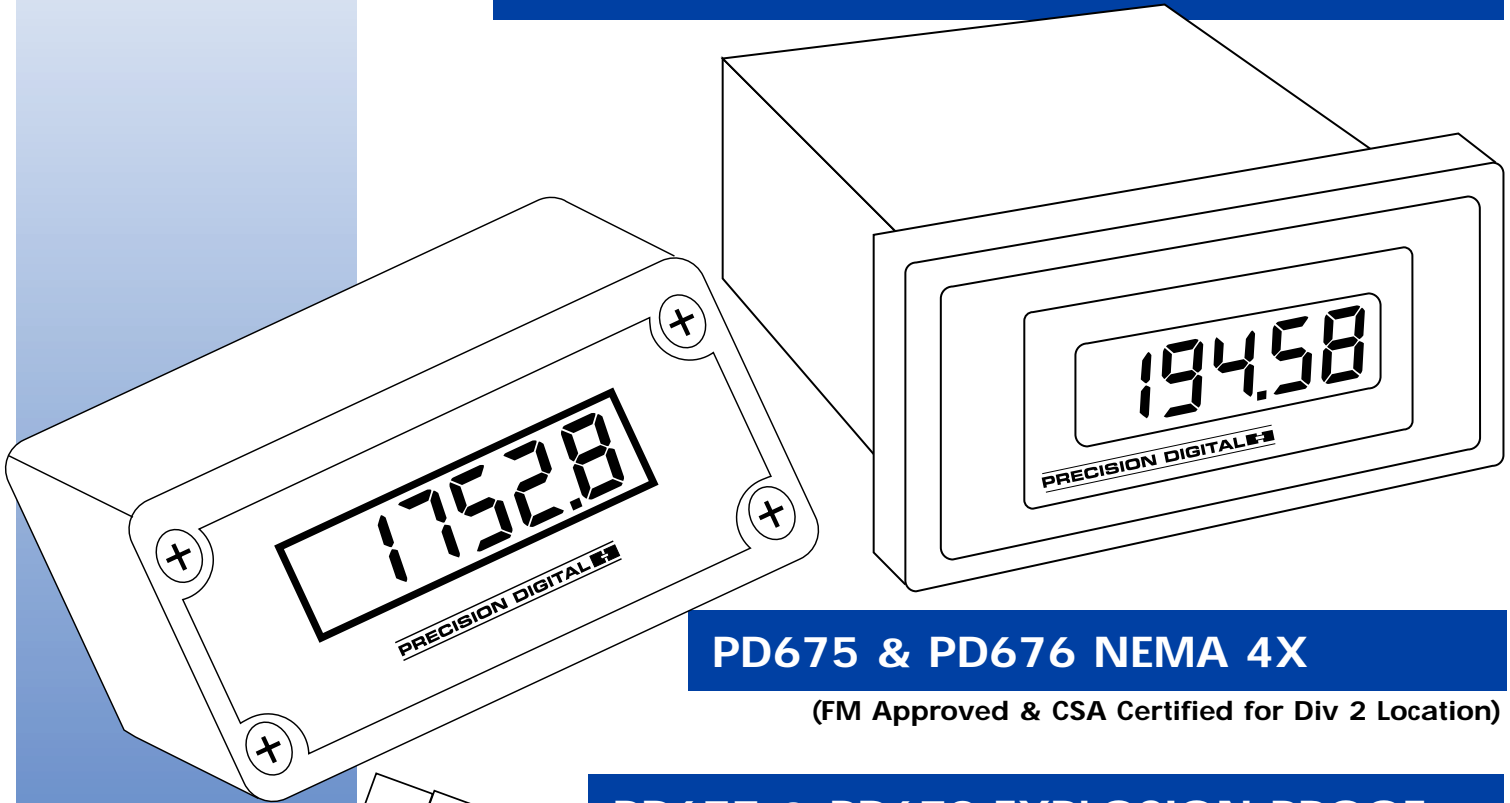


4¹/₂ DIGIT LOOP-POWERED METERS

PD673 & PD674 1/8 DIN PANEL MOUNT

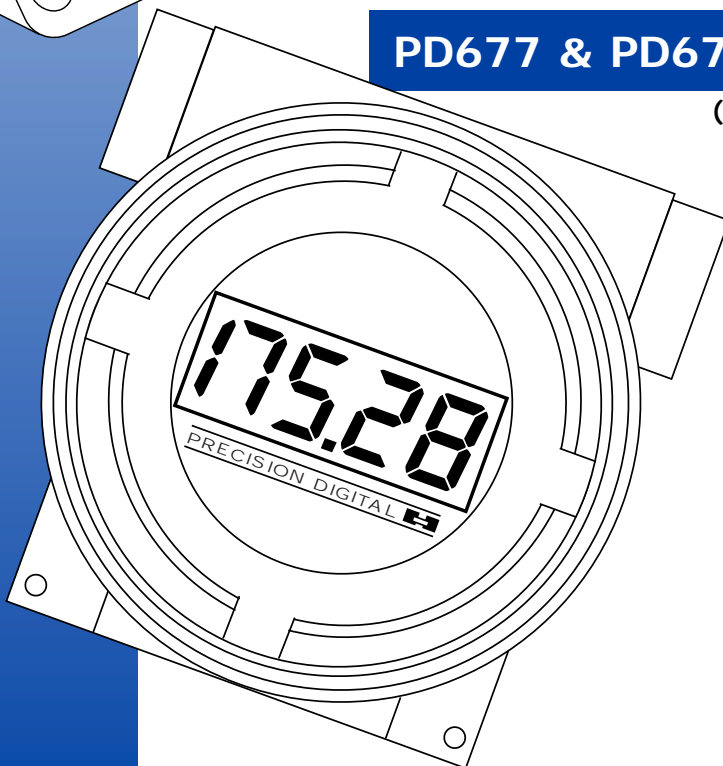


PD675 & PD676 NEMA 4X

(FM Approved & CSA Certified for Div 2 Location)

PD677 & PD678 EXPLOSION-PROOF

(FM, CSA, & CENELEC Versions Available)



- 4¹/₂ Digit
- Operates from -20 to 65°C
- High Alarm Option
- Square Root Extraction Option



WARNING: If any of the following operations are performed in hazardous areas, all appropriate hazardous area procedures must be followed (PD675-PD678).

WARNING: Disconnect from supply before opening.

Keep cover tight while circuits are alive. Conduit seals must be installed within 18" of the enclosure (PD677 and PD678).

AVERTISSEMENT: Ouvrir le circuit avant D'enlever le couvercle garder le couvercle bien fermé tant que les circuits sont sous tension. Un scellement doit être installé à moins de 450 mm du boîtier (PD677 and PD678).

WARNING: Calibration of the Loop-Powered Display should be performed in a non-hazardous area prior to installing it in its enclosure (PD675-PD678).

CAUTION: Care should be taken to avoid static electricity damaging the electronic circuitry.

SETUP

The only tools needed for calibration are a calibrated current source and a screwdriver.

Decimal Point Selection

Decimal point selection is made by placing a jumper over one set of pins (JP1) located behind the faceplate to the right of the LCD Display.

Place a jumper over both pins of #1 for a display of 1999.9, #2 for 199.99, #3 for 19.999, #4 for 1.9999

