

Digital Meters & Controllers

2005-2006 Catalog



**Flow
Level
Pressure
Temperature**



Over 30 Years of Service



Jeffrey L. Peters
President

WE have been very busy over the past two years and are excited to tell you about it in the biggest and best catalog in our 31-year history. The catalog is divided into two sections to make it easy to use. The first section of the catalog gives you a quick overview of the most important features of our products and services. The second section contains detailed specifications, drawings, and ordering information to help you specify the exact product you need.

The 2005-2006 Catalog contains more new products and services than any of our previous catalogs. Be sure to check out the "What's New" section to learn about them.

We hope the 2005-2006 Catalog will be your first source for digital displays and process control instrumentation. Keeping it handy will make your work easier.

Our Pledge to You!

We are dedicated to provide you with the widest range of high quality digital displays and controllers for the process industry. When you buy from Precision Digital, you will get:

- Expert Technical Assistance to Help You Specify What You Need, Get it Running, and Keep it Running
- Responsive and Caring Customer Service to Process Your Orders On-Time, Properly and as Specified
- Extensive Inventory and Quick Shipment Program Products for Fast Delivery of the Products You Need

**ISO 9001:2000
Certified
Quality System**



**Your Complete Source for
Digital Meters, Controllers
& Digital Pressure Gauges**
www.predig.com

Instruction Manuals and Data Sheets

- 100% digitally generated
- Extra large drawings for easy reading
- Available 24 hours a day!

**Approvals to
Worldwide Standards**



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SETUP, CALIBRATION & WARRANTY SERVICES

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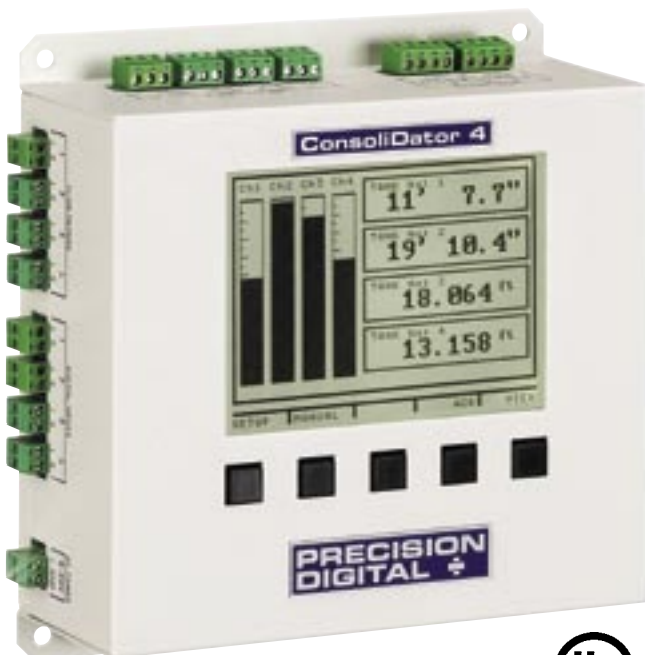
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What's New

WE have listened to our customers and believe that by developing new products and expanding our product line, Precision Digital will continue as a leading supplier of digital instrumentation for process and automation control applications.

CONTENTS

- PD900 ConsoliDator Multi-Channel Controllers
- PD500 Nova Process & Temperature Controllers
- PD740 Javelin T Low-Cost Temperature Meter
- PD644 Javelin D High-Voltage DC Meter
- PD865 Snooper Modbus Serial Input Meter
- PD602 Dart Low-Cost Process Meter
- PD685 General Purpose Loop-Powered Meter
- Fluidwell Totalizers & Batch Controllers
- Digital Pressure Gauges
- LabVIEW Driver for PD765 Trident
- Setup, Calibration & Warranty Services



PD500 Nova Series Process & Temperature Controllers

From simple temperature indication and on/off control to auto-tuning PID control applications, the Nova Series Process & Temperature Controllers can handle them with ease and at a high degree of accuracy.

See pages 39-49 for more information.



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PD740 Javelin T **Low-Cost Temperature Meter**

The new PD740 Javelin T Low-Cost Temperature Meter has the functionality of the PD765 Trident Meter temperature inputs. It comes with built-in RS-485 serial communications, which makes it easy to integrate with other devices.

See page 28 for more information.

PD644 Javelin D **High-Voltage DC Meter**

The new PD644 Javelin D High-Voltage Meter accepts 0-300 VDC input. It comes with built-in 4-20 mA analog output, which makes it ideal for Variable Frequency Drive (VFD) applications.

See page 28 for more information.



PD865 Snooper **Modbus® Serial Input Meter**

Expand the capability of other Modbus RTU serial devices with the new PD865 Snooper. It has a six-digit sunlight readable display and may be set up as a master or slave. The PD865 comes with RS-485 communications, two relays standard, and up to four relays plus one 4-20 mA output.

See page 29 for more information.



What's New

PD602 Dart Low-Cost Process Meter

The PD602 Dart Low-Cost Process Meter is easy to set up and calibrate. There are no menus or buttons to deal with, simply apply the signal and adjust the trim pots at the front for the desired reading.

See page 29 for more information.



PD685 General Purpose Loop-Powered Meter

The PD685 General Purpose Loop-Powered Meter is an economical alternative for applications where FM Approval or CSA Certification is not required.

See page 35 for more information.

Fluidwell Totalizers & Batch Controllers

Precision Digital Corporation is the exclusive North & South American agent for Fluidwell products. Fluidwell offers a wide selection of indicators, totalizers, batch controllers, and monitoring systems for liquid and gas flow applications as well as level, pressure, and temperature.

See pages 52-55 for more information.



Digital Pressure Gauges

These multi-function digital pressure gauges are a great solution that will save you time, money, and space. They are loaded with features such as large numeric and bargraph backlit LCD, 4-20 mA output, and relay options. Battery power is standard; loop-power and 12-36 VDC power are optional.

See pages 50-51 for more information.



LabVIEW™ Driver for PD765 Trident Meter

Integration of the PD765 into LabVIEW systems is easy with the PD765 plug & play LabVIEW instrument driver. The PD765 may be configured entirely within the LabVIEW environment, relays may be acknowledged, and data logging applications may be developed easily.

The PD765 LabVIEW driver is free and available for download at www.ni.com.



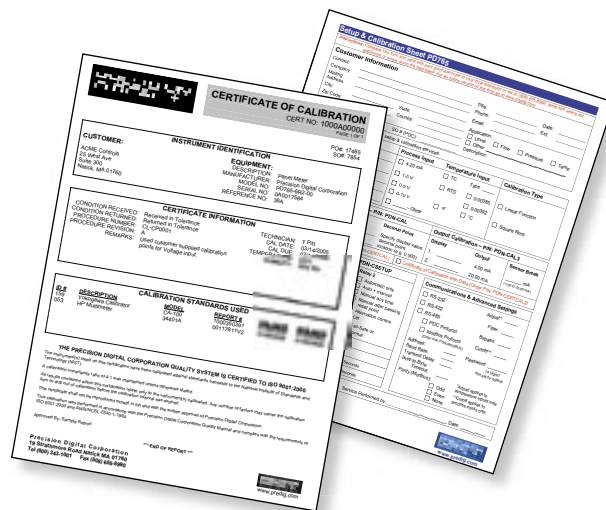
Setup, Calibration & Warranty Services



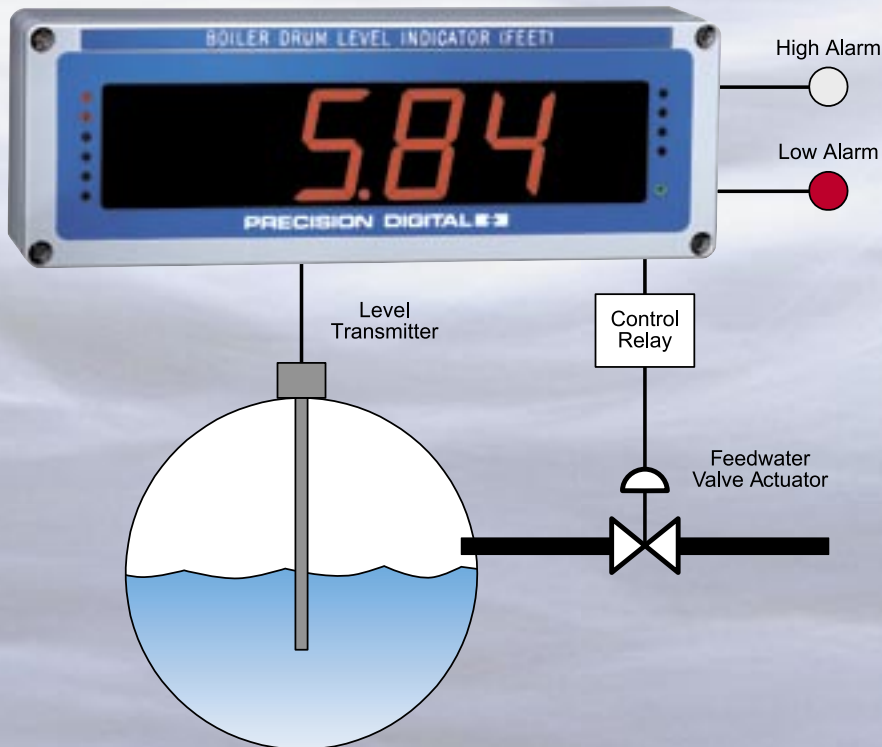
For your convenience Precision Digital offers setup & calibration services for most of its products at very competitive prices. Setup & calibration sheets are available to make it easier to specify desired setup. Order the Lifetime Calibration and forget about paying for recalibration again for as long as you own the product.

You may also purchase one or two years of extended warranty for most products.

See page 160 for more information.



On the **LEVEL**



Applications

- Sump pump control
- Well level monitoring
- Lift station level control
- Round horizontal tank
- Dam level monitoring
- Boiler drum level

Boiler Drum Level

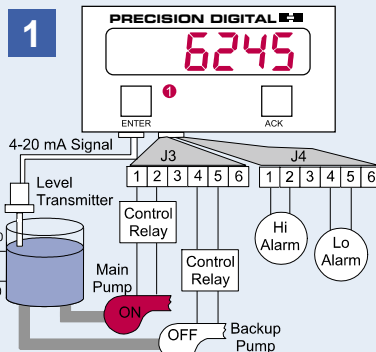
The PD650 monitors and controls the boiler drum level. This is critical for personnel safety and plant protection. High and low level alarms alert the operator of dangerous conditions.

Products: PD690, PD692, PD650, PD655, PD656

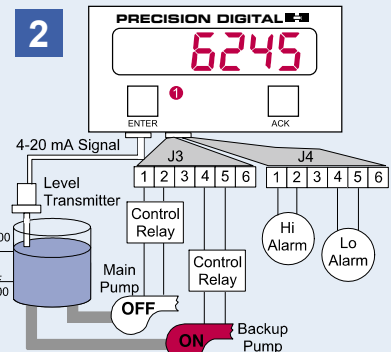
Pump Alternation Control

Extend the life of your pumps and reduce maintenance cost with the Pump Alternation Control feature.

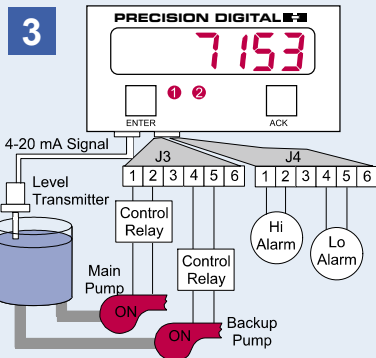
Products: PD692, PD650, PD655, PD656, ConsoliDator PD940, PD941, PD980, PD981



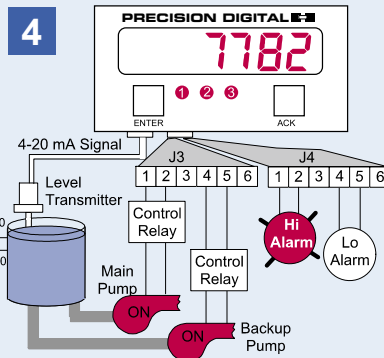
Relay #1 turns the main pump on at 6000 gallons and turns off at 1000 gallons.



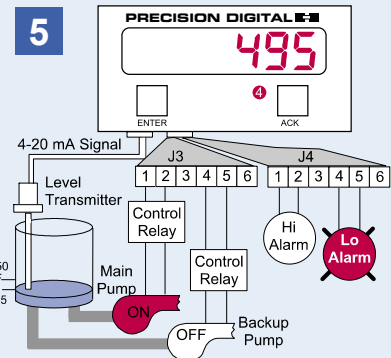
With the Pump Alternation feature activated, the next time the level reaches 6000 gallons, relay #2 trips and starts the backup pump.



The backup pump is not able to keep up, so when the level reaches 7000 gallons, relay #1 trips and starts the main pump.



Relay #3 trips the High Level Alarm at 7500 gallons and resets at 6900 gallons.



Relay #4 trips the Low Level Alarm at 495 gallons and resets at 750 gallons.

with Precision Digital Meters

Tank Farm Level Monitoring

- Monitor up to eight tanks
- Bargraphs and numeric screens
- Pump alternation control
- Low and high alarms
- RS-232 Modbus RTU

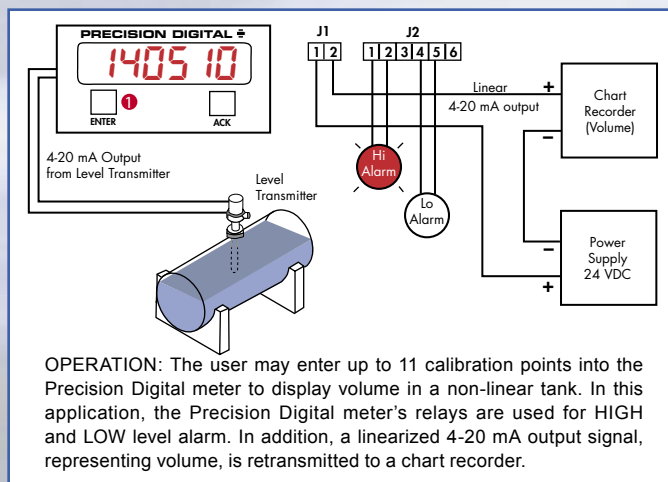
Products: ConsoliDator PD940, PD941, PD980, PD981



4-20 mA
Level
Transmitters



Volume of Non-Linear Tanks



Products: PD690, PD692, PD650, PD655, PD656,
ConsoliDator PD940, PD941, PD980, PD981

Local & PC Monitoring

- Local level display
- Control room PC display & logging

Products: PD765 & MeterView® Software or LabVIEW



Point Level Monitoring

- Powers the level switch
- Built-in horn
- Form C 2 A relay
- Free message labels

Product: PD141AFO VIGILANTE®



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Know Your **FLOW**

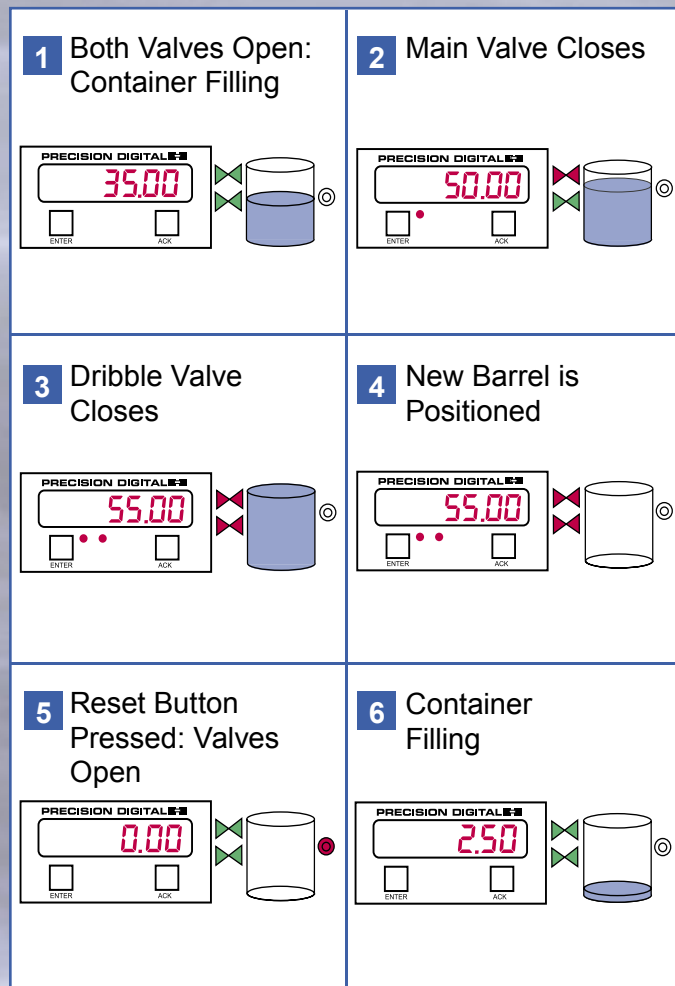
Applications

- Flow rate & integrating totalizer
- Automatic & manual batch control
- Open channel flow
- Analog & pulse inputs

Manual Batch Control

- Priority batch programming
- Economical batch control solutions
- One to four stage control

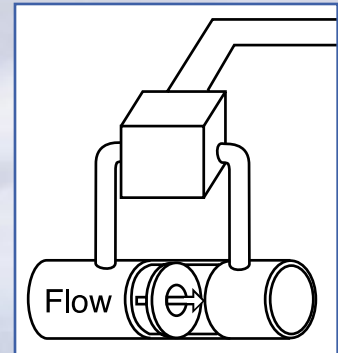
Products: PD692, PD693, PD650, PD655, PD656,
Fluidwell F-Series



Square Root Function

- Display flow rate
- Low-flow cutoff
- Two-point calibration

Products: PD690, PD692, PD650,
PD655, PD656, PD696-698, PD765,
Fluidwell F-Series



Local Display for Flowmeters... Even Those with Built-in Display!



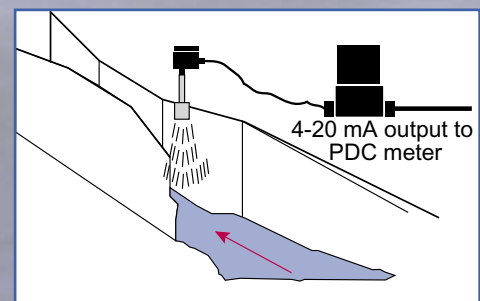
- Easier to read
- Less confusing
- Backlit for night viewing

Products: PD696-PD698,
Fluidwell F-Series



Open Channel Flow Rate & Total

- Programmable root function for weirs and flumes



Products: PD692, PD650, PD655, PD656

with Precision Digital Meters

Applications

- 4-20 mA flow transmitters
- Magnetic pickup flowmeters
- Flow rate monitoring
- Flow totalizer
- Low-flow alarm
- High-flow alarm

Products: ConsoliDator
PD940, PD941, PD980, PD981



Applications

- Analog or pulse inputs
- NPN/PNP transistor
- NAMUR sensors
- Magnetic pickup flowmeters
- Flow rate monitoring
- Flow totalizer & batch controller
- Ratio between additive & total flow
- Low & high-flow alarm control
- 4-20 mA analog output
- Pulse output for accumulated total
- Explosion-proof or intrinsically safe

Products: Fluidwell F-Series



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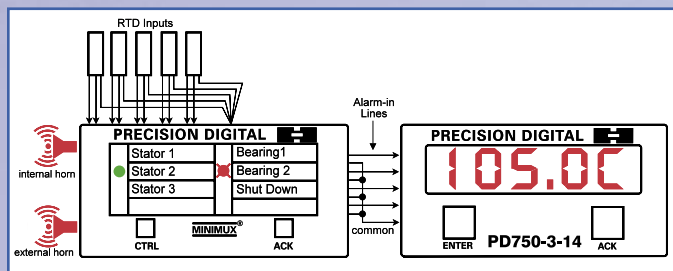
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Take the **TEMPERATURE**

Temperature Applications

- Bearing temperature monitoring
- Thermocouples and RTDs
- High temperature alarms
- Temperature transmitting

Bearing Temperature Monitoring



Products: PD118, PD750

- PD118 scans up to 8 inputs
- Automatically switches them to PD750-3-14
- PD750-3-14 checks for alarm condition
- PD118 indicates alarm condition

Wax Reclaim Temperatures



- Enclosures with custom labels available
- Plastic, steel, or stainless steel
- Up to ten meters per enclosure

Products: PD765, PD740, Trident Enclosures

Exp-Proof Temperature Transmitter with Big Display

- TC or RTD input
- Isolated, linearized 4-20 mA output
- Big, 0.8" LED

Product: PD756



Temperature Controllers

- Electric heaters
- Plastic processing
- Environmental chambers
- Process control



Digital Controller

- 4 selectable set points
- Run/Stop timer
- Heating & cooling control
- Auto-tuning PID

Products: PD540 Series



Programmable Controller

- Ramp & Soak controller with two-program capacity
- 15 segments per program
- Auto-tuning PID

Products: PD550 Series



Digital Meter

- Max/Min display
- 4-20 mA output
- Up to 3 alarm relays

Products: PD560 Series



Limit Controller

- Latching relay
- Max/Min display
- Over limit timer

Products: PD570 Series

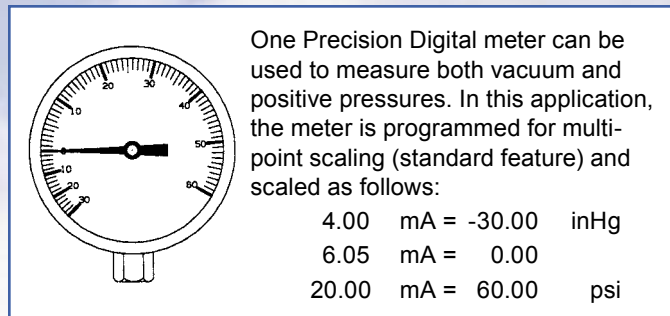


Handle the **PRESSURE**

Pressure Applications

- Differential pressure display
- Compound pressure
- Submersible pressure transducers

Compound Pressure



Products: PD690, PD692, PD650, PD655, PD656

Pressure Measurement in Div 2 Area



- Loop-powered
- Display up to 19,999
- Big display

Products: PD675, PD686



Boiler Pressure Monitoring

- First-out indication for troubleshooting
- Momentary & maintained alarms
- Free message labels

Product: PD141AFO VIGILANTE®



Industrial Digital Pressure Gauge

- Extra large display
- Backlit for easy viewing
- Relays & 4-20 mA output

Products: PD214, PD224



Pressure Measurement in Hazardous Locations

- 0.05%, 0.1%, or 0.25% accuracy
- Intrinsically safe Class I, Div 1
- Twelve engineering units

Products: PD253, PD243, PD233

ConsoliDator 4

HIGHLIGHTS

- Four 4-20 mA inputs
- Four pulse inputs
- Four digital inputs
- Four 4-20 mA outputs
- Nine Form C 10 A relays
- RS-232 Modbus® RTU
- 32-point linearization
- Square root function
- Sum & difference functions



► **Model PD940**

Features & Benefits

- Easy to read backlit LCD
- Readable in direct sunlight
- Bargraphs & numeric screens
- Easy to set up & program
- Set up with front panel keys
- Intuitive menus in English
- Detailed individual screens
- Input simulation feature
- Low-flow cutoff
- Powered from AC or DC
- Panel or wall mount
- RS-232 Modbus® RTU
- FREE Programming & data logging software

Multi-Channel Controllers

ConsoliDator 8

HIGHLIGHTS

Eight 4-20 mA inputs

Four pulse inputs

Four digital inputs

Two 4-20 mA outputs

Nine Form C 10 A relays

RS-232 Modbus® RTU

32-point linearization

Square root function

Sum & difference functions



► Model PD981

Applications

- Tank level monitoring
- Sump pump control
- Lift station level control
- Dam level indication
- Well level monitoring
- Boiler drum level
- Pump alternation control
- Analog & pulse inputs
- Flow rate & total display
- Temperature transmitters
- Pressure transmitters
- Gas detection systems
- Plunger lift systems
- Alarm & control relays

See pages 70-72 for complete specifications.

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Programming

MAIN SETUP MENU SCREEN

Inputs	Outputs
Channel #1	Alarm Relay #1
Channel #2	Alarm Relay #2
Channel #3	Alarm Relay #3
Channel #4	Alarm Relay #4
Channel #5	Alarm Relay #5
Channel #6	Alarm Relay #6
Channel #7	Alarm Relay #7
Channel #8	Alarm Relay #8
Flow Meter #1	Alarm Relay #9
Flow Meter #2	Analog Out #1
Flow Meter #3	Analog Out #2
Flow Meter #4	

General Functions	
Buzzer:	ON ☐ OFF ☒
Change Password	
Save BL:	YES ☒ NO ☐
Baud Rate:	19200 bps
Parity:	NONE - 8N1
Modbus ID:	1
Tx Delay:	0 ms
Adjust Contrast	

↓	↑	→	ENTER	EXIT
---	---	---	-------	------



Main Setup Menu Screen Shown Actual Size

Inputs

Program Analog Input 1

Analog Input: 1	
Input Type:	4-20 mA Transmitter
Channel ID:	TANK 1 mA:
High Value:	10000.0 gal 20.00
Low Value:	0.0 gal 4.00
Min Value:	0.0 gal
Max Value:	5000.0 gal
Format:	99999.9 gal
Units:	gal

↓	↑		EXIT
---	---	--	------

Program Flowmeter 1

Flow Meter: 1	
Channel ID:	Flow: 1 State: OFF
K Factor:	100.00 pls / Gal
Max Value:	50.00 GPM
K-Fac Fmt:	9999.99
Rate Fmt:	9999.99 GPM
Total Fmt:	9999.00 GAL
Units:	GAL & GPM
Display:	RATE

↓	↑	EDIT	EXIT
---	---	------	------

Alarms

Alarm 1 - HIGH MODE

Alarm Setup: 1	
→ Alarm Mode:	HIGH
Channel:	[1] TANK 1
High Value:	3000.0 gal
Low Value:	2000.0 gal
Delay ON:	5.0 sec
Delay OFF:	5.0 sec

↓	↑	EDIT	EXIT
---	---	------	------

Alarm 8 - LEAD-LAG HIGH MODE

Alarm Setup: 8	
Alarm Mode:	LEAD-LAG: HIGH
Channel:	[5] WEST TANK
High Value:	18.00 f&i
Low Value:	6.00 f&i
Delay ON:	5.0 sec
Delay OFF:	5.0 sec
Link Relays:	
1 2 3 4 5 6 7 8 9	ON ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

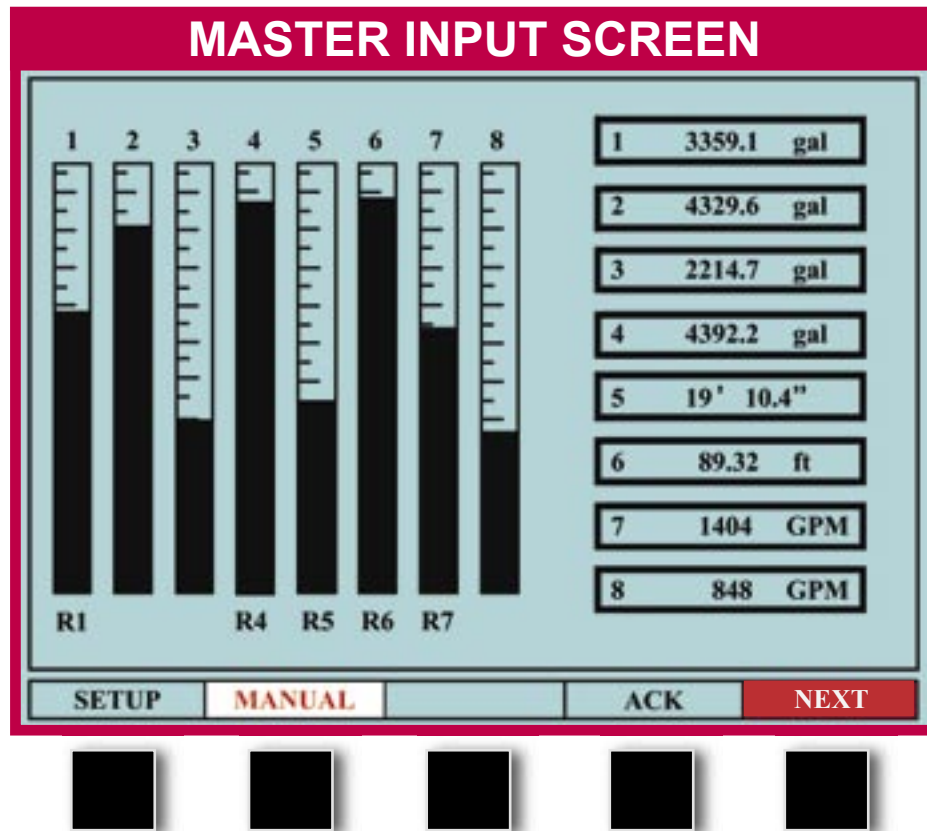
↓	↑	EDIT	EXIT
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Color shown for illustration only

Input & alarm screens shown ¼ scale

Multi-Channel Controllers

Operation



Master Input Screen Shown Actual Size

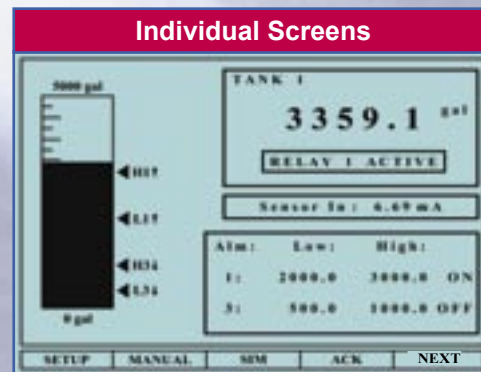
Manual Mode Screen

Relay #	Status	Hours	Cycles
Relay #1:	ON	5.7	14
Relay #2:	OFF	2.9	18
Relay #3:	OFF	1.4	5
Relay #4:	ON	3.9	16
Relay #5:	ON	3.3	24
Relay #6:	ON	3.5	7
Relay #7:	ON	3.3	9
Relay #8:	OFF	0.7	1
Relay #9:	ON	0.0	2

Buttons: ↑, ↓, OFF, RESET, EXIT

Key Points Shown

- **View relay status**
 - On & off status
 - Hours of operation
 - Operation cycles
- **Control relay operation**
 - Reset hours & cycles
 - Toggle status on & off



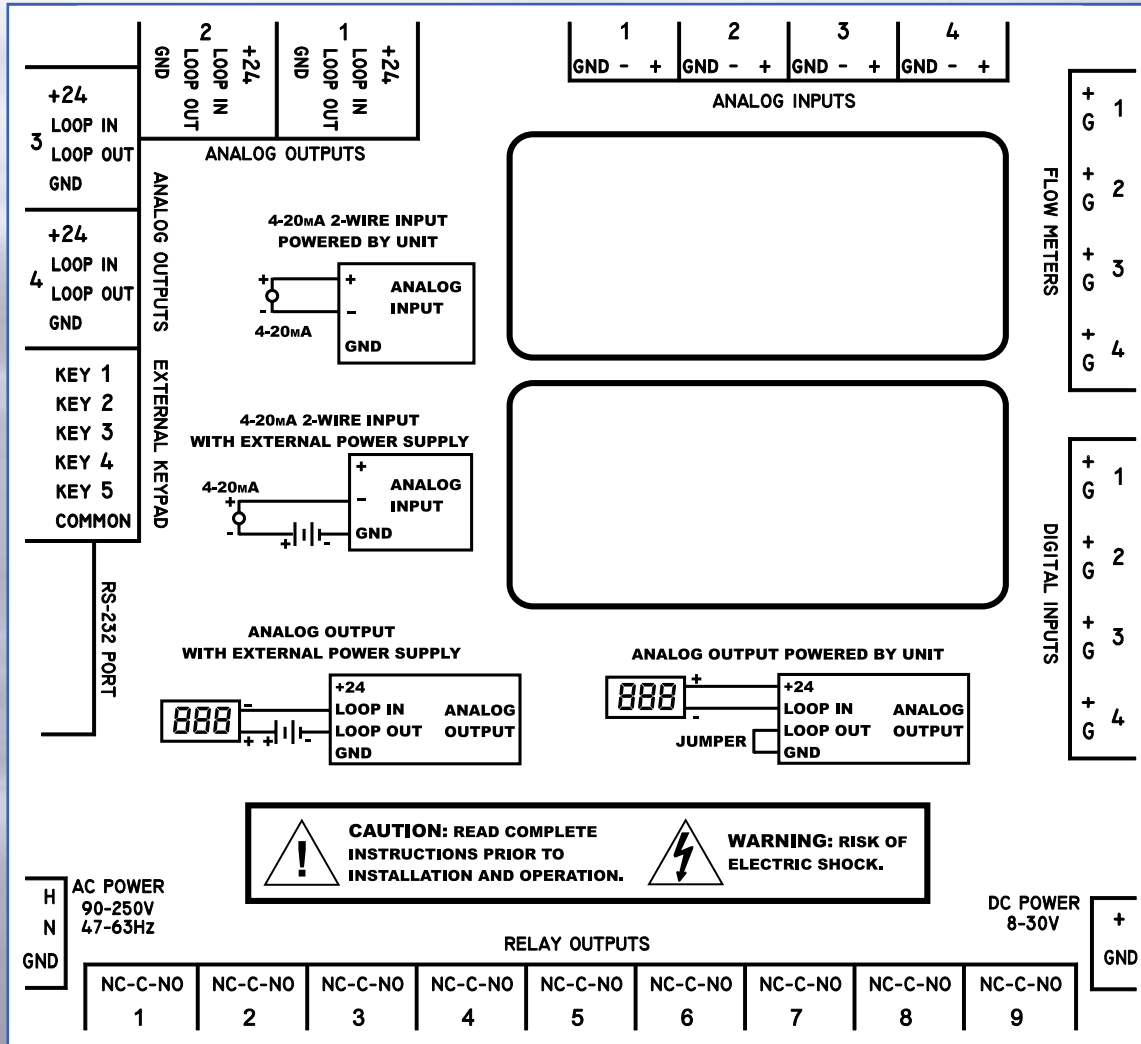
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Manual mode & individual screens shown 1/4 scale

Key Points Shown

- **Bargraph with set points**
- **Input identification**
- **Engineering units label (gal, ft, GPM)**
- **Alarm status**
 - Assigned alarms 1 & 3
 - Low & high set points
 - On & off status
- **Input simulation**
 - Test setup without applying an input

Connectors Diagram



The connectors diagram is silk-screened on the back of all panel mount ConsoliDators (PD941 shown here).

Features Shown

- AC & DC power with voltage ratings
- Nine Form C 10 A relays
- External keypad terminals
- RS-232 port for Modbus® RTU
- Four analog output loop connections
- Four analog input loop connections
- Power the loops with internal 24 VDC
- Four flowmeter pulse inputs
- Four digital inputs
- Input & output wiring diagrams

Multi-Channel Controllers

ConsoliDator Accessories



► **Model PDA2901**
NEMA 4X Enclosure*

Features

- NEMA 4X
- Hinged clear cover
- Hinged mounting panel
- Stainless steel latches
- Power switch & fuse
- Captive screws
- Plenty of space inside
- Sub-panel with terminal strips

See pages 148, 149 for complete specifications.

*ConsoliDators and accessories are sold separately.



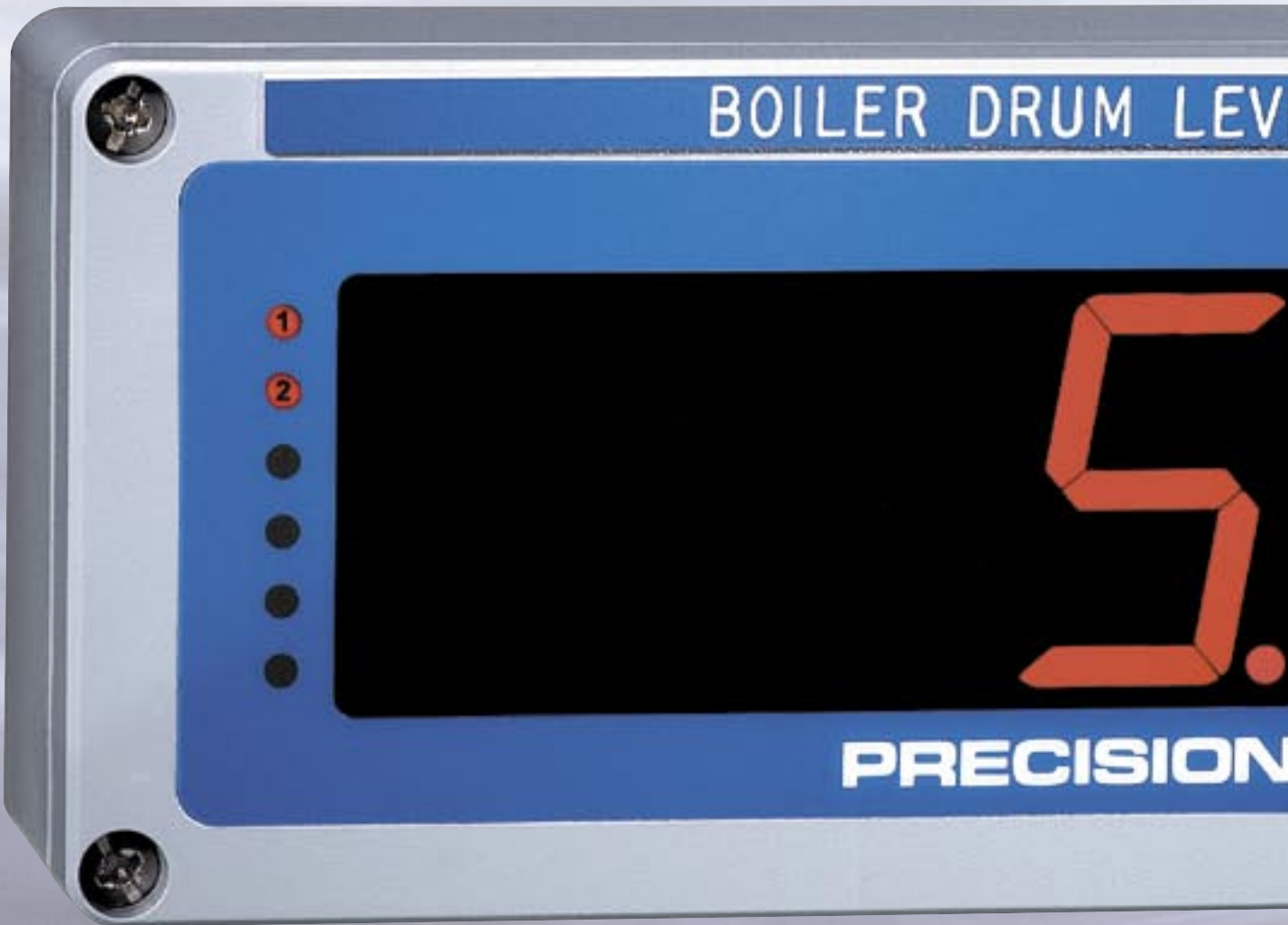
► **Model PDP2901**
Sub-Panel with Terminal Strips*

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Large Display



ACTUAL SIZE

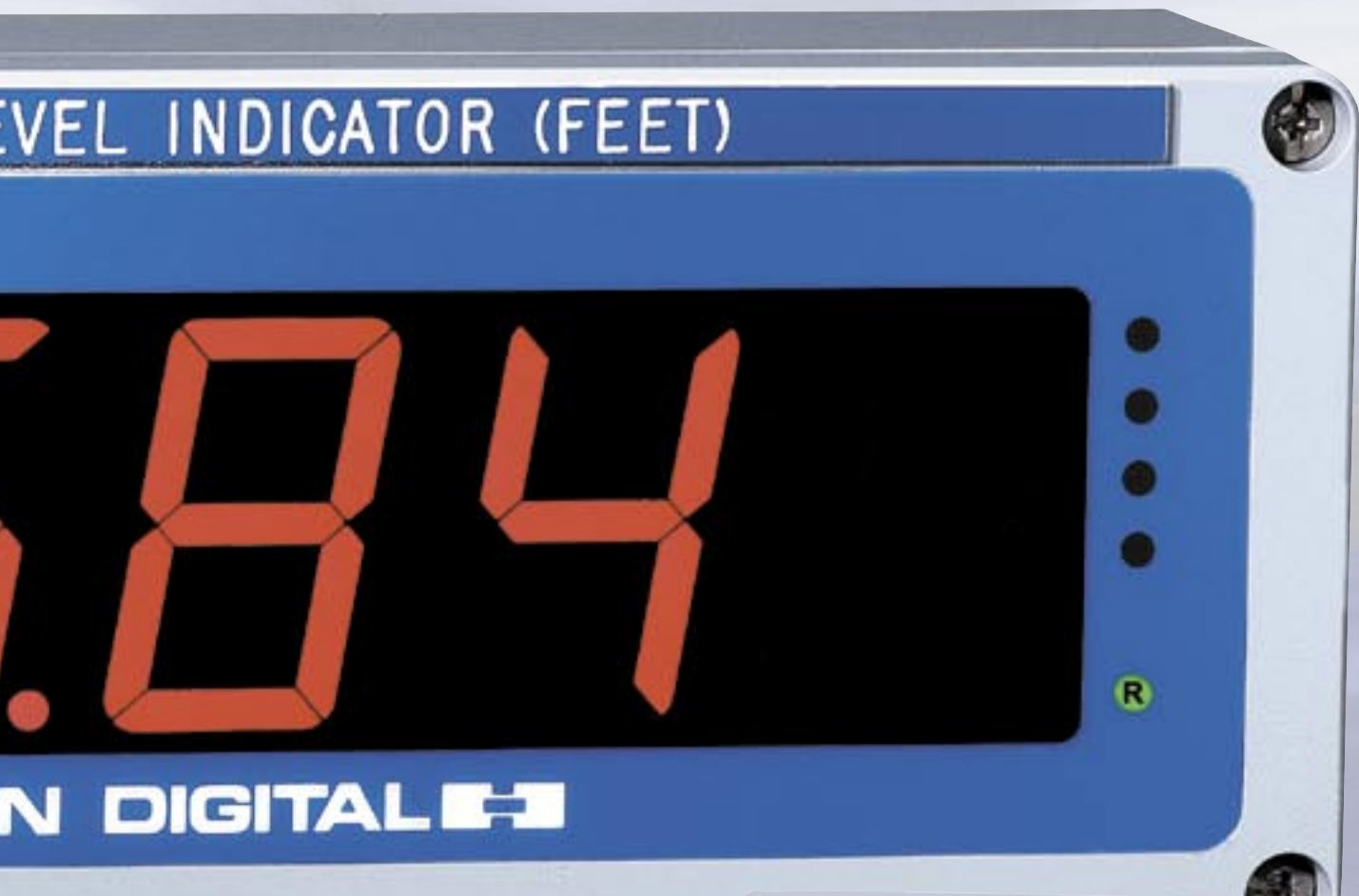
Large Display Process

- 4-20 mA, 1-5 V, 0-5 V, 0-10 V inputs
- 4½ digit + extra zero display for rate
- 6 digit display for total
- Programmable exponent for weirs & flumes
- Pump alternation control
- Two 24 VDC transmitter power supplies
- 200 mA transmitter power supply option
- Operating temperature: -20 to 65°C

Large Display Temperature

- Type J, K, T, E, R, S thermocouple and 100 Ω platinum RTD inputs
- Minimum display reading of -330.0°F
- Maximum display reading of 3213°F
- Display in degrees Fahrenheit or Celsius
- Max/Min temperature display
- Use as temperature transmitter with big display
- Operating temperature: 0 to 65°C

Meters & Totalizers



- ▶ **Model PD650** for process inputs
- ▶ **Model PD757** for temperature inputs



All Large Display Meters

- Big displays for easy reading
- Rugged industrial enclosures
- 115 or 230 VAC power standard
- 24 VDC power optional
- 2 or 4 relays & 4-20 mA output
- Wall mounting standard

2.3" LED NEMA 4X

- Rugged die-cast aluminum enclosure
- 2.3" (57.3 mm) red LED display
- Wall mounting standard
- Panel mounting kit option
- Four ½" conduit holes provided

See pages 77-81 for complete specifications.

Large Display



- ▶ **Model PD655** for process inputs
- ▶ **Model PD755** for temperature inputs

ACTUAL SIZE

1" LED NEMA 4X

- Rugged polycarbonate enclosure
- 1" (25.4 mm) red LED display
- Wall mounting standard
- Panel & pipe mounting kits optional
- Two ½" conduit holes provided

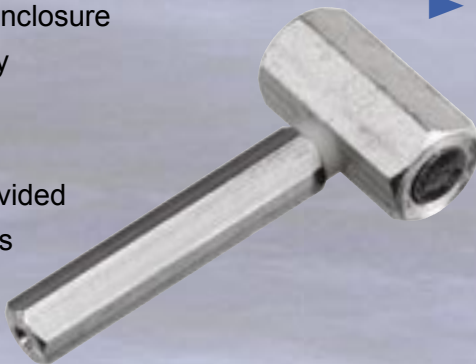
See pages 77-81 for complete specifications.

Meters & Totalizers



0.8" LED Explosion-Proof

- Rugged sand-cast aluminum enclosure
- 0.8" (20.3 mm) red LED display
- Wall mounting standard
- Pipe mounting kit optional
- Two ¾" NPT conduit holes provided
- Explosion-proof control stations available



- ▶ **Model PD656** for process inputs
- ▶ **Model PD756** for temperature inputs

Magnet Key
(PDA-MAG Optional)

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Trident Process & Temperature

NEW FEATURES

Sunlight readable display

Modbus® RTU option

Free LabVIEW driver

4-20 mA output option

Square root function

Dual 24 VDC supplies option

Key Features

- 4-20 mA, ± 10 V, TC & RTD inputs
- NEMA 4X, IP65 front panel
- Shallow depth case 3.6" behind panel
- 85-265 VAC universal power supply
- Serial communication adapter options
- Two Form C 3 A relays option
- Selectable fail-safe operation
- Latching or non-latching
- Pump alternation control
- On & off time delays
- 24 VDC @ 200 mA supply option
- 3 year warranty

*VirtualMeter Demo Lets You Test
Drive Before You Buy!*



► **Model PD765**



User Friendly Menu Structure

- Main menu – three submenus
- Advanced features menu
- Easy to set up & program
- Lockout with password



Setup Menu

- Select input
- Decimal point
- Degrees F or C



Program Menu

- Scale meter without signal
- Calibrate meter with signal



Password Menu

- Prevent changes to meter settings

See pages 84-87 for complete specifications.

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SETUP, CALIBRATION & WARRANTY SERVICES

Digital Panel Meters



Serial Communications

- RS-232 & RS-422/485 adapters
- RS-232 to RS-422/485 converters
- USB to RS-422/485 converters
- MeterView® software
- Data acquisition & programming
- Free LabVIEW driver available

Sunlight Readable Display

- Standard feature – no extra charge
- Viewable under direct sunlight
- Mount outside or inside



Meter Copy Feature

- Save time and money using Meter Copy feature
- Copy all settings to another meter in 10 seconds!
- Standard feature – no serial adapter required
- Reduce setup time, cost, and errors
- Restore meter configuration from master meter

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MeterView® Software

MeterView

HIGHLIGHTS

- Program or read meter settings
- Save meter profiles for cloning
- Use profiles for reporting
- Monitor up to 10 meters per tab
- Log up to 100 meters
- Acknowledge relays



Programming

Configure Input

- Input type
- Temperature units
- Decimal point
- Sensor type

Set Relays/Alarms

- Select mode
- Fail-safe operation
- Set & reset points
- On & off delays

Meter Scaling

- Scale input
- Scale display
- No cryptic codes
- Simple to use

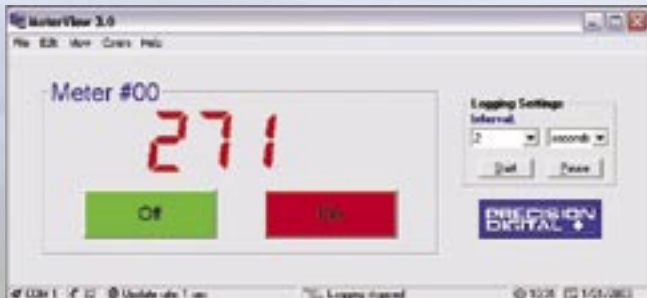
Advanced Settings

- Password
- Function type
- Adjust value
- Cutoff value
- Filter & bypass
- Transmit delay

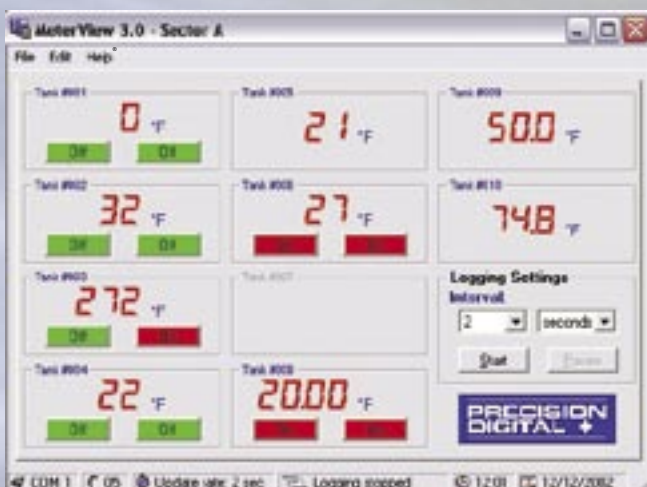
Digital Panel Meters

Data Acquisition

► Model PDA7503-1 Monitor 1 meter



► Model PDA7503-2 Monitor 1 to 10 meters



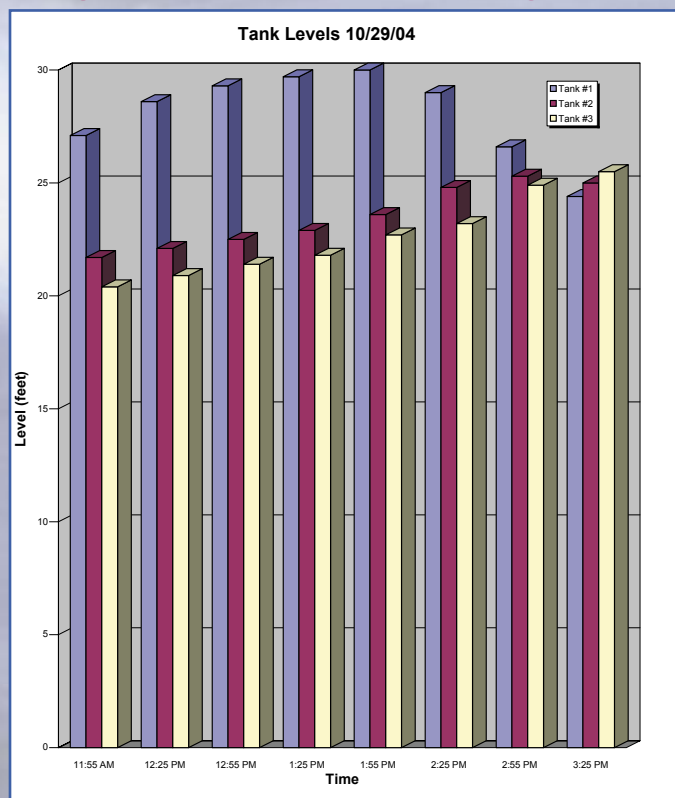
► Model PDA7503-3 Monitor 1 to 100 meters



Sample Data Logging File

PD765 Log File						
Name: C:\MV3logfile.htm			Created: 2/26/2003 5:34:12 PM			
Serial Port: COM 1		Connection speed: 2400 Baud		Logging rate: 1 update every 10 seconds		
Date & Time	Tag Number	Address	Display	Units	Relay 1	Relay 2
2/26/2003 5:34:12 PM	Tank 1 Level	06	17.70	Feet	P1 On	P2 Off
2/26/2003 5:34:12 PM	Tank 2 Level	07	18.18	Feet	P3 Off	P4 Off
2/26/2003 5:34:12 PM	Tank 3 Level	08	20.54	Feet	P5 On	P6 Off
2/26/2003 5:34:12 PM	Tank 1 Temp	09	74	°F	Off	Off
2/26/2003 5:34:12 PM	Tank 2 Temp	10	72	°F	Off	Off
2/26/2003 5:34:12 PM	Tank 3 Temp	11	72	°F	Off	Off
2/26/2003 5:34:22 PM	Tank 1 Level	06	17.58	Feet	P1 On	P2 Off
2/26/2003 5:34:22 PM	Tank 2 Level	07	18.04	Feet	P3 Off	P4 Off
2/26/2003 5:34:22 PM	Tank 3 Level	08	19.79	Feet	P5 Off	P6 Off
2/26/2003 5:34:22 PM	Tank 1 Temp	09	74	°F	Off	Off
2/26/2003 5:34:22 PM	Tank 2 Temp	10	72	°F	Off	Off
2/26/2003 5:34:22 PM	Tank 3 Temp	11	72	°F	Off	Off
2/26/2003 5:34:32 PM	Tank 1 Level	06	16.47	Feet	P1 On	P2 Off
2/26/2003 5:34:32 PM	Tank 2 Level	07	16.87	Feet	P3 Off	P4 Off
2/26/2003 5:34:32 PM	Tank 3 Level	08	17.10	Feet	P5 Off	P6 Off
2/26/2003 5:34:32 PM	Tank 1 Temp	09	74	°F	Off	Off

Bargraph Generated from Log File



See pages 86, 87 for complete specifications.

ACCURACY ■ RELIABILITY ■ CONVENIENCE

**PRECISION
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Javelin · Snooper · Dart



► **Model PD740**

See pages 89, 91 for complete specifications.

Javelin T **Low-Cost Temperature Meter**

The new PD740 Javelin T Low-Cost Temperature Meter has the functionality of the PD765 Trident Meter temperature inputs. It comes with built-in RS-485 serial communications, which makes it easy to integrate with other devices.

Features & Benefits

- TC & RTD inputs
- NEMA 4X, IP65 front panel
- Sunlight readable LED display
- RS-485 serial communications
- Modbus® RTU option
- Two Form C relays or 4-20 mA output
- Data acquisition with MeterView®

Javelin D **High-Voltage DC Meter**

The new PD644 Javelin D High-Voltage Meter accepts 0-300 VDC input. It comes with built-in 4-20 mA analog output, which makes it ideal for Variable Frequency Drive (VFD) applications.

Features & Benefits

- 0-300 VDC input
- NEMA 4X, IP65 front panel
- Scale in engineering units
- Sunlight readable LED display
- 4-20 mA analog output
- Two Form C 3 A relays option
- RS-485 serial communications
- Modbus® RTU option
- Data acquisition with MeterView®



► **Model PD644**



See pages 90, 91 for complete specifications.

Digital Panel Meters

Snooper Modbus® Serial Input Meter

Expand the capability of other Modbus® RTU serial devices with the new PD865 Snooper. It has a six-digit sunlight readable display and may be set up as a master or a slave in an RS-485 bus. The PD865 may be ordered with up to four relays and 4-20 mA output.

Features & Benefits

- RS-485 Modbus® RTU input
- Six full digits 999,999
- Sunlight readable LED display
- Scale in engineering units
- 16-point linearization & square root
- Exact display of input data
- 4-20 mA analog output option
- Two Form A 3 A relays standard
- Two Form C 3 A relays option
- Up to four pump alternation control
- Universal power supply



► **Model PD865**



See pages 94, 95 for complete specifications.



► **Model PD602**

See page 98 for complete specifications.

Dart Low-Cost Process Meter

The PD602 Dart Low-Cost Process Meter is easy to set up and calibrate. No menus or buttons to deal with, simply apply the signal and adjust the trim pots at the front for the desired reading in engineering units.

Features & Benefits

- 4-20 mA, 0-5 V, 1-5 V, 0-10 V inputs
- NEMA 4X front panel with protective overlay
- Calibrate from the front panel
- Easy to set up and calibrate
- Universal power supply
- 12-36 VDC power option
- 24 VDC @ 200 mA supply option

Enclosures & Labels

NEMA 4 & NEMA 4X Enclosures

- Plastic, steel, & stainless steel
- Up to ten meters per enclosure
- 2" pipe mounting brackets
- Custom engraved plastic labels



- ▶ **Low-Cost Plastic NEMA 4X**
- ▶ **Model PDA2801**



- ▶ **Plastic NEMA 4X**
- ▶ **Model PDA2501**



- ▶ **Painted Steel NEMA 4**
- ▶ **Model PDA2703**



- ▶ **Stainless Steel NEMA 4X**
- ▶ **Model PDA2601**

See pages 139-147 for complete specifications.

Digital Panel Meters • Serial Adapters



- ▶ **Painted Steel NEMA 4**
- ▶ **Model PDA2706**



- ▶ **Explosion-Proof NEMA 4, 7, & 9**
- ▶ **Model PDA2446**

See pages 139-147 for complete specifications.

Serial Communication Adapters & Converters

- Trident RS-232 adapter
- Trident RS-422/485 adapter
- RS-232 to RS-422/485 converter
- USB to RS-422/485 converter
- Isolated converters available
- Trident RS-232 & RS-485 isolated multi-input adapter board

- ▶ **PDA7488**



- ▶ **PDA7422**



- ▶ **PDA7232**



- ▶ **PDA8485**

- ▶ **PDA7485**



See page 87 for complete specifications.

ACCURACY • RELIABILITY • CONVENIENCE

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Process • Strain • Pulse



HIGHLIGHTS

Process, TC, RTD, strain gauge, pulse

NEMA 4X, IP65 front panel

2 or 4 relays + 4-20 mA output options

4½ digits + extra zero

115 VAC, 230 VAC, or 24 VDC power

0.56" (14.2 mm) red LED display

Process

- 4-20 mA, 0-5 V, 0-10 V inputs
- 24 V transmitter power supply standard
- 11-point linearization
- Square root function

► Model PD690

One Button Does It All



Scale the meter without applying an input



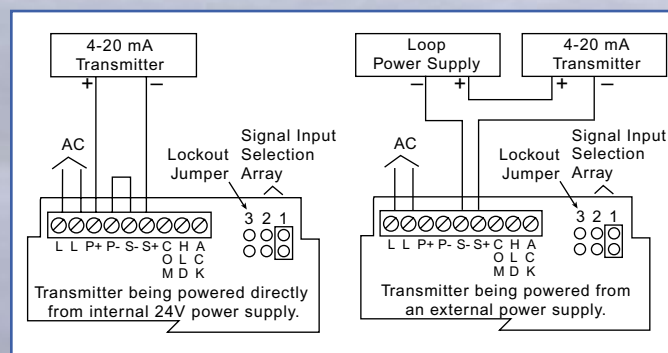
Program up to 4 alarms with 100% deadband



Program the isolated 4-20 mA output

Powers the Loop

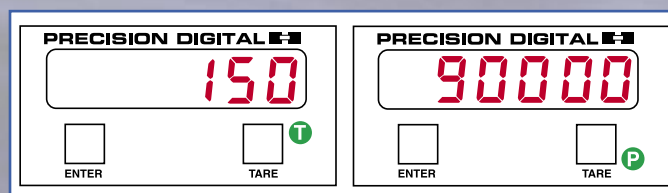
The 24 V transmitter power supply is standard on most line-powered meters. This feature saves time and money by simplifying wiring and eliminating the cost of an external transmitter power supply.



