BAPI ZPM Zone Pressure Sensor Instruction Manual

Contents

BAPI ZPM Zone Pressure Sensor

Product Information

Specifications:

- **Product Name:** ZPM Zone Pressure Sensor
- **Model:** 47138_ins_ZPM_SR_BB
- Designed for quick and easy field installation
- Optional LCD for troubleshooting
- Outputs, ranges, units, and directionality can be easily set in the field
- Pressure range indication with LEDs
- **Mounting:** Self-tapping #10×3/4 sheet metal screws
- IP66 rating with cover latch screws

Product Usage Instructions

Switch Setup:

1. Select OUTPUT
2. Select RANGE (Set to R6 if Custom Range is ordered)
3. Choose DIRECTION (Bidirectional or Unidirectional)
4. Choose UNITS (Inches WC or PASCALS)
5. Choose RESPONSE TIME (Fast or Slow Response)

Mounting Instructions:
Attach the unit to the mounting surface using the provided self-tapping screws. Mount with pressure ports facing down to prevent condensation entry. Avoid mounting on vibrating surfaces to maintain accuracy.

Output Termination:
Wire the product with the power disconnected. Ensure proper supply voltage, polarity, and wiring connections for successful installation.

FAQ:

- **Q: How do I know if the pressure is out of range?**
  A: Three LEDs on the unit indicate when the pressure is Out of Range Low, In Range, or Out of Range High for the selected range. The appropriate LED will flash when out of range.
- **Q: What is the response time setting for?**
  A: The response time setting allows you to choose between Fast (1/2 second) or Slow (4 seconds) response times for pressure readings.

Identification and Overview

BAPI's ZPM is designed for quick and easy field installation. The outputs, ranges, units, and directionality, are all easily set in the field without powering the unit.

The optional LCD display helps with troubleshooting because it displays the actual pressure regardless of the selected pressure range. Three LEDs on the face of the unit indicate when the pressure is "Out of Range Low", "In Range" or "Out of Range High" for the selected range. The appropriate LED will flash when out of range.

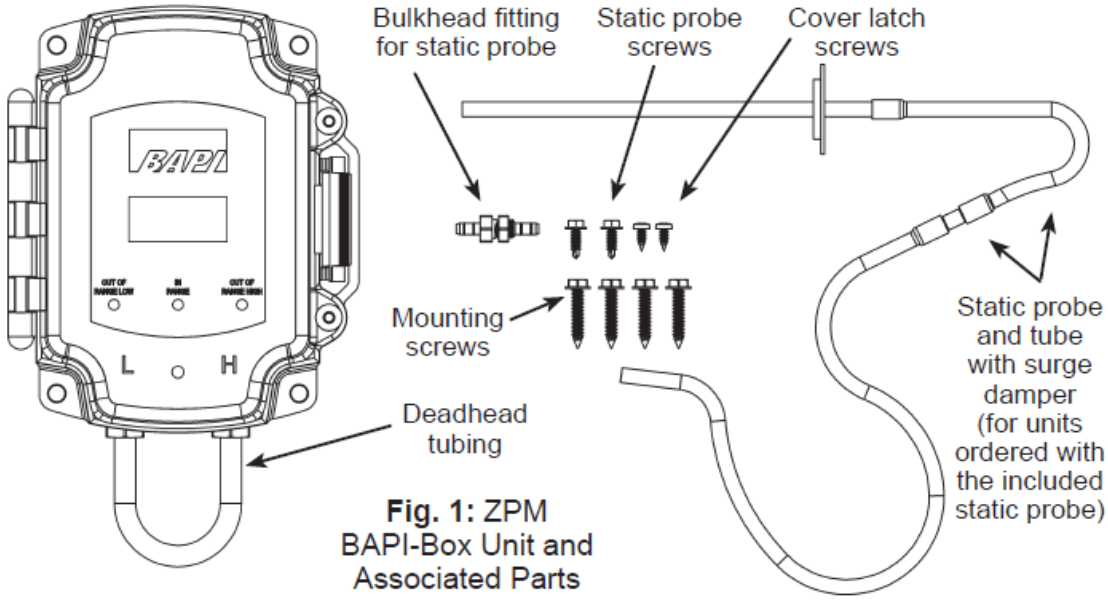


Fig. 1: ZPM BAPI-Box Unit and Associated Parts

Switch Setup – Outputs, Ranges, Units/Response

NOTE!
Always follow the Auto-Zero procedure after changing settings.

