



Installation and Operation Instructions

WPR2-300 Series

Wet to Wet Differential Pressure

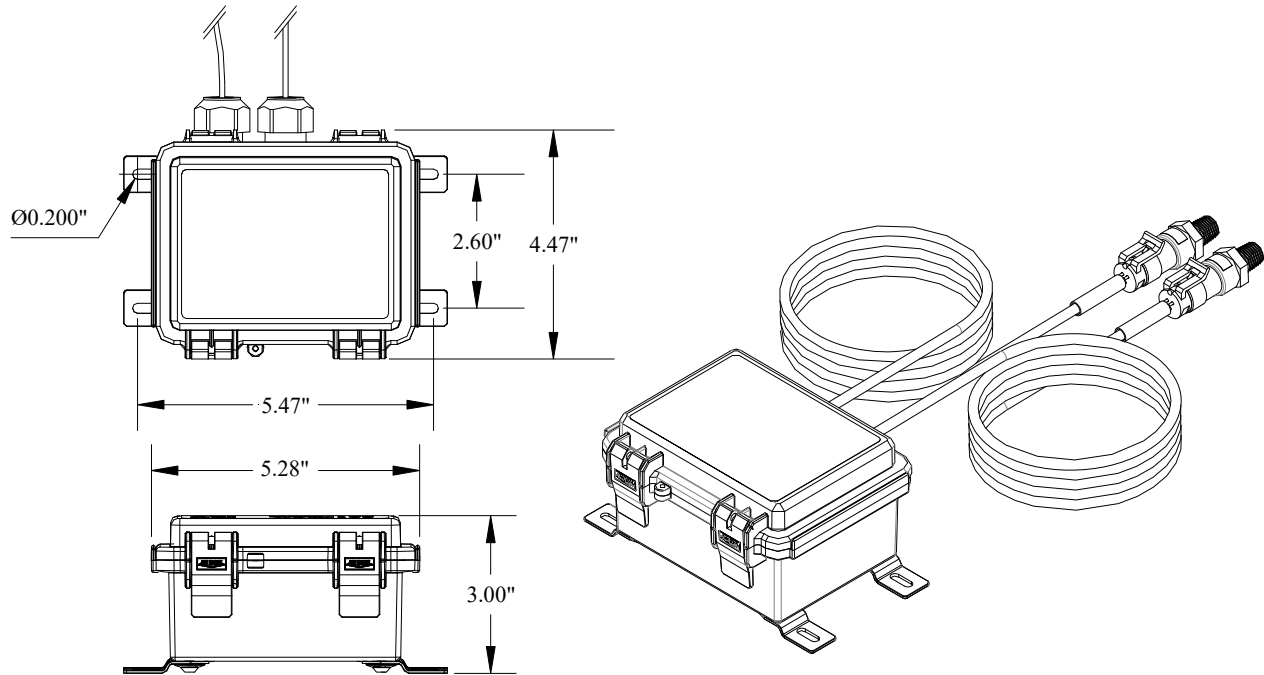


Figure 1: WPR2-300 Dimensions and Hardware

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.
- DO NOT SWITCH PRESSURE RANGE AND OUTPUT MODE WHEN POWER IS ON. MAKE SURE TO POWER OFF THE UNIT FIRST, THEN MOVE JUMPERS TO THE RIGHT POSITIONS AND THEN POWER ON THE TRANSMITTER.
- DO NOT APPLY ANY EXTERNAL VOLTAGE TO ZERO TERMINALS.
- DO NOT REPLACE PRESSURE SENSORS WITH ANY OTHER SENSORS. DO NOT INTERCHANGE THE HIGH AND LOW SENSORS. THE HIGH AND LOW SENSORS ARE SPECIFICALLY CALIBRATED TO THE WPR2 UNIT.

