

Honeywell

PWTA Series Conduit Wet Pressure Transmitters

INSTALLATION INSTRUCTIONS



WARNING

This product can expose you to chemicals including 1,3 Butadiene, which is known to the State of California to cause cancer and reproductive harm. For more information, go to www.P65Warnings.ca.gov

APPLICATION

The PWTA Series wet/wet differential pressure sensors provide reliable, accurate measurement and control of proper applications, including the monitor and control of pump differential pressure, chiller/boiler differential pressure drop, and CW/HW system differential pressure. The PWTA Series is ideal for measuring pressure across pumps, filters, heat exchangers, compressors and other non-corrosive wet media applications. The PWTA Series of pressure sensors feature three field selectable pressure ranges, bi/uni-directional modes with configurable output: 4-20 mA, 0-5 Vdc, or 0-10 Vdc output.

IMPORTANT

- Only qualified trade installers should install this product
- This product is not intended for life-safety applications
- Do not install in hazardous or classified locations
- The installer is responsible for all applicable codes
- De-energize power supply prior to installation or service

Product Application Limitation:

Honeywell products are not designed for life or safety applications. Honeywell products are not intended for use in critical applications such as nuclear facilities, human implantable device or life support. Honeywell is not liable, in whole or in part, for any claims or damages arising from such uses.

IMPORTANT

- Do NOT exceed gauge pressure rating of sensor.
- Use ONLY Honeywell gauge pressure sensors provided with your PWTA transmitter to obtain the specified transmitter accuracy.
- Follow instructions step by step to ensure proper setup.

Limites de l'application du produit :

Les produits Honeywell ne sont pas conçus pour des applications de sécurité ou de sauvetage. Les produits Honeywell ne sont pas conçus pour les applications critiques, comme les installations nucléaires, les dispositifs implantables dans le corps humain ou d'assistance vitale. Honeywell n'est pas responsable, en tout ou en partie, des réclamations ou dommages découlant d'une telle utilisation.

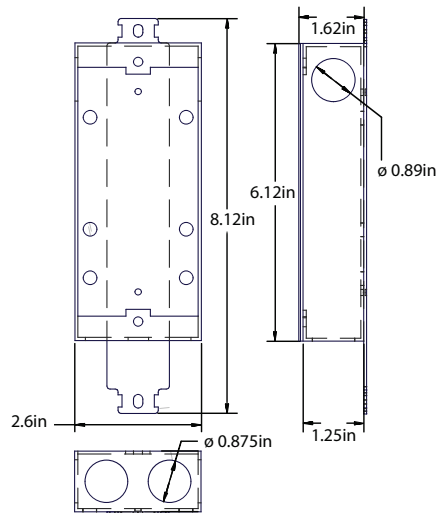
IMPORTANT

- Ne dépassez PAS la pression manométrique nominale du capteur.
- Utilisez uniquement des capteurs de pression manométrique Honeywell fournis avec votre émetteur PWTA pour obtenir la précision spécifiée de l'émetteur.
- Suivez les instructions détaillées pour assurer une configuration adéquate.



31-00396-01

DIMENSIONS



CONNECTION WIRING

Honeywell recommends 22 AWG stranded, 4 conductor shielded cable to wire between the PWTA transmitter and pressure sensors.

Terminals are rated for 24–14 AWG, 3.5 lb-in of torque.

INSTALLATION

1. Identify PWTA sensors A & B and their respective PSIG rating.

If the expected system gauge pressure exceeds the PSIG rating on the PWTA sensors call factory and DO NOT proceed with install.

PWTA40-X = 100 PSIG (50/75/100 PSID)
PWTA100-X = 100 PSIG (10/20/40 PSID)
PWTA250-X = 250 PSIG (75/150/250 PSID)

2. Plumb sensors to media. Sensor A is intended for supply pressure and sensor B is intended for return pressure of the system. Plumb sensors to the side or top of pipe, as plumbing to the bottom will cause sediment to settle and could clog or affect sensor accuracy.
 It is advisable to use a single wrap of PTFE tape on the sensor thread sealing alternative, to improve sensor accuracy.

