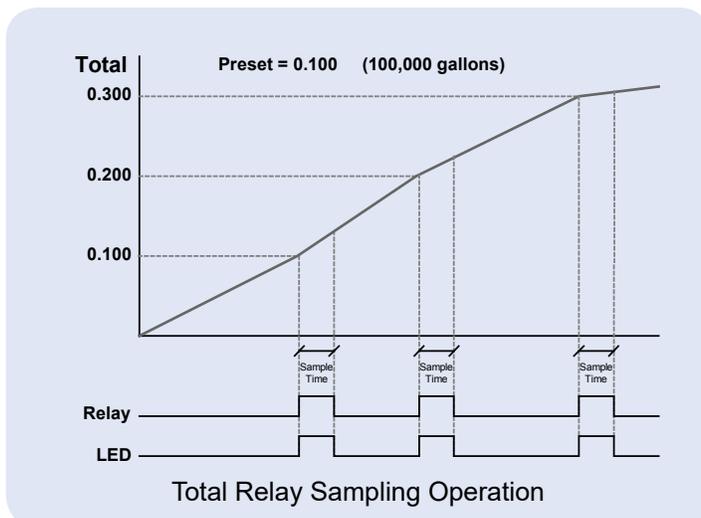
Differential Pressure Flow

The Loop Leader can display flow rate and total by extracting the square root from the 4-20 mA signal from a differential pressure transmitter. The user selectable low-flow cutoff feature gives a reading of zero when the flow rate drops below a user selectable value.

- Display Flow Rate
- User Selectable Low-Flow Cutoff
- Only 2 Calibration Points Required
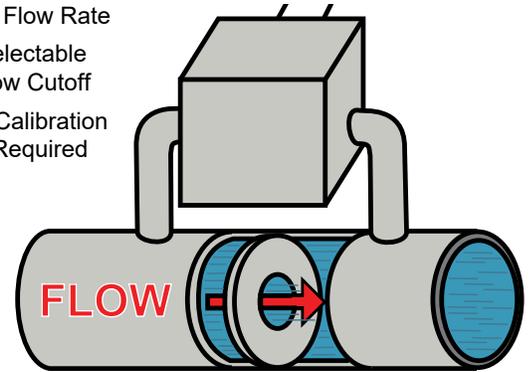
NEMA 4 & 4X FIELD ENCLOSURES

Precision Digital offers a variety of rugged enclosures that provide a high degree of protection against harsh operating environments. Thermoplastic and stainless steel NEMA 4X, and painted steel NEMA 4 enclosures for up to 10 Loop Leader meters are available.


Low-Cost NEMA 4X Enclosure

NEMA 4X Enclosures are Available in Plastic and Stainless Steel; NEMA 4 Enclosures in Painted Steel

See Our Complete Offering and Enclosure Selection Utility at www.predig.com/esu

MOUNTING DIMENSIONS

Units: Inch (mm)
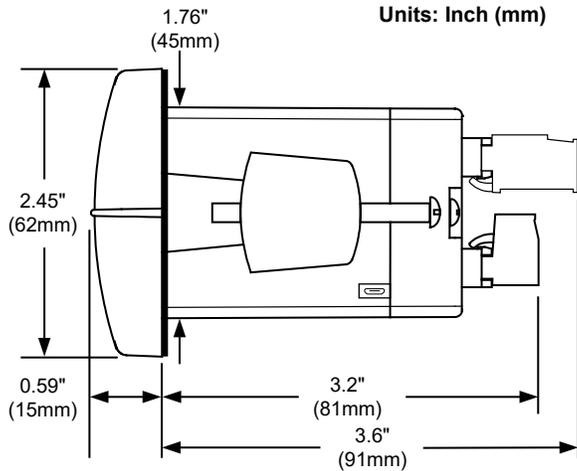
▲ *Meter Dimensions - Side View*
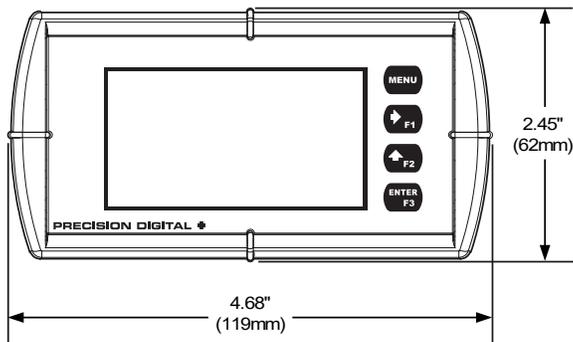

