AIRFLOW PRESSURE SENSING SWITCH
(ADJUSTABLE SET POINT 0.15" WC TO 5.0" WC)

MODEL RFS-4001

APPLICATION

Model RFS-4001 is a general purpose proving switch designed for HVAC and Energy Management applications. This switch can be used to sense positive, negative, or differential air pressure.

DESCRIPTION & OPERATION

The plated housing contains a diaphragm, a calibration spring, and a snap-acting switch. The sample line connections located on each side of the diaphragm accept ¼" OD rigid tubing via the integral compression ferrule and nut. The electrical connections are screw terminals with cup washers. An enclosure cover protects the operator from accidental contact with the electrical components. The enclosure cover has five knockouts for a ½" conduit connection.

MOUNTING (FIGURE 1)

Select a mounting location that is free from vibration. Mount the switch with the diaphragm in any vertical plane in order to maintain the specified operating set point. Do not mount with the sample line connections in the "up" position.

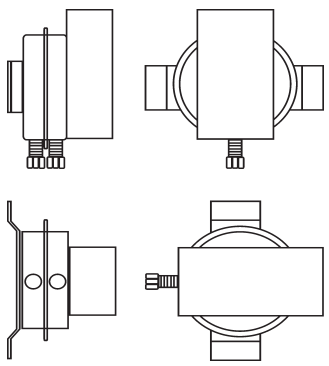


Figure 1: Mount with the diaphragm in any vertical plane.

The standard model is surface-mounted via the two round holes (0.14" dia.) **or** two of the four slots (3⁄16" wide) on the zinc-plated strap bracket.

The mounting holes and slots are 3-⅞" apart. Custom mounting configurations are available.

AIR SAMPLING CONNECTION (FIGURE 2)

Model RFS-4001 switches are equipped with compression ferrule and nut sample line connections situated on either side of the diaphragm as shown in Figure 2. These connections are suitable for ¼" OD rigid tubing (aluminum, copper, or plastic) sample lines up to 20 feet in length. Install a sampling probe as close to the center of the air stream as possible. Locate the sampling probe a minimum of 1.5 duct diameters downstream from the air source.

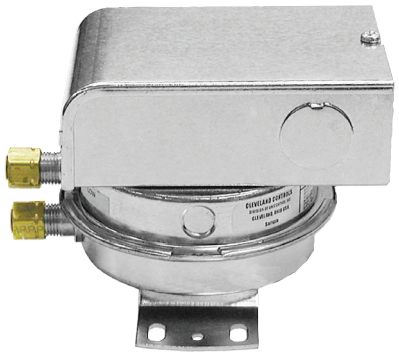
Refer to Figure 2 to identify the high pressure inlet (H) and the low pressure inlet (L). Select one of the five application options listed below, and connect the sample lines as recommended.

POSITIVE PRESSURE ONLY: Connect the sample line to inlet H; inlet L remains open to the atmosphere.

NEGATIVE PRESSURE ONLY: Connect the sample line to inlet L; inlet H remains open to the atmosphere.

TWO NEGATIVE SAMPLES: Connect the higher negative sample to inlet L. Connect the lower negative sample to inlet H.

TWO POSITIVE SAMPLES: Connect the higher positive sample to inlet H. Connect the lower positive sample to inlet L.



ONE POSITIVE & ONE NEGATIVE SAMPLE: Connect the positive sample to inlet H. Connect the negative sample to inlet L.

ELECTRICAL CONNECTIONS (FIGURES 3 & 4)

Before pressure is applied to the diaphragm, the switch contacts are in the normally closed (NC) position. Wire control and alarm functions as shown in Figure 4.

FIELD ADJUSTMENT

The adjustment range of an RFS-4001 is 0.15±0.02" wc to 5.0"wc.

To adjust the set point, turn the adjusting screw counterclockwise until motion has stopped. Next, turn the adjusting screw 5 complete turns clockwise to engage the spring. From this point, the next eight turns will be used for the actual calibration. Each full turn represents approximately 0.61" wc.

Please note: To properly calibrate an air switch, use a digital manometer or other measuring device to confirm the actual set point.

