

Model AFS-460-DSS

Air Pressure Sensing Switch with Dual Snap Acting Switches & Manual Reset

Application

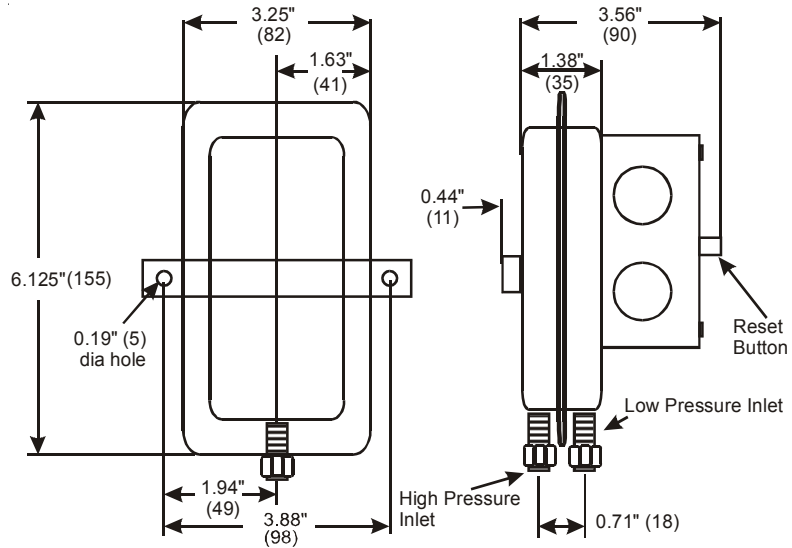
The Model AFS-460-DSS is a general purpose airflow proving switch designed for 120 VAC HVAC and Energy Management applications where dual manual reset switches with SPST contacts are needed. It may be used to sense positive, negative, or differential air pressure.

General Description & Operation

The plated housing contains a diaphragm, a calibration spring, and 2 snap-acting switches with a single manual reset button.

The sample connections located on each side of the diaphragm accept .25" (6.35 mm) OD tubing via the integral compression ferrule and nut.

An enclosure cover guards against accidental contact with the live switch terminal screws and the set point adjusting screw. The enclosure cover accepts two 0.5" (12.7 mm) conduit connections. The manual reset button is located on the top surface of the enclosure cover.



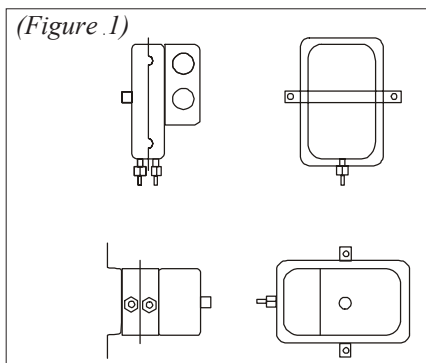
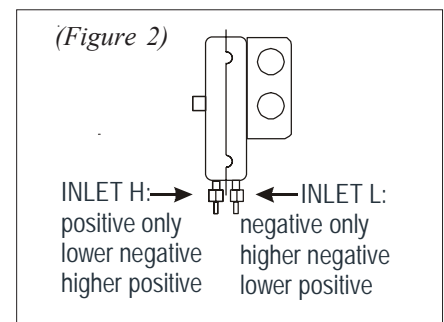
Mounting (see Figure 1)

Select a mounting location which is free from vibration. The AFS-460-DSS must be mounted with the diaphragm in any vertical plane in order to obtain the lowest specified operating set point. Avoid mounting with the sample line connections in the "up" position. Surface mount via the two 3/16" (4.75 mm) diameter holes in the integral mounting bracket. The mounting holes are 3-7/8" (98.4 mm) apart.

1/4" (6.35 mm) OD tubing is acceptable. For lines up to 20 feet (6.1 metres), use 1/4" (6.35 mm) ID tubing. For lines up to 60 feet (18.3 metres), use 1/2" (12.7 mm) ID tubing. 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 five application options listed below, and connect the sample lines as recommended.

Air Sampling Connection (see Figure 2)

The AFS-460-DSS is designed to accept firm-wall sample lines of 1/4" (6.35 mm) OD tubing by means of ferrule and nut compression connections. An optional 1/4" (6.35 mm) adapter, suitable for slip-on flexible tubing is available. For sample lines of up to 10 feet (3.05 metres),



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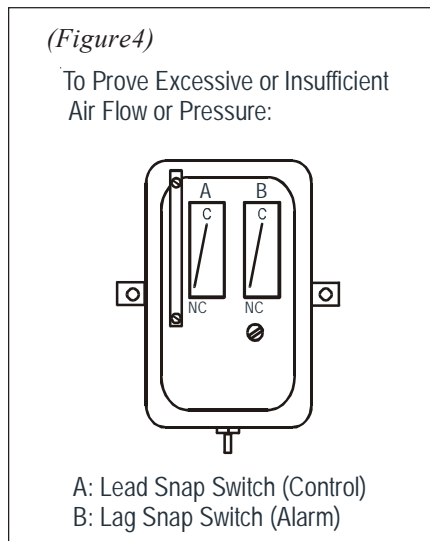
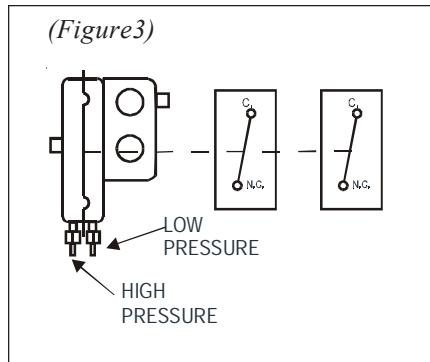
POSITIVE PRESSURE ONLY: Connect the sample line to inlet H; inlet L remains open to the atmosphere.

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.



Pressure Conversion Table

- 1" H₂O = .0361 lbs./sq. in. or .0735 in. mercury (25.4 mm w.c. or .249 kPa)
- 1" Hg. = .491 lbs./sq. in. or 13.6 in. water (345 mm w.c. or 3.39 kPa)
- 1 psi = 27.7 in. water or 2.036 in. mercury (703 mm w.c. or 6.89 kPa)

Electrical Connections (see Figure 3)

Before pressure is applied to the diaphragm, the snap switch contacts will be in the normally closed (NC) position as shown in **Figure 3**.

The snap switches have screw top terminals with cup washers. Wire alarm and control applications as shown in **Figure 4**.

Field Adjustment: Lead & Lag Snap Switches (see Fig. 4)

The **AFS-460-DSS** Manual Reset Air Switch has a **lead** snap switch adjustment of **1.25" w.c. to 12.0" w.c.** (31.8 mm w.c. to 305 mm w.c.) The set point adjusting screw is used to adjust the set point of the **lead** snap switch (**Switch A, in Fig. 4**). The **lag** snap switch (**Switch B, in Fig. 4**) operates after the **lead** snap switch at progressively increasing set point as indicated in **Table 1**, below. **Note:** if **simultaneous** operation of Switch A and Switch B is required, refer to **Descriptive Bulletin AFS-460-136.0x** or **AFS-460-137.0x**.

To adjust the set point of Switch A: Turn the adjusting screw counterclockwise until motion has stopped. Next, turn the adjusting screw **four** complete turns in a clockwise direction to engage the spring. From this point, the next **ten** turns will be used for the actual calibration. **Each full turn represents approximately 1.0" w.c. (25.4 mm w.c.). Please note:** To properly calibrate an air switch, a digital manometer or other measuring device should be used to confirm the actual set point.

Switch A	Switch B
Lead Switch	Lag Switch
Set Point	Set Point
1.25" - 3.00" w.c. (31.8 - 76.2 mm w.c.)	up to 5% after Switch A
3.00" - 6.00" w.c. (76.2 mm w.c. - 152.4 mm w.c.)	up to 10% after Switch A
6.00" - 9.00" w.c. (152.4 mm w.c. - 229 mm w.c.)	up to 15% after Switch A
9.00 - 12.00" w.c. (229 mm w.c. - 305 mm w.c.)	up to 35% after Switch A

Specifications

Model **AFS-460-DSS** Air Pressure Sensing Switch with Manual Reset and Dual SPST-NC Contact Arrangement
Sample Media: Air or combustion products that do not degrade silicone.

Mounting Position (in order to meet lowest operating specifications): Diaphragm in any vertical plane.

Field Adjustable Range: 1.25" ± 0.06" w.c. to 12.0" w.c. (31.8mm ± 1.52mm w.c. to 305 mm w.c.)

Switch Differential: Progressive, increasing from approximately 0.06± 0.01" w.c. (1.52 ± .254mm w.c.) at minimum set point, to approximately 0.8" w.c. (20.3mm w.c.) at maximum set point.

Maximum Pressure: 0.5 psi (0.03 bar, 3.45 kPa)

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

Life: Exceeds UL-recognized mechanical endurance test of 6,000 cycles minimum at 0.5 psi (0.03 bar, 3.45 kPa) maximum pressure each cycle and at maximum electrical load.

Electrical Rating: @ 60 Hz.
15 amp 125, 250, or 277 v AC
¼ hp 125 v AC, ½ amp 125 v DC,
¼ amp 250 v DC . 0.5 VA @ 24 v AC, 50/60 Hz.

Contact Arrangement:
2 SPST-NC (manual reset).

Electrical Connections: Screw top terminals with cup washers.

Sample Line Connections: Ferrule and nut compression type connectors will accept ¼" (6.35mm) OD rigid tubing.

Shipping Weight: 1.2 lbs. (.54 kg)
Agency Approvals & Recognitions: UL and CSA approved, CE pending.

Accessories

- P/N 18311 Slip-on ¼" (6.35mm) OD Tubing Adapter, suitable for slipping on flexible plastic tubing.
- Sample line probes.
- Orifice plugs (pulsation dampers).