PD8-6100 Explosion-Proof Strain Gauge, Load Cell & mV Meter Data Sheet









MeterView Pro

USB Install

- CSA Certified Explosion-Proof Meter
- 0-20 mA, 4-20 mA, 0-5 V, 1-5 V, and ±10 V Field Selectable Inputs with ±0.03% Accuracy
- Dual-Line 6-Digit Display,
 0.6" (15 mm) & 0.46" (12 mm)
- SafeTouch Through-Glass Button Programming
- Display Mountable at 0°, 90°, 180°, & 270°
- Isolated 24 VDC @ 25 mA Transmitter Power Supply
- Easy Field Scaling in Engineering Units without Applying an Input
- 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

- Input Power Options: 85-265 VAC / 90-265 VDC or 12-24 VDC / 12-24 VAC
- Display Input in Two Different Scales
 Simultaneously Great for Level Applications
- Multi-Pump Alternation Control
- Round Horizontal Tank Function;
 Just Enter Diameter & Length
- 32-Point Linearization, Square Root Extraction and Programmable Exponent Function
- Password Protection
- 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
- Four 3/4" NPT Threaded Conduit Openings
- Pipe Mounting Kits
- Stainless Steel Tag Available
- 3-Year Warranty



The Complete **Protex** Series





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® Scanner
with Dual Analog Input



PD8-6363
Pulse Dual-Input
Flow Rate/Totalizer



PD8-6081
Feet & Inches
Modbus® Scanner



PD8-7000 **Temperature Meter**



FEATURE RICH AND FLEXIBLE

The ProtEX-MAX PD8-6100 is a full-featured multipurpose, easy-to-use digital strain gauge & load cell meter ideal for weight and force measurement applications and is certified by CSA as Explosion-Proof / Dust-Ignition-Proof / Flame-Proof. It accepts mV input signals up to 300 mV (unipolar) and \pm 250 mV (bipolar). The PD8-6100's powerful dual-scale capability allows the measurement to be displayed in two different units of measure.

KEY FEATURES

Precise, Accurate, and More Informative

ProtEX-MAX's large 0.6" upper display provides a highly accurate and precise 6-digit view of the process measurement. Its 24-bit A/D is accurate to ±0.03% of calibrated span ±1 count.



mV & Setpoint



Net & Gross



Weight & Max (Peak)

Configurable

The upper display can be programmed to indicate PV, maximum (peak), minimum (valley), alternating maximum/minimum, one of eight alarm set points, or Modbus input. The lower display can also be configured to display engineering units, set points, user defined legends, or simply turned off.

SafeTouch Button Programming



The ProtEX-MAX 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. The SafeTouch buttons are configured by default to duplicate the function of the front panel

mechanical pushbuttons associated with the integrated meter.

Standard SunBright LED Display

The ProtEX-MAX's SunBright display features extraordinarily bright LEDs. They are perfect for indoor and outdoor applications where visibility may be impaired by smoke, fog, dust, or distance or even in direct sunlight.

Free 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. The software will allow you to configure, monitor, and datalog a ProtEX-MAX PD8-6100 using your PC. Just simply connect the meter to your PC with the USB cable and within minutes you will be programming it.



Zero the Meter

The zero function zeroes out the display. In the case where there has been drift in the strain gauge output over time, zero is used to eliminate this drift and provide a true zero reading. For example, if an empty scale were to display a value other than zero, the zero function would tell the meter to show zero regardless of the current input signal.

Capture Tare

The tare function also zeroes out the display. In the case of scale weight, tare is used to eliminate container weight and provide net weight readings. If the tare value is a known constant, such as a container weight, this may be programmed in manually. The captured tare may be reset manually with any function key or digital input.







Before tare

After capture tare

After reset tare

Automatic Unit Conversion

In addition to entering a custom unit or tag, pre-defined engineering units may be selected: lb, kg, ounce, gram, ton (short), tonne (metric ton). Automatic unit conversions are done when switching between pre-defined units, without the need for additional scaling. The meter converts the reading according to the unit selected (e.g. 100.00 lb = 45.36 kg = 45359.2 g = 1600 oz).

Auto-Zero

The auto-zero feature corrects for drift that can occur over time that causes the input signal to slowly change. The meter will continue to read zero despite slow and small changes to the input signal around zero. The auto-zero sensitivity is set by the user as a percent of full scale.

Rounding

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, 10, 20, 50, or 100). For example, with a rounding value of 10, and a input of 12346, the display would indicate 12350.

