



BAPI BA/ZPM-LR-ST-ND Low Range ZPM Zone Pressure Sensor Instruction Manual

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BAPI BA/ZPM-LR-ST-ND Low Range ZPM Zone Pressure Sensor



Low Range ZPM – Zone Pressure Sensor

BAPI's ZPM is a pressure sensor designed for easy field installation. It has customizable outputs, ranges, units, directionality, and response time that can be set in the field without powering the unit. The optional LCD display provides troubleshooting assistance by displaying the actual pressure regardless of the selected pressure range. Three LEDs indicate when the pressure is Out of Range Low, In Range or Out of Range High.

Installation & Operations

Mounting: Attach the unit to its mounting surface with 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.

Switch Setup: Follow the Auto-Zero procedure after changing settings. Choose the desired output, range, direction, units, and response time using the Setup Switches as shown in **Figure 2**.

Output Termination: BAPI recommends wiring the product with power disconnected. Proper supply voltage, polarity and wiring connections are important to a successful installation. Refer to **Table 1** for ZPM Termination details.

Figures

ZPM unit and associated parts

Figure 1: ZPM unit and associated parts

ZPM Mounting without Attached Tube

Figure 3: ZPM Mounting (for units without Attached Tube option)

ZPM Mounting with Attached Tube

Figure 4: ZPM Mounting (for units with Attached Tube option)