ANY CHANGES TO THE SENSORS WILL VOID THE PRODUCT WARRANTY

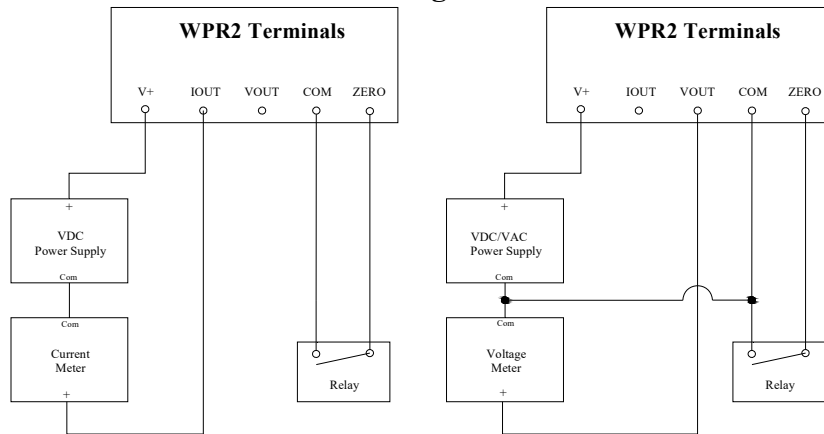
Wiring

Shielded cable with 16 to 22AWG conductors is recommended. Each WPR2-300 unit can be configured to three output modes: 4-20mA, 0-5V and 0-10V. Use the Wiring Connections table below to determine the proper wiring for your application. See Figure 1 below for Output Mode and Output Signal switch positions.

Note: The WPR2 units are shipped from the factory set up with a 0-10 VDC output.

Output Mode (SW8)	Output Signal (SW7 Position 2)	Supply Voltage	Wire Connections		
Vout	0-5 VDC (5V)	VAC/VDC	V+	COM	VOUT
Vout	0-10 VDC (10V)	VAC/VDC	V+	COM	VOUT
mA	4-20 mA	VDC	V+		IOUT

Table 1: Wiring Connections



AUTO ZERO

The WPR2-300 unit should be “ZEROED” before the pressure transducers are installed on the pipes. The Auto zero button and remote zero are both used to cancel out the offsets caused by installation and sensor drift.

NOTE: Make sure a minimum of 10 minutes of warm-up time before adjustment to the ZERO.

The Auto Zero adjustment should only be performed with NO pressure applied to both sensors.

- Shut off your main pressure valve and open a shutoff valve with hose drain to equalize the pressure in the line to your atmosphere.
- Remove the sensors from the system to remove pressure from each sensor to achieve equal pressure.
- Push “ZERO” button or “SHORT ZERO PIN” for 2 seconds to “COM PIN” before installation or when it is necessary.

For units with LCD display:

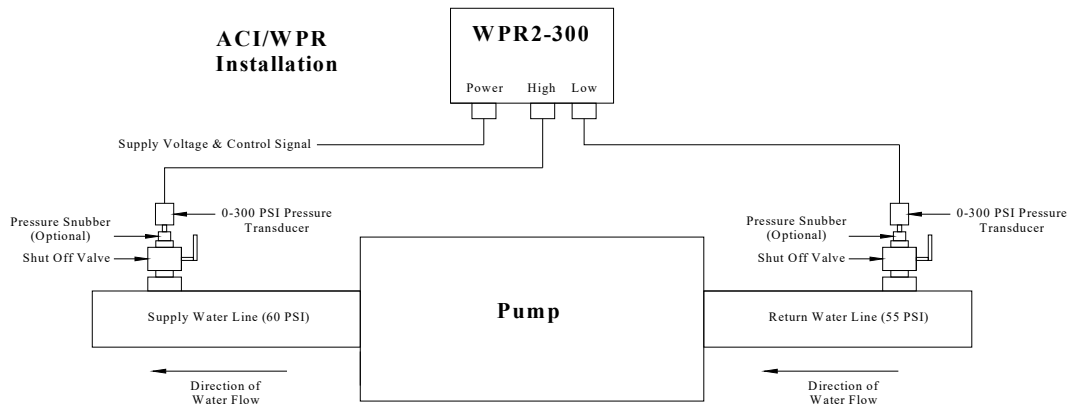
“ZERO” icon will be on when the push button is released. If auto zero is successful, “ZERO” icon will flash twice, otherwise “ERROR” and “OVR” icons will flash twice.

