

#38927 – 1/9/19

Overview

The Zone Pressure Multi-Sensor (Part #NSB-ZPM-HR-ST-D) is the most flexible pressure sensor on the market. Output, range, units, directionality, and response time are quickly set in the field with no tools, no power and no small components.

The LCD display helps with troubleshooting because it displays the actual differential pressure over the entire operational range regardless of which pressure range is selected for output to the system controller. Three LEDs on the face of the unit indicate when the pressure is “Out of Range Low”, “In Range” or “Out of Range High”.

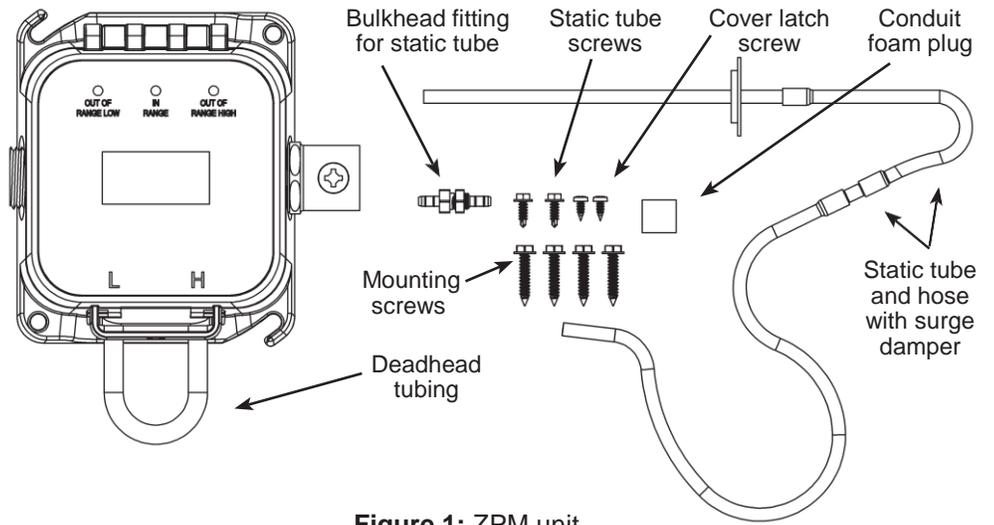


Figure 1: ZPM unit and associated parts

Specifications

Power:

- 7 to 40 VDC for 4 to 20 mA Output
- 7 to 40 VDC or 18 to 32 VAC for 0 to 5 or 1 to 5 V Output
- 13 to 40 VDC or 18 to 32 VAC for 0 to 10 or 2 to 10 V Output

Power Consumption:

- 20 mA max, DC only at 4 to 20 mA Output
- 4.9 mA max DC at 0 to 5 VDC or 0 to 10 VDC Output
- 0.12 VA max AC at 0 to 5 VDC or 0 to 10 VDC Output

Load Resistance:

- 4 to 20 mA Output 850 Ω Maximum @ 24 VDC
- 0 to 5 V or 0 to 10 V output 6K to 10KΩ minimum

Accuracy for High Pressure Ranges at 72°F:

±0.25% on all ranges

Stability: ±0.25% F.S. per year

Port Size: 1/4" tubing (1/8" to 3/16" I.D.)

Environmental Operating Range: -4 to 140°F (-20 to 60°C)

Storage Temperature: -40 to 203°F (-40 to 95°C)

Temperature Error High Range:

- 0.015% FS/°F (0.025% FS/°C)
- (0 to 30" W.C @-4 to 140°F (-20 to 60°C)

Overpressure:

- Proof: 300.1 WC (10.83 PSI)
- Burst: 512.6 WC (18.5 PSI)

Wiring:

- 2 wires (4 to 20mA Current loop)*
- 3 wires (AC or DC powered, Voltage out)*

Humidity: 0 to 95% RH, non-condensing

Port Size: 1/4" tubing (1/8" to 3/16" I.D.)

