

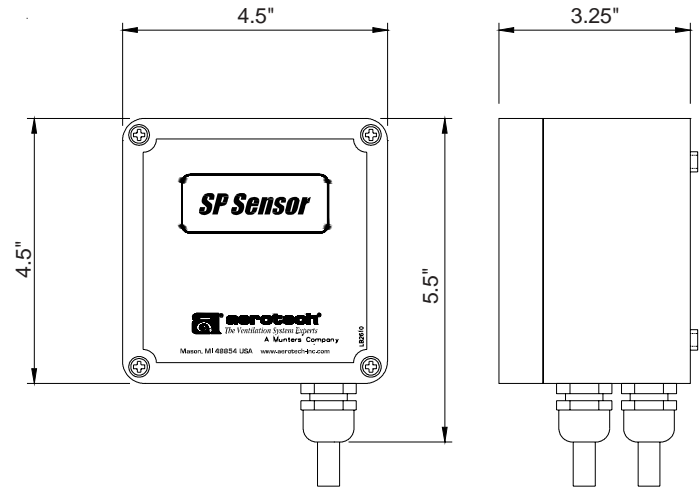
Each SP-SENSOR includes:

- 1 - SP-Sensor Controller
- 2 - 10 ft.L.^{3/16"} dia. Sensing Tubes with Filters
- 2 - Spare Air Filters

Control Specifications:

Power: 12-30VDC
Hertz: 50/60
Pressure Range: 0"-1"W.C.

NOTE: The SP-SENSOR is capable of measuring low pressures with a $\pm 1\%$ accuracy - ideally suited for proper building pressurization and air flow control. Transmitters can be damaged by over pressure to the unit. **DO NOT** overpressure unit more than 2" W.C. Variable capacitance sensor design provides excellent sensitivity and long-term stability.



INSTALLATION INSTRUCTIONS

- 1) The SP-Sensor should be mounted on a wall indoors at each point where the low voltage cable enters and exits a building, preferably in a location where humidity and dirt levels are not too high. Isolate the module from vibrations because the axis perpendicular to the mounting base is sensitive to vibrations. In most cases, preferred installation is with the baseplate mounted vertically and located on a relatively flat surface in a junction box or attached to a nearby beam.
- 2) Pressure Fitting: Both the positive (high) pressure port and the reference (low) pressure port are located on the top of the pressure transmitter, labeled High and Low respectively. For best result (shortest response times), ^{3/16"} I.D. tubing is suggested for tubing lengths up to 100 feet long, if tube length exceeds 100 feet consult Aerotech. See Exploded View (Page 5) for tube hole location.
- 3) Open sensor cover by removing the 4 top cover screws, **See Figure 1, item A**. There are 2 mounting holes, **Figure 1, Item B**.

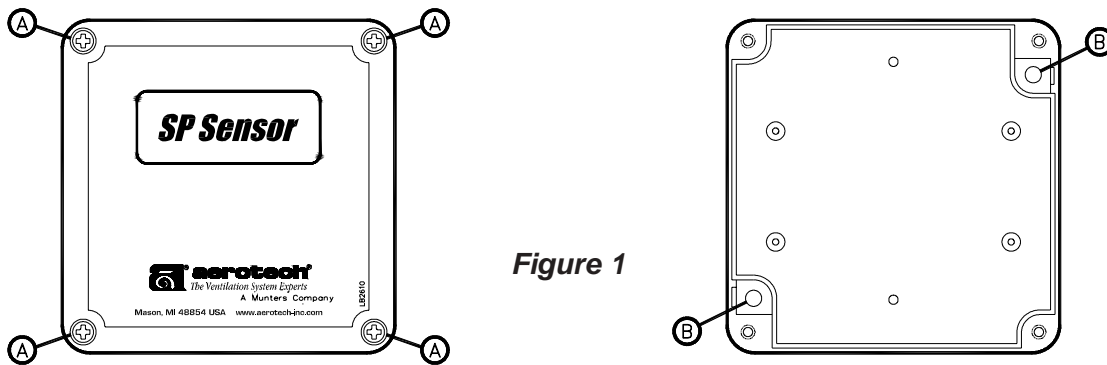


Figure 1

⚠ WARNING

The axis most sensitive to vibration is the perpendicular to the mounting base. Avoid mounting with maximum vibration along this axis.

- 4) Install tubing as shown in **Figure 2** or as shown on your Aerotech ventilation blueprint. The end of the outlet tube (low pressure) must be placed in the ventilated room with the plastic filter (provided). This filter prevents insects from entering the tube.