Pressure Connections

The WPR2-300 Series have 1/4"-18NPT male fittings. The sensors are labeled “SENSOR HIGH” and “SENSOR LOW”; **MAKE SURE THE SENSORS ARE WIRED TO THE CORRESPONDING TERMINAL BLOCK INSIDE THE HOUSING.** Otherwise ACI will not guarantee the accuracy specifications. **DO NOT REPLACE SENSORS WITH ANY OTHER SENSORS. THE WPR2-300 UNITS ARE CALIBRATED WITH THE HIGH AND LOW SENSORS SUPPLIED WITH THE UNIT.**

All WPR2-300 units can handle a proof pressure of 600 psi for both HIGH and LOW pressure sensors. If after connecting the pipe, the unit outputs out-of-range diagnostic signal **OVR** on display only, turn off the unit, disconnect the pipe or shut down the valves immediately and check the pressure input with a gauge or other test instrument.

Pressure Snubbers are optional with each WPR2-300 unit. The Pressure Snubber is used to dampen pressure surges. A pigtail siphon should be used to lower the media temperature below 230°F (110°C) to prevent damage to the pressure sensor.



INPUT RANGE ADJUSTMENT

- **DO NOT SWITCH PRESSURE RANGE AND 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 LINE PRESSURE IS 300 PSI FOR A/WPR2-300.**

The WPR2-300 can operate in either unidirectional mode (0 – X psid) or bidirectional mode (\pm X psid). The unit will be set at unidirectional mode after factory calibration.

Unidirectional Mode

- DIP switch SW7 position 1 set at **UNI** side.
- DIP switch SW7 positions 4 and 5 are for Range Selection

ACI/Part No.	SW7 Position 5: 1		SW7 Position 5: 2	
	Position 4: A	Position 4: B	Position 4: A	Position 4: B
A/WPR2-300	0-300 psid	0-150 psid	0-75 psid	0-30 psid

Bidirectional Mode

- DIP switch SW7 position 1 set at **BI** side.
- DIP switch SW7 positions 4 and 5 are for Range Selection

Note: In Bidirectional mode, a value of 0 psid will have an output equal to 50% of the full output range.

ACI/Part No.	SW7 Position 5: 1		SW7 Position 5: 2	
	Position 4: A	Position 4: B	Position 4: A	Position 4: B
A/WPR2-300	\pm 300 psid	\pm 150 psid	\pm 75 psid	\pm 30 psid

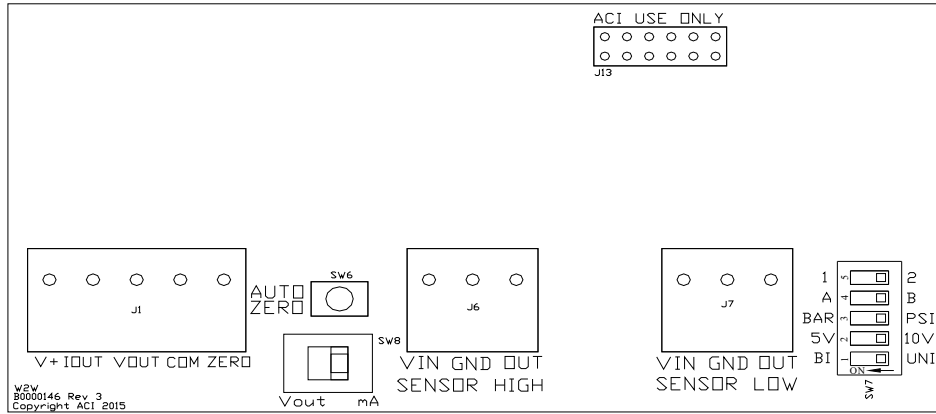


Figure 1

ENGINEERING UNITS ADJUSTMENT

This option is ONLY for units with LCD display. Switch DIP switch SW7 position 3 to select PSI or BAR.