Encl. Material: UV-resistant Polycarb., UL94, V-0

Enclosure Rating: IP44, NEMA 2

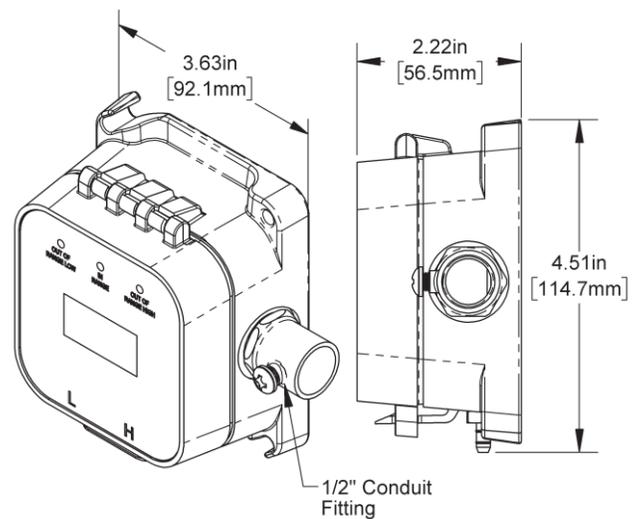


Figure 2: ZPM Dimensions

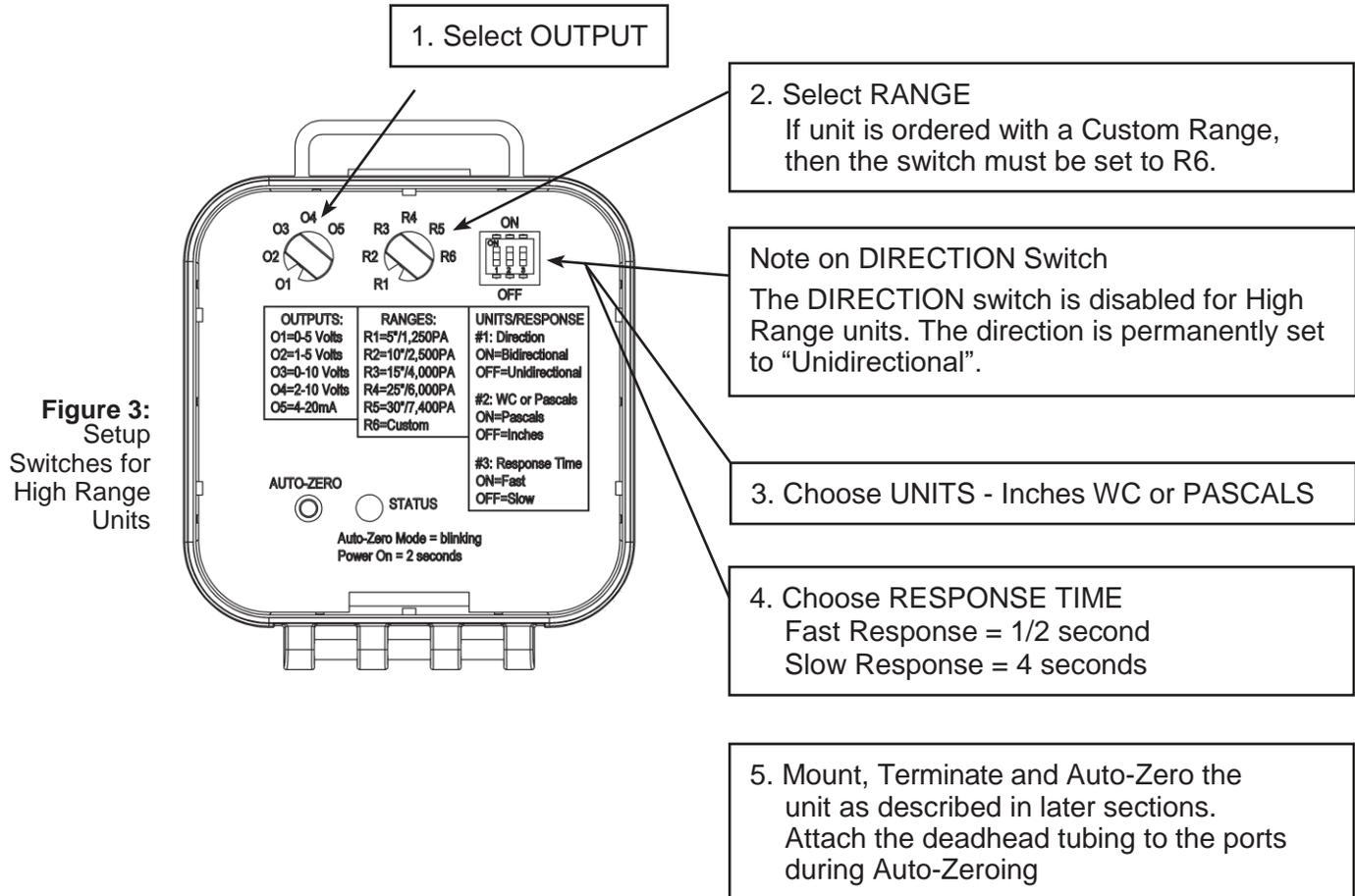
| Selectable High Ranges | |
|------------------------|------------|
| Inches WC | Pascals |
| 0 to 5..... | 0 to 1,250 |
| 0 to 10..... | 0 to 2,500 |
| 0 to 15..... | 0 to 4,000 |
| 0 to 25..... | 0 to 6,000 |
| 0 to 30..... | 0 to 7,400 |

Specifications subject to change without notice.

