

# ProtEX-MAX PD8-7000 Explosion-Proof Temperature Meter

## Data Sheet



**MeterView Pro**

USB Install

- Fully Approved Explosion-Proof Temperature Meter
- J, K, T, E, R, S, B, N, C Thermocouples
- 100 or 1000  $\Omega$  Platinum, 10  $\Omega$  Copper, 120  $\Omega$  Nickel RTDs
- 1° or 0.1° Resolution
- User Programmable Display in Fahrenheit or Celsius
- Capture Maximum and Minimum Temperature Readings
- Optional Isolated 4-20 mA Output Turns the Meter into a Temperature Transmitter
- Averages up to 10 RTD Sensors
- Automatic Cold Junction Compensation
- Dual-Line 6-Digit Display, 0.60" (15.2 mm) & 0.46" (12.0 mm)
- SafeTouch Through-Glass Button Programming
- 4 Relays with Interlocking Capability + Isolated 4-20 mA Output Option
- Free PC-Based, On-Board, MeterView Pro USB Programming Software
- SunBright Display Standard Feature; Great for Outdoor Applications
- Operating Temperature Range: -55 to 65°C (-67 to 149°F)
- CSA Certified as Explosion-Proof / Dust-Ignition-Proof / Flame-Proof
- ATEX and IECEx Certified as Dust-Ignition-Proof / Flame-Proof
- Input Power Options: 85-265 VAC / 90-265 VDC or 12-24 VDC / 12-24 VAC
- Programmable Display, Function Keys & Digital Inputs
- Flanges for Wall or Pipe Mounting
- Explosion-Proof Aluminum or Stainless Steel NEMA 4X / IP68 Enclosures
- On-Board RS-485 Serial Communications
- Modbus® RTU Communication Protocol Standard
- Password Protection
- Four 3/4" NPT Threaded Conduit Openings
- Stainless Steel Pipe Mounting Kit
- Stainless Steel Tag Available
- 3-Year Warranty

# The Complete **ProtEX<sup>TM</sup>** Series MAX

SP Ex IECEx CE



PD8-154  
**4-Point Alarm  
Annunciator**



PD8-6100  
**Strain Gauge Meter**



PD8-158  
**8-Point Alarm  
Annunciator**



PD8-6200  
**Analog Input  
Flow Rate/Totalizer**



PD8-765  
**Process &  
Temperature Meter**



PD8-6210  
**Analog Input Batch  
Controller**



PD8-6000  
**Process Meter**



PD8-6262  
**Analog Dual-Input  
Flow Rate/Totalizer**



PD8-6001  
**Feet & Inches  
Level Meter**



PD8-6300  
**Pulse Input  
Flow Rate/Totalizer**



PD8-6060  
**Dual-Input  
Process Meter**



PD8-6310  
**Pulse Input  
Batch Controller**



PD8-6080  
**Modbus<sup>®</sup> Scanner  
with Dual Analog Input**



PD8-6363  
**Pulse Dual-Input  
Flow Rate/Totalizer**



PD8-6081  
**Feet & Inches  
Modbus<sup>®</sup> Scanner**



PD8-7000  
**Temperature Meter**

Go to **PREDIG.COM** for details on the entire ProtEX-MAX Series Meters







## TABLE OF CONTENTS

OVERVIEW . . . . .	4
ADVANCED DISPLAY FEATURES . . . . .	5
CAPTOUCH THROUGH-GLASS BUTTONS . . . . .	6
QUICK & EASY SCALE & PROGRAMMING METHODS . . . . .	7
4-20 mA OUTPUT & RELAYS . . . . .	10
DIGITAL COMMUNICATIONS. . . . .	13
PHYSICAL FEATURES . . . . .	14
VIDEOS TO WATCH . . . . .	16
OPERATIONAL FEATURES . . . . .	16
ACCESSORIES . . . . .	19
DIMENSIONS . . . . .	21
CONNECTIONS . . . . .	21
SPECIFICATIONS . . . . .	22
ORDERING INFORMATION . . . . .	26

## OVERVIEW

**Front**





Explosion-Proof NEMA 4X Enclosure  
L: Aluminum, blue  
R: Stainless Steel, silver

90° Rotatable Display

Sunlight Readable Display

NEMA 4X Enclosure

Mounting Flanges (Up to 2½" Pipe)

Locking Screw

CapTouch Menu Button

Large 0.6" Digits On Upper Display

User Configurable Lower Display

CapTouch Right Arrow

CapTouch Enter or Alarm Acknowledge Button

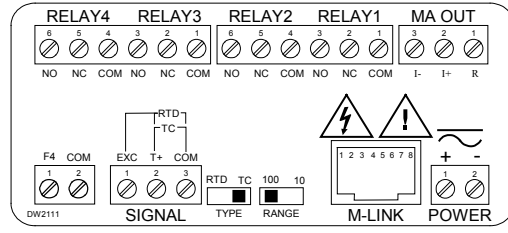
Temperature Units

Programmable Function Keys

Alarm Status Indicators

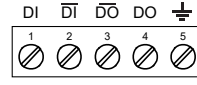
CapTouch Display or Up Arrow

**Connections**

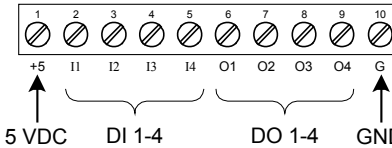


- Form C (SPDT) relays
- Isolated supply available even on 12/24 VDC input power models
- Removable terminal blocks
- 2 or 4 relays + isolated 4-20 mA output option

**RS-485 Connections**



**Digital I/O Connections**



*Connections for PD8-6000-6H7 & PD8-6000-7H7*

## The Only Explosion-Proof Temperature Meter You Will Ever Need

Front, back and in between, the PD8-7000 ProtEX-MAX explosion-proof temperature meter boasts specifications, features and functionality that make it the only hazardous area temperature meter you will ever need. The first thing you notice about the PD8-7000 is its modern looking, rugged, explosion-proof housing with convenient mounting flanges, available in aluminum or stainless steel. Housed inside this enclosure is a dual-line, 6-digit display with high intensity LEDs that can be read in direct sunlight.

The PD8-7000 has all the same features as our PD7000 1/8 DIN temperature meter, as a fully approved explosion-proof product. The product is certified by CSA as Explosion-Proof / Dust-Ignition-Proof / Flame-Proof, and is ATEX and IECEx certified as Dust-Ignition-Proof / Flame-Proof.

The ProtEX MAX PD8-7000 can be programmed by the user to accept type J, K, T, E, R, S, B, N, and C

thermocouples as well as 100 or 1000 Ω platinum, 10 Ω copper, and 120 Ω nickel RTD inputs. The meter's six-digit display allows it to display the higher temperature thermocouples up to their standard Fahrenheit range, such as 2400 degrees for the Type K thermocouple. The user can also set the meter to display in Fahrenheit or Celsius and set the resolution to 1 degree or 0.1 degree.

One of the most common applications for the PD8-7000 with the isolated 4-20 mA output is to act as an explosion-proof temperature transmitter with a big display. The meter will also capture the maximum and minimum readings.

Finally, all these features and capabilities can easily be programmed without removing the cover using SafeTouch buttons in a hazardous area or with free MeterView Pro PC-based software in a safe area.

## ADVANCED DISPLAY FEATURES

### Informative Display

The most common setup for the dual-line display on the PD8-7000 is to show the temperature (in °F or °C with 1° or 0.1° resolution) on the main display and a tag on the second display.

### Dual-Line Makes All the Difference

The main display can be programmed to indicate the maximum (peak), minimum (valley), alternate between the maximum/minimum, or one of four alarm set points. The second display can also be configured to display set points, user defined messages, or simply turned off.

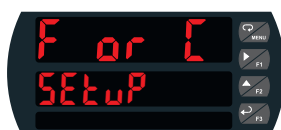
The ProtEX-MAX's dual-line display makes all the difference both when programming the instrument and when using it in the field. When programming the instrument, the dual-line display prompts for the needed information and also helps you keep track of where you are in the setup process. When using the instrument, the dual-line display provides more information such as displaying the input in two different scales like height and volume for a level application. We call this the Dual-Scale feature.

### Programming Assistance

The ProtEX-MAX's dual-line display makes programming the instrument much easier because the lower line prompts for the needed information and also helps you keep track of where you are in the setup process.



Input Setup



Display Setup

### Super-Bright Display

The ProtEX-MAX comes standard with a super-bright display, with LEDs that are visible even in direct sunlight. The display also has up to eight levels of adjustable intensity for optimum visibility in any lighting condition.

### Rounding Feature for Even Steadier Display

The rounding feature is used to give the user a steadier display with fluctuating signals. It causes the display to round to the nearest value according to the rounding value selected (1, 2, 5, or 10). For example, with a rounding value of 10, and an input of 123.45, the display would indicate 123.50.

### Multiple Sensor Averaging

The PD8-7000 can find the average temperature of up to 10 RTD probes connected in parallel. This new calculated value would then be treated as the PV (temperature) displayed on the meter. The average temperature is also available via Modbus communications and as the retransmitted value for the optional 4-20 mA output.





## CAPTUCH THROUGH-GLASS BUTTONS

The ProtEX-MAX is equipped with four capacitive sensors that operate as through-glass buttons so that they can be operated without removing the cover (and exposing the electronics) in a hazardous area or harsh environment. CapTouch buttons are designed to protect against false triggering and can be disabled for security by selecting DISABLE on the switch labeled NO-CONTACT BUTTONS located on the connector board.

### CapTouch Buttons

To actuate a button, press one finger to the window directly over the marked button area. When the cover is removed or replaced, the CapTouch buttons can be used after the meter completes a self-calibrating routine. The sensors are disabled when more than one button is pressed, and they will automatically re-enable after a few seconds. When the cover is removed, the four mechanical buttons located on the right of the faceplate are used.

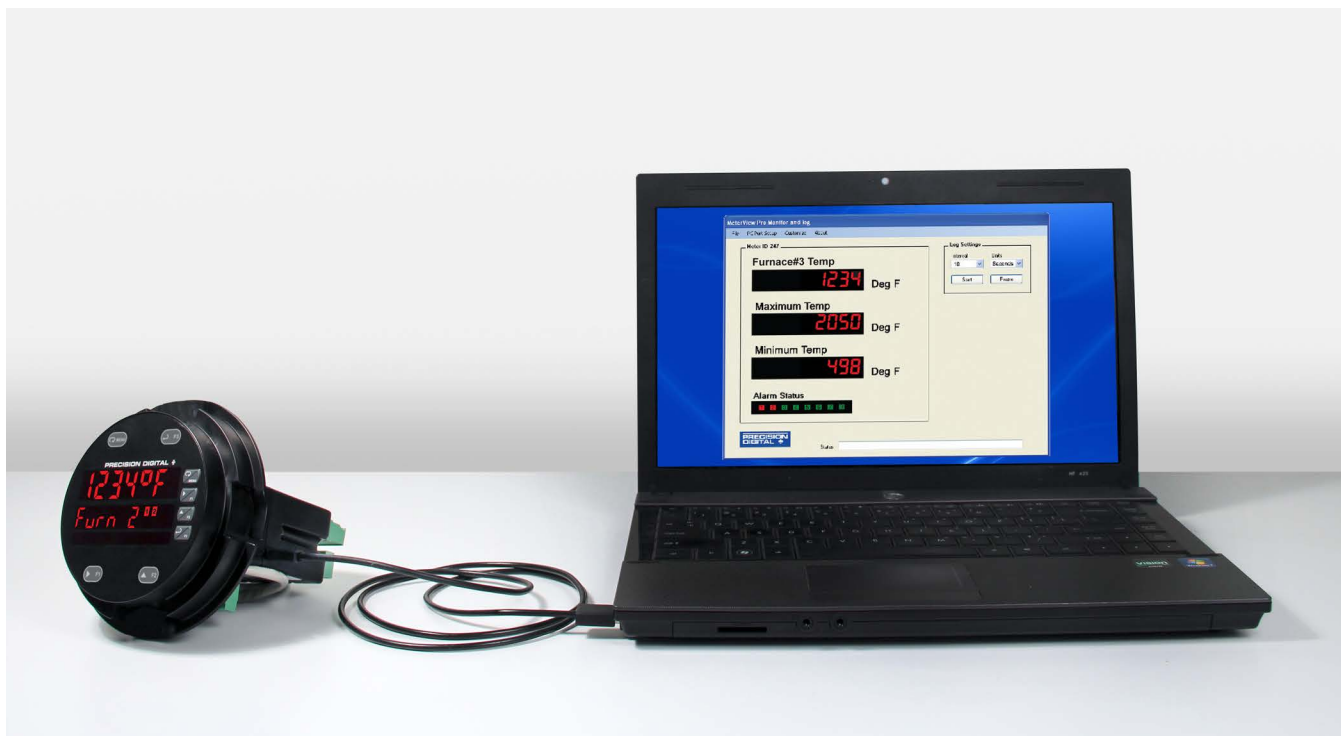
The CapTouch Buttons are configured by default to duplicate the function of the front panel mechanical pushbuttons associated with the integrated meter.



## QUICK & EASY SCALE & PROGRAMMING METHODS

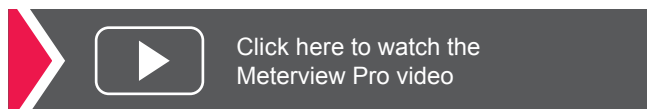
The ProtEX-MAX can be programmed either via the front panel push buttons or free, PC-based MeterView Pro software. MeterView Pro is resident on the ProtEX-MAX and is accessed by a provided USB cable, so it is by far the easiest way to program the ProtEX-MAX. The ProtEX-MAX can be calibrated either by applying a known signal or scaled by entering a desired value with the front panel buttons or MeterView Pro software. Most customers will use the scaling method because it is simpler and does not require a calibrated signal source. Selecting the input to be current or voltage is done with the front panel buttons or MeterView Pro software in conjunction with a switch on the back of the meter. Once programming is completed it can be locked with a password.

### Free PC-Based MeterView Pro USB Programming Software & Cable



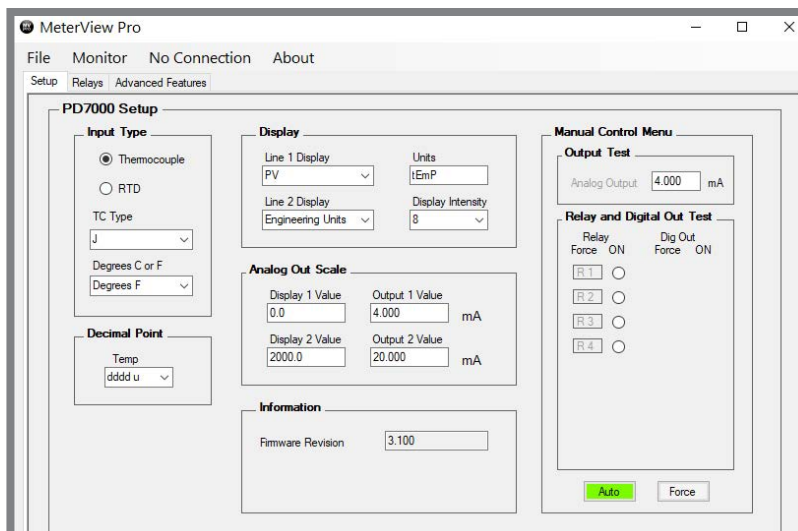
The ProtEX-MAX comes preloaded with free MeterView Pro programming software that connects and installs directly to your PC with a standard USB cable, also provided free with each instrument. This eliminates the need to insert CDs, install drivers, or download software from the internet. When you connect your ProtEX-MAX to your PC, MeterView Pro is downloaded to your PC, the software automatically selects the model you are programming, and you're ready to start programming immediately. Further simplifying the programming process, the ProtEX-MAX can be powered

from the USB port, so no need to apply external power while programming your meter. In addition to programming, the software will also allow you to monitor, and datalog a ProtEX-MAX using your PC. You can also generate and save programming files for later use.



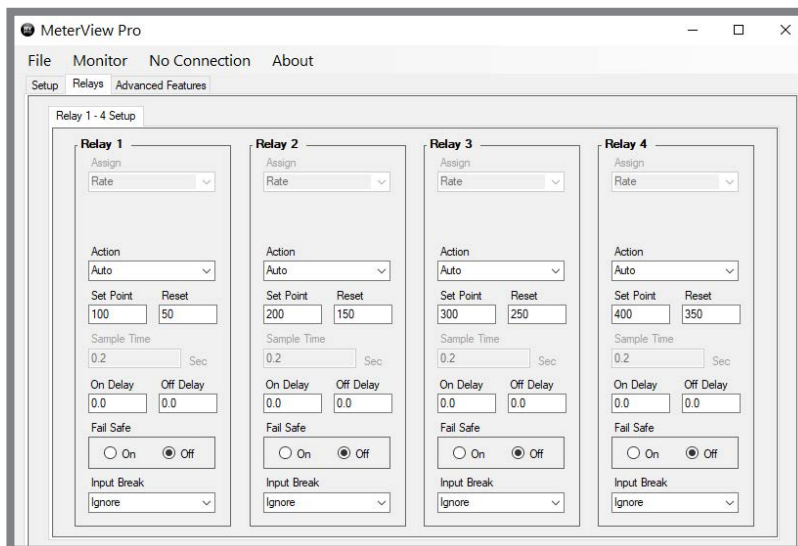
## Setup Screen

- Select Thermocouple or RTD Input
- Select TC Type and Degrees C or F
- Set Decimal Point
- Set Line 1 Display Parameters
- Set Line 2 Display Parameters
- Set Units
- Set Display Intensity
- Set Analog Output Values
- Enable Manual Control
- Test Relays & Digital Outputs