No bypass valve manifold is necessary. Use only Honeywell gauge pressure sensor elements provided with your transmitter.

Optional shutoff valves are available

Honeywell recommends closing service valves when flushing system to prevent contaminants and water hammer from damaging sensing elements.

3. Mount the PWTA transmitter and run conduit (if required) between the transmitter and the sensors.
4. Run the appropriate length cables between the PWTA transmitter and sensors.
 Honeywell recommends 22 AWG stranded, 4 conductor shielded cable to wire between the PWTA transmitter and the sensors.
5. Loosen the top screw on each sensor and remove the terminal block for wiring as shown below:



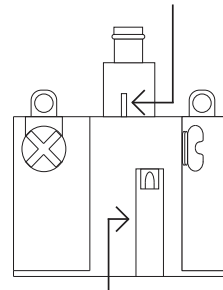
Conduit Adapter Terminal Block Rubber Cover Pressure Sensing Element

6. Run the cable through the conduit adapter and connect the wires to the sensor terminal block. Note that the conduit terminal block is numbered and color coded to match the terminal label colors on the PWTA transmitter.

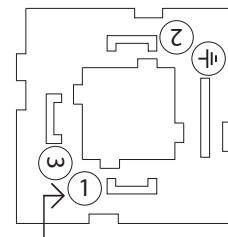
Reassemble the sensor conduit adapter and terminal block. Place the rubber cover back on the conduit adapter and plug the adapter onto the sensor. Tighten the assembly screw.

DO NOT attempt to plumb or tighten the sensors while wires are attached, as you run the risk of pulling wires from cable attachments.

TERMINAL WIRING

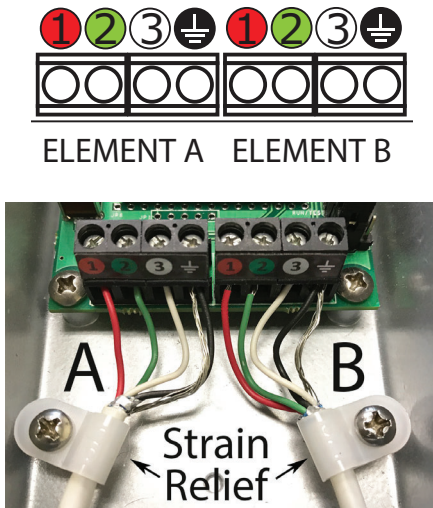


TERMINAL COLOR



TERMINAL NUMBER

7. Wire sensors A & B to the PWTA Transmitter terminals labeled A & B respectively. For strain relief, use the cable clamps as shown below:



IMPORTANT

Cable shielding should **ONLY** be connected to the GROUND terminal at the PWTA transmitter. **DO NOT** connect cable shielding at the pressure sensor.

Picture above shows the 5 wires connected properly from the sensor to the PWTA transmitter (+/- voltage supply (terminals 1 and GROUND), +/- feedback from transducer (terminals 2 and 3) and shield wire (GROUND terminal).

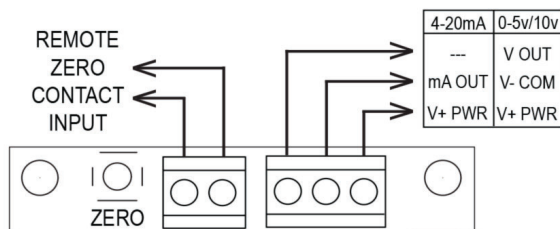
8. Connect conduit fittings to the sensors and PWTA transmitter. Use water tight fittings if required by your installation conditions.
9. Wire PWTA transmitter for voltage or current output as shown (Remote zero wiring is optional):

4-20mA wiring:

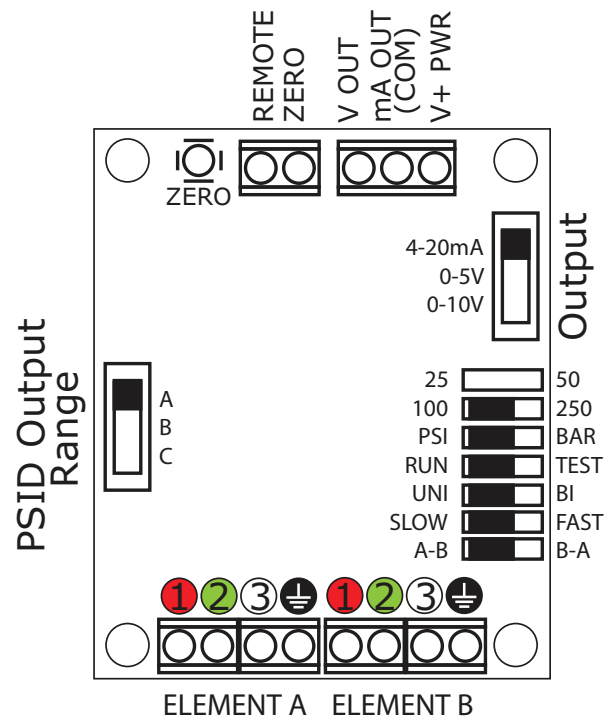
mA OUT = 4-20mA output return
V+ PWR = Loop supply excitation voltage

0-5v/0-10v wiring:

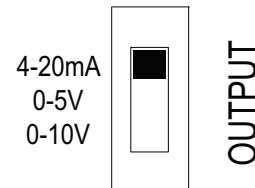
V OUT = Voltage output, 0-5 or 10vdc
V- COM = Ground/Common
V+ PWR = Power supply excitation voltage



10. Use the following diagram for the remaining configuration of your PWTA system.



11. Select 20 mA, 5 V or 10 V output using OUTPUT switch based on wiring configuration.

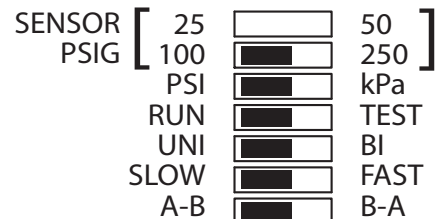


12. Verify the PSIG jumper matches the PSIG rating on the sensors.

Sensor Identification:

PWTA40-X = 100 PSIG
PWTA100-X = 100 PSIG
PWTA250-X = 250 PSIG

PWTA Transmitter Jumper Configuration:



13. Select differential pressure range using RANGE switch. Identify if your PWTA transmitter is labeled a PWTA40, PWTA100, or PWTA250 model. Each Transmitter provides three PSID ranges based on the PSIG rating on sensors A and B. Use the appropriate

PSID range selection chart below based on the transmitter label. Selected range will scale the PWTA transmitter output.

Transmitter PSID Range Selection:








RANGE	PWTA40 PWTA100 PWTA250		
	A 10 PSID	50 PSID	75 PSID
	B 20 PSID	75 PSID	150 PSID
	C 40 PSID	100 PSID	250 PSID

14. Inspect LCD for readings. LCD toggles between sensor A reading, sensor B reading, and PSID reading.

Sensor A reading is indicated by a tick mark on the top left of LCD. Sensor B reading is indicated by a tick mark at the bottom left of LCD. PSID reading is displayed without any mark at the left of the LCD.

O/R symbol will flash in bottom center of LCD if differential pressure reading is over range. If this occurs, select larger PSID range to avoid clipping of readings.

15. Check remaining jumper configurations for additional setup options:

SENSOR	[25		50]
PSIG	[100		250]
DISPLAY UNITS	PSI		kPa
TEST MODE	RUN		TEST
DIRECTION MODE	UNI		BI
RESPONSE TIME	SLOW		FAST
PORT SWAP	A-B		B-A

REMOVE FOR ABSOLUTE VALUE

Display Units: LCD will display readings in PSI or kPa. LCD will indicate PSI or kPa at top of screen.

Test Mode: In “Test Mode” sensor forces outputs to full-scale for testing wiring and panel setup.

Direction Mode: PWTA transmitter can be set up in Uni or Bi directional mode.