JP1

1 ○○

2 ○○

3 ○○

4 ○○

Disassembly

For each model, calibration controls are located behind the display faceplate. To access these controls, you must first remove the enclosure cover and faceplate by doing the following:

PD673-PD674: Grasp the top and bottom edges of the cover and firmly pull it forward. The faceplate is removed along with the cover. The latch will remain around the enclosure.

PD675-PD676: Loosen the four screws on the enclosure cover and remove. Unscrew the two fasteners that hold the faceplate, then remove.

PD677-PD678: Unscrew the enclosure cover and remove. Unscrew the two fasteners that hold the faceplate, then remove.

Field connections are accessed by doing the following:

PD673-PD674: Field connections are made to the screw terminals at the rear of the instrument. It is not necessary to remove the instrument from its enclosure.

PD675-PD678: Field connections are made to the screw terminals located on the Signal Input/Output PCB. To access these screw terminals it is necessary to remove the Display PCB from the Signal Input/Output PCB. First, disconnect the ribbon cable connector from the Display PCB. Next, remove the two screws located to the left and right of the LCD that hold the Display PCB in place. Finally, remove the Display PCB carefully to avoid contact with any rough surfaces.

If the meter is equipped with an alarm output, calibration and alarm setup must be done with the Display PCB outside the enclosure.