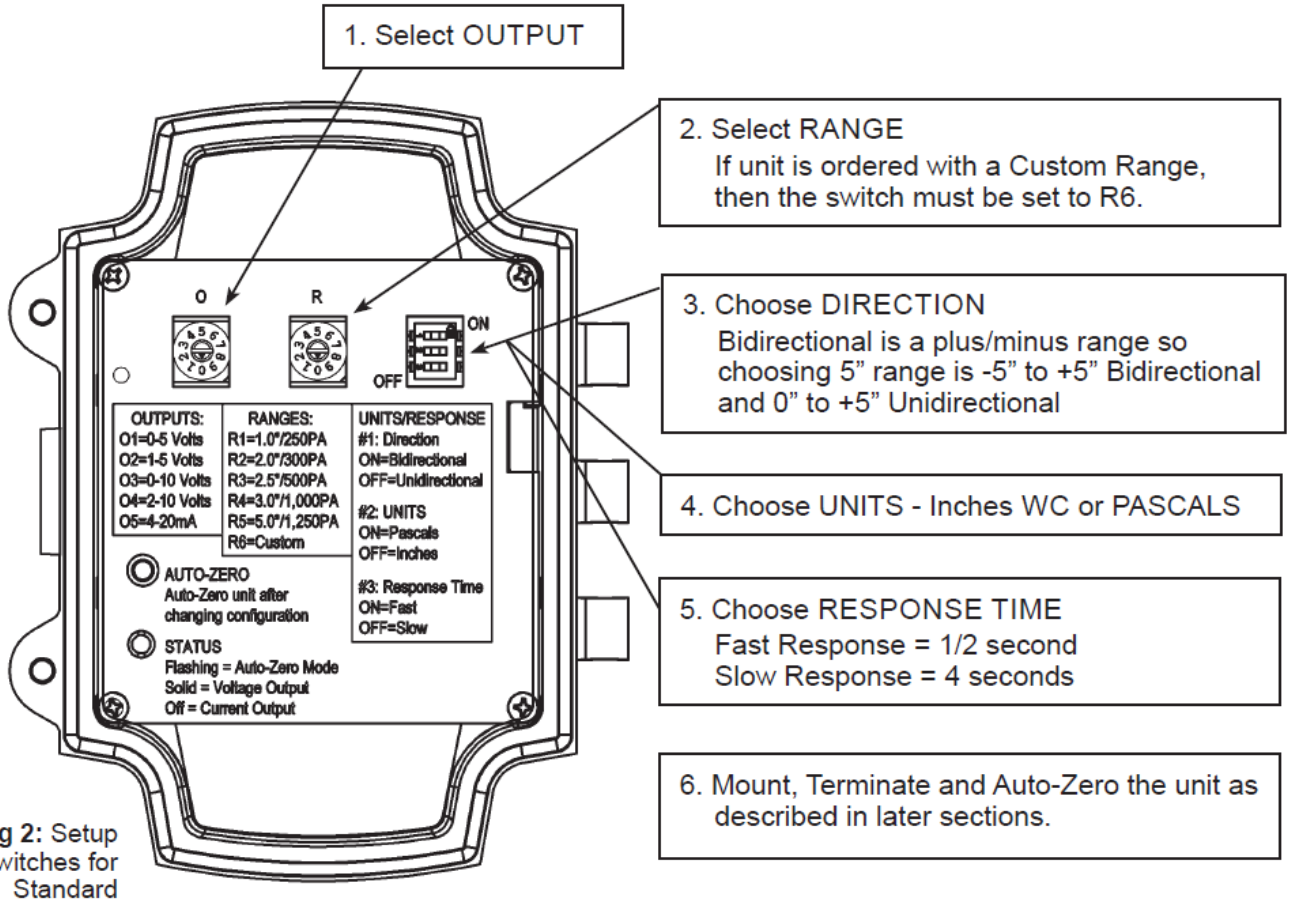


Fig 2: Setup Switches for Standard Range Units

Mounting

Attach the unit to its mounting surface with the four self-tapping #10×3/4" sheet metal screws through the holes in the mounting feet. The preferred mounting orientation is with the pressure ports facing down to prevent condensation from entering the pressure transducer. Do not mount to a vibrating surface as vibration may cause issues with the accuracy of the sensing element. See page 3 for an actual size mounting template for the unit.

The two cover latch screws must be installed to achieve an IP66 rating. After Auto-Zeroing, remove the