Strain Gauge & mV

- 0-30 mV, 0-200 mV, ±15 mV, ±100 mV inputs
- 5, 10, or 24 VDC field selectable excitation
- Max display or peak hold feature
- Capture or programmable tare function

► Model PD691



PD691
indicating a tared value

PD691
indicating a peak value

See pages 100-108 for complete specifications.



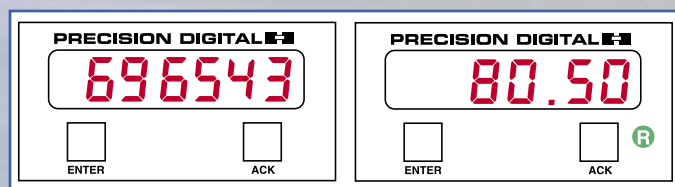
SETUP, CALIBRATION & WARRANTY SERVICES

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Flow Rate/Totalizer & Batch Controller

- 4½ digit + extra zero display for rate
- 6 digit display for total
- Alternating rate/total display
- Any relay for rate or total
- Time base in seconds, minutes, hours, or days
- Quick points for easy batch setting



Meter displaying
total flow

Meter displaying
flow rate

Analog Inputs

- 4-20 mA, 0-5 V, 0-10 V inputs
- 24 V transmitter power supply standard
- 11-point linearization
- Square root function
- Programmable exponent for weirs & flumes
- Pump alternation function

► **Model PD692**

Pulse Inputs

- Pulse, open collector, NPN, PNP, TTL, switch contact, square wave inputs
- 12 VDC @ 50 mA or 24 VDC @ 20 mA excitation
- Gate function for rate display of slow pulse rates
- K-Factor, internal or external calibration
- 4-20 mA output option converts the pulse input to an isolated 4-20 mA output

► **Model PD693**



Temperature

- TC & RTD inputs (PD750)
- Type J,K,T,E,R,S TC (PD750)
- 100 Ω platinum RTD (PD750)
- 10 Ω copper RTD (PD751)
- 120 Ω nickel RTD (PD752)
- Scan multiple inputs with the PD118 Minimax®

► **Models PD750, PD751, PD752**

Set Up with One Button



Select J,K,T,E,R,S TC
or 100 Ω platinum RTD



Select F or C
temperature units

See pages 100-108 for complete specifications.

Loop-Powered Meters



3½ Digits

- 1 V drop
- 0.5" (12.7 mm) LCD
- Easy two-step non-interactive calibration
- Extra zero to display up to 1999(0)
- Operating temperature: -40 to 70°C
- NEMA 4X front panel cover option

► Model PD680



4½ Digits

- 5.2 V drop
- 0.4" (10.2 mm) LCD
- NEMA 4X, IP65 front panel
- Full 4½ digit display to 19,999
- Operating temperature: -20 to 65°C

► Model PD673

See pages 110-114 for complete specifications.

6 Digits Loop-Powered Rate/Totalizer



- 5.6 V drop (7.0 V with backlight)
- 0.5" (12.7 mm) LCD
- NEMA 4X, IP65 front panel
- Rate: 4½ digits; Total: 6 digits
- Operating temperature: 0 to 65°C
- Linear or square root function
- Non-volatile memory – no battery needed
- Isolated open collector pulse output

► Model PD696

Hazardous Area Approval Explanations

INTRINSIC SAFETY: This method of protection limits the energy passing into the hazardous area. The energy limitation is provided by the use of safety barriers which are mounted in the safe area. Because of the energy limitation, regardless of the fault in the hazardous area, sufficient energy cannot be released to ignite the explosive atmosphere.

Approval Methods: There are two methods used by approval authorities to assure an intrinsically safe system:

System Approval: The system approval method is one in which specific field devices are examined in combination with specific barriers. No other field device or barriers may be substituted unless specifically examined by the approval authority.

Entity Approval: The entity approval method is one in which each piece of equipment is evaluated separately and assigned a set of safety parameters. The field device may then be connected to a barrier with compatible safety parameters.

NON-INCENDIVE: A device may be installed in Division 2 locations if it has been approved as non-incendive. Non-incendive equipment is incapable of releasing sufficient electrical or thermal energy to ignite flammable gases or vapors under "NORMAL" operation and environmental conditions. Non-incendive devices need no special enclosure or other physical safeguard.

EXPLOSION-PROOF: This is the most popular method of protection. When an explosive gas enters an enclosure containing electrical equipment an explosion could occur. With the enclosure properly installed, and the tight tolerance between the enclosure and the cover, the flame will cool sufficiently by the time it reaches the outside atmosphere.

Panel Mount & NEMA 4X

3½ Digits

- 1 V drop
- 1.0" (25.4 mm) LCD
- Display up to 1999
- Temperature: -40 to 85°C
- IS and Non-incendive

- ▶ **Model PD685** General Purpose
- ▶ **Model PD686** FM Approved
- ▶ **Model PD686-CSA** CSA Certified



ACTUAL SIZE

Panel and Pipe Mounting Kits Available



3½ Digits (Low-Cost)

- 1.5 V drop (3.5 V with backlight)
- 0.5" (12.7 mm) LCD
- Temperature: -40 to 80°C

▶ **Model PD660**



4½ Digits

- 5.2 V drop
- 0.7" (17.8 mm) LCD
- Temperature: -20 to 65°C
- Non-incendive

▶ **Model PD675**



6 Digits

Loop-Powered Rate/Totalizer

- 5.6 V drop (7.0 V with backlight)
- 0.5" (12.7 mm) LCD
- Rate: 4½ digits; Total: 6 digits
- Operating temperature: 0 to 65°C
- Linear or square root function
- Non-volatile memory – no battery needed
- Isolated open collector pulse output

▶ **Model PD697**

See pages 110-114
for complete specifications.

ACCURACY ■ RELIABILITY ■ CONVENIENCE

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Loop-Powered Meters

3½ Digits (Low-Cost)

- 1.5 V drop (3.5 V with backlight)
- 0.5" (12.7 mm) LCD
- Operating temperature: -40 to 80°C

► **Model PD661**

► **Model PD661-EX**



*Pipe mounting kits
available for most
Explosion-Proof
Loop-Powered Meters*

*See page 150
for complete specifications.*



4½ Digits

- 5.2 V drop
- 0.7" (17.8 mm) LCD
- Operating temperature: -20 to 65°C

► **Model PD677**

► **Model PD677-EX**

6 Digits Loop-Powered Rate/Totalizer

- 5.6 V drop (7.0 V with backlight)
- 0.5" (12.7 mm) LCD
- Rate: 4½ digits; Total: 6 digits
- Operating temperature: 0 to 65°C
- Linear or square root function
- Non-volatile memory – no battery needed
- Isolated open collector pulse output
- Program with a magnet

► **Model PD698**

► **Model PD698-EX**



See pages 110-114 for complete specifications.

Explosion-Proof

All Explosion-Proof Loop-Powered Meters
available with these approvals
as complete products



3½ Digits

- 1 V drop
- 1.0" (25.4 mm) LCD
- Operating temperature: -40 to 80°C

► **Model PD687**

► **Model PD687-EX**



ACTUAL SIZE

See pages 110-114 for complete specifications.

ACCURACY ■ RELIABILITY ■ CONVENIENCE

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Scanners & Annunciators

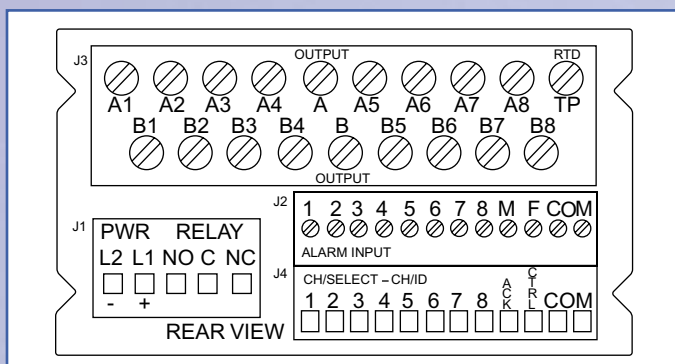


► **Model PD118**

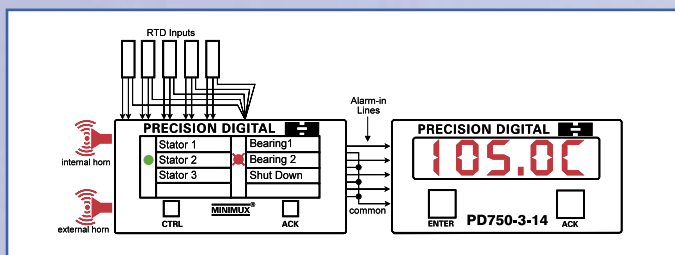
MINIMUX® 8 Channel Scanner

- TC, RTD, process, AC & DC inputs
- Internally or externally controlled scanning
- Unlimited number of units per system
- Adjustable dwell time for each channel
- Independent alarm input for each channel
- Alarms indicated by LEDs, built-in horn & relay
- Stop-on-alarmed channel (field select)
- FREE custom printed message labels

Connectors



RTD Scanner & Alarm Annunciator



► **Model PD141AFO**

VIGILANTE® 4 Point Annunciator

- Inputs
 - NO or NC switches
 - Open collector transistor
 - Logic level
- Vigilante® powers the switch
- Field selectable logic
 - ISA sequence A
 - ISA sequence F2A (first-out)
- FREE custom printed message labels
- NEMA 4X, IP65 front panel
- Built-in horn 75 dB
- One Form C 2 A relay
- Front panel LED alarm and power indication
- First-out LED indication
- 115 VAC, 230 VAC, or 24 VDC power

Operation

ISA Sequence F2A (First-out):
Momentary alarm

Condition	LED		Horn
	1st Pt	Next Pt	
Normal	Off	Off	Off
Alert	Flash	Steady	On
Normal	Flash	Steady	On
Acknowledge	Off	Off	Off

ISA Sequence A:
Momentary alarm

Condition	LED	Horn
Normal	Off	Off
Alert	Flash	On
Normal	Flash	On
Acknowledge	Off	Off

Maintained alarm

Condition	LED		Horn
	1st Pt	Next Pt	
Normal	Off	Off	Off
Alert	Flash	Steady	On
Acknowledge	Steady	Steady	Off
Normal	Off	Off	Off

Maintained alarm

Condition	LED	Horn
Normal	Off	Off
Alert	Flash	On
Acknowledge	Steady	Off
Normal	Off	Off

See pages 116-120 for complete specifications.

NOVA Controllers

Process & Temperature



PD500 SERIES COMPARISON

	PD540 Series	PD550 Series	PD560 Series	PD570 Series
Controller Type	Digital Controller	Ramp & Soak Controller	Digital Meter	Limit Controller
PID Control Outputs	Three Relays ² Two Analog ³	Three Relays ² Two Analog ³		
Limit Control Relay				One Latching Relay
Alarm Output Relays Only	(See Note 2)	(See Note 2)	Three Alarm Relays	One Alarm Relay
Retransmitting Outputs	(See Note 3)	(See Note 3)	One 4-20 mA	One 4-20 mA
Digital Inputs	Two	Two	Two	
Digital Outputs		Four		
Max/Min and Time Display			Max/Min Value	Max/Min Value, Time Since Limit Reached
Set Point Programming		2 Programs, 15 Segments Each		
Modbus Available	Yes	Yes	Yes	Yes
Serial Communications	RS-485	RS-485	RS-485	RS-485

- Notes:
1. Maximum available options for each category shown above.
 2. PID controlled time proportional relay activation and alarm capabilities.
 3. Analog outputs capable of 4-20 mA or voltage pulse settings, and may be configured as retransmitting or PID control outputs.



NOVA Controllers

Digital Controller PD540 Series

SPECIAL FEATURES

High accuracy $\pm 0.1\%$ FS

18 bit A/D converter

Universal input TC, RTD, VDC

Universal power 100-240 VAC

Up to 5 simultaneous outputs



► Model PD544



► Model PD540



► Model PD546



► Model PD548



► Model PD542



- Dual displays show process variable & set point
- Gain function protects against overshoot
- High accuracy auto-tuning PID
- Control output Run/Stop with timer
- Relay status LED indicators
- 3 year warranty
- Temperature bias function - 4 zones
- Heating & cooling control models
- RS-485 serial communications option
- Modbus, PC software & Sync communications
- Free monitoring & data logging software
- 1/16, 3/16, 1/8, 1/4 DIN

Operating Display



- Display output status in Stop mode



- Display control output status (% FS of output)



- Select set point number



- Set alarm 1 value

See pages 121, 122 for complete specifications.

Process & Temperature

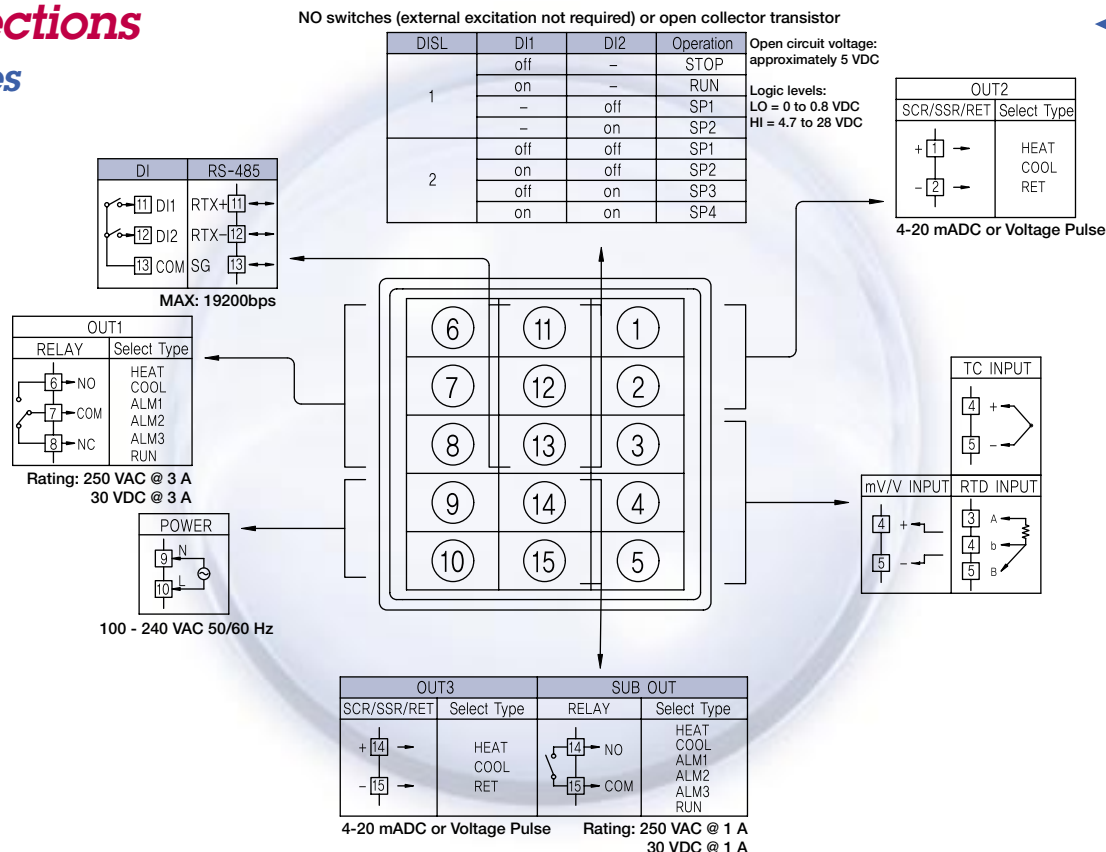
PD540 Connections

Standard Features

- Universal input
TC, RTD, mV, V
- Universal power
100-240 VAC
- One Form C relay
heat, cool, alarm
- One analog output
SCR, SSR, RET

Options

- One analog output
SCR, SSR, RET
- One Form A relay
- RS-485 output*
- Two digital inputs*



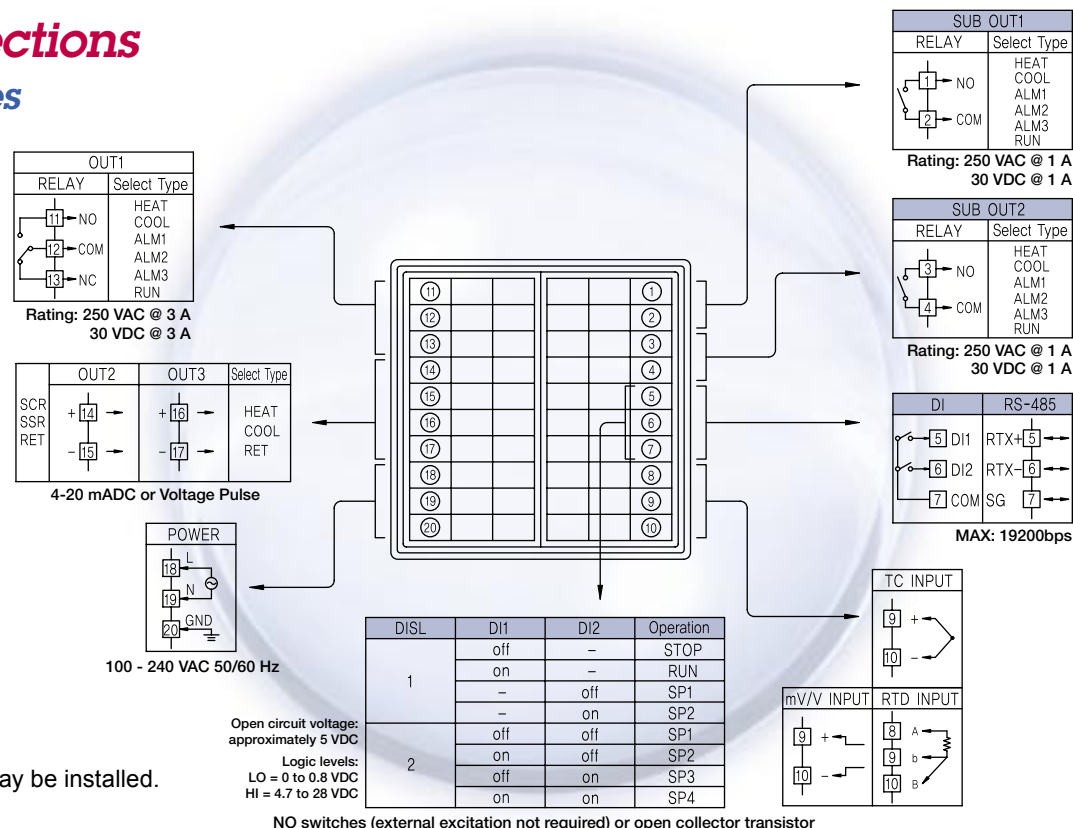
PD548 Connections

Standard Features

- Universal input
TC, RTD, mV, V
- Universal power
100-240 VAC
- One Form C relay
heat, cool, alarm
- Two analog outputs
SCR, SSR, RET

Options

- One analog output
- Two Form A relays
- RS-485 output*
- Two digital inputs*



*Only one of these options may be installed.

NOVA Controllers

Ramp & Soak Controller PD550 Series



SPECIAL FEATURES

High accuracy $\pm 0.1\%$ FS

18 bit A/D converter

Universal input TC, RTD, VDC

Universal power 100-240 VAC

Up to 5 simultaneous outputs

Easy to set up & program

► Model PD554

► Model PD550



► Model PD556



► Model PD558



- Ramp & Soak with up to 30 segments
- Two programs with 15 segments each
- Gain function protects against overshoot
- High accuracy auto-tuning PID
- Run/Stop controlled by digital inputs
- 3 year warranty
- Temperature bias function - 4 zones
- Variety of auxiliary outputs (IS, TS, Prog, END)
- RS-485 serial communications option
- Modbus, PC software & Sync communications
- Free monitoring & data logging software
- 1/16, 3/16, 1/8, 1/4 DIN

Operating Display



- Display output status in Stop mode



- Display control output status (% FS of output)



- Display indicates program running status



- To jump to next program segment: Step = On



- To hold running program: Hold = On

See pages 125, 126 for complete specifications.

Process & Temperature

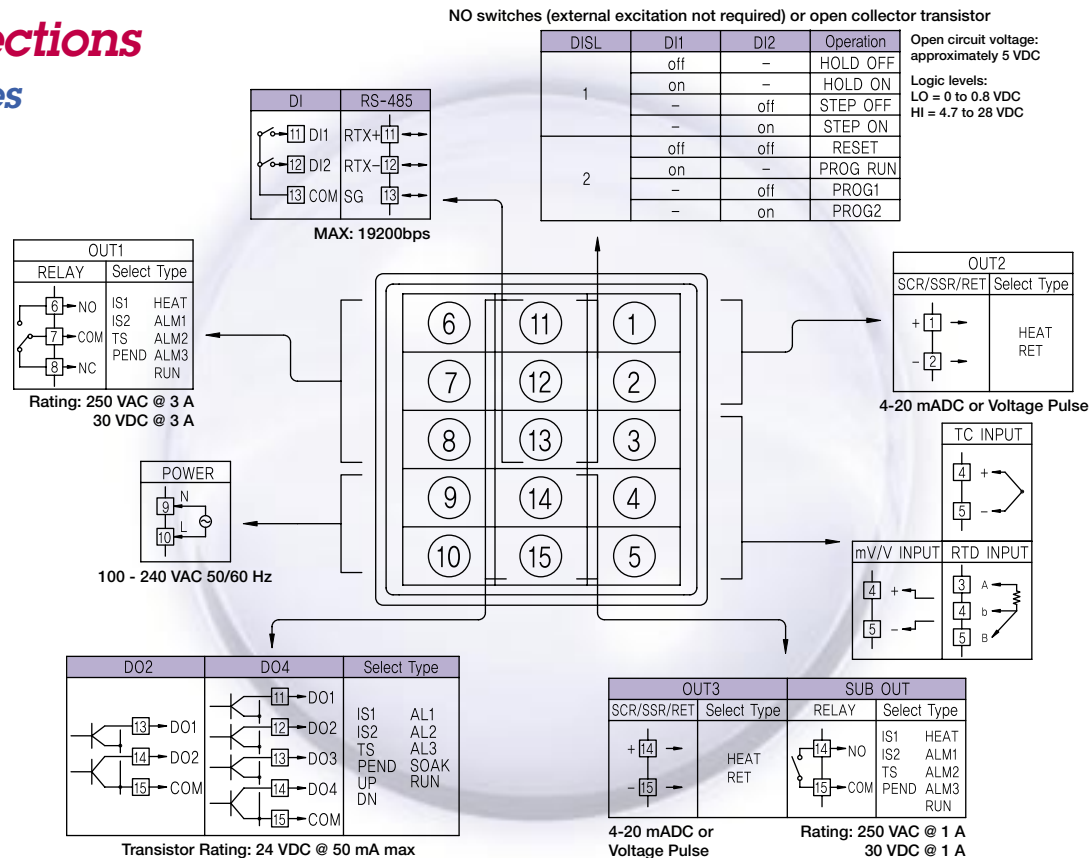
PD550 Connections

Standard Features

- Universal input
TC, RTD, mV, V
- Universal power
100-240 VAC
- One Form C relay
heat, cool, alarm
- One analog output
SCR, SSR, RET

Options

- One analog output
SCR, SSR, RET
- One Form A relay
- RS-485 output*
- Two or four digital
outputs*



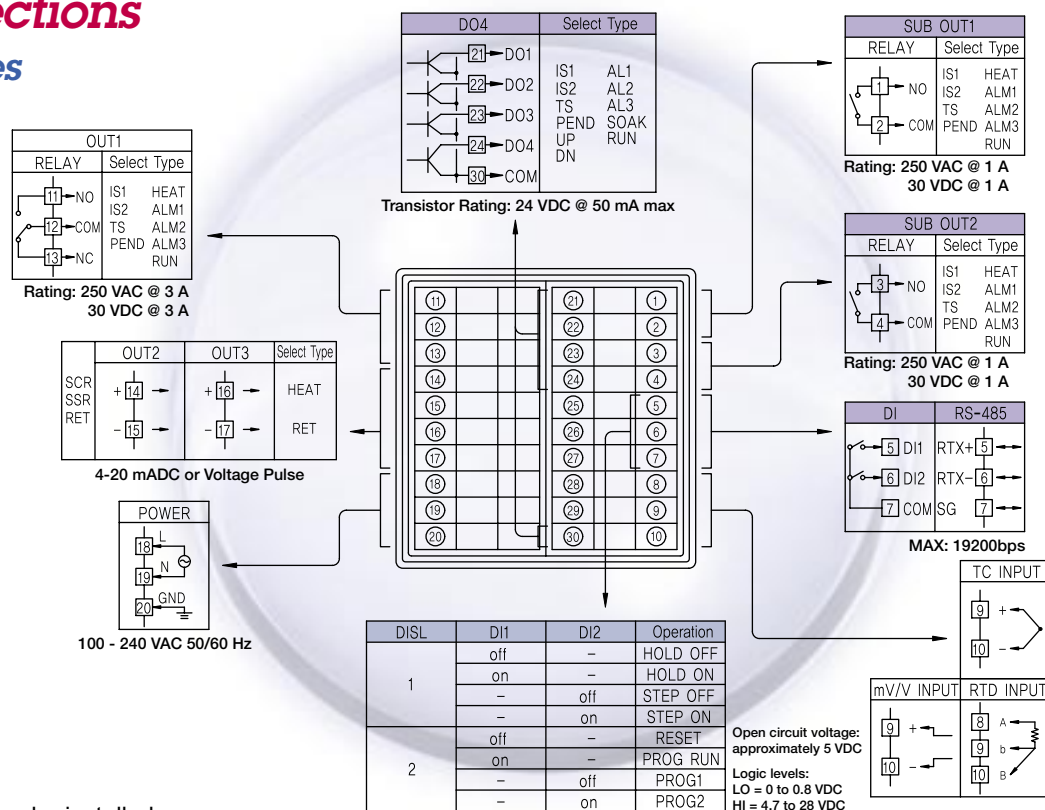
PD558 Connections

Standard Features

- Universal input
TC, RTD, mV, V
- Universal power
100-240 VAC
- One Form C relay
heat, cool, alarm
- Two analog outputs
SCR, SSR, RET

Options

- One analog output
- Two Form A relays
- RS-485 output*
- Two digital inputs*
- Four digital outputs*



*Only one of these options may be installed.

ACCURACY ■ RELIABILITY ■ CONVENIENCE

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NOVA Controllers

Digital Meter PD560 Series

SPECIAL FEATURES

- High accuracy $\pm 0.1\%$ FS
- 18 bit A/D converter
- Universal input TC, RTD, VDC
- Universal power 100-240 VAC
- Up to 3 relays & 1 analog output
- Easy to set up & program

Operating Display



► Display process value



► Display maximum process value



► Display minimum process value



Model PD562



- Displays max & min values
- One 4-20 mA output standard
- One alarm relay standard
- 3 year warranty

Model PD568



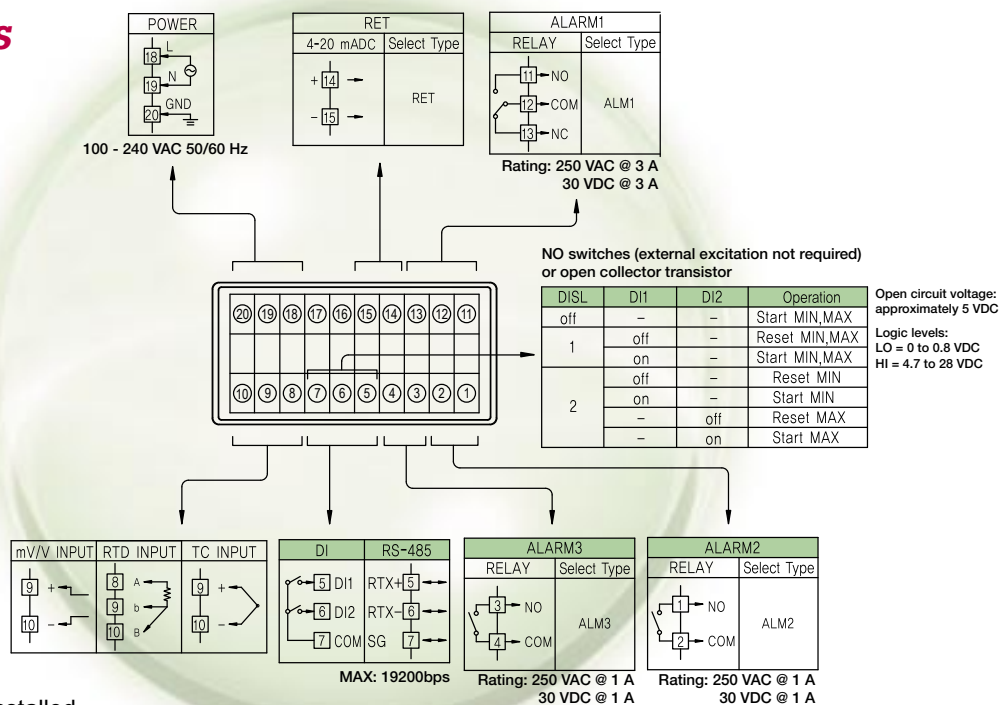
- RS-485 Modbus & PC software communications
- Free monitoring software
- 1/8, 1/4 DIN

PD562 Connections Standard Features

- Universal input TC, RTD, mV, V
- Universal power 100-240 VAC
- One Form C relay
- One 4-20 mA output

Options

- Two Form A relays
- RS-485 output*
- Two digital inputs*



*Only one of these options may be installed.

See pages 129, 130 for complete specifications.

Process & Temperature



► **Model PD570**



► **Model PD578**



Limit Controller PD570 Series

SPECIAL FEATURES

High accuracy $\pm 0.1\%$ FS

18 bit A/D converter

Universal input TC, RTD, VDC

Universal power 100-240 VAC

Easy to set up & program

- Latching relay for limit control
- Displays max or min values
- Over limit timer
- 3 year warranty
- RS-485 Modbus & PC software communications
- Free monitoring software
- 1/16, 1/4 DIN

Operating Display



► Display PV & SP



► Display output status



► Display time since over limit condition



► Display maximum process value



► Display minimum process value

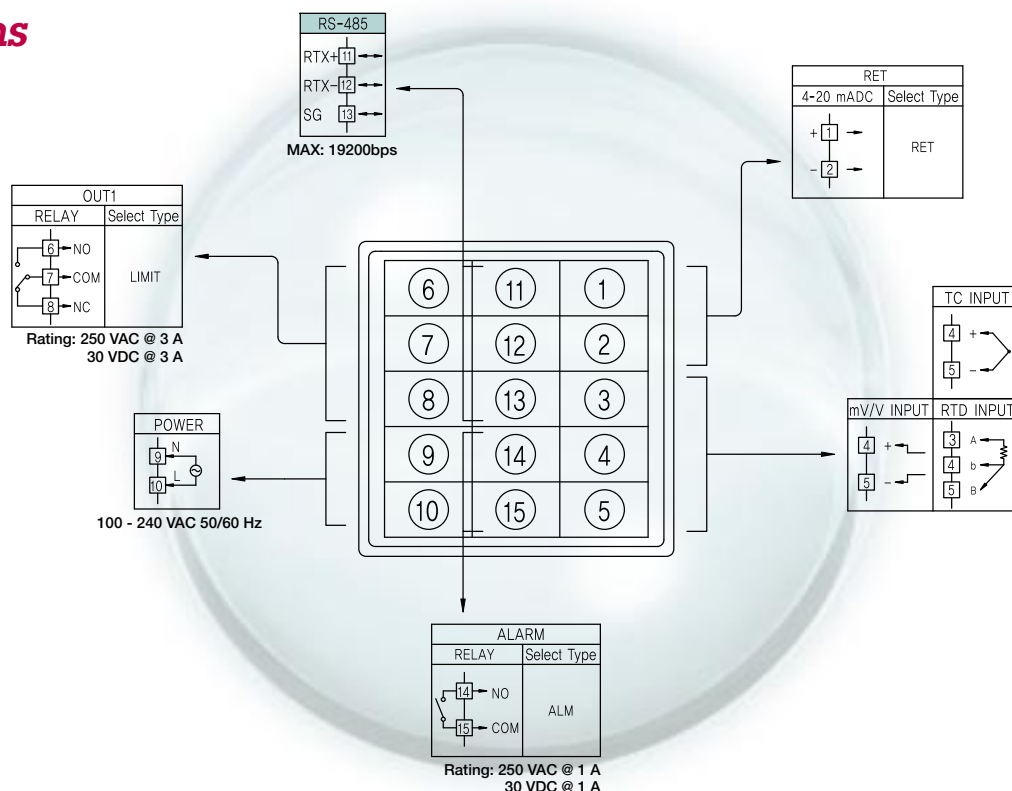
PD570 Connections

Standard Features

- Universal input TC, RTD, mV, V
- Universal power 100-240 VAC
- One Form C limit relay
- One Form A alarm relay
- One 4-20 mA output

Options

- RS-485 output



See pages 132, 133 for complete specifications.

ACCURACY ■ RELIABILITY ■ CONVENIENCE

**PRECISION
DIGITAL**

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NOVA Controllers

Unique Features of the Nova Series Controllers

Multiple Simultaneous Outputs (Max 5)

- Up to five simultaneous outputs
- Relays, SSR (V-Pulse), and SCR (4-20 mA)
- Control up to five loads with one controller

Easy Setup with Dual LED Displays

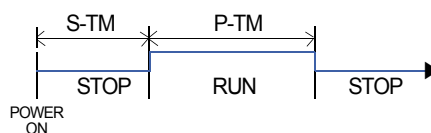
- Dual LED displays show parameters and setup options

Available Outputs

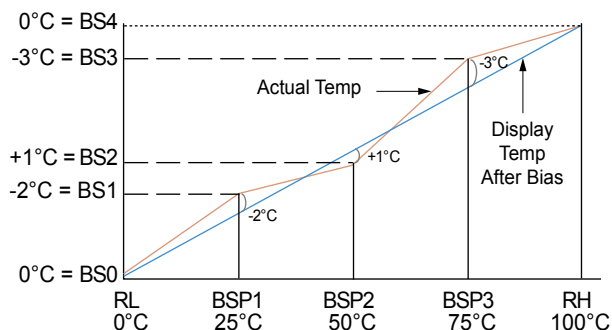
		Control Output			Sub (Aux) Relay Output		Digital Output
		1	2	3	1	2	DO1 - DO4
Output Settings	PD550 Series Programmable Controller	Control PID Output (Heat)	✓	✓	✓	✓	
		Control PID Output (Cool)	✓	✓	✓	✓	
		Alarm 1	✓		✓	✓	✓
		Alarm 2	✓		✓	✓	✓
		Alarm 3	✓		✓	✓	✓
		Set to Run Mode	✓		✓	✓	✓
		Retransmitting Output		✓			
	PD540 Series Digital Controller	Inner SP Signal Out 1	✓		✓	✓	✓
		Inner SP Signal Out 2	✓		✓	✓	✓
		Time Signal Out	✓		✓	✓	✓
		Program End Alert	✓		✓	✓	✓
		SP Status (Up, Down, Soak)					✓

Built-in Run & Stop Output Functions with Manual & Timer Control

- Run/Stop control through easily accessible menus
- Timer functions to set start-time delay and process time



Temperature Bias Function (4 Zones)



The actual temperature is shown within the range of 0°C (RL) and 100°C (RH). Bias points have been used to adjust the displayed temperature as shown in the graph.

To establish this bias, the settings are shown below.

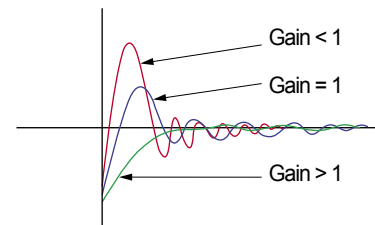
Temperature Settings to Establish Where the Bias Occurs				
RL	BSP1	BSP2	BSP3	RH
0°C	25°C	50°C	75°C	100°C
Bias Offset for Each Point				
BS0	BS1	BS2	BS3	BS4
0°C	-2°C	+1°C	-3°C	0°C

The graph to the left illustrates how these settings affect the displayed temperature.

Process & Temperature

Auto-Tuning PID with Programmable Gain Control

- All PID control parameters set automatically with Auto-tuning
- Programmable Gain value allows for simple user adjustments
- To reach the set point faster, lower the Gain value
- To achieve greater accuracy with less overshoot, increase the Gain value



Limit Controller to Protect System

- Latching relay for high or low limit control
- Front panel button to reset latching relay
- Alarm relay for added monitoring capabilities
- Control heating or cooling processes
- Max or min values displayed at the push of a button
- Displays over limit time

20 Alarm Types



- S** indicates standby operation
- F** for forward operation:
Relay energized in alarm condition.
- r** for reverse operation (fail-safe):
Relay energized during normal operating conditions.
- Decimal point always displayed
- H** indicates high alarm
- L** indicates low alarm
- o** outside range of deviation band
- i** inside range of deviation band
- A** indicates an absolute value alarm
- d** indicates deviation alarm

No.	Type	Display
1	Absolute Value High Limit Alarm (Forward)	AHf
2	Absolute Value Low Limit Alarm (Forward)	ALf
3	High Limit Deviation Alarm (Forward)	dHf
4	Low Limit Deviation Alarm (Forward)	dLf
5	High Limit Deviation Alarm (Reverse)	dHr
6	Low Limit Deviation Alarm (Reverse)	dLr
7	High and Low Limit Deviation Alarm (Forward)	doF
8	High and Low Limit Range Deviation Alarm (Forward)	d iF
9	Absolute Value High Limit Alarm (Reverse)	AHr
10	Absolute Value Low Limit Alarm (Reverse)	ALr
11	Absolute Value High Limit Alarm with Standby (Forward)	AHfS
12	Absolute Value Low Limit Alarm with Standby (Forward)	ALfS
13	High Limit Deviation Alarm with Standby (Forward)	dHfS
14	Low Limit Deviation Alarm with Standby (Forward)	dLfS
15	Low Limit Deviation Alarm with Standby (Reverse)	dHrS
16	High Limit Deviation Alarm with Standby (Reverse)	dLrS
17	High and Low Limit Deviation Alarm with Standby (Forward)	dofS
18	High and Low Limit Range Deviation Alarm with Standby (Forward)	d i fS
19	Absolute Value High Limit Alarm with Standby (Reverse)	AHrS
20	Absolute Value Low Limit Alarm with Standby (Reverse)	ALrS

NOVA Software



Main Monitoring Window

Simultaneously Monitor & Control up to 30 Nova Controllers

Multi-Monitoring Software

Any Nova controller with the serial communications option can be configured to interface with the Nova Multi-Monitoring software. Up to 30 controllers can be monitored and operated, and each can use independent data logging settings.

- Easy to set up and use
- Monitor 30 Nova controllers on the same window
- View PV, SP, and alarm status simultaneously
- Control set points and programs
- Log, view, and save data in spreadsheet format
- Free download at www.predig.com

Simultaneous Monitoring

The main monitoring window displays the process variable, set point, alarm status, and model number for all connected controllers. From this window, access detailed operating displays of any controller for more status information and control of an individual Nova controller.

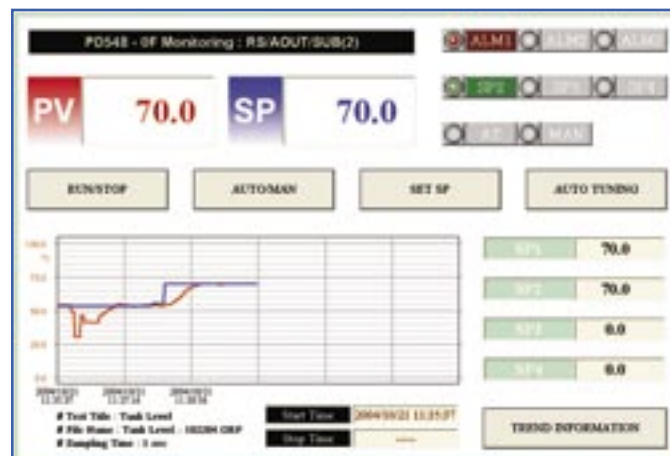


Detail of Main Monitoring Window

View the PV, SP, and alarm status of all controllers at once!

Individual Detailed Operation Window

Each controller has a detailed operation window which is unique for each controller series. From this window more in-depth information can be accessed about alarm and operation status indicators, common control features, and active data logging.



Individual Detailed Operation Window

Operating Status Indication

The detailed operation window displays additional information on the operating conditions of the controller. This may include alarm status, set point values, ramp & soak program status, manual or automatic control output modes, and auto-tuning. All are clearly displayed in large text and with bright indicators. Only information relevant to the model being viewed is displayed.

Process & Temperature Controllers

Remote Access to Control Features

The common functions of the Nova may be controlled from the detailed operation window.

- Program and select set points
- Switch to manual or automatic control
- Run, step, hold, or reset ramp & soak programs
- Initiate auto-tuning for initial setup
- Run or stop the control outputs

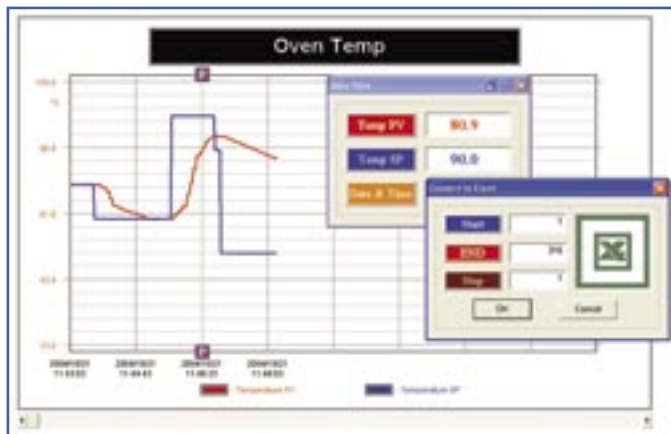
Real-Time Data Graphs

Process variable and set point data can be graphed in real-time. These graphs are easily set up and viewed from the detailed operation window for each controller. Each has its own independent data graph that can be saved for viewing and analysis in the program's Data Viewer application.

Convenient Data Logging Capabilities

Saved process variable and set point data can be opened for display in the Data Viewer.

- Format graphs for easy printing and display
- View PV and SP values at specific data points
- View all data points, values, and sample date & time
- Convert data for use in Microsoft® Excel for additional data processing and analysis



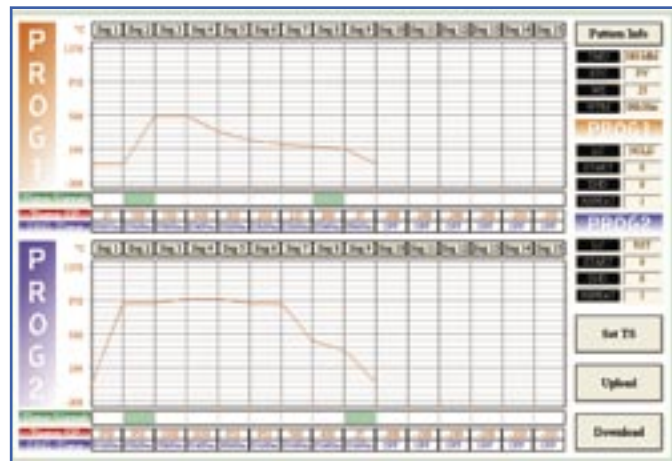
Data Viewer to Display Saved Graphs



Export Saved Data into Spreadsheet Format

Easy Ramp & Soak Programming

Use the Nova Program Editor to build the ramp & soak segments for PD550 Series controllers. Two programs containing up to 15 segments each may be linked to form a 30-segment program. Programs can include segment loops, end of program holds, resets, links, and time signals for output activation during specific segments. Upload programs from a PC to a PD550 Series controller or download programs from a PD550 Series to a PC. These programs may be saved for later use.



Create and Save Ramp & Soak Programs in the Program Editor

Specifications

System Requirements: Windows® 95\98\ME\2000\XP

Communications: An RS-232 to RS-485 or USB to RS-485 converter may be needed for communications between the controllers and a PC.

Number of Units: Up to 30 Nova controllers

Baud Rate: 9,600 or 19,200 bps; selection must match the baud rate selected in the controllers.

Data Logging: Graph and save data as .hdr format. Each monitored controller saves graphs independently. Data exportable in spreadsheet format.

Logging Interval: 1 second to 24 hours

Free!

Download the Nova Multi-Monitoring
Software and Instruction Manual at
www.predig.com

Digital Pressure Gauges

HIGHLIGHTS

- Direct pressure input up to 20,000 psi
- High accuracy up to 0.05% FS
- Large up to 0.88" (22.4 mm) LCD
- Numeric & bargraph LCD
- Backlight feature for easy viewing
- 2 relays & 4-20 mA output options
- Battery, loop, or 12-36 VDC powered



Digital Test Gauge

- Vacuum, compound pressure, 5 to 7,000 psi
- High accuracy 0.05% FS Total Error Band
- Available with 0.1% or 0.25% FS accuracy
- 5 digit LCD, % bargraph & battery level indication
- Large 0.66" (16.7 mm) display in compact 3" case
- Battery powered
- Intrinsically safe, Class I, Div 1
- Rugged & portable design
- Stainless steel case & socket welded
- Configurable options
 - Twelve engineering units
 - Seven languages
 - Adjustable update rate
 - Dampening with five settings
 - Field calibration capability
 - Password protected



- ▶ **Model PD253**
- ▶ **Model PD243**
- ▶ **Model PD233**



See pages 135-138 for complete specifications.

General Purpose • Industrial • Test

General Purpose Digital Gauge

- Vacuum, compound pressure, 30 to 19,999 psi
- 0.5% FS Terminal Point Accuracy
- 4½ digit, 0.5" (12.7 mm) LCD
- Nine engineering units
- IP54 protective boot
- Battery powered



► **Model PD202**

Industrial Digital Gauge

- Digital gauge, pressure switch, & transmitter
- Vacuum, compound pressure, 15 to 20,000 psi
- 0.25% FS Terminal Point Accuracy (0.13% BFSL)
- 5 digit LCD, % bargraph & battery level indication
- Large 0.6" (15.2 mm) or 0.88" (22.4 mm) LCD
- 4-20 mA output & 2 Form C relays
- Three case options: stainless steel, aluminum, or fiberglass reinforced thermoplastic
- NEMA 4, IP65 case
- Battery, loop, or 12-36 VDC powered
- Intrinsically safe, Class I, Div 1
- Password protected menus
- Easy-to-use menu options
 - Five backlight settings
 - Twelve engineering units
 - Menu configure feature
 - Update rate
 - Dampen mode
 - Auto off



► **Model PD214**



► **Model PD224**



► **Model PD213**

See pages 135-138 for complete specifications.



Key Features of the F-Series

- NEMA 4X, IP67 aluminum or ABS plastic
- Intrinsically safe or explosion-proof enclosure
- -40 to 80°C operating temperature
- Loop-powered, 24 VDC/VAC, or 80-240 VAC
- Internal lithium battery with lifetime up to 7 years
- 0.7" numeric & 0.3" alphanumeric backlit LCD
- Wall, panel, sensor, or pipe mounting
- RS-232, RS-485 Modbus communications
- Retransmission of 4-20 mA, 0-10 V, or pulse



THE Fluidwell F-Series is a versatile line of indicators and controllers designed primarily for flow rate, total, and batch control applications. These products are easily programmed, accept a variety of inputs, and display them on a large, informative, optional backlit LCD. Options for relays, retransmission, and Modbus serial communications further enhance this broad line of instruments. Rugged field and panel mount enclosures and the ability to power the F-Series from AC, DC, battery, or a 4-20 mA loop allow these products to be installed virtually anywhere.

Flow Rate/Totalizers

Twelve different models are offered to support:

- Pulse, NAMUR, coil, 4-20 mA, 0-10 V inputs
- Flow rate, total, & accumulated total
- Bi-directional measurements
- 15-point linearization with pulse & analog output
- Up to 4 high & low alarms w/backlight notification

Flow Computers

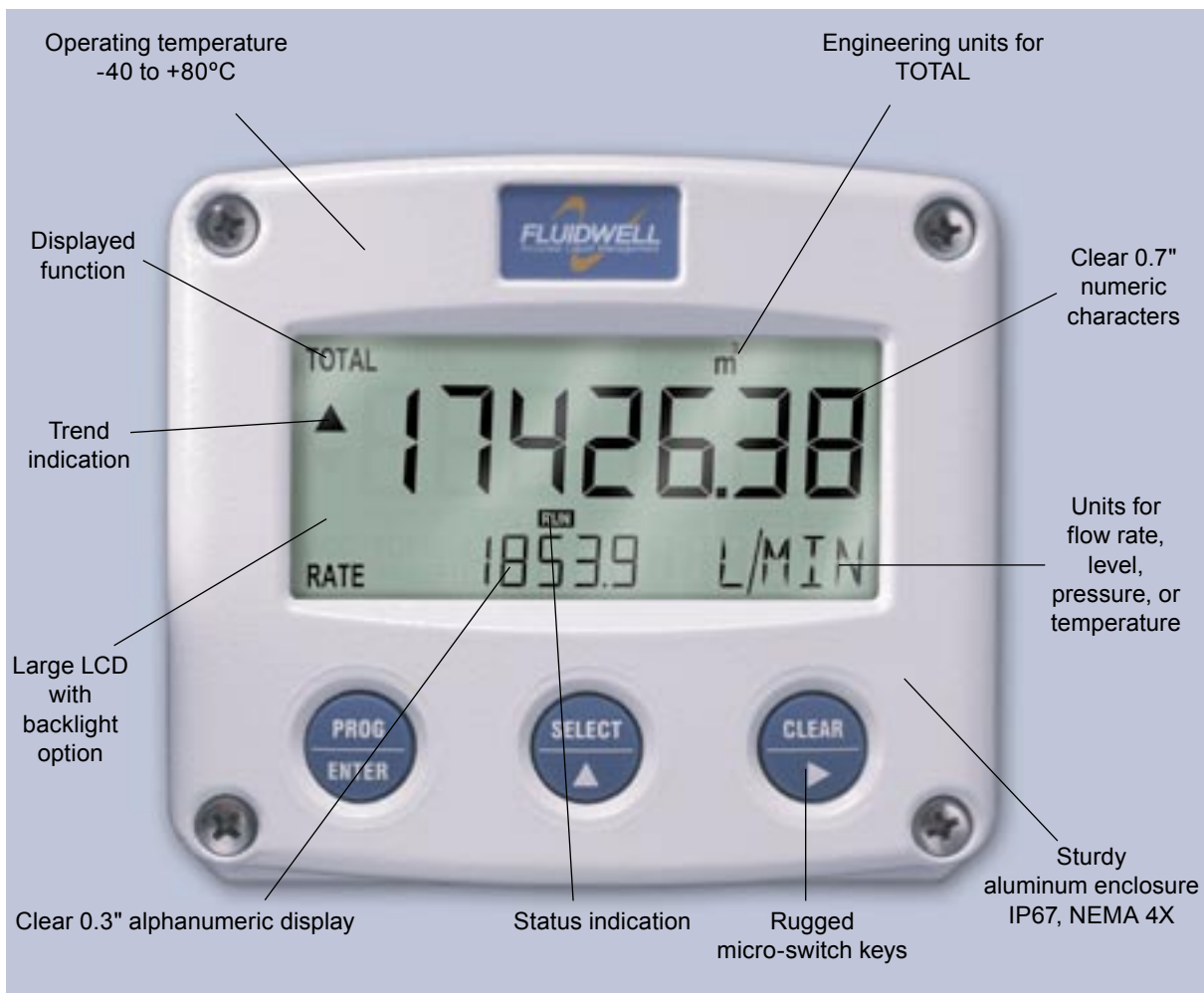
Five different models are offered to support:

- Pulse, NAMUR, coil, 4-20 mA, 0-10 V inputs
- Flow plus temperature measurements for liquid volume calculations
- Flow plus temperature and pressure measurements for gas volume calculations
- Consumption/sum with temperature correction
- Ratio calculation and monitoring



For more information go to www.predig.com.

Totalizers & Batch Controllers



Typical F-Series Interface

Batch Controllers/Dispensers

Five different models are offered to support:

- Pulse, NAMUR, coil, 4-20 mA, 0-10 V inputs
- One or two stage control, one stage control & pulse
- Analog outputs for flow retransmission
- Resettable actual total
- Accumulated total
- Self-learning overrun correction

Level, Temperature & Pressure

Eleven different models are offered to support:

- 4-20 mA, 0-10 V, 100 Ω platinum RTD inputs
- 15-point linearization of input signal
- Actual level & percentage
- Dual pressure indication
- Up to 4 alarms with green to red indication
- 4-20 mA, 0-20 mA, or 0-10 V analog output



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www.predig.com

Product Overview	Flow Rate/Totalizers												Flow Computers	
								Linearization			High/low alarms			
	F010	F011	F012	F014	F110	F111	F115	F016	F112	F118	F013	F113	F126 _{EL}	F126 _{EG}
	Flow rate indicator	Totalizer	Flow rate/totalizer	with pulse output	with pulse + analog outputs	with two inputs + two pulse outputs	with bi-directional measurement	with pulse output	with pulse + analog outputs	pulse + analog output + two flow rate alarms	Flow rate monitoring with one alarm output	Flow rate monitoring max four alarm outputs	Flow + temperature for liquid volume calc.	Flow + temp + Press. for gas volume calc.
Pulse, NAMUR, coil input	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
0-20 mA, 4-20 mA input	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
0-10 V input	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
100 Ω RTD (Pt100)														
Actual flow rate	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Actual total (resettable)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Accumulated total		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Preset and actual value														
Actual level and percentage														
Actual temperature													✓	✓
Actual pressure														✓
15-point linearization								✓	✓	✓				
Analog output assigned to:					✓		✓		✓	✓		✓	✓	✓
Flow rate, level, or temperature					✓		✓		✓	✓		✓	✓	✓
Differential or sum														
Ratio														
Process stage														
Pulse output assigned to total				✓	✓	✓	✓	✓	✓	✓		✓		
High & low alarms										✓	✓	✓		
1 stage control output														
2 stage control output														
Overrun correction														
Flow direction detection							✓							
Temperature compensation													✓	✓
Pressure compensation														✓
Dual input						✓	✓							
Consumption calculation														
Sum calculation (add on)														
External reset total or start/stop					✓				✓			✓		
RS-232, RS-485, TTL					✓	✓	✓		✓	✓		✓	✓	✓
Intrinsically safe or exp-proof	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Backlight	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

Totalizers & Batch Controllers

Flow Computers			Batch Controllers/ Dispensers					Level Indicators					Temperature			Pressure		
Ratio	Differential/ sum							High/low alarms			Linearization		High/low alarms			high/low alarms		
F114	F116	F127-EL	F030	F130	F131	F133	F136	F070	F073	F170	F077	F173	F040	F043	F143	F050	F151	F053
Ratio calculation and monitoring	Consumption/sum calculation	Consumption calc. with temp correction	with one stage control output	with two stage control or pulse outputs	with two control/pulse + analog output	Dispenser	with two control/pulse + analog output	Level indicator	with one alarm output	with analog + max four alarm outputs	with one alarm output	with analog + max four alarm outputs	Temperature indicator	with one alarm output	with analog + max four alarm outputs	Pressure indicator	Dual pressure indicator	with one alarm output
✓	✓	✓	✓	✓	✓	✓	✓											
	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓		✓	✓	✓			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
													✓	✓	✓			
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✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

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Accessories

NEMA 4 & NEMA 4X Enclosures

- Plastic, steel, & stainless steel
- Up to ten meters per enclosure
- 2" pipe mounting brackets
- Custom engraved plastic labels



- ▶ **Low-Cost Plastic NEMA 4X**
- ▶ **Model PDA2801**



- ▶ **Plastic NEMA 4X**
- ▶ **Model PDA2501**



- ▶ **Painted Steel NEMA 4**
- ▶ **Model PDA2703**



- ▶ **Stainless Steel NEMA 4X**
- ▶ **Model PDA2601**

See pages 139-147 for complete specifications.



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Accessories

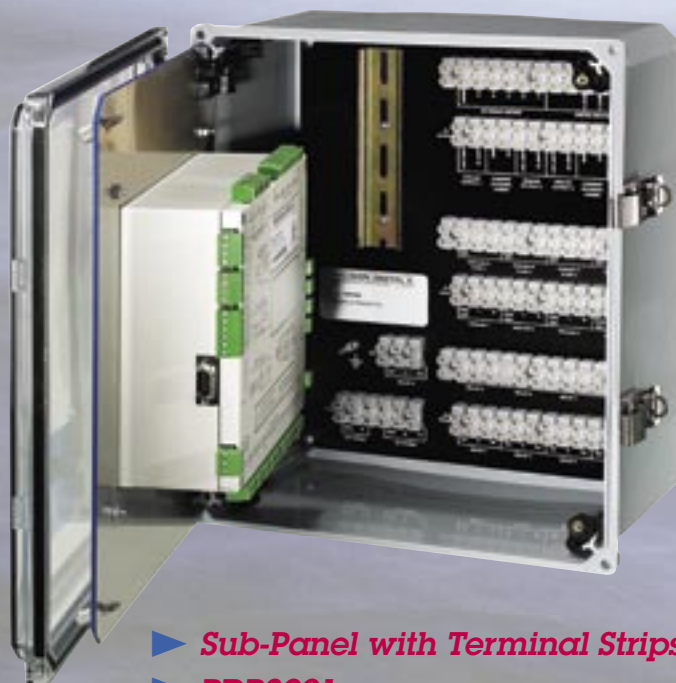
ConsoliDator® NEMA 4X Enclosure



► PDA2901

Features

- NEMA 4X
- Hinged clear cover
- Hinged mounting panel
- Stainless steel latches
- Power switch & fuse
- Captive screws
- Plenty of space inside
- Sub-panel with terminal strips



► Sub-Panel with Terminal Strips
► PDP2901

See pages 148, 149 for complete specifications.

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SETUP, CALIBRATION & WARRANTY SERVICES

www.predig.com

Enclosures • Serial Adapters

NEMA 4X Enclosures

Features

- Meter mounted inside cover
- Clear cover
- Mounting plate
- One to four meters
- 2" pipe mounting kit

► **PDA2407**



See page 145 for complete specifications.

Serial Communication Adapters & Converters

- Trident RS-232 adapter
- Trident RS-422/485 adapter
- RS-232 to RS-422/485 converter
- USB to RS-422/485 converter
- Isolated converters available
- Trident RS-232 & RS-485 isolated multi-input adapter board

► **PDA7488**



► **PDA7422**



► **PDA7232**



► **PDA8485**



► **PDA7485**



See page 87 for complete specifications.

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Setup, Calibration & Warranty Services

Setup & Calibration Services

For your convenience Precision Digital offers setup and calibration services for most of its products. Setup & Calibration sheets have been included at the end of the specifications for each product or product line. Order the Lifetime Calibration and forget about paying for recalibration again for as long as you own the product.