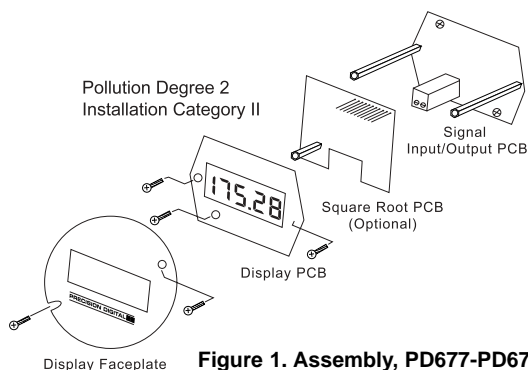
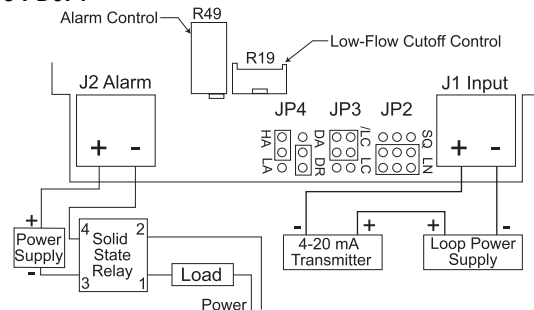


Figure 1. Assembly, PD677-PD678

When reassembling circuit boards be careful NOT to over-tighten screws.

PD673-PD674



PD675-PD678

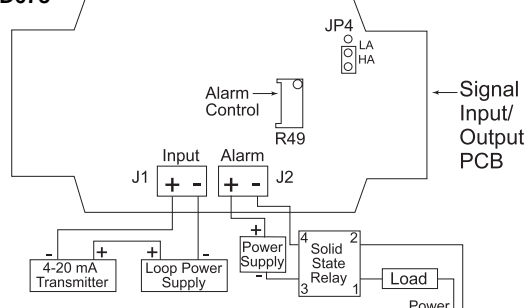


Figure 2. Signal Input and Alarm Output Connections; Low-Flow Cutoff and Alarm Controls

CALIBRATION

Calibration of these meters is a two-step process involving four controls and a jumper array. On the PD673 and PD674, these controls are located behind the faceplate. The LO controls are located on the right and the HI controls are located on the left. The jumper array is located at the back of the instrument. For the PD675-PD678 these controls are located on the Display PCB. The LO controls are on the right and the HI controls on the left. The jumper array is also located on the Display PCB.

Linear Calibration

Connect the 4-20 mA input signal and configure the input signal jumpers per Table 1 or 2 for Linear Input.

Apply 4 mA to the input and adjust the coarse and fine LO controls for the desired reading. Next apply a signal between 16 and 20 mA and adjust the coarse and fine HI controls for the desired reading. Complete the calibration by making any minor adjustments to the LO and HI displays.

Square Root Extraction Calibration

Connect the 4-20 mA input signal and configure the input signal jumpers per Table 1 or 2 for Square Root Extraction.

Turn LFC (Low-Flow Cutoff) control (R19) counter clockwise to minimize the low flow cutoff and allow proper calibration. On the PD673 and PD674 meters, R19 is located to the left of the jumper arrays. On the PD675-PD678 meters, it is located on the Square Root Option PCB. Apply 4.80 mA to the input and adjust the coarse and fine LO controls for the 22.36% of full flow. Next apply 20 mA (100% of flow) and adjust the coarse and fine HI controls for the desired reading. Complete the calibration by making any minor adjustments to the LO and HI displays.

Example: Flow Rate = 0-200.0 GPM

4.8 mA = 44.7 GPM

20.0 mA = 200.0 GPM

Jumper Array	Location (PCB)	Function	Jumper on pins	Function	Jumper on pins
JP2	Main	Linear Input	LN	Square Root Input	SQ
JP3	Main	Low-Flow Cutoff	LC	No Low-Flow Cutoff	/LC
JP4	Main	Display Alarm Set Point	DA	Display Process Reading	DR
JP4	Main	Flash on HI Alarm	HA	Flash on Low Alarm	LA

Table 1. Jumper Array Functions, PD673-PD674

Jumper Array	Location (PCB)	Function	Jumper on pins	Function	Jumper on pins
JP2	Display	Linear Input	LN	Square Root Input	SQ
JP3	Display	Low-Flow Cutoff	LC	No Low-Flow Cutoff	/LC
JP3	Signal In/Out	Display Alarm Set Point	DA	Display Process Reading	DR
JP4	Signal In/Out	Flash on HI Alarm	HA	Flash on Low Alarm	LA
JP5	Square Root Extraction	Low-Flow Cutoff	Jumper Installed		

Table 2. Jumper Array Functions, PD675-PD678

Low-Flow Cutoff

The low-flow cutoff feature allows the meter to be programmed so that the often unsteady output from a differential pressure transmitter at low flow rates always displays zero on the meter. The low-flow cutoff can be set for any input between 4.1 and 4.8 mA.