▲ *Meter Dimensions - Front View*

Notes:
1. Panel cutout required: 1.772" x 3.622" (45 mm x 92 mm)
2. Panel thickness: 0.040 - 0.250" (1.0 mm - 6.4 mm)
3. Mounting brackets lock in place for easy mounting
4. Clearance: Allow 6" (152 mm) behind the panel

CAD **See Website for 3D CAD Files**
www.predig.com/documentation-cad

CONNECTIONS

Connectors Labeling

The connectors' label, affixed to the meter, shows the location of all connectors available with requested configuration.
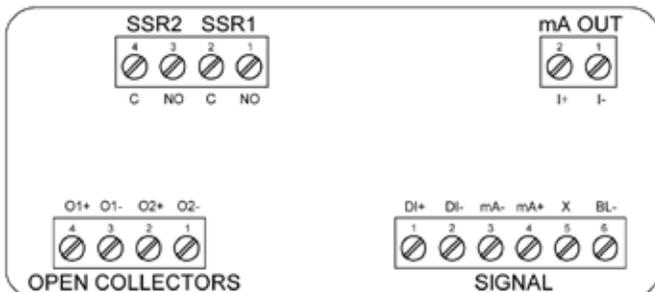
▲ *Connector Labeling for Fully Loaded Loop Leader*

Safe Area Input Loop (4-20 mA) Connections

The following figures show a 4-20 mA loop connected to the meter. The first figure shows the connection without the backlight and the second shows the connection with the backlight. The meter is powered by the 4-20 mA current loop.
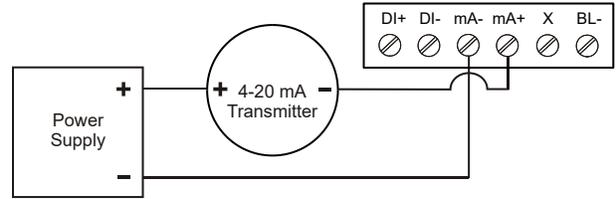

▲ *4-20 mA Input Connection without Backlight*
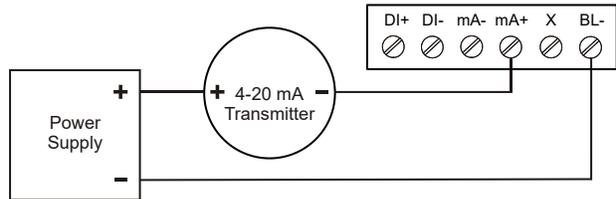
▲ *4-20 mA Input Connection with Backlight*

Safe Area Digital Input Connection

A digital input is standard on the meter. This digital input is connected with a normally open contact across DI+ and DI-, or with an active low signal applied to DI+.
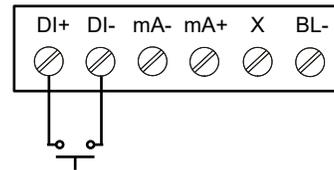

Safe Area 4-20 mA Output Connections

Connections for the 4-20 mA transmitter output are made to the connector terminals labeled mA OUT. The 4-20 mA output must be powered from an external power supply
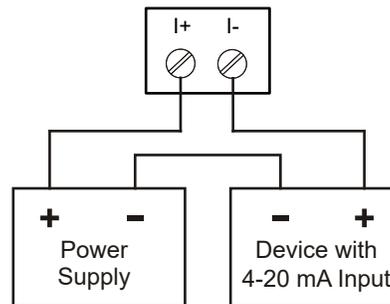

Safe Area Solid State Relay Connections

Relay connections are made to a four-terminal connectors. Each relay's C terminal is common only to the normally open (NO) contact of the corresponding relay.
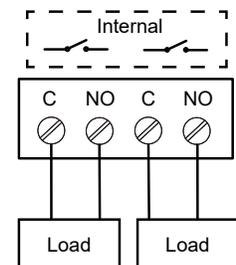
Safe Area Open Collector Outputs

Open collector output 1 and 2 connections are made to terminals labeled O1+ and O1-, and O2+ and O2-. Connect the alarm or pulse input device as shown below.
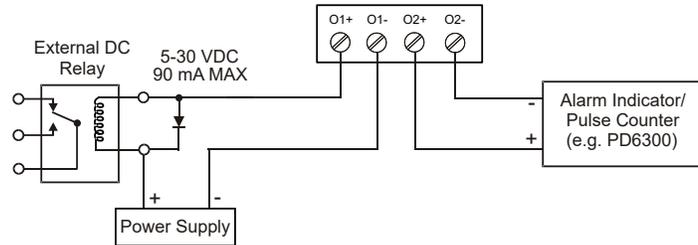
See Control Drawing LIM6600-2 for information on hazardous area wiring at www.predig.com/PD6626