Setup & Calibration Sheet PD765

Customer Information

Contact: _____
 Company: _____
 Address: _____
 City: _____
 Zip Code: _____
 State: _____
 Country: _____
 PO #: _____
 Title: _____
 Phone: _____
 Email: _____
 Date: _____
 Fax: _____
 Application: ☐ Level ☐ Flow ☐ Pressure ☐ Temp

Product Information

Model: _____
 Serial Number: _____
 SO # (POC): _____
 Process Input: ☐ 4-20 mA ☐ Temperature Input ☐ Type ☐ Calibration Type
 Total # of Units: _____
 Input: ☐ 1-5 V ☐ TC ☐ Type ☐ 0.00385 ☐ Linear Function
☐ 0-5 V ☐ RTD ☐ Type ☐ 0.00392 ☐ Square Root
☐ 0-10 V ☐ Other ☐ °F ☐ °C

2-Point Input Calibration/Scaling - P/N: PDN-CAL

Input: _____
 Display: _____
 Decimal Point: _____
 Specify display value: _____
 Location (e.g. 0.000): _____

Relay Setup & Programming - P/N: PDN-CSETUP

Relay 1: ☐ Automatic only ☐ Manual only ☐ Manual set point ☐ Manual set point passing ☐ Alternation control ☐ Fail-Safe or Normal ☐ On Delay _____
 Set Point: _____
 Reset Point: _____
 Off Delay: _____

**Relay 2: ☐ Automatic only ☐ Manual only ☐ Manual set point ☐ Manual set point passing ☐ Alternation control ☐ Fail-Safe or Normal ☐ On Delay _____
 Set Point: _____
 Reset Point: _____
 Off Delay: _____**

Communications & Advanced Settings

Address: _____
 Baud Rate: _____
 Parity: _____
 Stop Bits: _____
 Flow Control: _____
 Filter: _____
 Bypass: _____
 Password: _____
 *Not applicable to temperature inputs only
 *Cold applies to process inputs only

Precision Digital Corporation
 19 Strathmore Road
 Natick, MA 01760
 Tel: (800) 343-1001 Fax: (508) 655-8990
 www.predig.com

See page 160 for ordering information.

PRECISION DIGITAL

CERTIFICATE OF CALIBRATION
 CERT NO: 1000A00000
 PAGE 1 OF 1

CUSTOMER:
 ACME Controls
 25 West Ave
 Suite 300
 Natick, MA 01760

INSTRUMENT IDENTIFICATION
 PO#: 17485
 SO#: 7854

EQUIPMENT:
 DESCRIPTION: Panel Meter
 MANUFACTURER: Precision Digital Corporation
 MODEL NO: PD765-6R2-00
 SERIAL NO: DA0017584
 REFERENCE NO: 36A

CERTIFICATE INFORMATION
 CONDITION RECEIVED: Received in Tolerance
 CONDITION RETURNED: Returned in Tolerance
 PROCEDURE NUMBER: CL-CP0001
 PROCEDURE REVISION: A
 REMARKS: Used customer supplied calibration points for Voltage input

TECHNICIAN: T Pitt
CAL DATE: 03/14/2005
TEMPERATURE: 22°C
HUMIDITY: 32% RH

CALIBRATION STANDARDS USED

ID #	DESCRIPTION	MODEL	REPORT #	CAL DATE	DUE DATE
158	Yokogawa Calibrator	CA-100	1000050391	01/05/2005	01/05/2006
053	HP Multimeter	34401A	00117811V2	01/05/2005	01/05/2006

THE PRECISION DIGITAL CORPORATION QUALITY SYSTEM IS CERTIFIED TO ISO 9001:2000
 The instrument(s) listed on this certification have been calibrated against standards traceable to the National Institute of Standards and Technology (NIST).
 A calibration uncertainty ratio of 4:1 was maintained unless otherwise stated.
 All results contained within this certification apply only to the instrument(s) calibrated. Any number of factors may cause the calibration item to drift out of calibration before the calibration interval has expired.
 This certificate shall not be reproduced except in full and with the written approval of Precision Digital Corporation.
 This calibration was performed in accordance with the Precision Digital Corporation Quality Manual and complies with the requirements of ISO 9001:2000 and ANSI/ISO 2240-1-1994.
 Approved By: Sample Report

Precision Digital Corporation
 19 Strathmore Road
 Natick, MA 01760
 Tel: (800) 343-1001 Fax: (508) 655-8990
 www.predig.com

Extended Warranty

Precision Digital offers extended warranty for most products. Protect your investment by ordering one or two years of extended warranty. Purchasing the two-year extended warranty will give you up to five years of warranty for many products!

See page 160 for ordering information.

PRECISION DIGITAL

Extended Warranty Certificate
 Certificate Number: EWC-A0000

Issued to: ACME Controls
 25 West Ave
 Natick, MA 01760
 Ref: POW 17485
 Model: PD765-6R2-00
 S/N: 0509-12345-20

Extended Warranty Certification:
 Precision Digital Corporation hereby certifies that the product(s) listed above complies with all quality standards, assembly and test procedures, and any controlling regulatory requirements in effect at time of manufacture. The product has been tested, found free of defects and to perform within published specifications.

Terms and Conditions:
 Service coverage for the products under this Extended Warranty Certificate shall be in effect for:

Effective Date	Expiration Date
05/05/2005	05/05/2009

Extended Warranty covers the following:
 Precision Digital will, at its option, either repair or replace any product that fails to function properly under normal and proper usage due to defects in materials or workmanship during the period of this Extended Warranty.

Extended Warranty claims will be processed in accordance with Precision Digital product return policy. Before returning product for service, please contact our Technical Support department at (508) 655-7300 or email at support@predig.com and request a Return Material Authorization (RMA). All authorized product returns are to be shipped prepaid. Precision Digital Extended Warranty Service does not include repair of failures caused by misuse, neglect, accident, modification or operation outside the specified operating environment.

Certified by: Sample Report
 Name: Sample Report
 Date: 05/05/2005



SETUP, CALIBRATION & WARRANTY SERVICES

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Quick Selection Guides

ConsoliDator® Multi-Channel Controllers

				
Model	PD940	PD941	PD980	PD981
Type	Process/Rate & Totalizers			
Analog Inputs	Four analog inputs: 4-20 mA		Eight analog inputs: 4-20 mA	
Pulse Inputs	Four pulse inputs: 100 mVp-p to 15 Vp-p; 1-10,000 Hz			
Display	Backlit LCD Bargraphs Numeric ±999,999			
Programming Method	Front panel buttons External buttons PC with ConsoliDator Software or Modbus			
Transmitter Power	Input: Four 24 VDC @ 20 mA (Non-isolated) Output: Four 24 VDC @ 20 mA (Non-isolated)		Input: Eight 24 VDC @ 20 mA (Non-isolated) Output: Two 24 VDC @ 20 mA (Non-isolated)	
Relays	9 Form C (SPDT) 10 A			
Relay Operation	High or low alarm Annunciator high or low High or low pulse action Lead-lag pump alternation Plunger lift operation		Pulse width modulation Trigger mode PI control Summary alarm Supervisory alarm	
4-20 mA Output	Four analog outputs: 4-20 mA Manual PID control		Two analog outputs: 4-20 mA Manual PID control	
Serial Communications	RS-232 Modbus RTU			
Software	ConsoliDator Monitoring Software Any Modbus RTU compatible software			
Power	90-264 VAC & 8-30 VDC			
Operating Temperature	0 to 50°C			
Mounting	Wall mount	Panel mount	Wall mount	Panel mount
Approvals	UL & C-UL Listed 508 Industrial Control Equipment			
Page Number	70-76			

Quick Selection Guides

Large Display Process & Temperature Meters/Totalizers (LED Display)

	2.3" LED NEMA 4X 		1.0" LED NEMA 4X 		0.8" LED Explosion-Proof 	
Model	PD650	PD757	PD655	PD755	PD656	PD756
Type	Process/Rate & Totalizer	Temperature	Process/Rate & Totalizer	Temperature	Process/Rate & Totalizer	Temperature
Input Field Selectable	4-20 mA 1-5 V 0-5 V 0-10 V	J, K, T, E, R, S TC 100 Ω Pt RTD	4-20 mA 1-5 V 0-5 V 0-10 V	J, K, T, E, R, S TC 100 Ω Pt RTD	4-20 mA 1-5 V 0-5 V 0-10 V	J, K, T, E, R, S TC 100 Ω Pt RTD
Display Process/Rate Total	4½ + extra zero 299,99(0) 999,999	3214°F	4½ + extra zero 299,99(0) 999,999	3214°F	4½ + extra zero 299,99(0) 999,999	3214°F
Digit Height	2.3" (57.3 mm)		1.0" (25.4 mm)		0.8" (20.3 mm)	
Programming Method	Internal buttons External buttons		Front panel buttons External buttons		Internal buttons External buttons Magnet Key (Option)	
Multi-Point Linearization	11-point	N/A	11-point	N/A	11-point	N/A
Root Function	Square root Prog exponent	N/A	Square root Prog exponent	N/A	Square root Prog exponent	N/A
Max/Min Display	Max (Peak)	Max & Min	Max (Peak)	Max & Min	Max (Peak)	Max & Min
Transmitter Power	Dual, isolated 24 VDC @ 20 mA (Standard) or One 18 VDC (nominal) @ 200 mA unregulated (see Price List for modification number)					
Relays	2 or 4 Form C (SPDT) 2 A (Option)					
Relay Operation	High or low alarm 100% deadband Auto & manual reset Latch or non-latch Pump alternation* Rate or total* Auto & manual batch* Fail-safe or normal *Applies to process/rate totalizers only					
4-20 mA Output	Isolated (Option)					
Power Options	AC power: 115 or 230 VAC (field selectable) DC power: 22-28 VDC					
Operating Temperature	-20 to 65°C	0 to 65°C	-20 to 65°C	0 to 65°C	-20 to 65°C	0 to 65°C
Mounting	Panel, Wall		Panel, Wall, Pipe		Wall, Pipe	
Approvals	None		None		None	
Page Number	77-83		77-83		77-83	

Quick Selection Guides

Shallow Depth Trident Type Meters (LED Display)

					
Model	PD765 Trident	PD740 Javelin T	PD644 Javelin D	PD865 Snooper	PD602 Dart
Type	Process & Temperature	Temperature	High-Voltage DC	Serial Data	Process
Input Field Selectable	4-20 mA, 0-20 mA 1-5 V, 0-5 V -10 to 10 V J, K, T, E TC 100 Ω Pt RTD	J, K, T, E TC 100 Ω Pt RTD	0 to 300 VDC	Modbus RTU	4-20 mA 1-5 V 0-5 V 0-10 V
Display	4 digits 9,999; 2300°F	4 digits 2300°F	4 digits 9,999	6 digits 999,999	3½ digits 1,999
Display Intensity	Adjustable	Adjustable	Adjustable	Adjustable	Fixed
Digit Height	0.56" (14.2 mm)	0.56" (14.2 mm)	0.56" (14.2 mm)	0.56" (14.2 mm)	0.56" (14.2 mm)
Programming Method	Front panel Meter Copy PC with MeterView	Front panel Meter Copy PC with Modbus	Front panel Meter Copy PC with Modbus	Front panel PC with Modbus	High & low trim pots
Root Function Multi-Point Linearization	Square root	N/A	N/A	Square root Prog exponent 16-point	N/A
Max/Min Display	Toggle between Max & Min; 10 seconds momentary or continuous				N/A
Transmitter Power	Dual 24 VDC @ 200 mA & 40 mA (Option)	24 VDC @ 200 mA (Option)			
Relays	2 Form C (SPDT) 3 A (Option)			2 Form A 2 Form C (Option)	N/A
Relay Operation	High or low alarm 100% deadband Auto & manual reset Latch or non-latch			Pump alternation On & off time delay Fail-safe or normal Front panel ACK or PC	N/A
4-20 mA Output	Isolated (Option)	Isolated (Option)	Isolated (Standard)	Isolated (Option)	N/A
Serial Communications	RS-232 RS-422/485	RS-485	RS-485	RS-485	N/A
Protocol	Proprietary ASCII Modbus RTU (Option)			Modbus RTU	N/A
Software	MeterView® LabVIEW	MeterView® (Data logging only)	MeterView® (Data logging only)	Any Modbus RTU compatible	N/A
Power Options	Universal 85-265 VAC or 12-36 VDC				
Operating Temperature	0 to 65°C				
Mounting	Panel mount 1/8 DIN				
Approvals	CE, UL & C-UL	UL & C-UL Listed 508 Industrial Control Equipment			None
Page Number	84-88	89-92	90-93	94-97	98-99

Quick Selection Guides

1/8 DIN Process & Temperature Meters/Totalizers (LED Display)

					
Model	PD690	PD691	PD692	PD693	PD750
Type	Process	Strain Gauge Load Cell	Process/Rate & Totalizer	Process/Rate & Totalizer	Temperature
Input Field Selectable	4-20 mA 1-5 V 0-5 V 0-10 V	±15 mV ±100 mV 0-30 mV 0-200 mV	4-20 mA 1-5 V 0-5 V 0-10 V	Pulse or square wave Open collector or switch 0-5 V, 0-12 V @ 30 kHz	J, K, T, E, R, S TC 100 Ω Pt RTD
Display Process/Rate Total	4½ + extra zero 199,99(0)	4½ + extra zero 199,99(0)	4½ + extra zero 299,99(0) 999,999	4½ + extra zero 299,99(0) 999,999	3214°F
Digit Height	0.56" (14.2 mm)				
Programming Method	Front panel buttons				
Multi-Point Linearization	11-point	N/A	11-point	11-point	N/A
Root Function	N/A	N/A	Square root Programmable exponent	N/A	N/A
Max Display	N/A	Max (Peak)	Max (Peak)	Max (Peak)	N/A
Transmitter Power	24 VDC @ 20 mA	24 VDC @ 20 mA 5 or 10 VDC @ 50 mA	24 VDC @ 20 mA	24 VDC @ 20 mA or 12 VDC @ 50 mA	24 VDC @ 20 mA
Relays	2 or 4 Form C (SPDT) 2 A (Option)				
Relay Operation	High or low alarm 100% deadband Auto & manual reset Fail-safe or normal		High or low alarm 100% deadband Auto & manual reset Latch or non-latch Pump alternation Assign to rate or total Fail-safe or normal		High or low alarm 100% deadband Auto & manual reset Fail-safe or normal
4-20 mA Output	Option				
Power Options	AC power: 115 or 230 VAC (Factory set) DC power: 12-36 VDC				
Operating Temperature	0 to 60°C				
Mounting	1/8 DIN panel mount				
Approvals	UL & C-UL Listed 508 Industrial Control Equipment				
Page Number	100-101	102-103	104-107	104-107	108-109

Quick Selection Guides

Loop-Powered Meters (LCD)

Case Type	Model	# of Digits	Digit Height	Voltage Drop	Input	Option	Approvals	Temperature Range	Page
Panel Mount 	PD680	3½ + 0	0.5"	1.0 V	Linear	—	None	-40 to 70°C	112
	PD673	4½	0.4"	5.2 V	Linear	—	None	-20 to 65°C	111
NEMA 4X 	PD660	3½	0.5"	1.5 V*	Linear	Backlight*	None	-40 to 80°C	110
	PD685	3½	1.0"	1.0 V	Linear	—	None	-40 to 85°C	113
	PD686	3½	1.0"	1.0 V	Linear	—	FM & CSA	-40 to 85°C	113
Exp-Proof 	PD675	4½	0.7"	5.2 V	Linear	—	FM & CSA	-20 to 65°C	111
	PD661	3½	0.5"	1.5 V*	Linear	Backlight*	FM & CSA	-40 to 80°C	110
	PD687	3½	1.0"	1.0 V	Linear	—	FM & CSA	-40 to 80°C	113
	PD677	4½	0.7"	5.2 V	Linear	—	FM & CSA	-20 to 65°C	111

*Voltage drop: 3.5 V with backlight option installed

Loop-Powered Process/Rate & Totalizers (LCD)

Case Type	Model	# of Digits	Digit Height	Voltage Drop	Input	Option	Approvals	Temperature Range	Page
Panel Mount 	PD696	Rate: 4½ Total: 6	0.5"	5.6 V*	Linear & Square Root	Backlight*	None	0 to 65°C	114
NEMA 4X 	PD697						None	0 to 65°C	114
Exp-Proof 	PD698						FM & CSA	0 to 65°C	114

*Voltage drop: 7 V with backlight option installed

Scanners & Annunciators

	Model	Channels per Unit	Channels per System	Analog Input Scanning	Alarm Input	Alarm Output	Alarm Sequence	Power Options	Page
MINIMUX® 	PD118	8	Unlimited	Internal or External TC, RTD, Current, Voltage, AC or DC	Switch, Open collector, Logic level	LED, Relay, Built-in horn	ISA Sequence A or F2A (First-Out)	115 VAC or 230 VAC (Field selectable)	116
VIGILANTE® 	PD141	4	8	N/A	Switch, Open collector, Logic level	LED, Relay, Built-in horn	ISA Sequence A or F2A (First-Out)	115 VAC, 230 VAC or 24 VDC	119

Quick Selection Guides

Nova Process & Temperature Controllers (LED Display)

				
Nova Series	PD540 Series	PD550 Series	PD560 Series	PD570 Series
Type	Digital Controller	Programmable Ramp & Soak Controller	Digital Meter	Limit Controller
DIN Sizes	1/16, 3/16, 1/8(H), 1/8(V), 1/4	1/16, 3/16, 1/8(V), 1/4	1/8(H), 1/4	1/16, 1/4
Input Field Selectable	TC: J, K, T, E, R, S, B, L, N, U, W, Platinel II; RTD: 100 Ω Pt100, JPt100 VDC: -10 to 20 mV, 0-100 mV, 0.4-2.0 V, 1-5 V, 0-10 V			
Display	Dual red LED displays, 4 digits each			
Digit Height	PV: 0.45" to 0.81" SP: 0.37" to 0.47"		PV: 0.78" & 0.81" SP: 0.45" & 0.43"	PV: 0.45" & 0.81" SP: 0.37" & 0.43"
Programming Method	Front panel, PC with Nova software: set points only, PC with Modbus			
Max/Min & Time Display	N/A	N/A	Max & Min	Max or Min Over limit time
Control Loop & Mode	Single-loop control or heating & cooling	Single-loop control	N/A	High or low limit
Running Mode	Auto/Manual output control, Run/Stop	Prog/Reset 3 PID & 1 deviation	N/A	N/A
Ramp/Soak Programs	N/A	2: 15 segments each	N/A	N/A
Control Outputs	Universal, up to 5 outputs		N/A	N/A
Time Proportional PID	Relay, SSR (V-Pulse)		N/A	N/A
Continuous PID	SCR (4-20 mA)		N/A	N/A
Control Relays	Up to 3 (If not used for alarms)		N/A	1 latching relay
Analog Outputs*	1 or 2 (4-20 mA or V-Pulse)		N/A	N/A
Alarm Relays	Up to 3 (20 alarm types)		1 or 3 relays	1 relay
Retransmitting Output*	4-20 mA (PV, SP, MV)		4-20 mA (PV)	4-20 mA (PV, SP)
Digital Inputs	2: SP Select, Run/Stop	2: Run, Hold, Step, Reset	2: Store & reset Max/Min PV	N/A
Digital Outputs	N/A	2 or 4: IS, TS, PEND, UP, DN	N/A	N/A
Serial Communications	RS-485: PC Software, Modbus (ASCII, RTU), Sync (PD540: Master/Slave, PD550: Master)		RS-485: PC Software, Modbus (ASCII, RTU)	
Power	100-240 VAC, 50/60 Hz, 10 W			
Approvals	CE, UL & C-UL Recognized Process Control Equipment			
Page Number	121-124	125-128	129-131	132-134

*Analog outputs are internally powered – do not require excitation.

*Analog outputs are internally powered – do not require excitation.

Quick Selection Guides

Digital Pressure Gauges (LCD)			
			
Model	PD202	PD213, PD214, PD224	PD233, PD243, PD253
Type	General Purpose	Industrial	Precision Test
Accuracy	0.5% FS	0.25% FS	0.05%, 0.10%, or 0.25% FS
Case Size	2½"	3", 4½"	3"
Case Material	Thermoplastic	(3") 300 Series stainless steel (4½") Fiberglass reinforced thermo-plastic or black painted aluminum	300 Series stainless steel; Electropolished
Wetted Materials	17-4 PH stainless steel sensor; 316 stainless steel socket	17-4 PH stainless steel sensor; 316 stainless steel socket	316 stainless steel
Socket Size	¼" NPT	¼" NPT, (½" NPT: 4½" case only)	¼" NPT
Connection	Lower (6 o'clock)	Lower (6 o'clock)	Lower (6 o'clock)
Ranges	Vac. to 19,999 psi (see other engineering units below)	Vac. to 20,000 psi & compound (see other engineering units below)	Vac. to 7,000 psi & compound (see other engineering units below)
Power Options	Two AAA alkaline batteries	(3") Two AA alkaline batteries (4½") Two C alkaline batteries Loop-powered or 12-36 VDC	Three AAA alkaline batteries
Battery Life	>1,000 hrs	(3") >1,000 hrs, (4½") >3,600 hrs	>1,000 hrs
On/Off	Manual on/off Auto off: never, 5, 10, 20 min	Manual on/off Auto off: never, 2, 5, 15, or 30 min	Manual on/off Auto off: never, 2, 5, 15, or 30 min
Display	4½ digit LCD	5 digit LCD	5 digit LCD
Digit Height	0.5"	(3") 0.60", (4½") 0.88"	0.66"
Backlight	Option Auto off: 30 sec, 1 min, 5 min	Option Auto off: 10 sec, 30 sec, 1 min, 5 min	Standard Auto off: 10 sec, 30 sec, 1 min, 5 min
Engineering Units	psi, Bar, kg/cm², kPa, MPa, ftH₂O, inHg, cmHg, mmHg	psi, mmHg, inHg, inH₂O (tempera- ture options: 4°C, 20°C, 60°F), mBar, ftH₂O, MPa, kPa, kg/cm², Bar	psi, inHg, inH₂O, ftSW, Bar, mBar, kPa, MPa, mmHg, cmH₂O, mmH₂O, kg/cm²
Field Calibration	Zero & span	Zero, mid-point & span Password protected	Zero & span Password protected
Programming Method	Front panel	Front panel	Front panel
Max/Min Display	Max & Min	Max & Min	Max & Min
Zero/Clear	Zeros display or clears max/min	Zeros display or clears max/min	Zeros display or clears max/min
Relays	None	2 Form C (-2 power only)	N/A
Relay Operation	N/A	High or low alarm	N/A
4-20 mA Output	N/A	Optional (-2 power only)	N/A
Operating Temperature	-10 to 60°C	-10 to 60°C	-18 to 65°C
Approvals	CE, EN 61326 (1998)	CE, EN 50082-1 (1997) FM & CSA (option)	CE, EN 50082-1 (1997) FM & CSA
Page Number	137, 138	136, 138	135, 138

Quick Selection Guides

NEMA 4, NEMA 4X & Explosion-Proof Enclosures

PDA2706



PDA2446



PDA2407



Plastic NEMA 4X Enclosures - Meters Mounted inside Enclosure

Model	# of Meters	Type of Meters & Controllers	Page
PDA2407	1	All 1/8 DIN meters & controllers	145
PDA2408	2	Two PD680, one 1/4 DIN or two 1/8 DIN controllers	
PDA2409	3	PD680 & 1/8 DIN controllers	
PDA2410	4	PD680 & 1/8 DIN controllers	
PDA2411	2	All 1/8 DIN meters & controllers	
PDA2412	3	All 1/8 DIN meters, except PD680	
PDA2414	2	One 1/8 DIN (V) and one 1/8 DIN (H) meter or controller	
PDA2415	4	All 1/8 DIN meters, except PD680	

Plastic NEMA 4X Enclosures - Meters Mounted on Enclosure Door

Model	# of Meters	Type of Meters & Controllers	Page
PDA2501	1	1/8 DIN controllers: PD542, PD562 Trident type meters: PD602, PD644, PD740, PD765, PD865	139
PDA2502	2		
PDA2503	3		
PDA2504	4	1/8 DIN controllers: PD542, PD562 All 1/8 DIN meters	
PDA2505	5		
PDA2506	6		
PDA2507	7		
PDA2508	8		
PDA2510	10		
PDA2512	2		
PDA2801	1	Trident type meters: PD602, PD644, PD740, PD765, PD865	

Steel & Stainless Steel NEMA 4 & 4X Enclosures - Meters Mounted on Enclosure Door

Model - SS	Model - Steel	# of Meters	Type of Meters & Controllers	Page
PDA2601	PDA2701	1	Trident type meters: PD602, PD644, PD740, PD765, PD865	140
PDA2602	PDA2702	2		
PDA2603	PDA2703	3		
PDA2604	PDA2704	4	1/8 DIN controllers: PD542, PD562 All 1/8 DIN meters	
PDA2605	PDA2705	5		
PDA2606	PDA2706	6		

Explosion-Proof Enclosures - Meters Mounted inside Enclosure

Model	# of Meters	Type of Meters & Controllers	Page
PDA2444	1	All 1/8 DIN meters & controllers	146
PDA2445	2	Two PD680, one 1/4 DIN or two 1/8 DIN controllers	
PDA2446	2	All 1/8 DIN meters, except PD680	

Note: Custom enclosures available upon request.

Specifications & Ordering Guides

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ConsoliDator® Multi-Channel Controllers

SPECIFICATIONS

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

General

Display: Backlit LCD; 4.75" x 3.50" (121 mm x 89 mm)
Display Update Rate: 1 every 2 seconds
Programming Method: Front panel buttons, external buttons, PC with ConsoliDator software, or Modbus registers.
Password: Programmable, restricts modification of settings.
Non-Volatile Memory: Settings stored for a minimum of 10 years.
Power: 90-264 VAC, 47-63 Hz, 20 VA or 8-30 VDC, 15 W (field)
Isolation: AC: 1500 V; signal and output power grounds are connected to earth ground (chassis); DC: not isolated.
Surge Protection: Analog inputs have chokes & TVS
Operating Temperature: 0 to 50°C
Relative Humidity: 0 to 90% non-condensing
Storage Temperature: -40 to 60°C
Connections: Removable screw terminals and DB9 male
Enclosure: NEMA 1, powder-coated steel; color: warm gray
Mounting: Panel or wall mount models
Weight: 5.5 lb (2.5 kg)
UL File Number: E160849; 508 Industrial Control Equipment
Warranty: 1 year parts & labor
Extended Warranty: 1 or 2 years, refer to Price List for details.

Screen Displays

Numeric Display: Six digits, ±999999 or 99' 11.9" (feet & inches)
Bargraph: Twenty divisions
Engineering Units: User selectable or definable units (e.g. ppm, gal, m, lb, g/h, psi, ozs, ft, mA, °C, °F, f&i, %)
Master Input Screen:
Numeric Displays: Eight; process value & engineering units
Bargraphs: Eight; process & channel number
Individual Input Screen:
Numeric Displays: Process and mA input value
Bargraphs: High and low set point markings
Simulation Mode: Test setup without applying an input

Analog Inputs

Number of Inputs: Four (ConsoliDator 4); Eight (ConsoliDator 8)
Input: 4-20 mA; minimum span of 1 mA
Accuracy: ±0.03% FS ±1 count
Input Function: Linear, square root, programmable exponent, or fixed value
Programmable Exponent: From 0.50001 to 2.99999
Multi-Point Linearization: 2 to 32 points, accessible through ConsoliDator software or Modbus registers.
Math Function: Sum or difference of 2 or more channels
Totalizer: Calculates total based on rate and time base of seconds, minutes, hours, or days; stored in non-volatile memory every 5 minutes; supports linear inputs only.
Totalizer Reset: Via front panel buttons (password restricted)
Input Impedance: 130 Ω
Transmitter Supply: 24 VDC @ 20 mA per input; short circuit protection: current limited to 40 mA max per input

Digital Inputs

Number: Four
Type: Switch closure, open collector transistor, or logic level
Input Impedance: 240 Ω



PD940



PD981

Pulse Inputs

Number of Inputs: Four
Input: 100 mVp-p to 15 Vp-p; 1 Hz to 10 kHz
Accuracy: ±1 count for K-Factor >1
K-Factor: 0.00001 to 999999 pulses/unit
Totalizer: Calculates total based on rate, stored in non-volatile memory every 5 minutes.
Totalizer Reset: Via front panel buttons (password restricted)

Relays

Number of Relays: Nine
Relay Type: Form C (SPDT) with built in MOVs
Rating: 10 A @ 120/240 VAC resistive load; 1/3 HP @ 120/240 VAC inductive loads; 5 A @ 28 VDC
Minimum Load: 50 mA for AC, 10 mA @ 5 VDC
Assignment: Any relay may be assigned to any channel. Multiple relays may be assigned to one channel. All relays are programmed independently.
Cycle Monitoring: Controller tracks time relay has been active and number of times relay has cycled on/off.
Time Delay: Programmable on/off delays, 0 to 999.9 seconds
Operation:
High or Low Alarm: Assign to analog or pulse channel for on/off relay control; 100% adjustable deadband.
Multi-Channel Alarm: Assign two or more analog channels to indicate common high or low condition.
Annunciator High or Low: Assign to analog or pulse channel for on/off relay control with reset capability from digital input switch. 100% adjustable deadband; automatic or manual reset.
Summary Alarm: Indicates when any relay enters alarm state.
Supervisory Alarm: Indicates CPU failure or analog input loss.
High or Low Pulse Action: Assign to analog or pulse input channel for pulsing on/off timed relay control. Programmable pulse width and delay.
Trigger: Assign to pulse channel for indication of user-defined total increment. Programmable for scaled pulse output.
Plunger Lift: Assign to analog and/or pulse channels to control a plunger lift system.
Lead-Lag Alternation (Sequence): Link multiple relays for sequential operation. Programmable override set points to turn on additional relays.
Pulse Width Modulation: Assign to analog or pulse channel for on/off signal modulation based on input. User selectable cycle time.
PI Control: Assign to analog or pulse channel for Proportional plus Integral on/off modulated duty cycle. Manual tuning required.
Manual Override: Override any relay (password restricted). Relays do not respond to input while in this mode.

ConsoliDator® Multi-Channel Controllers

4-20 mA Analog Output

Number: Four (ConsoliDator 4); Two (ConsoliDator 8)

Assign to any process or pulse input

Accuracy: $\pm 0.05\%$ FS ± 0.01 mA

Mode: Linear or manual tuning PID

Loop Resistance: 10 to 600 Ω , powered by controller

External Loop Power Supply: 12 VDC min (300 Ω max);
32 VDC max (900 Ω max)

Isolation: 1500 V output-to-power line; 500 V output-to-input
when powered by external supply.

Modbus® Communications

Compatibility: EIA-232

Protocol: Modbus RTU

Address: Programmable between 1 and 247

Baud Rate: 1,200 to 38,400 bps

Transmit Delay: Programmable between 0 and 300 ms

Data: 8 bits (1 start bit, 1 stop bit)

Parity: Even, None with 1 stop bit, or None with 2 stop bits

ConsoliDator® Software

System Requirements: Windows® 95/98/ME/NT4/2000/XP

Communications: RS-232 using null-modem serial cable

Compatibility: ConsoliDator 4 & ConsoliDator 8, two versions

Configuration: Configure inputs and outputs. Save settings to
file for programming other controllers or restoring settings.

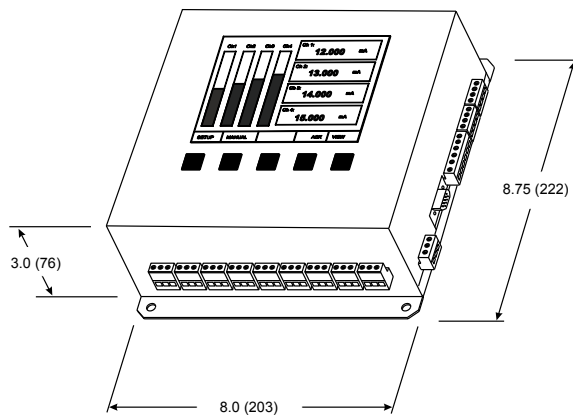
Logging Interval: 1 second to 10 minutes

Data Logging Report: Log to comma separated value (.csv) file
compatible with spreadsheet applications.

Wall Mount

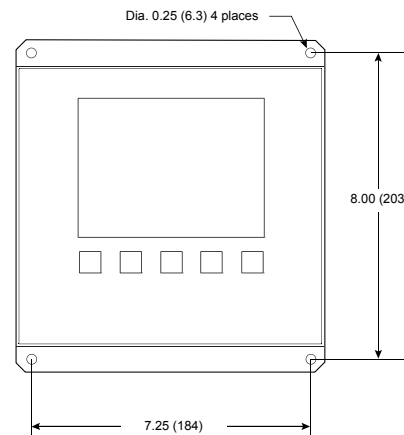
PD940, PD980

Overall Dimensions



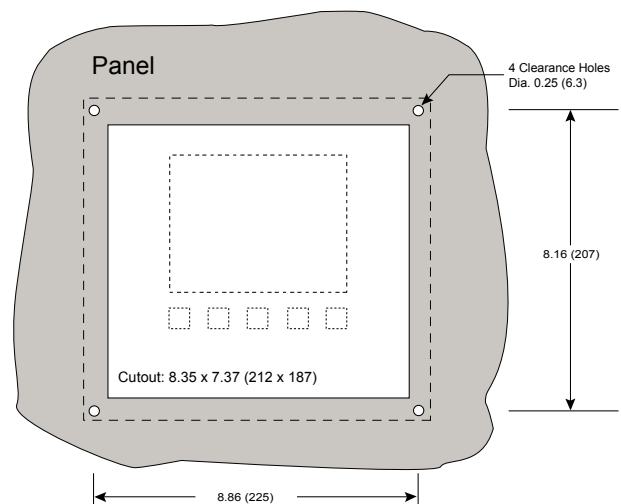
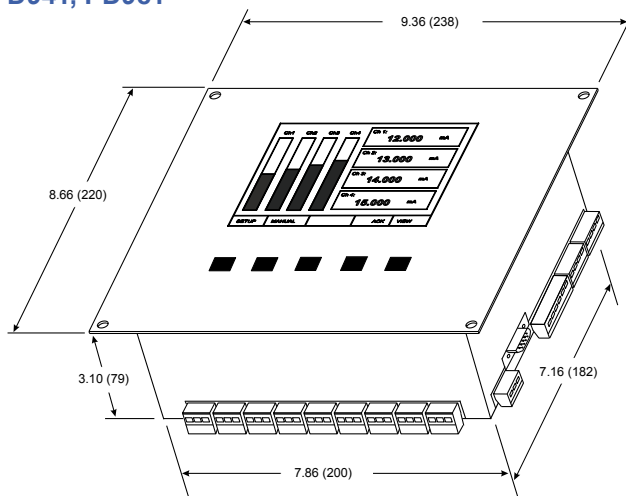
Mounting Dimensions

Units: Inch (mm)



Panel Mount

PD941, PD981

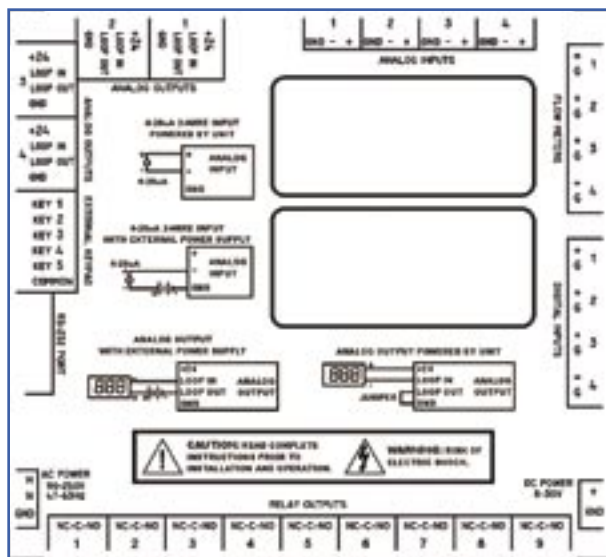


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**PRECISION
DIGITAL**

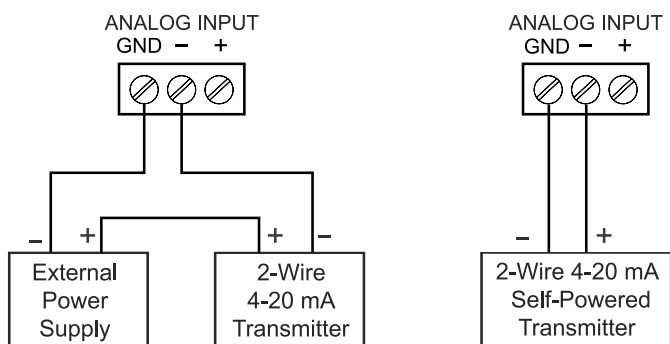
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Connectors Diagram

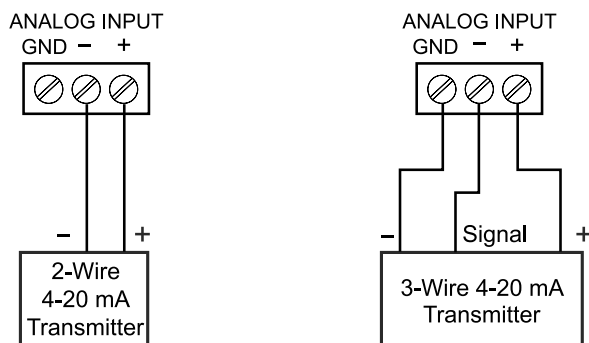


The connectors diagram is silk-screened on the back of every panel mount ConsoliDator (PD941 shown here)

4-20 mA Input Connections

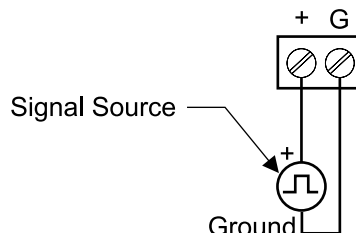


Transmitter Powered by External Supply

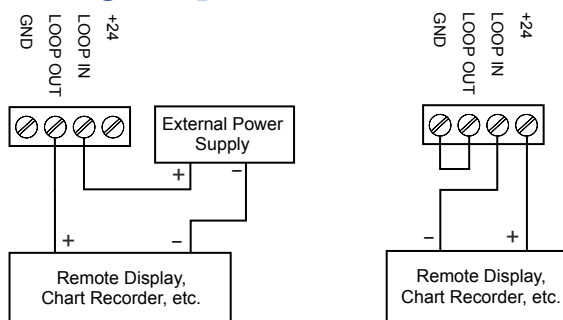


Transmitter Powered by Internal Supply

Pulse Input Connections



Analog Output Connections



Output Powered by External & Internal Supplies

ORDERING INFORMATION

ConsoliDator Controllers					
Model	Mount	4-20 mA Inputs	Pulse Inputs	4-20 mA Outputs	Relays
PD940-8K9-15	Wall	4	4	4	9
PD941-8K9-15	Panel	4	4	4	9
PD980-8K9-15	Wall	8	4	2	9
PD981-8K9-15	Panel	8	4	2	9

ConsoliDator Software for programming and data logging, available free of charge at www.predig.com.

Accessories	
Model	Description
PDA2901	NEMA 4X Enclosure for PD941 or PD981
PDA6901	2" Pipe Mounting Kit for PDA2901 Enclosure
PDA7485-I	RS-232 to RS-422/485 Isolated Converter
PDA7485-N	RS-232 to RS-422/485 Non-Isolated Converter
PDP2901	Sub-Panel with Terminal Strips for PDA2901 Enclosure
PDP2902	Sub-Panel w/o Terminal Strips for PDA2901 Enclosure
PDLXXXX	Engraved Plastic Label (see pages 142, 143)
PDX6901	Suppressor (snubber): 0.01 μ F/470 Ω , 250 VAC

Setup & Programming Services	
Part Number	Description
PDN-CSETUP2	Custom Setup & Programming
PDN-CERTCAL	Certificate of Calibration
PDN-CERTCAL2	Certificate of Calibration with Data

ConsoliDator® Multi-Channel Controllers

Setup & Programming Sheet ConsoliDator® 4 & 8

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Level ☐ Flow ☐ Pressure ☐ Temp	
Fax: _____	☐ Other: _____	
PO#: _____ SO# (PDC): _____	Description: _____	

P/N: PDN-CSETUP2 includes setup & calibration. Note: Refer to Price List for cost of setup & calibration services.

Product Information	Inputs to Set Up	Outputs to Set Up
Model Number: _____	ConsoliDator 4 4-20 mA (1-4) _____	ConsoliDator 4 4-20 mA (1-4) _____
Serial Number(s): _____	ConsoliDator 8 4-20 mA (1-8) _____	ConsoliDator 8 4-20 mA (1-2) _____
_____	Flowmeter Pulse (1-4) _____	
Total # of Units: _____	Digital Inputs (1-4) _____	Relays (1-9) _____

☐ Certificate of Calibration (Order P/N: PDN-CERTCAL)

☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)

Analog Inputs Setup & Programming

Function	Analog Input 1		Analog Input 2	
	☐ Linear ☐ Exponent: _____ ☐ Square Root ☐ Summation ☐ Difference ☐ Fixed Value	☐ Integration: Sec ☐ Integration: Min ☐ Integration: Hour ☐ Integration: Day ☐ Multi-Point Scaling*	☐ Linear ☐ Exponent: _____ ☐ Square Root ☐ Summation ☐ Difference ☐ Fixed Value	☐ Integration: Sec ☐ Integration: Min ☐ Integration: Hour ☐ Integration: Day ☐ Multi-Point Scaling*
Channel ID	Display	Input	Display	Input
High Value		mA		mA
Low Value		mA		mA
Bargraph Min Value				
Bargraph Max Value				
Dec Pt Format				
Eng Units				
Function Parameters	Summation Ch1 = ☒ 1+ ☐ 2+ ☐ 3+ ☐ 4+ ☐ 5+ ☐ 6+ ☐ 7+ ☐ 8	Difference Ch1 = ☒ 1- ☐ 2- ☐ 3- ☐ 4- ☐ 5- ☐ 6- ☐ 7- ☐ 8	Summation Ch2 = ☐ 1+ ☒ 2+ ☐ 3+ ☐ 4+ ☐ 5+ ☐ 6+ ☐ 7+ ☐ 8	Difference Ch2 = ☐ 1- ☒ 2- ☐ 3- ☐ 4- ☐ 5- ☐ 6- ☐ 7- ☐ 8

*Multi-Point Scaling: Please provide scaling points table on separate sheet.

Ref.: SA-DP0022-FM16 (1-4)

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Setup & Programming Sheet ConsoliDator® 4 & 8

Function	Analog Input 3		Analog Input 4	
	☐ Linear ☐ Exponent: _____ ☐ Square Root ☐ Summation ☐ Difference ☐ Fixed Value	☐ Integration: Sec ☐ Integration: Min ☐ Integration: Hour ☐ Integration: Day ☐ Multi-Point Scaling*	☐ Linear ☐ Exponent: _____ ☐ Square Root ☐ Summation ☐ Difference ☐ Fixed Value	☐ Integration: Sec ☐ Integration: Min ☐ Integration: Hour ☐ Integration: Day ☐ Multi-Point Scaling*
Channel ID				
	Display	Input	Display	Input
High Value		mA		mA
Low Value		mA		mA
Bargraph Min Value				
Bargraph Max Value				
Dec Pt Format				
Eng Units				
Function Parameters	Summation	Ch3 = ☐ 1+ ☐ 2+ ☒ 3+ ☐ 4+ ☐ 5+ ☐ 6+ ☐ 7+ ☐ 8	Summation	Ch4 = ☐ 1+ ☐ 2+ ☐ 3+ ☒ 4+ ☐ 5+ ☐ 6+ ☐ 7+ ☐ 8
	Difference	Ch3 = ☐ 1- ☐ 2- ☒ 3- ☐ 4- ☐ 5- ☐ 6- ☐ 7- ☐ 8	Difference	Ch4 = ☐ 1- ☐ 2- ☐ 3- ☒ 4- ☐ 5- ☐ 6- ☐ 7- ☐ 8
Function	Analog Input 5		Analog Input 6	
	☐ Linear ☐ Exponent: _____ ☐ Summation ☐ Integration: Min ☐ Integration: Day ☐ Fixed Value	☐ Square Root ☐ Difference ☐ Integration: Sec ☐ Integration: Hour ☐ Multi-Point Scaling*	☐ Linear ☐ Exponent: _____ ☐ Summation ☐ Integration: Min ☐ Integration: Day ☐ Fixed Value	☐ Square Root ☐ Difference ☐ Integration: Sec ☐ Integration: Hour ☐ Multi-Point Scaling*
Channel ID				
	Display	Input	Display	Input
High Value		mA		mA
Low Value		mA		mA
Bargraph Min Value				
Bargraph Max Value				
Dec Pt Format				
Eng Units				
Function Parameters	Summation	Ch5 = ☐ 1+ ☐ 2+ ☐ 3+ ☐ 4+ ☒ 5+ ☐ 6+ ☐ 7+ ☐ 8	Summation	Ch6 = ☐ 1+ ☐ 2+ ☐ 3+ ☐ 4+ ☐ 5+ ☒ 6+ ☐ 7+ ☐ 8
	Difference	Ch5 = ☐ 1- ☐ 2- ☐ 3- ☐ 4- ☒ 5- ☐ 6- ☐ 7- ☐ 8	Difference	Ch6 = ☐ 1- ☐ 2- ☐ 3- ☐ 4- ☐ 5- ☒ 6- ☐ 7- ☐ 8
Function	Analog Input 7		Analog Input 8	
	☐ Linear ☐ Exponent: _____ ☐ Square Root ☐ Summation ☐ Difference ☐ Fixed Value	☐ Integration: Sec ☐ Integration: Min ☐ Integration: Hour ☐ Integration: Day ☐ Multi-Point Scaling*	☐ Linear ☐ Exponent: _____ ☐ Square Root ☐ Summation ☐ Difference ☐ Fixed Value	☐ Integration: Sec ☐ Integration: Min ☐ Integration: Hour ☐ Integration: Day ☐ Multi-Point Scaling*
Channel ID				
	Display	Input	Display	Input
High Value		mA		mA
Low Value		mA		mA
Bargraph Min Value				
Bargraph Max Value				
Dec Pt Format				
Eng Units				
Function Parameters	Summation	Ch7 = ☐ 1+ ☐ 2+ ☐ 3+ ☐ 4+ ☐ 5+ ☐ 6+ ☒ 7+ ☐ 8	Summation	Ch8 = ☐ 1+ ☐ 2+ ☐ 3+ ☐ 4+ ☐ 5+ ☐ 6+ ☐ 7+ ☒ 8
	Difference	Ch7 = ☐ 1- ☐ 2- ☐ 3- ☐ 4- ☐ 5- ☐ 6- ☒ 7- ☐ 8	Difference	Ch8 = ☐ 1- ☐ 2- ☐ 3- ☐ 4- ☐ 5- ☐ 6- ☐ 7- ☒ 8

*Multi-Point Scaling: Please provide scaling points table on separate sheet.

Ref.: SA-DP0022-FM16 (2-4)

ConsoliDator® Multi-Channel Controllers

Setup & Programming Sheet ConsoliDator® 4 & 8

Flowmeter Pulse Input Setup & Programming

	Flowmeter #1	Flowmeter #2	Flowmeter #3	Flowmeter #4
Channel ID				
K-Factor				
Bargraph Max Value				
K-Factor				
Dec Pt Format				
Rate				
Dec Pt Format				
Total				
Dec Pt Format				
Eng Units				
Main Display & Bargraph	☐ Rate ☐ Total	☐ Rate ☐ Total	☐ Rate ☐ Total	☐ Rate ☐ Total

Analog Output Setup & Programming

	Analog Output 1	Analog Output 2	Analog Output 3	Analog Output 4
Mode	☐ Linear ☐ PID	☐ Linear ☐ PID	☐ Linear ☐ PID	☐ Linear ☐ PID
Input or Feedback Channel				
4 mA Value (Linear Mode)				
20 mA Value (Linear Mode)				
Set Point				
Proportional Gain	%	%	%	%
Integral Time	sec/rpt	sec/rpt	sec/rpt	sec/rpt
Cycle Time	sec	sec	sec	sec
Relay Period	sec	sec	sec	sec
Integration Limit	%	%	%	%
Increasing or Decreasing	☐ Inc ☐ Dec	☐ Inc ☐ Dec	☐ Inc ☐ Dec	☐ Inc ☐ Dec

ConsoliDator® Multi-Channel Controllers

Setup & Programming Sheet ConsoliDator® 4 & 8

Alarm/Relays Setup & Programming

Alarm/Relay▶	1.	2.	3.	4.	5.
Alarm Mode*					
Channel					
High Value					
Low Value					
Delay On					
Delay Off					
Pulse Width (Pulse Alarm Mode)					
Pulse Delay (Pulse Alarm Mode)					
Set Point (Trigger Mode)					
Reset Channel (Annunciator Mode)					
Link Relays (Lead-Lag)	☐	☐	☐	☐	☐

Alarm/Relay▶	6.	7.	8.	9.	Lead-Lag Override
Alarm Mode*					Set Point 1: _____
Channel					
High Value					
Low Value					Set Point 2: _____
Delay On					
Delay Off					
Pulse Width (Pulse Alarm Mode)					Set Point 3: _____
Pulse Delay (Pulse Alarm Mode)					
Set Point (Trigger Mode)					
Reset Channel (Annunciator Mode)					Set Point 4: _____
Link Relays (Lead-Lag)	☐	☐	☐	☐	

Note: Settings for PWM and Plunger Lift modes are not listed; refer to instruction manual and provide them on a separate sheet.

*Alarm/Relay Operation Modes

- | | | |
|---------------------|-------------------------|-------------------------------------|
| 1. High Alarm | 5. High Pulse Action | 10. Pulse Width Modulation – Linear |
| 2. Low Alarm | 6. Low Pulse Action | 11. PWM – PI Control |
| 3. Annunciator High | 7. Trigger Mode (Total) | 12. Summary Alarm |
| 4. Annunciator Low | 8. Plunger Lift | 13. Supervisory Alarm |
| | 9. Lead-Lag Alternation | |

Password: _____ (4 Digits) – Not set by default

Service Performed by: _____ Date: _____

Ref.: SA-DP0022-FM16 (4-4)



SETUP, CALIBRATION & WARRANTY SERVICES

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Large Display Meters & Totalizers

SPECIFICATIONS

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

PD650 & PD757 NEMA 4X 2.3" Red LED

Display: 2.3" (57.3 mm) red LED, 4½ digits, F or C can be selected on PD757 to indicate degrees Fahrenheit or Celsius.

Enclosure: Die-cast aluminum, NEMA 4X, IP66/IP67 Corrosion resistant, 0.1% max copper content, color: gray (RAL 7001) polyester powder paint. Four holes for ½" conduit provided at base, 3 plugs provided.

Mounting: Enclosure contains four ¼" (6.4 mm) holes for wall-mounting. Panel mounting kit available.

Overall Dimensions: 4.9" x 14.3" x 3.2" (125 x 362 x 81 mm)

Weight: 7.0 lb (3.2 kg)

PD655 & PD755 NEMA 4X 1.0" Red LED

Display: 1.0" (25.4 mm) red LED, 4½ digits, F or C can be selected on PD755 to indicate degrees Fahrenheit or Celsius.

Enclosure: Impact-resistant glass-filled polycarbonate, NEMA 4X, IP67 (IEC 529), color: gray (RAL 7035). Two holes for ½" conduit provided at base.

Mounting: Enclosure contains four holes for wall-mounting. Panel mounting and 2" pipe mounting kits available.

Overall Dimensions: 6.7" x 5.5" x 3.7" (170 x 140 x 95 mm)

Weight: 3.8 lb (1.73 kg)

PD656 & PD756 Explosion-Proof 0.8" Red LED

Display: 0.8" (20.3 mm) red LED, 4½ digits, F or C can be selected on PD756 to indicate Fahrenheit or Celsius.

Enclosure: Explosion-proof sand-cast aluminum with glass window, 0.3% max copper content, NEMA 4, 7, & 9, IP66.

UL Classified & CSA Certified Class I Groups C & D, Class II Groups E, F & G, Class III hazardous outdoor (Type 4) locations. Two ¾" NPT holes provided at opposite sides. Up to four holes can be provided for an additional charge.

Mounting: Enclosure contains four 7/16" (11.1 mm) holes for wall-mounting. A 2" pipe mounting kit is available.

Overall Dimensions: 8.0" x 8.0" x 5.7" (203 x 203 x 145 mm)

Weight: 14.6 lb (6.6 kg)

General

Alarm Points: Four, any combination of high or low alarms

Alarm Point Deadband: 0-100% FS, user selectable

Alarm Status Indication: Front panel LED

External Programming: The Enter button functions can be controlled externally by wiring a switch across terminals EN and CM.

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Normal Mode Rejection: 64 dB at 50/60 Hz

Power Options: AC power: 115 or 230 VAC (field select) ±10%, 50/60 Hz, 12 VA. DC power: 22-28 VDC; 12 W maximum.

Isolation: AC powered: 1500 V; DC powered: 500 V

Connections: Removable screw terminals accept 12 to 26 AWG

Warranty: 2 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.



PD655



PD757



PD656

Temperature Meters

Inputs: Field selectable: type J,K,T,E,R, or S thermocouples with 1° resolution; type T to 0.1°; 100 Ω platinum RTD (0.00385 or 0.00392 curve) to 1° or 0.1° resolution.

Cold Junction Reference: Automatic, fixed, no user calibration

Input Offset: Programmable to ±100% FS. This parameter allows the user to apply an offset value to the input temperature being displayed.

Sensor Break: All relays and alarm status LEDs go to alarm state; open sensor circuit indicated by display flashing "OPEN".

Max/Min Display: Meter stores max & min display values until reset by user or power is turned off.

Input Impedance: Greater than 100 kΩ

Lockout: Jumper JP2, located on main board, restricts modification of programmed settings.

Operating Temperature: 0 to 65°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Precalibrated Ranges

Input Type	Range	Accuracy
J	-328° to 1382°F -200° to 750°C	±2°F ±1°C
K	-328° to 2498°F -200° to 1330°C	±2°F ±1°C
T	-330.0° to 760.0°F -200.0° to 404.0°C	±2°F ±1°C
E	-328° to 1832°F -200° to 1000°C	±2°F ±1°C
R	32° to 3213°F 0° to 1767°C	±5°F ±3°C
S	40° to 3214°F 4° to 1768°C	±6°F ±3°C
100 Ω Pt RTD	-328.0° to 1382.0°F -200.0° to 750.0°C	±0.7°F ±0.4°C

Large Display Meters & Totalizers

Process Meters

Inputs: Field selectable: 4-20 mA, 0-20 mA, 0-5 V, 1-5 V, 0-10 V

Display: 6 digits, red LED, -19,999(0) to 29,999(0) with selectable extra zero. Total display: 0 to 999,999.

Decimal Point: Process/rate: 2.9999, 29.999, 299.99, 2999.9 or 299990. Total: 9.99999, 99.9999, 999.999, 9999.99, 99999.9, 999999. Rate and total decimal points are independent.

Linear Input Accuracy: $\pm 0.05\%$ FS ± 1 count

Root Function Accuracy: $\pm 0.1\%$ FS ± 2 counts

Programmable Exponent: From 1.0001 to 2.9999

Multi-Point Linearization: 2 to 11 points

Calibration: May be scaled using internal calibration ($I-CL$) or calibrated by applying an external calibration signal ($E-CL$). To scale inputs such as 0-5 V, 1-5 V, or 0-10 V without applying a signal it is necessary to first complete an Initial Calibration.

Calibration Range: User programmable over entire range of meter

Input Range	Minimum Span Between Input 1 & Input 2
-------------	--

0-5 V	0.16 V
0-10 V	0.32 V
4-20 mA	1.60 mA

11-Point Linearization: Minimum span between inputs

Input Range	Minimum Span
4-20 mA	(1.6 mA / (Number of points - 1))
0-5 V	(0.16 V / (Number of points - 1))
0-10 V	(0.32 V / (Number of points - 1))

e.g. Minimum span for an 11-point, 4-20 mA calibration is 0.16 mA between inputs.

Input Impedance: Voltage ranges: greater than 300 k Ω ; current ranges: 100 Ω

Transmitter Supply: Two isolated transmitter supplies, 24 VDC $\pm 5\%$ @ 20 mA each, regulated. Maximum loop resistance: 1200 Ω

Optional Transmitter Supply: One 18 VDC (nominal) @ 200 mA max; unregulated power supply can be provided instead of the two 24 VDC supplies (see Price List for modification number).

Max (Display Peak): Captures the maximum or peak process/rate and displays it via the front panel ENTER button ($dSPY P$)

Max Indication: Front panel flashing "R" LED

Lockout: Jumper JP1 labeled "LOCK" restricts modification of programmed settings.

Operating Temperature: -20 to 65°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Batch Control with Varying Batch Sizes

To simplify batch control applications with varying batch sizes, use one or more switches to control the relay outputs. The switch allows the operator to disable the process when changing presets in the meter and then enable the process after all the changes have been made and the process is ready to resume. The switch serves as a "Stop/Ready" control.

See application note AN-0001 at www.predig.com.

Rate/Totalizer/Batch Controller Features

Rate Display Indication: LED labeled "R" in lower right illuminates when meter is displaying rate or process input.

Alternating Display: Display may be programmed to alternate between rate and total every 10 seconds.

Low-Flow Cutoff: Any input below the low-flow cutoff value will result in a display of zero. May be set from 1 count to 100% FS, user selectable. To disable low-flow cutoff, program cutoff value to zero. Totalizer is based on rate display; inputs below the low-flow cutoff value will not affect the totalizer.

Total Display: 0 to 999,999, automatic lead zero blanking

Total Decimal Point: May be set in any of the following positions: 9.99999, 99.9999, 999.999, 9999.99, 99999.9, 999999.

Total decimal point is independent of process/rate decimal point.

Time Base: Seconds, minutes, hours, or days

Total Conversion Factor: Programmable from 0.00001 to 59999

Totalizer: Calculates total based on rate and field programmable multiplier to display total in engineering units. Total is stored in non-volatile memory.

Totalizer Rollover: Totalizer rolls over when total exceeds 999,999. Relay status reflects the display value.

Totalizer Presets: Up to four, user selectable under Setup menu. Any set point can be assigned to total and may be programmed anywhere in the range of the meter. Relays assigned to total trip when total reaches the preset value and reset when total is reset to zero or when acknowledged manually. Can be programmed so when the highest preset value is reached the total automatically resets to zero.

Preset Offset: Relays that are assigned to total can be programmed to trip at any point below the next relay's preset value. If preset offset mode is selected the corresponding relay will always trip at a programmed offset value before the next relay trips.

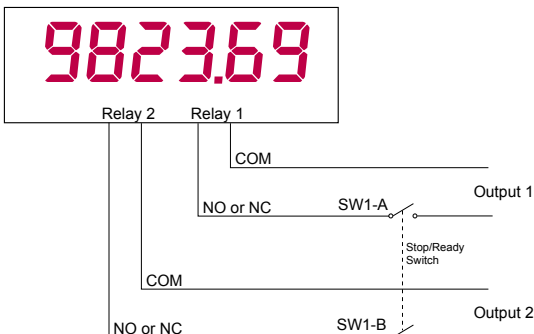
Example: Set point 1 and 2 are set up for total, with Offset selected (under set point 2). If the preset offset is set at 10, (during Set Points programming for set point 1), then relay 1 will trip 10 counts before relay 2.