deadhead tubing and push the system tubing onto the port nipple without creating any kinks or holes. If a hole must be cut into the plastic plugs in the ½" NPSM threaded ports of the BAPI-Box enclosure, it's recommended to use BAPI's Clean-Cut Tool. Not using this tool could cause damage to the electronics of the sensor. See the Accessories section of BAPI's website or product catalogue for more info on the Clean-Cut Tool.

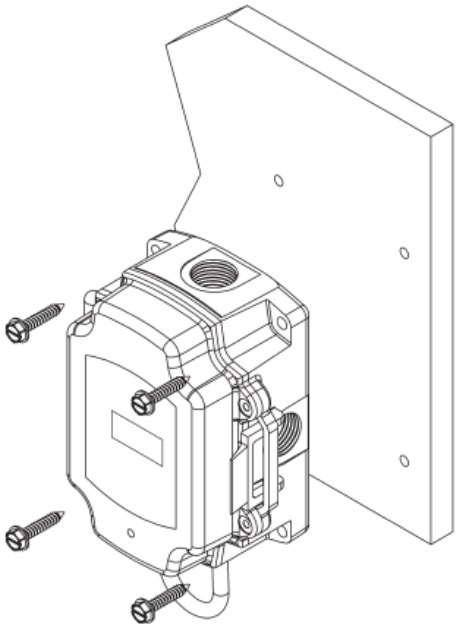


Fig. 3: ZPM BAPI-Box Mounting (for units without Attached Tube option)

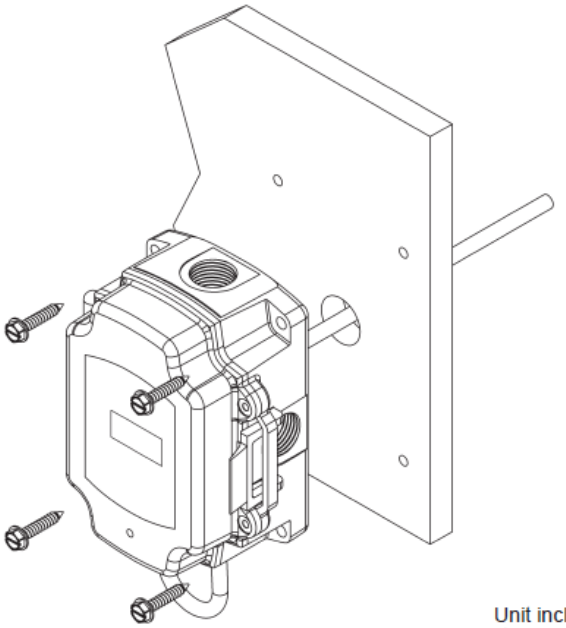


Fig. 4: ZPM BAPI-Box Mounting (for units with Attached Tube option)