Note: This feature is only available on PD674, PD676, and PD678.

- To program the low flow cutoff (LFC) function, configure jumpers as specified in Table 1 or 2.
- Apply an input of 4 mA and turn LFC control (R19) counter clock wise until the meter reads zero.
- Apply a signal between 4.1 and 4.7 mA for desired cutoff point. Turn LFC control clockwise slowly until display reads zero again.

OPEN COLLECTOR ALARM OUTPUT (Option)

These meters can be equipped with a high alarm open collector output. This output will provide a closed circuit when the display rises above a user selectable set point. Using the open collector output to indicate a low alarm is achieved by having the detecting device sense an open circuit as the alarm. The alarm output can be fed into a solid state relay or an annunciator such as Precision Digital's PD141AFO VIGILANTE®.

- To program the open collector alarm, set the display mode jumper (JP4 for PD673-PD674) or (JP3 for PD675-PD678) for DA.
- Adjust the alarm control (R49) for desired alarm set point. For PD673 and PD674, R49 is located at the back of the instrument—refer to Figure 2. For PD675-PD678, R49 is located on the Signal Input/Output PCB—refer to Figure 3.
- Set display mode jumper back to DR for normal display indication. Set the low-flow cutoff jumper as required.
- The display can be programmed to flash when the reading is above or below the alarm set point. Set the jumpers over pins labeled LA (JP4) to program the display to flash below the alarm set point. Set the jumper over pins labeled HA (JP4) to program the display to flash above the alarm set point.

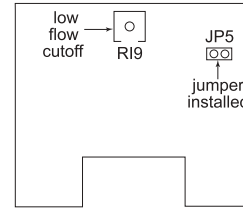


Figure 3. Low-Flow Cutoff Control (R19) and Jumper (Square Root Option PCB)

SPECIFICATIONS

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

General

INPUT: 4-20 mA @ 24 VDC maximum.
CALIBRATION RANGE: 4 mA input: -5000 to +5000; 20 mA input: between 200 to 20000 above 4 mA input.
MAXIMUM VOLTAGE DROP: 5.2 VDC @ 20 mA.
ACCURACY: ±0.05% of span, ±2 counts (linear input).
APPROVAL: FM Approved and CSA Certified.
OPERATING TEMPERATURE RANGE: -20 to 65°C, meter with no alarm output option. 0 to 65°C, meter with alarm output.
CONNECTIONS: Removable screw terminal block.
WARRANTY: 1 year parts and labor.

PD673 & PD674

DISPLAY: 0.4" high LCD, 4 1/2 digit; 19999. User selectable decimal point.
FRONT PANEL: NEMA 4X, panel gasket provided.
ENCLOSURE: 1/8 DIN, high impact plastic, UL 94V-0 color: black.

PD675 & PD676

DISPLAY: 0.7" high LCD, 4 1/2 digit; 19999. User selectable decimal point.
APPROVAL: FM Approved and CSA Certified as non-incendive for Class I, Division 2, Groups A,B,C,D; suitable for Class II, Division 2, Groups F and 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. 1/2" conduit hole provided at base. Hole may be provided on back for panel mounting applications, call factory for details.

PD677 & PD678

DISPLAY: 0.7" high LCD, 4 1/2 digit; 19999. User selectable decimal point.
APPROVAL: The PD677-A-EX, PD677-N-EX, PD678-A-EX, and PD678-N-EX are FM Approved and CSA Certified as explosion-proof for Class I, Division 1, Groups B, C, and D; dust-ignition proof for Class II, Division 1, Groups E, F, and G; and Class III hazardous (classified) locations.
LCIE (CENELEC) Certified as flameproof, EEx d IIC T6.
ENCLOSURE: Explosion-proof, cast aluminum, corrosion resistant, color: "safety blue" polyester powder coating. FM Approved and CSA Certified; NEMA 4X, 7 & 9; Class I, Division 1, Groups B, C, & D and Class II, Groups E, F, & G, Class III hazardous outdoor (Type 4X) locations. CENELEC: EEx d IIC + H2 IP 66. Two 3/4" NPT holes provided.

