



Installation and Operation Instructions DLP Series

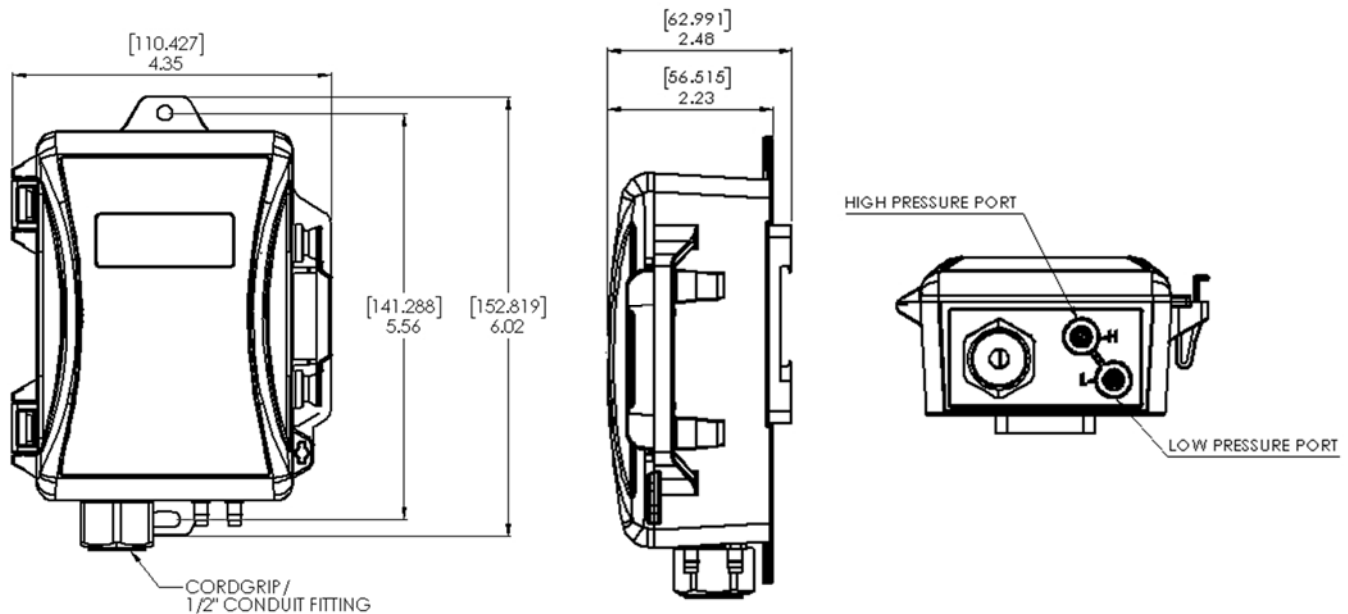


Figure 1: DLP Dimensions and Hardware

PRECAUTIONS

- **REMOVE POWER BEFORE WIRING. NEVER CONNECT OR DISCONNECT WIRING WITH THE POWER APPLIED. DO NOT ALLOW LIVE WIRES TO TOUCH THE CIRCUIT BOARD.**
- **AN ISOLATION TRANSFORMER IS RECOMMENDED WHEN POWERING THE DEVICE WITH 24VAC.**
- **DO NOT RUN THE WIRING IN ANY CONDUIT WITH LINE VOLTAGE.**
- **FAILURE TO WIRE DEVICES WITH THE CORRECT POLARITY WHEN USING A SHARED TRANSFORMER MAY RESULT IN DAMAGE TO ANY DEVICE POWERED BY THE SHARED TRANSFORMER.**

MEDIA

The DLP can be used to monitor the differential pressure in any application that uses dry air or inert gas.

DIN RAIL MOUNTING (Optional Accessory Ordered)

Attach the DIN Rail Mounting accessory to the back of the enclosure using the two screws provided. To mount the sensor on the DIN Rail, place the bottom of the DIN Rail Clip into the 35mm DIN Rail and push the unit upward to engage the spring clip. Now press the top of the unit back until it locks into place (see Figure 2).