Programmable Delay on Release: If the meter is programmed to reset total to zero automatically when the highest preset is reached, there will be a delay before the total relays are reset. This delay can be programmed between 1 and 999 seconds.

Priority Batch Programming: This feature allows the user to quickly change preset values without going into the main menu by holding the ENTER button for more than 3 seconds.

Total Reset: Via front panel ENTER button, external contact closure, or automatically via user selectable preset value.

Total Reset Lockout: Meter may be programmed so Total cannot be reset from front panel.



Large Display Meters & Totalizers

Relays

Rating: 2 or 4 Form C (SPDT); rated 2 A @ 30 VDC or 2 A @ 250 VAC resistive load; 1/14 HP @ 125/250 VAC inductive loads. Built-in suppression.

Assign to Process/Rate or Total: Any relay may be assigned to process/rate or total (process/rate meters).

Built-in Suppression: Each relay contact is protected by a built-in suppressor (snubber) to prolong the life of the relays and provide a degree of protection against electrical noise caused by inductive loads. Suppressors value: 0.01 μ F/470 Ω , 250 VAC.

Deadband: 0-100% FS, user selectable

High or Low Alarm: User may program any alarm for high or low

Relay Operation: Latching or non-latching

Fail-Safe Operation: Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state.

Fail-safe operation may be disabled, by removing jumper J5 located on the options board.

Auto Initialization: When power is applied, relays assigned to total will reflect the state of the accumulated Total value in memory. Relays assigned to process/rate or temperature will reflect the state of the input to the meter.

Relays Reset: User select via jumper array and **5EtUP** menu

Total Relays Reset (process/rate meters):

1. When total is reset to zero, if set up for external total reset.
2. After delay has elapsed, if set up for internal total reset.
3. Manual any time, if set up for external total reset. Manual reset resets all manually resettable relays.

Process/Rate & Temperature Relays Reset:

Relays assigned to process/rate or temperature may be programmed to reset in any of the following ways:

1. Automatic reset when the input passes the reset point.
2. Manual reset at any time (via user supplied external contact closure at terminals AK and CM or front panel ACK button). Manual reset resets all manually resettable relays.
3. Automatic plus manual reset at any time. Relays will automatically reset when input passes the reset point. Relays can also be manually reset at any time (via user supplied external contact closure at terminals AK and CM or front panel ACK button). Manual reset resets all manually resettable relays.
4. Manual reset only after alarm condition corrected. Relays can be manually reset only after alarm condition has been corrected (via user supplied external contact closure at terminals AK and CM or front panel ACK button). Manual reset resets all manually resettable relays.

Isolated 4-20 mA Transmitter Output

Scaling Range: Anywhere in range of meter, 501 counts minimum span for process/rate meter; reverse scaling allowed.

Accuracy: $\pm 0.1\%$ FS ± 0.004 mA

Output Loop Resistance:

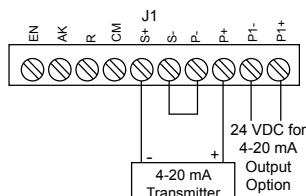
Power supply	Loop Resistance	
	Minimum	Maximum
24 VDC	10 Ω	600 Ω
35 VDC (external)	600 Ω	1000 Ω

Isolation: 500 V input-to-output or input/output-to-24 VDC supply

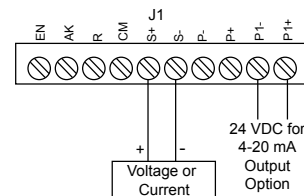
External Loop Power Supply: 35 VDC maximum

Process Signal Connections

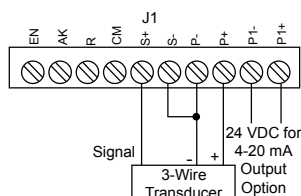
The PD650, PD655, and PD656 are ideal for loops that consist of a transmitter, a digital meter, and a DCS or computer because they can provide isolated power to drive both the input and output loops.



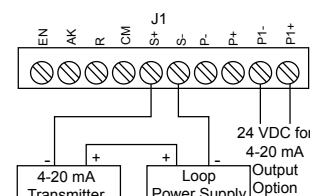
Transmitter Powered from Internal Power Supply



Direct Voltage or Current Signal Connections

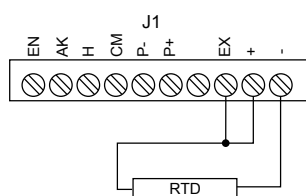


Transducer Powered from Internal Power Supply

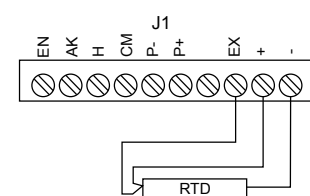


Transmitter Powered from External Power Supply

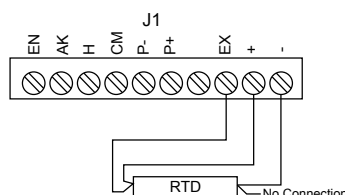
Temperature Signal Connections



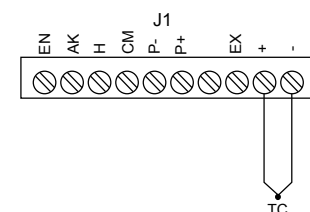
Two-Wire RTD Connections



Three-Wire RTD Connections



Four-Wire RTD Connections



Thermocouple Connections

Large Display Meters & Totalizers

NEMA 4X 2.3" Red LED



See page 151 for PDA6504 Panel Mounting Kit.

NEMA 4X 1.0" Red LED



See pages 150, 151 for Mounting Kits.

Explosion-Proof 0.8" Red LED



See page 147 for Explosion-Proof Control Stations and page 150 for Pipe Mounting Kit.

ORDERING INFORMATION

	115/230 VAC Model	24 VDC Model	Options Installed	Option Card*
P R O C E S S	PD650-N	PD650-2-N	None	
	PD650-34	PD650-2-34	2 Relays	PD374
	PD650-35	PD650-2-35	4-20 mA Output	PD375
	PD650-36	PD650-2-36	2 Relays + 4-20 mA Output	PD376
	PD650-37	PD650-2-37	4 Relays	PD377
	PD650-38	PD650-2-38	4 Relays + 4-20 mA Output	PD378
T E M P E R A T U R E	PD757-N	PD757-2-N	None	
	PD757-34	PD757-2-34	2 Relays	PD374
	PD757-35	PD757-2-35	4-20 mA Output	PD375
	PD757-36	PD757-2-36	2 Relays + 4-20 mA Output	PD376
	PD757-37	PD757-2-37	4 Relays	PD377
	PD757-38	PD757-2-38	4 Relays + 4-20 mA Output	PD378

	115/230 VAC Model	24 VDC Model	Options Installed	Option Card*
P R O C E S S	PD655-N	PD655-2-N	None	
	PD655-44	PD655-2-44	2 Relays	PD474
	PD655-45	PD655-2-45	4-20 mA Output	PD475
	PD655-46	PD655-2-46	2 Relays + 4-20 mA Output	PD476
	PD655-47	PD655-2-47	4 Relays	PD477
	PD655-48	PD655-2-48	4 Relays + 4-20 mA Output	PD478
T E M P E R A T U R E	PD755-N	PD755-2-N	None	
	PD755-44	PD755-2-44	2 Relays	PD474
	PD755-45	PD755-2-45	4-20 mA Output	PD475
	PD755-46	PD755-2-46	2 Relays + 4-20 mA Output	PD476
	PD755-47	PD755-2-47	4 Relays	PD477
	PD755-48	PD755-2-48	4 Relays + 4-20 mA Output	PD478

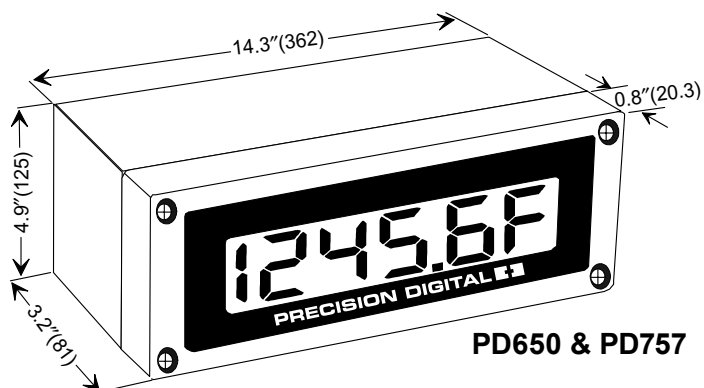
	115/230 VAC Model	24 VDC Model	Options Installed	Option Card*
P R O C E S S	PD656-N	PD656-2-N	None	
	PD656-44	PD656-2-44	2 Relays	PD474
	PD656-45	PD656-2-45	4-20 mA Output	PD475
	PD656-46	PD656-2-46	2 Relays + 4-20 mA Output	PD476
	PD656-47	PD656-2-47	4 Relays	PD477
	PD656-48	PD656-2-48	4 Relays + 4-20 mA Output	PD478
T E M P E R A T U R E	PD756-N	PD756-2-N	None	
	PD756-44	PD756-2-44	2 Relays	PD474
	PD756-45	PD756-2-45	4-20 mA Output	PD475
	PD756-46	PD756-2-46	2 Relays + 4-20 mA Output	PD476
	PD756-47	PD756-2-47	4 Relays	PD477
	PD756-48	PD756-2-48	4 Relays + 4-20 mA Output	PD478

Model	Description
PDA-MAG	Magnet Assembly for PD656 & PD756

*Part numbers for Option Cards when purchased separately.
Listed models include the corresponding described option.

Large Display Meters & Totalizers

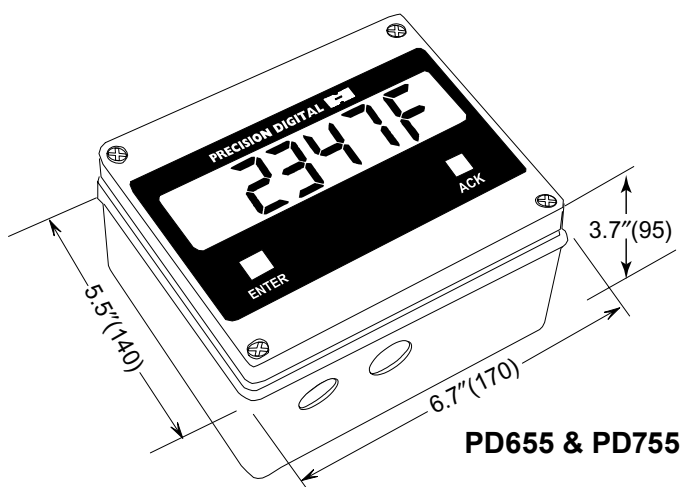
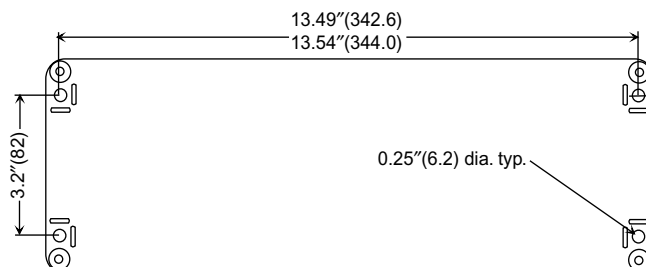
Overall Dimensions



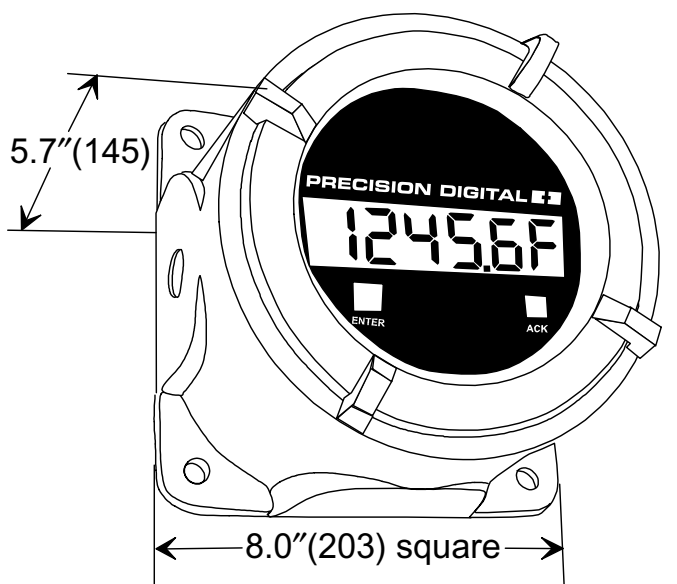
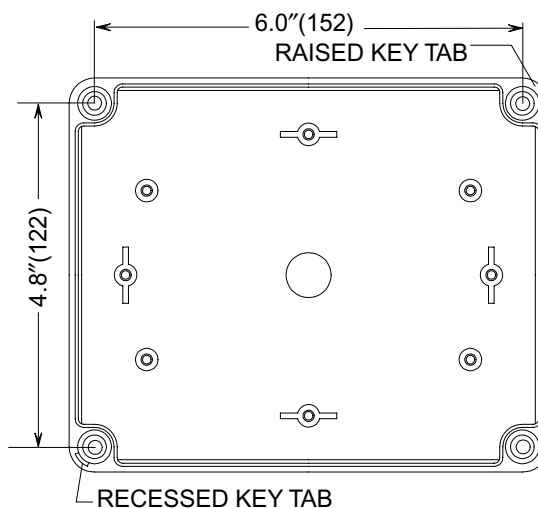
Wall Mounting

There are four mounting holes on the rear of the enclosure that are used to mount the instrument to a wall.

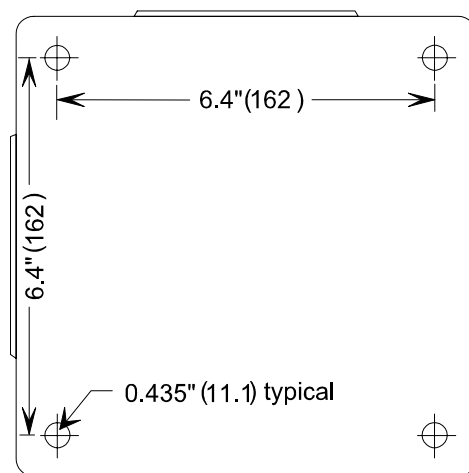
PD650 & PD757



PD655 & PD755



PD656 & PD756



Designed for vertical or horizontal conduit entry

Note: Millimeter dimensions (mm) are for reference only.

ACCURACY ■ RELIABILITY ■ CONVENIENCE

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Large Display Meters & Totalizers

Setup & Calibration Sheet Large Display Process & Temperature Meters

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Flow Rate ☐ Flow Total ☐ Batch Control	
Fax: _____	☐ Level ☐ Pressure ☐ Temp	
PO#: _____ SO# (PDC): _____	☐ Other: _____	
	Description: _____	

Note: Refer to Price List for cost of setup & calibration services.

Product Information	Process Input	Temperature Input	Calibration Type
Model Number: _____	☐ 4-20 mA	☐ TC Type _____	☐ 2-Point
Serial Number(s): _____	☐ 1-5 V	☐ RTD ☐ 0.00385	☐ Multi-Point
	☐ 0-5 V	☐ 0.00392	☐ Linear Function
	☐ 0-10 V	☐ °F ☐ °C	☐ Square Root
Total # of Units: _____	☐ _____ – Other	☐ 0.1°F ☐ 0.1°C	☐ Programmable Exponent: _____

2-Point Input Calibration/Scaling – P/N: PDN-CAL

Output Calibration – P/N: PDN-CAL3

Input	Display	Cutoff*	Adjust**
1. _____	_____	_____	_____
2. _____	_____	_____	_____

Display	Output
1. _____	4.00 mA
2. _____	20.00 mA

*Cutoff applies to square root calibration only.
**Adjust applies to temperature meters only.

Multi-Point Calibration/Scaling – P/N: PDN-CAL2 (Includes PDN-CAL above)

Point #	3.	4.	5.	6.	7.	8.	9.	10.	11.
Input	_____	_____	_____	_____	_____	_____	_____	_____	_____
Display	_____	_____	_____	_____	_____	_____	_____	_____	_____

☐ Certificate of Calibration (Order P/N: PDN-CERTCAL)

☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)

Rate Totalizer Setup (PD650, 655, 656) – P/N: PDN-CSETUP

Total Decimal Point	Time Base	Total Conversion Factor Calculation
☐ 999999	☐ Second	Rate Units (e.g. gal/min, bbl/hr) _____
☐ 99999.9	☐ Minute	
☐ 9999.99	☐ Hour	Total Units (e.g. gal, bbl, liters) _____
☐ 999.999	☐ Day	
☐ 99.9999		Total Conversion Factor _____
☐ 9.99999		

Ref.: SA-DP0022-FM07 (1-2)



SETUP, CALIBRATION & WARRANTY SERVICES

Large Display Meters & Totalizers

Setup & Calibration Sheet Large Display Process & Temperature Meters

Relay Setup for Process/Rate Totalizers (PD650, 655, 656) – P/N: PDN-CSETUP

	Relay 1	Relay 2	Relay 3	Relay 4
Assignment	☐ Process/Rate or ☐ Total	☐ Process/Rate or ☐ Total	☐ Process/Rate or ☐ Total	☐ Process/Rate or ☐ Total
Operation	☐ Latching or ☐ Non-Latching	☐ Latching or ☐ Non-Latching	☐ Latching or ☐ Non-Latching	☐ Latching or ☐ Non-Latching
Reset Type	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual only after passing reset point ☐ Alternation control	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual only after passing reset point ☐ Alternation control	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual only after passing reset point ☐ Alternation control	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual only after passing reset point ☐ Alternation control
Mode	☐ Fail-Safe or ☐ Normal			
Set Point				
Reset Point				
Total Reset Mode	☐ Internal or ☐ External	☐ Internal or ☐ External	☐ Internal or ☐ External	☐ Internal or ☐ External
Delay on Release				

Relay Setup for Temperature Meters (PD755, 756, 757) – P/N: PDN-CSETUP

	Relay 1	Relay 2	Relay 3	Relay 4
Operation	☐ Latching or ☐ Non-Latching	☐ Latching or ☐ Non-Latching	☐ Latching or ☐ Non-Latching	☐ Latching or ☐ Non-Latching
Reset Type	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual only after passing reset point	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual only after passing reset point	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual only after passing reset point	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual only after passing reset point
Mode	☐ Fail-Safe or ☐ Normal			
Set Point				
Reset Point				

Display Selection for Rate Totalizers – P/N: PDN-CSETUP

This feature is used to streamline the menu so that only items pertaining to the application are shown during operation. Selections become active only when Lockout jumper is installed.

- | | |
|--|---|
| ☐ Display Rate Only | ☐ Disable Reset Total |
| ☐ Display Total Only | ☐ Disable Display Peak |
| ☐ Display Rate & Total | ☐ Disable Set Point Edit |
| ☐ Toggle Between Rate & Total | |

☐ **Install Lockout Jumper** – Not installed by default

Service Performed by: _____ Date: _____

Trident Process & Temperature Meter

SPECIFICATIONS

PD765

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

General

Display: 0.56" (14.2 mm) red LED, 4 digits (-1999 to 9999)

Display Intensity: Eight user selectable intensity levels

Front Panel: NEMA 4X, IP65; panel gasket provided

Programming Methods: Four front panel buttons, cloning with Copy feature, PC with MeterView or LabVIEW software, and Modbus registers. Certified LabVIEW driver available.

Noise Filter: Programmable 2 to 199 (0 will disable filter)

Display Update Rate: Process/RTD: 3.7-5/sec; TC: 1.8-2.5/sec

Overrange: Display flashes 9999

Underrange: Display flashes -1999

Recalibration: All inputs are calibrated at the factory; recalibration is recommended at least every 12 months.

Max/Min Display: Stored until reset by user or meter is turned off.

Password: Restricts modification of programmed settings.

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Power Options: 85-265 VAC, 50/60 Hz; 90-265 VDC, 20 W max or 12-36 VDC; 12-24 VAC, 6 W max.

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

Normal Mode Rejection: 64 dB at 50/60 Hz

Isolation: 4 kV input/output-to-power line;

500 V input-to-output or output-to-24 VDC supplies

Operating Temperature: 0 to 65°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Connections: Power & Signal: removable screw terminal blocks accept 12 to 26 AWG. Serial: RJ11 header, standard on all meters.

Enclosure: 1/8 DIN, high impact plastic, 94V-0, color; gray

Weight: 9.5 oz (269 g) (including options)

UL File Number: E160849; 508 Industrial Control Equipment

Warranty: 3 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Process Inputs

Inputs: Field selectable: 0-20 mA, 4-20 mA, 1-5 V, ± 10 V

Accuracy: $\pm 0.05\%$ FS ± 1 count; square root: $\pm 0.1\%$ FS ± 2 counts

Function: Linear or square root

Low-Flow Cutoff: 0 to 9999 (0 disables cutoff function)

Decimal Point: Up to 3 decimals: d.ddd, dd.dd, ddd.d, or dddd

Calibration: Scale without signal or calibrate with signal source

Calibration Range: User programmable over entire range of meter

Input Impedance: Voltage range: greater than 1 M Ω , Current range: 50-100 Ω , varies with resettable fuse impedance

Input Overload: Protected by automatically resettable fuse

Temperature Drift: ± 50 PPM/ $^{\circ}$ C

Transmitter Supply: Isolated, one or two transmitter supplies

P1: 24 VDC $\pm 10\%$ @ 200 mA max (-1 option)

P1 & P2: 24 VDC $\pm 10\%$ @ 200 mA & 40 mA max (-2 option)

Temperature Inputs

Inputs: Factory calibrated, field selectable: type J, K, T, or E thermocouples and 100 Ω platinum RTD (0.00385 or 0.00392 curve)

Resolution: 1 $^{\circ}$; type T: 1 $^{\circ}$ or 0.1 $^{\circ}$

Cold Junction Reference: Automatic

Temperature Drift: $\pm 2^{\circ}$ C maximum

Offset Adjustment: Programmable to $\pm 19.9^{\circ}$. This parameter allows the user to apply an offset value to the temperature being displayed.



Input Impedance: Greater than 100 k Ω

Sensor Break: All relays and alarm status LEDs go to alarm state.

Type	Range	Accuracy	Range	Accuracy
J	-58 $^{\circ}$ to 1382 $^{\circ}$ F	$\pm 2^{\circ}$ F	-50 $^{\circ}$ to 750 $^{\circ}$ C	$\pm 1^{\circ}$ C
K	-58 $^{\circ}$ to 2300 $^{\circ}$ F	$\pm 2^{\circ}$ F	-50 $^{\circ}$ to 1260 $^{\circ}$ C	$\pm 1^{\circ}$ C
T	-292 $^{\circ}$ to 700 $^{\circ}$ F	$\pm 2^{\circ}$ F	-180 $^{\circ}$ to 371 $^{\circ}$ C	$\pm 1^{\circ}$ C
E	-58 $^{\circ}$ to 1700 $^{\circ}$ F	$\pm 2^{\circ}$ F	-50 $^{\circ}$ to 927 $^{\circ}$ C	$\pm 1^{\circ}$ C
RTD	-328 $^{\circ}$ to 1382 $^{\circ}$ F	$\pm 1^{\circ}$ F	-200 $^{\circ}$ to 750 $^{\circ}$ C	$\pm 1^{\circ}$ C

Relays

Rating: 2 Form C (SPDT); rated 3 A @ 30 VDC or 3 A @ 250 VAC resistive load; 1/14 HP @ 125/250 VAC inductive loads

Deadband: 0-100% FS, user selectable

High or Low Alarm: User may program any alarm for high or low

Relay Operation:

1. Automatic (non-latching) 2. Latching 3. Pump alternation control

Relay Reset: User selectable via front panel buttons or PC

1. Automatic reset only (non-latching)

2. Automatic plus 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)

Automatic Reset: Relays reset when input passes the reset point

Manual Reset: Front panel button, MeterView, Modbus registers

Time Delay: 0 to 199 seconds, on and off delays; programmable

Fail-Safe Operation: Programmable, independent for each relay.

Relay coils are energized in non-alarm condition. In case of power failure, relays 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.

Isolated 4-20 mA Transmitter Output

Scaling Range: 1.00 to 23.00 mA; reverse scaling allowed.

Calibration: Factory calibrated 4.00 to 20.00 mA

Accuracy: $\pm 0.1\%$ FS ± 0.004 mA

Temperature Drift: 50 PPM/ $^{\circ}$ C

Note: Analog output drift is separate from input drift

Isolation: 500 V input-to-output or output-to-24 VDC supplies;

4 kV output-to-power line

External Power: 35 VDC maximum

Output Loop Resistance: Loop Resistance

Power Supply	Minimum	Maximum
24 VDC	10 Ω	700 Ω
35 VDC (external)	100 Ω	1200 Ω

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SETUP, CALIBRATION & WARRANTY SERVICES

Trident Process & Temperature Meter

Serial Communications

Compatibility: EIA-232, EIA-422, and EIA-485 with PDA7232 and PDA7422 Trident adapters.

Protocol: PDC and Modbus RTU

Meter Address: PDC protocol: 0 to 99, Modbus protocol: 1 to 247

Baud Rate: 300 to 19,200 bps

Transmit Time Delay: Programmable 0 to 199 ms or transmitter always on for RS-422 communications.

Data: 8 bit (1 start bit, 1 stop bit)

Parity: None, even, or odd

(Modbus only; PDC protocol does not use parity)

Byte-to-Byte Timeout: 0.01 to 2.54 seconds (Modbus only)

Turn Around Delay: Less than 2 ms (fixed)

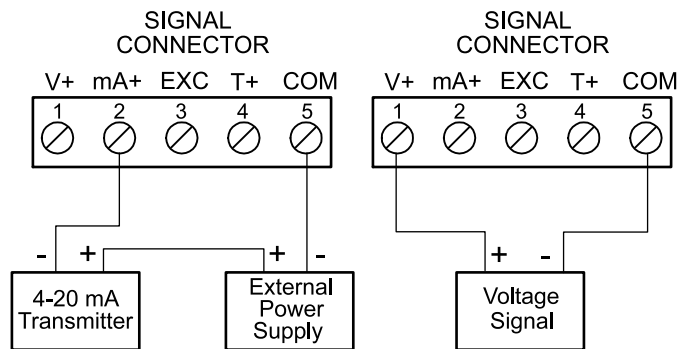
Refer to PDC and Modbus Serial Communications Protocol manuals for details.

Process & Temperature Inputs

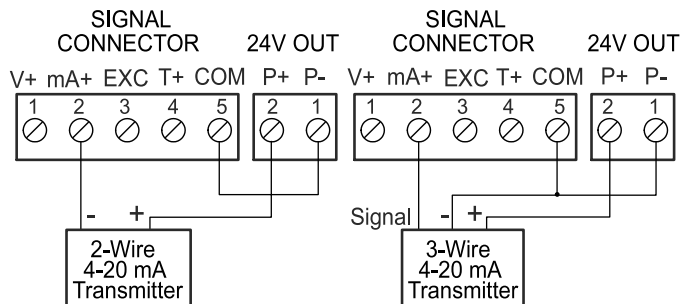
The Trident is factory calibrated to accept 4-20 mA, -10 to 10 V, type J, K, T, E thermocouples and 100 Ω platinum RTD. Process inputs can be scaled with or without applying an input for virtually any engineering units. Temperature inputs can be programmed to display in degrees Fahrenheit or Celsius and the type K thermocouple can display up to 2300°F.

Current & Voltage Inputs

Setup for current or voltage inputs is accomplished from the front panel buttons. No switches or jumpers are involved.



Current & Voltage Inputs



Transmitter Powered by Internal Supply

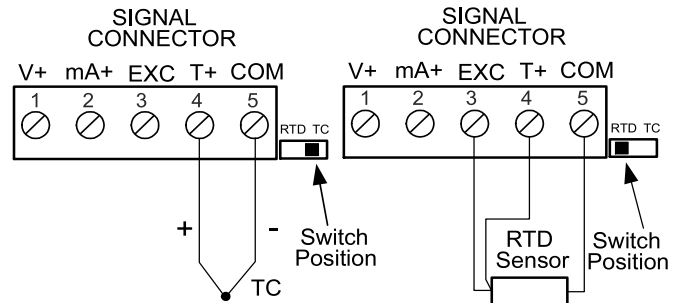
Current Overload Protection

An automatically resetting fuse in the current input circuit protects it from current overload. This fuse limits the current to a safe level when it detects a fault condition.

Thermocouple & RTD Inputs

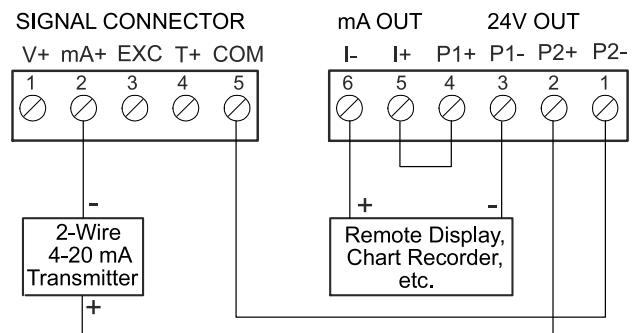
Setting up the Trident to accept a thermocouple or RTD input is simply a matter of setting a switch at the rear of the case and selecting the input type from the menu.

The meter accepts type J, K, T, or E thermocouples as well as two, three, or four-wire 100 Ω platinum RTD.



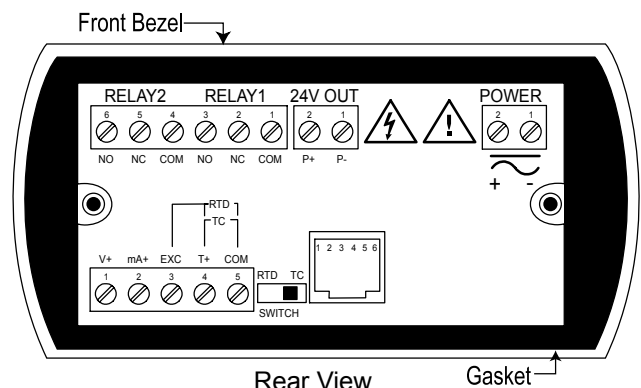
Thermocouple & RTD Inputs

Isolated 4-20 mA Analog Output



4-20 mA Output & Input Signal
Powered by Meter

Connectors Location



Meter with Relays & 24 V Options

See page 152 for mounting dimensions.

MeterView® Software

SPECIFICATIONS

Precision Digital's MeterView® software enables programming the PD765 Trident meter from a PC, displaying the reading of up to 100 Precision Digital meters, and data logging of all meters to a file. MeterView® may be used for monitoring and data logging applications using the PD765, PD644, and PD740 meters.

System Requirements: Windows® 95/98/ME/NT4/2000/XP

Communications: RS-232 adapter or RS-422/485 adapters with an RS-232 to RS-485 or USB to RS-485 converter may be used for communicating with the meters.

Number of Meters: Up to 100 meters simultaneously with addressing capability; minimum scan time for 100 meters: 60 sec

Meter Address: 00 to 99

Baud Rate: 300 bps to 19,200 bps; selection must match the baud rate selected in the meters.

Screen Update Rate: Dependent on system and meter settings. Rates of up to 10 meters/second are attainable at 19,200 bps.

Configuration: Configure meter settings one meter at a time.

Configuration Report: Save configuration to PDC file format or export to HTML for printing, cloning, or restoring meter.

Logging Interval: 2 seconds to 60 hours or manual

Manual Logging: Data saved to file when Log button is pressed.

Data Logging Report: Log data to HTML file format. All enabled meters are logged to a single file.

Alarm Notification: Pop-up message indicates new alarm condition. Alarm alert notification may be disabled.

Event Log: Important events are logged with date and time stamp.

Relay/Alarm Status: Indicate relay/alarm status with customized color and message label. Relay status indication may be disabled.

Units & Tag Number: Show engineering units and tag number information; these settings are not saved to the meter.

Relay Acknowledge: Relays may be acknowledged by clicking on corresponding Relay Status button. Meters must be set up for manual reset and Relay Mode must be enabled in MeterView.

Data Acquisition

MeterView software provides a convenient way to collect the data generated by the Trident and Javelin meters. The user can select the logging time interval and the engineering units that will be displayed on the computer screen. Data is written to a file that could then be imported into a spreadsheet or other application.

Remote Meter Programming

MeterView software allows all PD765 Trident setup parameters to be programmed from a PC and to save the configuration settings to a file for reporting or programming other meters. Remote programming is not available for the PD644 and PD740 Javelin meters.

Sample Data Logging File

PD765 Log File						
Name: C:\MV3logfile.htm			Created: 2/26/2003 5:34:12 PM			
Date & Time	Tag Number	Address	Display	Units	Relay 1	Relay 2
2/26/2003 5:34:12 PM	Tank 1 Level	06	17.70	Feet	P1 On	P2 Off
2/26/2003 5:34:12 PM	Tank 2 Level	07	18.18	Feet	P3 Off	P4 Off
2/26/2003 5:34:12 PM	Tank 3 Level	08	20.54	Feet	P5 On	P6 Off
2/26/2003 5:34:12 PM	Tank 1 Temp	09	74	°F	Off	Off
2/26/2003 5:34:12 PM	Tank 2 Temp	10	72	°F	Off	Off
2/26/2003 5:34:12 PM	Tank 3 Temp	11	72	°F	Off	Off
2/26/2003 5:34:22 PM	Tank 1 Level	06	17.58	Feet	P1 On	P2 Off
2/26/2003 5:34:22 PM	Tank 2 Level	07	18.04	Feet	P3 Off	P4 Off

MeterView Versions

Model PDA7503-1

Monitor 1 meter



Model PDA7503-2

Monitor 1 to 10 meters



Model PDA7503-3

Monitor 1 to 100 meters



SETUP, CALIBRATION & WARRANTY SERVICES

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Trident Process & Temperature Meter

Serial Communication Adapters & Converters

General

Cable: 7' (2.1 m) standard modular cable provided with PDA7232 and PDA7422 adapters.

Status Indication: Separate LEDs for power (P), transmit (TX), and receive (RX)

PDA7232 Trident RS-232 Adapter

Compatibility: EIA-232

Connectors: PC compatible 9-pin D subminiature connector (DB9) and RJ11 (adapter to meter)

Distance: Adapter to PD765 meter: 7' (2.1 m) max;
Adapter to computer: 50' (15 m) max; serial interface cable not provided.

PDA7422 Trident RS-422/485 Adapter

Compatibility: EIA-422 and EIA-485

Connectors: Removable screw terminal connector and RJ11

Distance: Adapter to PD765 meter: 7' (2.1 m) max;
Adapter to computer: 3,937' (1,200 m) max

PDA7485 RS-232 to RS-485 Converter

Compatibility: EIA-232, EIA-422, and EIA-485

Connectors: Screw terminal connector and DB9

Distance: RS-232 connection: 50' (15 m) max;
RS-422/485 connection: 3,937' (1,200 m) max

Number of Units: Up to 31 RS-485 compatible devices

Power: 9-12 VDC; 115 VAC/12 VDC adapter included

Isolation: PDA7485-I: 1500 VAC between data lines;
700 VDC input/output-to-power

PDA7485-N: 1500 VAC between data lines only

PDA7488 Trident RS-232 & RS-485 Isolated Multi-Input Adapter Board

Compatibility: EIA-232, EIA-422, and EIA-485

Connectors: Screw terminal connector, RJ11, and DB9

Distance: Adapter board to PD765 meter: 7' (2.1 m) max;
RS-232 connection: 50' (15 m) max;

RS-422/485 connection: 3,937' (1,200 m) max

Number of Units: Up to 6 Trident PD765 meters

Mounting: Board with 4 adhesive-backed mounting feet

Power: Powered by 1 PD765 RJ11 connection

Isolation: 1500 VAC input-to-output, TX-to-RX line

PDA8485 USB to RS-485 Converter

Compatibility: USB 1.1, USB 2.0, EIA-422, and EIA-485

Connectors: Screw terminal connector and USB Type B

Drivers: Windows 98/2000/ME/XP, Linux 2.4 & greater

Distance: USB connection: 10' (3 m) max;

RS-422/485 connection: 3,937' (1,200 m) max

Number of Units: Up to 31 RS-485 compatible devices

Power: USB port

Isolation: PDA8485-I: 1500 VAC between data lines;
700 VDC input/output-to-power.

PDA8485-N: 1500 VAC between data lines only

ORDERING INFORMATION

Trident Model PD765		
85-265 VAC** Model	12-36 VDC** Model	Options Installed
PD765-6R0-00*	PD765-7R0-00	None
PD765-6R0-10*		24 VDC Transmitter Supply
PD765-6R2-00*	PD765-7R2-00	2 Relays
PD765-6R2-10*		2 Relays & 24 VDC Transmitter Supply
PD765-6R3-00	PD765-7R3-00	4-20 mA Output
PD765-6R3-10		4-20 mA Output & 24 VDC Supply
PD765-6R3-20		4-20 mA Output & Dual 24 VDC Supplies
To order meters with Modbus option enabled, replace the last digit with a "1". Modbus option ordered separately by requesting P/N: PDN-MODBUS. *Quick Shipment Program product, shipped within 2 working days. **All models may be powered from AC or DC, see Specifications for details.		

Accessories	
Model	Description
PDA7420	Trident Meter Copy Cable, 7' (2.1 m)
PDA7232	Trident RS-232 Serial Adapter, PDA7420 Included
PDA7422	Trident RS-422/485 Serial Adapter, PDA7420 Included
PDA7485-I	RS-232 to RS-422/485 Isolated Converter
PDA7485-N	RS-232 to RS-422/485 Non-Isolated Converter
PDA7488	Trident RS-232 & RS-485 Isolated Multi-Input Adapter Board
PDA8485-I	USB to RS-422/485 Isolated Converter
PDA8485-N	USB to RS-422/485 Non-Isolated Converter
PDA7503-1	MeterView® Software for 1 Meter
PDA7503-2	MeterView® Software for 1-10 Meters
PDA7503-3	MeterView® Software for 1-100 Meters
PDN-MODBUS	Modbus Option Enable
PDX6901	Suppressor (snubber): 0.01 µF/470 Ω, 250 VAC

Setup, Calibration & Labels	
Model	Description
PDN-CAL	2-Point Input Calibration
PDN-CAL3	4-20 mA Output Calibration
PDN-CSETUP	Custom Setup
PDN-CERTCAL	Certificate of Calibration
PDN-CERTCAL2	Certificate of Calibration with Data
PDLXXXX	Engraved Plastic Labels (see pages 142, 143)

Ordering example: System consisting of 10 Tridents & MeterView®

Qty	Model	Description
10	PD765-6R2-10	Trident with 2 Relays & 24 VDC Transmitter Supply
10	PDA7422	Trident RS-422/485 Serial Adapter
1	PDA8485-I	USB to RS-422/485 Isolated Converter
1	PDA7503-2	MeterView® Software for 1-10 Meters

Trident Process & Temperature Meter

Setup & Calibration Sheet PD765

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Level ☐ Flow ☐ Pressure ☐ Temp	
Fax: _____	☐ Other: _____	
PO #: _____ SO # (PDC): _____	Description: _____	

Note: Refer to Price List for cost of setup & calibration services.

Product Information	Process Input	Temperature Input	Calibration Type
Model Number: _____	☐ 4-20 mA	☐ TC Type _____	☐ Linear Function ☐ Square Root
Serial Number(s): _____	☐ 1-5 V	☐ RTD ☐ 0.00385	
_____	☐ 0-5 V	☐ 0.00392	
_____	☐ 0-10 V	☐ °F ☐ °C	
Total # of Units: _____	☐ _____ – Other		

2-Point Input Calibration/Scaling – P/N: PDN-CAL			Output Calibration – P/N: PDN-CAL3		
Input	Display	Decimal Point	Display	Output	Sensor Break
1. _____	_____	Specify display value decimal point location (e.g. 0.000)	1. _____	4.00 mA	_____ mA (1.00 to 23.00 mA)
2. _____	_____		2. _____	20.00 mA	
☐ Certificate of Calibration (Order P/N: PDN-CERTCAL)			☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)		

Relay Setup & Programming – P/N: PDN-CSETUP			Communications & Advanced Settings	
Action & Reset Type	Relay 1	Relay 2	☐ RS-232	Adjust*: _____
	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual after passing reset point ☐ Alternation control ☐ Off	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual after passing reset point ☐ Alternation control ☐ Off	☐ RS-422	Filter: _____
Mode	☐ Fail-Safe or	☐ Fail-Safe or	☐ RS-485	Bypass: _____
	☐ Normal	☐ Normal	☐ PDC Protocol ☐ Modbus Protocol (Order P/N: PDN-MODBUS)	Cutoff**: _____
Set Point	_____	_____	Address: _____	Password: _____ (4 Digits)
Reset Point	_____	_____	Baud Rate: _____	Not set by default
On Delay	Seconds	Seconds	Transmit Delay: _____	
Off Delay	Seconds	Seconds	Byte-to-Byte Timeout: _____	
			Parity (Modbus):	*Adjust applies to temperature inputs only.
			☐ Odd	**Cutoff applies to process inputs only.
			☐ Even	
			☐ None	

Service Performed by: _____ Date: _____

Javelin T Low-Cost Temperature Meter

SPECIFICATIONS

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

General

Inputs: Factory calibrated, field selectable: type J, K, T, E thermocouples and 100 Ω platinum RTD (0.00385 or 0.00392 curve)

Display: 0.56" (14.2 mm) red LED, 4 digits (-1999 to 9999)

Display Intensity: Eight user selectable intensity levels

Accuracy: See Precalibrated Ranges table below

Resolution: 1°; type T: 1° or 0.1°

Cold Junction Reference: Automatic

Temperature Drift: $\pm 2^\circ\text{C}$ maximum

Offset Adjustment: Programmable to $\pm 19.9^\circ$. This parameter allows the user to apply an offset value to the temperature being displayed.

Input Impedance: Greater than 100 k Ω

Sensor Break: All relays and alarm status LEDs go to alarm state.

Front Panel: NEMA 4X, IP65; panel gasket provided

Programming Methods: Four front panel buttons, cloning with Copy feature, and Modbus registers

Noise Filter: Programmable 2 to 199 (0 will disable filter)

Display Update Rate: RTD: 3.7-5/sec; TC: 1.8-2.5/sec

Overrange: Display flashes 9999

Underrange: Display flashes -1999

Recalibration: All inputs are calibrated at the factory; recalibration is recommended at least every 12 months.

Max/Min Display: Stored until reset by user or meter is turned off.

Password: Restricts modification of programmed settings.

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Power Options: 85-265 VAC, 50/60 Hz; 90-265 VDC, 20 W max or 12-36 VDC; 12-24 VAC, 6 W max.

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

Normal Mode Rejection: 64 dB at 50/60 Hz

Isolation: 4 kV input/output-to-power line; 500 V input-to-output or output-to-24 VDC supply

Operating Temperature: 0 to 65°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Connections: Removable screw terminals accept 12 to 26 AWG

Enclosure: 1/8 DIN, high impact plastic, 94V-0, color; gray

Weight: 9 oz (255 g) (including options)

UL File Number: E160849; 508 Industrial Control Equipment

Warranty: 1 year parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Precalibrated Ranges

Type	Range	Accuracy	Range	Accuracy
J	-58° to 1382°F	$\pm 2^\circ\text{F}$	-50° to 750°C	$\pm 1^\circ\text{C}$
K	-58° to 2300°F	$\pm 2^\circ\text{F}$	-50° to 1260°C	$\pm 1^\circ\text{C}$
T	-292° to 700°F	$\pm 2^\circ\text{F}$	-180° to 371°C	$\pm 1^\circ\text{C}$
E	-58° to 1700°F	$\pm 2^\circ\text{F}$	-50° to 927°C	$\pm 1^\circ\text{C}$
RTD	-328° to 1382°F	$\pm 1^\circ\text{F}$	-200° to 750°C	$\pm 1^\circ\text{C}$

See page 152 for mounting dimensions.

PD740



Relays

Rating: 2 Form C (SPDT); rated 3 A @ 30 VDC or 3 A @ 250 VAC resistive load; 1/14 HP @ 125/250 VAC inductive loads

Deadband: 0-100% FS, user selectable

High or Low Alarm: User may program any alarm for high or low

Relay Operation:

1. Automatic (non-latching) 2. Latching 3. Alternation control

Relay Reset: User selectable via front panel buttons or PC

1. Automatic reset only (non-latching)

2. Automatic plus 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)

Automatic Reset: Relays reset when input passes the reset point

Manual Reset: Front panel button, MeterView, Modbus registers

Time Delay: 0 to 199 seconds, on and off delays; programmable

Fail-Safe Operation: Programmable, independent for each relay. Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state.

Isolated 4-20 mA Transmitter Output

Scaling Range: 1.00 to 23.00 mA; reverse scaling allowed.

Calibration: Factory calibrated 4.00 to 20.00 mA

Accuracy: $\pm 0.1\%$ FS ± 0.004 mA

Temperature Drift: 50 PPM/°C

Note: Analog output drift is separate from input drift

Transmitter Supply: Isolated 24 VDC $\pm 10\%$ @ 200 mA max

Isolation: 500 V input-to-output or output-to-24 VDC supply; 4 kV input/output-to-power line

External Power: 35 VDC maximum

Output Loop Resistance:

Power supply	Loop Resistance	
	Minimum	Maximum
24 VDC	10 Ω	700 Ω
35 VDC (external)	100 Ω	1200 Ω

Serial Communications

Compatibility: EIA-485

Protocol: PDC and Modbus RTU

Meter Address: PDC protocol: 0 to 99, Modbus protocol: 1 to 247

Baud Rate: 300 to 19,200 bps

Transmit Time Delay: Programmable 0 to 199 ms

Data: 8 bit (1 start bit, 1 stop bit)

Parity: None, even, or odd

(Modbus only; PDC protocol does not use parity)

Byte-to-Byte Timeout: 0.01 to 2.54 seconds (Modbus only)

Turn Around Delay: Less than 2 ms (fixed)

Refer to PDC and Modbus Serial Communications Protocol manuals for details.

ACCURACY ■ RELIABILITY ■ CONVENIENCE



www.predig.com

Javelin D High-Voltage DC Meter

SPECIFICATIONS

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

General

Input: 0-300 VDC

Display: 0.56" (14.2 mm) red LED, 4 digits (-1999 to 9999)

Accuracy: $\pm 0.05\%$ FS ± 1 count

Display Intensity: Eight user selectable intensity levels

Decimal Point: Up to 3 decimals: d.ddd, dd.dd, ddd.d, or dddd

Front Panel: NEMA 4X, IP65; panel gasket provided

Programming Methods: Four front panel buttons, cloning with Copy feature, and Modbus registers

Noise Filter: Programmable 2 to 199 (0 will disable filter)

Display Update Rate: 5/second

Overrange: Display flashes 9999

Underrange: Display flashes -1999

Recalibration: Input is calibrated at the factory; recalibration is recommended at least every 12 months.

Temperature Drift: ± 50 PPM/°C maximum

Input Impedance: Greater than 1 M Ω

Max/Min Display: Stored until reset by user or meter is turned off.

Password: Restricts modification of programmed settings.

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Power Options: 85-265 VAC, 50/60 Hz; 90-265 VDC, 20 W max or 12-36 VDC; 12-24 VAC, 6 W max.

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

Normal Mode Rejection: 64 dB at 50/60 Hz

Isolation: 4 kV input/output-to-power line;
500 V input-to-output or output-to-24 VDC supply

Operating Temperature: 0 to 65°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Connections: Removable screw terminals accept 12 to 26 AWG

Enclosure: 1/8 DIN, high impact plastic, 94V-0, color: gray

Weight: 8 oz (227 g) (including options)

UL File Number: E160849; 508 Industrial Control Equipment

Warranty: 3 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Serial Communications

Compatibility: EIA-485

Meter Address: PDC protocol: 0 to 99, Modbus protocol: 1 to 247

Baud Rate: 300 to 19,200 bps

Transmit Time Delay: Programmable 0-199 ms

Data: 8 bit (1 start bit, 1 stop bit)

Parity: None, even, or odd

(Modbus only; PDC protocol does not use parity)

Byte-to-Byte Timeout: 0.01-2.54 seconds (Modbus only)

Turn Around Delay: Less than 2 ms (fixed)

Refer to PDC and Modbus Serial Communications Protocol manuals for details.

PD644



Relays

Rating: 2 Form C (SPDT); rated 3 A @ 30 VDC or 3 A @ 250

VAC resistive load; 1/14 HP @ 125/250 VAC inductive loads

Deadband: 0-100% FS, user selectable

High or Low Alarm: User may program any alarm for high or low

Relay Operation:

1. Automatic (non-latching)
2. Latching
3. Pump alternation control

Relay Reset: User selectable via front panel buttons or PC

1. Automatic reset only (non-latching)
2. Automatic plus 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)

Automatic Reset: Relays reset when input passes the reset point

Manual Reset: Front panel button, MeterView, Modbus registers

Time Delay: 0 to 199 seconds, on and off delays; programmable

Fail-Safe Operation: Programmable, independent for each relay. Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state.

Isolated 4-20 mA Transmitter Output

Scaling Range: 1.00 to 23.00 mA; reverse scaling allowed.

Calibration: Factory calibrated 4.00 to 20.00 mA

Accuracy: $\pm 0.1\%$ FS ± 0.004 mA

Temperature Drift: 50 PPM/°C

Note: Analog output drift is separate from input drift

Transmitter Supply: Isolated 24 VDC $\pm 10\%$ @ 200 mA max

Isolation: 500 V input-to-output or output-to-24 VDC supply;
4 kV input/output-to-power line

External Power: 35 VDC maximum

Output Loop Resistance:

Power supply	Loop Resistance	
	Minimum	Maximum
24 VDC	10 Ω	700 Ω
35 VDC (external)	100 Ω	1200 Ω

See page 152 for mounting dimensions.

Javelin T/Javelin D Ordering Information

ORDERING INFORMATION

Javelin T Model PD740		
85-265 VAC** Model	12-36 VDC** Model	Options Installed
PD740-6R0-04	PD740-7R0-04	None
PD740-6R2-04	PD740-7R2-04	2 Relays
	PD740-7R3-04	4-20 mA Output
PD740-6R3-14		4-20 mA Output, 24 VDC Supply
All models supplied with RS-485 communications.		
**All models may be powered from AC or DC, see Specifications for details.		

Javelin D Model PD644		
85-265 VAC** Model	12-36 VDC** Model	Options Installed
PD644-6R3-14		24 VDC Transmitter Supply
PD644-6R5-14		2 Relays & 24 VDC Supply
	PD644-7R3-04	None
	PD644-7R5-04	2 Relays
All models are supplied with RS-485 communications and 4-20 mA output.		
**All models may be powered from AC or DC, see Specifications for details.		

Accessories	
Model	Description
PDA7485-I	RS-232 to RS-422/485 Isolated Converter
PDA7485-N	RS-232 to RS-422/485 Non-Isolated Converter
PDA8485-I	USB to RS-422/485 Isolated Converter
PDA8485-N	USB to RS-422/485 Non-Isolated Converter
PDA7503-1*	MeterView® Software for 1 Meter
PDA7503-2*	MeterView® Software for 1-10 Meters
PDA7503-3*	MeterView® Software for 1-100 Meters
PDN-MODBUS	Modbus Option Enable
PDX6901	Suppressor (snubber): 0.01µF/470 Ω, 250 VAC
*MeterView® Software may be used for monitoring and data logging of PD644 and PD740 Javelin meters. Configuration and programming of Javelin meters must be done through the front panel or Modbus registers.	

Setup, Calibration & Labels	
Model	Description
PDN-CAL	2-Point Input Calibration
PDN-CAL3	4-20 mA Output Calibration
PDN-CSETUP	Custom Setup
PDN-CERTCAL	Certificate of Calibration
PDN-CERTCAL2	Certificate of Calibration with Data
PDLXXXX	Engraved Plastic Labels (see pages 142, 143)

NEMA 4 & NEMA 4X Enclosures



PDA2706

NEMA 4 and NEMA 4X enclosures are available to house from one to ten meters.

NEMA 4 & 4X Enclosures			
Number of Meters	Plastic	Stainless Steel	Steel
1	PDA2501	PDA2601	PDA2701
2	PDA2502	PDA2602	PDA2702
3	PDA2503	PDA2603	PDA2703
4	PDA2504	PDA2604	PDA2704
5	PDA2505	PDA2605	PDA2705
6	PDA2506	PDA2606	PDA2706
7	PDA2507		
8	PDA2508		
10	PDA2510		
2	PDA2512	Large enclosure for two meters	
1	PDA2801	Low-cost enclosure for one meter	

Enclosures and meters are ordered as separate items.

Javelin T Low-Cost Temperature Meter

Setup & Calibration Sheet PD740

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Indication Only ☐ On/Off Control	
Fax: _____	☐ 4-20 mA Retransmitting	
PO#: _____ SO# (PDC): _____	☐ Other: _____	
	Description: _____	

Note: Refer to Price List for cost of setup & calibration services.

Product Information	Input
Model Number: _____	☐ TC Type _____
Serial Number(s): _____	☐ RTD 100 Ω Pt ☐ 0.00385 Curve
	☐ 0.00392 Curve
	☐ °F ☐ °C
Total # of Units: _____	

Input Calibration – P/N: PDN-CAL		Output Calibration – P/N: PDN-CAL3	
Input	Display	Display	Output
1. _____	_____	1. _____	4.00 mA
2. _____	_____	2. _____	20.00 mA

☐ Certificate of Calibration (Order P/N: PDN-CERTCAL) ☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)

Relay Setup & Programming – P/N: PDN-CSETUP			Communications & Advanced Settings	
Action & Reset Type	Relay 1	Relay 2	☐ PDC Protocol	Adjust: _____
	☐ Automatic only	☐ Automatic only	☐ Modbus Protocol	Filter: _____
Mode	☐ Auto + manual	☐ Auto + manual	(Order P/N: PDN-MODBUS)	Bypass: _____
	☐ Manual any time	☐ Manual any time	Address: _____	
Set Point	☐ Manual after passing reset point	☐ Manual after passing reset point	Baud Rate: _____	
	☐ Alternation control	☐ Alternation control	Transmit Delay: _____	
Reset Point	☐ Off	☐ Off	Byte-to-Byte Timeout: _____	
	☐ Fail-Safe or	☐ Fail-Safe or	Parity (Modbus):	Password: _____
On Delay	☐ Normal	☐ Normal	☐ Odd	(4 Digits)
			☐ Even	Not set by default
Off Delay	Seconds	Seconds	☐ None	
	Seconds	Seconds		

Service Performed by: _____ Date: _____

Javelin D High-Voltage DC Meter

Setup & Calibration Sheet PD644

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Description of Application: _____	
Zip Code: _____ Country: _____		
Fax: _____		
PO#: _____ SO# (PDC): _____		

Note: Refer to Price List for cost of setup & calibration services.

Product Information	Input
Model Number: _____	0 – 300 VDC
Serial Number(s): _____	Note: Virtually any voltage range may be scaled or calibrated to correspond to any engineering units. Example: 0 – 90 VDC = 0 – 1750 RPM
Total # of Units: _____	

2-Point Calibration/Scaling – P/N: PDN-CAL			Output Calibration – P/N: PDN-CAL3		
Input (VDC)	Display	Decimal Point	Display	Output	Sensor Break
1. _____	_____	Specify display value decimal point location (e.g. 0.000)	1. _____	4.00 mA	_____ mA
2. _____	_____		2. _____	20.00 mA	(1.00 to 23.00 mA)

☐ Certificate of Calibration (Order P/N: PDN-CERTCAL)
☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)

Relay Setup & Programming – P/N: PDN-CSETUP			Communications & Advanced Settings	
Action & Reset Type	Relay 1	Relay 2	☐ PDC Protocol ☐ Modbus Protocol (Order P/N: PDN-MODBUS) Filter: _____ Address: _____ Bypass: _____ Baud Rate: _____ Transmit Delay: _____ Byte-to-Byte Timeout: _____ Parity (Modbus): ☐ Odd ☐ Even ☐ None	
	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual after passing reset point ☐ Alternation control ☐ Off Mode ☐ Fail-Safe or ☐ Normal	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual after passing reset point ☐ Alternation control ☐ Off ☐ Fail-Safe or ☐ Normal		
Set Point	_____	_____	Password: _____ (4 Digits) Not set by default	
Reset Point	_____	_____		
On Delay	Seconds _____	Seconds _____		
Off Delay	Seconds _____	Seconds _____		

Service Performed by: _____ Date: _____

Snooper Modbus® Serial Input Meter

PD865



SPECIFICATIONS

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

General

Input/Output: Modbus RTU RS-485

Display: 0.56" (14.2 mm) red LED, 6 digits; displays from -199999 to 999999, automatic leading zero blanking

Display Intensity: Eight user selectable intensity levels

Decimal Point: Up to five decimal places: d.ddddd, dd.dddd, ddd.ddd, dddd.dd, ddddd.d, or ddddd

Front Panel: NEMA 4X, IP65; panel gasket provided

Programming Methods: Four front panel buttons or via Modbus registers (Slave mode only)

Scaling: Input may be scaled from -199,999 to 999,999

Function: Linear, square root, or programmable exponent from 0.50000 to 2.99999

Multi-Point Linearization: 2 to 16 points

Noise Filter: Programmable 2 to 199 (0 will disable filter)

Bypass: 0.2 to 99.9% of full-scale

Cutoff: 0 to 999999; 0 disables cutoff

Display Update Rate: Master: 10/sec to 1 every 25.5 seconds; Slave: Dependent on master device (PLC, DCS, etc)

Overrange: Display flashes 999999

Underrange: Display flashes -199999

Max/Min Display: Stored until reset by user or meter is turned off; user can reset by front panel buttons or via Modbus registers.

Password: Restricts modification of programmed settings.

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Power Options: 85-265 VAC, 50/60 Hz; 90-265 VDC, 20 W max or 12-36 VDC; 12-24 VAC, 6 W max.

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

Normal Mode Rejection: 64 dB at 50/60 Hz

Transmitter Supply: Isolated 24 VDC $\pm 10\%$ @ 200 mA max

Isolation: 4 kV input/output-to-power line, 500 V input-to-output or output-to-24 VDC supply

Operating Temperature: 0 to 65°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Connections: Removable screw terminals accept 12 to 26 AWG

Enclosure: 1/8 DIN, high impact plastic, UL 94V-0, color: gray

Weight: 9.7 oz (275 g) (including options)

UL File Number: E160849; 508 Industrial Control Equipment

Warranty: 3 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Operating Modes

Master: Processes data read from a Modbus RTU slave device (only one parameter at a time can be programmed for reading).

Slave: Processes data sent from a Modbus RTU master device.

Note that the relays and the 4-20 mA output are functional in either mode.

Master Mode Settings

Function Code: Select which Modbus function code (03 or 04) to use in reading the slave device.

Register Number: 1 to 65536. Specifies which register(s) to read in the slave device. Register number is preceded by register type (3xxxxx or 4xxxxx). Five or six digit register number allowed.