Cover Latch Screw

Figure 5: Cover Latch Screw

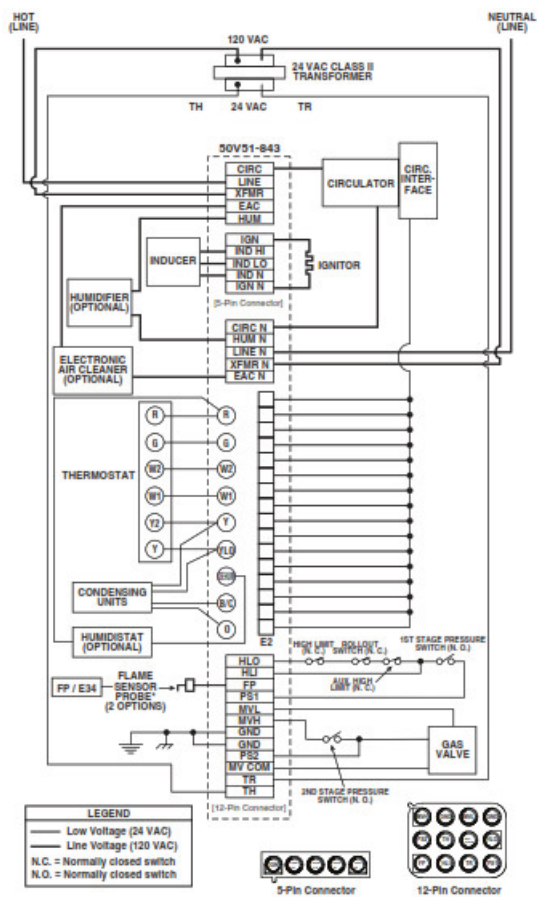


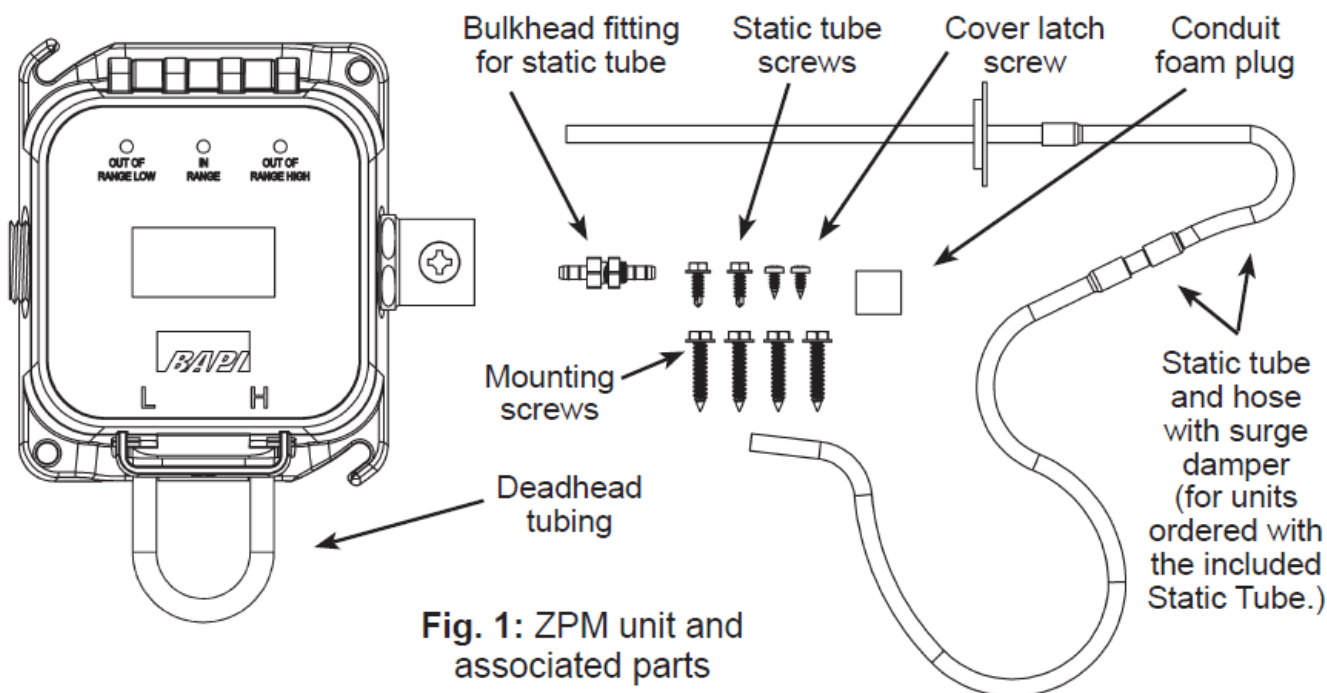
Figure 6: Mounting Hole Template – shown actual size

Table:

| Output Signal | PWR Terminal | GND Terminal | To Controller Ground |
|------------------------|------------------------------|----------------------------|----------------------|
| 4 to 20 mA | 7 to 40 VDC | To Controller Analog Input | |
| 0 to 5 or 1 to 5 VDC | 7 to 40 VDC or 18 to 32 VAC | | To Controller Ground |
| 0 to 10 or 2 to 10 VDC | 13 to 40 VDC or 18 to 32 VAC | | To Controller Ground |

To use the Low Range ZPM – Zone Pressure Sensor, follow the installation and operations instructions below: 1. Mount the unit on a flat surface with four self-tapping #10×3/4 sheet metal screws through the holes in the mounting feet. The preferred orientation is with the pressure ports facing down. 2. Set up the desired output, range, direction, units, and response time using the Setup Switches as shown in Figure 2. Always follow the Auto-Zero procedure after changing settings. 3. Wire the product with power disconnected to ensure proper supply voltage, polarity and wiring connections. Refer to Table 1 for ZPM Termination details. 4. After Auto-Zeroing, remove the deadhead tubing and push the system tubing onto the port nipple without creating any kinks or holes. 5. The optional LCD display provides troubleshooting assistance by displaying the actual pressure regardless of the selected pressure range. Three LEDs indicate when the pressure is Out of Range Low, In Range or Out of Range High.