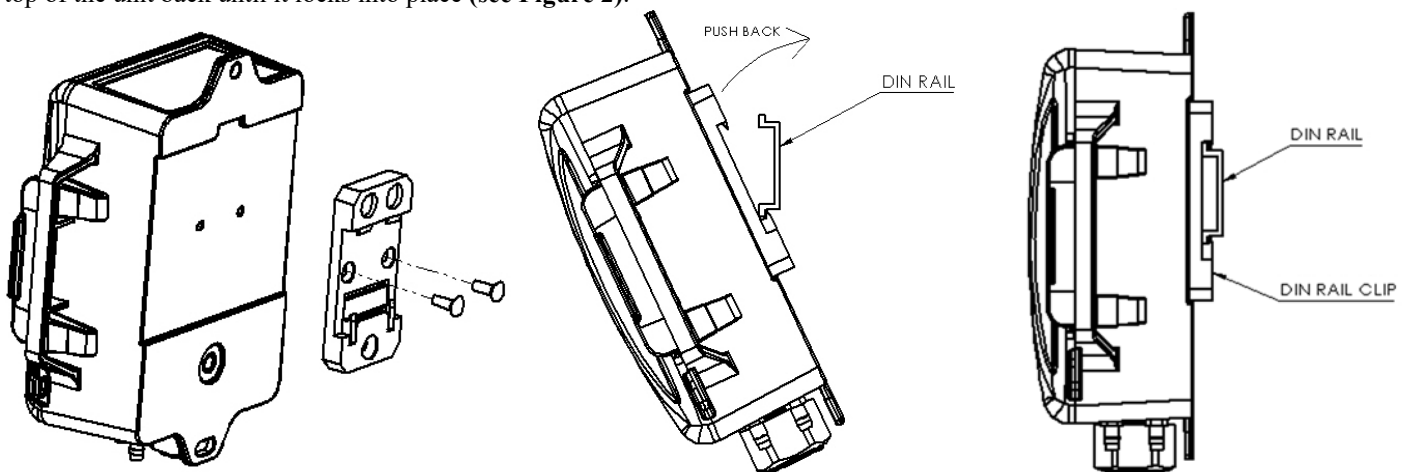


Figure 2: DIN Rail Mounting

PITOT TUBE INSTALLATION (Optional Accessory Ordered)

Slip the rubber washer over the threaded end of the pitot tube, keeping the washer as close to the threaded end as possible. Fasten the pitot into the threaded insert on the back of the enclosure. Press the rubber washer against the enclosure.