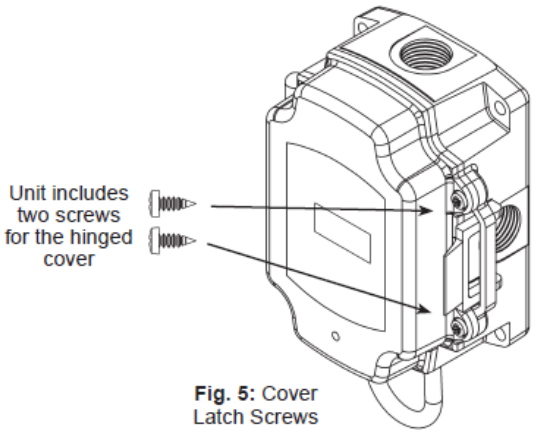


Fig. 5: Cover Latch Screws

Mounting Template

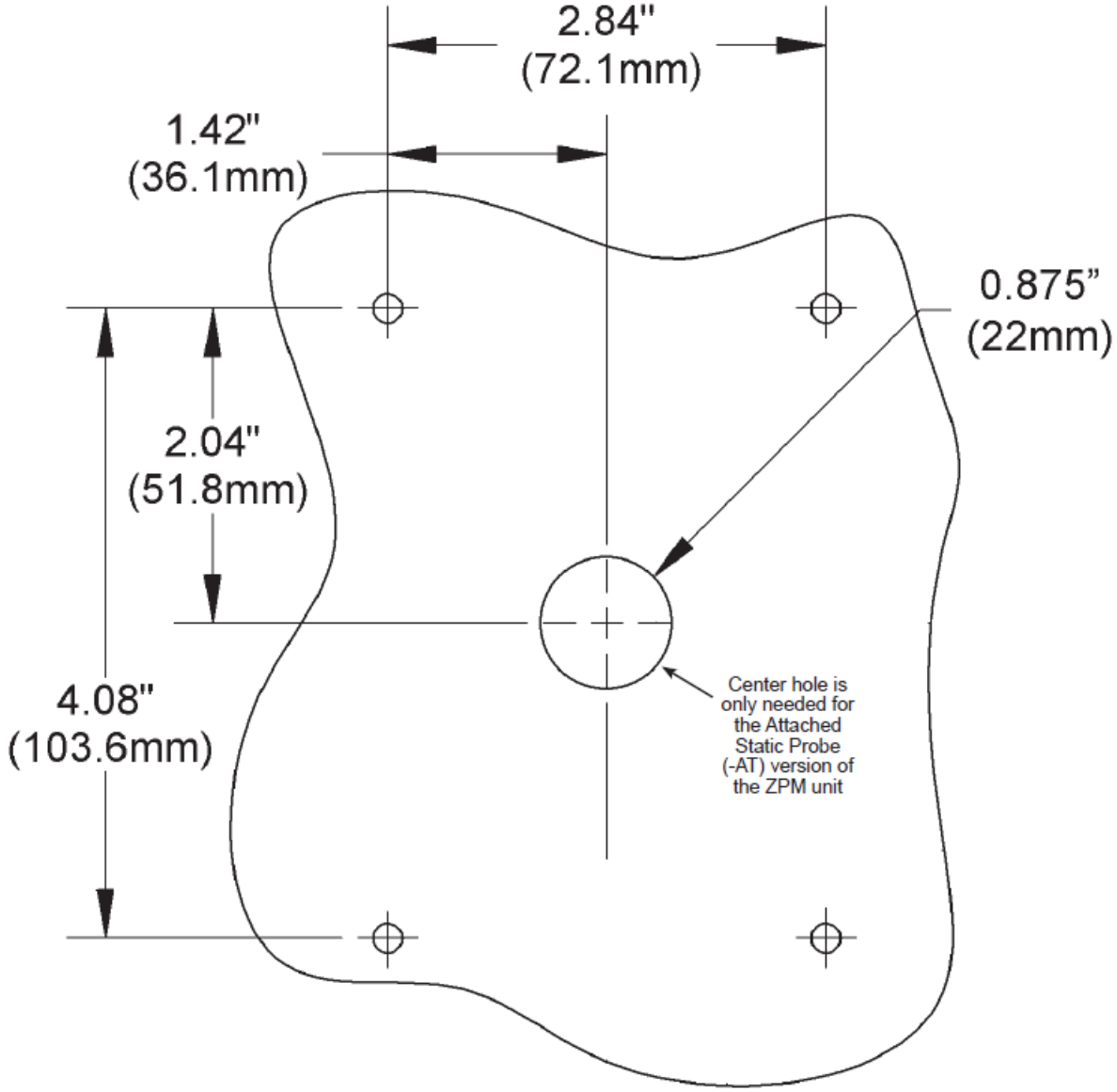


Fig. 6:
Mounting Hole Template - shown actual size

(BAPI recommends creating 5/32" (4mm) pilot holes for the #10x3/4" self-tapping mounting screws.)

Output Termination

BAPI recommends wiring the product with the power disconnected. Proper supply voltage, polarity and wiring connections are important to a successful installation. Not observing these recommendations may damage the product and void the warranty.

To ensure that all wires are properly terminated, twist the stripped ends of each wire together before inserting them into the terminals. Gently tug on the wire after inserting it into the terminal to verify a good connection.

Table 1: ZPM Termination			
Output Signal	**PWR Terminal**	**GND Terminal**	**OUT Terminal**
4 to 20 mA	7 to 40 VDC	4 to 20 mA Signal To Controller Analog Input	Not Used