Open Collector Alarm Output (Option)

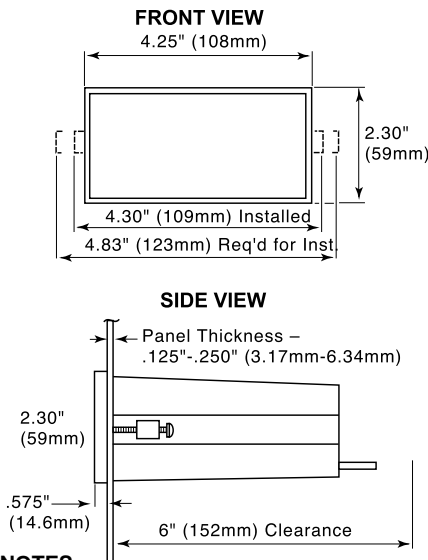
HIGH-ALARM: Circuit closes above user selectable set point.
Rating: 20 VDC @ 20 mA.
SET POINT ADJUSTMENT: 10-100% of full scale, user selectable.
RESET: Automatically when the input falls below the alarm set point by approximately 0.5% of full scale.
ALARM SET POINT ACCURACY: ±0.5% of full scale.
ALARM STATUS INDICATION: Flashing display, user selectable.

Square Root Extraction (Option)

SQUARE ROOT EXTRACTION ACCURACY: ±0.2% F.S. ±2 counts from 15-100% of flow.
LOW-FLOW CUTOFF: 10-22% of full scale, user selectable.
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DIMENSIONS & WALL MOUNTING INFORMATION

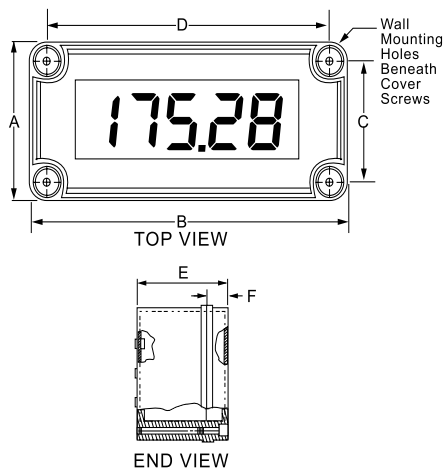
PD673 & PD674



NOTES:

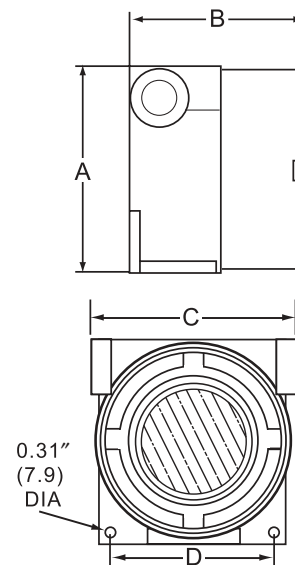
1. Panel cutout required: 1.772" X 3.622" (45 mm x 92 mm) 1/8 DIN
2. Panel thickness: 0.125" - 0.250" (3.17 mm - 6.34 mm)
3. Clearance: allow 6 inches (152 mm) behind the panel
4. Weight: 8 oz (227 g)

PD675 & PD676



- A: 3.15" (80 mm) D: 4.72" (120 mm)
 B: 5.51" (140 mm) E: 2.56" (65 mm)
 C: 2.36" (60 mm) F: 0.79" (20 mm)
 Weight: 12 oz (340 g)

PD677 & PD678



- A: 5.63" (143 mm) C: 5.44" (138 mm)
 B: 5.63" (143 mm) D: 4.06" (103 mm)
 Weight: 6 lbs (2.72 kg)

ORDERING INFORMATION	
Model	Linear Input and:
PD673-N	Panel Mount, No Options
PD673-A	Panel Mount, Open Collector Alarm Output
PD675-N	NEMA 4X, No Options
PD675-A	NEMA 4X, Open Collector Alarm Output
PD677-N	Explosion-Proof, No Options
PD677-N-EX	FM, CSA, & CENELEC Explosion-Proof, No Options
PD677-A	Explosion-Proof, Open Collector Alarm Output
PD677-A-EX	FM, CSA, & CENELEC Explosion-Proof, Open Collector Alarm Output
Model	Linear Input, Square Root Extraction and:
PD674-N	Panel Mount, No Options
PD674-A	Panel Mount, Open Collector Alarm Output
PD676-N	NEMA 4X, No Options
PD676-A	NEMA 4X, Open Collector Alarm Output
PD678-N	Explosion-Proof, No Options
PD678-N-EX	FM, CSA, & CENELEC Explosion-Proof, No Options
PD678-A	Explosion-Proof, Open Collector Alarm Output
PD678-A-EX	FM, CSA, & CENELEC Explosion-Proof, Open Collector Alarm Output
Model	Description
PDA6844	Panel Mounting Kit Panel Mounting Kit does not provide NEMA 4X seal to panel.
PDA6845	2" Pipe Mounting Kit

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