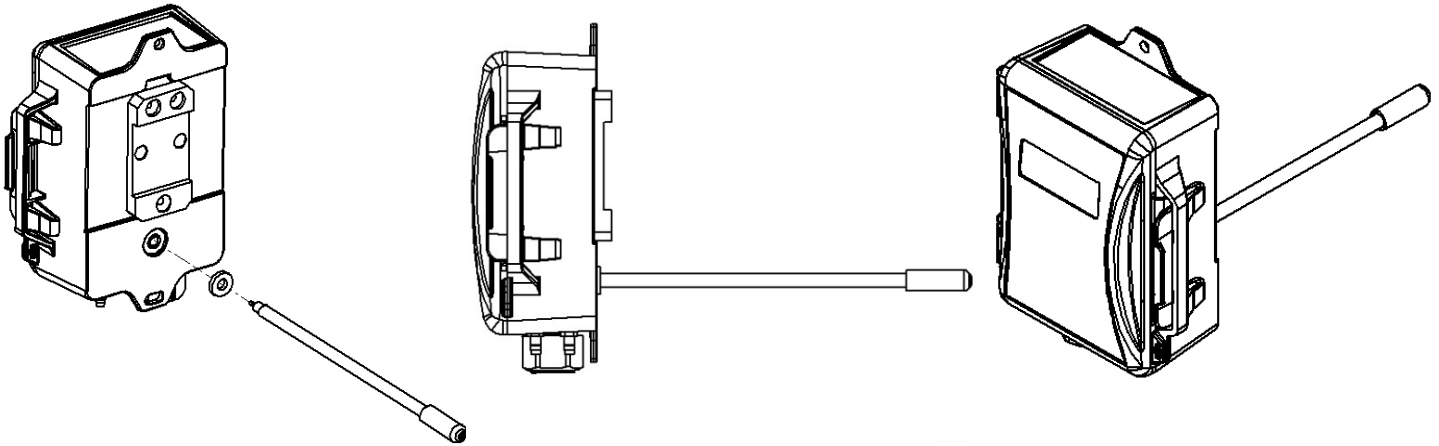


Figure 3: Pitot Tube Installation

TUBING SETUP WHEN PITOT TUBE IS INSTALLED

Units will be shipped with silicone tubing attached to the high and low pressure barb fittings. The silicone tubing will need to be removed from the High Pressure (H) barb fitting and secured onto the pitot tube barb fitting. This will leave the high pressure barb fitting open to atmosphere, and the Low pressure barb fitting remaining at default setup.