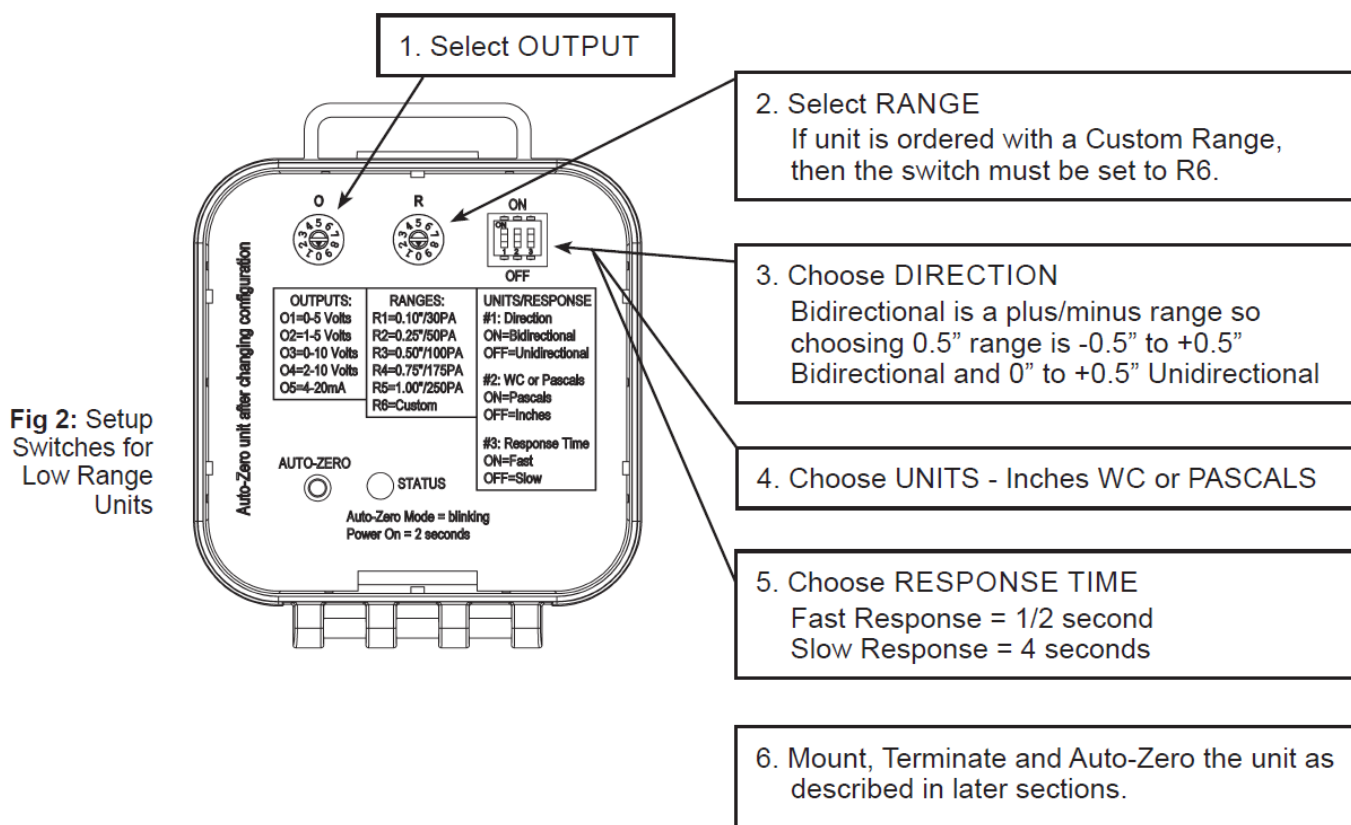
Identification and Overview



BAPI's ZPM is designed for quick and easy field installation. The outputs, ranges, units, directionality, and response time 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".