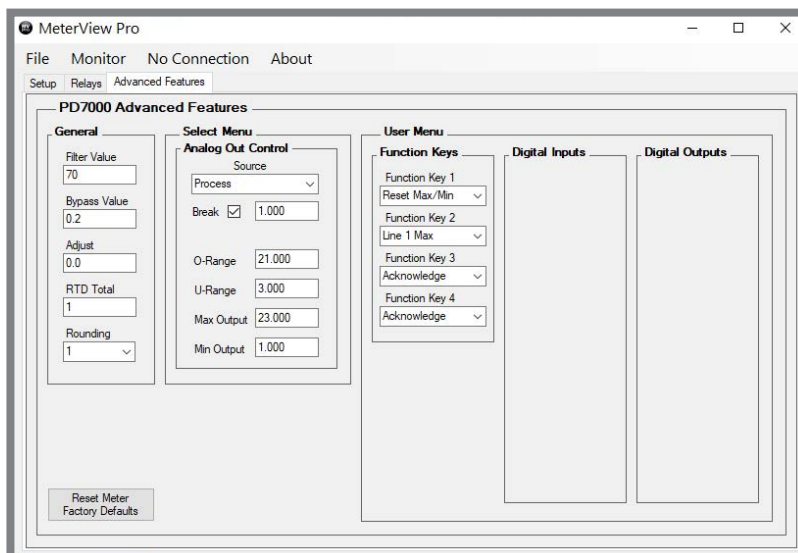
## Relays Screen

- Greatly Simplifies Programming a Variety of Relay Features
- Set Relay Action
- Set Sampling Time
- Set Set & Reset Points
- Set On/Off Time Delays
- Set Fail Safe Operation
- Set Input Break Relay Action



## Advanced Features Screen

- Set Filter and Bypass Values
- Control Analog Out
- Set Function Keys
- Control Digital Inputs/Outputs
- Reset Meter to Factory Defaults





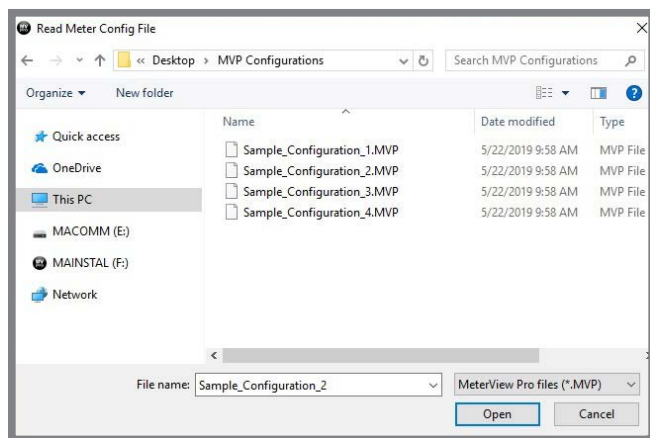
## Save/Open Configuration

At the bottom of most MeterView screens are two tabs:

1. **Get Meter Data:** This reads the programming of the meter that is currently connected to the PC.
2. **Send Meter Data:** Clicking this button, sends current MeterView programming to the meter.



The configuration file can be sent or retrieved from the directory of your choice. This makes it very easy to program multiple meters with the same programming. It is also a great backup utility as well.



## Specifications

### System Requirements:

Microsoft® Windows® 10/11

### Communications:

Onboard USB (firmware version 4.0 or higher),  
RS-232 Adapter or RS-485 Adapter

**Meter Address:** 1 - 247

### Reports:

- Data logging: Save as CSV file format
- Configuration: Save as PDC file format or print configuration

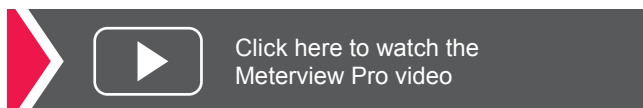
**Baud Rate:** 300 - 19,200 bps

**Configuration:** One meter at a time

### Protocol:

Modbus RTU (requires firmware version 4.0 or higher)

*\*Note: Windows® 32/64-bit operating systems*



## Password Protection

The Password menu is used for programming three levels of security to prevent unauthorized changes to the programmed parameter settings:

**Pass 1:** Allows use of function keys and digital inputs

**Pass 2:** Allows use of function points keys, digital inputs and editing set/reset points

**Pass 3:** Restricts all programming, function keys, and digital inputs

## 4-20 mA OUTPUT & RELAYS

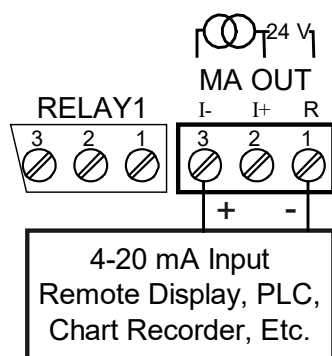
### 4-20 mA Analog Output

The isolated analog retransmission signal can be configured to represent the process variable (PV), maximum (peak) value, minimum (valley) value, the value for any of the eight relay set points, or Modbus input. While the output is nominally 4-20 mA, the signal will accurately accommodate under- and over-ranges from 1 to 23 mA.

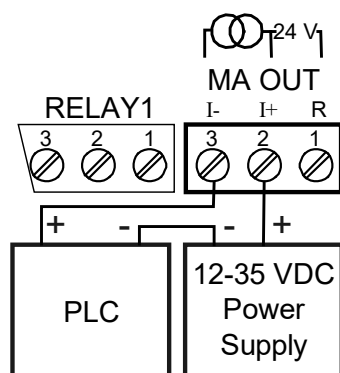
The 4-20 mA output can be reversed scaled such that 4 mA represents the high value and 20 mA represents the low value. For instance, a 4-20 mA output signal could be generated as the meter went from 100.0 to 0.0.

### Connections

The ProtEX-MAX can provide 25 mA at 24 VDC to power the 4-20 mA output signal or an external power supply can be used:



4-20 mA Output Powered by PD8-7000



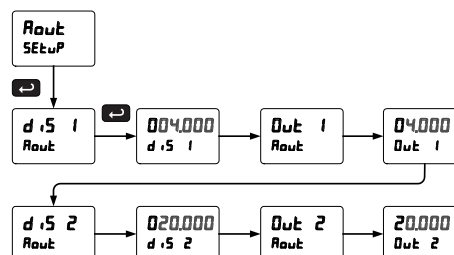
4-20 mA Output Powered by External Power Supply

The 4-20 mA output can either be programmed using the front panel push buttons or free MeterView Pro software.

### Front Panel Push Button Programming

The 4-20 mA analog output can be scaled to provide a 4-20 mA signal for any display range selected. No equipment is needed to scale the analog output; simply program the display values to the corresponding mA output signal. The Analog Output menu is used to program the 4-20 mA output based on display values.

**Note:** During the analog output scaling, the display value is always indicated with a decimal point regardless of the decimal point selection for the temperature display.



### MeterView Pro Software Programming

When a meter is programmed as shown below, the output will be 4.00 mA when the display reads 0 and the output will be 20.00 mA when the display reads 2000.

Analog Out Scale	
Display 1 Value	Output 1 Value
0.0	4.000 mA
Display 2 Value	Output 2 Value
2000.0	20.000 mA

The meter can be set up for reverse scaling as shown below: the output will be 4.00 mA when the display reads 2000 and the output will be 20.00 mA when the display reads 0.

Analog Out Scale	
Display 1 Value	Output 1 Value
2000.0	4.000 mA
Display 2 Value	Output 2 Value
0.0	20.000 mA

Analog Out Control	
Source	PV Value
Break	<input checked="" type="checkbox"/> 1.000
O-Range	21.000
U-Range	3.000
Max Output	23.000
Min Output	1.000

**Source:** Source for generating the 4-20 mA output (e.g. PV)

**Overrange:** Analog output value with display in overrange condition

**Underrange:** Analog output value with display in underrange condition

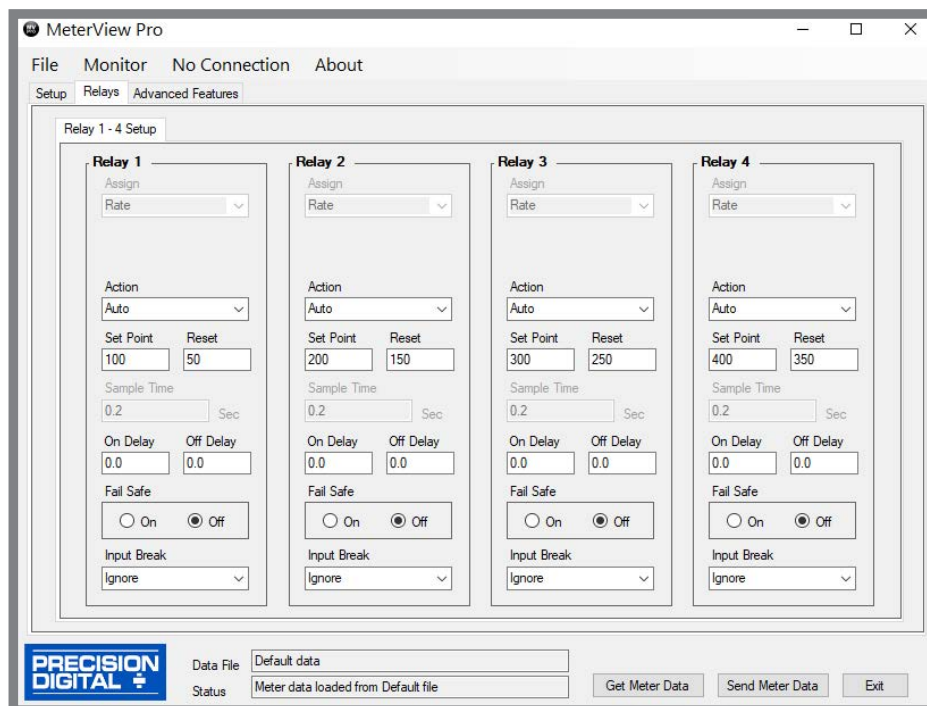
**Break:** Analog output value when loop break is detected

**Max:** Maximum analog output value allowed regardless of input

**Min:** Minimum analog output value allowed regardless of input

## Relays for Hazardous Area Alarm & Control Applications

Adding relays to the ProtEX-MAX meter turns it into a sophisticated explosion-proof alarm device as well as a powerful, yet simple, alternative to a more complicated PLC system for control applications. One such application would be pump control using the ProtEX-MAX's relays in pump alternation mode. The ProtEX-MAX can be equipped with up to four 3 A Form C (SPDT) relays that can all be programmed to alternate, thus creating an explosion-proof pump alternator. Relays are highly user-configurable as the following screen shot from MeterView Pro indicates:



\*Values are intended to show programming choices. They are not intended to represent an actual application.