SPECIFICATIONS

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

Input

Input: 4-20 mA
Accuracy: ±0.02% of span ±1 count, Square root and programmable exponent: 10-100% FS
Voltage Drop: *Without backlight:* 1.5 V maximum,
With backlight: 4.5 V maximum
Equivalent Resistance: *With backlight off:* 75 Ω @ 20 mA
With backlight on: 225 Ω @ 20 mA
Input Overload: Over current protection to 1 A maximum
Over voltage protection to 30 VDC max
(between mA+ and mA-/BL-)
Temperature Drift: 25 PPM/°C from -40 to 75°C ambient
Function: Linear, square root, or programmable exponent
Low-Flow Cutoff: 0.0 to 999,999.9
HART Transparency: Analog input will not interfere with existing HART communications on the wired 4-20 mA signal.

Display

Display: Dual-line LCD with backlight. Both lines 14-segment alphanumeric. Top: 0.7" (17.8 mm), Bottom: 0.4" (10.2 mm). Display may be programmed to turn red and flash a user-defined message on alarm condition.
Backlight: Powered by 4-20 mA loop. Intensity varies with signal level
PD6622 & PD6626:
Top line: 5 digits (-9999 to 99999) or 5 characters (all capital & most lower case letters)
Bottom line: 8 digits (-9,999,999 to 99,999,999; separated by commas) or 8 characters (all capital & most lower case letters)
PD6624 & PD6628:
Top line: 5 digits (-9999 to 99999) or 5 characters (all capital & most lower case letters)
Bottom line: 8 digits (-9,999,999 to 99,999,999; separated by commas) or 8 characters (all capital & most lower case letters)
Bargraph: 20 segments, numeric percent indication at top
Decimal Point & Commas
Top line: Up to four decimal places
Bottom line: Up to seven decimal places and commas to indicate 1000s (e.g. 88,987,628)
Dual-Scale Feature: The input can be displayed in different scales on the top and bottom lines. For instance, the top line could display the flow in GPM and the bottom line could display that same input in CFM.
Alarm Indication: Red backlight, flashing display, alarm symbol (!) Symbols are not available on bargraph models. Bargraph segment flashes on alarm.

Alarm Message: On or Off; user programmable, 8 characters maximum. Displayed every 10 seconds for 1 second on bottom line.
Display Update Rate: Ambient > -10°C: 1 update/second
Ambient = -20°C: 1 update/2 seconds
From -20°C to -40°C the update rate slows down 1 second for every -2°C (e.g. at -24°C, 1 update/4 seconds).
Overrange: Top: 99999; Bottom: 99,999,999 (flashing)
Underrange: Top: -9999; Bottom: -9,999,999 (flashing)

Approvals (Select Models)

ATEX: II 1G, Ex ia IIC T4 Ga, Ta = -40°C to +70°C
Certificate number: CML 17ATEX2015X
IECEx: Ex ia IIC T4 Ga, Tamb = -40°C to +70°C
Certificate number: IECEx CML 17.0008X
UL & C-UL Listed as Intrinsically Safe and Nonincendive:
   Class I, Division 1, Groups A, B, C and D T4
   Class I, Division 2, Groups A, B, C and D T4
   Ex ia IIC T4 (Canada); Class I Zone 0, Zone 1,
   AEx ia IIC T4 (U.S.)
   Class I Zone 2, Group IIC T4 (U.S.)
   PROCESS CONTROL EQUIPMENT FOR USE IN HAZARDOUS LOCATIONS
UL & C-UL 61010 Listed for Electrical Safety and Type 4X Environmental:
   Standards for Safety:
   IEC 61010-1:2010 (3rd Edition);
   UL 61010-1, 3rd Edition;
   CAN/CSA-C22.2 No. 61010-1-12, 3rd Edition;
   Additional Standards: UL 50E