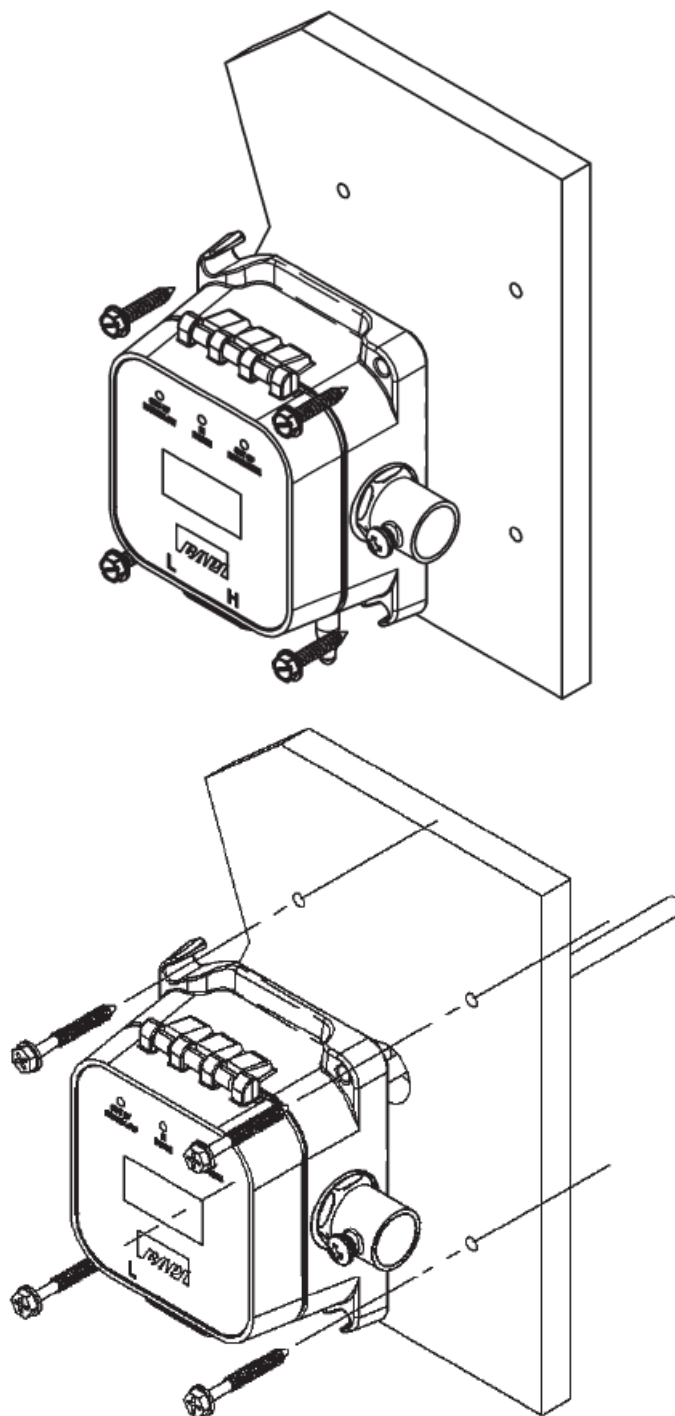
Switch Setup – Outputs, Ranges, Units/Response

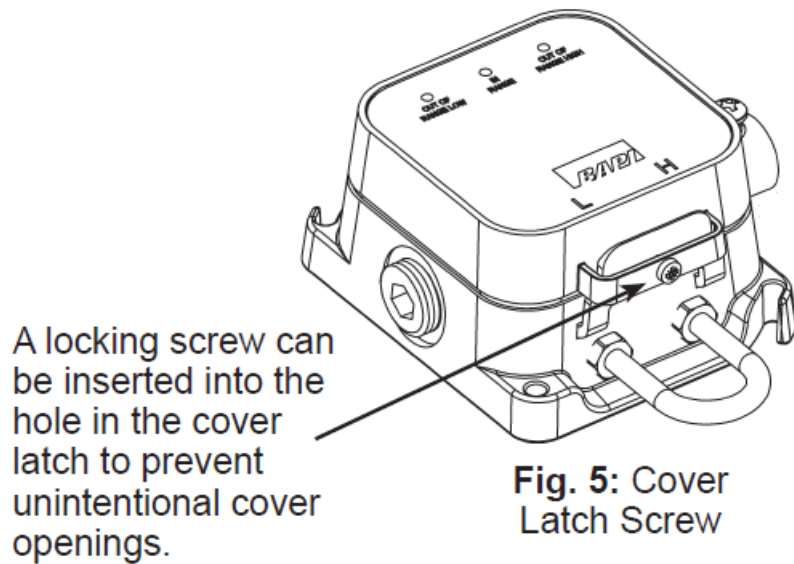
NOTE! Always follow the Auto-Zero procedure after changing settings.