### Setting Set and Reset Points (HI / LO Alarms)

All relays are independent of each other and may be programmed as high or low alarms with user desired set and reset points. Setting a set point above a reset point results in a high alarm and setting a set point below a reset point results in a low alarm. Alarms have 0 – 100% deadband and set and reset points may be set anywhere in the range of the meter.

### Resetting the Relays (Action in MV Pro)

All relays are independent of each other and may be programmed to reset (*Action* in MV Pro) in the following ways:

- **Automatic:** Alarm will reset automatically once the alarm condition has cleared.
- **Automatic/Manual:** Alarm will reset automatically once the alarm condition has cleared but can also be reset using the F3 front panel button\* at any time.
- **Latching:** Alarm must be reset manually and can be done so at any time. Press the F3 front panel button\* at any time to clear the alarm.
- **Latching with Reset after Cleared:** Alarm must be reset manually and can only be done so after the alarm condition has cleared. Press the F3 front panel button\* after the alarm condition has cleared to reset the alarm.

\* Or by connecting an external switch to F4 terminal or with an optional digital input.

### Time Delay (On and Off)

In many applications it is desirable to wait before turning off or on a relay – such as waiting for a process to settle before taking action. Each relay on the ProtEX-MAX can be programmed with independent on and off time delays of 0 to 999.9 seconds to achieve this.

### Relays Auto Initialization

When power is applied to the meter, the front panel LEDs and alarm relays will reflect the state of the input to the meter.

### Signal Loss or Loop Break Relay Operation

When the meter detects a break in the 4-20 mA loop, the relay will go to one of the following selected actions:

1. Turn On (Go to alarm condition)
2. Turn Off (Go to non-alarm condition)
3. Ignore (Processed as a low signal condition)

### User Selectable Fail-Safe Operation

All relays are independent of each other and may be programmed for user selectable fail-safe operation. With the fail-safe feature activated, the relays will transfer to the alarm state on power loss to the meter.



## Front Panel LEDs

The meter is supplied with four alarm points that include front panel LEDs to indicate alarm conditions. This standard feature is particularly useful for alarm applications that require visual-only indication.

## Manual Output Control

Take control of any output with this feature. All relays can be forced ON or OFF, and the 4-20 mA output signal can be set to any value within its range. When the relays and 4-20 mA output are controlled manually, an LED labeled "M" is turned on and the associated Alarm LEDs (1-4) flash every 10 seconds indicating that the meter is in manual control mode.

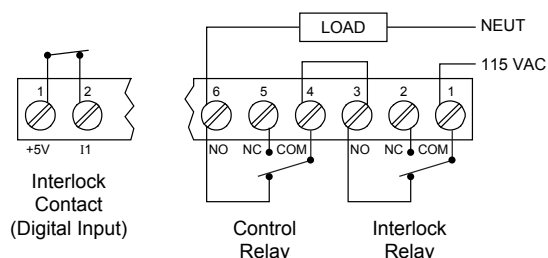


## Sampling Function (PV Triggered Timed Relay)

The sampling function allows the operator to set a relay as a "sampling" relay. When the PV reaches that set point, it will close that relay's contacts for a preset period of time (0.1 to 5999.9 seconds). An example of its use may be for beer/ale fermentation. When the batch reaches a certain pH, the relay contacts would close and by some means (light, horn, etc.) alert someone to take a sample, or provide the trigger to automatically take a sample of the batch. The utility of this function can, of course, be expanded beyond sampling and be used whenever a timed relay output closure is required when the PV reaches a certain set point.

## Interlock Relay(s)

This function allows a process to use one or more very low voltage input signals or simple switch contacts to control the state of one or more internal "interlock" relays. A violation (i.e. loss of input, open switch, or open circuit) forces one or more N/O interlock relay contacts to open. One input can be used in series with a number of interlock switches, or up to eight inputs can be required to force-on one (or more) internal interlock relays. Please see *Safety Interlock on the ProVu Series* whitepaper on our website for more information.



## Switching Inductive Loads

The use of snubbers to suppress electrical noise is strongly recommended when switching inductive loads to prevent disrupting the microprocessor's operation. The snubbers also prolong the life of the relay contacts. Precision Digital offers the PDX6901.

## DIGITAL COMMUNICATIONS

### Modbus® RTU Serial Communications

With onboard RS-485 serial communication, the PD8-6000 can communicate with any Modbus *master* device using the popular Modbus communications protocol that is included in every ProtEX-MAX. In addition to the typical Modbus capabilities of reading PVs and writing set points, below are some examples of other things that can be done with the meter's Modbus communications:

- Send a 6-character message to the lower display upon an event
- Convert a digital value to a 4-20 mA signal
- Remote user control (i.e. change set points, acknowledge alarms)
- Input a Modbus digital PV (in place of analog input)
- Remote override of any or all relays and analog outputs



Modbus PV Input



Remote Message



Click here for more information on the ProVu's Modbus capabilities

### Serial Adapters & Converters\*



**PDA7485-I**  
RS-232 to RS-422/485  
Isolated Converter



**PDA8485-I**  
USB to  
RS-422/485  
Isolated Converter



For more  
info on serial  
converters  
click here.

\*All adapters and connectors supplied with appropriate cables.

### Integrated Digital I/O and Serial Communications



#### Digital I/O Connections

Four digital inputs and four digital outputs come standard with the ProtEX-MAX. External digital inputs can function similarly to the front panel function keys or digital input F4. They can be configured to trigger certain events (i.e. acknowledge/reset alarms, reset max and/or min values, disable/enable all output relays, and hold current relay states), or provide a direct menu access point. The inputs can be connected to a multi-button control station to provide the user with remote control of the four front panel push buttons.

Digital outputs can be used to remotely monitor the ProtEX-MAX's alarm relay output states, or the states of a variety of actions and functions executed by the meter.

**Note:** The onboard digital inputs (1-4) are configured at the factory to function identically to the front panel pushbuttons (Menu, F1, F2, & F3) in order to work with the CapTouch buttons. Changing the programming of the digital inputs will affect the function of the CapTouch buttons.



#### Serial Communications Connections

ProtEX-MAX meters come with an RS-485 connection for serial communications with other digital devices. The industry standard Modbus® RTU protocol is included with every meter.

## PHYSICAL FEATURES

The ProtEX-MAX is designed for ease-of-use in safe and hazardous area applications, and is housed in a rugged NEMA 4X explosion-proof enclosure, available in either aluminum or stainless steel. The PD8-7000 can operate over a wide temperature range (-55 to 65°C / -67 to 149°F), includes removable screw terminal connectors, can have up to four relays and a 4-20 mA output, and features through-glass buttons for easy meter operation without the need to remove the cover. All of these features are backed by a 3-year warranty.

### Super-Bright LED Display

The ProtEX-MAX features a dual-line 6-digit display with super-bright LEDs, our brightest ever. These allow the display to be read in any lighting condition, even in direct sunlight.



### CapTouch Through-Glass Buttons

The ProtEX-MAX is equipped with four capacitive 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 DISABLE setting on the NO-CONTACT BUTTONS switch located on the back of the electronics module, inside the enclosure.

### Rugged Explosion-Proof Enclosure

The ProtEX-MAX is housed in a rugged NEMA 4X, 7, & 9, IP68 aluminum or stainless steel enclosure, designed to withstand harsh environments in safe and hazardous areas.



### Wide Viewing Angle

Customers can't always look at the display from straight on, so the window and display module have been optimized to provide a wide viewing angle of approximately  $\pm 40^\circ$ ; nearly twice that of the competition.



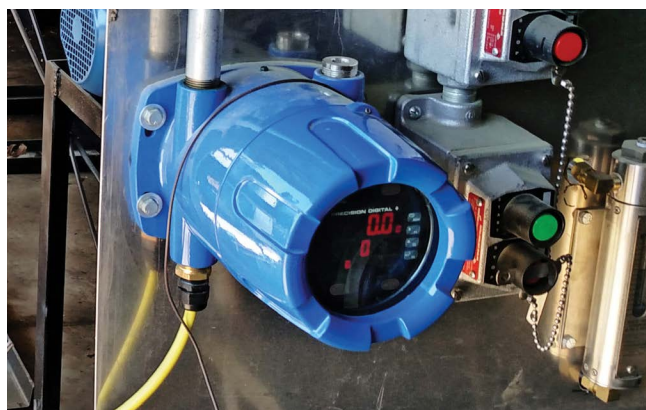
### Built-In Mounting Flanges

The ProtEX-MAX is equipped with two slotted flanges for wall mounting or NPS 1½" to 2½" or DN 40 to 65 mm pipe mounting.



### Flexible Mounting & Wiring

The ProtEX-MAX features four ¾" NPT conduit openings so that wiring can be routed to the most convenient conduit connection(s).





## Rotatable Display

The ProtEX-MAX rotatable display, along with four available conduit connections, provide for numerous installation options. The display can be rotated in 90° increments. Rotate it 90° for horizontal mounting.



Vertical Mounting



Horizontal Mounting

## Perfect & Secure Fit Every Time

The internal cast rails ensure the ProtEX-MAX assembles 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. The display module snaps into the built-in rails on the enclosure making assembly a snap, while pressing the display as close to the glass as possible to improve wide angle viewing. No tools are needed to install or remove it.

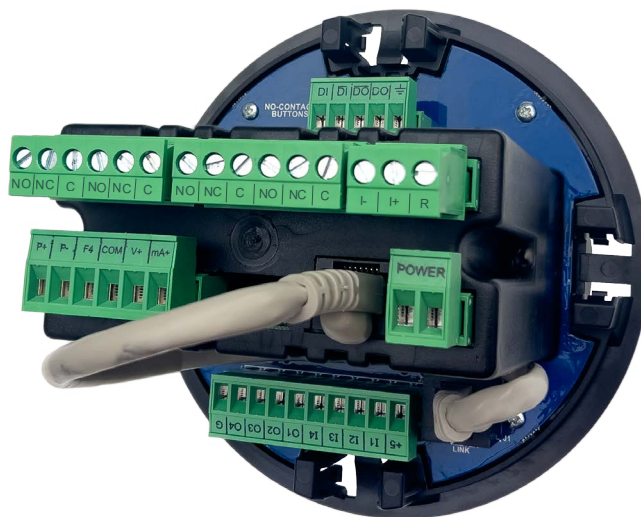
## PDA-SSTAG Stainless Steel Tags

PDA-SSTAG is a laser etched stainless steel tag accessory for any Precision Digital meter. The tag features custom text for equipment identification, instruction, or whatever else is needed in your facility. Each tag comes with a stainless steel wire and lead seal for easy mounting wherever you need it.



## Removable Screw Terminal Connectors

Industrial applications require screw terminal connections for easy field wiring and the ProtEX-MAX goes one step further in convenience by also making them removable.



*Note: The above photograph is representative of the back of the PD8-7000 in every regard except for the signal input connector.*

## USB Port MeterView Pro



USB cable conveniently plugs into side of ProtEX-MAX meter

## Hazardous Area Certification

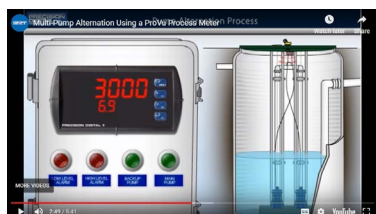
The ProtEX-MAX is certified by CSA as Explosion-Proof / Dust-Ignition-Proof / Flame-Proof and is approved by ATEX and IECEx as Dust-Ignition-Proof / Flame-Proof.

## Wide Operating Temperature Range

The ProtEX-MAX can operate from -55 to 65°C (-67 to 149°F) meaning it can be installed in a wide variety of indoor and outdoor industrial applications.

## VIDEOS TO WATCH

The ProtEX-MAX meter is very similar to the ProVu in features and functionality so the following videos might be of interest:



### ProVu Multi-Pump Alternation

Learn How to Use the ProVu as a Pump Controller.



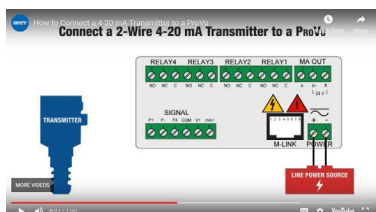
### ProVu Function Keys

Learn How the ProVu's Function Keys Increase the Utility of the ProVu.



### Connect a ProVu to a PC Using MeterView Pro

Learn How Easy it is to Use MeterView Pro Software.



### Connect a 2-Wire 4-20 mA Transmitter to a ProVu

Learn How to Connect Your Transmitter to a ProVu.

## OPERATIONAL FEATURES

### Function Keys, F4 Terminal, Digital Inputs

There are three ways the user can interact with the ProtEX-MAX to perform a variety of useful functions:

#### 1. Three Front Panel Function Keys

The default settings for the function keys are:



Reset Max/Min Reading



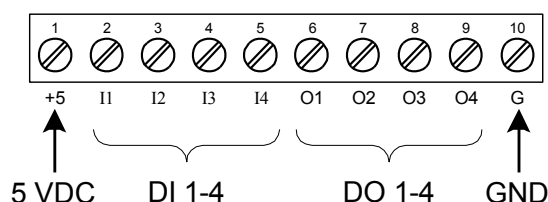
Display Max/Min Reading



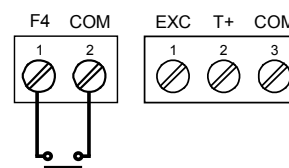
Acknowledge Relays

#### 2. Built-in Digital Inputs/Outputs

The ProtEX-MAX comes with five digital inputs and four digital outputs. The digital inputs can operate with the tare, reset tare, or interlock relays feature, force relays on from a signal from a PLC or relay on other equipment, and much more. The digital inputs can also be used to mimic the programming buttons, while the digital outputs can be used to send signals to PLCs and other devices.



4 Digital Inputs  
& 4 Digital Outputs



F4 Terminal for  
Digital Input

#### 3. CapTouch Through-Glass Buttons

The ProtEX-MAX is equipped with four capacitive 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. The CapTouch buttons are configured by default to duplicate the function of the front panel mechanical pushbuttons associated with the integrated meter.

## Function Key, Digital Inputs, & Digital Outputs Descriptions

The following table describes the actions that ProtEX-MAX function keys and digital inputs can be programmed to perform. The table also describes how the digital outputs can be programmed to remotely monitor the ProtEX-MAX's alarm relay states, or the states of a variety of actions and functions executed by the meter.

Display	Description	Item	Display	Description	Item
rSt H1	Reset the stored maximum display value	FK, DI, DO	Ln2 H1	Display maximum display value on line 2	FK, DI
rSt Lo	Reset the stored minimum display value	FK, DI, DO	Ln2 Lo	Display minimum display value on line 2	FK, DI
rSt HL	Reset the stored maximum & minimum display values	FK, DI, DO	Ln2 HL	Display maximum & minimum display values on line 2	FK, DI
rELAY	Directly access the relay menu	FK, DI	F On 1*	Force relay 1 (*through 4) into the on state. This is used in conjunction with a digital input expansion module to achieve interlock functionality.	FK, DI
SEt 1*	Directly access the set point menu for relay 1 (*through 8)	FK, DI	Control	Directly access the control menu	FK, DI
rLY d	Disable all relays until a button assigned to enable relays (rLY E) is pressed	FK, DI	disABL	Disable the selected function key or digital I/O	FK, DI
rLY E	Enable all relays to function as they have been programmed	FK, DI	AcH	Acknowledge all active relays that are in a manual operation mode such as auto-manual or latching	FK, DI, DO
0 Hold	Hold current relay states and analog output as they are until a button assigned to enable relays (rLY E) is pressed	FK, DI	rESEt	Directly access the reset menu	FK, DI
d Hold	Hold the current display value, relay states, and analog output momentarily while the function key or digital input is active. The process value will continue to be calculated in the background.	FK, DI	naEnu	Mimic the menu button functionality (digital inputs only)	DI
Ln1 H1	Display maximum display value on line 1	FK, DI	rIGHt	Mimic the right arrow/F1 button functionality (digital inputs only)	DI
Ln1 Lo	Display minimum display value on line 1	FK, DI	uP	Mimic the up arrow/F2 button functionality (digital inputs only)	DI
Ln1 HL	Display maximum & minimum display values on line 1	FK, DI	EntEr	Mimic the enter/F3 button functionality (digital inputs only)	DI
			ALAr 1*	Provide indication when alarm 1 (*through 4) has been triggered (digital outputs only)	DO

FK: Function Keys    DI: Digital Inputs    DO: Digital Outputs

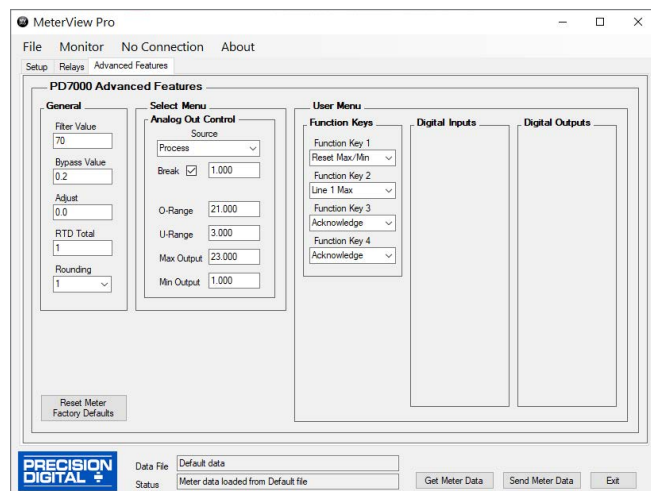


Watch video about the programmable function keys, digital inputs, and all the capabilities these features offer on the ProVu Series, which work similarly on the ProtEX-MAX.