0 to 5 or 1 to 5 VDC	7 to 40 VDC or 18 to 32 VAC	To Controller Ground	VDC Signal To Controller Analog Input
0 to 10 or 2 to 10 VDC	13 to 40 VDC or 18 to 32 VAC	To Controller Ground	VDC Signal To Controller Analog Input

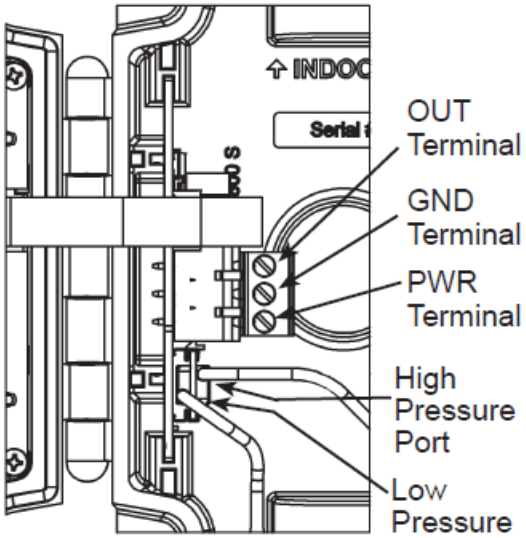


Fig. 7: ZPM Wiring Terminals

Auto-Zero Procedure and Status LED Operation

AUTO-ZERO FOR STANDARD UNITS

Auto-Zeroing must be done after the initial setup, changing mounting orientation or changing any settings. For most applications, perform an auto-zero whenever it appears that the sensor has drifted. For critical applications, the unit should be zeroed 2-3 times a year.

1. The power must be on.
2. Detach system tubing and deadhead ports using the supplied tubing or another short length of tubing. Do not kink tubing.
3. Press and hold the Auto-Zero button for 1-2 seconds. The Status LED will stop flashing when completed.
4. Remove deadhead tubing and reattach system tubing.