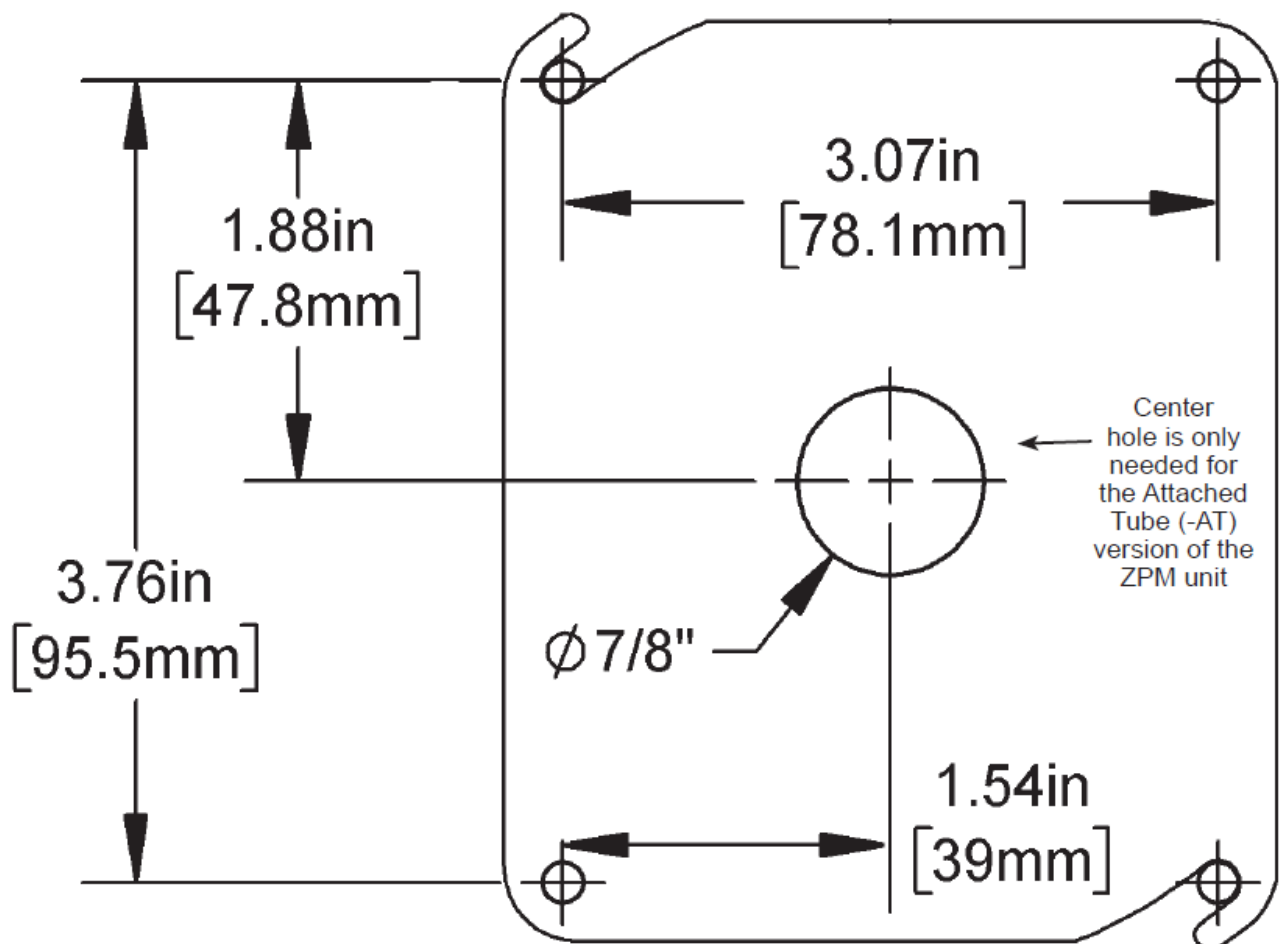
Mounting

Attach the unit to its mounting surface with 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. After Auto-Zeroing, remove the deadhead tubing and push the system tubing onto the port nipple without creating any kinks or holes.