Shunt Calibration Check

The PD8-6100 is equipped with a means of simulating strain in a strain gauge bridge circuit, via an included shunt resistor in the meter. This technique can be used as a means of verifying the meter setup and output behavior by simulating a physical input. With no load connected, the enabling of the shunt resistor will simulate a 70% full scale load in the case of a 350Ω Strain Bridge.

Ratiometric Compensation

This feature compensates for changes in the strain gauge input signal that are due to variations in the internal or external excitation voltage. The compensation is effective for up to $\pm 5\%$ variation in the excitation power supply.

Function Keys

There are three function keys available to the user. These keys can be programmed to trigger certain events (e.g. tare the display, reset the tared display, zero the displayed value, acknowledge alarm states, etc.), provide direct menu access points, and more.

Dual-Scale Display Feature

The ProtEX-MAX PD8-6100 has a rather unique, and very flexible dual-scale capability; a second scaled display can represent the measured input in a different form (i.e. gallons & height). This is of particular value in level applications. Please see the examples shown below. Beyond level, this function has been used for pressure & force, weight & piece count, feet & meters, and more.





Volume & Height

Pressure & mV

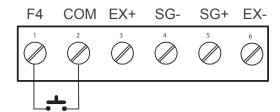
Advanced Linearization Capability

The ProtEX-MAX includes a 32-point linearizer. In non-linear level applications (i.e. some pumping or lift stations), it can easily compensate for submerged equipment or plumbing that displace usable volume. A second independent 8-point linearizer is available for a second scaled display (PV2) when the dual scale feature is enabled. Precision Digital's free MeterView Pro PC-based software greatly simplifies the construction of the linearization tables. The software can save this data to the meter and/or PC.

On-Board Digital Input

The PD8-6100 includes a digital input as a standard feature. This digital input 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. This is ideal for installations where the meter is inaccessible behind a cover, or where an additional function key is needed for customized operation.

INPUT SIGNAL



METERVIEW® PRO SOFTWARE

Configure, monitor, and datalog a ProtEX-MAX PD8-6100 from a PC using MeterView Pro Software available via USB or for download at www.predig.com).

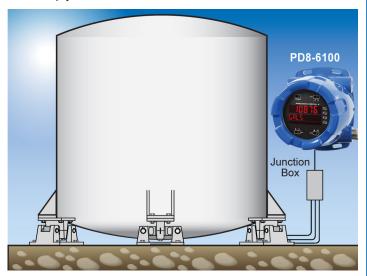




APPLICATION

Load Cell

A typical application for load cells is in a tank weighing operation. In the following example, this three-legged tank has a load cell under each leg. The three load cells are wired locally in parallel within a junction box. The combined signals are then connected to the PD8-6100. During field calibration, the weight of the empty tank (zero point) and the full tank weight (full scale) are programmed into the meter. Over time, the tare feature on the PD8-6100 can account for obstacles like sludge buildup on the bottom of the tank when empty.



DIGITAL COMMUNICATIONS

Modbus® RTU Serial Communications

With the purchase of a serial communication adapter, ProtEX-MAX meters can communicate with any Modbus Master device using the ever-popular Modbus communications protocol that is included in every ProtEX-MAX. This greatly increases the flexibility of the meter. Modbus provides much more capability than read PV and write set points. Below are some examples of other things that can be done with ProtEX-MAX'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

OUTPUTS

Relay Outputs



The ProtEX-MAX is available with four 3 A Form C relays (SPDT) with multiple power loss fail-safe options. Relays can be configured for proper protective action upon input loop break. Relay ON and OFF delay times are user adjustable. Up to eight front panel indicators show alarm and/or relay state. All relays can be configured for 0-100% deadband.

Relay Operation/Configuration

There are powerful relay functions that can be configured in the ProtEX-MAX meter, including:

- · Automatic reset only (non-latching)
- Automatic + manual reset at any time (non-latching)
- Latching (manual reset only)
- Latching with clear (manual reset only after alarm condition has cleared)
- Pump alternation control (automatic reset only)
- Sampling (activated for a user-specified time)
- · User selectable fail-safe operation
- · Time delay (on and off), independent for each relay
- · Manual control mode
- · Interlock relay mode

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.

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 (1-8) flash every 10 seconds indicating that the meter is in manual control mode.