General

Environmental: *Operating temperature range:*
-40 to 75°C for safe area products
-40 to 70°C for hazardous area products
Storage temperature range: -40 to 85°C
Relative humidity: 0 to 90% non-condensing. Printed circuit boards are conformally coated.
Programming Method: Front panel & Free PC-based USB programming software
Enclosure & Materials: Enclosure: 1/8 DIN, IP65, NEMA 4X front panel, high impact plastic, NORYL® polyphenylene ether & polystyrene blend (PPE PS) resin, UL 94V-0, Color: gray, Gasket: silicone rubber, Faceplate: LEXAN® polycarbonate (PC) film, Buttons: silicone rubber
Noise Filter: Averages the input signal over a period of time between 1 and 16 seconds to dampen the effects of a noisy signal that causes a jumpy display.
Filter Bypass: 0.0 to 99.9% of full scale. Input signal changes greater than bypass value are displayed immediately.
Recalibration: Recalibration is 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: There are three password types available: Main, Total, and Grand Total. The Main password prevents access to the meter Programming Mode. Total and Grand Total passwords prevent resetting the total and grand total, respectively.
Non-Volatile Memory: All programmed settings and total and grand total values are stored in non-volatile memory for a minimum of ten years if power is lost.
Normal Mode Rejection: 64 dB at 50/60 Hz
Connections: Removable screw terminals accept 12 to 22 AWG.
DI Digital Input Contacts: 2.1 VDC on contact. Connect normally open contacts across DI+ and DI-
DI Digital Input Logic Levels: *Logic High:* 2.4 to 30 VDC (max)
Logic Low: 0 to 0.9 VDC
Tightening Torque: *Screw terminal connectors:* 4.5 lb-in (0.5 Nm)
Mounting screws: 8.0 lb-in max. (0.9 Nm)
Overall Dimensions: 4.68" x 2.45" x 3.79"
(119 mm x 62 mm x 96 mm) (W x H x D)
Weight: 8.7 oz (247g) with option board
Warranty: 3 years parts and labor

Rate/Totalizer

Rate Display Capability: Top display: -9999 to 99999; bottom display: -9,999,999 to 99,999,999 (with commas)

Total & Grand Total Display Capability: Top display: -9999 to 99999; bottom display: -9,999,999 to 99,999,999 (with commas)

13-Digit Total & Grand Total Capability: Up to 9,999,999,999,999 using both lines with 13-digit total feature enabled.

Total & Grand Total Indication: On bottom display; "T" indicates total and "GT" indicates grand total (not available on bargraph models)

Total Decimal Point: Up to four decimal places on top, up to seven decimal places on bottom. Total decimal point is independent of rate decimal point.

Totalizer: Calculates total based on rate and rate units to display total in engineering units. A custom factor must be programmed if using custom defined units.

Time Base: Seconds, Minutes, Hours, Days

Totalizer Rollover: Totalizer rolls over when display exceeds 99,999,999 (9,999,999,999,999 if 13-digit limit enabled). Relay status reflects display.

Total & Grand Total Reset: Via front panel button or external contact closure on digital input

Total & Grand Total Reset Passwords: Total and grand total passwords may be entered to prevent resetting the total or grand total unless a password is entered.

Non-Resettable Grand Total: Grand total reset may be disabled through the meter interface. Grand total reset may be permanently disabled by selecting YES at the PERMLOCK menu.
Caution: Once the Grand Total has been programmed as "non-resettable" the feature cannot be disabled

Common Open Collector & Relay (Alarm) Specifications

High or Low Alarm: User programmable for high or low alarm

Alarm Deadband: 0-100% FS, user programmable

On & Off Time Delay: 0 to 9,999 seconds

Fail-Safe Operation: Independent for each open collector and relay
Fail-safe: on, the output is on under normal conditions
Fail-safe: off, the output is on under alarm conditions

Alarm Operation: Automatic, Automatic with manual override, Latching (manual reset anytime), Latching with reset after cleared (manual reset only after alarm has cleared)

Alarm Indication: Red backlight, flashing display, alarm symbol (!) (symbols not available on bargraph models) Bargraph segment flashes on alarm.

Alarm Message: On or Off; User programmable, 8 characters maximum. Displayed every 10 seconds for 1 second on bottom line

Alarm Acknowledge: Front panel ACK button or external digital input resets output and screen indication

Auto Initialization: When power is applied to the meter, open collectors and relays will reflect the state of the input to the meter.