Table 1. Bi-Directional Mode Example range set at 100 PSID

A	B	DP	Output
100	0	+100	20mA/10V/5V
100	50	+50	16mA/7.5V/3.75V
50	50	0	12mA/5V/2.5V
50	100	-50	8mA/2.5V/1.25V
0	100	-100	4mA/0V/0V

Response Time: In “Slow Mode” the output returns a reading averaged over 64 samples. In ‘Fast Mode’ the output returns the most recently calculated reading for PSI.

Port Swap: If Sensor A was plumbed to the return (low) side and Sensor B was plumbed to the supply (high) side instead of re-plumbing the sensors, the Port Swap can be utilized without a physical reconfiguration. If this jumper is removed, transmitter is in Absolute Mode, where values will always be reported positive.

16. To custom zero the device (optional), hold down the zero button for 5 seconds (until the LCD blinks once). Hold down for 10 seconds (until LCD blinks twice) to reset/clear the zero value.
17. Seal remaining conduit knockouts on PWTA transmitter.

CALIBRATION

Honeywell wet pressure sensors are factory calibrated as a set to each PWTA transmitter.

RECYCLING

Product should not be thrown away in regular trash. Instead, it should be recycled according to local municipality.



TROUBLESHOOTING

Symptom	Solution
No output	Check wiring. Ensure power supply meets requirements.
Pressure reading error	Verify control panel software is configured for correct output scaling. Verify switch and jumper settings.
Device will not zero	Hold ZERO button for full 5-seconds until LCD blinks once. Continue holding ZERO button for 10-15 seconds, until LCD blinks twice, to restore to factory settings.

SPECIFICATIONS

Power supply	Voltage output (0-5V)	12-30 VDC/24 VAC ¹ , 20 mA max.
	Voltage output (0-10V) Current (4-20 mA) output	15-30 VDC/24 VAC 12-30 VDC, 20 mA max.
Outputs	Switch selectable	2-wire 4-20 mA, 3-wire 0-5V/10V
Pressure Ranges (Switch selectable)	PWTA40-X PWTA100-X PWTA250-X	10/20/40 PSID 50/75/100 PSID 75/150/250 PSID
Operating Temperature	Transmitter	32 to 140°F (0-60°C)
Media Compatibility	Type	Water, other 17-4 SS compatible media
	Temperature	-40 to 248°F (-40-120°C)
Zero adjustment	Automatic	Pushbutton, terminal block switch input Press button for 5 seconds to re-zero Hold for 10 seconds to restore to factory settings
Sensor type		Micro-machined silicon strain gauge
PWTA40 Transmitter	Accuracy ²	Range A: +/-4% FS Range B/C: +/- 2% FS
PWTA100/250 Transmitter	Accuracy ²	Range A: +/-2% FS Range B/C: +/- 1% FS

Sensor Performance	Accuracy	< +/-0.5% BFS
	Zero Offset	< +/-2% FS
	Span Tolerance	< +/-2% FS
	Stability (1 year)	+/-2.5% FS, typ
	Over-range protection	2x rated pressure
	Burst pressure	5x or 20,000 PSI (whichever is less)
	Pressure Cycles	> 100 million
	Compensated Range	30 to 130°F (0-55°C)
	Temperature Compensation	Zero, < +/-1.5% of FS Span, < +/-1.5% of FS
	Shock	100G, 11 msec, 1/2 sine
	Vibration	10G peak, 20 to 2000 Hz
	EMI/RFI Protection	Yes
Enclosure, Transmitter	Construction	Powder coated steel
	Sealing	IP65 (Installed with water-tight fittings)
Enclosure, Sensor	Construction	Stainless Steel, 17-4, 1/4" MNPT, 1/2" Conduit Fitting

¹ One side of transformer secondary is connected to signal common. Dedicated transformer is recommended.

² For PWTA Transmitter performance accuracy, FS is defined as the full scale of the selected range in bi-directional mode.

SPECIFICATION BY PRODUCT

Product Number	Max PSIG	Selectable PSID Range
PWTA40-X	100 PSIG	10/20/40 PSID
PWTA100-X	100 PSIG	50/75/100 PSID
PWTA250-X	250 PSIG	75/150/250 PSID

Honeywell Building Technologies

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