Isolated Transmitter Power Supplies

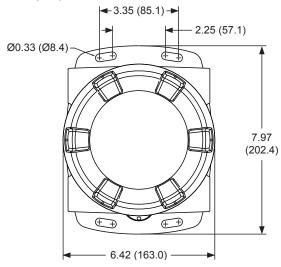
A powerful isolated power supply is a standard feature on the ProtEX-MAX meter. It can be configured for 5, 10 (default), or 24 V (not to be used with strain gauge or load cell) by means of a simple internal jumper (see manual). An additional power supply (24 V @ 25 mA) is standard with the 4-20 mA output option.

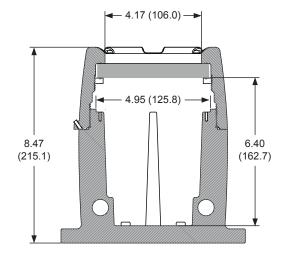
ProtEX VIDEOS

Vist our archive at predig.com/videos to watch a video on the ProtEX-MAX Family of Explosion-Proof Meters. Here, you will also find other videos on the ProtEX Series including videos on loop powered process meters, feet and inches level meters, and flow rate/totalizers. Also, see the SafeTouch through-glass button programming in action.

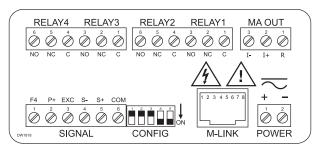
DIMENSIONS

Units: Inches (mm)





CONNECTIONS



▲ Connector Labeling for Fully Loaded PD8-6100

SPECIFICATIONS

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

General

Display: Upper display: 0.60" (15 mm) high. Lower display: 0.46" (12 mm) high. Both are 6 digits (-99999 to 999999), red LEDs.

Display Intensity: Eight intensity levels Display Update Rate: 5/second (200 ms) Overrange: Display flashes 999999 Underrange: Display flashes -99999

Display Assignment: The displays may be assigned to PV1, PV2, PCT, max & min, set points, PV & units, units (lower display only), net & gross weight, Modbus input, and display millivolts.

Units: lb, kg, ounce, gram, ton, metric ton (tonne), custom units. Programming Methods: Four SafeTouch through-glass buttons when cover is installed. Four internal pushbuttons when cover is removed. F4 Digital Input Contacts: 3.3 VDC on contact. Connect normally open contacts across F4 to COM.

F4 Digital Input Logic Levels: Logic High: 3 to 5 VDC Logic Low: 0 to 1.25 VDC

Noise Filter: Programmable from 2 to 199 (0 will disable filter) Filter Bypass: Programmable from 0.1 to 99.9% of calibrated span **Rounding:** Select 1, 2, 5, 10, 20, 50, or 100 (e.g. rounding = 10, value = 123.45, display = 123.50).

Recalibration: All ranges are calibrated at the factory. 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 cycled.

Password: Three programmable passwords restrict modification of programmed settings.

Non-Volatile Memory: All programmed settings are stored in non-volatile memory for a minimum of ten years if power is lost. Power Options: 85-265 VAC 50/60 Hz, 90-265 VDC, 20 W max, or optional model with 12-24 VDC ±10%, 15 W max.

Fuse: Required external fuse: UL Recognized, 5 A max, slow blow; up to 6 meters may share one 5 A fuse.

Normal Mode Rejection: Greater than 60 dB at 50/60 Hz Isolation: 4 kV input/output-to-power line. 500 V input-to-output (powered by external supply).

Overvoltage Category: Installation Overvoltage Category II: Local level with smaller transient overvoltages than Installation Overvoltage Category III.

Environmental: 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%

Max Power Dissipation: Maximum power dissipation limited to 15.1 W. Connections: Removable screw terminal blocks accept 12 to 22 AWG wire, RJ45 for external relays, digital I/O, and serial communication

Mounting: Two slotted flanges for wall mounting or NPS 11/2" to 21/2" or DN 40 to 65 mm pipe mounting. See Mounting Dimensions in the PD8-6060 instruction manual.

Overall Dimensions: 6.42" x 7.97" x 8.47" (W x H x D) (163 mm x 202 mm x 215 mm)

Weight: Aluminum: 14.7 lbs (6.67 kg); Stainless Steel: 23.5 lbs (10.66 kg)

Warranty: 3 years parts & labor

USB Connection: Compatibility: USB 2.0 Standard, Compliant. Connector Type: Micro-B receptacle. Cable: USB A Male to Micro-B Cable. Driver: Windows 98/SE, ME, 2000, Server 2003/2008, XP 32/64-Bit, Vista 32/64-Bit, Windows 7 32/64-Bit, Windows 10 32/64-Bit. Power: USB Port.