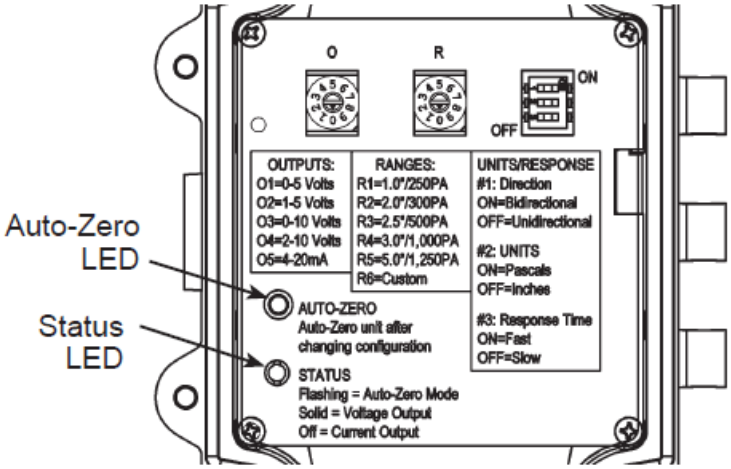


Fig 8: Auto-Zero and Status LEDs

AUTO-ZERO FOR UNITS WITH ATTACHED TUBE

1. The power must be on.
2. Disconnect system tubing from the Low-Pressure brass fitting and attach the supplied 6” deadhead tubing to the brass fitting.
3. Disconnect the short clear tubing from the 90° black Attached Tube fitting with your fingers (Fig. 9). A pliers may cut the tubing.
4. Connect the clear tubing to the supplied straight black fitting on the 6” tubing (Fig. 9). Do not kink the tubing.
5. Press and hold the Auto-Zero button for 1-2 seconds. The Status LED will stop flashing when completed.
6. Disconnect the deadhead tubing and reattach the clear tubing and system tubing. Confirm that the clear tubing is pressed all of the way onto the fitting and that it is not kinked.

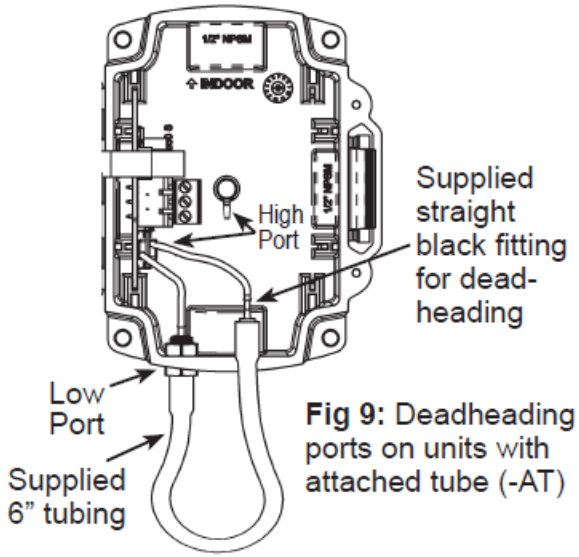


Fig 9: Deadheading ports on units with attached tube (-AT)

STATUS LED OPERATION

- **LED Off:** No power is applied or the unit is in 4 to 20 mA Mode
- **LED Solid (On):** LED is on when power is applied and a VDC output is selected. When 4 to 20 mA output is selected, the light is on for 2 seconds at power up then goes off.
- **LED Flashing:** Auto-Zero. The LED will flash for about 20 seconds.

Typical Applications

Fig. 10: Duct Static Pressure Monitoring (ZPM Pressure Sensor mounted on the duct with a Static Pressure Probe in the duct.)

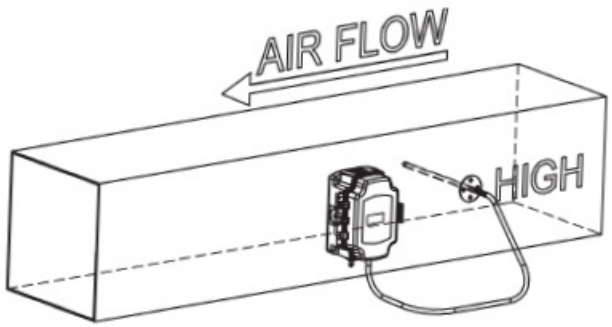
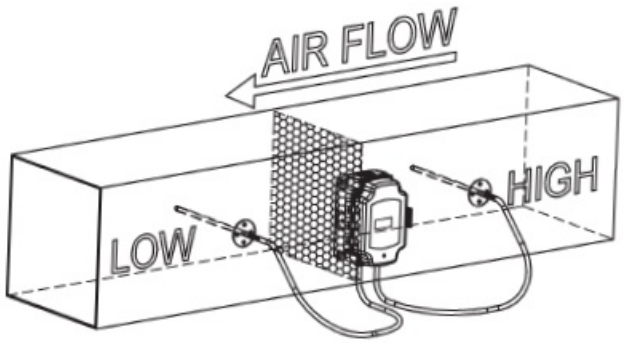


Fig. 11: Air Filter Pressure Drop Monitoring (ZPM Pressure Sensor mounted on the duct with a Static Pressure Probe on either side of the filter in a duct.)