The end of the inlet tube (reference pressure) must run to a location where it can sense outside air pressure without the influence of gusting winds. The building attic space is usually best for this, but only if it is naturally ventilated. If there is no attic space or if the attic has exhaust fans, then an adjacent non-ventilated room may be used or the tube may be extended out both eaves. **See Figure 2.**

Make a loop in both tubes (room and reference) to trap humidity, **See Figure 2.**

⚠ WARNING
Always make loops in the inlet and outlet tubes. If this is not done, humidity may permanently damage the sensor.

Warnings:
 Never mount the sensor near water or rain pipes, as failure of these pipe may cause strong water jets to reach the sensor.

Do not under any circumstances change the setting of the calibration potentiometer inside the enclosure. This will decalibrate the pressure gauge.

Do not install ends of inlet (reference) and outlet (room) tubes in the walls, in insulation, in a humid environment or near walls affected by drafts.

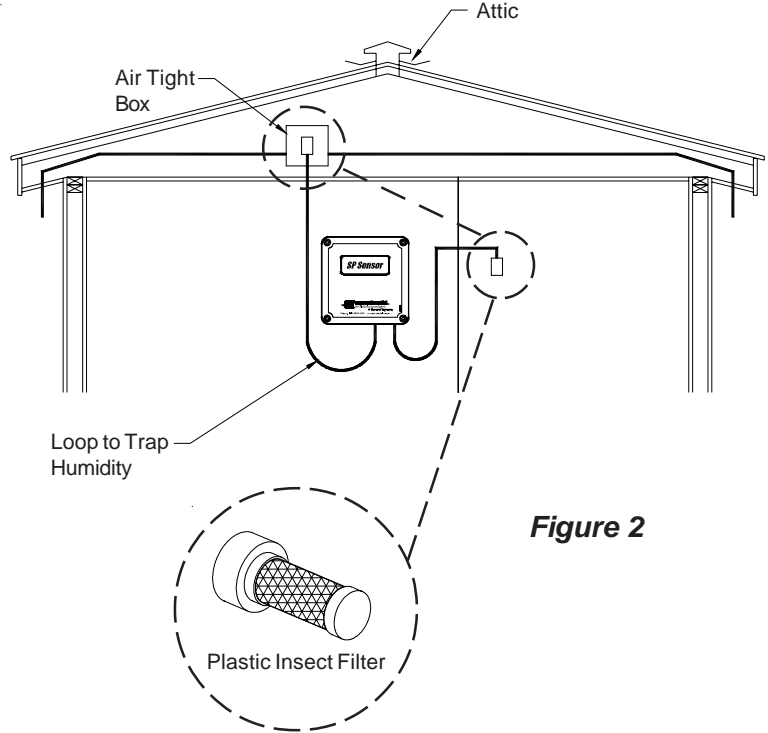


Figure 2

ELECTRICAL WIRING

- 1) Wire the sensor to the main controller. Refer to **Figure 3** or wiring diagram from controller. All wiring should be installed in accordance with National, State, and Local electrical codes. Make sure the power supply is suitable for the sensor.

Pass all wiring through the bottom of the enclosure. Do not drill holes on the side or the top of the enclosure as this may allow water to enter the enclosure. To punch holes through the bottom, use a hammer and punch to carefully punch the holes you need.

- 2) The cable may be a conductor low voltage shielded cable and may be extended up to 1000ft (300 meters) (if the wire diameter is at least 18 AWG (.64mm)). The recommended wire diameter for extending sensor cables is 1.0mm.

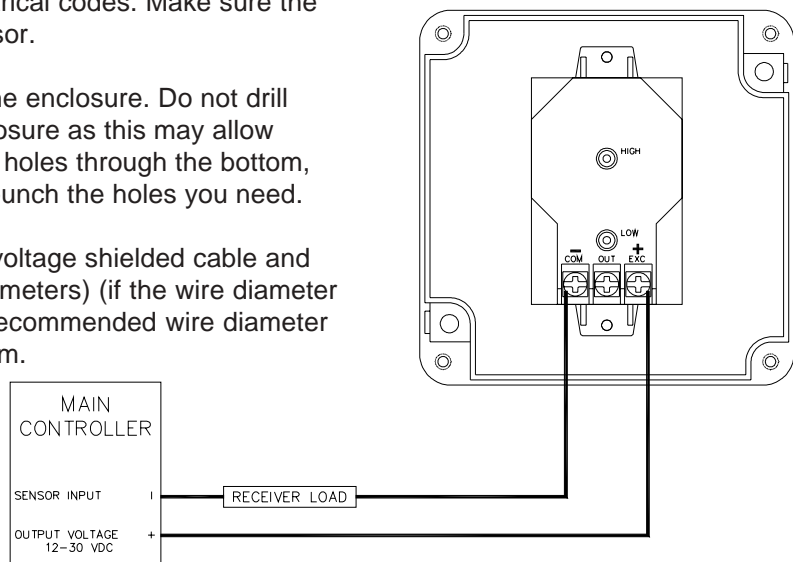


Figure 3

- 3) When extending an output wire, solder all connections.
- 4) Never run low voltage cables parallel to high voltage wires to prevent interference.
- 5) Output cables must cross power cables at a 90° angle.
- 6) ALWAYS switch power to the sensor OFF before opening the sensor.