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Switch Setup - Outputs, Ranges, Units/Response

Do not have power applied to unit when changing settings. After changing settings, apply power and Auto-Zero the unit in its orientation of operation.



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Mounting

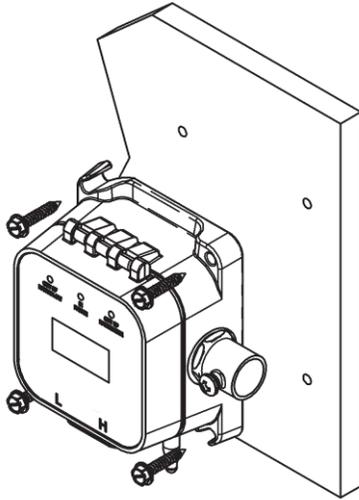
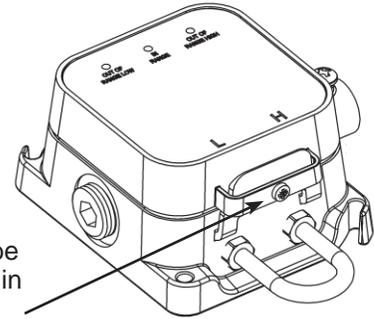


Figure 4: ZPM Mounting

Attach the unit to its mounting surface with four self-tapping #10x3/4" sheet metal screws through the holes in the mounting feet. The preferred mounting orientation is with the pressure ports facing down.

Remove the deadhead tubing and push the system tubing onto the port nipple without creating any kinks or holes.



A locking screw can be inserted into the hole in the cover latch to prevent unintentional cover openings.

Figure 5:
Cover Latch
Screw

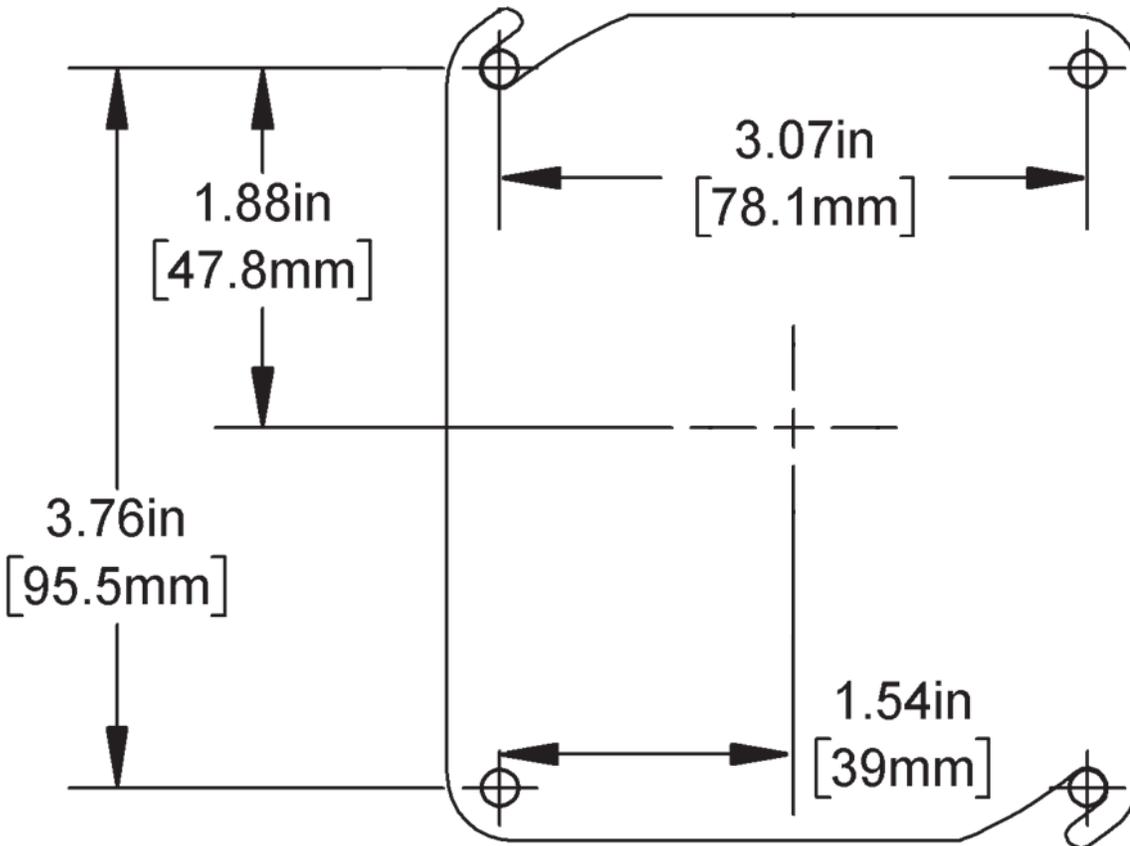


Figure 6:
Mounting Hole
Template - shown
actual size

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

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Output Termination



Automated Logic® 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.

