

# 5-DIGIT DUAL-LINE EXPLOSION-PROOF ANALOG INPUT RATE/TOTALIZER

**ProtEX**<sup>TM</sup>  
RTA

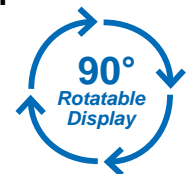


**SAFE TOUCH**<sup>®</sup>  
Through-Glass  
Button Programming



**ProtEX-RTA • Model PD6820**

- 4-20 mA Input Loop-Powered
- Modern, Sleek and Practical Enclosure
- 5-Digit, 0.7" (17.8 mm) Upper Display
- 7 Alphanumeric Character, 0.4" (10.2 mm) Lower Display
- 7-Digit Totalizer
- SafeTouch<sup>®</sup> Through-Glass Button Programming
- Password Protection
- 32-Point, Square Root, or Exponential Linearization
- Rate in Units per Second, Minute, Hour, or Day
- Open Collector Pulse or Alarm Output
- Loop or External DC-Powered Backlight Standard
- 3.0 V Drop (6.0 V with Backlight)
- Explosion-Proof, IP68, NEMA 4X Enclosure
- Flanges for Wall or Pipe Mounting
- HART<sup>®</sup> Protocol Transparent
- Operates from -40 to 75°C



**PRECISION  
DIGITAL** ÷

**PRECISION DIGITAL CORPORATION**

[www.predig.com](http://www.predig.com)

**PD6820 Analog Input Rate/Totalizer**

**Displays rate & total simultaneously**



- Ground Screw
- Mounting Flanges (Up to 2½" Pipe)
- Locking Screw
- SafeTouch® Menu Button
- Backlight Standard
- 0.7" (17.8 mm) 5-Digit
- 0.4" (10.2 mm) 7-Character (Alphanumeric)
- Two ¾" NPT Conduit Holes
- SafeTouch® Reset or Right Arrow



- Explosion-Proof Die-Cast Aluminum NEMA 4X Enclosure
- SafeTouch® Enter or Acknowledge Button
- Process Variable
- Alphanumeric Engineering Units
- Alarm Indicator
- Password Protection
- SafeTouch® Max/Min or Up Arrow
- Mechanical Buttons (4 Places)

**Rate/Totalizer Displays**



Flow Rate Indicator



Flow Totalizer



Rate & Total



**Easy to Setup**

Programming

**SafeTouch®** Through-Glass Button Programming

**OVERVIEW**

The new ProtEX-RTA PD6820 explosion-proof rate/totalizer brings modern design, easy readability, and enhanced functionality to hazardous areas around the world in a way never seen before. Competitors have lost sight of the fact that the primary thing customers want to do with meters such as these is to look at them. Customers want a meter that looks nice so they can be proud to install it in their facility. And they want a meter with a display that provides the important information about their process, can be seen under varied lighting conditions, from wide angles, and from a distance. The PD6820 delivers all these and more. Spend a few minutes reviewing the features described in the graphic above and you will see how!

**KEY FEATURES**

**Informative & Easy to Read Display**

The high contrast, backlight LCD display is easy to read from far away and under various lighting conditions. The upper display is 0.7" high and shows 5 digits of flow rate. The lower display is 0.4" high and shows either flow total or a tag with 7 alphanumeric characters. And best of all, the display is mounted right up against the glass so it can be seen from a wide viewing angle.

**Through-Glass SafeTouch® Buttons**

The PD6820 is equipped with four sensors that operate as through-glass buttons so that it can be programmed and operated without removing the cover (and exposing the electronics) in a hazardous area. These buttons can be disabled for security by selecting the LOCK setting on the switch located on the connector board in the base of the enclosure. To actuate a button, press one finger to the glass directly over the marked button area. When the cover is removed, four mechanical buttons located next to the sensors are used.

**Modern, Sleek and Practical Enclosure**

The first thing customers notice about a product is its enclosure and the ProtEX-RTA really shines here. The copper-free (0.30%), smooth, die-cast aluminum NEMA 4X (IP68) enclosure is finished with a corrosion resistant epoxy coating that literally does make the ProtEX-RTA shine. The built-in mounting flanges make for convenient wall or pipe mounting and there is even a slot on the back of the enclosure for centering on the pipe. There are two ¾" NPT conduit holes for wiring.