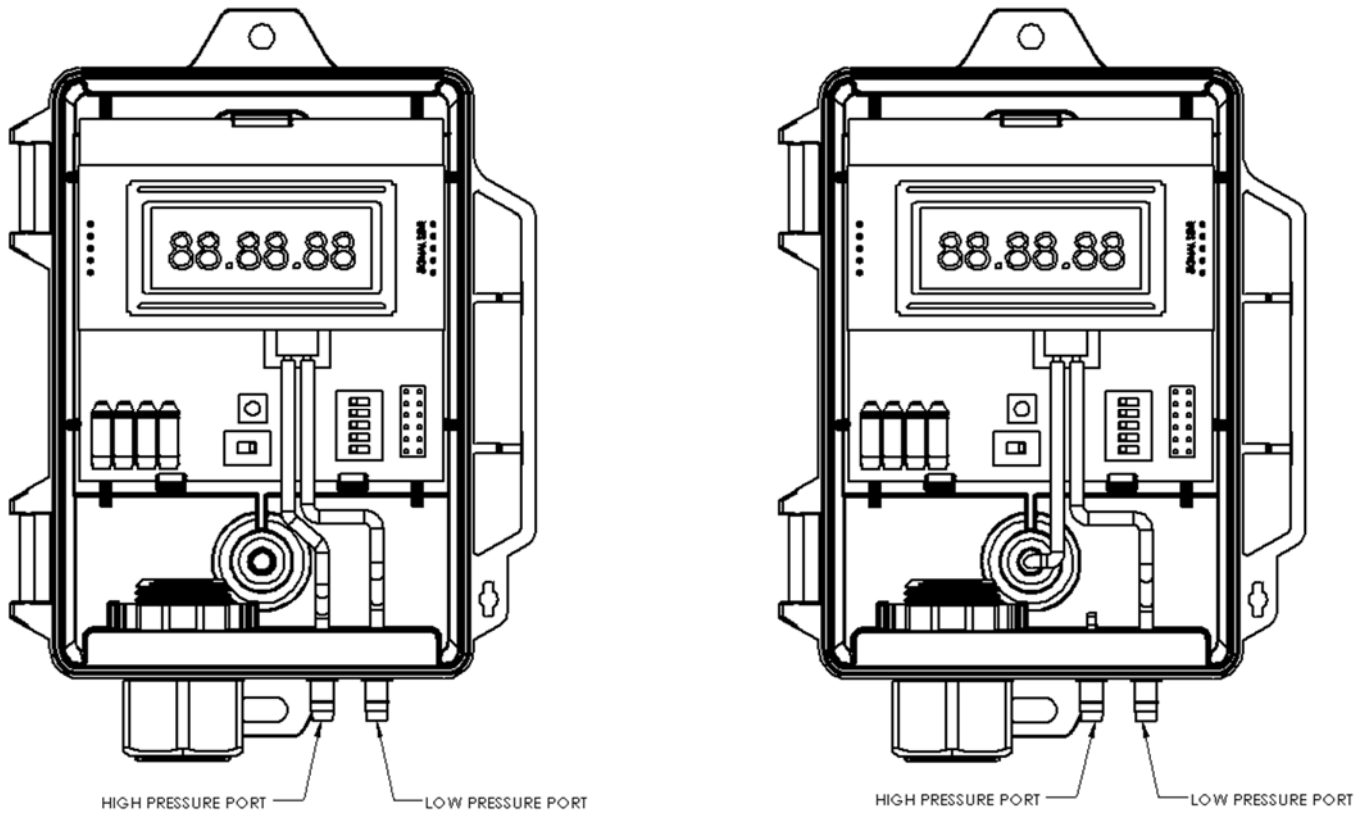


Figure 4: Pitot Tube Installation

MOUNTING

Two size #8 x 3/4" self drilling screws are supplied. Mount the unit vertically with the brass fittings pointing towards the ground. Attach the unit to the mounting surface using the two mounting holes located on the top and bottom flanges. For best results, all tubing lengths should be limited to a maximum length of 75 feet (23 meters).

PRESSURE CONNECTIONS

The recommended connection tubing is 1/4" O.D push-on tubing (1/8" to 3/16" I.D.).