## Remote Operation of Front Panel Buttons

The user can operate the front panel buttons from a remote location by using digital inputs programmed in the following manner:



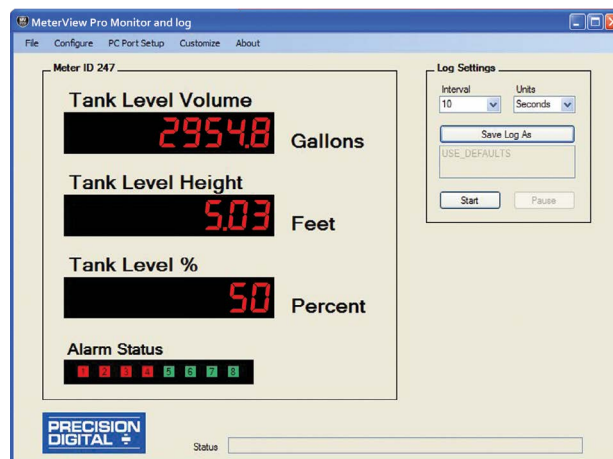
Click here to watch the  
Function Keys video

## Max / Min Display

Max/Min (or Peak/Valley) is standard on the ProtEX-MAX PD8-7000. Either display can be configured to show either maximum or minimum excursion since last reset. The displays can also be configured to toggle between Max and Min values. Both values can be simply reset from the front panel.

## MeterView Pro Monitoring & Datalogging Software

Not only does free MeterView Pro software greatly simplify setup and programming of the ProtEX-MAX, it can also be used to monitor and datalog your process.



- Custom Tags: i.e. Tank Level Volume
- Custom Units: i.e. Gallons, Feet, Percent
- Alarm Status Indicators

## Datalog Report

Collected data logger information can be sent to a CSV file for importing into a spreadsheet program. Below is an example of one such file. Of course, once within the spreadsheet, much can be done to customize the data.

aw ProFurnace 3.csv Created 8/10/2010 3:22:37 PM

COM5Logging Rate: 1 update every 55seconds

Date& Time	Tag1	Display	Units	Tag2	Display	Units	Tag3	Display	Units	R1	R2	R3	R4
8/10/2010 3:22	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:22	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:22	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:22	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:22	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:23	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:24	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off
8/10/2010 3:24	Furn 3	207	Degrees F	MAX	247	Degrees F	MIN	206	Degrees F	Off	On	Off	Off

## Relay Control

Relays can be controlled from MeterView Pro for testing purposes. This is commonly done to determine whether the relays are functioning properly. In the *Setup* window, under *Relay and Digital Out Test* you have the option of selecting the relays you want in an ON state or OFF state and also whether you want to leave the relays in manual control or to return them to automatic operation.



Click here to watch the Meterview Pro video

## ACCESSORIES

### 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
<a href="#">PD9501</a>	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
<a href="#">PD9502</a>	Low-Cost Signal Generator

## WARNING

- These accessories do not carry hazardous area approvals and are thus not suitable for location in hazardous areas. The use of additional protective devices may allow them 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.

# Complete Product Line of Displays and Controllers

## IN ALL SHAPES, SIZES & LOCATIONS



Big, Bright Displays  
For Indoor or Outdoor  
in Bright Sunlight



Large Dual-Line  
6-Digit Display



24 VDC  
Transmitter  
Power Supply



MeterView® Pro USB  
Programming Software



Universal 85-265  
VAC or 12-24 VDC  
Input Power  
Options



4-20 mA, 0-10 V,  
Thermocouple, RTD,  
Strain Gauge, High  
Voltage, & Modbus Inputs



Up To Four  
3 A Form C  
Relays (SPDT)



SP Ex IECEx CE

### EXPLOSION-PROOF ProtEX-MAX Series

- NEMA 4X, IP68 Rated Enclosure
- CapTouch Through-Glass Buttons
- Operating Temperature of -55 to 65°C
- Worldwide Approvals

### LARGE DISPLAYS Helios Series

- 1.8" Digits Readable From 100 Feet
- NEMA 4X, IP65 Rated Enclosure
- Operating Temperature of -40 to 65°C
- Now UL and C-UL Approved!

UL CE

### PANEL METERS ProVu Series

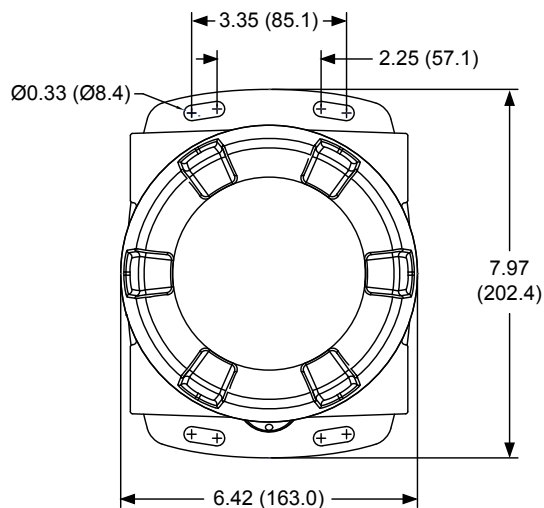
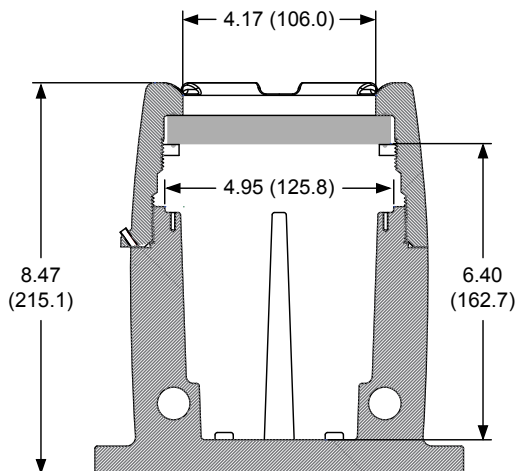
- NEMA 4X, IP65 Rated Front
- Programmable Function Keys
- UL, C-UL, and CE Approvals
- 1/8 DIN Size

Go to [PREDIG.COM](http://PREDIG.COM) for details on ProVu, ProtEX-MAX and Helios Series Meters



## DIMENSIONS

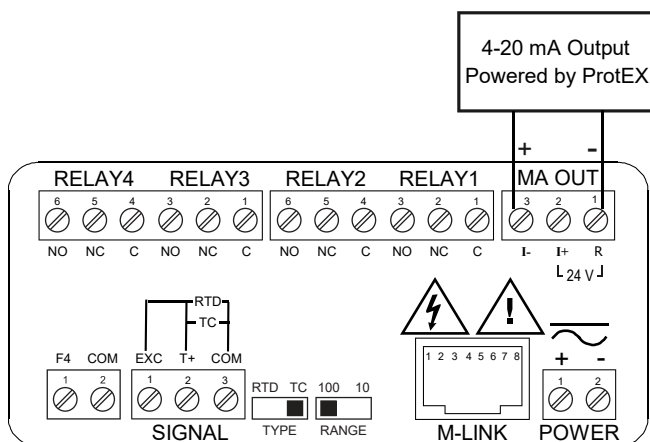
Units: Inches (mm)



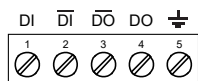
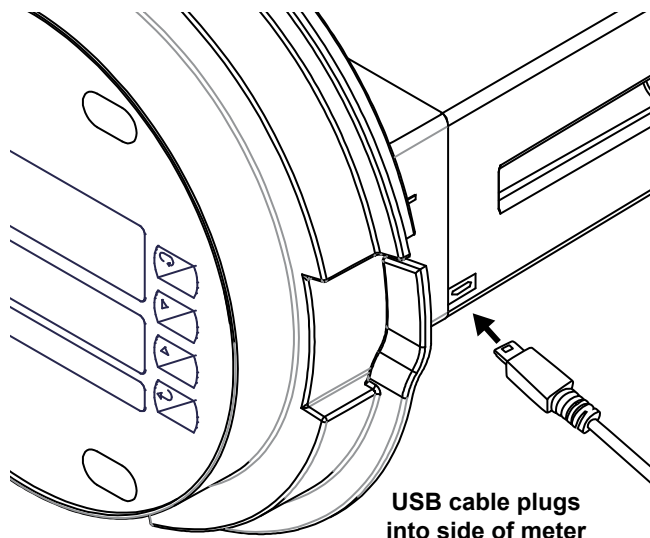
Download free 3-D CAD files of these instruments to simplify your drawings!

