

CLEVELAND CONTROLS
Air Pressure Sensing Switch with Dual Sensing Switches & Manual Reset

Model AFS-460-DSS

Application

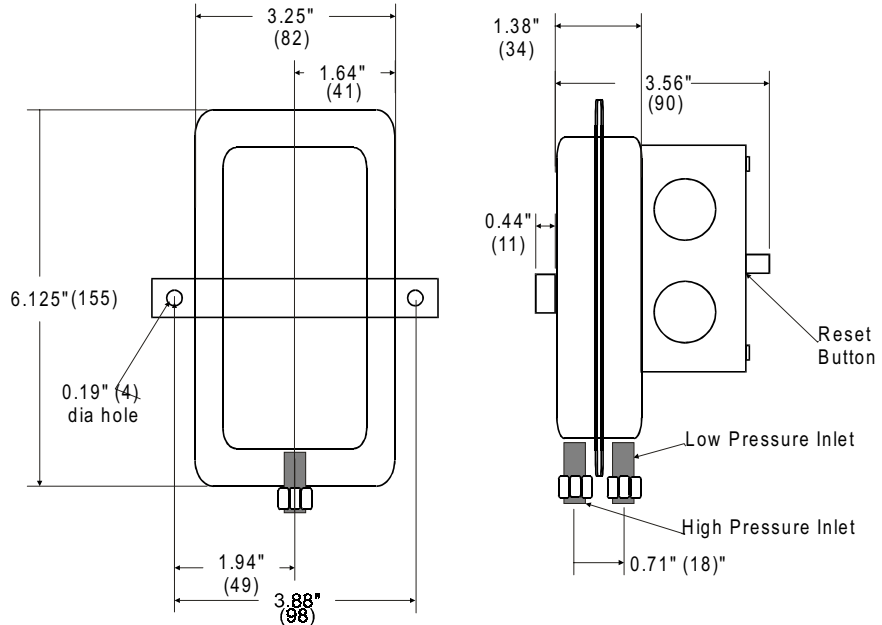
The **Model AFS-460-DSS** is a general purpose airflow proving switch designed for HVAC and Energy Management applications where dual manual reset switches with SPST contacts are needed. It may be used to sense positive, negative, or differential air pressure.

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" 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" conduit connections. The manual reset button is located on the top surface of the enclosure cover.



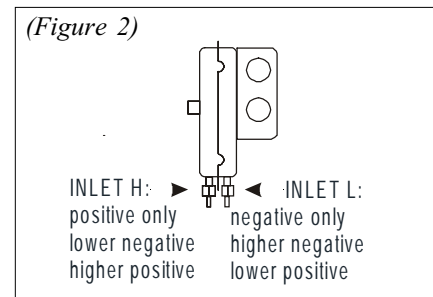
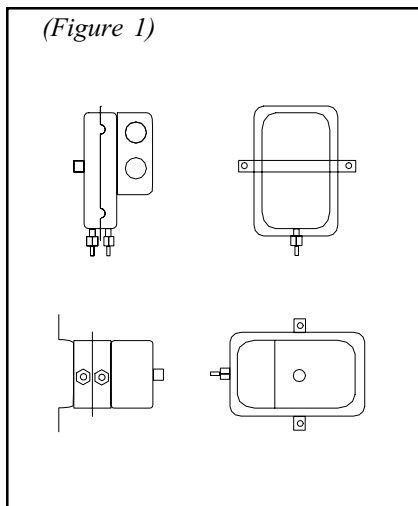
Mounting (see Figure 1)

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" diameter holes in the integral mounting bracket. The mounting holes are 3-7/8" apart.

Air Sampling Connection (see Figure 2)

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

acceptable. For lines up to 20 feet, use 1/4" ID tubing. For lines up to 60 feet, use 1/2" 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.

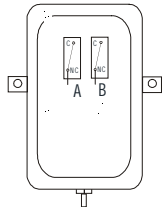


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(Figure 3)



A Lead Snap Switch (Control)
B Lag Snap Switch

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.

Pressure Conversions

1" H₂O = .0361 lbs./sq. in. or .0735 in. mercury

1" Hg. = .491 lbs./sq. in. or 13.6 in. water

Electrical Connections

(see Figure 3)

Before pressure is applied to the diaphragm, the snap switch contacts will be in the normally closed (NC) position. The snap switch has screwtop terminals with cup washers. Wire alarm and control applications as shown in **Figure 3**.

Field Adjustment: Lead and Lag Snap Switches

The **AFS-460-DSS** Manual Reset Air Switch has a **lead** snap switch adjustment range of **1.25 to 12.0" w.c.** The set point adjusting screw is used to adjust the set point of the lead snap switch (**Switch A, in Fig. 3**). The **lag** snap switch (**Switch B, in Fig. 3**) operates after the lead snap switch at progressively increasing set point as indicated in **Table 1**, below.

Switch A	Switch B
Lead Switch	Lag Switch
Set Point	Set Point
1.25" - 3.00" wc	up to 5% after switch A
3.00" - 6.00" wc	up to 10% after switch A
6.00" - 9.00" wc	up to 15% after switch A
9.00" - 12.0" wc	up to 35% after switch A

(Table 1)

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 4 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.**

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

Specifications

Model AFS-460-DSS Air Pressure Sensing Switch with manual reset, 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 "w.c. to 12.0"w.c.

Maximum Pressure:

0.5 psi (0.03 bar)

Operating Temperature

Range: -40 to 180F (-40 to 82C)

Life: Exceeds mechanical endurance test of 6,000 cycles minimum at 0.5 psi maximum pressure each cycle and at maximum 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.

Contacts:

2 SPST - NC (manual reset)

Electrical Connections:

Screw terminals with cup washers.

Sample Line Connections:

Ferrule and nut compression type connectors will accept .25" OD rigid tubing.

Shipping Weight: 1.2 lbs.

Agency Approvals: UL approved. CE and CSA pending.

AFS-460-DSS Sensing Switches are manufactured by **Cleveland Controls, Div. of UniControl Inc.**

Accessories

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