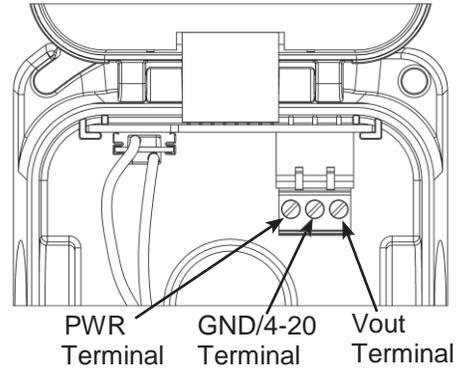


Figure 7: ZPM Wiring Terminals

Table 1: ZPM Termination

| Output Signal | PWR Terminal | GND/4-20 Terminal | Vout 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 Operation

Auto-Zeroing must be done after the initial setup and after any changing of settings.

1. Make sure power is applied
2. Deadhead ports
4. Press the Auto-Zero button for 2 seconds (LED blinks)
5. Remove deadhead after LED stops blinking
6. Attach system tubing

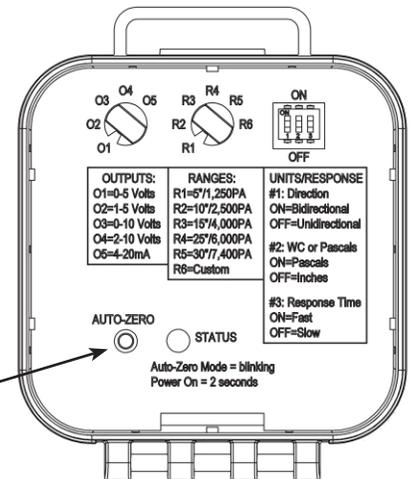


Figure 8: Auto-Zero Button

Status LED Operation

LED Off: No power is applied or the unit is in 4 to 20 mA Mode

LED On: LED is on when power is applied and voltage 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 Blinking Fast: Auto-Zero or Error Mode

LED Blinking Slow: The pressure measurement is above or below the selected pressure range. **NOTE** When the reading is above or below the selected pressure range, the LCD on the face of the unit will alternate between showing the actual reading and showing “err”.

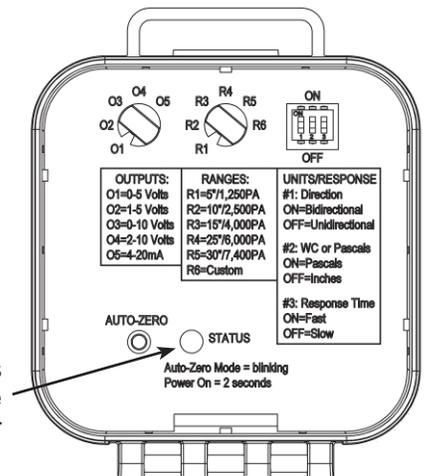


Figure 9: Status LED on the inside of the cover

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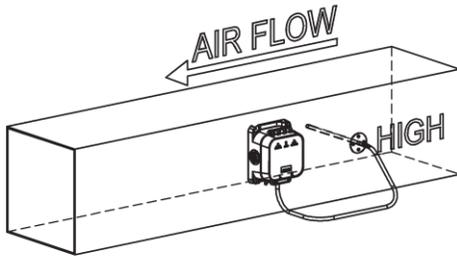
Typical Applications

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

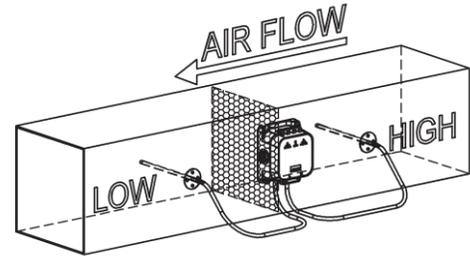


Figure 11: Air Filter Pressure Drop Monitoring (ZPM Pressure Sensor mounted on the duct with a Static Pressure Probe on either side of the filter in a duct.)

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

Troubleshooting**POSSIBLE PROBLEMS:**

LED does not light

LED is blinking fast
(1/2 second on, 1/2 second off)

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

- The unit may be performing an auto-zero. Wait 10 seconds and check again.
- Sensor is in an Error Mode. Cycle power.

- 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

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