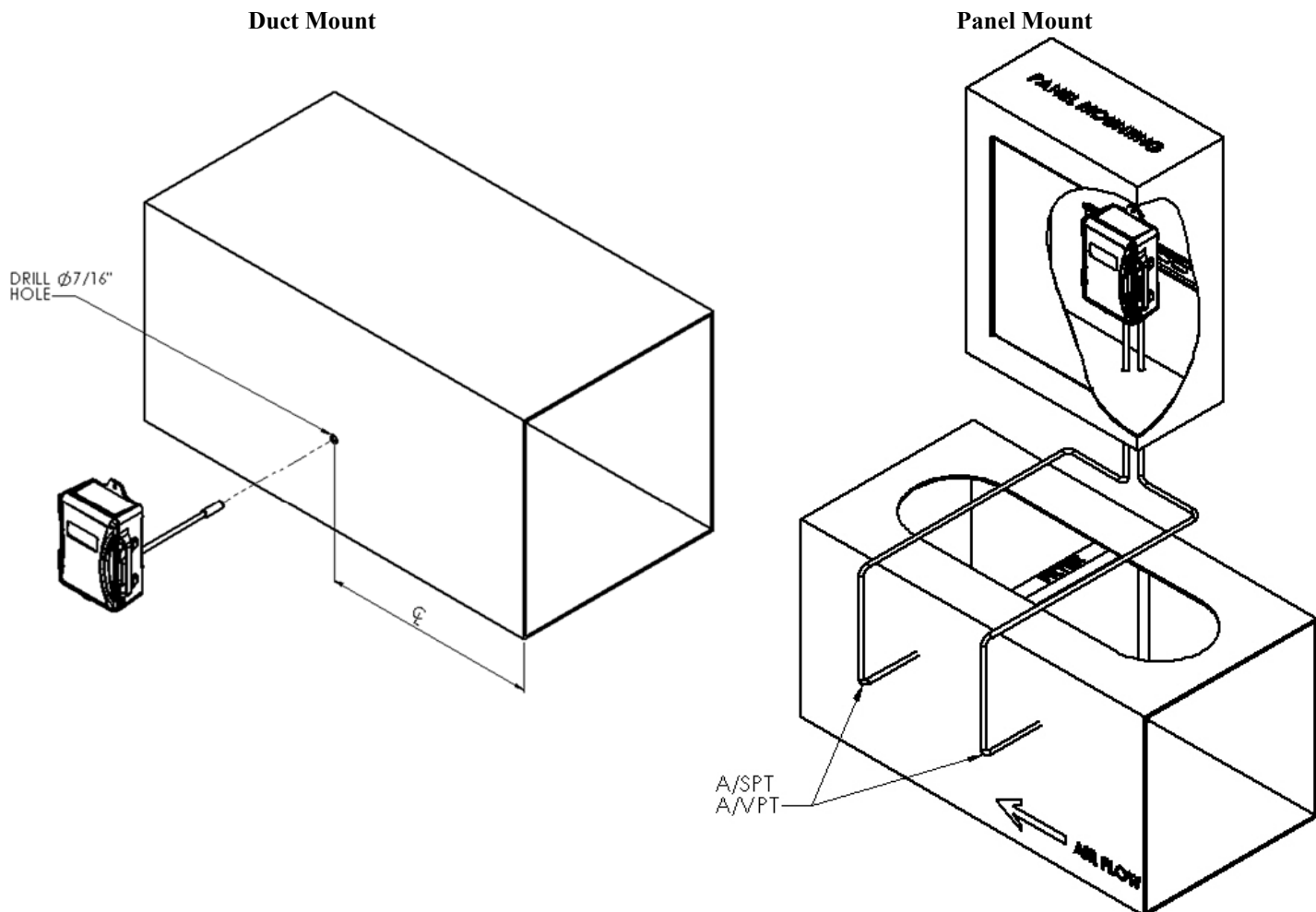


Figure 5: DLP Mounting

WIRING

Shielded is recommended cable with 16 to 24AWG conductors. The hinged cover must be opened to connect wires to the unit's finger push-button terminal blocks. Each DLP unit can be configured to three output signals: 4-20mA, 0-5V or 0-10V. Use the Wiring Connections (**Table 1**) and diagrams (**Figure 7**) to determine the proper wiring for your application. See **Table 1** for Output Mode and Output Signal switch positions.

Output Signal	Output Mode (SW1)	Output Signal (SW3 Position 4)	Supply Voltage	Wire Connections			
				Red	Black	White	Yellow
0-5 VDC	Vout	5V	VAC/VDC	V+	COM	VOUT	n/c
0-10 VDC	Vout	10V	VAC/VDC	V+	COM	VOUT	n/c
4-20 mA	mA	n/a	VDC	V+	n/c	n/c	IOUT