- Mounting Hole Template – shown actual size (BAPI recommends creating 5/32" pilot holes for the #10×3/4" self-tapping mounting screws.)



Output Termination

- BAPI recommends wiring the product with 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 into the terminals. Gently tug on the wire after inserting into the terminal to verify a good connection.

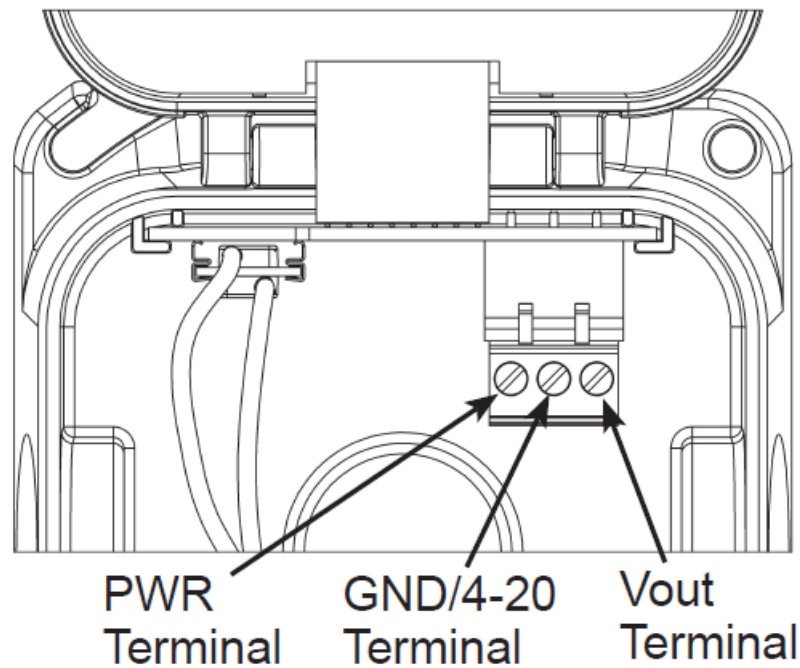


Fig. 7: ZPM Wiring Terminals

| 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 |

Auto-Zero and Status LED Operation

AUTO-ZERO OPERATION

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.