Timer Output: One-shot or Continuous
Off Time Delay: 1 sec to 99:59:59 (hrs:min:sec)
On Time: 1 sec to 99:59:59 (hrs:min:sec)

Stopwatch: Output turns on when started and off when stopped

Open Collector Outputs

Rating: Two NPN, Isolated open collector, 5-30 VDC @ 150mA max

Output Assignment: Pulse, Alarm, Timer, Total Reset, Stopwatch on/off, or Disable

Pulse Output Source: Rate, Total, Grand Total, or Test Frequency

Pulse Output Factor: 0.000001 to 999,999.9

Pulse Width: 0.5 ms @ 1 kHz; 500 ms @ 1 Hz; 50% duty cycle

Pulse Output Frequency: 1,000 Hz maximum

Quadrature Pulse Output: Available for Output 2 (90° behind Output 1)

Alarm Output Source: Assign to Rate, Total, Grand Total or Digital Input

Solid State Relays

Rating: 250 VAC/VDC @ 1A resistive
75VA; 250VAC; 0.6A pilot duty (inductive) – UL Code D300
25VA; 250VDC; 0.6A pilot duty (inductive) – UL Code R300

Noise Suppression: Metal oxide varistors across outputs

Relay Assignment: Alarm, Sample, Timer, Batch, Stopwatch on/off, or Disable

Alarm Output Source: Assign to Rate, Total, Grand Total, or Digital Input

Relay Runtime: Meter will keep track of how long each relay has operated and display this information

Relay Cycles: Meter will keep track of how many times the relays have cycled and display this information

4-20 mA Transmitter Output

Accuracy: ±0.05% FS ±0.001mA

Output Source: Rate, total, re-transmit; reverse scaling allowed

Scaling Range: 1.00 to 23.0 mA

Disable: High impedance state, less than 1 mA

Calibration: Factory calibrated 4.00 to 20.00 mA

Underrange: 1.0 mA, 3.5 mA, or 3.8 mA (If input < 3.5 mA), or Off; user selectable

Overrange: 20.5 mA, 20.8 mA, or 23.0 mA (If input > 20.5 mA), or Off; user selectable

Isolation: 500 V input-to-output

Temperature Drift: 0.5 µA/°C max from -40 to 75°C ambient

External Loop Power Supply: 7.0 VDC to 30.0 VDC maximum

Output Loop Resistance: 10-750 Ω @ 24 VDC; 100-1100 Ω @ 30 VDC

Batch Control

Methods: Automatic or Manual, count up or count down

Manual Batch Start: Pressing F1 function key starts the batch

Manual Batch Pause/Stop: Pressing F3 once pauses the batch, pressing it twice cancels the batch

Automatic Batching: The Loop Leader can be used as an automatic batch controller where batches run continuously without operator input.

Batching Relay Operation: Single or dual-relay batching with optional preclose for dual-stage operation

Batch Preset: Set via F2 function key anywhere between 0.0001 to 99,999 based on batch total decimal point. If batch total is assigned to bottom, the preset can be up to 8 digits.

Batch Preclose: For two-stage batch application, a preclose value can be set to close the main flow line.

Automatic Batch Restart Delay: 1 to 9,999 seconds. The batch will automatically restart after completion of the last batch.

MeterView XL Programming Software

MeterView XL System Requirements: Microsoft® Windows® 7 & 10

Communications: USB 2.0 (Standard USB A to Micro USB B)

Configuration: Configure meters one at a time

Configuration Files: Generate with or without meter connected. Save to file for later use.

USB Power Connection: Meter is powered by USB connection during programming.

## FREE SIMPLE TO USE METERVIEW XL PROGRAMMING SOFTWARE

Free, PC-based, MeterView XL software that connects to the meter via a micro USB cable is available for programming and setup of the meters. This software greatly simplifies the programming process and also allows the user to save configuration files for later use. The meter will also be powered by the USB connection so no additional power is needed during programming.

- Free PC-Based USB Programming Software
- Easy Programming of Features Packed Product
- USB Connection Provides Power During Programming
- Save & Print Configuration Files without Meter Connected
- Micro USB Cable Provided