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

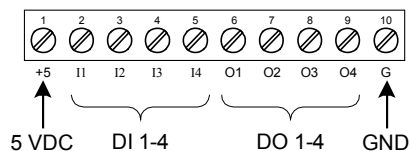
## CONNECTIONS



Connections for PD8-7000-6H7 & PD8-7000-7H7



RS-485 Connections



Digital I/O Connections

## SPECIFICATIONS

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

### General

<b>Display</b>	Display Line 1: 0.60" (15.2 mm) high, red LEDs Display Line 2: 0.46" (12.0 mm) high, red LEDs 6 digits each (-99999 to 999999), with lead zero blanking Temperature displayed on line 1 with four or five-digits and F/C indication, based on configuration. Example 2347.2F with 0.1° resolution and 2347°F with 1° resolution.	<b>Overvoltage Category</b>	Installation Overvoltage Category II: Local level with smaller transient overvoltages than Installation Overvoltage Category III.
<b>Resolution</b>	1° or 0.1° for all thermocouple and RTD inputs	<b>Environmental</b>	T6 Class operating temperature range Ta = -55 to 60°C T5 Class operating temperature range Ta = -55 to 65°C Storage temperature range: -55 to 85°C (-67 to 185°F) Relative humidity: 0 to 90% non-condensing
<b>Display Intensity</b>	Eight user selectable intensity levels. Default intensity is six.	<b>Max Power Dissipation</b>	Maximum power dissipation limited to 13.73 W
<b>Display Update Rate</b>	5/second (200 ms)	<b>Connections</b>	Power, signal, relays, mA out: Removable screw terminal blocks accept 12 to 22 AWG wire RS-485: Removable screw terminal block accepts 16 to 30 AWG wire Digital I/O: Removable screw terminal blocks accept 16 to 30 AWG wire
<b>Overrange</b>	Display flashes 99999	<b>Mounting</b>	Wall Mounting: Four (4) mounting holes provided for mounting meter to wall. Pipe Mounting: Optional pipe mounting kit (PDA6848) allows for pipe mounting. Sold separately.
<b>Underrange</b>	Display flashes -9999	<b>Tightening Torque</b>	Power, signal, relays, mA out terminals: 5 lb-in (0.56 Nm) Digital I/O and RS-485: 2.2 lb-in (0.25 Nm)
<b>Programming Methods</b>	Four CapTouch through-glass buttons when cover is installed. Mechanical buttons can be used with the cover removed. Free PC-based USB MeterView Pro programming software.	<b>Overall Dimensions</b>	6.4" x 8.0" x 8.5" (163 mm x 202 mm x 215 mm) (W x H x D)
<b>Noise Filter</b>	Programmable from 2 to 199 (0 will disable filter)	<b>Weight</b>	Aluminum: 14.7 lbs (6.7 kg) Stainless Steel: 23.5 lbs (10.7 kg)
<b>Filter Bypass</b>	Programmable from 0.1 to 99.9% of calibrated span	<b>Warranty</b>	3 years parts & labor. See Warranty Information and Terms & Conditions on <a href="http://www.predig.com">www.predig.com</a> for complete details.
<b>Recalibration</b>	All ranges are calibrated at the factory. Recalibration is recommended at least every 12 months.		
<b>Max/Min Display</b>	Max/min readings reached by the process are stored until reset by the user or until power to the meter is cycled.		
<b>Rounding</b>	Select 1, 2, 5, or 10 (e.g. rounding = 10, value = 123.45, display = 123.50)		
<b>Password</b>	Three programmable passwords restrict modification of programmed settings. Pass 1: Allows use of function keys and digital inputs Pass 2: Allows use of function keys, digital inputs and editing set/reset points Pass 3: Restricts all programming, function keys, and digital inputs		
<b>Non-Volatile Memory</b>	All programmed settings are stored in non-volatile memory for a minimum of ten years if power is lost.		
<b>Power Options</b>	85-265 VAC 50/60 Hz; 90-265 VDC, 20 W max; 12-24 VDC, 12-24 VAC, 15 W max. Powered over USB for configuration only.		
<b>Fuse</b>	Required external fuse: UL Recognized, 5 A max, slow blow; up to 6 meters may share one 5 A fuse		
<b>Normal Mode Rejection</b>	Greater than 60 dB at 50/60 Hz		
<b>Isolation</b>	4 kV input/output-to-power line 500 V input-to-output		

## Temperature Inputs

<b>Inputs</b>	Thermocouple: J, K, T, E, R, S, B, N, C RTD: 100 $\Omega$ platinum (0.00385 & 0.00392 coefficients), 10 $\Omega$ copper, 120 $\Omega$ nickel, 1000 $\Omega$ platinum (0.00385 & 0.00392 coefficients)
<b>Cold Junction Reference</b>	Automatic, fixed, no user calibration needed
<b>Temperature Drift</b>	$\pm 2^{\circ}\text{C}$ maximum from 0 to $65^{\circ}\text{C}$ ambient temperature $\pm 4^{\circ}\text{C}$ maximum from $-20$ to $0^{\circ}\text{C}$ ambient temperature
<b>Offset Adjustment</b>	User programmable offset adjust $\pm 50.0$ degrees. This parameter allows the user to apply an offset value to the temperature being displayed.
<b>Input Impedance</b>	Greater than 100 k $\Omega$
<b>Sensor Break Detection</b>	Open TC or RTD sensor indicated by display flashing oPEn, relays can be programmed to go "On", "Off", or to "Ignore" ( <b>Note:</b> Ignore is detected as an upscale condition). Analog output goes to the programmed sensor break value.
<b>RTD Averaging</b>	Up to 10 RTDs connected in parallel can be averaged.

## Accuracy & Ranges

Type	Range ( $^{\circ}\text{F}$ )	Accuracy	Range ( $^{\circ}\text{C}$ )	Accuracy
J	-200 to 2000	$\pm 1.8^{\circ}\text{F}$	-129 to 1093	$\pm 1^{\circ}\text{C}$
K	-200 to 2400	$\pm 1.8^{\circ}\text{F}$	-129 to 1316	$\pm 1^{\circ}\text{C}$
T	-200 to 752	$\pm 1.8^{\circ}\text{F}$	-129 to 400	$\pm 1^{\circ}\text{C}$
E	-200 to 1800	$\pm 1.8^{\circ}\text{F}$	-129 to 982	$\pm 1^{\circ}\text{C}$
R	-50 to 3000	$\pm 3.6^{\circ}\text{F}$	-46 to 1649	$\pm 2^{\circ}\text{C}$
S	-50 to 3000	$\pm 3.6^{\circ}\text{F}$	-46 to 1649	$\pm 2^{\circ}\text{C}$
B	752 to 3300	$\pm 3.6^{\circ}\text{F}$	400 to 1816	$\pm 2^{\circ}\text{C}$
N	-100 to 2300	$\pm 3.6^{\circ}\text{F}$	-73 to 1260	$\pm 2^{\circ}\text{C}$
C	32 to 4100	$\pm 3.6^{\circ}\text{F}$	0 to 2260	$\pm 2^{\circ}\text{C}$
10 $\Omega$	-328 to 500	$\pm 0.2^{\circ}\text{F}$	-200 to 260	$\pm 0.1^{\circ}\text{C}$
100 $\Omega$	-328 to 1562	$\pm 0.7^{\circ}\text{F}$	-200 to 850	$\pm 0.4^{\circ}\text{C}$
120 $\Omega$	-110 to 500	$\pm 0.2^{\circ}\text{F}$	-79 to 260	$\pm 0.1^{\circ}\text{C}$
1000 $\Omega$	-328 to 900	$\pm 0.7^{\circ}\text{F}$	-200 to 482	$\pm 0.4^{\circ}\text{C}$
All ranges capable of $1^{\circ}$ or $0.1^{\circ}$ resolution.				

## Relays

<b>Rating</b>	Rating: 4 SPDT (Form C) internal and rated 3 A @ 30 VDC and 125/250 VAC resistive load, Total current: 4 A max (total of all relays), 1/14 HP ( $\approx 50$ W) @ 125/250 VAC for inductive loads
<b>Noise Suppression</b>	Noise suppression is recommended for each relay contact switching inductive loads.
<b>Deadband</b>	0-100% of span, user programmable
<b>High or Low Alarm</b>	User may program any alarm for high or low trip point. Unused alarm LEDs and relays may be disabled (turn off).
<b>Relay Operation</b>	<ul style="list-style-type: none"> <li>Automatic (non-latching) and/or manual reset</li> <li>Latching (requires manual acknowledge) with or without clear</li> <li>Pump alternation control (2-4 relays)</li> <li>Sampling (based on set point and time)</li> <li>Off (disable unused relays and enable Interlock feature)</li> <li>Manual on/off control mode</li> </ul>
<b>Relay Reset (Acknowledge)</b>	User selectable via front panel button, F4 digital input, external contact closure on digital inputs, or through serial communications.
<b>Time Delay</b>	0 to 999.9 seconds, on & off relay time delays. Programmable and independent for each relay
<b>Fail-Safe Operation</b>	Programmable and independent for each relay <b>Note:</b> Relay coil is energized in non-alarm condition. In case of power failure, relay will go to alarm state.
<b>Auto Initialization</b>	When power is applied to the meter, relays will reflect the state of the input to the meter

## USB Connection

<b>Function</b>	Programming only
<b>Compatibility</b>	USB 2.0 Standard, Compliant
<b>Connector Type</b>	Micro-B receptacle
<b>Cable</b>	USB A Male to Micro-B Cable
<b>Driver</b>	Microsoft® Windows® 10/11
<b>Power</b>	USB port provides power to the meter. <b>DO NOT</b> apply AC or DC power to the meter while the USB port is in use.