Data Type: Select the data format that the slave device uses; select between Short (2 byte) and Long (4 byte), Integers or Floating point (4 byte), Signed or Unsigned (integer only), and byte order (big-endian vs little-endian).

Slave Response Timeout: 0 to 25.5 seconds, limited by Poll Time value. This is the time allowed for slave to respond to a command.

Poll Time: 0.1 to 25.5 seconds between read commands.

Relays

Rating: 2 Form A (SPST) standard; 2 Form C (SPDT) optional; rated 3 A @ 30 VDC or 3 A @ 250 VAC, resistive loads

High or Low Alarm: User may program any alarm for high or low

Deadband: 0-100% FS, user selectable

Relay Operation:

1. Automatic (non-latching)
2. Latching
3. Pump alternation control (up to 4 relays)

Relay Reset: Selectable via front panel or Modbus registers

1. Automatic reset only (non-latching)
2. Automatic plus 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)

Automatic Reset: Relays reset when input passes the reset point

Manual Reset: Front panel button, Modbus registers (Slave only)

Time Delay: 0 to 199 seconds, on and off delays, programmable and independent for each relay

Fail-Safe Operation: Programmable, independent for each relay

Communications Break: No change, Relay on, or Relay off.

Controls the condition the relay goes to when a slave device does not reply (Master mode only).

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

Serial Communications

Compatibility: EIA-485

Protocol: Modbus RTU

Address: 1 to 247. Specifies the address of the slave device (Master mode) or the address of the PD865 (Slave mode).

Baud Rate: 300 to 19,200 bps

Data: 8 bits (1 start bit, 1 stop bit; 1 or 2 stop bits with no parity)

Parity: None, even, or odd

Byte-to-Byte Timeout: 0.01 to 2.54 seconds

Turn Around Delay: Less than 2 ms (fixed)

See page 152 for mounting dimensions.

**PRECISION
DIGITAL**

www.predig.com

SETUP, CALIBRATION & WARRANTY SERVICES

Snooper Modbus® Serial Input Meter

Isolated 4-20 mA Transmitter Output

Scaling Range: 1.000 to 23.000 mA; reverse scaling allowed.

Calibration: Factory calibrated 4.000 to 20.000 mA

Accuracy: $\pm 0.1\%$ FS ± 0.004 mA

Recalibration: Recommended at least every 12 months.

Temperature Drift: 50 PPM/°C

Transmitter Supply: Isolated 24 VDC $\pm 10\%$ @ 200 mA max

Isolation: 500 V input-to-output or output-to-24 VDC supply;
4 kV output-to-power line

External Loop Power Supply: 35 VDC maximum

Output Loop Resistance: Loop Resistance

Power Supply	Minimum	Maximum
24 VDC	10 Ω	700 Ω
35 VDC (external)	100 Ω	1200 Ω

Data Source: Display value, maximum display value, minimum display value, or Modbus register

Overrange: Programmable mA output for overrange condition

Underrange: Programmable mA output for underrange condition

Communications Break: Programmable mA output when a slave device does not reply within the Slave Response Timeout

Maximum Output: Programmable absolute maximum mA output

Minimum Output: Programmable absolute minimum mA output

ORDERING INFORMATION

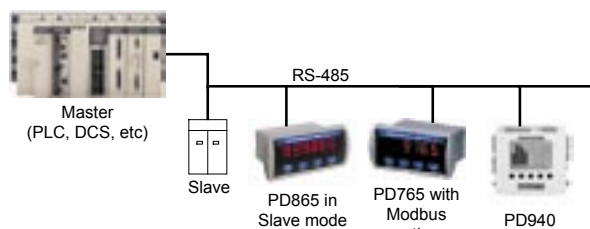
Snooper Model PD865		
85-265 VAC** Model	12-36 VDC** Model	Options Installed
PD865-6R2-06		None
PD865-6R5-16		4-20 mA Output & 24 VDC Transmitter Supply
PD865-6R7-16		2 Relays, 4-20 mA Output & 24 VDC Transmitter Supply
	PD865-7R5-06	4-20 mA Output
	PD865-7R7-06	2 Relays & 4-20 mA Output
All models are supplied with 2 Form A relays.		
**All models may be powered from AC or DC, see Specifications for details.		

Accessories	
Model	Description
PDA7485-I	RS-232 to RS-422/485 Isolated Converter
PDA7485-N	RS-232 to RS-422/485 Non-Isolated Converter
PDA8485-I	USB to RS-422/485 Isolated Converter
PDA8485-N	USB to RS-422/485 Non-Isolated Converter
PDX6901	Suppressor (snubber): 0.01 μ F/470 Ω , 250 VAC

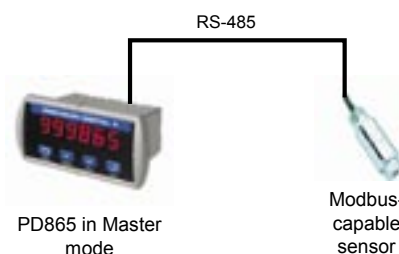
Setup, Calibration & Labels	
Model	Description
PDN-CAL	2-Point Input Calibration
PDN-CAL2	Multi-Point Calibration
PDN-CAL3	4-20 mA Output Calibration
PDN-CSETUP	Custom Setup
PDN-CERTCAL	Certificate of Calibration
PDN-CERTCAL2	Certificate of Calibration with Data
PDLXXXX	Engraved Plastic Labels (see pages 142, 143)

Operation

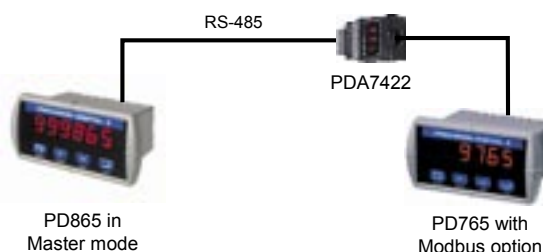
The Snooper Model PD865 meter is capable of operating as a Modbus Master or Slave. As a Slave, the meter requires connection to a master device: PLC, DCS, etc. As a Master, the meter interfaces to one slave device. The following figures show several possible connection schemes.



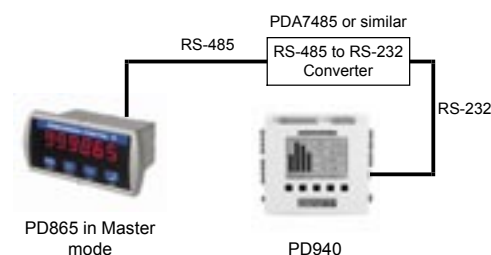
PD865 Connected to a Master



PD865 Connected to a Smart Sensor



PD865 Connected to a PD765 Trident



PD865 Connected to a PD940 ConsoliDator

Snooper Modbus® Serial Input Meter

Setup & Scaling Sheet PD865

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Level ☐ Flow ☐ Pressure ☐ Temp	
Fax: _____	☐ Other: _____	
PO#: _____ SO# (PDC): _____	Description: _____	

Note: Refer to Price List for cost of setup & calibration services.

Product Information	Communication Settings	Scaling Type
Model Number: _____	Address: _____	Linear Function:
Serial Number(s): _____	Baud Rate: _____	☐ 2-Point
	Transmit Delay: _____	☐ Multi-Point: _____
	Byte-to-Byte	Exponential Function (2 points):
	Timeout: _____	☐ Square Root
	Parity:	☐ Programmable Exponent:
	☐ Odd	_____ (0.50000 to 2.99999)
	☐ Even	
	☐ None, 1 Stop Bit	
Total # of Units: _____	☐ None, 2 Stop Bits	

2-Point Scaling – P/N: PDN-CAL			Output Calibration – P/N: PDN-CAL3	
Input	Display	Decimal Point	Display	Output
1. _____	_____	Specify display value decimal point location (e.g. 0.00000)	1. _____	4.000 mA
2. _____	_____		2. _____	20.000 mA
Multi-Point Scaling – P/N: PDN-CAL2 (Includes PDN-CAL above)			Analog Output Source	
3. _____	_____		☐ Display Value	
4. _____	_____		☐ Max Display Value	
5. _____	_____		☐ Min Display Value	
6. _____	_____		☐ Register (Slave Only)	
7. _____	_____			
8. _____	_____		Analog Output Parameters	
9. _____	_____		Range: 1.000 to 23.000 mA	
10. _____	_____		Overrange value _____ mA	
11. _____	_____		Underrange value _____ mA	
12. _____	_____		Comm break value _____ mA	
13. _____	_____		Maximum value _____ mA	
14. _____	_____		Minimum value _____ mA	
15. _____	_____			
16. _____	_____			
☐ Certificate of Calibration (Order P/N: PDN-CERTCAL)				
☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)				

Ref.: SA-DP0022-FM15 (1-2)



SETUP, CALIBRATION & WARRANTY SERVICES

Snooper Modbus® Serial Input Meter

Setup & Scaling Sheet PD865

Mode Selection	Display Functions
☐ Master ☐ Slave	Intensity: _____
Master Parameters: Function Code: ☐ 03 ☐ 04 Register Number: _____ Poll Time (0.1 to 25.5): _____ Response Time (0 to Poll Time): _____ Data Type: Data Parameters: ☐ Short Integer ☐ BCD (Binary Coded Decimal Integer) ☐ Long Integer ☐ Signed (Binary Integer) ☐ Floating Point ☐ Unsigned (Binary Integer) ☐ Most Significant Byte First (Integer or Floating Point) ☐ Most Significant Byte Last (Integer or Floating Point)	Noise Filter: (2 to 199) _____ Bypass: (0.2 to 99%) _____ Cutoff: (0 to 999999, 0 disables) _____

Relay Setup & Programming – P/N: PDN-CSETUP

	Relay 1	Relay 2	Relay 3	Relay 4
Action & Reset Type	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual after passing reset point ☐ Alternation control ☐ Off	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual after passing reset point ☐ Alternation control ☐ Off	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual after passing reset point ☐ Alternation control ☐ Off	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual after passing reset point ☐ Alternation control ☐ Off
Mode	☐ Fail-Safe or ☐ Normal	☐ Fail-Safe or ☐ Normal	☐ Fail-Safe or ☐ Normal	☐ Fail-Safe or ☐ Normal
Comm Break	☐ No Change ☐ Relay on ☐ Relay off	☐ No Change ☐ Relay on ☐ Relay off	☐ No Change ☐ Relay on ☐ Relay off	☐ No Change ☐ Relay on ☐ Relay off
Set Point	_____	_____	_____	_____
Reset Point	_____	_____	_____	_____
On Delay	_____ Seconds (0 to 199)	_____ Seconds	_____ Seconds	_____ Seconds
Off Delay	_____ Seconds (0 to 199)	_____ Seconds	_____ Seconds	_____ Seconds

Password: _____ (4 Digits) – Not set by default

Service Performed by: _____ Date: _____

Dart Low-Cost Process Meter

PD602



SPECIFICATIONS

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

General

Inputs: Field selectable: 4-20 mA, 0-5 V, 1-5 V, 0-10 V

Display: 0.56" (14.2 mm) red LED, 3½ digits (±1999)

Accuracy: ±0.05% FS ±1 count

Calibration Range: Low input (e.g. 4 mA): -500 to 500

High input (e.g. 20 mA): 20 to 2000 above low input display.

Decimal Point: Jumper selectable up to three decimal places

Front Panel: NEMA 4X, IP65; panel gasket provided

Input Impedance: Voltage ranges: greater than 200 kΩ;

Current range: 10-60 Ω, varies with resettable fuse impedance

Input Overload: Protected by automatically resettable fuse

Display Update Rate: 2.5/second

Overrange: Displays 1

Underrange: Displays -1

Temperature Drift: 100 PPM/°C

Recalibration: Recommended at least every 12 months

Power Options: 85-265 VAC, 50/60 Hz, 90-265 VDC, 8 W max or 12-36 VDC, 12-24 VAC, 6 W max.

Transmitter Supply: Isolated 24 VDC ±10% @ 200 mA max

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

Normal Mode Rejection: 62 dB at 50/60 Hz

Common Mode Rejection: 120 dB at 50/60 Hz

Isolation: 4 kV input-to-power line; 500 V input-to-24 VDC supply

Operating Temperature: 0 to 65°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Connections: Removable screw terminals accept 12 to 26 AWG

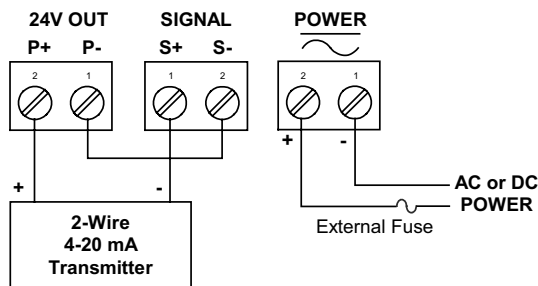
Enclosure: 1/8 DIN, high impact plastic, UL 94V-0, color: gray

Weight: 5.0 oz (142 g)

Warranty: 1 year parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Connections



Transmitter powered by internal power supply

ORDERING INFORMATION

85-265 VAC** Model	12-36 VDC** Model	Options Installed
PD602-6R0-0*	PD602-7R0-0	None
PD602-6R0-1*		24 VDC Transmitter Supply

*Quick Shipment Program product, shipped within 2 working days.
**Meters may be powered from AC or DC, see Specifications for details.

Setup, Calibration & Labels	
Model	Description
PDN-CAL	2-Point Input Calibration
PDN-CERTCAL	Certificate of Calibration
PDN-CERTCAL2	Certificate of Calibration with Data
PDLXXXX	Engraved Plastic Labels (see pages 142, 143)

NEMA 4 & NEMA 4X Enclosures

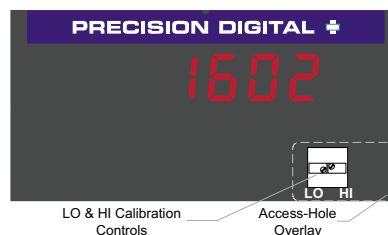
Enclosures are available to house from one to ten meters.

Enclosures and meters are ordered as separate items.

NEMA 4 & 4X Enclosures			
Number of Meters	Plastic	Stainless Steel	Steel
1	PDA2501	PDA2601	PDA2701
2	PDA2502	PDA2602	PDA2702
3	PDA2503	PDA2603	PDA2703
4	PDA2504	PDA2604	PDA2704
5	PDA2505	PDA2605	PDA2705
6	PDA2506	PDA2606	PDA2706
7	PDA2507		
8	PDA2508		
10	PDA2510		
2	PDA2512	Large enclosure for two meters	
1	PDA2801	Low-cost enclosure for one meter	

Front Panel Calibration Controls

The LO and HI calibration controls are located behind the faceplate. The calibration controls may be reached through an access-hole on the faceplate. After the calibration has been completed, use the overlay provided to cover the access-hole to maintain NEMA 4X protection.



See page 152 for mounting dimensions.

Dart Low-Cost Process Meter

Setup & Calibration Sheet PD602

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____ Title: _____ Date: _____
Company: _____ Phone: _____ Ext: _____
Mailing Address: _____ Email: _____
City: _____ State: _____ Application: _____
Zip Code: _____ Country: _____ ☐ Level ☐ Flow ☐ Pressure ☐ Temp
Fax: _____ ☐ Other: _____
PO#: _____ SO# (PDC): _____ Description: _____

Note: Refer to Price List for cost of setup & calibration services.

Product Information

Model Number: _____
Serial Number(s): _____

Total # of Units: _____

Input

- ☐ 4-20 mA
☐ 1-5 V
☐ 0-5 V
☐ 0-10 V
☐ _____ - Other

2-Point Input Calibration – P/N: PDN-CAL

Input	Display
1. _____	_____
2. _____	_____

☐ Certificate of Calibration (Order P/N: PDN-CERTCAL)
☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)

Notes:

Service Performed by: _____ Date: _____

Process Meter

SPECIFICATIONS

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

General

Inputs: Field selectable: 4-20 mA, 0-5 V, 1-5 V, 0-10 V

Display: 0.56" (14.2 mm) red LED; 4½ digits + extra zero; ±19999(0), (0) may be switched on to display 199,990

Linear Input Accuracy: ±0.05% FS ±1 count

Square Root Accuracy: ±0.1% FS ±2 counts

Multi-Point Linearization: 2 to 11 points

Front Panel: NEMA 4X, IP65; panel gasket provided

Calibration: May be scaled using internal calibration ($I-EL$) or calibrated by applying an external calibration signal ($E-EL$). To scale inputs such as 0-5 V, 1-5 V, or 0-10 V without applying a signal it is necessary to first complete an Initial Calibration.

Calibration Range: User programmable over entire range of meter

Input Impedance: Voltage ranges: greater than 300 kΩ;

Current range: 100-120 Ω, varies with resettable fuse impedance

Input Overload: Protected by automatically resettable fuse

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Lockout: Jumper 3 restricts modification of programmed settings.

Transmitter Supply: Isolated 24 VDC ±5% @ 20 mA; maximum loop resistance: 1200 Ω. Available for either input transmitter or 4-20 mA output option, but not both.

Hold Reading: Connect terminals HLD and COM

Power Options: 115 VAC ±10%, 230 VAC ±10%, 50/60 Hz, 10 VA; or 18-36 VDC, 6 W maximum.

Isolation: AC powered: 1500 V; DC powered: 500 V

Normal Mode Rejection: 64 dB at 50/60 Hz

Operating Temperature: 0 to 60°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Enclosure: 1/8 DIN, high impact plastic, UL 94V-0, color: black

Weight: 19.7 oz (559 g) (including options)

Connections: Removable screw terminals accept 12 to 26 AWG

Alarm Points: 4, any combination of high or low alarms

Alarm Status Indication: Front panel LED

Alarm Deadband: 0-100%, user selectable

UL File Number: E160849; 508 Industrial Control Equipment

Warranty: 2 years parts & labor

Relays

Rating: 2 or 4 Form C (SPDT); rated 2 A @ 30 VDC or 2 A @ 250 VAC resistive load; 1/14 HP @ 125/250 VAC inductive loads

Reset: User selectable

1. Automatic when the input passes the reset point.

2. Automatic plus manual (via user supplied switch or front panel ACK button). Manual reset resets all manually resettable relays.

ORDERING INFORMATION

115 VAC Model	230 VAC Model	24 VDC Model	Options Installed	Option Card**
PD690-3-N*	PD690-4-N	PD690-2-N	None	
PD690-3-14*	PD690-4-14	PD690-2-14	2 Relays	PD174
PD690-3-15*	PD690-4-15	PD690-2-15	4-20 mA Output	PD175
PD690-3-16*	PD690-4-16	PD690-2-16	2 Relays + 4-20 mA Output	PD176
PD690-3-17*	PD690-4-17	PD690-2-17	4 Relays	PD177
PD690-3-18*	PD690-4-18	PD690-2-18	4 Relays + 4-20 mA Output	PD178

NOTES:

*Quick Shipment Program product, shipped within 2 working days.

**Part numbers for Option Cards when purchased separately. Listed models include the corresponding described option.

See page 152 for mounting dimensions.

PD690



Fail-Safe Operation: Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state. To disable fail-safe operation remove jumper JP6 located on the display board.

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

Deadband: 0-100%, user selectable

Isolated 4-20 mA Transmitter Output

Scaling Range: Anywhere in range of meter, 501 count minimum span; reverse scaling allowed.

Accuracy: ±0.1% FS ±0.004 mA

Output Loop Resistance:

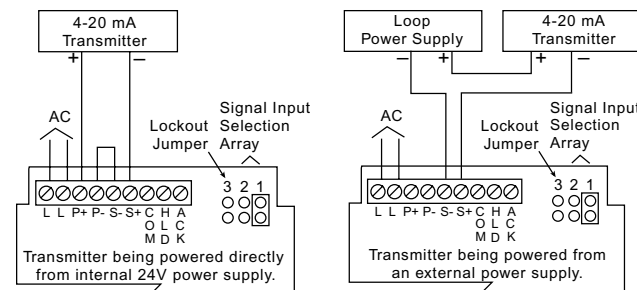
Power supply	Loop Resistance	
	Minimum	Maximum
24 VDC	10 Ω	600 Ω
35 VDC (external)	600 Ω	1000 Ω

Isolation: 500 V input-to-output or input/output-to-24 VDC supply

External Loop Power Supply: 35 VDC maximum

Simplify Loops with PD690's 24 V Transmitter Power Supply

The PD690 is ideal for loops that consist of a transmitter and a digital display because the PD690 provides the 24 V to power the transmitter. This standard feature saves time and money by simplifying wiring and eliminating the cost of an external power supply. In addition, the isolated power supply can be used to power 3- and 4-wire transducers with either current or voltage output.



Process Meter

Setup & Calibration Sheet PD690

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Level ☐ Flow ☐ Pressure ☐ Temp	
Fax: _____	☐ Other: _____	
PO#: _____ SO# (PDC): _____	Description: _____	

Note: Refer to Price List for cost of setup & calibration services.

Product Information	Input	Calibration Type
Model Number: _____	☐ 4-20 mA	☐ 2-Point
Serial Number(s): _____	☐ 1-5 V	☐ Multi-Point
	☐ 0-5 V	☐ Linear Function
	☐ 0-10 V	☐ Square Root
Total # of Units: _____	☐ _____ - Other	

2-Point Input Calibration/Scaling – P/N: PDN-CAL			Output Calibration – P/N: PDN-CAL3	
Input	Display	Cutoff*	Display	Output
1. _____	_____	_____	1. _____	4.00 mA
2. _____	_____	_____	2. _____	20.00 mA

*Cutoff applies to square root calibration only.

Multi-Point Calibration/Scaling – P/N: PDN-CAL2 (Includes PDN-CAL above)

Point #	3.	4.	5.	6.	7.	8.	9.	10.	11.
Input	_____	_____	_____	_____	_____	_____	_____	_____	_____
Display	_____	_____	_____	_____	_____	_____	_____	_____	_____

☐ Certificate of Calibration (Order P/N: PDN-CERTCAL) | ☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)

Relay Setup – P/N: PDN-CSETUP

	Relay 1	Relay 2	Relay 3	Relay 4
Reset Type	☐ Automatic only ☐ Auto + manual	☐ Automatic only ☐ Auto + manual	☐ Automatic only ☐ Auto + manual	☐ Automatic only ☐ Auto + manual
Mode	☐ Fail-Safe or ☐ Normal			
Set Point	_____	_____	_____	_____
Reset Point	_____	_____	_____	_____

☐ Install Lockout Jumper – Not installed by default

Service Performed by: _____ Date: _____

Strain Gauge Meter

SPECIFICATIONS

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

General

Inputs: Field selectable: 0-30 mV, 0-200 mV, ± 15 mV ± 100 mV

Display: 0.56" (14.2 mm) red LED, 4½ digits + extra zero may be switched on to display $\pm 19,999(0)$

Accuracy: 0.05% FS ± 1 count

Ratiometric Operation: Deviation less than 0.1% FS ± 1 count, with $\pm 10\%$ variation in excitation voltage

Zero Stability: 0.5 μ V/°C

Span Stability: 0.005% FS/°C

Front Panel: NEMA 4X, IP65; panel gasket provided

Calibration Range: User programmable over entire range of meter

Input Impedance: 20 k Ω

Sensor Power Supply: Isolated, selectable: 5 VDC or 10 VDC $\pm 5\%$ @ 50 mA; or 24 VDC $\pm 5\%$ @ 20 mA. Available for either strain gauge input or 4-20 mA output option, but not both.

Max Display (Peak): Stored until reset by user or meter is turned off

Max Display Indication: Front panel LED

Tare: Capture Tare - Sets current display to Zero via front panel TARE button. Programmable Tare - Automatically sets TARE to a programmable preset value.

Tare Indication: Front panel LED

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Lockout: Switch 8 restricts modification of programmed settings.

Power Options: 115 VAC or 230 VAC $\pm 10\%$, 50/60 Hz, 10 VA

Isolation: 1500 VAC

Normal Mode Rejection: 64 dB at 50/60 Hz

Operating Temperature: 0 to 60°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Enclosure: 1/8 DIN, high impact plastic, UL 94V-0, color: black

Weight: 19.7 oz (559 g) (including options)

Connections: Removable screw terminals accept 12 to 26 AWG

Alarm Points: 4, any combination of high or low alarms

Alarm Status Indication: Front panel LED

Alarm Deadband: 0-100% FS, user selectable

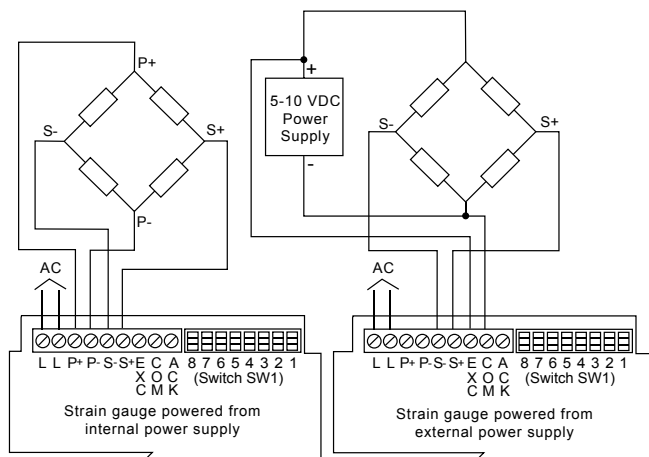
UL File Number: E160849; 508 Industrial Control Equipment

Warranty: 2 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Field Selectable Excitation Power Supply

The internal power supply can provide either 5, 10, or 24 VDC.



PD691



Relays

Rating: 2 or 4 Form C (SPDT); rated 2 A @ 30 VDC or 2 A @ 250 VAC resistive load; 1/4 HP @ 125/250 VAC inductive loads

Reset: User selectable

1. Automatic when the input passes the reset point.
2. Automatic plus manual (via user supplied switch). Manual reset resets all manually resettable relays.

Fail-Safe Operation: Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state. Fail-safe may be disabled with internal jumper.

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

Deadband: 0-100%, user selectable

Isolated 4-20 mA Transmitter Output

Scaling Range: Anywhere in range of meter, 501 count minimum span; reverse scaling allowed.

Accuracy: $\pm 0.1\%$ FS ± 0.004 mA

Output Loop Resistance:

	Loop Resistance	
Power supply	Minimum	Maximum
24 VDC	10 Ω	600 Ω
35 VDC (external)	600 Ω	1000 Ω

Isolation: 500 V input-to-output or input/output-to-24 VDC supply

External Loop Power Supply: 35 VDC maximum

ORDERING INFORMATION

115 VAC Model	230 VAC Model	Options Installed	Option Card**
PD691-3-N	PD691-4-N	None	
PD691-3-14	PD691-4-14	2 Relays	PD174
PD691-3-15	PD691-4-15	4-20 mA Output	PD175
PD691-3-16	PD691-4-16	2 Relays + 4-20 mA Output	PD176
PD691-3-17	PD691-4-17	4 Relays	PD177
PD691-3-18	PD691-4-18	4 Relays + 4-20 mA Output	PD178

**Part numbers for Option Cards when purchased separately. Listed models include the corresponding described option.

See page 152 for mounting dimensions.



www.predig.com

SETUP, CALIBRATION & WARRANTY SERVICES

Strain Gauge Meter

Setup & Calibration Sheet PD691

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Strain Gauge ☐ Load Cell ☐ mV	
Fax: _____	☐ Other: _____	
PO#: _____ SO# (PDC): _____	Description: _____	

Note: Refer to Price List for cost of setup & calibration services.

Product Information	Input	Calibration Type
Model Number: _____	☐ 0-30 mV ☐ Unipolar	☐ 2-Point
Serial Number(s): _____	☐ 0-200 mV ☐ Bipolar	☐ Multi-Point
	☐ ±15 mV ☐ Ratiometric Operation with Internal Excitation	Internal Excitation:
	☐ ±100 mV ☐ Ratiometric Operation with External Excitation	☐ 24 VDC
Total # of Units: _____	☐ _____ - Other Tare: _____ (0, 1, or 2)	☐ 10 VDC
		☐ 5 VDC

2-Point Calibration/Scaling – P/N: PDN-CAL			Output Calibration – P/N: PDN-CAL3	
Input	Display	Tare (2)	Display	Output
1. _____	_____	_____	1. _____	4.00 mA
2. _____	_____	_____	2. _____	20.00 mA

Multi-Point Calibration/Scaling – P/N: PDN-CAL2 (Includes PDN-CAL above)

Point #	3.	4.	5.	6.	7.	8.	9.	10.	11.
Input	_____	_____	_____	_____	_____	_____	_____	_____	_____
Display	_____	_____	_____	_____	_____	_____	_____	_____	_____

☐ Certificate of Calibration (Order P/N: PDN-CERTCAL) ☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)

Relay Setup – P/N: PDN-CSETUP

	Relay 1	Relay 2	Relay 3	Relay 4
Reset Type	☐ Automatic only ☐ Auto + manual	☐ Automatic only ☐ Auto + manual	☐ Automatic only ☐ Auto + manual	☐ Automatic only ☐ Auto + manual
Mode	☐ Fail-Safe or ☐ Normal			
Set Point	_____	_____	_____	_____
Reset Point	_____	_____	_____	_____

☐ Set Lockout Switch – Not set by default

Service Performed by: _____ Date: _____

Rate/Totalizer/Batch Controllers

SPECIFICATIONS

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

General

Display: 6 digits, 0.56" (14.2 mm) red LED

Rate: -19,999(0) to 29,999(0) with selectable extra zero

Total: 0 to 999,999

Decimal Point: Process/rate: 2.9999, 29.999, 299.99, 2999.9, or extra zero may be turned on 299990. Total: 9.99999, 99.9999, 999.999, 9999.99, 99999.9, 999999.

Multi-Point Linearization: 2 to 11 points

Front Panel: NEMA 4X, IP65; panel gasket provided

Max Display (Peak): Captures the peak process/rate and displays it via the front panel ENTER button (d5P4 P)

Max Display Indication: Front panel flashing R LED

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Power Options: 115 VAC $\pm 10\%$, 230 VAC $\pm 10\%$, 50/60 Hz, 10 VA; or 18-36 VDC, 6 W maximum.

Isolation: AC powered: 1500 V; DC powered: 500 V

Operating Temperature: 0 to 60°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Enclosure: 1/8 DIN, high impact plastic, UL 94V-0, color: black

Weight: 19.7 oz (559 g) (including options)

Connections: Removable screw terminals accept 12 to 26 AWG

Alarm Points: 4, any combination of high or low alarms

Alarm Status Indication: Front panel LED

Alarm Deadband: 0-100%, user selectable

UL File Number: E160849; 508 Industrial Control Equipment

Warranty: 2 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

PD692 Analog Input

Inputs: Field selectable: 4-20 mA, 0-20 mA, 0-5 V, 1-5 V, 0-10 V

Linear Input Accuracy: $\pm 0.05\%$ FS ± 1 count

Square Root Accuracy: $\pm 0.1\%$ FS ± 2 counts

Programmable Exponent: 1.0001 to 2.9999

Calibration Range: User programmable over entire range of meter

Input Range	Minimum Span Input 1 & Input 2
0-5 V	0.16 V
0-10 V	0.32 V
4-20 mA	1.60 mA

Input Impedance: Voltage ranges: greater than 300 k Ω ;

Current range: 100-120 Ω , varies with resettable fuse impedance

Input Overload: Protected by automatically resettable fuse

Lockout: Jumper 3 restricts modification of programmed settings.

Transmitter Supply: Isolated 24 VDC $\pm 5\%$ @ 20 mA. Maximum loop resistance: 1200 Ω . Available for either input transmitter or 4-20 mA output option, but not both.

PD693 Pulse Input

Inputs: Field selectable: Pulse or square wave 0-5 V or 0-12 V @ 30 kHz; TTL; open collector 4.7 k Ω pull-up to 12 V @ 30 kHz; NPN or PNP transistor; switch contact 4.7 k Ω pull-up to 12 V @ 40 Hz.

Accuracy: $\pm 0.1\%$ FS

Calibration: May be calibrated using K-factor scaling, internal calibration or by applying an external calibration signal. Field programmable K-factor converts input pulses to rate in engineering units. May be programmed from 0.0001 to 999,999 pulses/unit.

Input Impedance: Pulse input: Greater than 300 k Ω @ 1 kHz. Open collector/switch input: 4.7 k Ω pull-up to 12 V.

PD692, PD693



Sensor Power Supply: Isolated, field selectable: 12 VDC @ 50 mA to power the sensor or 24 VDC @ 20 mA $\pm 5\%$ for output option.

Filter: Programmable contact debounce filter

Gate: Low gate: 1 to 98 seconds; High gate: 2 to 99.9 seconds

Lockout: Jumper JP2 restricts modification of programmed settings.

Rate/Totalizer/Batch Controller

Rate Display Indication: LED labeled R on right illuminates when meter is displaying rate or process input

Low-Flow Cutoff: Any input below the low-flow cutoff value will result in a display of zero. May be set from 1 count to 100% FS, user selectable. To disable low-flow cutoff, program cutoff value to zero. Totalizer is based on rate display; inputs below the low-flow cutoff value will not affect the totalizer (low-flow cutoff is ignored in PD693 K-factor mode).

Alternating Display: Display may be programmed to alternate between rate and total every 10 seconds.

Total Display: 0 to 999,999

Total Decimal Point: May be set in any of the following positions: 9.99999, 99.9999, 999.999, 9999.99, or 99999.9, 999999. Total decimal point is independent of process/rate decimal point.

Time Base: Seconds, minutes, hours, or days (time base of days available on PD692 only).

Total Conversion Factor: Programmable from 0.00001 to 59999

Totalizer: Calculates total based on rate and field programmable multiplier to display total in engineering units. Total is stored in non-volatile memory.

Totalizer Rollover: Totalizer rolls over when total exceeds 999,999. Relay status reflects the display value.

Totalizer Presets: Up to four, user selectable under Setup menu. Any set point can be assigned to total and may be programmed anywhere in the range of the meter.

Preset Offset: Relays assigned to total can be programmed to trip at any point below the next relay's preset value.

Programmable Delay on Release: If the meter is programmed to reset total to zero automatically when the highest preset is reached, then a delay will occur before the total relays reset. This delay can be programmed anywhere between 1 and 999 seconds.

Priority Batch Programming: This feature allows the user to quickly change preset values without going into the main menu by holding the ENTER button for more than 3 seconds.

Total Reset: Via front panel ENTER button, external contact closure, or automatically via user selectable preset value.

Total Reset Lockout: Meter may be programmed so total cannot be reset from the front panel.

Rate/Totalizer/Batch Controllers

Relays

Rating: 2 or 4 Form C (SPDT); rated 2 A @ 30 VDC or 2 A @ 250 VAC resistive load; 1/14 HP @ 125/250 VAC inductive loads
Assigned to Process/Rate or Total: Any relay may be assigned to process/rate or total

Electrical Noise Suppression: A suppressor (RC network) to prolong the life of the relays should be connected to each relay contact switching inductive loads. The suppressor provides a degree of protection against electrical noise caused by inductive loads. Recommended suppressor value, 0.01 μ F/470 Ω , 250 VAC.

Deadband: 0-100% FS, user selectable

High or Low Alarm: User may program any alarm for high or low
Relay Operation: Latching or non-latching

Fail-Safe Operation: Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state. To disable fail-safe operation remove jumper JP6 located on the display board.

Auto Initialization: When power is applied to the meter, relays assigned to total will reflect the state of the accumulated total value in memory. Relays assigned to process/rate will reflect the state of the input to the meter.

Relays Reset: User select via JP3 jumper array and *5EtUP* menu

Total Relays Reset:

1. When total is reset to zero, if set up for external total reset
2. After delay has elapsed, if set up for internal total reset
3. Manual any time, if set up for external total reset (via user supplied external contact closure at terminals AK and CM or front panel ACK button). Manual reset resets all manually resettable relays.

Process/Rate Relays Reset:

1. Automatic reset only
2. Manual reset only, at any time
3. Automatic plus manual reset at any time
4. Manual reset only after alarm condition has been corrected

Automatic Reset: Relays reset when input passes the reset point

Manual Reset: Front panel ACK button or via user supplied external contact closure at terminals AK and CM. Manual reset resets all manually resettable relays.

Isolated 4-20 mA Transmitter Output

Scaling Range: Anywhere in range of meter, 501 count minimum span; reverse scaling allowed.

Accuracy: $\pm 0.1\%$ FS ± 0.004 mA

Output Loop Resistance:

Power supply	Loop Resistance	
	Minimum	Maximum
24 VDC	10 Ω	600 Ω
35 VDC (external)	600 Ω	1000 Ω

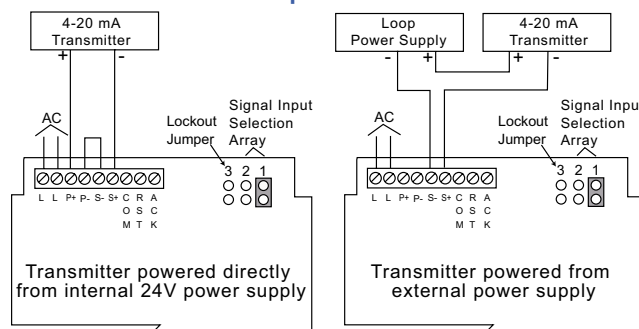
Isolation: 500 V input-to-output or input/output-to-24 VDC supply

External Loop Power Supply: 35 VDC maximum

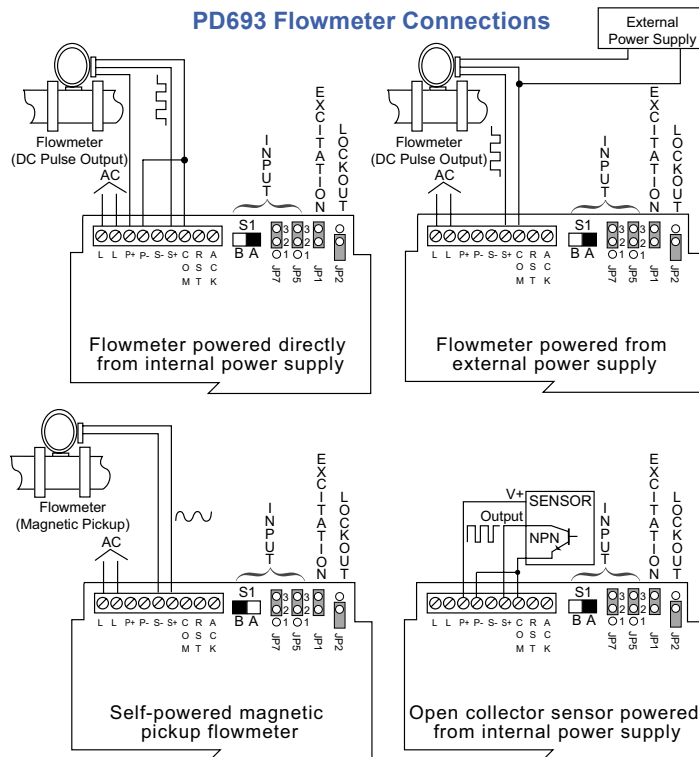
Connections

The PD692 internal power supply provides 24 VDC @ 20 mA to drive either the 4-20 mA input or output loop. The PD693 provides 12 VDC at 50 mA or 24 VDC @ 20 mA to power either the flowmeter input or the 4-20 mA output.

PD692 Loop Connections



PD693 Flowmeter Connections



ORDERING INFORMATION

115 VAC Model		230 VAC Model		24 VDC Model		Options Installed	Option Card**
PD692-3-N*	PD693-3-N*	PD692-4-N	PD693-4-N	PD692-2-N	PD693-2-N	None	
PD692-3-14*	PD693-3-14*	PD692-4-14	PD693-4-14	PD692-2-14	PD693-2-14	2 Relays	PD174
PD692-3-15	PD693-3-15*	PD692-4-15	PD693-4-15	PD692-2-15	PD693-2-15	4-20 mA Output	PD175
PD692-3-16	PD693-3-16	PD692-4-16	PD693-4-16	PD692-2-16	PD693-2-16	2 Relays + 4-20 mA Output	PD176
PD692-3-17	PD693-3-17	PD692-4-17	PD693-4-17	PD692-2-17	PD693-2-17	4 Relays	PD177
PD692-3-18	PD693-3-18	PD692-4-18	PD693-4-18	PD692-2-18	PD693-2-18	4 Relays + 4-20 mA Output	PD178

*Quick Shipment Program product, shipped within 2 working days.

**Part numbers for Option Cards when purchased separately. Listed models include the corresponding described option.

See page 152 for mounting dimensions.

ACCURACY ■ RELIABILITY ■ CONVENIENCE

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Rate/Totalizer/Batch Controllers

Setup & Calibration Sheet PD692 & PD693

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____ Title: _____ Date: _____
 Company: _____ Phone: _____ Ext: _____
 Mailing Address: _____ Email: _____
 City: _____ State: _____ Application: _____
 Zip Code: _____ Country: _____ ☐ Flow Rate ☐ Flow Total ☐ Batch Control
 Fax: _____ ☐ RPM ☐ Pulse Counter ☐ Level
 PO#: _____ SO# (PDC): _____ ☐ Other: _____
 Description: _____

Note: Refer to Price List for cost of setup & calibration services.

Product Information	Analog Input	Pulse Input	Calibration Type
Model Number: _____	☐ 4-20 mA	☐ 0-5 V Pulse	☐ 2-Point ☐ K-Factor
Serial Number(s): _____	☐ 1-5 V	☐ 0-12 V Pulse	☐ Multi-Point
_____	☐ 0-5 V	☐ Flowmeter Magnetic Pickup	☐ Linear Function
_____	☐ 0-10 V	☐ Contact Closure	☐ Square Root
Total # of Units: _____	☐ _____ Other	☐ Open Collector	☐ Programmable Exponent: _____

2-Point & K-Factor Calibration – P/N: PDN-CAL

Input	Display	K-Factor	Cutoff*
1. _____	_____	_____	_____
2. _____	_____	*PD693: Cutoff does not affect total in K-Factor mode. *PD692: Cutoff applies to square root calibration only.	

Output Calibration – P/N: PDN-CAL3

Display	Output
1. _____	4.00 mA
2. _____	20.00 mA

Multi-Point Calibration/Scaling – P/N: PDN-CAL2 (Includes PDN-CAL above)

Point #	3.	4.	5.	6.	7.	8.	9.	10.	11.
Input	_____	_____	_____	_____	_____	_____	_____	_____	_____
Display	_____	_____	_____	_____	_____	_____	_____	_____	_____

☐ Certificate of Calibration (Order P/N: PDN-CERTCAL)
☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)

Ref.:SA-DP0022-FM11 (1-2)

Rate/Totalizer/Batch Controllers

Setup & Calibration Sheet PD692 & PD693

Rate Totalizer Setup – P/N: PDN-CSETUP				
Total Decimal Point ☐ 999999 ☐ 99999.9 ☐ 9999.99 ☐ 999.999 ☐ 99.9999 ☐ 9.99999	Time Base ☐ Second ☐ Minute ☐ Hour ☐ Day (PD692 only) Rate Units: _____ Total Units: _____ Total Conversion Factor: _____	PD693 Pulse Input Settings Transistor Type: ☐ NPN ☐ PNP ☐ Low Speed Filter (950 Hz max) ☐ High Speed Filter (30 kHz max) Excitation: ☐ 5 V ☐ 12 V ☐ 24 V Low Gate: _____ High Gate: _____ Min Frequency: _____ Max Frequency: _____		
Relay Setup				
Assignment	Relay 1 ☐ Process/Rate or ☐ Total	Relay 2 ☐ Process/Rate or ☐ Total	Relay 3 ☐ Process/Rate or ☐ Total	Relay 4 ☐ Process/Rate or ☐ Total
Operation	☐ Latching or ☐ Non-Latching	☐ Latching or ☐ Non-Latching	☐ Latching or ☐ Non-Latching	☐ Latching or ☐ Non-Latching
Reset Type	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual only after passing reset point ☐ Alternation control	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual only after passing reset point ☐ Alternation control	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual only after passing reset point ☐ Alternation control	☐ Automatic only ☐ Auto + manual ☐ Manual any time ☐ Manual only after passing reset point ☐ Alternation control
Mode	☐ Fail-Safe or ☐ Normal			
Set Point				
Reset Point				
Total Reset Mode	☐ Internal or ☐ External	☐ Internal or ☐ External	☐ Internal or ☐ External	☐ Internal or ☐ External
Delay on Release (Total)				
Display Selection for Rate Totalizers This feature is used to streamline the menu so that only items pertaining to the application are shown during operation. Selections become active only when Lockout jumper is installed.				
☐ Display Rate Only ☐ Display Total Only ☐ Display Rate & Total ☐ Toggle Between Rate & Total ☐ Disable Reset Total ☐ Disable Display Peak ☐ Disable Set Point Edit				
☐ Install Lockout Jumper – Not installed by default				
Service Performed by: _____ Date: _____				

Ref.:SA-DP0022-FM11 (2-2)

ACCURACY • RELIABILITY • CONVENIENCE



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Temperature Meters

SPECIFICATIONS

PD750, PD751, PD752

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

General

Inputs: PD750: Field selectable: type J, K, T, E, R, S thermocouples with 1° resolution; type T to 0.1°; 100 Ω platinum RTD (0.00385 or 0.00392 curve) to 1° or 0.1° resolution.

PD751: 10 Ω copper RTD, PD752: 120 Ω nickel RTD

Display: 0.56" (14.2 mm) red LED, 4½ digits; F or C may be switched on to indicate Fahrenheit or Celsius.

Accuracy: See Precalibrated Ranges table below

Cold Junction Reference: Automatic

Front Panel: NEMA 4X, IP65; panel gasket provided

Sensor Break: All relays and alarm status LEDs go to alarm state; open sensor circuit indicated by display flashing "OPEN".

Hold Reading: Connect switch to ACK/HLD and COM terminals

Lockout: Jumper JP2 restricts modification programmed settings

Input Impedance: Greater than 100 kΩ

Power Options: 115 VAC ±10%, 230 VAC ±10%, 50/60 Hz, 10 VA; or 18-36 VDC, 6 W maximum.

Isolation: AC power: 1500 VAC; DC power: 500 VDC

Normal Mode Rejection: 64 dB at 50/60 Hz

Operating Temperature: 0 to 60°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Enclosure: 1/8 DIN, high impact plastic, UL 94V-0, color: black

Weight: 19.7 oz (559 g) (including options)

Connections: Removable screw terminals accept 12 to 26 AWG

Alarm Points: 4, any combination of high or low alarms

Alarm Status Indication: Front panel LED

Alarm Deadband: 0-100% FS, user selectable

UL File Number: E160849; 508 Industrial Control Equipment (PD750 AC Powered Units Only)

Warranty: 2 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Precalibrated Ranges

PD750 Type	Range	Accuracy
J	-328° to 1382°F -200° to 750°C	±2°F ±1°C
K	-328° to 2498°F -200° to 1330°C	±2°F ±1°C
T	-330° to 760°F -200° to 404°C	±2°F ±1°C
T (0.1°)	-330.0° to 760.0°F -200.0° to 404.0°C	±2°F ±1°C
E	-328° to 1832°F -200° to 1000°C	±2°F ±1°C
R	32° to 3213°F 0° to 1767°C	±5°F ±3°C
S	40° to 3214°F 4° to 1768°C	±6°F ±3°C
100 Ω Pt RTD	-328.0° to 1382.0°F -200.0° to 750.0°C	±0.7°F ±0.4°C

PD751	Range	Accuracy
10 Ω Cu RTD	-328° to 500°F -200° to 250°C	±0.2°F ±0.1°C

PD752	Range	Accuracy
120 Ω Ni RTD	-112° to 608°F -80° to 320°C	±0.2°F ±0.1°C



Relays

Rating: 2 or 4 Form C (SPDT); rated 2 A @ 30 VDC or 2 A @ 250 VAC resistive load; 1/14 HP @ 125/250 VAC inductive loads.

Reset: User selectable

1. Automatic when the input passes the reset point.

2. Automatic plus manual (via front panel ACK button or user supplied switch). Manual reset resets all manually resettable relays.

Fail-Safe Operation: Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state. To disable fail-safe operation remove jumper J2 located on the options board.

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

Deadband: 0-100%, user selectable

Isolated 4-20 mA Transmitter Output

Scaling Range: Anywhere in range of meter, 501 count minimum span; reverse scaling allowed.

Accuracy: ±0.1% FS ±0.004 mA

Transmitter Supply: Isolated 24 VDC ±5% @ 20 mA
Loop Resistance

Power supply	Minimum	Maximum
24 VDC	10 Ω	600 Ω
35 VDC (external)	600 Ω	1000 Ω

Isolation: 500 V input-to-output or input/output-to-24 VDC supply

External Loop Power Supply: 35 VDC maximum

ORDERING INFORMATION

	115 VAC Model	230 VAC Model	24 VDC Model	Options Installed	Option Card**
Thermocouple 100 Ω Pt RTD	PD750-3-N*	PD750-4-N	PD750-2-N	None	
	PD750-3-14*	PD750-4-14	PD750-2-14	2 Relays	PD174
	PD750-3-15*	PD750-4-15	PD750-2-15	4-20 mA Output	PD175
	PD750-3-16	PD750-4-16	PD750-2-16	2 Relays + 4-20 mA Out	PD176
	PD750-3-17	PD750-4-17	PD750-2-17	4 Relays	PD177
	PD750-3-18	PD750-4-18	PD750-2-18	4 Relays + 4-20 mA Out	PD178
10 Ω Copper	PD751-3-N	PD751-4-N	PD751-2-N	None	
	PD751-3-14	PD751-4-14	PD751-2-14	2 Relays	PD174
	PD751-3-15	PD751-4-15	PD751-2-15	4-20 mA Output	PD175
	PD751-3-16	PD751-4-16	PD751-2-16	2 Relays + 4-20 mA Out	PD176
	PD751-3-17	PD751-4-17	PD751-2-17	4 Relays	PD177
	PD751-3-18	PD751-4-18	PD751-2-18	4 Relays + 4-20 mA Out	PD178
120 Ω Nickel	PD752-3-N	PD752-4-N	PD752-2-N	None	
	PD752-3-14	PD752-4-14	PD752-2-14	2 Relays	PD174
	PD752-3-15	PD752-4-15	PD752-2-15	4-20 mA Output	PD175
	PD752-3-16	PD752-4-16	PD752-2-16	2 Relays + 4-20 mA Out	PD176
	PD752-3-17	PD752-4-17	PD752-2-17	4 Relays	PD177
	PD752-3-18	PD752-4-18	PD752-2-18	4 Relays + 4-20 mA Out	PD178

*Quick Shipment Program product, shipped within 2 working days.

**Part numbers for Option Cards when purchased separately. Listed models include the corresponding described option.

See page 152 for mounting dimensions.



SETUP, CALIBRATION & WARRANTY SERVICES

www.predig.com

Temperature Meters

Setup & Calibration Sheet PD750-752

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Indication Only ☐ On/Off Control	
Fax: _____	☐ 4-20 mA Retransmission	
PO#: _____ SO# (PDC): _____	☐ Other: _____	
	Description: _____	

Note: Refer to Price List for cost of setup & calibration services.

Product Information	Input
Model Number: _____	☐ TC Type _____
Serial Number(s): _____	☐ RTD 100 Ω Pt ☐ 0.00385 Curve
	☐ 0.00392 Curve
	☐ RTD 10 Ω Cu ☐ °F ☐ °C
Total # of Units: _____	☐ RTD 120 Ω Ni ☐ 0.1°F (RTD & TC T Only) ☐ 0.1°C (RTD & TC T Only)

Input Calibration – P/N: PDN-CAL		Output Calibration – P/N: PDN-CAL3	
Input	Display	Display	Output
1. _____	_____	1. _____	4.00 mA
2. _____	_____	2. _____	20.00 mA

☐ Certificate of Calibration (Order P/N: PDN-CERTCAL) ☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)

Relay Setup – P/N: PDN-CSETUP				
	Relay 1	Relay 2	Relay 3	Relay 4
Reset Type	☐ Automatic only ☐ Auto + manual	☐ Automatic only ☐ Auto + manual	☐ Automatic only ☐ Auto + manual	☐ Automatic only ☐ Auto + manual
Mode	☐ Fail-Safe or ☐ Normal			
Set Point	_____	_____	_____	_____
Reset Point	_____	_____	_____	_____

☐ Install Lockout Jumper – Not installed by default

Service Performed by: _____ Date: _____

Loop-Powered Meters



PD660



PD661

SPECIFICATIONS

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

General

Input: 4-20 mA @ 24 VDC maximum

Display: 0.5" (12.7 mm) LCD, 3½ digits; 1999

Accuracy: ±0.1% FS ±1 count

Decimal Point: User selectable decimal point

Calibration: 2 step; non-interacting zero and span

Calibration Range: 4 mA input: -500 to +500;
20 mA input: between 20 and 2000 above 4 mA display

Maximum Voltage Drop: 1.5 VDC @ 20 mA;

3.5 VDC @ 20 mA with backlight option

Display Update Rate: 2.5/second

Loop-Powered Backlight Option: Factory installed only.

Powered directly from the 4-20 mA loop, no batteries required.
The display brightness will increase as the input signal current increases.

Connections: Removable screw terminals accept 12 to 26 AWG

Operating Temperature: -40 to 80°C

Storage Temperature: -40 to 80°C

Relative Humidity: 0 to 90% non-condensing

Approvals: The PD661-N-EX and PD661-B-EX are FM Approved & CSA Certified as explosion-proof for Class I, Division 1, Groups B, C, & D; dust-ignition proof for Class II, Division 1, Groups E, F, & G; and Class III hazardous (classified) locations.

PD660 Enclosure: Impact-resistant ABS plastic body, color: gray, clear polycarbonate cover with blue faceplate; NEMA 4X, IP67; ½" conduit hole provided at base. Hole may be provided on back for panel mounting applications, call factory for details.

PD660 Weight: 9.3 oz (264 g)

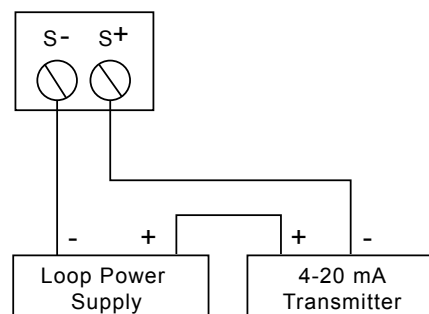
PD661 Enclosure: Explosion-proof, cast aluminum with glass window, 0.3% max copper content, corrosion resistant polyester powder coating, color: safety blue. NEMA 4X, 7, & 9, IP66; FM Approved & CSA Certified: Class I, Division 1, Groups B, C, & D, Class II, Groups E, F, & G, Class III hazardous outdoor (Type 4X) locations. Two ½" NPT holes provided; mounts directly to conduit.

PD661 Weight: 3.1 lb (1.4 kg)

Warranty: 2 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Connections



Input Signal Connections

ORDERING INFORMATION

Model	Description
PD660-N*	NEMA 4X Loop-Powered Meter
PD660-B	NEMA 4X Loop-Powered Meter with Loop-Powered Backlight
PD661-N*	Explosion-Proof Loop-Powered Meter
PD661-B	Explosion-Proof Loop-Powered Meter with Loop-Powered Backlight
PD661-N-EX	FM Approved & CSA Certified Explosion-Proof Meter
PD661-B-EX	FM Approved & CSA Certified Explosion-Proof Meter with Loop-Powered Backlight
PDA6604	Panel Mounting Kit for PD660 (does not provide NEMA 4X seal to the panel)
PDA6845	2" Pipe Mounting Kit for PD660
PDA6845-SS	2" Pipe Mounting Kit Stainless Steel for PD660
PDA-SSTAG	Stainless Steel Tag

See pages 153, 154 for mounting dimensions.

*Quick Shipment Program product, shipped within 2 working days.



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SETUP, CALIBRATION & WARRANTY SERVICES

Loop-Powered Meters

SPECIFICATIONS

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

General

Input: 4-20 mA @ 24 VDC maximum

Accuracy: $\pm 0.05\%$ FS ± 2 counts

Decimal Point: User selectable

Calibration Range: 4 mA input: -5000 to +5000;

20 mA input: between 200 and 20000 above 4 mA input

Maximum Voltage Drop: 5.2 VDC @ 20 mA

Display Update Rate: 2.5/second

Operating Temperature: -20 to 65°C

Storage Temperature: -40 to 80°C

Relative Humidity: 0 to 90% non-condensing

Connections: Removable screw terminals accept 12 to 26 AWG

Warranty: 2 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

PD673

Display: 0.4" (10.2 mm) LCD, 4½ digits; 19999

Front Panel: NEMA 4X, IP65; panel gasket provided

Enclosure: 1/8 DIN, high impact plastic, UL 94V-0, color: black

Weight: 6.6 oz (188 g)

PD675

Display: 0.7" (17.8 mm) LCD, 4½ digits; 19999

Approvals: FM Approved & CSA Certified as non-incendive for Class I, Division 2, Groups A, B, C, & D; suitable for Class II, Division 2, Groups F & G; suitable for Class III, Division 2, indoor and outdoor, hazardous (classified) NEMA 4X locations.

Enclosure: Impact-resistant polycarbonate body, color: gray; clear polycarbonate cover; NEMA 4X, IP67. One ½" conduit hole provided at base. Hole may be provided on back for panel mounting applications, call factory for details.

Weight: 12 oz (340 g)

PD677

Display: 0.7" (17.8 mm) LCD, 4½ digits; 19999

Approvals: The PD677-N-EX is FM Approved & CSA Certified as explosion-proof for Class I, Division 1, Groups B, C, & D; dust-ignition proof for Class II, Division 1, Groups E, F, & G, Class III hazardous (classified) locations.

Enclosure: Explosion-proof, cast aluminum with glass window, 0.3% max copper content, corrosion resistant polyester powder coating, color: safety blue. NEMA 4X, 7, & 9, IP66; FM Approved & UL/C-UL Certified: Class I, Division 1, Groups B, C, & D, Class II, Groups E, F, & G, Class III; Class I, Zone 1 AEx d IIC hazardous outdoor (Type 4X) locations. IEC rating: Ex d IIC IEC 60529 IP66. Two ¾" NPT holes provided.

Weight: 5.7 lb (2.6 kg)

See page 152-154 for mounting dimensions.



PD673



PD675



PD677



ORDERING INFORMATION

Model	Description
PD673-N	Panel Mount Loop-Powered Meter
PD675-N	NEMA 4X Loop-Powered Meter
PD677-N	Explosion-Proof Loop-Powered Meter
PD677-N-EX	FM Approved & CSA Certified Explosion-Proof Meter
Accessories	
PDA6844	Panel Mounting Kit for PD675 (PDA6844 does not provide NEMA 4X seal to the panel)
PDA6845	2" Pipe Mounting Kit for PD675, PD677
PDA6845-SS	2" Pipe Mounting Kit SS for PD675, PD677
PDA-SSTAG	Stainless Steel Tag

Loop-Powered Meters

SPECIFICATIONS

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

General

Input: User selectable: 4-20 mA or 1-5 V

Display: 0.5" (12.7 mm) LCD, 3½ digits + extra zero; extra zero may be switched on to display up to 19,990

Accuracy: ±0.1% FS ±1 count

Decimal Point: User selectable

Calibration: Two-step; non-interacting zero and span

Calibration Range: 4 mA input: -500(0) to +500(0); 20 mA input: between 20(0) and 2000(0) > 4 mA

Display Update Rate: 2.5/second

Maximum Input Current: 30 mA

Maximum Voltage Drop: 1 V @ 20 mA

Operating Temperature: -40° to 70°C

Storage Temperature: -40 to 80°C

Relative Humidity: 0 to 90% non-condensing

Enclosure: 1/8 DIN, high impact plastic, UL 94V-0, color: black

Weight: 5.9 oz (166 g)

Connections: Removable screw terminals accept 12 to 22 AWG

Power: Loop-powered, 1 V maximum voltage drop; or powered by separate 5 to 25 VDC @ 6 mA supply.