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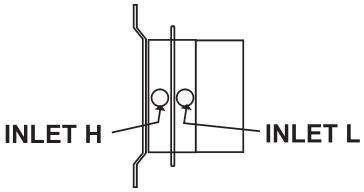
Figure 2



Positive Only
Lower Negative
Higher Positive

Negative Only
Higher Negative
Lower Positive

Figure 3

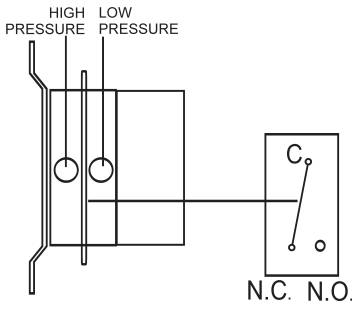
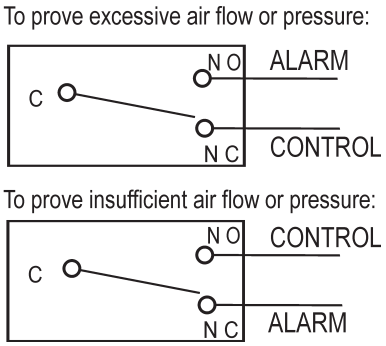
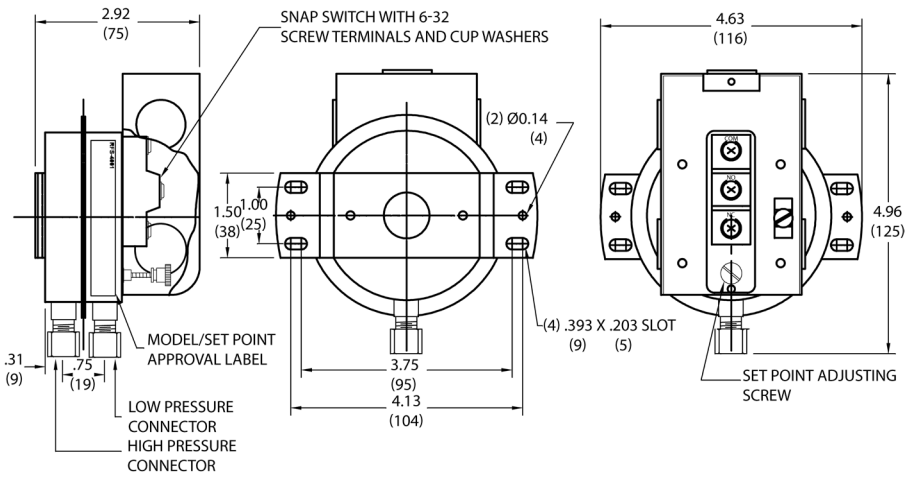


Figure 4: (Left) Wiring control and alarm functions.



Reference Dimensions in Inches (Millimeters)



SPECIFICATIONS
MODEL RFS-4001

Mounting Position:
Mount with the diaphragm in any vertical plane.

Standard Set Point Range:
0.15 ±0.02" wc to 5.0" wc

Field Adjustable "Operate Range":
0.17" wc to 5.0". wc

Field Adjustable "Release Range":
0.10" wc to 4.7". wc

Approximate Switch Differential:
Progressive, increasing from 0.05±0.02" wc at minimum set point to approximately 0.3" wc at maximum set point

Measured Media:
Air or combustion by-products that will not degrade silicone

Maximum Pressure: ½ psi (0.03 bar).

Operating Temperature Range:
–40 to 180 °F(–40.0 to 82.2 °C)

Life:
100,000 cycles minimum at ½ psi maximum pressure each cycle and at maximum rated electrical load.

Electrical Rating:
300 VA pilot duty at 115 to 277 VAC;
15 amp noninductive to 277 VAC, 60 Hz.

Contact Arrangement: SPDT.

Electrical Connections:
Screw terminals with cup washers

Sample Line Connectors:
Externally threaded 7⁄16" UNS 2A thread with nuts and self-aligning ferrules will accept ¼" OD rigid tubing.

Approvals: UL, CUL

Shipping Weight:1 lb., approximately.

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