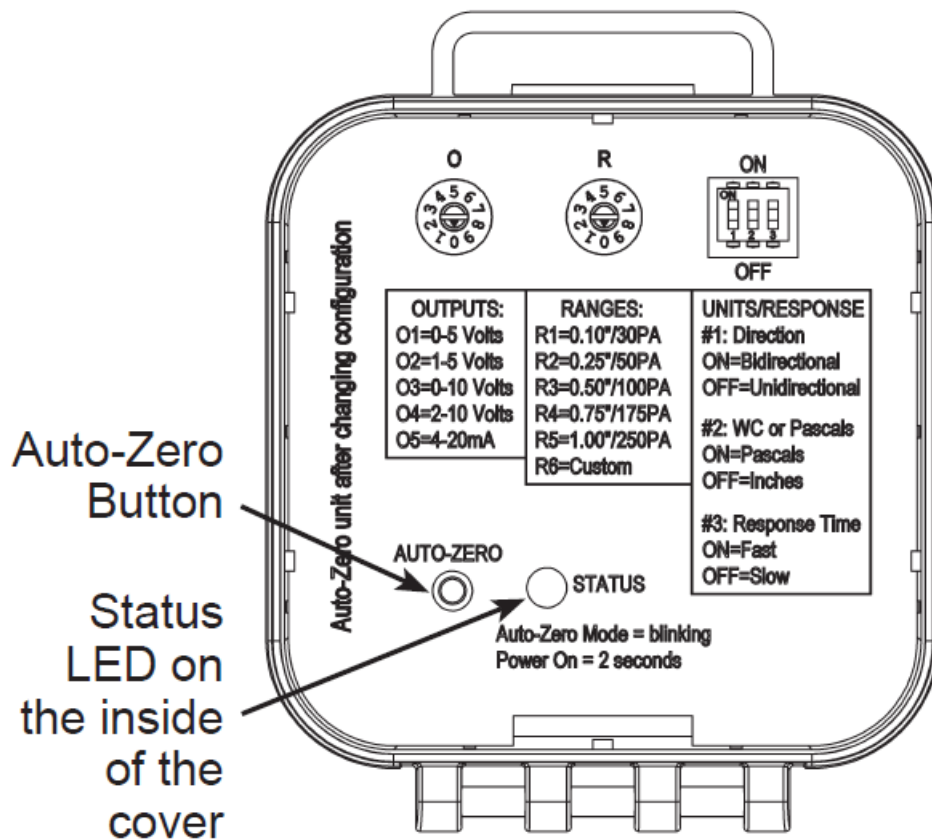
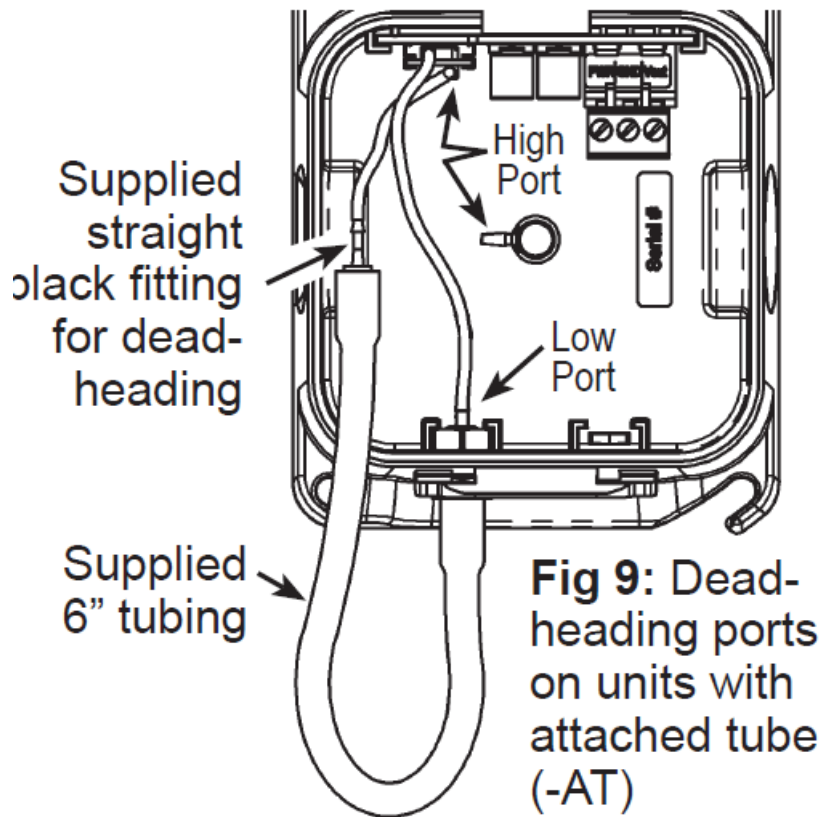


Fig 8: Auto-Zero and Status LEDs

1. Power must be on.
2. Detach system tubing and deadhead ports using the supplied tubing or other 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.

AUTO-ZERO OPERATION (Units w/ Attached Tube)

1. 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 high pressure 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.