Wide Viewing Angle

**Isolated Open Collector Output**

The isolated open collector output on the PD6820 may be assigned for use with the alarm or totalizer (pulse output). The rating of the output is 30 VDC @ 150 mA max.

**Perfect & Secure Fit Every Time**

The internal cast rails ensure the ProtEX assemblies together perfectly, quickly and securely; and everything lines up for optimal viewing every time. There are no standoffs to worry about breaking or getting out of alignment. Two spring-loaded, self-retaining, thumbscrews make the assembly a snap, while pressing the LCD as close to the glass as possible to improve wide angle viewing.

## TOTALIZER CAPABILITIES

### Totalizer Pulse Output

The totalizer pulse output function requires use of the open collector output. It will output a pulse at a user adjustable pulse rate, and can be scaled with a K-factor of between 0.0001 and 99999. Example: For 1 pulse every 500 gallons, set the K-factor to 500. This output can be sent to a PLC or counter.

### Totalizer Conversion Factor

Total Conversion Factor is used to convert to a different unit of measure for the total display. For example, to display rate in gallons and total in liters, enter a conversion factor of 3.7854. When rate and total units are the same, the Conversion Factor should be 1.0000.

### Total Reset

The total can be reset either manually via the front panel RESET button or external contact; or automatically using a programmed setpoint and delay time. Total reset can also be disabled.

## INPUT SIGNAL CONDITIONING

### Live Input Calibration

In lieu of meter scaling, the meter can be calibrated with a precision signal source. While applying a precision signal, the relative scale value is entered via the front panel. This is done at any two points along the scale. Using this method, the operator can set a "best fit straight line" for non-linear input spans.

### Multi-Point Linearizer

Up to 32 linearization points can be selected under the Linear function. The multi-point linearization can be used to linearize the display for non-linear signals such as those from level transmitters used to measure volume in odd-shaped tanks or to convert level to flow using weirs and flumes that require a complex exponent. These points are established via direct entry (SCALE) or with an external calibration signal (CAL).

### Square Root Extraction

The square root extraction function 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.

### 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 & total, units of measure, or toggle between total and units of measure.

## ADDITIONAL FEATURES

### Password Protection

A 5-digit password prevents unauthorized changes to the programmed parameter settings. The lock symbol is displayed to show that settings are protected. If the meter is password protected, the meter will display the message LOCKED when the Menu button is pressed.

### Alarm Indication

The PD6820 can be configured to have a high or low rate alarm indicator, or a total alarm trip point indicator. The OC output is available for use as an alarm output. When in alarm mode, the display will flash, and a HI or LO symbol is displayed. The alarm has an adjustable deadband and is acknowledged by pressing the ENTER/ACK button.

## INSTALLATION

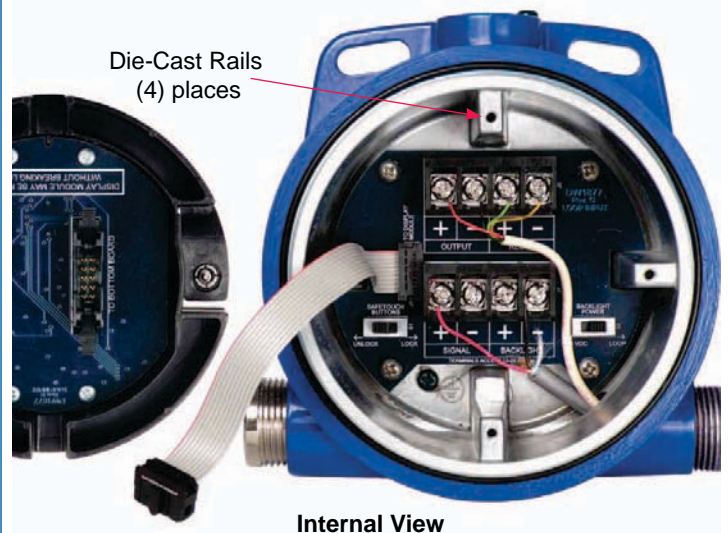
### Installation Flexibility

The PD6820's rotatable display/meter module along with two available conduit connections provide for numerous installation options. The display can be rotated in 90° increments. Rotate it 90° for horizontal mounting. Wiring can then be routed to either the top conduit connection, or from below to the opposite conduit connection (metal conduit plug supplied). Use both conduit connections for through-wiring in any plane.