Strain Gauge Input

Inputs: Field selectable: 0-15, 0-30, 0-150, 0-300 mV, ±15, ±25, ±150,

±250 mV, or Modbus PV (Slave)

Accuracy: ±0.03% of calibrated span ±1 count

Temperature Drift: 0.002% of calibrated span/°C max from 0 to 65°C ambient, 0.005% of calibrated span/°C max from -30 to 0°C ambient

Function: Linear with multi-point linearization

Low-Flow Cutoff: 0-999999 (0 disables cutoff function)

Decimal Point: Up to five decimal places or none: d.ddddd. dd.dddd.

ddd.ddd, dddd.dd, ddddd.d, or dddddd.

Calibration Range:

Minimum Span Input 1 & Input 2 Input Range

15 mV 0.2 mV 25 mV, 30 mV 0.4 mV 150 mV 2.0 mV 4 0 mV 250 mV, 300 mV

An Error message will appear if the input 1 and input 2 signals are too

Input Impedance: Strain Gauge Bridge: Greater than 10 MΩ

mV Source: 200 $k\Omega$

Isolated Excitation Power Supply: Terminals Ex+ & Ex- may be used for sensor excitation, 10 VDC or 5 VDC ±10% @ 25 mA max. Field selectable for 10 VDC excitation voltage to operate up to two 1000 Ω strain gauges, or 5 VDC excitation voltage to operate up to four 1000 Ω strain gauges or one 350 Ω strain gauge. For safe area only, not agency approved installations, Ex+ & Ex- may be used for sensor excitation; 10 VDC or 5 VDC ±10% @ 350 mA max.

Relays

Rating: 4 SPDT (Form C) internal and/or 4 SPST (Form A) external; rated 3 A @ 30 VDC and 125/250 VAC resistive load; 1/14 HP (≈ 50 watts) @ 125/250 VAC for inductive loads.

Noise Suppression: Noise suppression is recommended for each relay contact switching inductive loads.

Deadband: 0-100% of span, user programmable

High or Low Alarm: User may program any alarm for high or low trip point. Unused alarm LEDs and relays may be disabled (turned off).

Relay Operation: automatic (non-latching), latching (requires manual acknowledge), sampling (based on time), pump alternation control (2 to 8 relays), Off (disable unused relays and enable interlock feature, manual on/off control mode).

Relay Reset: User selectable via front panel buttons or digital inputs.

- 1. Automatic reset only (non-latching), when input passes the reset point.
- 2. Automatic + manual reset at any time (non-latching).
- 3. Manual reset only, at any time (latching).
- 4. Manual reset only after alarm condition has cleared (latching).

Note: Front panel button or digital input may be assigned to acknowledge relays programmed for manual reset.

Time Delay: 0 to 999.9 seconds, on & off relay time delays.

Programmable and independent for each relay.

Fail-Safe Operation: Programmable and independent for each relay. Note: Relay coil is energized in non-alarm condition. In case of power failure, relay will go to alarm state.

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

Serial Communications

Protocol: Modbus RTU

Slave ID: 1 - 247 (Meter address) Baud Rate: 300 - 19,200 bps

Transmit Time Delay: Programmable between 0 and 199 ms or

transmitter always on for RS-422 communication

Data: 8 bit (1 start bit, 1 or 2 stop bits) Parity: Even, odd, or none with 1 or 2 stop bits Byte-to-Byte Timeout: 0.01 - 2.54 seconds Turn Around Delay: Less than 2 ms (fixed)

Note: Refer to the PRoVu Modbus Register Tables located at www.predig.com for details.

Isolated 4-20 mA Transmitter Output

Output Source: Process variable (PV), max, min, set points 1-8, manual

control setting, or Modbus input

Scaling Range: 1.000 to 23.000 mA for any display range Calibration: Factory calibrated: 0.00 to 100.0 = 4-20 mA output Analog Output Programming: 1.000 mA minimum and 23.000 mA maximum for all parameters: Overrange, underrange, max, min, and break

Accuracy: ± 0.1% of span ± 0.004 mA

Temperature Drift: 0.4 μA/°C max from 0 to 65°C ambient, 0.8 μA/°C max from -40 to 0°C ambient Note: Analog output drift is separate from

Isolated Transmitter Power Supply: Terminals I+ & R: 24 VDC ± 10%. Isolated from the input at >500 V. May be used to power the 4-20 mA output or other devices (except load cell/strain gauge). All models @ 25 mA max.