### Isolated 4-20 mA Transmitter Output

<b>Output Source</b>	PV (temperature), max, min, set points 1-4, Modbus PV input, or manual control mode		
<b>Scaling Range</b>	1.000 to 23.000 mA for any display range		
<b>Calibration</b>	Factory calibrated: 0.0 to 2000.0 = 4-20 mA output		
<b>Analog Out Programming</b>	23.000 mA maximum for all parameters: Overrange, underrange, max, min, and break		
<b>Accuracy</b>	± 0.1% of span ± 0.004 mA		
<b>Temperature Drift</b>	0.4 $\mu$ A/°C max from 0 to 65°C ambient, 0.8 $\mu$ A/°C max from -40 to 0°C ambient <b>Note:</b> Analog output drift is separate from input drift.		
<b>Isolated Transmitter Power Supply</b>	Terminals I+ & R: 24 VDC ±10%. Used to power the 4-20 mA output. All models rated @ 25 mA max		
<b>External Loop Power Supply</b>	35 VDC maximum		
<b>Output Loop Resistance</b>	Power Supply	Minimum	Maximum
	24 VDC	10 $\Omega$	700 $\Omega$
	35 VDC (external)	100 $\Omega$	1200 $\Omega$

### RS-485 Serial Communications

<b>Compatibility</b>	EIA-485
<b>Connectors</b>	Removable screw terminal connector
<b>Max Distance</b>	3,937' (1,200 m) max
<b>Status Indication</b>	Separate LEDs for Power (P), Transmit (TX), and Receive (RX)

### Modbus® RTU Serial Communications

<b>Slave Id</b>	1 – 247 (Meter address)
<b>Baud Rate</b>	300 – 19,200 bps
<b>Transmit Time Delay</b>	Programmable between 0 and 199 ms
<b>Data</b>	8 bit (1 start bit, 1 or 2 stop bits)
<b>Parity</b>	Even, Odd, or None with 1 or 2 stop bits
<b>Byte-To-Byte Timeout</b>	0.01 – 2.54 second
<b>Turn Around Delay</b>	Less than 2 ms (fixed) Note: Refer to the ProtEX-MAX Modbus® Register Tables located at <a href="http://www.predig.com">www.predig.com</a> for details.

### Digital Input (F4)

<b>Function</b>	Remote operation of front-panel buttons, acknowledge/reset relays, reset max/min values.
<b>Contacts</b>	3.3 VDC on contact. Connect normally open contacts across F4 to COM
<b>Logic Levels</b>	Logic High: 3 to 5 VDC Logic Low: 0 to 1.25 VDC

### Digital Inputs & Outputs

<b>Function</b>	Terminals provided for remote operation of all four programming / operation buttons. Other uses include acknowledge/reset relays and reset max/min values.
<b>Channels</b>	5 digital inputs & 4 digital outputs
<b>Digital Input Logic High</b>	3 to 5 VDC
<b>Digital Input Logic Low</b>	0 to 1.25 VDC
<b>Digital Output Logic High</b>	3.1 to 3.3 VDC
<b>Digital Output Logic Low</b>	0 to 0.4 VDC
<b>Source Current</b>	10 mA maximum output current
<b>Sink Current</b>	1.5 mA minimum input current
<b>+5 V Terminal</b>	To be used as pull-up for digital inputs only. Connect normally open push buttons across +5 V & DI 1-4.

#### WARNING

- DO NOT** use +5 V terminal to power external devices.

### MeterView Pro Software

<b>Availability</b>	Download directly from meter or from <a href="http://www.predig.com/meterviewpro">www.predig.com/meterviewpro</a>
<b>System Requirements</b>	Microsoft® Windows® 10/11 USB 2.0 (for programming only)
<b>Communications</b>	USB 2.0 (for programming only) (USB A Male to Micro-B Cable) RS-485 to USB converter (programming, monitoring, and data logging)
<b>Configuration</b>	Configure meters one at a time
<b>Power</b>	USB port provides power to the meter. <b>DO NOT</b> apply AC or DC power to the meter while the USB port is in use.

## Enclosure

<b>Material</b>	AL Models: ASTM A413 LM6 die-cast aluminum, copper-free, enamel coated SS Models: ASTM A743 CF8M investment-cast 316 stainless steel
<b>Gasket</b>	Fluoroelastomer
<b>Rating</b>	NEMA 4X, IP68 Explosion-proof
<b>Color</b>	AL: Blue SS: Silver
<b>Window</b>	Borosilicate glass
<b>Conduits</b>	Four 3/4" NPT threaded conduit openings
<b>Conduit Stopping Plugs</b>	Sold separately
<b>Flanges</b>	Two built-in flanges for wall and pipe mounting
<b>Tamper-Proof Seal</b>	Cover may be secured with tamper-proof seal
<b>Overall Dimensions</b>	6.4" x 8.0" x 8.5" (163 mm x 202 mm x 215 mm) (W x H x D)
<b>Weight</b>	AL: 14.7 lbs (6.7 kg) SS: 23.5 lbs (10.7 kg)
<b>ATEX</b>	Ⓔ II 2 G D Ex db IIC Gb Ex tb IIIC Db IP66/IP68 Tamb: -55°C to +85°C Certificate No.: Sira 19ATEX1252U
<b>IECEX</b>	Ex db IIC Gb Ex tb IIIC Db IP66/IP68 Tamb: -55°C to +85°C Certificate No.: IECEX SIR 19.0075U
<b>CSA</b>	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.: CSA19.80011200U
<b>UL</b>	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 Db 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 approvals on the entire instrument.

## General Compliance Information

### Electromagnetic Compatibility

<b>Emissions</b>	EN 55022 Class A ITE emissions requirements
Radiated Emissions	Class A
AC Mains Conducted Emissions	Class A
<b>Immunity</b>	EN 61326-1 Measurement, control, and laboratory equipment EN 61000-6-2 EMC heavy industrial generic immunity standard
RFI - Amplitude Modulated	80 - 1000 MHz 10 V/m 80% AM (1 kHz) 1.4 - 2.0 GHz 3 V/m 80% AM (1 kHz) 2.0 - 2.7 GHz 1 V/m 80% AM (1 kHz)
Electrical Fast Transients	±2kV AC mains, ±1kV other
Electrostatic Discharge	±4kV contact, ±8kV air
RFI - Conducted	10V, 0.15-80 MHz, 1kHz 80% AM
AC Surge	±2kV Common, ±1kV Differential
Surge	1KV (CM)
Power-Frequency Magnetic Field	30 A/m 70%V for 0.5 period
Voltage Dips	40%V for 5 & 50 periods 70%V for 25 periods
Voltage Interruptions	<5%V for 250 periods

**Note:** Testing was conducted on meters with cable shields grounded at the point of entry representing installations designed to optimize EMC performance.

## Product Ratings and Approvals

<b>CSA</b>	Class I, Division 1, Groups B, C, D Class II, Division 1, Groups E, F, G Class III, Division 1, T5 Class III, Division 1, T6 (Ta max = 60°C) Ex db IIC T5 Ex db IIC T6 (Ta max = 60°C) Ex tb IIIC T90°C Ta = -55°C to +65°C Enclosure: Type 4X & IP66 / IP68 CSA Certificate: CSA 12 2531731
<b>ATEX</b>	II 2 G D Ex db IIC T* Gb Ex tb IIIC T90°C Db IP68 Ta = -55°C to +*°C *T6 = -55°C to +60°C *T5 = -55°C to +65°C Certificate Number: Sira 12ATEX1182X
<b>IECEX</b>	Ex db IIC T* Gb Ex tb IIIC T90°C Db IP68 Ta = -55°C to +*°C *T6 = -55°C to +60°C *T5 = -55°C to +65°C Certificate Number: IECEX SIR 12.0073X

### ATEX/IECEX Specific Conditions of Use:

1. The equipment label and epoxy coating may generate an ignition-capable level of electrostatic charges under certain extreme conditions. The user should ensure that the equipment is not installed in a location where it may be subjected to external conditions (such as high-pressure steam) which might cause a build-up of electrostatic charges on non-conducting surfaces. Additionally, cleaning of the equipment should be done only with a damp cloth.
2. Flameproof joints are not intended to be repaired.
3. All entry closure devices shall be suitably certified as "Ex d", "Ex t" and "IP66/68" as applicable. Suitable thread sealing compound (non-setting, non-insulating, non-corrosive, not solvent based, suitable for the ambient rating) must be used at the NPT conduit entries to achieve the IPx8 rating while maintaining the Ex protection concept.

### Year of Construction

This information is contained within the serial number with the first four digits representing the year and month in the YYMM format.

### For European Community

The ProtEX-MAX must be installed in accordance with the ATEX directive 2014/34/EU, the product manual, and the product certificate Sira 12ATEX1182X.

### WARNING

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

### Disclaimer

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## ORDERING INFORMATION

ProtEX-MAX PD8-7000 • Aluminum Enclosure		
85-265 VAC Model	12/24 VDC Model	Options Installed
PD8-7000-6H0	PD8-7000-7H0	None
PD8-7000-6H7	PD8-7000-7H7	4 Relays & 4-20 mA Output

ProtEX-MAX PD8-7000 • Stainless Steel Enclosure		
85-265 VAC Model	12/24 VDC Model	Options Installed
PD8-7000-6H0-SS	PD8-7000-7H0-SS	None
PD8-7000-6H7-SS	PD8-7000-7H7-SS	4 Relays & 4-20 mA Output

Accessories	
Model	Description
PDAPLUG75	3/4" NPT 316 Stainless Steel Stopping Plug with Approvals
PDA-SSTAG	Stainless Steel Tag
PDA6848-SS	Pipe Mounting Kit Stainless Steel
PDA7485-I	RS-232 to RS-422/485 Isolated Converter
PDA8485-I	USB to RS-422/485 Isolated Converter

**Your Local Distributor is:**

LDS8-7000\_G 04/25