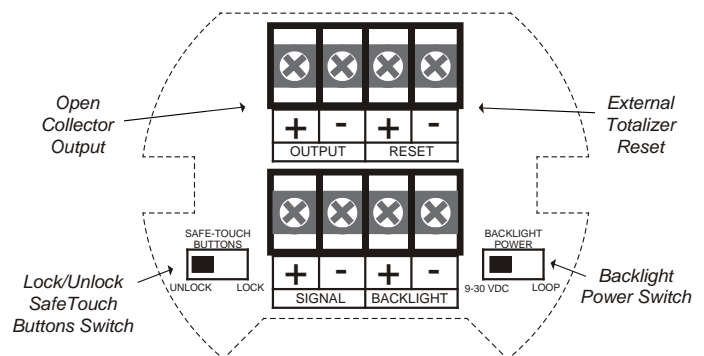


### Easy Wiring & Service

Unscrew the two captured thumb screws and unplug a connecting cable and the display/meter module is simply and completely removed. A heavy duty terminal block is then easily accessed and wired. It is clearly marked to prevent wiring errors. The display/meter module can be removed *without breaking the loop*. As such, it can be serviced without the need to uninstall the entire product.



## CONNECTIONS



See LIM6820 manual for wiring instructions

**SPECIFICATIONS**

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

**General**

**Display:** Upper: Five digits (-9,999 to 99,999) 0.70" (17.8 mm) high, 7-segment, automatic lead zero blanking. Lower: Seven characters 0.4" (10.2 mm) high, 14 segment alphanumeric. Symbols: for high & low alarm, password lock. Backlight: white  
**Display Update Rate:** Ambient > -25°C: 2 Updates/Second. Ambient < -25°C: 1 Update/5 Seconds  
**Display Orientation:** Display may be mounted at 90° increments up to 270° from default orientation.  
**Overrange:** Display flashes 99,999  
**Underrange:** Display flashes -9,999  
**Programming Method:** Four SafeTouch® through-glass buttons when cover is installed. Four internal pushbuttons when cover is removed.  
**Noise Filter:** Programmable Lo, Med, Hi, or Off  
**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:** Programmable password restricts modification of programmed settings.  
**Advanced Functions:** Live input calibration, linearization, square root, or programmable exponent  
**Non-Volatile Memory:** All programmed settings 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  
**Operating Temperature Range:** -40 to 75°C.  
**Storage Temperature Range:** -40 to 85°C.  
**Relative Humidity:** 0 to 90% non-condensing  
**Connections:** Screw terminals accept 12 to 22 AWG wire  
**Enclosure:** Explosion-proof die-cast aluminum with glass window, corrosion resistant epoxy coating, color: blue. NEMA 4X, 7, & 9, IP68. Copper-free (0.3%). Two ¾" NPT threaded conduit openings. One ¾" NPT metal conduit plug with 12 mm hex key fitting installed.  
**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.  
**Overall Dimensions:** 5.65" x 5.25" x 4.86" (W x H x D) (144 mm x 133 mm x 124 mm)  
**Weight:** 5.00 lbs (80 oz, 2.27 kg)  
**Warranty:** 3 years parts and labor

**Input**

**Input range:** 4-20 mA  
**Accuracy:** ±0.03% of calibrated span ±1 count, square root & programmable exponent accuracy range: 10-100% of calibrated span.  
**Temperature Drift:** 50 PPM/°C  
**Decimal Point:** User selectable decimal point  
**Calibration Range:** An error message will appear if input 1 and input 2 signals are too close together. Input Range: 4-20 mA. Minimum Span Input 1 & Input 2: 0.10 mA  
**Maximum Voltage Drop:** 3.0 VDC @ 20 mA without loop-powered backlight. 6.0 VDC @ 20 mA with loop-powered backlight  
**Equivalent Resistance:** 150 Ω @ 20 mA without loop-powered backlight. 300 Ω @ 20 mA with loop-powered backlight  
**Input Overload:** Over current protection to 2 A max.  
**Externally Powered Backlight:**

Voltage Range	Maximum Power			
	9 VDC	12 VDC	24 VDC	30 VDC
	0.2 W	0.25 W	0.5 W	0.75 W

**Open Collector Output**

**Rating:** Isolated open collector, 30 VDC @ 150 mA max.  
**Alarm Output:** Assign as rate alarm or total alarm trip point.  
**Deadband:** 0-100% FS, user selectable  
**Acknowledge:** Front panel ACK button resets output and screen indication.  
**Pulse Output K-Factor:** K-factor programmable from 0.0001 to 99999.  
**Pulse Output Frequency:** 2, 4, 8, 16, 32, 64, 128 Hz. Minimum pulse width: 3.9 ms @ 128 Hz. Maximum pulse width: 250 ms @ 2 Hz. Factory default pulse width: 31 ms @ 16 Hz

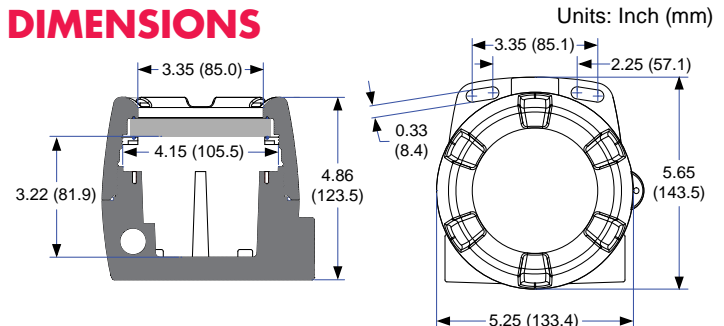
**Rate/Totalizer**

**Rate Display:** 0 to 99,999 leading zero blanking  
**Total Display:** 0 to 9,999,999 leading zero blanking  
**Total Decimal Point:** Up to six decimal places or none: d.dddddd, d.ddddd, d.dddd d.ddd, d.dd, d.d, or ddddddd  
**Lower Display Configuration:** Can be programmed to display total, tag name/engineering units, or to alternate between them.  
**Totalizer:** Calculates total based on rate, time base of second, minute, hour, or day, and field programmable multiplier; stored in non-volatile memory upon power loss.  
**Totalizer Reset:** Via front panel SafeTouch® button, time delay, external contact closure, or protected  
**Total Conversion Factor:** 0.000001 to 9,999,999  
**Totalizer Rollover:** Display rolls over when display exceeds 9,999,999. Relay status reflects the displayed value.  
**Total Reset Delay:** Programmable from 0 to 99,999 seconds

**Product Ratings & Approvals**

**FM:** Explosion-proof for use in Class I, Division 1, Groups B, C, D. Class II, Division 1, Groups E, F, G. Class III, Division 1; T6. Class I, Zone 1, AEx d IIC T6 Gb. Zone 21, AEx tb IIIC T85°C. Ta = -40 to 75°C.  
**Enclosure:** Type 4X & IP66. Certificate number: 3040391  
**ATEX:** II 2 G D. Ex d IIC T6 Gb. Ex tb IIIC T85°C Db IP68. Ta = -40 to 75°C. Certificate number: Sira 10ATEX1116X  
**IECEx:** IECEx SIR 10.0056X. Ex d IIC T6 Gb. Ex tb IIIC T85°C Db IP68. Ta = -40 to 75°C  
**CSA:** Class I, Division 1, Groups B, C, D. Class II, Division 1, Groups E, F, G. Class III, Division 1; T6. Class I, Zone 1, Ex d IIC T6. Ta = -40 to 75°C. Enclosure: Type 4X & IP66. Certificate number: 11 2325749

**DIMENSIONS**



**ORDERING INFORMATION**

ProtEX-RTA PD6820 • Analog Input Rate/Totalizer	
Model	Options Installed
PD6820-0K1	Backlight

**Your Local Distributor is:**

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