Advanced Features

For units with LCD display:

- “ERROR” icon will be on when differential pressure is out of range.
- “OVR” icon will be on when gage pressure is out of range on either the high or low port.

Trouble Shooting

Problem	Trouble Shooting Steps
<p>“ERROR” icon on Display will be on when differential pressure is out of range. The differential pressure could be lower or higher than the selected range.</p> <p>“OVR” icon on Display will be on when the input pressure is > than 300 psi. Check pressure input with a gauge or other test instrument.</p>	<ol style="list-style-type: none"> 1. Verify the HIGH Sensor Voltage is between 0.5 VDC (0 psi) and 4.5 VDC (100 psi) When measuring from the HIGH Sensor terminal Block “GND” to “OUT”. If out of range call ACI for Technical support. 2. Verify the LOW Sensor Voltage is between 0.5 VDC (0 psi) and 4.5 VDC (100 psi) When measuring from the LOW Sensor terminal Block “GND” to “OUT”. If out of range call ACI for Technical support. 3. Verify in Uni-Directional Mode that the HIGH Sensor Voltage is \geq the LOW Sensor Voltage. If voltage is anything different call ACI for Technical support.
<p>Output reading @ 4mA or 0 VDC all the time</p>	<ol style="list-style-type: none"> 1. Verify proper Supply Voltage at the transducer meets the Product Specifications. 2. Verify 5 VDC Reference voltage across “VIN” to “GND” terminals for both the HIGH & LOW Sensor terminal blocks. If voltage is anything different than 5VDC call ACI for Technical support.
<p>Erroneous Readings</p>	<ol style="list-style-type: none"> 1. Bleed Air from System. 2. Repeat the Auto Zero calibration on page 2.

Product Specifications

Supply Voltage	4-20mA Output: 250 Ohm Load 16-36 VDC 4-20mA Output: 500 Ohm Load 20-36 VDC 0-5 VDC Output: 16-36 VDC / 24VAC ($\pm 10\%$) 0-10 VDC Output: 16-36 VDC / 24VAC ($\pm 10\%$)
Supply Current	24mA minimum
Output	2-wire, 4 to 20mA DC Current (500 Ohm Load Max.) or 3-wire, 0-5 or 0-10VDC (5K Ohm Min.)
Sensor Accuracy ¹	$\pm 1\%$ FSO $\pm 1.5\%$ FSO for 0-30/ ± 30 psid ranges
Output Update Rate	1 Second Interval
Response Time (0-100%)	8 Seconds
Operating Temperature Range	Sensor: -40 to 230°F (-40 to 110°C) Enclosure: 5 to 176°F (-15 to 80°C) Sensor Cable: 0 to +75°C (32 to 167°F)
Compensated Temperature Range	32 to 140°F (0 to 60°C)
Humidity	10 to 90% RH, non-condensing
Thermal Effects ²	$\pm 2\%$ FSO (0 to 60°C)
Proof Pressure	2 x F.S. for WPR2-300 series
Burst Pressure	1500 psi
Media	Gases, refrigerants, ammonia and water-based fluids *
Features	Depluggable terminal blocks Push button/Remote Auto Zero DIP switch selectable ranges and output modes Out-Of-Range Diagnostic Output
Enclosure	IP66 Rated (Mounting Flanges & Screws Included)
Approvals	RoHS
Display	Optional LCD display
Note 1: Accuracy includes linearity, hysteresis and repeatability.	
Note 2: Shift is relative to 77°F (25°C).	

*Please contact ACI for petrol chemical compatible versions.

Table 2: Product Specifications

Warranty Specification

The ACI WPR2 Series is 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: