AIRFLOW PRESSURE SENSING SWITCH
WITH DPDT CONTACTS FOR 24 V AC APPLICATIONS
(ADJUSTABLE SET POINT 0.05" WC TO 12.0" WC)

MODEL AFS-222-137

APPLICATION

Model AFS-222-137 is a general purpose proving switch designed for 24 V ac Energy Management and HVAC applications where a switch with DPDT contacts is needed. It can be used to sense positive, negative, or differential air pressure.

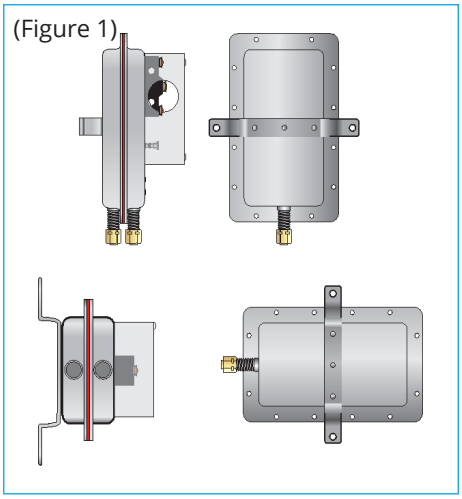
DESCRIPTION & OPERATION

The plated housing contains a silicone diaphragm, a calibration spring and a snap-acting SPDT switch with a DPDT relay installed on the snap switch at the factory. The DPDT feature consists of a relay-pack circuit board assembly containing a power connection terminal block and a DPDT slave relay with two form-C 8-Amp contacts connected to two terminal blocks.

The sample connections located on each side of the diaphragm accept ¼" OD metallic tubing via the integral compression ferrule and nut.

The enclosure cover guards against accidental contact with the live switch terminal screws, the set point adjusting screw and the electronic DPDT configuration printed circuit board assembly. The enclosure cover accepts a ½" conduit connection.

(Figure 1)



MOUNTING (FIGURE 1)

Select a mounting location that is free from vibration. The **AFS-222-137** must be mounted with the diaphragm in any vertical plane in order to obtain the lowest specified operating set point. Do not mount with the sample line connections in the "up" position. Surface mount via the two 3⁄16" diameter holes in the integral mounting bracket. The mounting holes are 3-⅞" apart.

AIR SAMPLING CONNECTION (FIGURE 2)

The **AFS-222-137** is designed to accept firm-wall sample lines of ¼" OD tubing by means of ferrule and nut compression connections. For sample lines of up to 10 feet, ¼" OD tubing is acceptable. For lines up to 20 feet, use ¼" ID tubing. A ¼" OD adapter, suitable for slip-on flexible tubing is available: order part number 18311.

Locate the sampling probe a minimum of 1.5 duct diameters downstream from the air source. Install the sampling probe as close to the center of the airstream as possible.

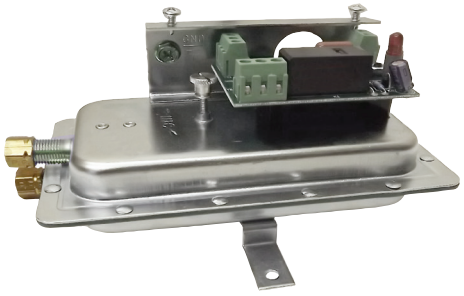
Refer to Figure 2 to identify the high pressure inlet (H) and the low pressure inlet (L). Select one of the following five application options, and connect the sample lines as recommended.

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

ELECTRICAL CONNECTIONS (FIGURE 3)

Before pressure is applied to the diaphragm, the snap switch contacts will be in the normally closed (NC) position. As differential pressure moves away from the field adjustable set point, the snap switch opens, de-energizing the coil on the slave relay, which activates the DPDT contacts. An LED lights, indicating that the snap switch exceeds differential set point. The LED remains lit until the differential pressure returns to set point.

FIELD ADJUSTMENT

The adjustment range of an **AFS-222-137** Air Switch is 0.05 +0.035" wc / -0.005" wc to 12.0" wc. To adjust the set point, turn the adjusting screw counter-clockwise until motion has stopped. Next, turn the adjusting screw 4 complete turns clockwise to engage the spring. From this point, the next ten turns are used for the actual calibration. **Each full turn represents approximately 1.2" 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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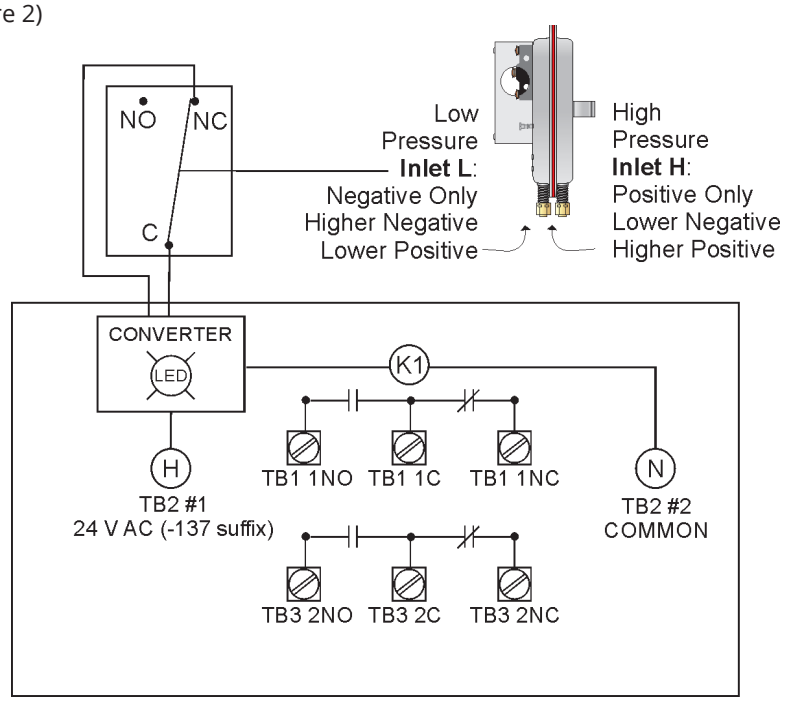
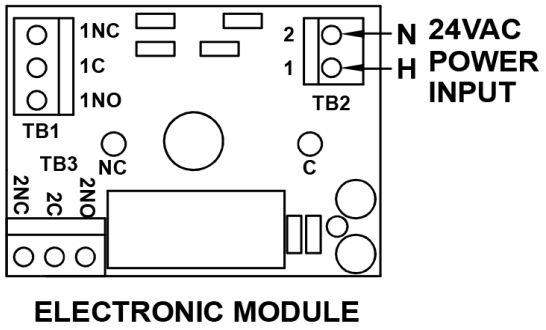
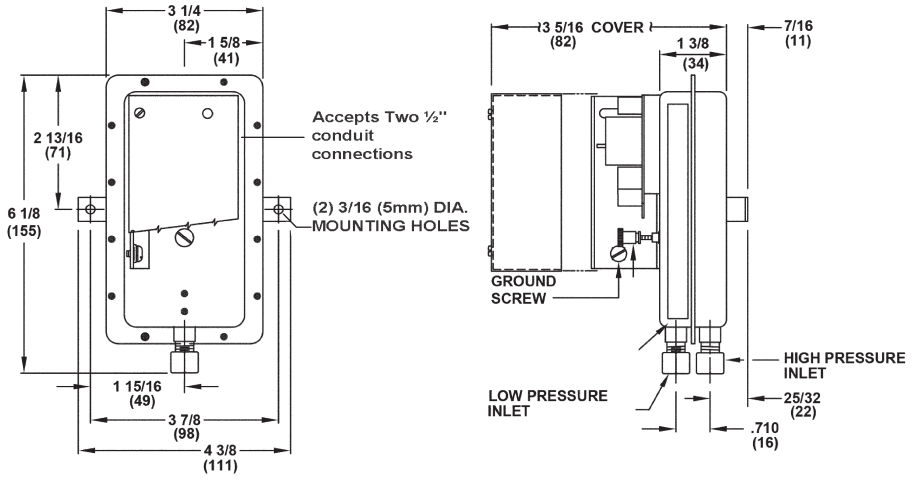
(Figure 2)



(Figure 3)



Nominal Dimensions in Inches (Millimeters)



SPECIFICATIONS
Model AFS-222-137

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

Set Point Range:
0.05 + 0.035" wc / -0.005" wc to 12.0" wc

Field Adjustable "Operate Range": 0.07" wc to 12.0" wc

Field Adjustable "Release Range":
0.04" wc to 11.2" wc

Approximate Switching Differential:
Progressive, increasing from 0.02 ± 0.01"wc at minimum set point to approximately 0.8" 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 °F to 180 °F (-40 °C to 82 °C).

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

Electrical Rating: 0.5 VA @ 24 V ac, 50/60 Hz.

Contact Arrangement:
DPDT, 2 form-C rated 8 Amps @ 250 V ac.

Electrical Connections: Terminal blocks

Conduit Opening:
⅞" diameter opening accepts ½" conduit

Sample Line Connectors:
Male, externally threaded 7/16" -24 UNS 2 A thread, complete with nuts and self-aligning ferrules

Sample Line Connections:
Connectors accept ¼" OD rigid or semi-rigid tubing.

Approvals (Switch): UL, FM, CE, CSA.

Approvals (Electronic Module):
UL, CSA approved as accessory.

Shipping Weight: 1.2 lbs.

Accessories (purchase separately):

- Adapters for slip-on flexible tubing: Consult factory for specific types.
- Sample Line Probes
- Orifice Plugs (Pulsation Dampers)

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