n/a=Not Applicable

n/c=No Connection

Table 1: Wiring Connections

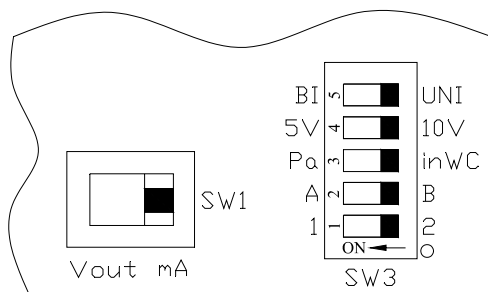


Figure 6: SW1 and SW3 Output Switches

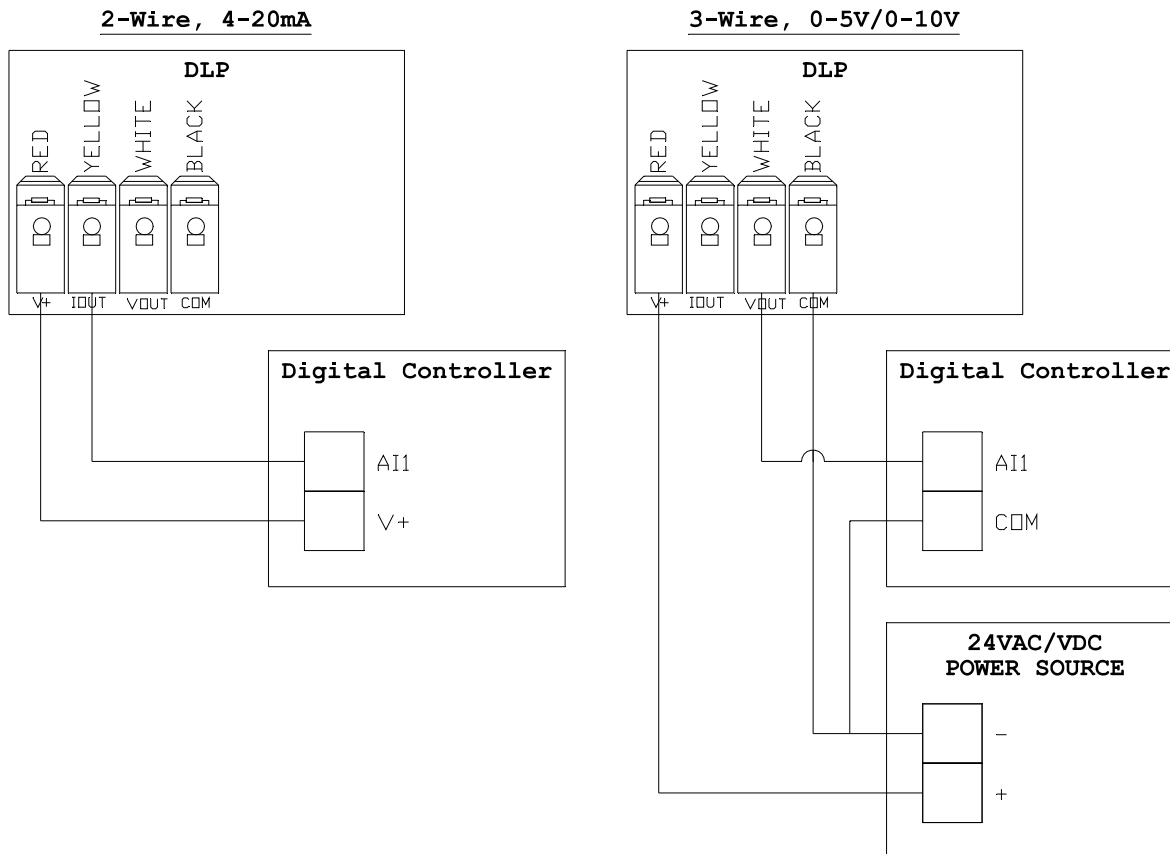


Figure 7: Wiring Connections

- When using ½” conduit, the strain relief fitting must be removed from the enclosure.
- Make sure that any conduit or metal fittings do not come in contact with the circuit board.

ZERO FUNCTION

The DLP unit should be “ZEROED” before pressure is applied to the unit.

The zero button is used to cancel out any offsets caused by installation and sensor drift.

The Zero adjustment must be performed with NO pressure applied to either side of the sensor.

- Remove the tubing connected to the H(High) and/or L(Low) pressure fittings.
- Push “**ZERO**” button for more than three seconds before installation or whenever necessary.

For units with LCD display: “AUTOZERO” icon will be on when the unit enters zero mode. If zeroing process is successful, the “AUTOZERO” icon will flash twice.

PRESSURE RANGE SELECTION

If a custom calibrated range is ordered, DO NOT change Range Selection DIP switch settings.

The DLP can operate in either unidirectional mode (0 – X inWC) or bidirectional mode (\pm X inWC). Each unit could have up to eight field selectable, uni or bidirectional ranges.

- **DO NOT SWITCH PRESSURE RANGE OR OUTPUT MODE WHEN POWER IS ON. MAKE SURE POWER TO THE UNIT IS OFF. FAILURE TO DO SO WILL NOT ALLOW ANY NEW SWITCH SETTINGS TO TAKE PLACE.**
- **CHOOSE DIFFERENTIAL RANGE BASED ON THE EXPECTED DIFFERENTIAL PRESSURE IN YOUR APPLICATION. MOVE SWITCHES TO THE CORRECT POSITIONS AND THEN POWER ON THE TRANSMITTER.**
- **MAXIMUM PRESSURE**