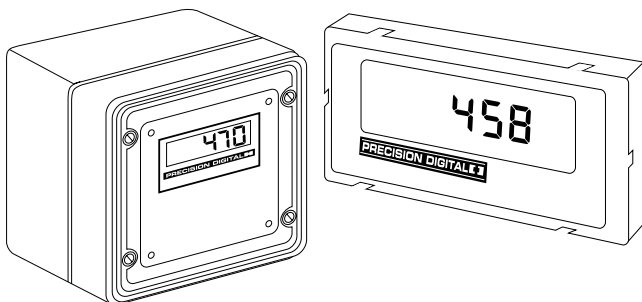
Isolation: 500 V between signal and power using separate supply

Warranty: 2 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Environmental Protection

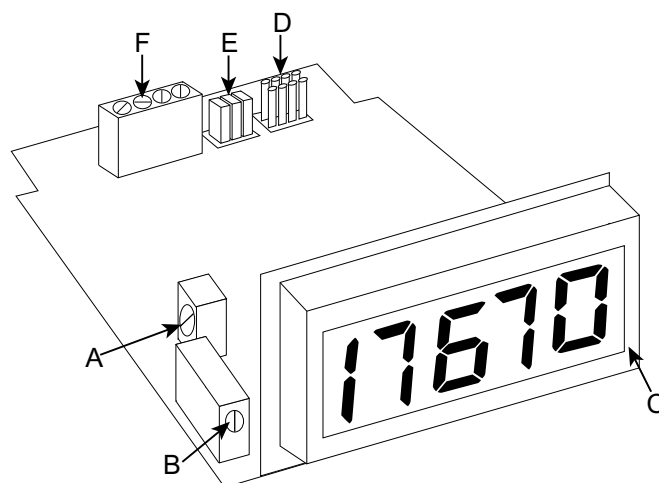
Precision Digital offers a NEMA 4X panel meter front cover and NEMA 4X boxes that will house 1, 2, 3, or 4 PD680s.



PD680

Calibration

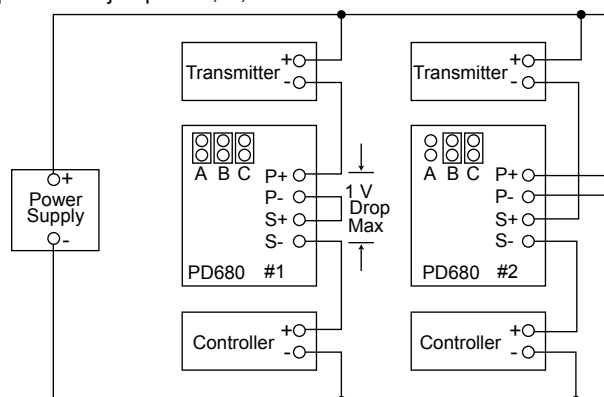
Calibration of the meter is a two-step process involving two front panel controls located behind the faceplate.



- A. Balance control; (factory adjust only)
- B. HI calibration control
- C. LO calibration control
- D. Decimal point and extra zero pin array
- E. Input selection pin array
- F. Removable screw terminal block

Connections

Circuit connections for PD680 #1 monitoring loop current and deriving its power from the loop. PD680 #2 is powered by the system power supply and is monitoring the loop current. Note the position of jumpers A, B, C.



ORDERING INFORMATION

Model	Description
PD680	Loop-Powered Panel Meter
PDA2405	NEMA 4X Panel Meter Front Cover
PDA2407	NEMA 4X Enclosure for 1 Meter
PDA2408	NEMA 4X Enclosure for 2 Meters
PDA2409	NEMA 4X Enclosure for 3 Meters
PDA2410	NEMA 4X Enclosure for 4 Meters

See page 152 for mounting dimensions.

Loop-Powered Meters

SPECIFICATIONS

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

General

Input: 4-20 mA @ 24 VDC maximum

Display: 1.0" (25.4 mm) LCD, 3½ digits; 1999

Accuracy: ±0.1% FS ±1 count

Decimal Point: User selectable

Calibration: Two-step; non-interacting zero and span

Calibration Range: 4 mA input: -1000 to +1000;

20 mA input: between 20 and 2000 counts > 4 mA display

Display Update Rate: 2.5/second

Maximum Input Current: 30 mA

Maximum Voltage Drop: 1 V @ 20 mA

Storage Temperature: -40 to 80°C

Relative Humidity: 0 to 90% non-condensing

Connections: Removable screw terminals accept 12 to 26 AWG

Conduit Hole: PD687: one ¾" NPT hole provided;

PD685 & PD686: one ½" conduit hole provided; refer to Ordering

Information to specify conduit hole location; request models with

rear conduit hole (-X) for panel mounting applications.

Warranty: 2 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

PD685

Enclosure: Impact-resistant plastic; body: gray ABS; cover: clear polycarbonate; NEMA 4X, IP66/67

Weight: 12 oz (340 g)

Operating Temperature: -40 to 80°C

PD686

Approvals: FM Approved & CSA Certified as intrinsically safe with entity, for use in Class I, II, III, Division 1, Groups A, B, C, D, E, F, & G; T-code = T4; hazardous locations. Non-incendive for use in Class I, II, III, Division 2, Groups A, B, C, D, F, & G.

Entity Parameters: $V_{max} = 30 \text{ V}$, $I_{max} = 175 \text{ mA}$, $C_i = 0 \text{ } \mu\text{F}$, $L_i = 0 \text{ } \mu\text{H}$, $P_i = 1.3 \text{ W}$

FM Approved: Intrinsically Safe, Class I Zone 0

See Control Drawing LIM686-2 for complete installation instructions.

Enclosure: Impact-resistant glass filled polycarbonate body, color: gray; impact-resistant clear polycarbonate cover; NEMA 4X, IP67

Weight: 12 oz (340 g)

Operating Temperature: PD686: -40 to 85°C;

PD686-CSA: -40 to 40°C for Canadian installations.

PD687

Approvals: The PD687-EX is FM Approved & CSA Certified as explosion-proof for Class I, Division 1, Groups B, C, & D; dust-ignition proof for Class II, Division 1, Groups E, F, & G; and Class III hazardous (Classified) locations.

Enclosure: Explosion-proof cast aluminum with glass window, 0.3% max copper content, NEMA 4, 7, & 9, IP66; suitable for location in Class I, Division 1, Groups B*, C, & D, Class II, Groups E, F, & G, Class III hazardous outdoor (Type 4) locations. One ¾" NPT hole provided.

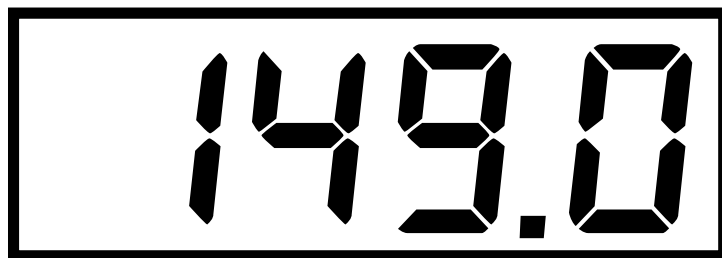
Weight: 7.5 lb (3.4 kg)

Operating Temperature: -40 to 80°C

*Enclosure rated for Group B is available with PD687-EX only. Call the factory for availability of Group B rating with PD687.

PD685 & PD686

PD687



1" High Actual Size Digits

ORDERING INFORMATION

Model	Description	½" Hole Location
PD685	General Purpose Loop-Powered Meter	Bottom
PD685-X	General Purpose Loop-Powered Meter	Rear
PD685-Y	General Purpose Loop-Powered Meter	Top
PD685-Z	General Purpose Loop-Powered Meter	None
PD686*	FM Approved Loop-Powered Meter	Bottom
PD686-X	FM Approved Loop-Powered Meter	Rear
PD686-Y	FM Approved Loop-Powered Meter	Top
PD686-Z	FM Approved Loop-Powered Meter	None
PD686-CSA*	CSA Certified Loop-Powered Meter	Bottom
PD686-CSA-X	CSA Certified Loop-Powered Meter	Rear
PD686-CSA-Y	CSA Certified Loop-Powered Meter	Top
PD686-CSA-Z	CSA Certified Loop-Powered Meter	None
PD687	Loop-Powered Explosion-Proof Meter	
PD687-EX	FM & CSA Loop-Powered Explosion-Proof Meter	
Accessories		
PDA6545	2" Pipe Mounting Kit Zinc Plated	
PDA6545-SS	2" Pipe Mounting Kit Stainless Steel	
PDA6844**	Panel Mounting Kit for PD685 & PD686	
PDA6845	2" Pipe Mounting Kit Zinc Plated	
PDA6845-SS	2" Pipe Mounting Kit Stainless Steel	
PDA-SSTAG	Stainless Steel Tag	
*Quick Shipment Program product, shipped within 2 working days.		
**Panel Mounting Kit does not provide NEMA 4X seal to panel.		

See page 153, 154 for mounting dimensions.

ACCURACY ■ RELIABILITY ■ CONVENIENCE

**PRECISION
DIGITAL**

www.predig.com

Loop-Powered Meters & Totalizers

SPECIFICATIONS

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

General

Input: 4-20 mA @ 24 VDC maximum, Linear or Square Root

Display: 0.5" (12.7 mm) LCD, 6 digits

Rate: 0 to 19,999. Total: 0 to 999,999

Linear Input Accuracy: $\pm 0.05\%$ FS ± 1 count

Square Root Accuracy: $\pm 0.1\%$ FS ± 1 count 10-100% of flow;
 $\pm 1\%$ FS (0-10% of flow)

Decimal Point: User selectable

Calibration Range: User programmable over entire range of meter

Minimum Input Span: 1.6 mA between Input 1 and Input 2. An Error message will appear if Input 1 signal and Input 2 signal are too close together.

Programming Method: PD696 & PD697: one front panel button;

PD698: one button behind faceplate or reed switch & magnet.

Noise Filter: The field selectable noise filter allows the meter to be programmed so that an unsteady (noisy) input can be displayed with greater stability.

Display Update Rate: 1/second

Alternating Display: Display may be programmed to alternate between rate and total every 10 seconds.

Minimum Input Current: 3.5 mA

Maximum Voltage Drop: 5.6 VDC @ 20 mA; Model with back-light option: 7.0 VDC @ 20 mA

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Pulse Output Rating: Isolated open collector, 24 VDC @ 20 mA; maximum pulse output: 30 pulses/sec; pulse width: 16 ms. If the pulse output exceeds the maximum pulse output (30 pulses/sec), the total will flash and counts will be lost in the totalizer and the pulse output.

Lockout: Jumper JP1 restricts modification of programmed settings.

Totalizer: Calculates total based on rate and field programmable multiplier to display total in engineering units. Time base available in seconds, minutes, or hours. Time base must be selected according to time units in which rate is displayed.

Totalizer Conversion Factor: 0.00001 to 59999

Total Reset: Via front panel button or external contact closure

External Total Reset: Connect terminals R and CM

Low-Flow Cutoff: 0 to 100% FS, user selectable. To disable low-flow cutoff, program cutoff value to zero. Meter does not totalize below low-flow cutoff value.

Loop-Powered Backlight Option: Powered directly from the 4-20 mA loop, no batteries required. The display brightness will increase as the input current increases.

Connections: Removable screw terminals accept 12 to 26 AWG

Operating Temperature: 0 to 65°C

Storage Temperature: -30 to 80°C

Relative Humidity: 0 to 90% non-condensing

Approvals: The PD698-N-EX and PD698-B-EX are FM Approved & CSA Certified as explosion-proof for use in Class I, Division 1, Groups B, C, & D; dust-ignition proof in Class II, Division 1, Groups E, F, & G; Class III

Warranty: 2 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

See page 152-154 for mounting dimensions.



PD696 Enclosure: 1/8 DIN, high impact plastic, UL 94V-0; color: black; NEMA 4X, IP65 front panel; panel gasket provided
PD696 Weight: 6.9 oz (196 g)

PD697 Enclosure: Impact-resistant glass filled polycarbonate, color: gray, NEMA 4X, IP67; 1/2" conduit hole provided at base. May be provided on back for panel mounting applications, call factory for details.

PD697 Weight: 10.4 oz (294 g)

PD698 Enclosure: Explosion-proof, cast aluminum with glass window, 0.3% max copper content, corrosion resistant polyester powder coating, color: safety blue. NEMA 4X, 7, & 9, IP66; FM Approved & UL/C-UL Certified: Class I, Division 1, Groups B, C, & D, Class II, Groups E, F, & G, Class III; Class I, Zone 1 AEx d IIC hazardous outdoor (Type 4X) locations. IEC rating: Ex d IIC IEC 60529 IP66. Two 3/4" NPT holes provided.

PD698 Weight: 5.7 lb (2.6 kg)

ORDERING INFORMATION

Model	Description
PD696-N	Panel Mount Loop-Powered Totalizer
PD696-B	Panel Mount Loop-Powered Totalizer with Loop-Powered Backlight
PD697-N	NEMA 4X Loop-Powered Totalizer
PD697-B	NEMA 4X Loop-Powered Totalizer with Loop-Powered Backlight
PD698-N	Explosion-Proof Loop-Powered Totalizer
PD698-N-EX	FM Approved & CSA Certified Explosion-Proof Loop-Powered Totalizer
PD698-B	Explosion-Proof Loop-Powered Totalizer with Loop-Powered Backlight
PD698-B-EX	FM Approved & CSA Certified Explosion-Proof Loop-Powered Totalizer with Backlight
Accessories	
PDA6844	Panel Mounting Kit for PD697 (does not provide NEMA 4X seal to the panel)
PDA6845	2" Pipe Mounting Kit for PD697 & PD698
PDA-MAG	Reed Switch Magnet for PD698
PDA-SSTAG	Stainless Steel Tag
PDA2451-R	Explosion-Proof Control Station, Total Reset

Loop-Powered Meters & Totalizers

Setup & Calibration Sheet Loop-Powered Meters & Totalizers

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Intrinsically Safe ☐ Non-Incendive	
Fax: _____	☐ Explosion-Proof	
	☐ Other: _____	
PO#: _____ SO# (PDC): _____	Description: _____	

Note: Refer to Price List for cost of setup & calibration services.

Product Information	Input
Model Number: _____	☐ 4-20 mA ☐ Linear Function
Serial Number(s): _____	☐ Square Root (PD696-698 Only)
	☐ 0-20 mA PD680 Powered Externally
Total # of Units: _____	☐ 1-5 V PD680 Powered Externally

Calibration (PD696-698) – P/N: PDN-CAL	Cutoff	Pulse Output Setting
Input Display 1. _____ 2. _____	_____	_____ Units/Pulse (1 to 999 units total = 1 pulse)

Calibration (PD660-661, 673-677, 680-687) – P/N: PDN-CAL	Certificates of Calibration – P/N: PDN-CERTCAL
Input Display 1. _____ 2. _____	☐ Certificate of Calibration (Order P/N: PDN-CERTCAL) ☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)

Rate Totalizer Setup (PD696-698) – P/N: PDN-CSETUP		
Total Decimal Point	Time Base	Display Selection
☐ 999999	☐ Second	☐ Display Rate Only ☐ Display Total Only ☐ Display Rate & Total ☐ Toggle Between Rate & Total ☐ Disable Reset Total
☐ 99999.9	☐ Minute	
☐ 9999.99	☐ Hour	
☐ 999.999	Total Conversion Factor _____ (0.00001 to 59999)	
☐ 99.9999		
☐ 9.99999		

☐ Lockout Jumper Installed – Not installed by default

Service Performed by: _____ Date: _____

MINIMUX® 8 Channel Scanner

SPECIFICATIONS

Number of Channels: 8 double-pole channels per unit
Number of Channels per System: Unlimited number of units
Signal Switching: DPST reed relays
Contact Resistance: 0.2 Ω maximum
Maximum Input Voltage: 200 V (switched or common mode)
Maximum Current Switched: 0.5 A
Maximum Power Switched: 10 W
Front Panel: NEMA 4X, IP65; panel gasket provided
Dwell Time (Internal-Scan): adjustable from 0.6 to 30 seconds
Dwell Time (External-Scan): Determined by external device such as a PLC or DCS, 1.5 seconds per channel minimum
Non-Volatile Memory: Settings stored for a minimum of 10 years.
Power: 115 or 230 VAC (field selectable) $\pm 10\%$, 50/60 Hz, 4 VA
LED Test: All LEDs briefly illuminate on power-up
Scan Method: Internal or externally controlled (PLC, DCS, etc.)
Channel Select/Channel ID: Input Impedance; 10 k Ω pull-up to 5 V. Each channel on the Minimax® has a Channel Select/Channel ID line which is used to either select or identify a channel on the PD118. For instance, in External-Scan Mode, an external device such as a PLC can drive the Channel Select/Channel ID line low for the channel it wants to see, the PD118 will then go to that channel. In Internal-Scan Mode, the Channel Select/Channel ID line for the currently scanned channel goes low to provide identification of the current channel to an external device.
Channel Indication: Green LED on front panel; Channel Select/Channel ID line goes low.
Disabling Channels: Channels may be disabled during setup with front panel CTRL button.
Scan Stop: The scan may be stopped by pressing and holding the CTRL button for more than 0.5 seconds. The scan may be resumed by pressing and releasing the CTRL button quickly (less than 0.5 seconds).
Alarm Input: Independent alarm input for each channel. Input Impedance; 25 k Ω , typical pull-up to 5 V.
Alarm Sequence: Sequence A or Sequence F2A (first out)
Alarm Outputs: Alarm condition indicated by:

- Front panel red LED for each channel
- One Form C (SPDT) relay
- Built-in Horn, 75 dB
- Stop on alarmed channel (user select)

Relay Rating: Form C (SPDT); rated 2 A @ 30 VDC or 2 A @ 250 VAC resistive load; 1/14 HP @ 125/250 VAC inductive loads.
Fail-Safe Operation: Relay coil is energized in the non-alarm condition. In case of power failure, the relay will go to the alarm state (NC contact is connected to common).
Alarm Acknowledgement: Front panel ACK and rear connector
External CTRL: The functions of the CTRL button are available at screw terminals at the rear of the instrument
Message Labels: Custom printed free of charge. Area available per message is 1.25" x .22" (32 mm x 6 mm); user may specify any size and length that will fit in this area. One line of 14 characters at 9 point type will fit. See page 120 for message labels ordering form.
Connections: Removable screw terminals accept 12 to 26 AWG
Operating Temperature: -10 to 65°C
Storage Temperature: -40 to 85°C
Relative Humidity: 0 to 90% non-condensing
Enclosure: 1/8 DIN, high impact plastic, UL 94V-0, color: black
Weight: 15.6 oz (443 g)
Warranty: 2 years parts & labor
Extended Warranty: 1 or 2 years, refer to Price List for details.

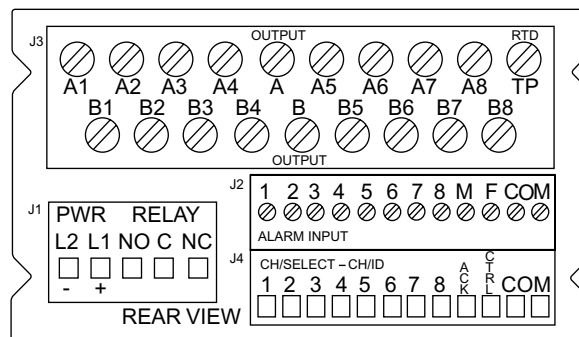
THE MINIMUX® is a microprocessor-based 8 channel analog input scanner/multiplexer and annunciator that provides low-cost automatic switching for multi-point display and alarm systems. Each Minimax® can automatically switch up to eight inputs to another device such as a digital panel meter, controller, or PLC. Signal switching is done with reed relays making the Minimax® ideal for switching thermocouples, RTDs, control loops, and AC & DC signals.



PD118

Connections Overview

All connections are made to removable screw terminal connectors which are supplied with each Minimax®.



Connector	Function
J1	Power Input and Alarm Relay
J2	Alarm-In, Master-Follower
J3	Signal Inputs and Output
J4	Channel Select/Channel ID with External ACK & CTRL

ORDERING INFORMATION

Model	Description
PD118*	8 Channel Scanner/Annunciator; 115 or 230 VAC
PD118-CL	8 Channel Scanner/Annunciator; 115 or 230 VAC with resistor network for 4-20 mA inputs
PDA-CL	Current Loop Resistor Network for 4-20 mA inputs

NOTES:

1. All units are shipped from the factory set for 115 VAC power.
2. Message labels for the PD118 may be specified at time of order or later.
3. Removable screw terminal connectors are standard on the PD118.
4. There is no special cable required to connect multiple PD118s together.

Ordering Example

A system to automatically scan and display eight type J thermocouples and check each one for alarm condition, powered from 115 VAC:

Model	Description	Quantity
PD118	8 Channel Scanner/Annunciator	1
PD750-3-14	Temperature Meter with 2 Relay Alarm Option, 115 VAC	1

*Quick Shipment Program product, shipped within 2 working days.

See page 152 for mounting dimensions.

MINIMUX® 8 Channel Scanner

APPLICATION

Using PD118 & PD750 to scan 4 thermocouples

In this example, four thermocouples are being scanned by a PD750 Temperature Meter and checked for independent alarm conditions.

The PD118 Minimax® is programmed in the following manner to satisfy this application:

- select internal scan
- select alarm Sequence A
- stop-on-alarm is off
- program dwell times:
 - channel 1 for ten seconds
 - channel 2 for five second
 - channel 3 for fifteen seconds
 - channel 4 for five seconds
 - channels 5-8 are disabled

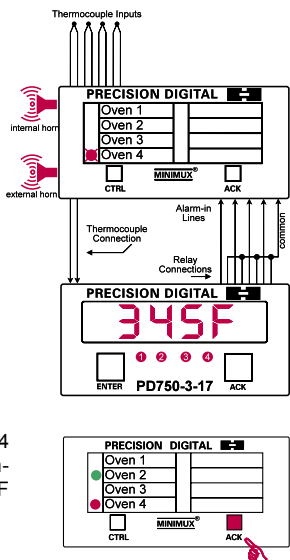
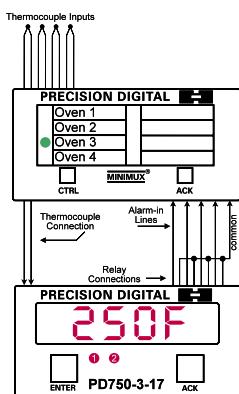
The PD750-3-17 is programmed in the following manner to satisfy this application:

- select thermocouple
- select Fahrenheit
- program alarm set and reset points:
 - #1 alarm set point 150, reset point 145
 - #2 alarm set point 175, reset point 170
 - #3 alarm set point 300, reset point 295
 - #4 alarm set point 325, reset point 320

The Minimax® scans each channel and is currently switching input #3 to the PD750-3-17 where thermocouple #3 is reading 250°F. Relay #3 does not detect an alarm because the temperature has not reached 300°. The Minimax® only responds to alarm conditions detected on the currently active channel, which is why relays #1 and #2 in the PD750 have transferred, but have not been detected by the PD118. The PD118 also avoids false alarms by detecting alarm conditions only after dwelling on a channel for 2 seconds or 0.05 seconds before it goes onto the next point, if dwelling on a channel for less than 2 seconds. This gives the PD750 time to stabilize and accurately display the temperature and check for alarm conditions.

The Minimax® switches input #4 to the PD750-3-17 where a temperature of 345°F is found to be in alarm condition. Relay #4 on the PD750 trips and after two seconds the PD118 detects this. The PD118 is programmed for Sequence A, so channel #4 LED begins to flash orange, the internal horn sounds and the PD118's alarm relay trips causing an external horn to sound.

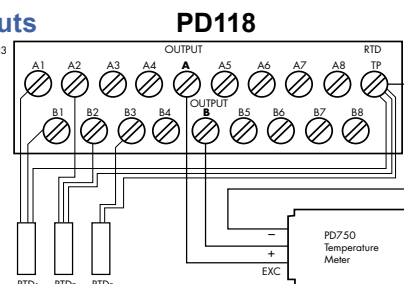
The Minimax® scan has moved to channel #2 where the temperature is 160°F. The operator acknowledges the alarm that occurred on channel #4 by pressing the ACK button on the PD118. This causes the internal and external horn to silence, and the #4 LED on the PD118 to go from flashing to steady red. Channel #4 will remain in alarm condition until the temperature for channel #4 falls below 320°F and the PD118 re-scans that channel.



SIGNAL CONNECTIONS

Three-Wire RTD Inputs

Three-wire inputs such as thermistors and RTDs can be handled by switching the two common wires and connecting the third wire of each sensor to the RTD-TP terminal and to the temperature meter.



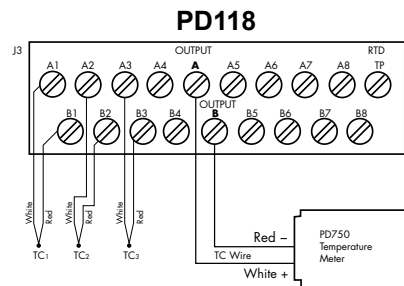
- Connect like color leads to terminals A1 & B1, A2 & B2, A3 & B3, etc.
- Connect odd color leads to terminal RTD-TP.
- Connect outputs A, B and RTD-TP to the temperature meter.

The example above shows three 3-wire RTDs multiplexed into one temperature meter.

Thermocouple Inputs

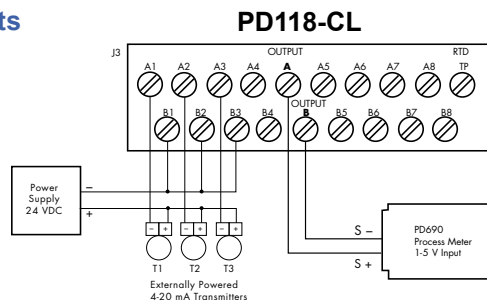
Thermocouple wire must be used between the Minimax® and the meter.

This example shows 3 type J thermocouples multiplexed into one temperature meter.



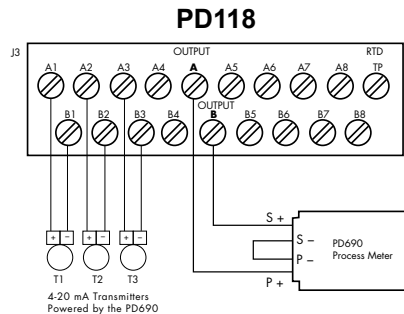
4-20 mA Inputs

A special version of the Minimax® is used to switch 4-20 mA signals. The PD118-CL, has a built-in resistor network that eliminates loop interruptions. This resistor network, model PDA-CL, may be ordered separately and field installed into existing PD118s.



The process meter must be set up for 1-5 V input and the complete system should be calibrated together.

The PD690's internal transmitter power supply may be used to power the transmitters. However, only the transmitter that is currently selected will be powered and all others will not be powered. Care should be taken to provide the transmitter with sufficient time to stabilize to provide an accurate output.



MINIMUX® 8 Channel Scanner

Setup Sheet PD118

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____ Title: _____ Date: _____
Company: _____ Phone: _____ Ext: _____
Mailing Address: _____ Email: _____
City: _____ State: _____ Application: _____
Zip Code: _____ Country: _____ ☐ TC ☐ RTD ☐ mA ☐ VDC ☐ VAC
Fax: _____ ☐ Other: _____
PO#: _____ SO# (PDC): _____ Description: _____

Note: Refer to Price List for cost of setup services.

Product Information

Model Number: _____
Serial Number(s): _____

Total # of Units: _____

Setup – P/N: PDN-CSETUP

- ☐ Internal Scan
☐ Stop on Alarm

☐ External Scan

Alarm Sequence: ☐ ISA Sequence A
☐ ISA Sequence F2A (First-Out)

Channel Number	Enabled	Disabled	Default Dwell Time (4 seconds)	Custom Dwell Time (0.6 to 30 seconds)
1.	☐	☐	☐	____ Seconds
2.	☐	☐	☐	____ Seconds
3.	☐	☐	☐	____ Seconds
4.	☐	☐	☐	____ Seconds
5.	☐	☐	☐	____ Seconds
6.	☐	☐	☐	____ Seconds
7.	☐	☐	☐	____ Seconds
8.	☐	☐	☐	____ Seconds

Service Performed by: _____ Date: _____



SETUP, CALIBRATION & WARRANTY SERVICES

Ref.:SA-DP0022-FM01

VIGILANTE® 4 Channel Annunciator

FROM urgent alarms to routine messages, the PD141AFO Vigilante® handles all types of operational messages with simplicity and economy. The Vigilante® delivers clear, eye catching (and ear catching) information to the plant operators. Alarm outputs from Precision Digital meters, alarm relays, logic levels from 5 to 28 VDC, and switches for parameters such as temperature, pressure, flow, level and proximity can all be fed directly into the Vigilante®.

SPECIFICATIONS

Number of Inputs: 4 per Vigilante®; 8 per system

Type of Inputs: Momentary or maintained:

- 1. NO or NC Switches:** Each input circuit contains a pull-up resistor, so it is not necessary to provide external excitation to the switch.
- 2. Open Collector Transistor:** Open circuit voltage is approximately 5 VDC.
- 3. Logic Levels:** LO = 0 to 0.8 VDC, HI = 4.7 to 28 VDC; input impedance: 100 kΩ

Front Panel: NEMA 4X, IP65; panel gasket provided

Alarm Detection: Selector switch located beside message LED for each channel. Alarm detected on low input (close contact) or high input (open contact).

Operation: ISA Sequence A or ISA Sequence F2A (first-out)

Sequence Selection: Selector switch located at rear of unit

Type of Outputs: Alarm condition indicated in three ways:

- 1. Relay:** 1 Form C (SPDT); rated 2 A @ 30 VDC or 2 A @ 250 VAC resistive load; 1/14 HP @ 125/250 VAC inductive loads. Fail-safe operation: relay coil is energized in non-alarm condition. In the case of a power failure, the relay will go to the alarm state (NC contact is connected to common).
- 2. Audible:** Built-in horn, 75 dB
- 3. Visual:** Red LED next to the alarm message

Alarm Messages: Custom printed free of charge. Area available per message is 1.25" x 0.28" (32 mm x 7 mm); user may specify any size and length that will fit in this area. Two lines of 14 characters each at 9 point type will fit. See page 120 for message labels ordering form.

Power Options: 115 VAC ±10%, 230 VAC ±10%, 50/60 Hz, 3 VA or 24-48 VDC, 2 W max

Isolation: AC powered: 1500 V; DC powered: 500 V

Connections: Removable screw terminals accept 12 to 26 AWG

Enclosure: 1/8 DIN, high impact plastic, UL 94V-0, color: black

Weight: 15.6 oz (443 g)

Operating Temperature: -20 to 70°C

Storage Temperature: -40 to 85°C

Relative Humidity: 0 to 90% non-condensing

Warranty: 2 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

ORDERING INFORMATION

Model	Description
PD141AFO-2	4 Channel Annunciator; 24-48 VDC
PD141AFO-3*	4 Channel Annunciator; 115 VAC
PD141AFO-4	4 Channel Annunciator; 230 VAC

*Quick Shipment Program product, shipped within 2 working days.



PD141AFO

- ISA Sequence A
- ISA Sequence F2A
- FREE Message Labels
- NEMA 4X Front Panel
- 1 Form C Relay
- Built-In Horn
- 4 Points per Unit
- 8-Point System with First-Out (2 units required)

Operation

The Vigilante® can be field programmed for either ISA Sequence A or ISA Sequence F2A (First-Out).

ISA Sequence F2A (First-Out)

Momentary Alarm

Condition	LED		Horn
	1st Pt	Next Pt	
Normal	Off	Off	Off
Alert	Flash	Steady	On
Normal	Flash	Steady	On
Acknowledge	Off	Off	Off

Maintained Alarm

Condition	LED		Horn
	1st Pt	Next Pt	
Normal	Off	Off	Off
Alert	Flash	Steady	On
Acknowledge	Steady	Steady	Off
Normal	Off	Off	Off

ISA Sequence A

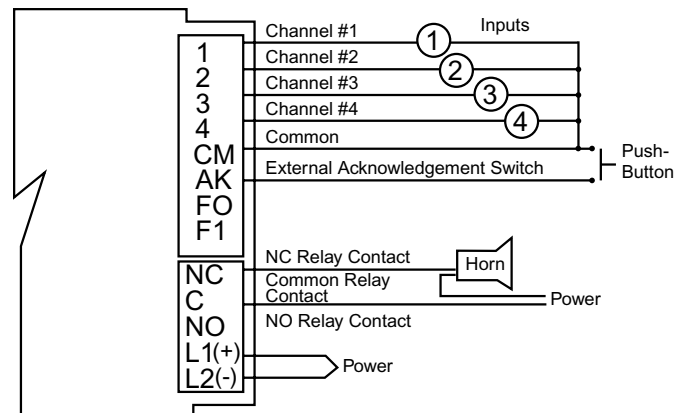
Momentary Alarm

Condition	LED	Horn
Normal	Off	Off
Alert	Flash	On
Normal	Flash	On
Acknowledge	Off	Off

Maintained Alarm

Condition	LED	Horn
Normal	Off	Off
Alert	Flash	On
Acknowledge	Steady	Off
Normal	Off	Off

Signal & Power Connections



See page 152 for mounting dimensions.

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Message Labels for Minimax® & Vigilante®

Free Message Labels

Alarm message labels for the PD118 and PD141 may be factory printed at no charge, or field printed using a laser printer with clear self-adhesive labels.

Factory printed message labels may be ordered at any time by completing the corresponding form.

Note: message #1 is the top message on the left side and #2 is below it. PD118 message #5 is the top message on the right side. Make copies of this page for additional message labels.

_____ Please include label with my order

_____ I have the model PD _____, please send label ASAP

Quantity: _____

Name: _____

Title: _____

Company: _____

Mailing Address: _____

City, State, Zip: _____

Phone: _____

Fax: _____

Email: _____

PO#: _____

PD141AFO

Custom printed free of charge. Area available per message is 1.25" x 0.28" (32 mm x 7 mm); user may specify any size and length that will fit in this area. Two lines of 14 characters each at 9 point type will fit.

Message Number 1

Message Number 2

Message Number 3

Message Number 4

PD118

Custom printed free of charge. Area available per message is 1.25" x 0.22" (32 mm x 6 mm); user may specify any size and length that will fit in this area. One line of 14 characters each at 9 point type will fit.

Unit Number: _____

Message Number 1

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 2

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 3

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 4

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 5

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 6

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 7

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 8

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Unit Number: _____

Message Number 1

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 2

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 3

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 4

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 5

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 6

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 7

--	--	--	--	--	--	--	--	--	--	--	--	--	--

Message Number 8

--	--	--	--	--	--	--	--	--	--	--	--	--	--

NOVA Controllers

PD540 Series Digital Controllers SPECIFICATIONS

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

General

Display: Dual 4 digits, red LED, -1999 to 9999

DIN Sizes	PV Display Inch (mm)	SP Display Inch (mm)	Weight oz (g)
1/16	0.45 (11.3)	0.37 (9.5)	7.0 (198)
3/16	0.55 (14.0)	0.47 (12.0)	11.4 (324)
1/8 (H)	0.78 (19.8)	0.45 (11.5)	10.8 (306)
1/8 (V)	0.54 (13.6)	0.41 (10.5)	10.7 (304)
1/4	0.81 (20.5)	0.43 (11.0)	13.7 (389)

Front Panel: Panel gasket provided

1/16 & 1/8 DIN: IP65, 3/16 & 1/4 DIN: IP55

Programming Methods: Four front panel buttons and Modbus

Number of Set Points: Four programmable set points

Noise Filter: Programmable 1 to 120 seconds or off

Display Update Rate: 4/second

Password: Restricts modification of programmed settings.

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Power: 100-240 VAC, 50/60 Hz, 10 W

Required Fuse: UL Recognized, 1 A, 250 V, slow-blow

Isolation: 2300 V input/output-to-power line; 4 kV relay output-to-input/output/power line.

Operating Temperature: 10 to 50°C

Storage Temperature: -40 to 85°C

Relative Humidity: 20 to 90% non-condensing

Enclosure: 1/16, 3/16, 1/8(H), 1/8(V), 1/4 DIN; impact-resistant plastic; color: black

UL File Number: E244207; Process Control Equipment

Warranty: 3 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Process Inputs

Inputs: Field selectable: 0.4 to 2.0 V, 1 to 5 V, 0 to 10 V, -10 to 20 mV, 0 to 100 mV. 4-20 mA input requires 100 Ω resistor connected across input terminals (order P/N: PDX-RES1).

Accuracy: ±0.1% FS ±1 count

Decimal Point: Up to 3 decimals: 9.999, 99.99, 999.9, or 9999

Calibration: All inputs are calibrated at the factory

Scale Range: User programmable over entire range

Transmitter Supply: 14 to 18 VDC @ 20 mA; available at terminals OUT2 or OUT3, instead of retransmitting analog output; selection is made through the front panel.

Quick Auto/Manual Switching

To switch between automatic PID and manual output control without entering the setup menu, use the user defined menu screen feature. This allows the user to switch from automatic to manual control, and vice versa, with just a few easy keystrokes as shown to the right.

To learn more about this feature or for instructions on how to set up this application, visit www.predig.com/content/support/ and see Tech tips & app. notes.



Relays

Ratings: 1 Form C (SPDT) standard; rated 3 A @ 30 VDC or 3 A @ 250 VAC resistive load. 1 or 2 Form A (SPST) optional; rated 1 A @ 30 VDC or 1 A @ 250 VAC resistive load.

Relay Operation: Time proportional PID control, on/off control, forward or reverse (fail-safe) alarm, or run status

Cycle Time: 1 to 300 seconds; time proportional PID control only

On/Off Hysteresis: For standard models, 0-10.0% of sensor range for independent high and low hysteresis limit. For heating & cooling models, 0-10.0% of sensor range full hysteresis band.

High/Low Alarm: User may program any alarm for absolute high or low trigger values.

Deviation Alarm: User may program any relay for high, low, or high/low range set point deviation alarm.

Alarm Deadband: 0-100% FS, user selectable

Alarm Delay: 0 to 99 minutes and 59 seconds

Reverse Operation (Fail-Safe): Programmable, independent for each alarm. Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state.

Forward Operation: Relay coils are energized in alarm condition. In case of power failure, relays will go to non-alarm state.

Auto Alarm Initialization: Normal and standby operation independent for each alarm. Normal alarms will reflect the state of the input to the controller at all times. Standby alarms will not trigger if the change to alarm state is a result of power up cycle, set point change, or alarm configuration change.

Run Status: Relays will energize when PID outputs are running.

See page 155 for mounting dimensions.



① Press the SET/ENT key



② Press the SET/ENT key



③ Set parameter for automatic or manual control

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NOVA Controllers

Temperature Inputs

Inputs: Factory calibrated, field selectable: J, K, T, E, B, R, S, L, U, N, W, Platinel II thermocouples, and 100 Ω platinum RTD (0.00385 or 0.00392 curve)

Cold Junction Reference: Automatic or off

Offset Adjustment: Four programmable input bias zones

Sensor Break: Up or down scale, user selectable; display reads 5.0Pn; alarm relays will follow the up or down scale selection.

Type	Range (°C)	Range (°F)	Accuracy*	
Thermocouple	K1	-200 to 1370	-300 to 2500	>0°C: ±0.1% FS ±1 count <0°C: ±0.2% FS ±1 count
	K2	-199.9 to 999.9	0 to 2300	
	J	-199.9 to 999.9	-300 to 2300	
	T	-199.9 to 400.0	-300 to 750	
	E	-199.9 to 999.9	-300 to 1800	
	B	0 to 1800	32 to 3300	>400°C: ±0.15% FS ±1 count <400°C: ±5% FS ±1 count
	R	0 to 1700	32 to 3100	±0.15% FS ±1 count
	S	0 to 1700	32 to 3100	
	L	-199.9 to 900.0	-300 to 1600	
	U	-199.9 to 400.0	-300 to 750	>0°C: ±0.1% FS ±1 count <0°C: ±0.2% FS ±1 count
	N	-200 to 1300	-300 to 2400	>0°C: ±0.1% FS ±1 count <0°C: ±0.25% FS ±1 count
	W	0 to 2300	32 to 4200	±0.2% FS ±1 count
Platinel II	0 to 1390	32 to 2500	±0.1% FS ±1 count	
RTD	PtA	-199.9 to 850.0	-300 to 1560	±0.1% FS ±1 count
	PtB	-199.9 to 500.0	-199.9 to 999.9	
	PtC	-19.99 to 99.99	-4.0 to 212.0	±0.2% FS ±1 count
	JPtA	-199.9 to 500.0	-199.9 to 999.9	±0.1% FS ±1 count
	JPtB	-150.0 to 150.0	-199.9 to 300.0	

*Performance within recommended operating conditions (10 to 50 °C, 20 to 90% RH)

Analog Outputs

Scaling Range: Retransmitting 4-20 mA outputs can be scaled for any display range.

Accuracy: $\pm 0.1\%$ FS

Availability: 1/16 & 3/16 DIN: 1 standard, 1 optional
1/8 & 1/4 DIN: 2 standard

Output Operation: 4-20 mA PID control, time proportional voltage pulse PID control, or 4-20 mA retransmitting

Ratings: Continuous 4-20 mA PID or retransmitting: 600 Ω max
Time Proportional PID: 15 VDC pulse high, less than 0.1 VDC pulse low; 600 Ω minimum, current limited at 30 mA

Cycle Time: 1 to 300 seconds; time proportional PID control only

Power: Internally powered 4-20 mA output

Isolation: 500 V input-to-output

Output Loop Resistance: 600 Ω max

Digital Inputs

Configuration: Two contacts, two operating modes

Contacts: Normally open switches (external excitation not required) or open collector transistor

Open Circuit Voltage: Approximately 5 VDC

Logic Levels: LO = 0 to 0.8 VDC, HI = 4.7 to 28 VDC

Operation Modes: Mode 1: Control output run or stop, selection of set point 1 or 2. Mode 2: Selection of set points 1 to 4

Serial Communications

Compatibility: EIA-485

Protocol: PC, Modbus (ASCII, RTU),
Sync (Master/Slave SP Control)

Address: 1 to 99 (Max 31 units connected)

Baud Rate: 600 to 19,200 bps

Transmit Time Delay: 0 to 100 ms

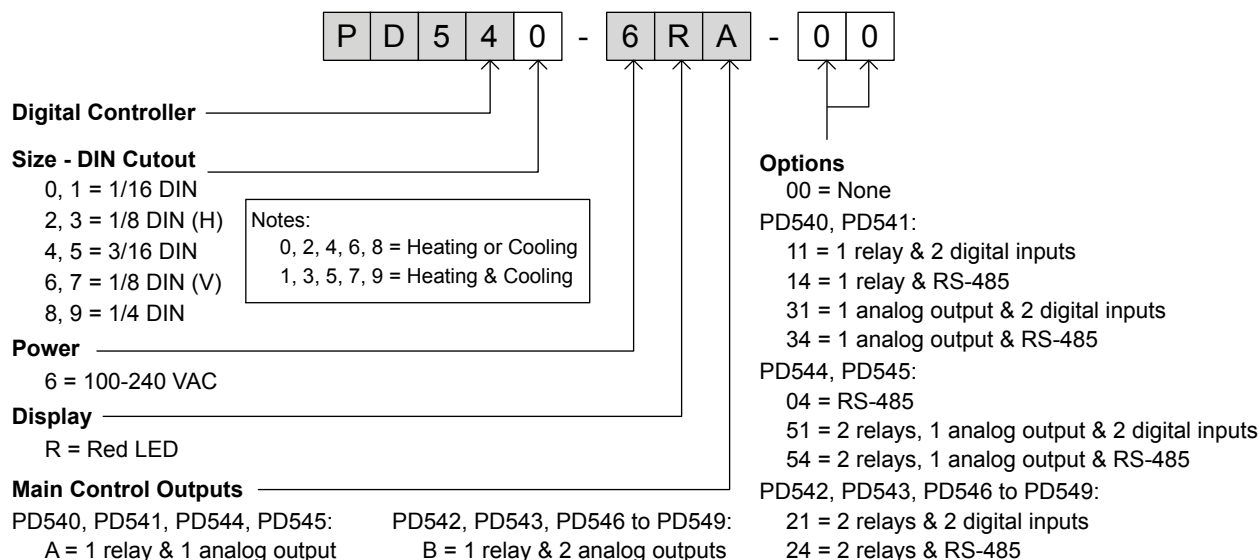
Data: 7 or 8 bit, automatic when using Modbus protocol

Stop Bit: 1 or 2

Parity: None, even, or odd

Model Number Guide

The following guide describes the possible PD540 Series Nova Digital Process & Temperature Controller model numbers.



Process & Temperature

Setup & Calibration Sheet PD540 Series

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Level ☐ Flow ☐ Pressure ☐ Temp	
Fax: _____	☐ Other: _____	
PO#: _____ SO# (PDC): _____	Description: _____	

P/N: PDN-CSETUP1 includes setup & calibration. Note: Refer to Price List for cost of setup & calibration services.

Product Information	Input Selection	Output Settings (Standard PID control set for HEAT)
Model Number: _____	☐ TC Type _____	Out1 (Relay) ☐ ALM1 ☐ ALM2 ☐ ALM3 ☐ HEAT ☐ COOL ☐ RUN
Serial Numbers: _____	☐ RTD Type _____	Out2 (Analog) ☐ HEAT ☐ COOL ☐ RET
	☐ °C	If Heat or Cool: ☐ SSR (VDC Pulse) ☐ SCR (4-20 mA)
	☐ °F	Out3 (Analog) ☐ HEAT ☐ COOL ☐ RET
	☐ VDC	If Heat or Cool: ☐ SSR (VDC Pulse) ☐ SCR (4-20 mA)
	☐ 4 - 20 mA (Order Resistor P/N: PDX-RES1)	Sub1 (Relay) ☐ ALM1 ☐ ALM2 ☐ ALM3 ☐ HEAT ☐ COOL ☐ RUN
Total # of Units: _____		Sub2 (Relay) ☐ ALM1 ☐ ALM2 ☐ ALM3 ☐ HEAT ☐ COOL ☐ RUN

Alarm Setup & Programming			
	ALM1	ALM2	ALM3
Absolute Value High Limit	☐	☐	☐
Absolute Value Low Limit	☐	☐	☐
High Limit Deviation	☐	☐	☐
Low Limit Deviation	☐	☐	☐
Outside Deviation Band	☐	☐	☐
Inside Deviation Band	☐	☐	☐
Fail-Safe Mode On	☐	☐	☐
Standby Mode On	☐	☐	☐
Alarm Value*			
High Deviation Limit**			
Low Deviation Limit**			
On Delay	_____ sec	_____ sec	_____ sec
Deadband			

* Absolute Value Alarm Only

** Deviation Alarm Only

Set Point Programming	
Set Point Values	Active Set Point
Set Point 1 (SP1): _____	☐
Set Point 2 (SP2): _____	☐
Set Point 3 (SP3): _____	☐
Set Point 4 (SP4): _____	☐
Sync Slave SP (RSP): _____	☐
Set Point Rate of Change	
☐ Instant	
☐ Ramp	
Increase at a rate of:	
_____ per ☐ min ☐ sec	
Decrease at a rate of:	
_____ per ☐ min ☐ sec	

NOVA Controllers

Setup & Calibration Sheet PD540 Series

Input Scaling/Calibration		Retransmitting Output Scaling/Calibration	
Input	Display	Type	Display Value Output
1. _____	_____	☐ PV	1. _____ 4.00 mA
2. _____	_____	☐ SP	2. _____ 20.00 mA
☐ Certificate of Calibration (Order P/N: PDN-CERTCAL) ☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)		☐ LPS (Loop Power Supply)	

Control Output Setup & Programming		
PID Control Direction	☐ Reverse (HEAT outputs drive PV higher. Default.) ☐ Forward (HEAT outputs drive PV lower.)	
Time Proportional PID Cycle Time	Heat: _____ seconds	Cool (H&C Models): _____ seconds
Error Condition Output Level	Heat: _____ % of FS Output	Cool (H&C Models): _____ % of FS Output
Digital Input Configuration	☐ 1 ☐ 2 ☐ Off	

Optional Setup Features		
Manual Output Level Control	☐ On (Disables PID Control)	
On/Off Control	☐ On (Disables PID Control)	
Hysteresis for On/Off Control	For Standard Models High Value: _____ Low Value: _____	For H/C Models Hysteresis Value: _____
Password	_____ (4 Digits) - Default is 0 if Left Blank	

Communication Settings
☐ Modbus Protocol ☐ RTU ☐ ASCII Baud Rate: _____ Parity: ☐ Odd ☐ Even ☐ None Stop Bit ☐ 1 ☐ 2 Data Length: _____ Address (1-99): _____ Response Time: _____
☐ Sync ☐ Master ☐ Slave
☐ PC Link Address (1-99) _____

Special Requests/Notes

Service Performed by: _____ Date: _____

Ref.:SA-DP0022-FM02 (2-2)



SETUP, CALIBRATION & WARRANTY SERVICES

Process & Temperature

PD550 Series Programmable Ramp & Soak Controllers

SPECIFICATIONS

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

General

Display: Dual 4 digits, red LED, -1999 to 9999

DIN Sizes	PV Display Inch (mm)	SP Display Inch (mm)	Weight oz (g)
1/16	0.45 (11.3)	0.37 (9.5)	7.0 (198)
3/16	0.55 (14.0)	0.47 (12.0)	12.4 (352)
1/8 (V)	0.54 (13.6)	0.41 (10.5)	11.8 (333)
1/4	0.81 (20.5)	0.43 (11.0)	14.9 (421)

Front Panel: Panel gasket provided

1/16 & 1/8 DIN: IP65

3/16 & 1/4 DIN: IP55

Programming Methods: Four front panel buttons and Modbus

Ramp & Soak Programs: 2 with 15 segments each

Noise Filter: Programmable 1 to 120 seconds or off

Display Update Rate: 4/second

Password: Restricts modification of programmed settings.

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Power: 100-240 VAC, 50/60 Hz, 10 W

Required Fuse: UL Recognized, 1 A, 250 V, slow-blow

Isolation: 2300 V input/output-to-power line; 4 kV relay output-to-input/output/power line.

Operating Temperature: 10 to 50°C

Storage Temperature: -40 to 85°C

Relative Humidity: 20 to 90% non-condensing

Enclosure: 1/16, 3/16, 1/8, & 1/4 DIN available; impact-resistant plastic; color: black

UL File Number: E244207; Process Control Equipment

Warranty: 3 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Process Inputs

Inputs: Field selectable: 0.4 to 2.0 V, 1 to 5 V, 0 to 10 V, -10 to 20 mV, 0 to 100 mV. 4-20 mA input requires 100 Ω resistor connected across input terminals (order P/N: PDX-RES1).

Accuracy: $\pm 0.1\%$ FS ± 1 count

Decimal Point: Up to 3 decimals: 9.999, 99.99, 999.9, or 9999

Calibration: All inputs are calibrated at the factory

Scale Range: User programmable over entire range

Transmitter Supply: 14 to 18 VDC @ 20 mA; available at terminals OUT2 or OUT3, instead of retransmitting analog output; selection is made through the front panel.

See page 155 for mounting dimensions.



Relays

Ratings: 1 Form C (SPDT) standard; rated 3 A @ 30 VDC or 3 A @ 250 VAC resistive load. 1 or 2 Form A (SPST) optional; rated 1 A @ 30 VDC or 1 A @ 250 VAC resistive load.

Relay Operation: Time proportional PID control, forward or reverse (fail-safe) alarms, inner signal PV or SP zones, program segment time signals, or program run or end alerts

Cycle Time: 1 to 300 seconds; time proportional PID control only.

High/Low Alarm: User may program any alarm for absolute high or low trigger values.

Deviation Alarm: User may program any relay for high, low, or high/low range set point deviation alarm.

Alarm Deadband: 0-100% FS, user selectable

Alarm Delay: 0 to 99 minutes and 59 seconds

Reverse Operation (Fail-Safe): Programmable, independent for each alarm. Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state.

Forward Operation: Relay coils are energized in alarm condition. In case of power failure, relays will go to non-alarm state.

Inner Signal Zones (IS): Relay activates with inner signal 1 or 2 states, based on the value of the PV, SP, or target SP of the program segment. Two programmable trigger value ranges.

Time Signal (TS): Relay activates during program segments with time signals.

Program Run (RUN): Relay activates during program operation.

Program End Alert (PEND): Relay activates for 15 seconds following reset at program completion.

Auto Alarm Initialization: Normal and standby operation independent for each alarm. Normal alarms will reflect the state of the input to the controller at all times. Standby alarms will not trigger if the change to alarm state is a result of power up cycle, set point change, or alarm configuration change.

Digital Outputs

Configuration: 2 or 4 open collector transistor

Operation Modes: Alarms, inner signal zones (IS), program segment time signals (TS), SP status (ramp up/down or soak), program running (RUN) or end alerts (PEND). See *Relays* above for operation mode details.

Transistor Rating: 24 VDC @ 50 mA

NOVA Controllers

Temperature Inputs

Inputs: Factory calibrated, field selectable: J, K, T, E, B, R, S, L, U, N, W, and Platinel II thermocouples and 100 Ω platinum RTD (0.00385 or 0.00392 curve)

Cold Junction Reference: Automatic or off

Offset Adjustment: Four programmable input bias zones

Sensor Break: Up or down scale, user selectable; display reads 5.0Pn; alarm relays will follow the up or down scale selection.

Type	Range (°C)	Range (°F)	Accuracy*
Thermocouple	K1	-200 to 1370	-300 to 2500
	K2	-199.9 to 999.9	0 to 2300
	J	-199.9 to 999.9	-300 to 2300
	T	-199.9 to 400.0	-300 to 750
	E	-199.9 to 999.9	-300 to 1800
	B	0 to 1800	32 to 3300
	R	0 to 1700	32 to 3100
	S	0 to 1700	32 to 3100
	L	-199.9 to 900.0	-300 to 1600
	U	-199.9 to 400.0	-300 to 750
	N	-200 to 1300	-300 to 2400
	W	0 to 2300	32 to 4200
RTD	Platinel II	0 to 1390	32 to 2500
	PTA	-199.9 to 850.0	-300 to 1560
	PTB	-199.9 to 500.0	-199.9 to 999.9
	PTC	-19.99 to 99.99	-4.0 to 212.0
	JPTA	-199.9 to 500.0	-199.9 to 999.9
	JPTB	-150.0 to 150.0	-199.9 to 300.0

*Performance within recommended operating conditions (10 to 50 °C, 20 to 90% RH)

Analog Outputs

Scaling Range: Retransmitting 4-20 mA outputs can be scaled for any display range.

Accuracy: $\pm 0.1\%$ FS

Availability: 1/16 & 3/16 DIN: 1 standard, 1 optional
1/8 & 1/4 DIN: 2 standard

Output Operation: 4-20 mA PID control, time proportional voltage pulse PID control, or 4-20 mA retransmitting

Ratings: Continuous 4-20 mA PID or retransmitting: 600 Ω max pulse low; 600 Ω minimum, current limited at 30 mA

Cycle Time: 1 to 300 seconds; time proportional PID control only

Power: Internally powered 4-20 mA output

Isolation: 500 V input-to-output

Output Loop Resistance: 600 Ω max

Digital Inputs

Configuration: Two contacts, two operating modes

Contacts: Normally open switches (external excitation not required) or open collector transistor

Open Circuit Voltage: Approximately 5 VDC

Logic Levels: LO = 0 to 0.8 VDC, HI = 4.7 to 28 VDC

Operation Modes: Mode 1: Program hold and step;
Mode 2: Program run or reset.

Serial Communications

Compatibility: EIA-485

Protocols: PC, Modbus (ASCII, RTU),
Sync (Master SP Control)

Address: 1 to 99 (Max 31 units connected)

Baud Rate: 600 to 19,200 bps

Transmit Time Delay: 0 to 100 ms

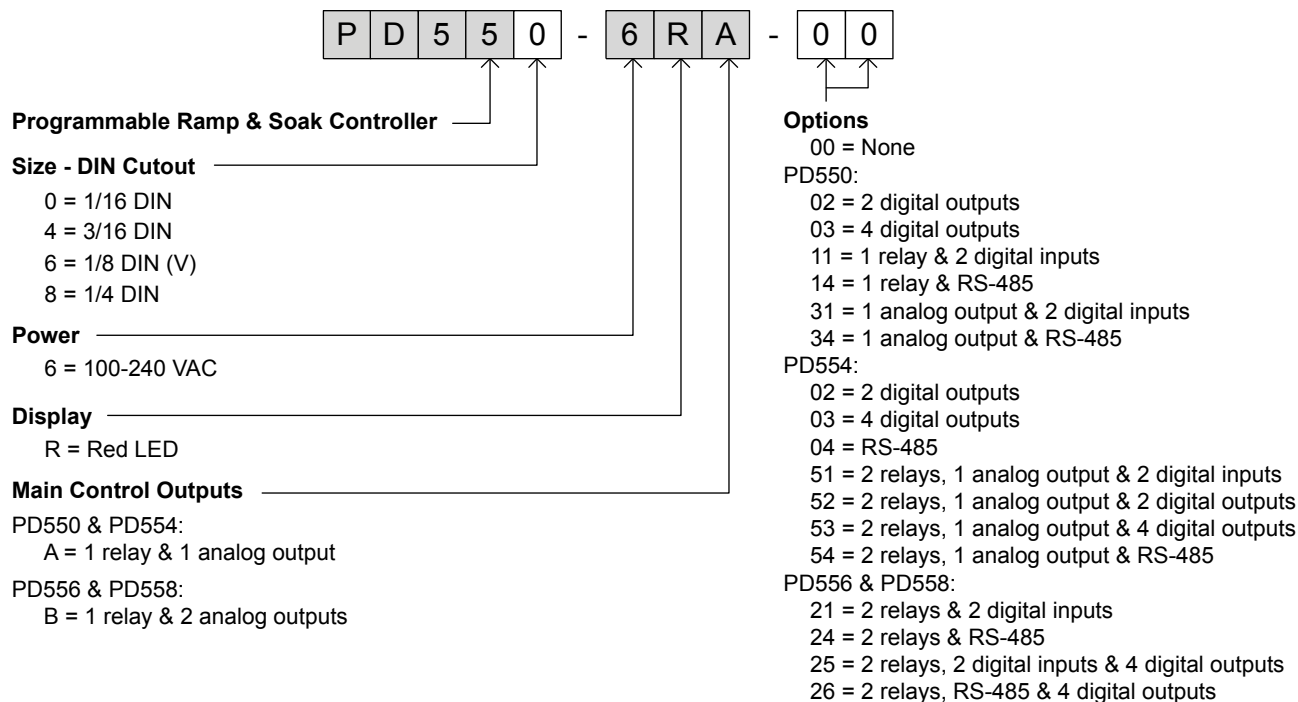
Data: 7 or 8 bit, automatic when using Modbus protocol

Stop Bit: 1 or 2

Parity: None, even, or odd

Model Number Guide

The following guide describes the possible PD550 Series Nova Programmable Ramp & Soak Controller model numbers.