External Loop Power Supply: 35 VDC maximum

Output Loop Resistance:

Power supply Minimum Maximum 24 VDC 10 Ω 700 Ω

35 VDC (external) 100 Ω 1200 Ω

Enclosure

Material: AL Models: ASTM A413 LM6 die-cast aluminum, copper-free, enamel coated. SS Models: ASTM A743 CF8M investment-cast 316

stainless steel

Gasket: Fluoroelastomer

Rating: NEMA 4X, IP68 Explosion-proof

Color: AL: Blue. SS: Silver. Window: Borosilicate glass

Conduits: Four 3/4" NPT threaded conduit openings

Conduit Stopping Plugs: Sold separately

Flanges: Two built-in flanges for wall and pipe mounting.

Tamper-Proof Seal: Cover may be secured with tamper-proof seal. Overall Dimensions: 6.42" x 7.97" x 8.47" (W x H x D) (163 mm x 202 mm

Weight: AL: 14.7 lbs (6.67 kg). SS: 23.5 lbs (10.66 kg).

ATEX: Flameproof protection

 II 2GD Ex db IIC Gb Ex tb IIIC Db IP66/IP68

Tamb: -55°C to +85°C

Certificate No.: Sira 19ATEX1252U IECEx: Flameproof and dust protection

Ex db IIC Gb Ex tb IIIC Db

IP66/IP68 Tamb: -55°C to +85°C

Certificate No.: IECEx SIR 19.0075U CSA: Class I, Division 1, Groups A, B, C, D

Class II, Division 1, Group E, F, G

Ex db IIC Gb

Ex tb IIIC Db

Class I, Zone 1, AEx db IIC Gb Zone 21. AEx tb IIIC Db

IP66/IP68/TYPE 4X Tamb: -55°C to +85°C Certificate No.: 80011200

UL: Class I, Division 1, Groups A, B, C, D

Class II, Division 1, Groups E, F, G

Class III

Class I, Zone 1, AEx db IIC Gb

Zone 21, AEx tb IIIC Ex db IIC Gb Ex tb IIIC Db IP66/IP68/TYPE 4X Tamb: -55°C to +85°C Certificate Number: E518920

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

General Compliance Information

Electromagnetic Compatibility

Emissions

EN 55022

Class A ITE emissions requirements Radiated Emissions: Class A

AC Mains Conducted Emissions: Class A

Immunity

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

CSA: Class I, Division 1, Groups B, C, D Class II, Division 1, Groups E, F, G

Class III, Division 1 Class I Zone 1 Ex db IIC Zone 21 Ex tb IIIC T90°C

-55°C < Tamb. < +60° C; Temperature Code T6 -55°C < Tamb. < +65° C; Temperature Code T5

Enclosure Type 4X & IP66 / IP68 Certificate Number: 2531731

Special Conditions for Safe Use:

Use suitably certified and dimensioned cable entry device and/or plug. The equipment shall be installed such that the supply cable is protected from mechanical damage. The cable shall not be subjected to tension or torque. If the cable is to be terminated within an explosive atmosphere, then appropriate protection of the free end of the cable shall be provided. Cable must be suitable for 90°C.

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.

ORDERING INFORMATION

ProtEX-MAX PD8-6100 • Aluminum Enclosure		
85-265 VAC Model	12-24 VDC Model	Options Installed
PD8-6100-6H0	PD8-6100-7H0	None
PD8-6100-6H7	PD8-6100-7H7	4 Relays & 4-20 mA Output
Note: 24 V Transmitter power supply standard on all models.		

ProtEX-MAX PD8-6100 • Stainless Steel Enclosure		
85-265 VAC Model	12-24 VDC Model	Options Installed
PD8-6100-6H0-SS	PD8-6100-7H0-SS	None
PD8-6100-6H7-SS	PD8-6100-7H7-SS	4 Relays & 4-20 mA Output
Note: 24 V Transmitter power supply standard on all models.		

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

Your Local Distributor is:



46, Jalan SS 22/21, Damansara Jaya, 47400 Petaling Jaya, Selangor Darul Ehsan, Malaysia.

Email: nog@nog.com.my Website: www.nog.com.my



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

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