ACI Part No.	Maximum Pressure (inWC)
DLP-001-W	1
DLP-010-W	10
DLP-040-W	40

Unidirectional Mode

- DIP switch SW3 position five set at **UNI** side.
- DIP switch SW3 positions one and two are for Range Selection

ACI Part No.	SW3 Position 1: 1		SW3 Position 1: 2	
	Position 2: A	Position 2: B	Position 2: A	Position 2: B
DLP-001-W	1 inWC	0.5 inWC	0.2 inWC	0.1 inWC
DLP-010-W	10 inWC	5 inWC	2 inWC	1 inWC
DLP-040-W	40 inWC	30 inWC	20 inWC	10 inWC

See Figure 8

Bidirectional Mode

- DIP switch SW3 position five set at **BI** side.
- DIP switch SW3 positions one and two are for Pressure Range Selection.

Note: In Bidirectional mode, a value of 0 inWC will have an output equal to 50% of the output signal range (12mA, 2.5V, 5V).

ACI Part No.	SW3 Position 1: 1		SW3 Position 1: 2	
	Position 2: A	Position 2: B	Position 2: A	Position 2: B
DLP-001-W	±1 inWC	±0.5 inWC	±0.2 inWC	±0.1 inWC
DLP-010-W	±10 inWC	±5 inWC	±2 inWC	±1 inWC
DLP-040-W	±40 inWC	±30 inWC	±20 inWC	±10 inWC

See Figure 8

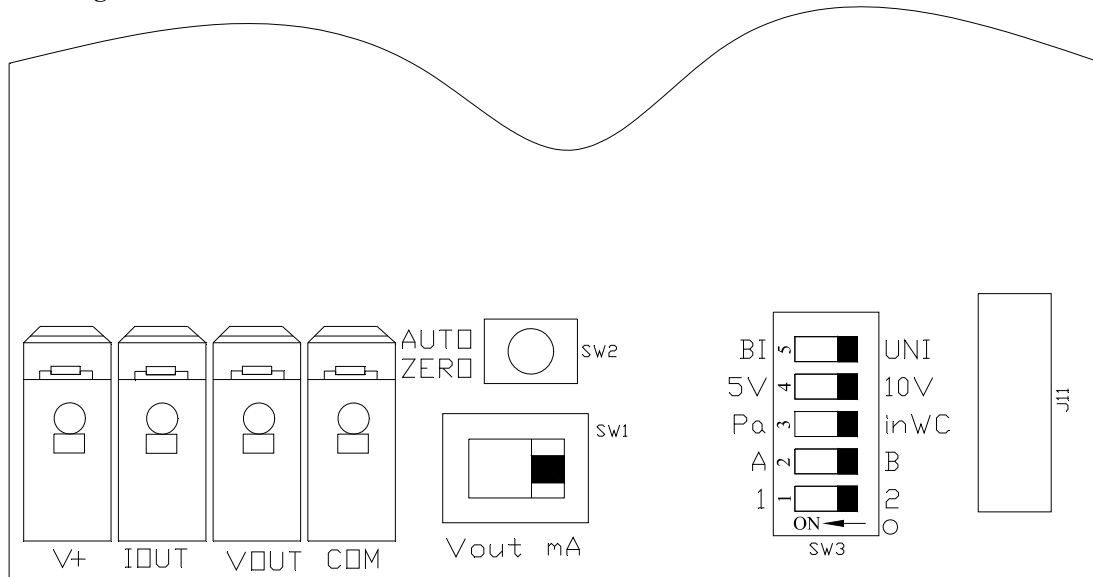


Figure 8: PCB Layout

ENGINEERING UNITS ADJUSTMENT

This option is **ONLY** for units with LCD display. Switch DIP switch SW3 position three to select Pa or inWC. If switched with power on, unit change will not take place until power is cycled.

DIAGNOSTIC OUTPUT

Each DLP unit has the feature to check the pressure on the sensor. When the sensor's input pressure is out of range, the DLP will output 5.25V for a 0-5V output; 10.5V for a 0-10V output and 22mA for a 4-20mA output.