Process & Temperature

Setup & Calibration Sheet PD550 Series

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Level ☐ Flow ☐ Pressure ☐ Temp	
Fax: _____	☐ Other: _____	
PO#: _____ SO# (PDC): _____	Description: _____	

P/N: PDN-CSETUP1 includes setup & calibration. Note: Refer to Price List for cost of setup & calibration services.

Product Information	Input Selection	Output Settings (For PID control set for HEAT)
Model Number: _____	☐ TC Type _____	Out1 (Relay) ☐ ALM1 ☐ ALM2 ☐ ALM3 ☐ HEAT ☐ RUN
Serial Numbers: _____	☐ RTD Type _____	Out2 (Analog) ☐ HEAT ☐ RET
	☐ °C	If Heat: ☐ SSR (VDC Pulse) ☐ SCR (4-20 mA)
	☐ °F	Out3 (Analog) ☐ HEAT ☐ RET
	☐ VDC	If Heat: ☐ SSR (VDC Pulse) ☐ SCR (4-20 mA)
	☐ 4 - 20 mA (Order Resistor P/N: PDX-RES1)	Sub1 (Relay) ☐ ALM1 ☐ ALM2 ☐ ALM3 ☐ HEAT ☐ RUN
Total # of Units: _____		Sub2 (Relay) ☐ ALM1 ☐ ALM2 ☐ ALM3 ☐ HEAT ☐ RUN

Alarm Setup & Programming

	ALM1	ALM2	ALM3
Absolute Value High Limit	☐	☐	☐
Absolute Value Low Limit	☐	☐	☐
High Limit Deviation	☐	☐	☐
Low Limit Deviation	☐	☐	☐
Outside Deviation Band	☐	☐	☐
Inside Deviation Band	☐	☐	☐
Fail-Safe Mode On	☐	☐	☐
Standby Mode On	☐	☐	☐
Alarm Value*			
High Deviation Limit**			
Low Deviation Limit**			
On Delay	_____ sec	_____ sec	_____ sec
Deadband			

*Absolute Value Alarm Only

**Deviation Alarm Only

Communication Settings

☐ Modbus Protocol
☐ RTU ☐ ASCII
Baud Rate: _____
Parity:
☐ Odd
☐ Even
☐ None
Stop Bit
☐ 1
☐ 2
Data Length: _____
Address (1-99): _____
Response Time: _____
☐ Sync Master
☐ PC Link
Address (1-99) _____

NOVA Controllers

Setup & Calibration Sheet PD550 Series

Input Scaling/Calibration		Retransmitting Output Scaling/Calibration	
Input	Display	Type	Display Value Output
1. _____	_____	☐ PV ☐ SP	1. _____ 4.00 mA
2. _____	_____	☐ LPS (Loop Power Supply)	2. _____ 20.00 mA
☐ Certificate of Calibration (Order P/N: PDN-CERTCAL)		☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)	

Control Output Setup		Optional Setup Features	
PID Control Direction	☐ Reverse (PID outputs drive PV higher. Default.) ☐ Forward (PID outputs drive PV lower.)	Digital Input Configuration	☐ 1 ☐ 2 ☐ Off
Time Proportional PID Cycle Time	_____ seconds	Password	_____ (4 Digits, default 0)
Error Condition Output Level	_____ % of FS Output		

Set Point Program Patterns															
<i>Program Pattern 1 – 15 segments</i>															
Segment #	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
Target SP															
Seg Time															
Time Signal	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
<i>Program Pattern 2 – 15 segments</i>															
Segment #	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
Target SP															
Seg Time															
Time Signal	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

	Program Pattern 1 Settings	Program Pattern 2 Settings
Time Unit	☐ hours, minutes (hh.mm)	☐ minutes, seconds (mm.ss)
Wait Zone	_____ °	
Wait Time	_____ (hh.mm)	
Start Code	☐ SSP ☐ PV	☐ SSP ☐ PV
Starting Set Point		
Link Code	☐ Reset ☐ Hold ☐ Prog 1 ☐ Prog 2	☐ Reset ☐ Hold ☐ Prog 1 ☐ Prog 2
Repeat Start Segment		
Repeat End Segment		
Number of Repetitions		

Notes:

Service Performed by: _____ Date: _____

Process & Temperature

PD560 Series Digital Meters SPECIFICATIONS

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

General

Display: Dual 4 digits, red LED, -1999 to 9999

DIN Sizes	PV Display Inch (mm)	SP Display Inch (mm)	Weight oz (g)
1/8 (H)	0.78 (19.8)	0.45 (11.5)	10.0 (285)
1/4	0.81 (20.5)	0.43 (11.0)	13.9 (394)

Front Panel: Panel gasket provided

1/8 DIN: IP65

1/4 DIN: IP55

Programming Methods: Four front panel buttons and Modbus

Noise Filter: Programmable 1 to 120 seconds or off

Display Update Rate: 4/second

Max/Min Display: Stored until reset by user or meter is turned off.

Password: Restricts modification of programmed settings.

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Power: 100-240 VAC, 50/60 Hz, 10 W

Required Fuse: UL Recognized, 1 A, 250 V, slow-blow

Isolation: 2300 V input/output-to-power line; 4 kV relay output-to-input/output/power line.

Operating Temperature: 10 to 50°C

Storage Temperature: -40 to 85°C

Relative Humidity: 20 to 90% non-condensing

Enclosure: 1/8 & 1/4 DIN available; impact-resistant plastic; color: black

UL File Number: E244207; Process Control Equipment

Warranty: 3 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Process Inputs

Inputs: Field selectable: 0.4 to 2.0 V, 1 to 5 V, 0 to 10 V, -10 to 20 mV, 0 to 100 mV. 4-20 mA input requires 100 Ω resistor connected across input terminals (order P/N: PDX-RES1).

Accuracy: $\pm 0.1\%$ FS ± 1 count

Decimal Point: Up to 3 decimals: 9.999, 99.99, 999.9, or 9999

Calibration: All inputs are calibrated at the factory

Scale Range: User programmable over entire range

Transmitter Supply: 14 to 18 VDC @ 20 mA; available instead of retransmitting analog output; selection is made through the front panel.



Alarm Relays

Ratings: 1 Form C (SPDT) standard; rated 3 A @ 30 VDC or 3 A @ 250 VAC resistive load. 1 or 2 Form A (SPST) optional; rated 1 A @ 30 VDC or 1 A @ 250 VAC resistive load.

High/Low Alarm: User may program any alarm for absolute high or low operation, forward or reverse (fail-safe) mode.

Alarm Deadband: 0-100% FS, user selectable

Alarm Delay: 0 to 99 minutes and 59 seconds

Reverse Operation (Fail-Safe): Programmable, independent for each alarm. Relay coils are energized in non-alarm condition. In case of power failure, relays will go to alarm state.

Forward Operation: Relay coils are energized in alarm condition. In case of power failure, relays will go to non-alarm state.

Auto Alarm Initialization: Normal and standby operation independent for each alarm. Normal alarms will reflect the state of the input to the meter at all times. Standby alarms will not trigger if the change to alarm state is a result of power up cycle, set point change, or alarm configuration change.

See page 155 for mounting dimensions.

NOVA Controllers

Temperature Inputs

Inputs: Factory calibrated, field selectable: J, K, T, E, B, R, S, L, U, N, W, and Platinel II thermocouples and 100 Ω platinum RTD (0.00385 or 0.00392 curve)

Cold Junction Reference: Automatic or off

Offset Adjustment: Four programmable input bias zones

Sensor Break: Up or down scale, user selectable; display reads 5.0Pn; alarm relays will follow the up or down scale selection.

Type	Range (°C)	Range (°F)	Accuracy*	
Thermocouple	K1	-200 to 1370	-300 to 2500	>0°C: ±0.1% FS ±1 count <0°C: ±0.2% FS ±1 count
	K2	-199.9 to 999.9	0 to 2300	
	J	-199.9 to 999.9	-300 to 2300	
	T	-199.9 to 400.0	-300 to 750	
	E	-199.9 to 999.9	-300 to 1800	
	B	0 to 1800	32 to 3300	>400°C: ±0.15% FS ±1 count <400°C: ±5% FS ±1 count
	R	0 to 1700	32 to 3100	±0.15% FS ±1 count
	S	0 to 1700	32 to 3100	
	L	-199.9 to 900.0	-300 to 1600	
	U	-199.9 to 400.0	-300 to 750	>0°C: ±0.1% FS ±1 count <0°C: ±0.2% FS ±1 count
	N	-200 to 1300	-300 to 2400	>0°C: ±0.1% FS ±1 count <0°C: ±0.25% FS ±1 count
	W	0 to 2300	32 to 4200	±0.2% FS ±1 count
	Platinel II	0 to 1390	32 to 2500	±0.1% FS ±1 count
RTD	PtA	-199.9 to 850.0	-300 to 1560	±0.1% FS ±1 count
	PtB	-199.9 to 500.0	-199.9 to 999.9	
	PtC	-19.99 to 99.99	-4.0 to 212.0	±0.2% FS ±1 count
	JPtA	-199.9 to 500.0	-199.9 to 999.9	±0.1% FS ±1 count
	JPtB	-150.0 to 150.0	-199.9 to 300.0	

*Performance within recommended operating conditions (10 to 50 °C, 20 to 90% RH)

4-20 mA Retransmitting Output

Scaling Range: 4-20 mA output can be scaled for any display

Accuracy: $\pm 0.1\%$ FS

Power: Internally powered 4-20 mA output

Isolation: 500 V input-to-output

Output Loop Resistance: 600 Ω max

Digital Inputs

Configuration: Two contacts. Two operating modes.

Contacts: Normally open switches (external excitation note required) or open collector transistor

Open Circuit Voltage: Approximately 5 VDC

Logic Levels: LO = 0 to 0.8 VDC, HI = 4.7 to 28 VDC

Operation Modes: Mode 1: Store and reset max & min display values simultaneously. Mode 2: Store and reset max & min display values independently.

Serial Communications

Compatibility: EIA-485

Protocols: PC, Modbus (ASCII, RTU)

Address: 1 to 99 (Max 31 units connected)

Baud Rate: 600 to 19,200 bps

Transmit Time Delay: 0 to 100 ms

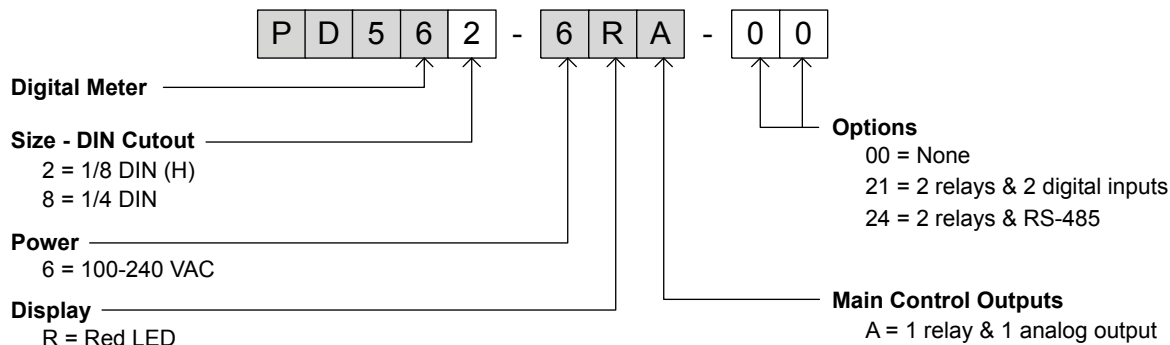
Data: 7 or 8 bit, automatic when using Modbus protocol

Stop Bit: 1 or 2

Parity: None, even, or odd

Model Number Guide

The following guide describes the possible PD560 Series Nova Digital Process & Temperature Meter model numbers.



Process & Temperature

Setup & Calibration Sheet PD560 Series Nova Digital Meter

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Level ☐ Flow ☐ Pressure ☐ Temp	
Fax: _____	☐ Other: _____	
PO#: _____ SO# (PDC): _____	Description: _____	

P/N: PDN-CSETUP1 includes setup & calibration. Note: Refer to Price List for cost of setup & calibration services.

Product Information	Input Selection
Model Number: _____	☐ TC Type _____
Serial Numbers: _____	☐ RTD Type _____
	☐ °F ☐ °C
	☐ VDC
Total # of Units: _____	☐ 4 - 20 mA (Order Resistor P/N: PDX-RES1)

Communication Settings

☐ Modbus Protocol
☐ RTU ☐ ASCII
Baud Rate: _____
Parity:
☐ Odd
☐ Even
☐ None
Stop Bit
☐ 1
☐ 2
Data Length: _____
Address (1-99): _____
Response Time: _____
☐ PC Link
Address (1-99) _____

Alarm Setup & Programming			
	ALM1	ALM2	ALM3
Absolute Value High Limit	☐	☐	☐
Absolute Value Low Limit	☐	☐	☐
Fail-Safe Mode On	☐	☐	☐
Standby Mode On	☐	☐	☐
Alarm Value			
On Delay	_____ sec	_____ sec	_____ sec
Deadband			

Input Scaling/Calibration		Retransmitting Output Scaling/Calibration	
Input	Display	Type	Display Value Output
1. _____	_____	☐ PV ☐ SP	1. _____ 4.00 mA
2. _____	_____	☐ LPS (Loop Power Supply)	2. _____ 20.00 mA
☐ Certificate of Calibration (Order P/N: PDN-CERTCAL)		☐ Certificate of Calibration with Data (Order P/N: PDN-CERTCAL2)	

General Setup	
Digital Input Configuration	☐ 1 ☐ 2 ☐ Off
Password	_____ (4 Digits) - Default is 0 if Left Blank

Notes:

Service Performed by: _____ Date: _____

NOVA Controllers

PD570 Series Limit Controllers SPECIFICATIONS

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

General

Display: Dual 4 digits, red LED, -1999 to 9999

DIN Sizes	PV Display Inch (mm)	SP Display Inch (mm)	Weight oz (g)
1/16	0.45 (11.3)	0.37 (9.5)	7.0 (198)
1/4	0.81 (20.5)	0.43 (11.0)	13.9 (394)

Front Panel: Panel gasket provided

1/16 DIN: IP65

1/4 DIN: IP55

Programming Methods: Four front panel buttons and Modbus

Number of Set Points: 1 limit control

Noise Filter: Programmable 1 to 120 seconds or off

Display Update Rate: 4/second

Max/Min Display: Stored until reset by user or controller is turned off.

Password: Restricts modification of programmed settings.

Non-Volatile Memory: Settings stored for a minimum of 10 years.

Power: 100-240 VAC, 50/60 Hz, 10 W

Required Fuse: UL Recognized, 1 A, 250 V, slow-blow

Isolation: 2300 V input/output-to-power line; 4 kV relay output-to-input/output/power line.

Operating Temperature: 10 to 50°C

Storage Temperature: -40 to 85°C

Relative Humidity: 20 to 90% non-condensing

Enclosure: 1/16, & 1/4 DIN available; impact-resistant plastic; color: black

UL File Number: E244207; Process Control Equipment

Warranty: 3 years parts & labor

Extended Warranty: 1 or 2 years, refer to Price List for details.

Process Inputs

Inputs: Field selectable: 0.4 to 2.0 V, 1 to 5 V, 0 to 10 V, -10 to 20 mV, 0 to 100 mV. 4-20 mA input requires 100 Ω resistor connected across input terminals (order P/N: PDX-RES1).

Accuracy: $\pm 0.1\%$ FS ± 1 count

Decimal Point: Up to 3 decimals: 9.999, 99.99, 999.9, or 9999

Calibration: All inputs are calibrated at the factory

Scale Range: User programmable over entire range

Transmitter Supply: 14 to 18 VDC @ 20 mA; available instead of retransmitting analog output; selection is made through the front panel.

See page 155 for mounting dimensions.



Limit Control Relay and Indicators

Ratings: Latching, 1 Form C (SPDT); rated 3 A @ 30 VDC or 3 A @ 250 VAC resistive load

Relay Operation: User may select high or low limit operation, forward or reverse (fail-safe) mode.

Reverse Operation (Fail-Safe): Programmable; relay coil is energized in non-alarm condition. In case of power failure, relay will go to alarm state.

Forward Operation: Relay coil is energized in alarm condition. In case of power failure, relay will go to non-alarm state.

Hysteresis: 0-10% FS, user selectable; manual reset allowed after condition has been corrected.

Out LED: Relay status indicator. LED is on when relay is de-energized (during over limit conditions in reverse operation).

Over Limit LED: Over LED is on when system is in over limit condition. LED will go off once system returns to normal condition.

Over Limit Timer Display: Time stored since last occurrence of over limit condition or until controller is turned off.

Alarm Relay

Ratings: 1 Form A (SPST); rated 1 A @ 30 VDC or 1 A @ 250 VAC resistive load

High/Low Alarm: User may program alarm for absolute value, high or low operation, forward or reverse (fail-safe) mode.

Deviation Alarm: User may program relay for high, low, or high/low range deviation alarm, forward or reverse (fail-safe) mode.

Alarm Deadband: 0-100% FS, user selectable

Alarm Delay: 0 to 99 minutes and 59 seconds

Reverse Operation (Fail-Safe): Programmable; relay coil is energized in non-alarm condition. In case of power failure, relay will go to alarm state.

Forward Operation: Relay coil is energized in alarm condition. In case of power failure, relay will go to non-alarm state.

Auto Alarm Initialization: Normal and standby operation. Normal alarm will reflect the state of the input to the controller at all times. Standby alarm will not trigger if the change to alarm state is a result of power up cycle, set point change, or alarm configuration change.

Process & Temperature

Temperature Inputs

Inputs: Factory calibrated, field selectable: J, K, T, E, B, R, S, L, U, N, W, and Platinel II thermocouples and 100 Ω platinum RTD (0.00385 or 0.00392 curve)

Cold Junction Reference: Automatic or off

Offset Adjustment: Four programmable input bias zones

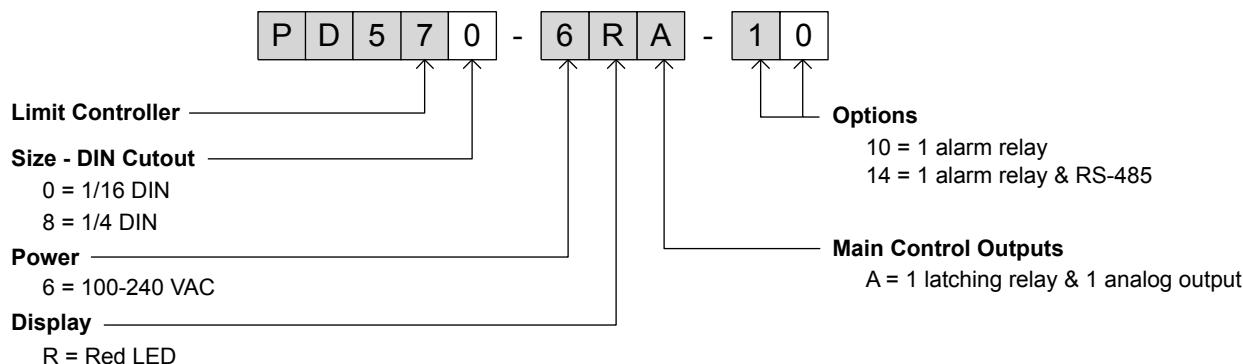
Sensor Break: Up or down scale, user selectable; display reads 5.0Pn; alarm relays will follow the up or down scale selection.

Type	Range (°C)	Range (°F)	Accuracy*	
Thermocouple	K1	-200 to 1370	-300 to 2500	>0°C: ±0.1% FS ±1 count <0°C: ±0.2% FS ±1 count
	K2	-199.9 to 999.9	0 to 2300	
	J	-199.9 to 999.9	-300 to 2300	
	T	-199.9 to 400.0	-300 to 750	
	E	-199.9 to 999.9	-300 to 1800	
	B	0 to 1800	32 to 3300	>400°C: ±0.15% FS ±1 count <400°C: ±5% FS ±1 count
	R	0 to 1700	32 to 3100	
	S	0 to 1700	32 to 3100	±0.15% FS ±1 count
	L	-199.9 to 900.0	-300 to 1600	>0°C: ±0.1% FS ±1 count <0°C: ±0.2% FS ±1 count
	U	-199.9 to 400.0	-300 to 750	
	N	-200 to 1300	-300 to 2400	>0°C: ±0.1% FS ±1 count <0°C: ±0.25% FS ±1 count
	W	0 to 2300	32 to 4200	
Platinel II	0 to 1390	32 to 2500	±0.1% FS ±1 count	
RTD	PtA	-199.9 to 850.0	-300 to 1560	±0.1% FS ±1 count
	PtB	-199.9 to 500.0	-199.9 to 999.9	
	PtC	-19.99 to 99.99	-4.0 to 212.0	±0.2% FS ±1 count
	JPtA	-199.9 to 500.0	-199.9 to 999.9	±0.1% FS ±1 count
	JPtB	-150.0 to 150.0	-199.9 to 300.0	

*Performance within recommended operating conditions (10 to 50 °C, 20 to 90% RH)

Model Number Guide

The following guide describes the possible PD570 Series Nova Process & Temperature Limit Controller model numbers.



4-20 mA Retransmitting Output

Scaling Range: 4-20 mA output can be scaled for any display

Accuracy: $\pm 0.1\%$ FS

Power: Internally powered 4-20 mA output

Isolation: 500 V input-to-output

Output Loop Resistance: 600 Ω max

Serial Communications

Compatibility: EIA-485

Protocols: PC, Modbus (ASCII, RTU)

Address: 1 to 99 (Max 31 units connected)

Baud Rate: 600 to 19,200 bps

Transmit Time Delay: 0 to 100 ms

Data: 7 or 8 bit, automatic when using Modbus protocol

Stop Bit: 1 or 2

Parity: None, even, or odd

NOVA Controllers

Setup & Calibration Sheet PD570 Series Nova Limit Controller

Instructions: Complete this form and send with your purchase order to your local distributor or fax to (508) 655-8990. Write N/A where not applicable or simply leave the field blank. For an online version of this form go to www.predig.com.

Customer Information

Contact: _____	Title: _____	Date: _____
Company: _____	Phone: _____	Ext: _____
Mailing Address: _____	Email: _____	
City: _____ State: _____	Application: _____	
Zip Code: _____ Country: _____	☐ Level ☐ Flow ☐ Pressure ☐ Temp	
Fax: _____	☐ Other: _____	
PO#: _____	Description: _____	
SO# (PDC): _____		

P/N: PDN-CSETUP1 includes setup & calibration. Note: Refer to Price List for cost of setup & calibration services.

Product Information	Input Selection	Limit Control Output Settings
Model Number: _____	☐ TC Type _____	Note:
Serial Numbers: _____	☐ RTD Type _____	Out1: Limit Control Latching Relay
_____	☐ °C	Limit Set Point: _____
_____	☐ °F	Limit Direction: ☐ High Limit
_____	☐ VDC	☐ Low Limit
_____	☐ 4 - 20 mA (Order Resistor P/N: PDX-RES1)	
Total # of Units: _____		

Alarm Setup & Programming	
Absolute Value High Limit	☐
Absolute Value Low Limit	☐
High Limit Deviation	☐
Low Limit Deviation	☐
Outside Deviation Band	☐
Inside Deviation Band	☐
Fail-Safe Mode On	☐
Standby Mode On	☐
Alarm Value*	
High Deviation Limit**	
Low Deviation Limit**	
On Delay	_____ sec
Deadband	
*Absolute Value Alarm Only	
** Deviation Alarm Only	

Input Scaling/Calibration	
Input	Display
1. _____	_____
2. _____	_____
☐ Certificate of Calibration (P/N: PDN-CERTCAL)	
☐ Certificate of Calibration with Data (P/N: PDN-CERTCAL2)	

Retransmitting Output Scaling/Calibration		
Type	Display Value	Output
☐ PV ☐ SP	1. _____	4.00 mA
☐ LPS (Loop Power Supply)	2. _____	20.00 mA

Lockout Feature	
Password	_____ (4 Digits) - Default is 0 if Left Blank

Communications
☐ Modbus Protocol
☐ RTU ☐ ASCII
Baud Rate: _____
Parity:
☐ Odd
☐ Even
☐ None
Stop Bit
☐ 1
☐ 2
Data Length: _____
Address (1-99): _____
Response Time: _____
☐ PC Link
Address (1-99) _____

Service Performed by: _____	Date: _____
-----------------------------	-------------

Ref.:SA-DP0022-FM05



SETUP, CALIBRATION & WARRANTY SERVICES

www.predig.com

Digital Pressure Gauges

SPECIFICATIONS

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

Type: Precision Digital Test Pressure Gauge

Pressure Input: Vacuum to 7,000 psi & compound; see other engineering units below

Display: 0.66" (17 mm) 5 digit LCD, 99999

Accuracy: 0.05%, 0.10% or 0.25% FS Terminal Point, Total Error Band (TEB) including hysteresis, linearity, repeatability and temperature drift

Temperature Corrected: From -18 to 65°C

Certificate of Calibration: 10-point individual calibration chart, standard for model PD253; optional for other models

Backlight: Standard, manual, or auto off

Bargraph: 10-segment %FS and battery level indicator

Case Size: 3" diameter

Case Material: 300 Series stainless steel

Case Finish: Electropolished

Case Rating: NEMA 4X, IP65; protective rubber boot optional

Wetted Materials: 316 stainless steel

Socket Size: 1/4" NPT

Socket Location: Lower connection, 6 o'clock

Mounting: Stem (standard), panel (optional)

Case Protection: 300 Series stainless steel protective cover and protective carrying pouch included.

Weight: 12.5 oz (354 g)

Power: Three AAA alkaline batteries included

Battery Life: >1000 hours

Operating Temperature: -18 to 65°C

Storage Temperature: -40 to 82°C

Relative Humidity: 0 to 90% non-condensing

Approvals: FM Approved & CSA Certified as intrinsically safe for use in Class I, II, III, Division 1, Groups A, B, C, D, E, F, & G; T-code = T4. Non-incendive for use in Class I, II, III, Division 2, Groups A, B, C, D, F, & G; Type 4 hazardous (Classified) locations.

Keypad Functions

On/Off: Manually turns unit on and off; auto off options in configuration menu.

Backlight: Manually turns backlight on and off; auto off options in configuration menu.

Max/Min: Displays max & min values.

Zero/Clear: Zeros display or clears max & min values when values are displayed.

Enter: Selects items in configuration menu.

Menu Mode

Configuration Mode (CONFIG): Allows scrolling through configuration menus to select available options.

Engineering Units: psi, inHg, inH₂O, ftSW, Bar, mBar, kPa, MPa, mmHg, cmH₂O, mmH₂O, kg/cm²

Display Update Rate: 4 settings: 10/sec, 5/sec, 2/sec, 1/sec

Auto Off: 5 settings: Never, 2, 5, 15, or 30 minutes

Backlight: 5 settings: On/off, 10 sec, 30 sec, 1 min, 5 min

Language: 7 Languages: English, Spanish, French, Italian, German, Portuguese, and Dutch.

Dampening: 5 settings: None, Average: 2, 4, 6, 8 readings

Contrast: 7 settings

Field Calibration: Zero & span (password protected)

Disable: Password allows lockout of configuration settings.

Zero Disable: Allows disabling of Zero button.

PD233, PD243, PD253



Digital Test Gauge Pressure Ranges

psi	Compound (psi)	kPa	Bar/ kg/cm ²	Compound (Bar)
Vac.	-15 to 15	-100 to 0	1	-1 to 0
5	-15 to 30	25	1.6	-1 to 1
10	-15 to 60	40	2.5	-1 to 2
15	-15 to 100	60	4	-1 to 3
30		100	6	-1 to 30
60		160	10	
100		250	16	
160		400	25	
200		600	40	
300		1000	60	
500			100	
600			160	
800			250	
1000			400	
1500			500	
2000				
2500				
3000				
5000				
7000				

mmH ₂ O	MPa	mBar/ cmH ₂ O	Absolute (psia)
3000	1	250	15
5000	1.6	300	25
10,000	2.5	400	50
	6	500	
	10	600	
	40	1000	
		1600	
		2000	
		2500	
		4000	
		5000	
		6000	
		10,000	

See page 154 for mounting dimensions.

ACCURACY ■ RELIABILITY ■ CONVENIENCE

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Digital Pressure Gauges

SPECIFICATIONS

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

Type: Industrial Digital Pressure Gauge

Pressure Input: Vacuum to 20,000 psi & compound; see other engineering units below

Display: 5 digit LCD 99,999; PD213 (3"): 0.60" (15.2 mm), PD214 & PD224 (4½"): 0.88" (22.4 mm)

Accuracy: 0.25% FS, Terminal Point

Temperature Drift: 0.02%/°C zero & span (<0.01%/°C typical)

Backlight: Optional; manual or auto off

Bargraph: 10-segment %FS, programmable to indicate desired pressure range; and battery level indicator

Case Size: PD213: 3" diameter; PD214 & PD224: 4½" diameter

Case Material: PD213: 300 Series stainless steel,

PD214: Fiberglass reinforced thermoplastic,

PD224: Black epoxy coated aluminum

Case Rating: NEMA 4, IP65

Wetted Materials: 17-4 PH stainless steel sensor;

316 stainless steel socket

Socket Size: ¼" or ½" NPT

Note: ½" NPT only with PD214 & PD224

Socket Location: Lower connection, 6 o'clock

Mounting: Stem (standard), panel (optional)

Weight: 3" case: 12.5 oz (354 g), 4½" plastic case: 24.4 oz (692 g)

Power Options: Battery, loop-powered, or 12-36 VDC

Battery Life: PD213: >1000 hours, PD214 & PD224: >3600 hours

Operating Temperature: -10 to 60°C

Storage Temperature: -20 to 70°C

Relative Humidity: 0 to 90% non-condensing

Approvals: FM & CSA available for PD224 only.

FM Approved & CSA Certified as intrinsically safe with entity, for use in Class I, II, III, Division 1, Groups A, B, C, D, E, F, & G; T-code = T4. Non-incendive for use in Class I, II, III, Division 2, Groups A, B, C, D, F, & G; Type 4 hazardous (Classified) locations.

Relays

Ratings: 2 Form C (SPDT); rated 1 A @ 30 VDC, 0.5 A @ 125 VAC

Deadband: 0-100% FS, user selectable

High or Low Alarm: User may program any alarm for high or low.

4-20 mA Transmitter Output

Scaling Range: 0-100% FS

Transmitter Power Supply: 12-36 VDC, 2 W max

(transmitter supply available with -2L and -2K models)

Keypad Functions

On/Off: Manually turns unit on and off (auto off options in menu)

Zero/Clear: Zeros display or clears max & min values when values are displayed.

Max/Min ▼ (down) Arrow Key: Displays max & min values, arrow key allows for scrolling through menu items.

Menu Key: Provides access to menu options.

Backlight ▲ (up) Arrow Key (backlight optional): Manually turns backlight on and off (auto off options in menu), arrow key allows for five menu options. ▲ (up) arrow key allows for scrolling through menu options.

Enter: Selects items in the menu.



Menu Mode

Engineering Units: psi, inHg, mmHg, inH₂O (temperature options: 4°C, 20°C, 60°F), mBar, ftH₂O, MPa, kPa, kg/cm², Bar

Configuration Mode: Allows for changes to default settings of gauge including zero disable feature.

Bargraph: Allows for adjustment of bargraph and 4-20 mA output (optional feature).

Backlight: 5 settings: never, 10 sec, 30 sec, 1 min, 5 min

Auto Off: Allows changes to auto off function of pressure gauge, 5 settings: never, 2, 5, 15, 30 minutes.

Display Update Rate: 4 settings: 100 ms, 200 ms, 500 ms, 1 sec

Dampening: 6 settings: none, average, (2, 4, 6, or 8) x 100 ms

Password: Restricts modification of programmed settings.

Field Calibration: Allows for calibration of zero, mid-point, and span (password protected).

Industrial Digital Gauge Pressure Ranges

psi	Comp. psi	mmHg (press.)	inHg (press.)	in H ₂ O	mBar	ft H ₂ O	MPa	kPa	Bar kg/cm ²
15	-15 to 15	800	30	400	1000	60	1	100	1
30	-15 to 30	1000	60	800	1500	160	1.6	160	1.6
60	-15 to 60	2000	100	1000	2000	200	2.5	250	2.5
100	-15 to 100	3000	160		2500	300	4	400	4
160		5000	200		4000	400	6	600	6
200		10,000	300		5000	600	10	1000	10
300			400		6000	1000	16	1600	16
600	inHg (Vacuum)		600		10,000		25	2500	25
800	-30		800		15,000		40	4000	40
1000					20,000		60	6000	60
1500							100	10,000	100
2000							140	16,000	160
3000								25,000	250
5000								40,000	400
8000								60,000	600
10,000									1000
15,000									1400
20,000									

See page 154 for mounting dimensions.



SETUP, CALIBRATION & WARRANTY SERVICES

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Digital Pressure Gauges

SPECIFICATIONS

PD202

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

Type: General Purpose Digital Pressure Gauge

Pressure Input: Vacuum to 19,999 psi & compound; see other engineering units below

Display: 0.5" (12.7 mm), 4½ digit LCD, 19,999

Accuracy: 0.5% FS, Terminal Point

Backlight: Optional; manual or auto off

Bargraph: Four-level battery indication

Display Resolution:	Pressure Range	Resolution
	-15 to 0	-XX.000
	0 to 2	X.0000
	2 to 20	XX.000
	20 to 200	XXX.00
	200 to 2000	XXXX.0
	2000 to 19,999	XXXXX

Display Update Rate: 10/second

Case Size: 2½" diameter

Case Material: impact-resistant thermoplastic; color: black

Case Rating: IP54 with protective boot

Wetted Materials: 17-4 PH stainless steel sensor;

316 stainless steel socket

Socket Size: ¼" NPT

Socket Location: Lower connection, 6 o'clock

Mounting: Stem

Weight: 4.8 oz (136 g)

Power: Two AAA alkaline batteries included

Battery Life: >1000 hours

Overpressure:	Vacuum	0-3000	
	0-1000	0-5000	0-9999
Proof:	200%	150%	120%
Burst:	800%	300%	150%

Cycle Life: 10⁸ cycles 20-80% FS with negligible performance loss

Vibration: < ±0.1% FS effect for 0-2000 Hz @ 20 g in any axis

Shock: < ±0.05% FS effect for 100 g, 20 ms shock in any axis

Operating Temperature: -10 to 60°C

Storage Temperature: -20 to 70°C

Relative Humidity: 0 to 90% non-condensing

Leak Integrity: 1 x 10⁻³ std. cc/sec

Keypad Functions

On/Off: Manually turns unit on and off (programmable auto off settings: never, 5, 10, 20 minutes).

Zero/Clear: Zeros display or clears max & min values when values are displayed.

Max/Min: Displays max & min value when activated.

Backlight (optional): Manually turns backlight on and off; (programmable auto off settings: never, 30 sec, 1 min, or 5 min)

Engineering Units: psi, Bar, kg/cm², kPa, MPa, ftH₂O, inHg, cmHg, mmHg

Field Calibration: Zero and span



General Purpose Gauge Pressure Ranges

Vacuum					
inHg	kPa	cmHg	Bar	kg/cm ²	mmHg
-30	-100	-76	-1	-1	-760
Compound					
inHg/psi	kPa	MPa	Bar	kg/cm ²	ftH ₂ O
-30 to 30	-100 to 200	—	-1 to 2	-1 to 2	-35 to 70
-30 to 60	-100 to 400	—	-1 to 2	-1 to 2	-35 to 140
-30 to 100	-100 to 700	—	-1 to 2	-1 to 2	-35 to 230
-30 to 150	-100 to 1050	—	-1 to 11	-1 to 11	-35 to 350
-30 to 300	-100 to 2100	—	-1 to 21	-1 to 21	-35 to 700
Pressure					
psi	kPa	MPa	Bar	kg/cm ²	ftH ₂ O
30	200	—	2	2	70
60	400	—	4	4	140
100	700	—	7	7	230
200	1400	—	14	14	460
300	2100	—	21	21	700
500	3500	—	35	35	—
1000	7000	—	70	70	—
1500	—	10	105	105	—
2000	—	14	140	140	—
3000	—	21	210	210	—
5000	—	35	350	350	—
10,000	—	70	700	700	—
15,000	—	100	1000	1000	—
19,999	—	140	1400	1400	—

See page 154 for mounting dimensions.

Digital Pressure Gauges

ORDERING INFORMATION

Industrial Digital Pressure Gauge			
Model	Model with Backlight	Description	Power
PD213-0L0-4N-##		Industrial Digital Pressure Gauge 3" Stainless Steel Case	Loop-Powered
PD213-2L0-4N-##	PD213-2K0-4N-##		12-36 VDC
PD213-BL0-4N-##	PD213-BK0-4N-##		Battery
PD214-0L0-4N-##		Industrial Digital Pressure Gauge 4½" Fiberglass Reinforced Thermoplastic	Loop-Powered
PD214-2L0-4N-##	PD214-2K0-4N-##		12-36 VDC
PD214-BL0-4N-##	PD214-BK0-4N-##		Battery
PD224-0L0-4N-##		Industrial Digital Pressure Gauge 4½" Black Painted Aluminum	Loop-Powered
PD224-2L0-4N-##	PD224-2K0-4N-##		12-36 VDC
PD224-BL0-4N-##	PD224-BK0-4N-##		Battery
PD224-0L0-4F-##		FM Approved & CSA Certified Industrial Digital Pressure Gauge 4½" Black Painted Aluminum	Loop-Powered
PD224-2L0-4F-##			12-36 VDC
PD224-BL0-4F-##			Battery
PD213-2L2-4N-##	PD213-2K2-4N-##	with 2 Relays	12-36 VDC
PD213-2L3-4N-##	PD213-2K3-4N-##	with 4-20 mA Output	
PD213-2L5-4N-##	PD213-2K5-4N-##	with 2 Relays & 4-20 mA Output	
PD214-2L2-4N-##	PD214-2K2-4N-##	with 2 Relays	
PD214-2L3-4N-##	PD214-2K3-4N-##	with 4-20 mA Output	
PD214-2L5-4N-##	PD214-2K5-4N-##	with 2 Relays & 4-20 mA Output	
PD224-2L2-4N-##	PD224-2K2-4N-##	with 2 Relays	
PD224-2L3-4N-##	PD224-2K3-4N-##	with 4-20 mA Output	
PD224-2L5-4N-##	PD224-2K5-4N-##	with 2 Relays & 4-20 mA Output	
½" NPT Connection Available for PD214 & PD224 only: Replace -4 with -2 Ordering Example: PD224-2L0-2F-08 PD224: Aluminum case -2L0: 12-36 VDC powered w/o backlight -2F: ½" NPT, FM Approved -08: 200 psi pressure range		Special Features Enter X, Y, Z before ## code in place of hyphen (-) 1. Oxygen Service = X 2. Accu-Seal Diaphragm = Y 3. Oxygen Service & Accu-Seal Diaphragm = Z Note: Accu-Seal for PD214 & PD224 only. 3" SS Case Options Enter E, G, or H in place of N 1. Electropolished = E 2. Front Flange for panel mounting = G 3. Electropolished & Front Flange = H Ordering Example: PD224-2L0-2FX08 X = Oxygen Service	

Pressure Range Code (##)			
##Code	Range	Units	Type
C1	-15/15	Compound	I, T
C2	-15/30	psi	All
C3	-15/60	C2-C4: inHg/psi for G type	All
C4	-15/100		All
C5	-30/150	Compound	G
C6	-30/300	inHg/psi	G
00	-30/0	Vacuum inHg	All
01	5	Pressure psi	T
02	10		T
03	15		I, T
04	30		All
05	60		All
06	100		All
07	160		I, T
08	200		All
09	300		All
10	500		T, G
11	600		I, G
12	800		I, G
13	1000		All
14	1500		All
15	2000		All
16	2500		T
17	3000		All
18	5000		All
19	7000		T
20	8000		I
21	10,000		I, G
22	15,000		I, G
23	20,000		I, G

G = General Purpose, I = Industrial, T = Test Gauge

General Purpose Pressure Gauge	
Model	Description
PD202-BL0-4N-##	General Purpose Digital Pressure Gauge
PD202-BK0-4N-##	General Purpose Digital Pressure Gauge with Backlight

Precision Digital Test Pressure Gauge			
Model	Description	Accuracy	Options & Features
PD233-BK0-4N-##	FM Approved & CSA Certified Digital Test Pressure Gauge with Backlight	0.25% FS Total Error Band	Oxygen Service: Enter "X" before ## code Front Flange: Enter "G" in place of "N" Ordering Example: PD253-BK0-4GX06
PD243-BK0-4N-##		0.10% FS Total Error Band	
PD253-BK0-4N-##		0.05% FS Total Error Band	

Accessories	
Model	Description
PDA2000	ABS Carrying Case 3" Gauges
PDA2001	Protective Rubber Boot 3" Gauges
PDA2002	Protective Front Cover 3" Gauges
PDA2003	Throttle Screw (Standard Orifice 0.031") 4½" Gauge
PDA2004	Throttle Plug (Standard Orifice 0.013") 3" Gauges
PDA2005	Panel Mounting Kit 4½" Gauges
PDA2006	Gauge Pouch for PD202
PDA-SSTAG	Stainless Steel Tag
PDN-ADHSTAG	Laminated Paper Tag Label
PDN-CERTCAL3	Certificate of Calibration (as shipped)
PDN-CERTCAL4	Cert of Cal (as received & as shipped)
PDN-CERTCON2	Certificate of Conformance

THE Trident style meters are available with a wide variety of NEMA 4 & 4X enclosures to help them withstand the harsh operating environment of an industrial plant. Meters are mounted in the enclosure door so all programming and operational functions are available without opening the enclosure. The PDA2501-PDA2706 enclosures feature a hinged door. The larger enclosures (e.g. PDA2504-PDA2512) will also house other Precision Digital meters.

Low-Cost NEMA 4X Enclosure

The PDA2801 is a low-cost, compact, NEMA 4X enclosure that will house one Trident style meter. The cover is held in place with four screws. One ½" conduit hole is provided. PDA6845 pipe mounting kit is available for this enclosure.

ORDERING INFORMATION

Model	No. of Meters	Meter Type*	Overall Outside Dimensions (H x W x D)	Weight lb (kg)
PDA2801	1	C	3.1 x 6.3 x 3.7 (80 x 160 x 95)	0.58 (0.26)

SPECIFICATIONS

Dimensions: Inch (mm)

Rating: NEMA 4X, IP66

Material: Polycarbonate

Color: Gray



► **Model PDA2801**

Enclosures and meters are ordered and packaged separately.

Plastic NEMA 4X Enclosures

ORDERING INFORMATION

Model	No. of Meters	Meter Type*	Overall Outside Dimensions (H x W x D)	Inside Dimensions	Mounting Dimensions	Weight lb (kg)
PDA2501	1	C	7.7 x 6.4 x 5.1 (196 x 163 x 130)	4.9 x 4.9 x 4.5 (124 x 124 x 114)	6.75 x 4.0 (171 x 102)	1.6 (0.7)
PDA2502	2	C	9.7 x 6.4 x 5.1 (246 x 163 x 130)	6.7 x 4.9 x 4.5 (170 x 124 x 114)	8.75 x 4.0 (222 x 102)	2.2 (1.0)
PDA2503	3	C	11.7 x 8.4 x 5.1 (297 x 213 x 130)	8.7 x 6.9 x 4.5 (221 x 175 x 114)	10.75 x 6.0 (273 x 152)	3.0 (1.4)
PDA2504	4	A,B,C	13.7 x 12.4 x 7.1 (348 x 315 x 181)	10.7 x 10.9 x 6.5 (272 x 277 x 165)	12.75 x 10.0 (324 x 254)	5.0 (2.3)
PDA2505	5					
PDA2506	6					
PDA2512	2	A,B,C	15.7 x 12.4 x 7.1 (399 x 315 x 181)	12.7 x 10.9 x 6.5 (323 x 277 x 165)	14.75 x 10.0 (375 x 254)	5.5 (2.5)
PDA2507	7					
PDA2508	8	A,B,C	17.7 x 14.4 x 7.1 (450 x 366 x 180)	14.7 x 10.9 x 6.5 (373 x 277 x 165)	16.75 x 12.0 (425 x 305)	7.3 (3.3)
PDA2509	9					
PDA2510	10					
PDP2503	Sub-Panel for Plastic NEMA 4X Enclosure PDA2503.					
PDP2504	Sub-Panel for Plastic NEMA 4X Enclosures PDA2504 - PDA2506 and PDA2512.					

SPECIFICATIONS

Dimensions: Inch (mm)

Material: Thermoplastic

Color: Gray

Ratings: NEMA 4X

Approvals: UL & CSA

*Meter Types:

1. Type A (e.g. PD690) meter bezel dimensions: 4.25 x 2.3 x 0.6 (108 x 59 x 15), depth behind panel: 4.7 (119) not including clearance for wiring.
2. Type B (e.g. PD680) meter bezel dimensions: 3.82 x 1.88 x 0.21 (97 x 48 x 5), depth behind panel: 5.1 (130) not including clearance for wiring.
3. Type C (e.g. PD765) meter bezel dimensions: 4.68 x 2.45 x 0.6 (119 x 62 x 15), depth behind panel: 3.6 (91) not including clearance for wiring.

► **Model PDA2501**

Enclosures and meters are ordered and packaged separately.



Trident Enclosures



► **Model PDA2706**



► **Model PDA2601**

NEMA 4 & NEMA 4X Steel & Stainless Steel Enclosures

ORDERING INFORMATION

ORDERING INFORMATION

Model (Stainless)	Model (Steel)	No. of Meters	Meter Type*	Overall Outside Dimensions (H x W x D)	Mounting Dimensions	Weight lb (kg)
PDA2601	PDA2701	1	C	7.5 x 6.9 x 4.0 (191 x 176 x 89)	6.75 x 4.0 (171 x 102)	3.8 (1.7)
PDA2602	PDA2702	2	C	9.5 x 6.9 x 3.5 (241 x 176 x 89)	8.75 x 4.0 (222 x 102)	5.1 (2.3)
PDA2603	PDA2703	3	C	11.5 x 8.9 x 4.0 (292 x 227 x 102)	10.75 x 6.0 (273 x 152)	7.9 (3.6)
PDA2604	PDA2704	4	A,B,C	13.5 x 12.9 x 6.0 (343 x 329 x 152)	12.75 x 10.0 (324 x 254)	13.9 (6.3)
PDA2605	PDA2705	5				
PDA2606	PDA2706	6				
PDP2603	PDP2503	Sub-Panel for Stainless Steel and Painted Steel Enclosures PDA2603 and PDA2703.				
PDP2604	PDP2504	Sub-Panel for Stainless Steel and Painted Steel Enclosures (4-6 Meters).				

SPECIFICATIONS

All dimensions are in inches and millimeters (mm).

Material: Model PDA2701: 16-gauge steel; PDA2702-2706: 14-gauge steel
Model PDA2601: 16-gauge, Type 304 SS; PDA2602-2606: 14-gauge, Type 304 SS

Rating: Steel Enclosures: UL 50 Type 4; NEMA 4; CSA Type 4; IP66
Stainless Steel Enclosures: UL 50 Type 4, 4X, NEMA 4X; CSA Type 4X; IP66

Color: Steel Enclosures: Gray; Stainless Steel: unpainted, smooth brushed finish



► **Model PDA2446**
Explosion-Proof Enclosures

See page 146 for complete specifications.

*Meter Types:

1. Type A (e.g. PD690) meter bezel dimensions: 4.25 x 2.3 x 0.6 (108 x 59 x 15), depth behind panel: 4.7 (119) not including clearance for wiring.
2. Type B (e.g. PD680) meter bezel dimensions: 3.82 x 1.88 x 0.21 (97 x 48 x 5), depth behind panel: 5.1 (130) not including clearance for wiring.
3. Type C (e.g. PD765) meter bezel dimensions: 4.68 x 2.45 x 0.6 (119 x 62 x 15), depth behind panel: 3.6 (91) not including clearance for wiring.

Custom Engraved Labels & SS Tags

Custom engraved labels are available to identify individual meters; an overall enclosure label is also available for most of the enclosures. Labels are supplied with self-adhesive backing for easy mounting.

See pages 142-144 for Ordering Information.

Enclosures and meters are ordered and packaged separately.

Nova Controller Enclosures

THE Nova Process & Temperature Controllers are available with a wide variety of enclosures. In some models, the controllers are mounted in the enclosure door so all programming and operational functions are available without opening the enclosure. In other models, the controllers are mounted inside the enclosure for maximum environmental protection.



► **Model PDA2706**

Enclosures for 1/8 DIN (H) Door Mounted

Model (Plastic)	Model (Stainless)	Model (Steel)	No. of Controllers
PDA2501			1
PDA2502			2
PDA2503			3
PDA2504	PDA2604	PDA2704	4
PDA2505	PDA2605	PDA2705	5
PDA2506	PDA2606	PDA2706	6
PDA2512			2
PDA2507			7
PDA2508			8
PDA2509			9
PDA2510			10

See page 139 for complete specifications.

NEMA 4X Enclosures for Internally Mounted Controllers

Model	No. of 1/8 DIN	No. of 1/4 DIN
PDA2407	1	
PDA2408	2	1
PDA2409	3	
PDA2410	4	
PDA2414	2*	
*One 1/8 DIN (H) and One 1/8 DIN (V)		

See page 145 for complete specifications.



► **Model PDA2408**

Explosion-Proof Enclosures for Internally Mounted Controllers

Model	No. of 1/8 DIN	No. of 1/4 DIN
PDA2444	1	
PDA2445	2 (H)	1

See page 146 for complete specifications.

Notes:

1. Enclosures for other DIN sizes are available upon request.
2. Contact the Factory for additional information.

Enclosures and controllers are ordered and packaged separately.



► **Model PDA2445**

ACCURACY ■ RELIABILITY ■ CONVENIENCE

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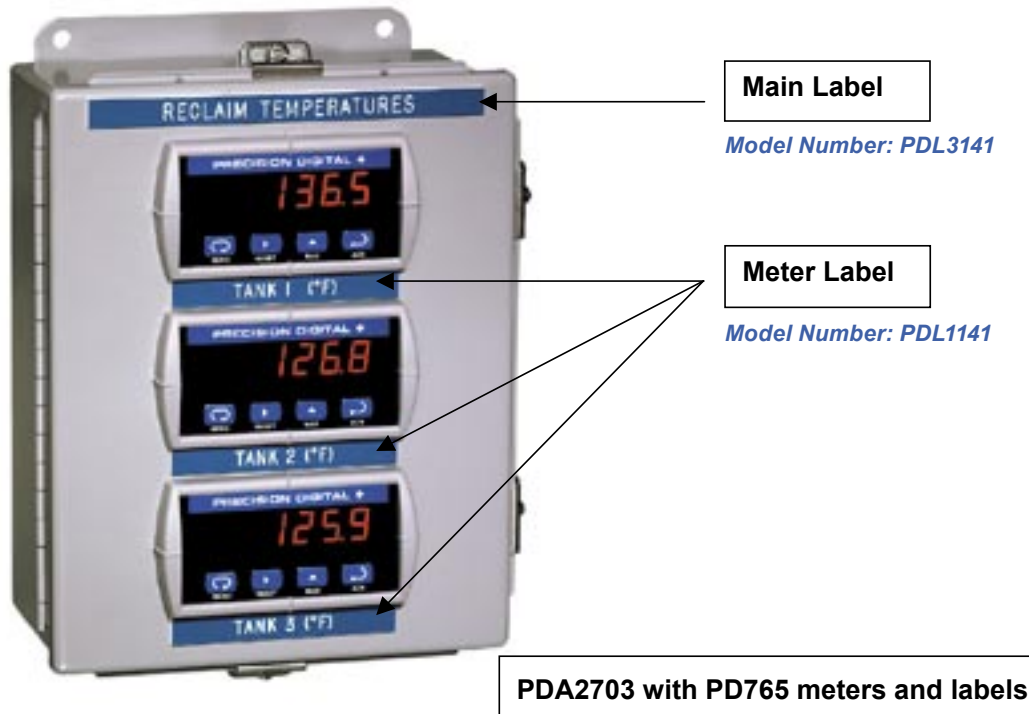
Custom Engraved Labels & Tags

Ordering Information

Select Label Model Number per table below

Model Number	Dimensions A x B	Rows of Text	Characters per Row (maximum)	Character Size	Where Used	
					Meter Label	Main Label
PDL1111	4 x 0.20 (102x5)	1	24	0.15 (3.8)	PDA2801	
PDL1121	4 x 0.25 (102x6)	1	20	0.20 (5.0)		PDA2801
PDL1141	4 x 0.50 (102x13)	1	16	0.25 (6.3)	PD655, PD755, PDA2501-2706	
PDL1241		2	30	0.13 (3.3)		
PDL2141	5 x 0.50 (127x13)	1	20	0.25 (6.3)		PD655, PD755, PDA2502
PDL2151	5 x 0.90 (127x23)	1	12	0.50 (12.7)		PDA2501, PDA2701, PDA2702
PDL2241	5 x 0.50 (127x13)	2	30	0.13 (3.3)		PD655, PD755, PDA2502
PDL2251	5 x 0.90 (127x23)	2	20	0.22 (5.5)		PDA2501, PDA2701, PDA2702
PDL3141	7 x 0.50 (178x13)	1	30	0.30 (7.6)		PDA2703
PDL3241		2	30	0.13 (3.3)		
PDL4161	11 x 1.0 (279x25)	1	26	0.50 (12.7)		PDA2504-2506, PDA2704-2706
PDL4261		2	30	0.30 (7.6)		
PDL5131	12 x 0.4 (305x10)	1	30	0.30 (7.6)	PD650, PD757	PD650, PD757

Note: All dimensions are in inches and millimeters (mm).



For information on Laminated Paper Tags go to www.predig.com and download form SA-DP0020-FM01.

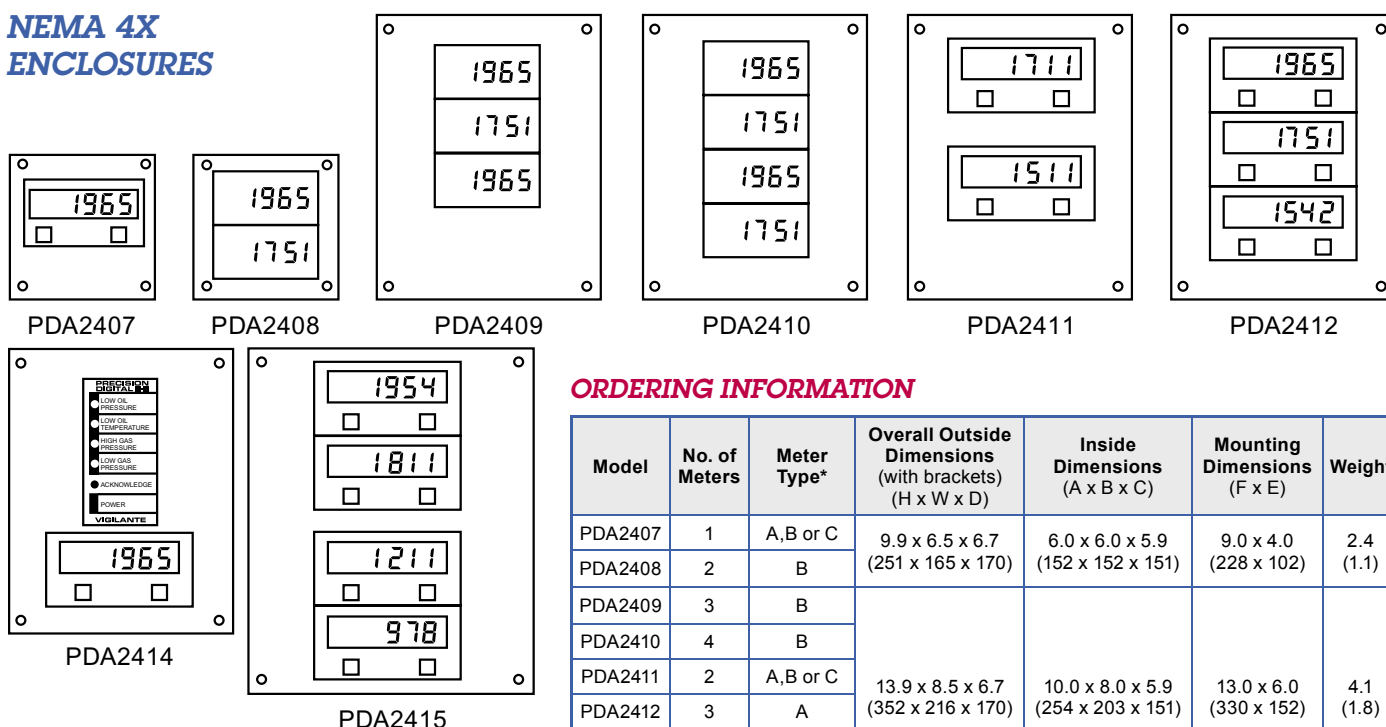
NEMA 4X Enclosures



THESE NEMA 4X enclosures provide a high degree of protection against the harsh operating environment of an industrial plant. The Precision Digital meters are mounted inside the enclosure for maximum protection. The clear cover is held in place with four screws.

► Model PDA2407

NEMA 4X ENCLOSURES



ORDERING INFORMATION

Model	No. of Meters	Meter Type*	Overall Outside Dimensions (with brackets) (H x W x D)	Inside Dimensions (A x B x C)	Mounting Dimensions (F x E)	Weight
PDA2407	1	A, B or C	9.9 x 6.5 x 6.7 (251 x 165 x 170)	6.0 x 6.0 x 5.9 (152 x 152 x 151)	9.0 x 4.0 (228 x 102)	2.4 (1.1)
PDA2408	2	B				
PDA2409	3	B				
PDA2410	4	B				
PDA2411	2	A, B or C	13.9 x 8.5 x 6.7 (352 x 216 x 170)	10.0 x 8.0 x 5.9 (254 x 203 x 151)	13.0 x 6.0 (330 x 152)	4.1 (1.8)
PDA2412	3	A				
PDA2414	2	1 Type A, B or C; 1 PD141				
PDA2415	4	A	15.9 x 10.5 x 7.7 (403 x 267 x 195)	12.0 x 10.0 x 6.9 (305 x 254 x 176)	15.0 x 8.0 (381 x 203)	5.6 (2.5)

*Meter Types:

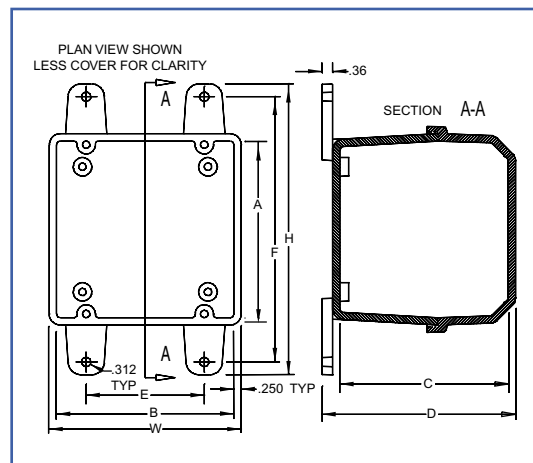
1. Type A (e.g. PD690) meter bezel dimensions: 4.25 x 2.3 x 0.6 (108 x 59 x 15), depth behind panel: 4.7 (119) not including clearance for wiring.
2. Type B (e.g. PD680) meter bezel dimensions: 3.82 x 1.88 x 0.21 (97 x 48 x 5), depth behind panel: 5.1 (130) not including clearance for wiring.
3. Type C (e.g. PD765) meter bezel dimensions: 4.68 x 2.45 x 0.6 (119 x 62 x 15), depth behind panel: 3.6 (91) not including clearance for wiring.