Diagnostics

POSSIBLE PROBLEMS:
Status LED does not light

- The status LED is flashing
- Output stuck (high or low)
- Output not tracking pressure properly

POSSIBLE SOLUTIONS:

- Check power connections for proper power
- The sensor is set to 4 to 20mA output
- The unit is performing an auto-zero. Wait 20 seconds and check again.
- Remove pressure from ports and perform auto-zero procedure
- Check the rotary switch for proper pressure range selection
- Check the rotary switch for proper output range selection

Specifications

- **Power:**

    - 7 to 40 VDC (4 to 20 mA Output)
    - 7 to 40 VDC or 18 to 32 VAC (0 to 5 or 1 to 5 VDC Output)
    - 13 to 40 VDC or 18 to 32 VAC (0 to 10 or 2 to 10 VDC Output)
- **Power Consumption:**
    - 20 mA max, DC only at 4 to 20 mA Output
    - 5.2 mA max DC at 0 to 5 or 0 to 10 VDC Output
    - 0.12 VA max AC at 0 to 5 or 0 to 10 VDC Output
- **Load Resistance:**
    - 4 to 20 mA Output 850 Ω Maximum @ 24 VDC
    - 0 to 5 or 0 to 10 VDC Output 6KΩ Minimum
- **System Accuracy:**
  ±0.25% FS at 72°F (22°C) for All Units
- **Standard Range Unit:** ±0.025” WC (±6.22 Pa)
- **Stability:** ±0.25% FS per year
- **Overpressure:** Proof 300” WC (74 kPa)
- **Media:** Clean, dry, non-corrosive gases
- **Compensated Temperature Range:** 32 to 122°F (0 to 50°C)
- **Environmental Operating Range:** -4 to 140°F (-20 to 60°C)
- **Storage Temperature:** -40 to 185°F (-40 to 85°C)
- **Humidity:** 0 to 95% RH, non-condensing
- **Wiring:**
    - 2 wires (4 to 20mA Current loop)
    - 3 wires (AC or DC powered, VDC output)
- **Port Size:** 1/4” barb
- **Enclosure Material:** UV-resistant Polycarbonate, UL94, V-0
- Enclosure Rating: IP66, NEMA 4
- **Agency:**
    - CE EN 61326-1:2013 EMC (Industrial
    - Electromagnetic Environment), UL, RoHS

Selectable Standard Ranges

Inches WC/Pascals

- 0 to 1.00…… 0 to 250
- 0 to 2.00…… 0 to 300
- 0 to 2.50…… 0 to 500
- 0 to 3.00…… 0 to 1,000
- 0 to 5.00…… 0 to 1,250
- -1.00 to 1.00…….. -250 to 250
- -2.00 to 2.00…….. -300 to 300
- -2.50 to 2.50…….. -500 to 500
- -3.00 to 3.00……. -1,000 to 1,000
- -5.00 to 5.00……. -1,250 to 1,250

Contact Information

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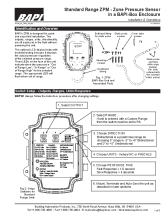
- **Web:** www.bapihvac.com.

Documents / Resources

	BAPI ZPM Zone Pressure Sensor [pdf] Instruction Manual ZPM Zone Pressure Sensor, ZPM, Zone Pressure Sensor, Pressure Sensor, Sensor

References

- BAPI - Sensor Products for HVAC/R Duct and Room
- User Manual

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