OPERATION AND ADJUSTMENT

SP-Sensor has one 4-20mA output signal.
See Figure 4.

- 1) Calibration: The SP-Sensor (668 Series) is factory calibrated and should require no field adjustment. However, both zero and span adjustments are provided. Whenever possible, any zero and/or span offsets should be corrected by software adjustment in the user's control system. Use the zero and span adjustments on the SP-Sensor (668 Series) only if absolutely necessary. The SP-Sensor (668 Series) is calibrated in the vertical position, the unit and follow the zero adjustment procedure listed below. Pressure ranges are fixed and cannot be changed in the field.

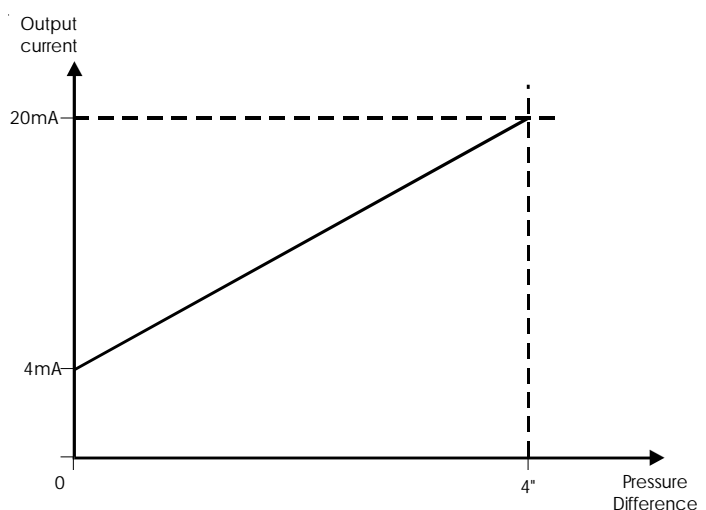


Figure 4

- 2) Zero Adjustment: While monitoring the current output with both pressure ports open to atmosphere, the zero may be adjusted. For unidirectional pressure ranges, turn the zero adjustment screw until a reading of 4mA (± 0.15 mA) is achieved.
- 3) Span Adjustment (complete the zero adjustment before setting span): Span on full scale output adjustments should only be performed by using an accurate pressure standard (electronic manometer, digital pressure gauge, etc.) with at least comparable accuracy to the SP-Sensor (668 Series) ($< \pm 1\%$ full scale). With full scale pressure applied to the high pressure port (reference port open to atmosphere) adjust span to achieve 20mA output.

Example 1: Unidirectional pressure range of 0 to 1"W.C. Apply 1.00"W.C., adjust span to 20mA.

Notes: The input is reverse-voltage protected. The output is internally protected against damage if shorted to ground. Recheck all connections before applying power.