Notes:

1. All dimensions are in inches and millimeters (mm), weight is in pounds and (kg)
2. Enclosure material: Thermoplastic with clear polycarbonate cover
3. Enclosure rating: UL, CSA, NEMA 4X
4. Pipe mounting kit available for PDA2407 & PDA2408, see page 150 for details.

Enclosures and meters are ordered and packaged separately.

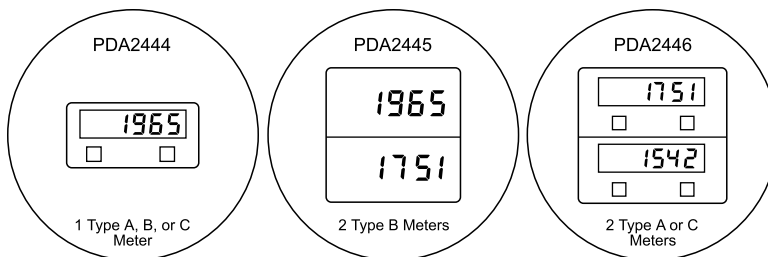
NEMA 4X Enclosure Dimensions



Explosion-Proof Enclosures



Model PDA2446



Explosion-Proof Enclosures

Notes:

- Enclosures with one 3/4" NPT conduit hole are standard (CH-L).
- Enclosures with two or more conduit holes are special order. User to specify location of holes (see table). Special order enclosures are non-cancelable and non-returnable.

Meter Types:

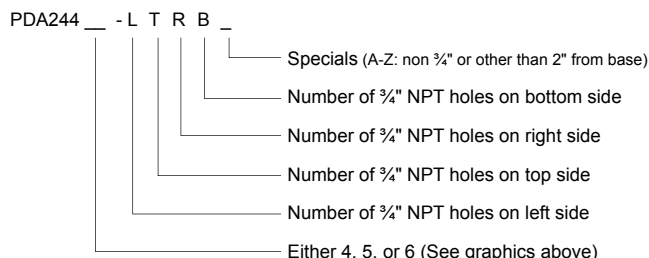
- Type A (e.g. PD690) meter bezel dimensions: 4.25 x 2.3 x 0.6 (108 x 59 x 15), depth behind panel: 4.7 (119) not including clearance for wiring.
- Type B (e.g. PD680) meter bezel dimensions: 3.82 x 1.88 x 0.21 (97 x 48 x 5), depth behind panel: 5.1 (130) not including clearance for wiring.
- Type C (e.g. PD765) meter bezel dimensions: 4.68 x 2.45 x 0.6 (119 x 62 x 15), depth behind panel: 3.6 (91) not including clearance for wiring.

Note: All dimensions are in inches and millimeters (mm)

ORDERING INFORMATION

Model Number	Conduit Hole Location
PDA244(4,5 or 6)-1000	CH-L (Standard Product)
PDA244(4,5 or 6)-1010	CH-L & R
PDA244(4,5 or 6)-1110	CH-L, T & R
PDA244(4,5 or 6)-1111	CH-L, T, R & B
PDA244(4,5 or 6)-LTRB (A-Z)	Special (requires separate drawing & authorization form – please call)

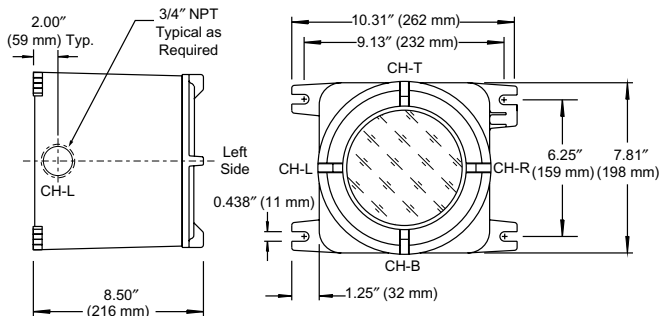
Enclosures and meters are ordered and packaged separately.



Notes:

- Pipe mounting kit available, see page 150 for details.
- Up to 4 conduit holes per side may be requested.

Explosion-Proof Enclosures Dimensions



Notes:

- UL & C-UL Classified
- NEMA 4, 7 & 9, NEC Class I, Groups C & D; Class II, Groups E, F, & G; Class III
- Weight: 17 lb (7.7 kg)
- Material: Cast aluminum 0.3% max copper content; glass window

HAZARDOUS LOCATIONS

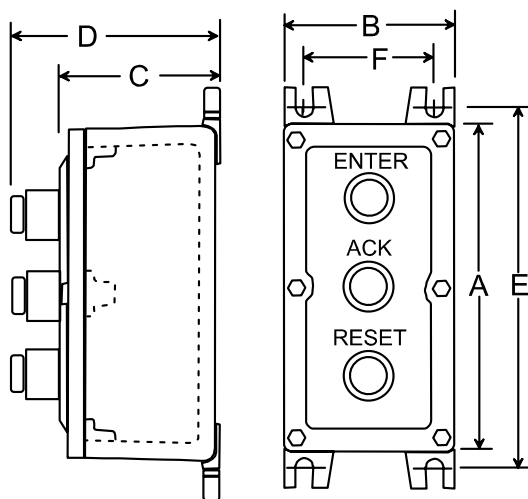
Apparatus Grouping

Typical Gas/ Dust/Fibers/ Flyings	US (NEC) Canada (CEC)	US (NEC) Canada (CEC) IEC, CENELEC
Acetylene	Class I, Group A	Group IIC
Hydrogen	Class I, Group B	
Ethylene	Class I, Group C	Group IIB
Propane	Class I, Group D	Group IIA
Methane	Gaseous Mines*	Group I*
Magnesium	Class II, Group E	IEC, CENELEC do not subdivide by material types
Coal	Class II, Group F	
Grain	Class II, Group G	
Cotton	Class III	
*Not within scope of NEC or CEC		
Class I: gas/vapor/mist, Class II: Dust, Class III: fibers/flyings		

Explosion-Proof Enclosures

THESE Explosion-Proof Control Stations can be used with explosion-proof meters or with digital panel meters that are mounted in explosion-proof enclosures. The Control Stations contain either 1, 2, or 3 switches that can be connected to terminals on Precision Digital meters to control various functions.

The ENTER button is used to program the meter.
The ACK button is used to acknowledge the relays.
The RESET button is used to reset the total.



Explosion-Proof Control Stations Dimensions

No. of Switches	Dimensions in Inches (mm)						Weight lb (kg)	Std Cond Size
	A	B	C	D	E	F		
1	4.5 (114)	4.5 (114)	4.19 (106)	6.19 (157)	5.5 (140)	3.25 (83)	4.5 (2.0)	3/4"
2	7.0 (178)	4.5 (114)	4.19 (106)	6.19 (157)	8.0 (203)	3.25 (83)	6.0 (2.7)	3/4"
3	8.0 (203)	4.5 (114)	4.19 (106)	6.19 (157)	9.0 (229)	3.25 (83)	6.75 (3.1)	3/4"

Control Stations have conduit openings centered on top and bottom.

ORDERING INFORMATION

Model Number	No. of Switches	Label
PDA2451-E	1	ENTER
PDA2451-R	1	RESET
PDA2451-A	1	ACK
PDA2452-ER	2	ENTER & RESET
PDA2452-EA	2	ENTER & ACK
PDA2453-EAR	3	ENTER, ACK & RESET

Notes:

1. UL Listed & CSA Certified
2. NEMA 7 & 9
3. NEC Class I, Groups C & D; Class II, Groups E, F, & G
4. Material: Cast aluminum, 0.3% max copper content

ENVIRONMENTAL PROTECTION RATINGS

NEMA/CSA/UL Enclosure Types

Type	Location	Abbreviated Definition
1	Indoor	General purpose
2	Indoor	Protection against angled dripping water
3, 3R, 3S	Indoor/Outdoor	Protection against rain, snow
4, 4X	Indoor/Outdoor	Protection against rain, snow, hose directed water
5	Indoor/Outdoor	Protection against angled dripping water, dust, fibers, flyings
6	Indoor/Outdoor	Protection against temporary submersion
6P	Indoor/Outdoor	Protection against prolonged submersion
7	Indoor	Class I Div 1, Groups A, B, C, & D hazardous classified locations
9	Indoor	Class II Div 1, Groups E, F, & G hazardous classified locations
12, 12X	Indoor	Protection against circulating dust, fibers, flyings
13	Indoor	Protection against circulating dust, fibers, flyings, seepage

Ingress Protection (IP) Codes

First Numeral Protection Against Solid Bodies		Second Numeral Protection Against Water	
0	No protection	0	No protection
1	Objects greater than 50 mm	1	Vertically dripping
2	Objects greater than 12.5 mm	2	Angled dripping (15° tilted)
3	Objects greater than 2.5 mm	3	Spraying
4	Objects greater than 1.0 mm	4	Splashing
5	Dust-protected	5	Jetting
6	Dust-tight	6	Powerful jetting
		7	Temporary immersion
		8	Continuous immersion

ConsoliDator® Enclosures & Accessories

SPECIFICATIONS

Overall Dimensions: 15.00" x 15.75" x 7.30" (W x H x D)
(381 mm x 400 mm x 185 mm)

Inside Dimensions: 12.00" x 14.00" x 6.00" (W x H x D)
(305 mm x 355 mm x 152 mm)

Weight: 9 lb (4.1 kg), PDA2901 only

Material: Enclosure and Cover: Polycarbonate

Front Panel: Painted aluminum

Cover Latches: Stainless steel

Optional Sub-Panel: Anodized aluminum

Color: Enclosure: Light gray

Cover: Transparent

Front Panel: Blue

Sub-Panel: PDP2901: Black; PDP2902: unpainted

Ratings: NEMA 4X UL & C-UL Listed Enclosure

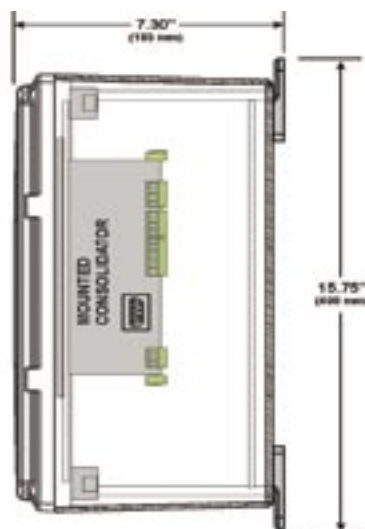
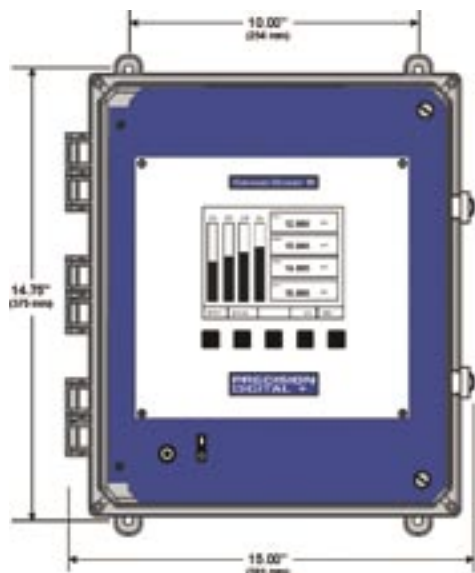
On/Off Switch: 10 A @ 125 V, 6 A @ 250 V

Fuse: 5 A @ 250 V

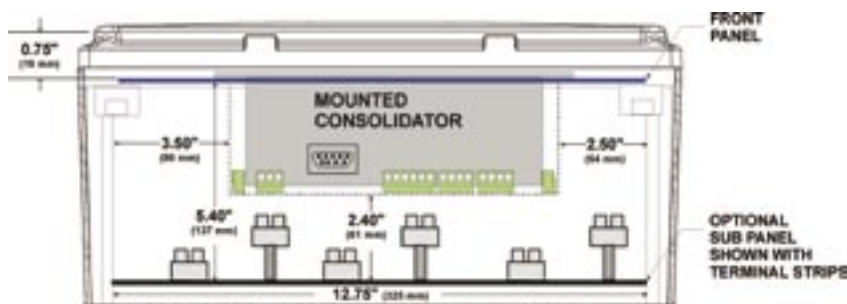


► **Model PDA2901**

Overall & Mounting Dimensions



Clearance Inside Enclosure



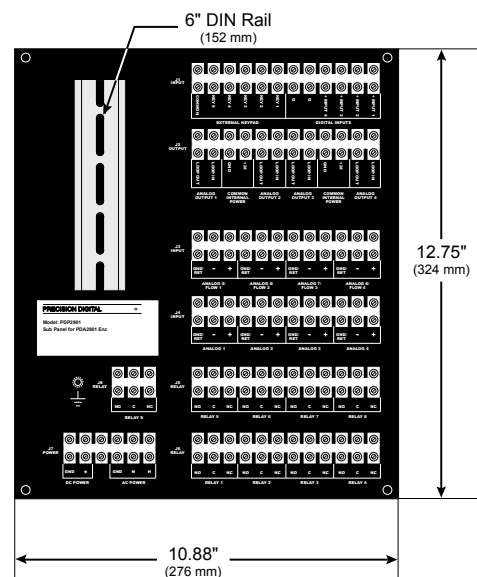
ConsoliDator® Enclosures & Accessories

Hinged Front Mounting Panel



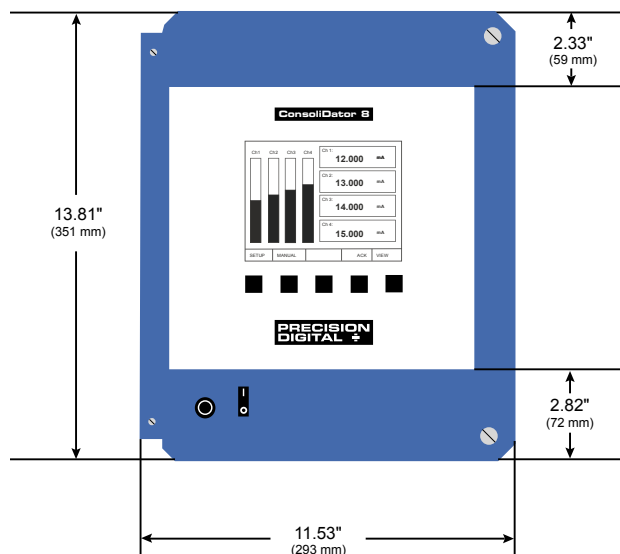
PDA2901 shown with optional sub-panel with terminal strips.

PDP2901 Sub-Panel



- Terminals accept field wire sizes 8 to 22 AWG
- Panel silk-screen shows all connections

Front Panel Dimensions



Custom engraved plastic labels are available from Precision Digital at an additional charge. See pages 142, 143 for complete details.

PDP2902 Sub-Panel

Dimensions: 10.88" (276 mm) x 12.75" (324 mm)

Pipe Mounting Kit



The optional PDA6901 pipe mounting kit provides a convenient method to mount the PDA2901 enclosure to a 2" diameter pipe.

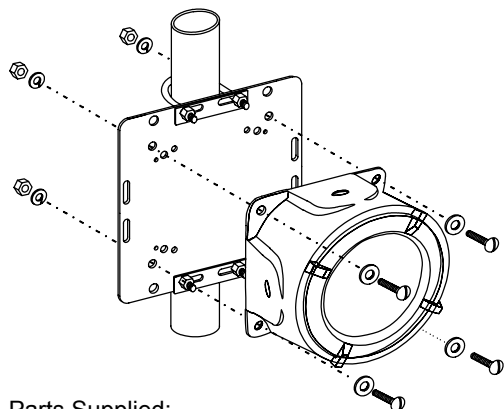
ORDERING INFORMATION

Model	Description
PDA2901	NEMA 4X Enclosure for PD941 or PD981
PDA6901	2" Pipe Mounting Kit for PDA2901 Enclosure
PDP2901	Sub-Panel with Terminal Strips for PDA2901 Enclosure
PDP2902	Sub-Panel without Terminal Strips for PDA2901 Enclosure
PDLXXXX	Engraved Plastic Label (see pages 142, 143)

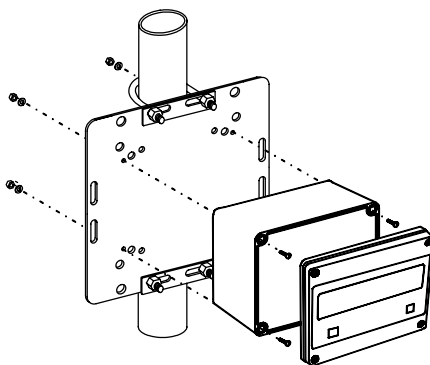
Pipe Mounting Kits

PDA6545 2" Pipe Mounting Kit

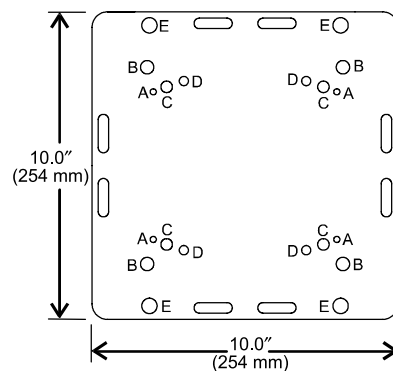
PD656, PD756 Example
Shown Here



PD655, PD755 Example
Shown Here



Mounting Plate
Hole Pattern



Parts Supplied:

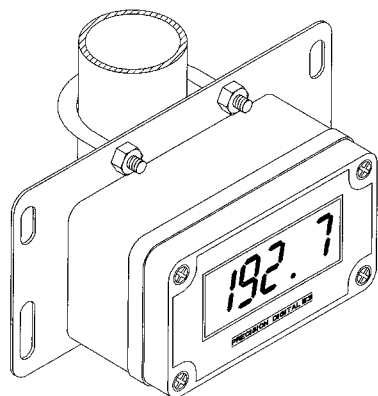
1. One mounting plate
2. Two 2" U-bolt kits
3. Four $\frac{5}{16}$ " - 18 x $1\frac{1}{4}$ " screws
4. Four $\frac{5}{16}$ " - 18 hex nuts
5. Four $\frac{5}{16}$ " flat washers
6. Four $\frac{5}{16}$ " lockwashers
7. Four #6 - 32 x $\frac{3}{4}$ " screws
8. Four #6 - 32 hex nuts
9. Four #6 - 32 lockwashers

Hardware Usage Table (Refer to Parts Supplied)

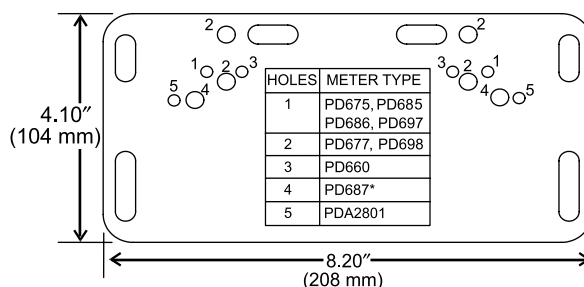
Meter Type	Holes	1.	2.	3.	4.	5.	6.	7.	8.	9.
PD655, PD755	A	X	X					X	X	X
PD656, PD756	B	X	X	X	X	X	X			
PD687*	C	X	X	X	X		X			
PDA2407, PDA2408	D	X	X	Hardware Supplied with Enclosure						
PDA2444-PDA2446	E	X	X	X	X	X	X			

*Note: PDA6545 provides four mounting holes for PD687; PDA6845 provides two mounting holes.

PDA6845 2" Pipe Mounting Kit



Mounting Plate
Hole Pattern



Parts Supplied:

1. One mounting plate
2. One 2" U-bolt kit
3. Two $\frac{1}{4}$ " - 20 x 1" screws
4. Two $\frac{1}{4}$ " - 20 hex nuts
5. Two #6 - 32 hex nuts
6. Two #6 - 32 x $\frac{3}{4}$ " screws
7. Two #6 lockwashers
8. Two $\frac{1}{4}$ " lockwashers

*Note:

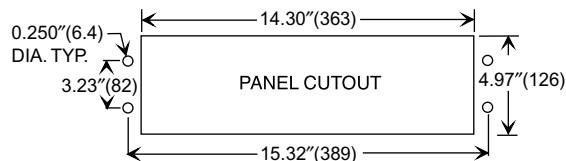
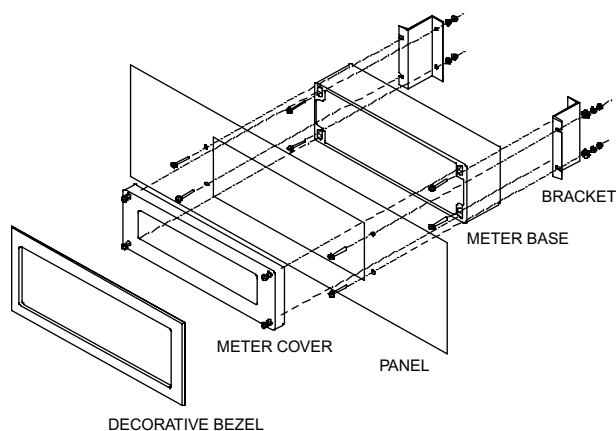
PDA6845 provides two mounting holes for PD687; PDA6545 provides four mounting holes.

ORDERING INFORMATION

Model	Description	Mounting Holes	Weight lb (kg)
PDA6545	2" Pipe Mounting Kit Zinc Plated Steel	4	3.0 (1.4)
PDA6545-SS	2" Pipe Mounting Kit Stainless Steel	4	3.0 (1.4)
PDA6845	2" Pipe Mounting Kit Zinc Plated Steel	2	1.1 (0.5)
PDA6845-SS	2" Pipe Mounting Kit Stainless Steel	2	1.1 (0.5)

Panel Mounting Kits

PDA6504 Panel Mounting Kit for PD650 & PD757



Instructions:

1. Drill four holes in panel and make panel cutout as shown. Tolerance for all dimensions is ± 0.01 (0.25)
2. Secure the two side mounting brackets to the meter base using the supplied hardware.
3. Mount this assembly to the rear of the panel using supplied hardware.
4. Secure the meter cover to the base.
5. Attach decorative bezel to the panel.

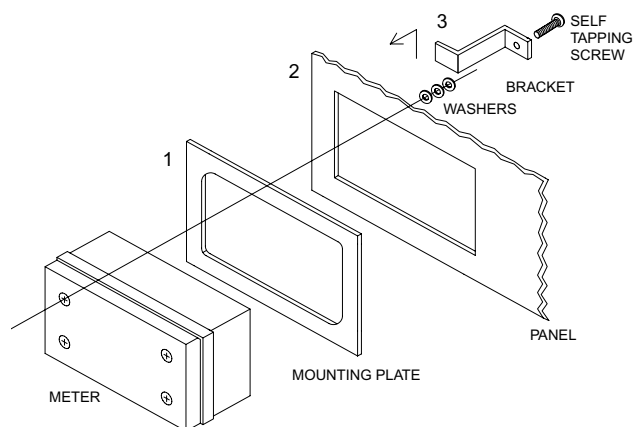
Notes:

1. Allowable panel thickness: 0.06 - 0.25 (1.5 - 6.4). Longer bracket screws may be used for panel thickness up to 0.5 (12.7).
2. Mounting space required: 7 x 17.5 x 4 (178 x 445 x 102) (H x W x D). Meter cover extends 0.8 (20) - X from the surface of the panel, where X equals the thickness of the panel.
3. This panel mounting kit is not intended to provide waterproof protection to the panel.
4. All dimensions are in inches and millimeters (mm).

Parts Supplied:

1. Two angle brackets
2. One self-adhesive decorative bezel
3. Eight #12-24 x $\frac{3}{4}$ " screws
4. Eight #12 lockwashers
5. Eight #12-24 hex nuts
6. Four #12 flat washers

PDA6554, PDA6604, PDA6844 Panel Mounting Kits



Instructions:

1. Insert the meter through the mounting plate.
2. Mount assembly on panel.
3. Secure with 4 brackets and 4 screws at corners of the meter. Use washers as needed to allow for panel thickness.

Notes:

1. Mounting brackets require 0.8 (20) clearance on either top or side of meter for installation.
2. Tolerance for panel cutout dimensions are $+0.01/-0.00$ ($+0.3/-0.0$).
3. Panel mounting kits are not intended to provide waterproof protection to the panel.
4. All dimensions are in inches and millimeters (mm).

Parts Supplied:

1. One mounting plate (ABS plastic)
2. Four self tapping screws
3. Four mounting brackets
4. Twelve washers

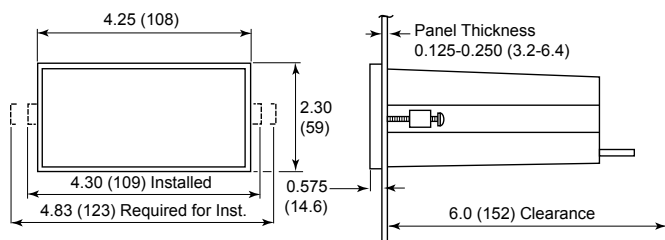
ORDERING INFORMATION

Model	Panel Cutout Required	Mounting Plate Overall Dimensions	Allowable Panel Thickness	Weight lb (kg)	Meter Type
PDA6504	14.30 x 4.97 (363 x 126)	16.28 x 6.98 x 0.25 (414 x 177 x 6)	0.060 - 0.25 (1.5 - 6.4)	1.6 (0.7)	PD650, PD757
PDA6554	6.62 x 5.43 (168 x 138)	7.57 x 6.40 x 0.125 (192 x 163 x 3)	0.060 - 0.125 (1.5 - 3.2)	0.2 (0.1)	PD655, PD755
PDA6604	4.25 x 3.07 (108 x 78)	5.24 x 4.05 x 0.125 (133 x 103 x 3)		0.2 (0.1)	PD660
PDA6844	5.45 x 3.08 (138 x 78)	6.43 x 4.05 x 0.125 (163 x 103 x 3)		0.2 (0.1)	PD675, PD685 PD686, PD697

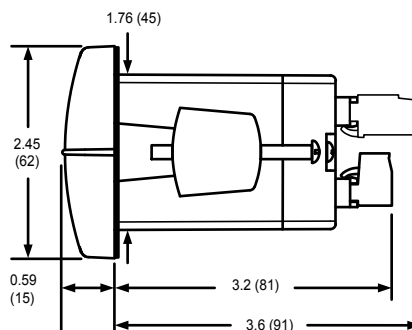
Mounting Dimensions

Units: Inch (mm)

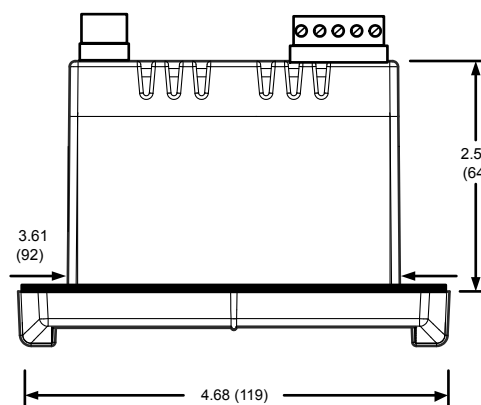
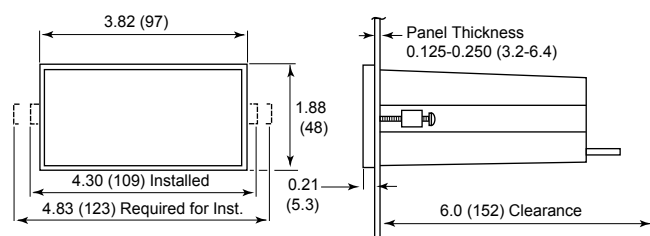
PD118, PD673, PD690-PD696, PD750-PD752



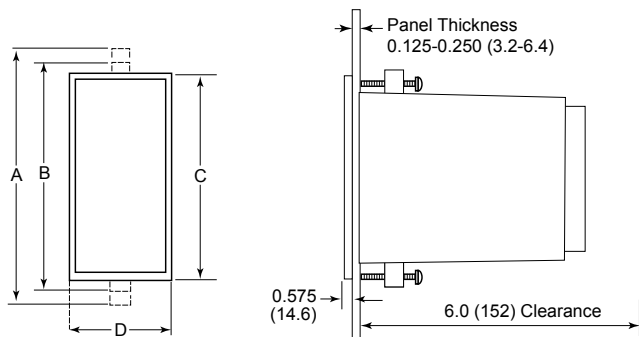
PD602, PD644, PD740, PD765, PD865



PD680



PD141AFO



Notes:

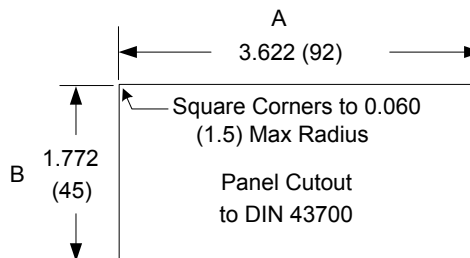
1. Panel cutout required: 1.772 x 3.622 (45 x 92)
2. Panel thickness: 0.040 - 0.250 (1.0 - 6.4)
3. Mounting brackets lock in place for easy mounting

- A: 4.83 (123) required for installation
B: 4.30 (109) installed
C: 4.25 (108)
D: 2.30 (59)

Notes:

1. Panel cutout required: 3.622 x 1.772 (92 x 45) 1/8 DIN
2. Panel thickness: 0.125 - 0.250 (3.2 - 6.4)
3. Clearance: allow 6 (152) behind panel

1/8 DIN Panel Cutout



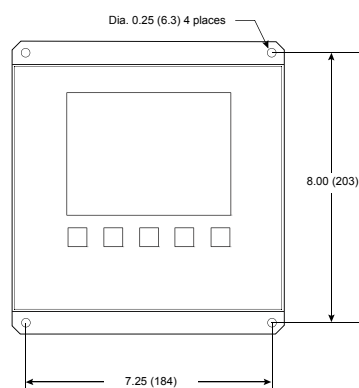
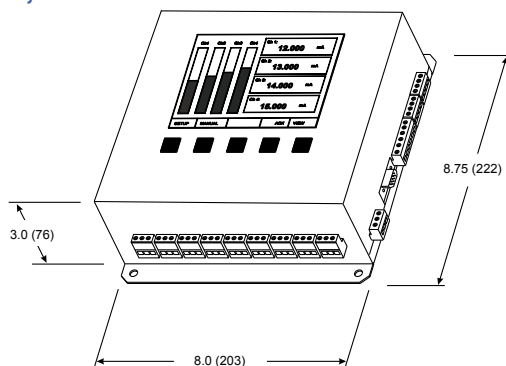
Tolerances:

- A: +0.032 (+0.8)
-0.000 (-0.0)
B: +0.024 (+0.6)
-0.000 (-0.0)

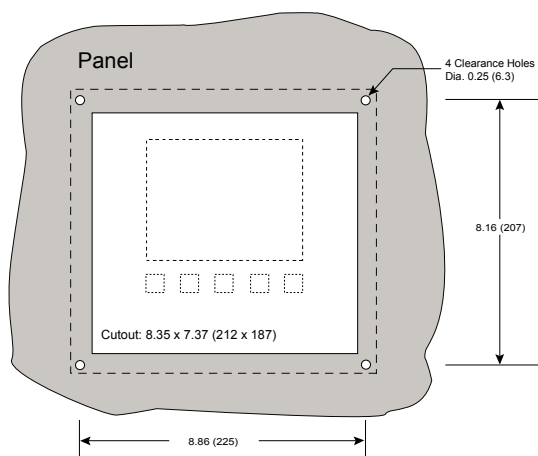
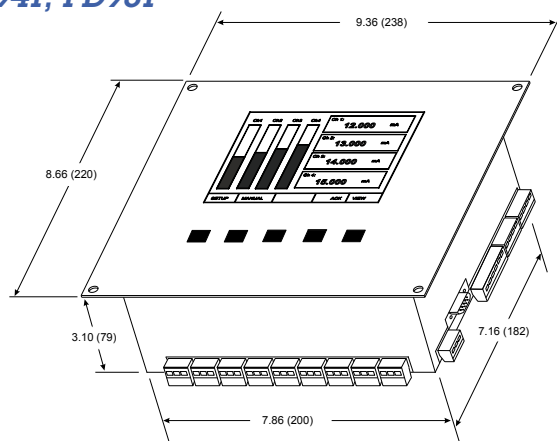
Mounting Dimensions

Units: Inch (mm)

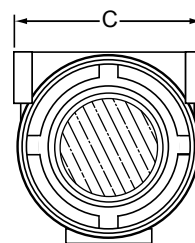
PD940, PD980



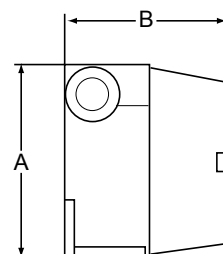
PD941, PD981



PD661

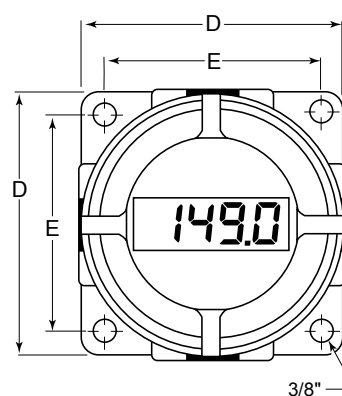


A: 4.75 (121)
B: 3.75 (95)



C: 4.5 (114)

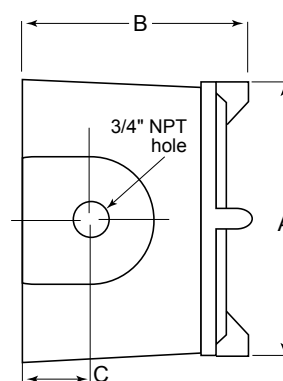
PD687



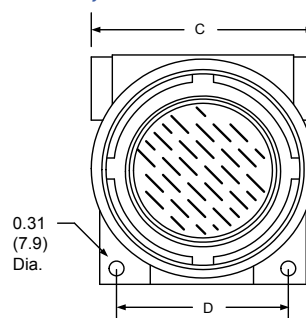
A: 6.34 (161)
B: 5.13 (130)
C: 1.5 (38)

D: 6.25 (159)
E: 5.13 (130)

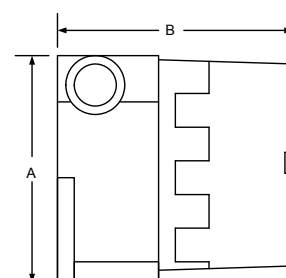
User may mount the display so conduit hole is oriented vertically or horizontally



PD677, PD698



A: 5.63 (143)
B: 5.63 (143)

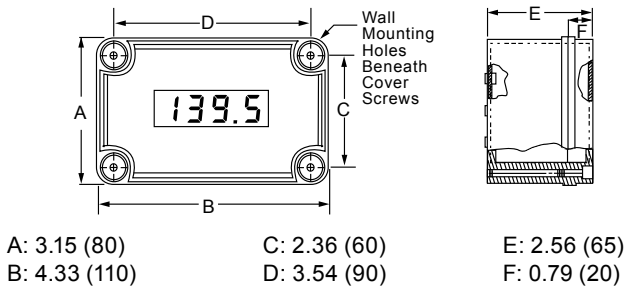


C: 5.44 (138)
D: 4.06 (103)

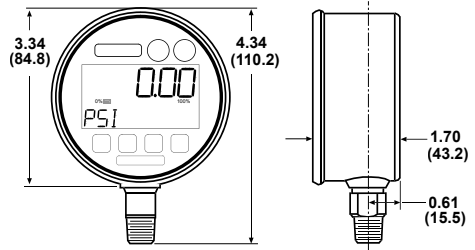
Mounting Dimensions

Units: Inch (mm)

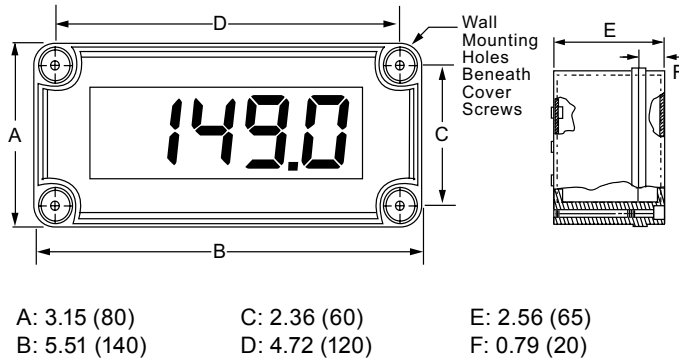
PD660



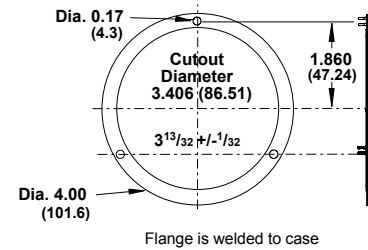
PD213, PD233, PD243, PD253



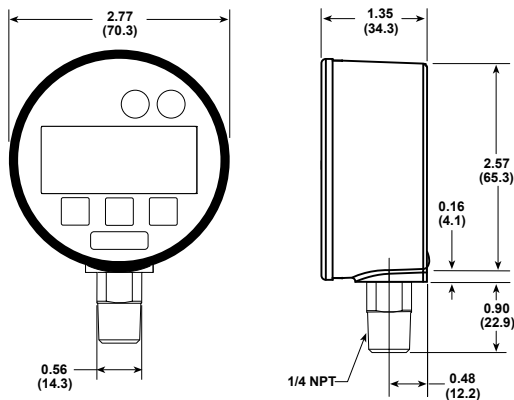
PD675, PD685, PD686, PD697



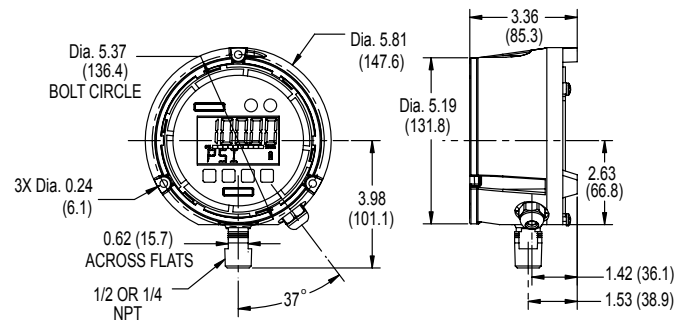
Panel Mounting Dimension



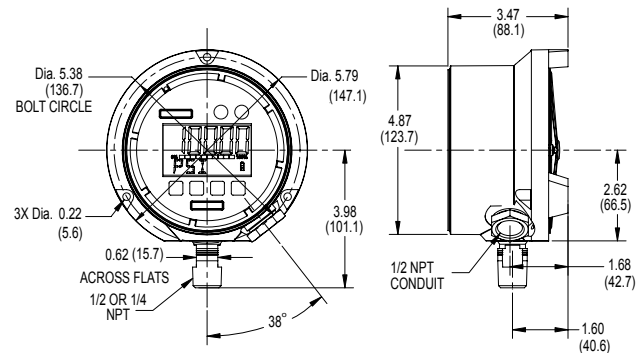
PD202



PD214



PD224

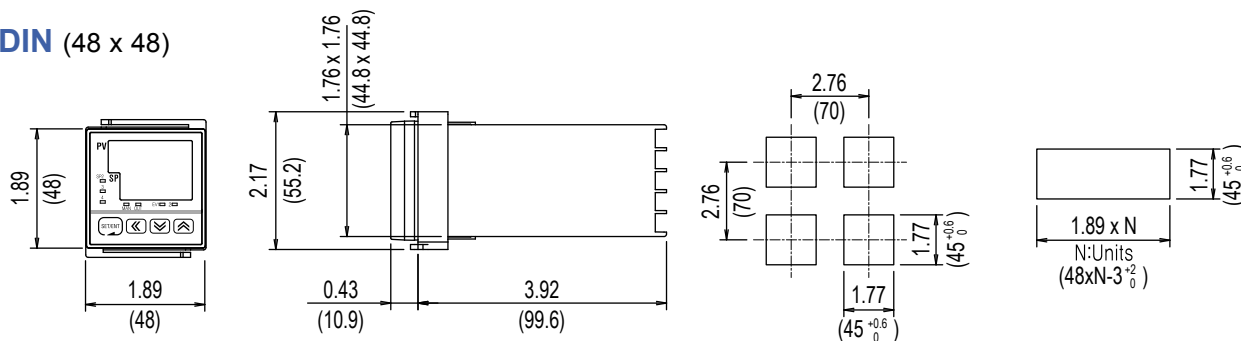


Mounting Dimensions

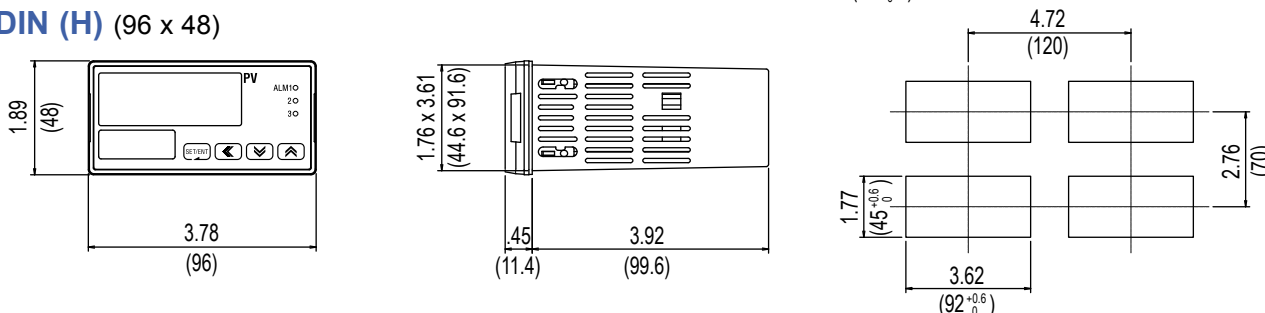
Units: Inch (mm)

PD540 - PD578

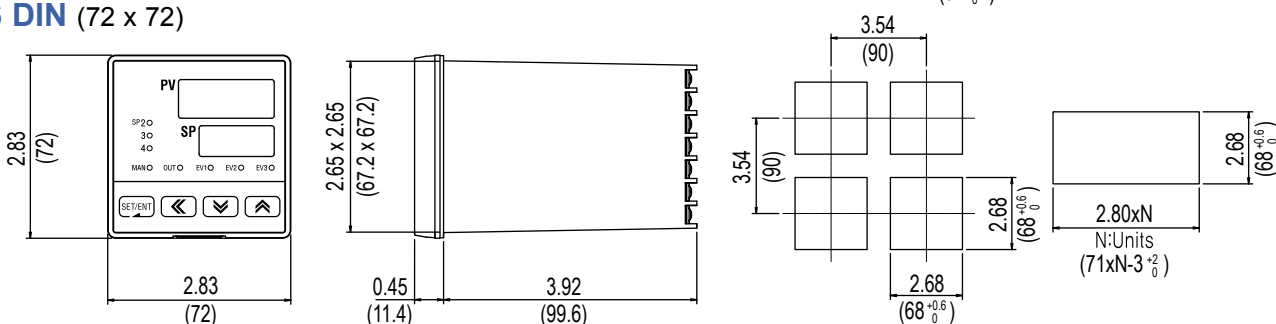
1/16 DIN (48 x 48)



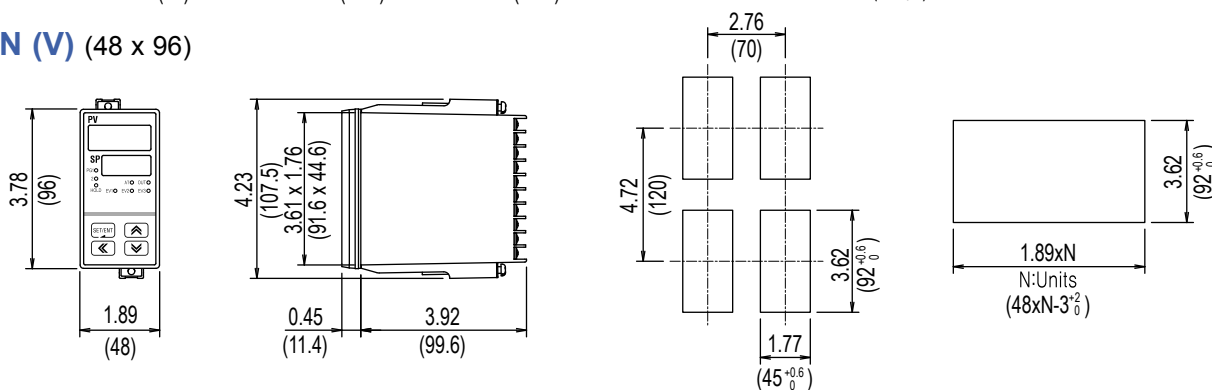
1/8 DIN (H) (96 x 48)



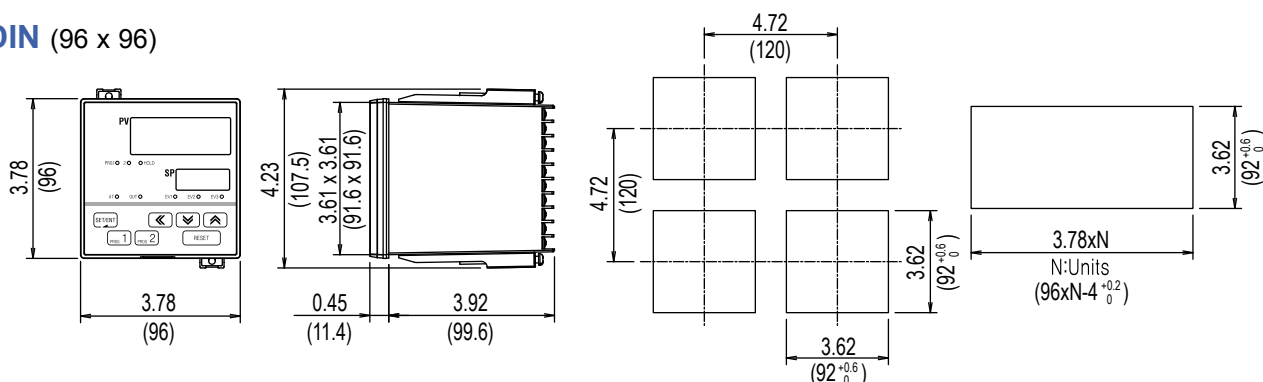
3/16 DIN (72 x 72)



1/8 DIN (V) (48 x 96)



1/4 DIN (96 x 96)



ACCURACY ■ RELIABILITY ■ CONVENIENCE

**PRECISION
DIGITAL**

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PD677	Loop-powered 4½ digit explosion-proof	111	65
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Setup, Calibration & Warranty Services

Setup

Time is Money! By ordering the setup services Precision Digital can help you save both. Setup services allow the instrument to be taken out of the box and placed right into your system with all the scaling and settings such as alarm conditions preprogrammed to the values you choose. Precision Digital has developed comprehensive setup sheets for most of its products to make this a simple task for you.

Calibration

If you require documented calibration for ISO compliance and validation purposes, Precision Digital can help. Calibrations are performed in accordance with the Precision Digital Corporation Quality Management System and comply with the requirements of ISO 9001:2000 and ANSI/NCSL Z540-1-1994. All standards are traceable to NIST.

Calibration Certificates are provided by our ISO 9001:2000 calibration laboratory and feature:

- Calibration to user test points
- NIST traceable Certificate of Calibration
- Calibration sticker with validity date
- Fast turnaround service
- Notification when instruments are due for calibration

We recommend annual recertification of your instruments for dependable accuracy.

Lifetime Calibration*

Precision Digital also offers lifetime calibration for most of its products. There are three levels of service that can be ordered to suit your needs. All levels include annual recertification of your instrument and data tracking. For long-term reference, your instrument serial numbers and associated calibration data are kept in our database. The lifetime history and data tracking lets you keep an accurate record of the instrument. This is important for some quality assurance systems and allows the spotting of performance trends in the instrument. Lifetime Calibration includes Certificate of Calibration.

Lifetime Red (PDN-LTCAL): We will calibrate and ship the instrument back the same day that we receive it (must be received before 11 am EST for same day service).

Lifetime Blue (PDN-LTCAL2): We will calibrate and ship the instrument back the next business day.

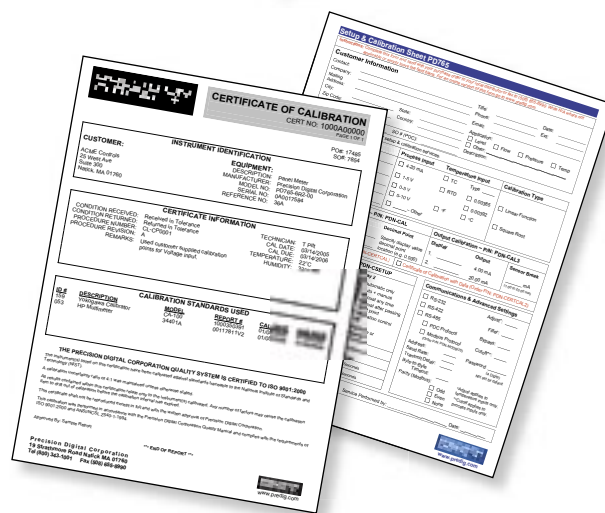
Lifetime Orange (PDN-LTCAL5): We will calibrate and ship the instrument back within 5 business days.

Notes:

1. Customer is responsible for all shipping charges.
2. Unless otherwise indicated, instruments will be shipped in the same manner they were received.
3. Lifetime calibration service allows for a maximum of one recertification annually.
4. Lifetime calibration is non-transferable.

*For complete details, please visit www.predig.com.

See pages 73-134 for setup & calibration sheets.



Extended Warranty

Precision Digital offers extended warranty for most products. Protect your investment by ordering one or two years of extended warranty. Purchasing the two-year extended warranty will give you up to five years of warranty for many products!

Ordering Information

Model	Description
PDN-CSETUP	Custom Setup
PDN-CSETUP1	Custom Setup Advanced (Nova series)
PDN-CSETUP2	Custom Setup Advanced (ConsoliDator series)
PDN-CAL	2-Point Calibration
PDN-CAL2	Multi-Point Calibration
PDN-CAL3	4-20 mA Output Calibration
PDN-CERTCAL	Certificate of Calibration
PDN-CERTCAL2	Certificate of Calibration with Data
PDN-CERTCAL3	Digital Pressure Gauge Certificate of Calibration (as shipped)
PDN-CERTCAL4	Digital Pressure Gauge Certificate of Calibration (as received & as shipped)
PDN-LTCAL	Lifetime Red Annual Recertification (shipped back same day)
PDN-LTCAL2	Lifetime Blue Annual Recertification (shipped back next day)
PDN-LTCAL5	Lifetime Orange Annual Recertification (shipped back within 5 days)
PDN-CERTCON	Certificate of Conformance
PDN-CERTCON2	Digital Pressure Gauge Certificate of Conformance
PDN-EXTWRNTY1-X	Extended Warranty 1 year (X = 0, 1, 2, or 3)
PDN-EXTWRNTY2-X	Extended Warranty 2 years (X = 0, 1, 2, or 3)

Ordering Example		
To order a custom setup, 2-point input calibration, 4-20 mA output calibration, and calibration certificate with documented data points:		
Model	Description	Qty
PDN-CSETUP	Custom Setup	1
PDN-CAL	2-Point Calibration	1
PDN-CAL3	4-20 mA Output Calibration	1
PDN-CERTCAL2	Certificate of Calibration with Data	1

Terms & Conditions

Standard Warranty

Precision Digital Corporation (PDC) warrants its products to be free from material or workmanship defects, when operated within published specifications. See table below for warranty period for specific products.

Precision Digital will, at its option, either repair or replace any product that fails to function properly under normal and proper usage due to defects in materials or workmanship during the warranty period.

Model or Series	Warranty
PD118 - PD141	2 years
PD202 - PD253	1 year
PD540 - PD578	3 years
PD644	3 years
PD680 - PD693	2 years
PD740	1 year
PD765	3 years
PD940 - PD981	1 year
Accessories	1 year
Fluidwell Products	1 year

Restocking Policy

Precision Digital Corporation will accept products for return that meet the following conditions:

1. Products must be on the current price list and be of current design.
2. Products must be unused and in their original packaging.
3. Products must be in saleable condition as determined by Precision Digital Corporation.
4. Products must be returned freight prepaid.
5. Products must be standard stock items.

Please note: Non-standard, custom, or specially-modified products will not be accepted for return.

PDC products returned for reasons other than repair may be subject to a restocking fee.

- The minimum restocking fee is \$25 per unit.
- The amount of credit allowed for returned unused product will depend upon its age.
- A credit of 85% will be issued for product up to 60 days old.
- A credit of 50% will be issued for product up to 180 days old.
- No credit will be issued for product older than 180 days.

Product Returns

In order to ensure the best service, PDC products being returned for service or credit must be preapproved by Technical Support. Please contact Precision Digital Technical Support at (508) 655-7300 or email at support@predig.com prior to any product return. If appropriate, a Return Material Authorization (RMA) number will be issued. All authorized returns are to be shipped freight prepaid. If it is determined that a product warranty action is appropriate (note: many start-up problems are the result of incorrect signal connections and/or programming errors), Precision Digital will repair or replace the instrument at no charge and return it via UPS ground. Other shipping options are available upon request for an additional charge.

Ship authorized product returns to:

Precision Digital Corporation
19 Strathmore Road
Natick, MA 01760
USA

Please be sure to include the RMA number on the outside of the returned product package.

Please note: In applications where instruments are exposed to hazardous materials:

- OSHA mandates that our employees be informed and protected from hazardous materials.
- Materials Safety Data Sheets (MSDS) listing the hazardous materials to which the instrument(s) have been exposed, **must** accompany any returned product.
- It is the customer's/end-user's responsibility to fully disclose exposure to all hazardous materials and decontaminate the instrument prior to return.

Registered Trademarks

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Quick Shipment Program

Quick Shipment Program

THE Precision Digital Quick Shipment Program (QSP) guarantees shipment within two days for Precision Digital's most popular products. QSP products (9 pieces or less) will ship within two days or we will ship UPS Next Day Air at our expense. Qualifying orders received by 2:00 pm EST will ship the same day or the following day.

See Price List for expedited shipment information.



Model	Description	Power	Input	Options
PD118	Minimux® Scanner	115/230 VAC	TC, RTD, VAC, VDC mA, Pulse	None
PD141AFO-3	Vigilante® Annunciator	115 VAC	Switch Logic level	None
PD602-6R0-0	1/8 DIN Dart Low-Cost Process Meter	85-265 VAC	4-20 mA, 0-5 V 1-5 V, 0-10 V	None
PD602-6R0-1				24 V Transmitter Supply
PD660-N	NEMA 4X Loop-Powered	Loop- Powered	4-20 mA	None
PD661-N	Exp-proof Loop-Powered			None
PD686	FM Approved NEMA 4X Loop-Powered Meter			None
PD686-CSA	CSA Certified NEMA 4X Loop-Powered Meter			None
PD690-3-N	1/8 DIN Process Meter	115 VAC	4-20 mA 0-20 mA 0-5 V 1-5 V 0-10 V	None
PD690-3-14				2 Relays
PD690-3-15				4-20 mA Output
PD690-3-16				2 Relays & 4-20 mA Output
PD690-3-17				4 Relays
PD690-3-18				4 Relays & 4-20 mA Output
PD692-3-N	1/8 DIN Analog Input Flow Rate Meter & Totalizer	115 VAC	4-20 mA, 0-20 mA 0-5 V, 1-5 V, 0-10 V	None
PD692-3-14				2 Relays
PD693-3-N	1/8 DIN Pulse Input Flow Rate Meter & Totalizer	115 VAC	Pulse Coil NPN or PNP transistor Switch contact	None
PD693-3-14				2 Relays
PD693-3-15				4-20 mA Output
PD750-3-N	1/8 DIN Temperature Meter	115 VAC	J, K, T, E, R, S TC 100 Ω Pt RTD	None
PD750-3-14				2 Relays
PD750-3-15				4-20 mA Output
PD765-6R0-00	1/8 DIN Trident Process & Temperature Meter	85-265 VAC	4-20 mA, 0-20 mA 1-5 V, 0-5 V -10 to 10 V J, K, T, E TC 100 Ω Pt RTD	None
PD765-6R0-10				24 V Transmitter Supply
PD765-6R2-00				2 Relays
PD765-6R2-10				2 Relays & 24 V Supply

Mission Statement & Quality Policy

Mission Statement

Precision Digital Corporation is dedicated to its customers, its technologies, and its people. We are committed to becoming a global supplier of digital devices that transform, control, and display critical information. Our goal is to provide a digital display solution that enhances our customers' competitiveness and success. This is achieved through the spirit of **partnership** with our customers, employees, and suppliers, **innovation** in technology and design, and **excellence** in manufacturing, quality, and customer service.

Our Guiding Principles

We will provide our employees with a high quality safe work environment: one that fosters empowerment and open communication, mutual trust and respect for each other; an environment that provides equitable compensation and benefits; and one which creates an atmosphere that promotes the full potential of each employee as individuals and as members of the Precision Digital team.

Quality Policy Statement

Precision Digital Corporation recognizes that product quality and customer satisfaction can be achieved only with a full commitment to continuous improvement of our policies and processes. The following Quality Policy conveys our thoughts and has been communicated to all employees.

Quality Policy: *Through the combined efforts of all employees, we will pursue quality leadership through error free results in our products, processes, and services. Our goal is complete customer satisfaction and our commitment is to continuously improve the effectiveness of the quality management system.*

We affirm this commitment, and have established a comprehensive quality management system, which will allow our company to meet the requirements of the ISO 9001 international standard for quality assurance in design, development, production, testing, calibration, distribution, and warehousing.

This effort also supports our organizational goals by focusing on:

- Defect-free products and services to our customers
- Continual improvement to our quality management system
- The incorporation of technology approaches in our products and services
- Exceptional delivery performance
- Competitive pricing



Jeffrey L. Peters, President

What's New at Precision Digital



*PD865 Snooper
Modbus® Input*



*Fluidwell Totalizers
& Batch Controllers*



Nova Controllers



Digital Pressure Gauges



ConsoliDator® Controllers

**PRECISION
DIGITAL** 

www.predig.com

Precision Digital Corporation

19 Strathmore Road • Natick MA 01760 USA

Phone (800) 343-1001 • Fax (508) 655-8990

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