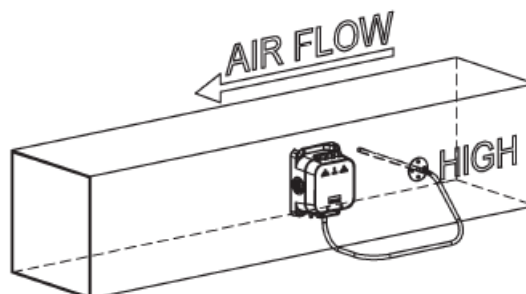


STATUS LED OPERATION

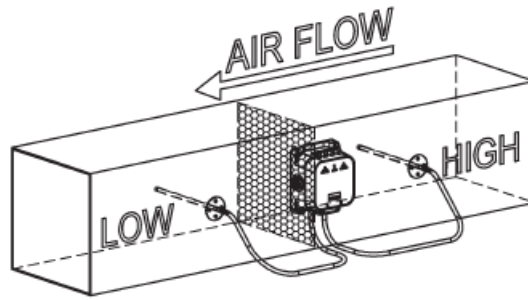
- LED Off: No power is applied or the unit is in 4 to 20 mA Mode
- LED Solid (On): LED is on when power is applied and a VDC output is selected. When 4 to 20 mA output is selected, the light is on for 2 seconds at power up then goes off.
- LED Flashing: Auto-Zero. The LED will flash for about 10 seconds.

Typical Applications

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



- 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.)



NOTE: Best practice is to form a drip loop in the tubing to prevent condensation from reaching the ZPM.

Troubleshooting

POSSIBLE PROBLEMS

- Status LED does not light
- Status LED is flashing
- Display is alternating between a number and “Err”
- Output stuck (high or low)
- Output not tracking pressure properly

POSSIBLE SOLUTIONS

- Check power connections for proper power
- Sensor is set to 4 to 20mA output
- The unit may be performing an auto-zero. Wait 10 seconds and check again.
- The measurement is out of selected range.
- Remove pressure from ports and perform auto-zero procedure
- Check rotary switch for proper pressure range selection
- Check rotary switch for proper output range selection

Specifications

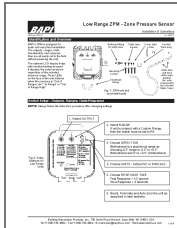
- **Power**
 - 7 to 40 VDC (4 to 20 mA Output)
 - 7 to 40 VDC or 18 to 32 VAC (0 to 5 or 1 to 5 VDC Output)
 - 13 to 40 VDC or 18 to 32 VAC (0 to 10 or 2 to 10 VDC Output)
- **Power Consumption**
 - 20 mA max, DC only at 4 to 20 mA Output
 - 5.2 mA max DC at 0 to 5 or 0 to 10 VDC Output
 - 0.12 VA max 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 6K Ω Minimum
- **Accuracy:** $\pm 0.25\%$ FS at 72°F (22°C) for All Units

- **Low Range Unit:** $\pm 0.005''$ WC (± 1.24 Pa)
- **Stability:** $\pm 0.25\%$ FS per year
- **Overpressure:** Proof 270'' WC (67 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:
- IP44, NEMA 2
- **Agency:**
- CE EN 61326-1:2013
- EMC (Industrial
- Electromagnetic
- Environment), UL,
- RoHS

Selectable Low Ranges

| <u>Inches WC</u> | <u>Pascals</u> |
|---------------------|----------------|
| 0 to 0.10..... | 0 to 30 |
| 0 to 0.25..... | 0 to 50 |
| 0 to 0.50..... | 0 to 100 |
| 0 to 0.75..... | 0 to 175 |
| 0 to 1.00..... | 0 to 250 |
| -0.10 to 0.10 | -30 to 30 |
| -0.25 to 0.25 | -50 to 50 |
| -0.50 to 0.50 | -100 to 100 |
| -0.75 to 0.75 | -175 to 175 |
| -1.00 to 1.00 | -250 to 250 |

Documents / Resources



[BAPI BA/ZPM-LR-ST-ND Low Range ZPM Zone Pressure Sensor](#) [pdf] Instruction Manual
BA ZPM-LR-ST-ND Low Range ZPM Zone Pressure Sensor, BA ZPM-LR-ST-ND, Low Range Z
PM Zone Pressure Sensor, Pressure Sensor

References

-  [BAPI - Sensor Products for HVAC/R Duct and Room](#)

[Manuals+](#).