▲ The main screen displays an image of the connected meter and includes various information about this meter, such as model number, readings, and status.
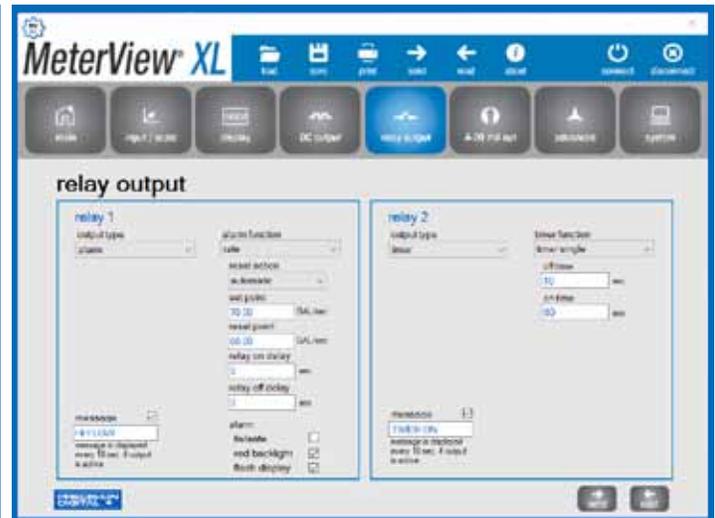
▲ The Relay Output window is used to assign a specific task to the 2 relays such as alarm, sample, timer, stopwatch, or off. A custom message that will flash every 10 seconds can also be added.

▲ The Input/Scale window is used to:

FUNCTION	THIS METER
Set the input	4-20 mA
Enable/disable the totalizer	Totalizer enabled
Enable/disable the dual-scale feature	Dual scale disabled
Scale the input	Linear input, unit is gallons, 2 cal points, 4-20 mA = 0-100 GAL

▲ The 4-20 mA Output window is used to program the isolated 4-20 mA output's source, range, and under and over range values.

ORDERING INFORMATION

General Purpose Instruments

Loop Leader PD6622 Standard Decimal Models - General Purpose

Model	Description
PD6622–LNN*	Loop-Powered, General Purpose, No Options
PD6622–L2N	Loop-Powered, General Purpose, Two Solid State Relays
PD6622–L3N	Loop-Powered, General Purpose, 4-20 mA Analog Output
PD6622–L5N*	Loop-Powered, General Purpose, Two Solid State Relays and 4-20 mA Analog Output

Loop Leader PD6624 Bargraph Models - General Purpose

Model	Description
PD6624–LNN*	Loop-Powered, General Purpose, Bargraph, No Options
PD6624–L2N	Loop-Powered, General Purpose, Bargraph, Two Solid State Relays
PD6624–L3N	Loop-Powered, General Purpose, Bargraph, 4-20 mA Analog Output
PD6624–L5N*	Loop-Powered, General Purpose, Bargraph, Two Solid State Relays and 4-20 mA Analog Output

Hazardous Area Instruments

Loop Leader PD6626 Standard Decimal Models - Hazardous Area

Model	Description
PD6626–LNN*	Loop-Powered, Hazardous Area, No Options
PD6626–L2N	Loop-Powered, Hazardous Area, Two Solid State Relays
PD6626–L3N	Loop-Powered, Hazardous Area, 4-20 mA Analog Output
PD6626–L5N*	Loop-Powered, Hazardous Area, Two Solid State Relays and 4-20 mA Analog Output

Loop Leader PD6628 Bargraph Models - Hazardous Area

Model	Description
PD6628–LNN*	Loop-Powered, Hazardous Area, Bargraph, No Options
PD6628–L2N	Loop-Powered, Hazardous Area, Bargraph, Two Solid State Relays
PD6628–L3N	Loop-Powered, Hazardous Area, Bargraph, 4-20 mA Analog Output
PD6628–L5N*	Loop-Powered, Hazardous Area, Bargraph, Two Solid State Relays and 4-20 mA Analog Output

Notes:
1. All models come with two open collector outputs standard.
2. *Quick Shipment Program product, typically ships within 2 working days.
3. General Purpose Instruments are CE marked only.
4. Hazardous Area Instruments are UL Listed for both hazardous areas and general electrical safety and ATEX and IECEx certified as intrinsically safe.

Enclosures

Model	Description
PDA2301	NEMA 4X Plastic Enclosure
PDA2501	Plastic NEMA 4X Enclosure
PDA2601	Stainless Steel NEMA 4X Enclosure
PDA2701	Painted Steel NEMA 4 Enclosure
PDA2801	Low-Cost Plastic NEMA 4X Enclosure
PDA3407	Internally Mount NEMA 4X Plastic Enclosure

Your Local Distributor is:

Disclaimer

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.

EASIER | FASTER | CONVENIENT

Free PC-Based MeterView XL Programming Software

Micro USB Cable

Meter shown is not actual size

PRECISION DIGITAL CORPORATION

233 South Street • Hopkinton MA 01748 USA • Tel (800) 343-1001 • Fax (508) 655-8990

PRECISION DIGITAL

www.predig.com