MAINTENANCE

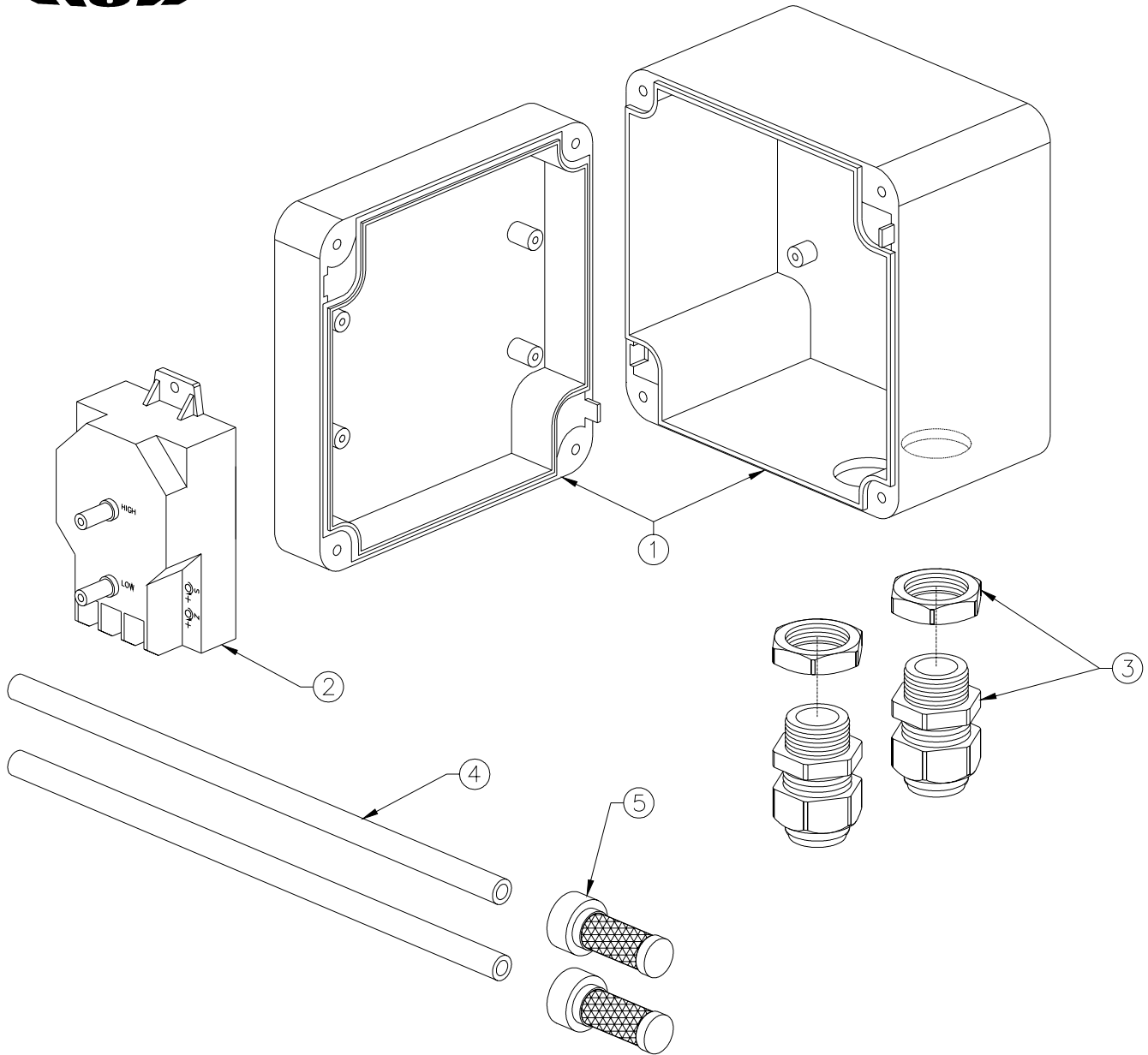
The following should be done monthly:

- 1) Remove dust buildup from control using a soft brush or dry cloth. NEVER use liquids to clean electrical controls.
- 2) Inspect small white plug filter in the end of each sensing tube to verify that it is clean. Spare filters are inside control box. Extra filters may be ordered from Aerotech, Catalog No. FC1112, 1/4" tube.
- 3) Check for kinks or holes in sensor tubing. Any damage to the tubing will result in incorrect pressure measurement and needs to be replaced.
- 4) Verify that the upper and lower set points are properly adjusted.
- 5) Check gauge calibration. Remove each tube from the SP-Sensor. If sensor reads zero pressure, gauge is reading correct, if gauge reads any other pressure, adjust pressure needle to zero, with zero set screw. Reattach tubes when adjustment is complete.

TECHNICAL SPECIFICATIONS

Type:	SP-SENSOR
Accuracy:	± 1% of full scale (RSS) (includes nonlinearity, hysteresis and non repeatability)
Nominal operating voltage:	14-28 VDC, 12-24 VAC 50/60Hz
Operating current:	20 to 50mA
Output:	4 to 20mA, 2-wire
Maximum pressure:	2" W.C. (0.072 PS16)
Loop resistance:	0-800 ohms
Supply voltage:	12-30 VDC
Zero and span adjust:	± 1mA, non-interactive
Compensated temperature range:	0 to 150°F (-18 to 65°C)
Thermal effects:	0.033% FS/°F (0.018% FS/°C)
Housing:	IP54, plastic casing
Weight:	.75 lbs
Dimensions (LxWxH):	4.5 x 4.5 x 3.25 inches (114 x 114 x 85mm)
Operating temperature:	0 to 150°F (-18 to 65°C)
Storage temperature:	-40 to 185°F (-40 to 85°C)
Pressure connection:	3/16" O.D. fitting for 3/16" tubing (4.75mm)
Minimum supply voltage:	12+0.02x (resistance of receiver plus line)
Maximum supply voltage:	30+0.004x (resistance of receiver plus line)

The unit is calibrated at the factory using a 250 ohm load at 28 VDC.



Ref. No.	Cat. No.	Description	Qty.
1	FC2487	Enclosure, 4 1/2"W x 4 1/2"L x 3 1/4"H NEMA-4x, plastic	1
2	AC1368	Pressure Transmitter, 24VDC	1
3	WC3217	Watertight Fitting, 0.17" - 0.47"D Cable	2
4	FC1113	Clear Tubing, 3/16" vinyl	2
5	FC1112	Plastic Filter Screen	2