If a DLP unit is outputting an out-of-range diagnostic signal, please turn off the unit immediately, and check the pressure input with a gauge or other test instrument.

Once the pressure has been verified, set the Range Selection DIP switch to the proper positions based upon your maximum expected differential pressure.

For units with LCD display:

“OUT OF RANGE” icon will be on when differential pressure is over or under the minimum or maximum pressure range selected.

PRODUCT SPECIFICATIONS

Supply Voltage	4-20 mA Output: 16-36 VDC (250 Ohm Load max.) / 22-36 VDC (500 Ohm Load max.) 0-5 VDC / 0-10 VDC Output: 16-36 VDC / 24 VAC (+/- 10%)
Supply Current	4-20 mA Output: 24 mA minimum 0-5 VDC / 0-10 VDC Output: 6 mA maximum
Output Signals	Current Output: 4-20 mA, 2-Wire Loop Powered (Standard); (Current limited to 21.4 mA max) Voltage Signals: 0-5 VDC / 0-10 VDC Field Selectable, 3-Wire; Output limited @ 5.25 & 10.5 VDC)
Response Time (0-100% FSO)	8 seconds
Output Update Rate	1 second
Pressure Ranges	See Product Ordering Grid (Data Sheet); Field Selectable Uni and Bi-Directional Ranges
Accuracy¹	+/- 0.5% FSO; +/- 0.25% (Only for Specified Range)
Zero Function	Pushbutton Zero Function
Thermal Effects²	+/- 0.067% FSO / °F (0.12% FSO / °C)
Proof Pressure / Burst Pressure³	A/DLP-001: Proof: 270 inWC (67.2 kPa) Burst: 415 inWC (103.3 kPa) for 1 inWC (249.8 Pa) A/DLP-010: Proof: 350 inWC (87.12 kPa) Burst: 550 inWC (136.9 kPa) for 10 inWC (2490.8 Pa) A/DLP-040: Proof: 562 inWC (140 kPa) Burst: 1004.7 inWC (250 kPa) for 40 inWC (9963.6 Pa)
Operating Temperature Range	-4 to 185°F (-20 to 85°C)
Compensated Temperature Range	32 to 122°F (0 to 50°C)
Storage Temperature Range	-22 to 185°F (-30 to 85°C)
Operating Humidity Range	10 to 95% RH, non-condensing
Media Types	Dry air or inert non-conductive gases
Enclosure Material / Flammability Rating	Flame Retardant Polycarbonate; UL94-5VA
Wiring Connections	Finger Pushbutton (Spring) Terminal Blocks; accepts 16-24 AWG wires
Conduit Knockouts	Watertight Cordgrip Installed (1/2" NPT Conduit fittings accepted when Cordgrip removed)
Pressure Fitting Material	Nickel Plated Brass or Stainless Steel
Tubing Size Accepted	1/4" O.D. x 0.170" I.D. Poly Tubing
Approvals	CE, Reach, RoHS2, WEEE
Product Weight (No Pitot Tube OR Din Rail)	Non-LCD Display Version: 0.53 lbs (0.240 kg) LCD Display Version: 0.58 lbs (0.263 kg)
Product Weight (With Pitot Tube & Din Rail)	Non-LCD Display Version: 0.80 lbs (0.363 kg) LCD Display Version: 0.85 lbs (0.385 kg)
NIST Certification	3 Point: Test Points 10%, 50%, and 90% FSO 5 Point: Test Points 10%, 30%, 50%, 70% and 90% FSO

Note¹: Accuracy includes linearity, hysteresis & repeatability.

Note²: Shift is relative to 77°F (25°C).

Note³: "x" designates both the LCD "-D-" & Non-LCD Display "-N-" versions.

Table 2: Product Specifications

WARRANTY SPECIFICATION

The DLP Series pressure transmitters are covered by ACI's Five (5) Year Limited Warranty, which is located in the front of ACI'S SENSORS & TRANSMITTERS CATALOG or can be found on ACI's web site: www.workaci.com.