



Air Pressure Sensing Switch with Fixed Set Point

Application

Model FS-751 is an airflow proving switch designed for duct heater, oven, and other HVAC or Energy Management applications where a conduit enclosure-protected, nonadjustable switch is desirable. It is especially suitable for surface-mounting in areas where internal access is limited, and it is advisable to provide protection against accidental contact with the switch terminals. It can be used to sense positive, negative, or differential air pressure. The sample connections located on each side of the diaphragm accept 0.25" OD metallic tubing via the integral compression ferrule and nut.

General Description & Operation

The plated housing contains a diaphragm and a snap-acting SPDT switch.

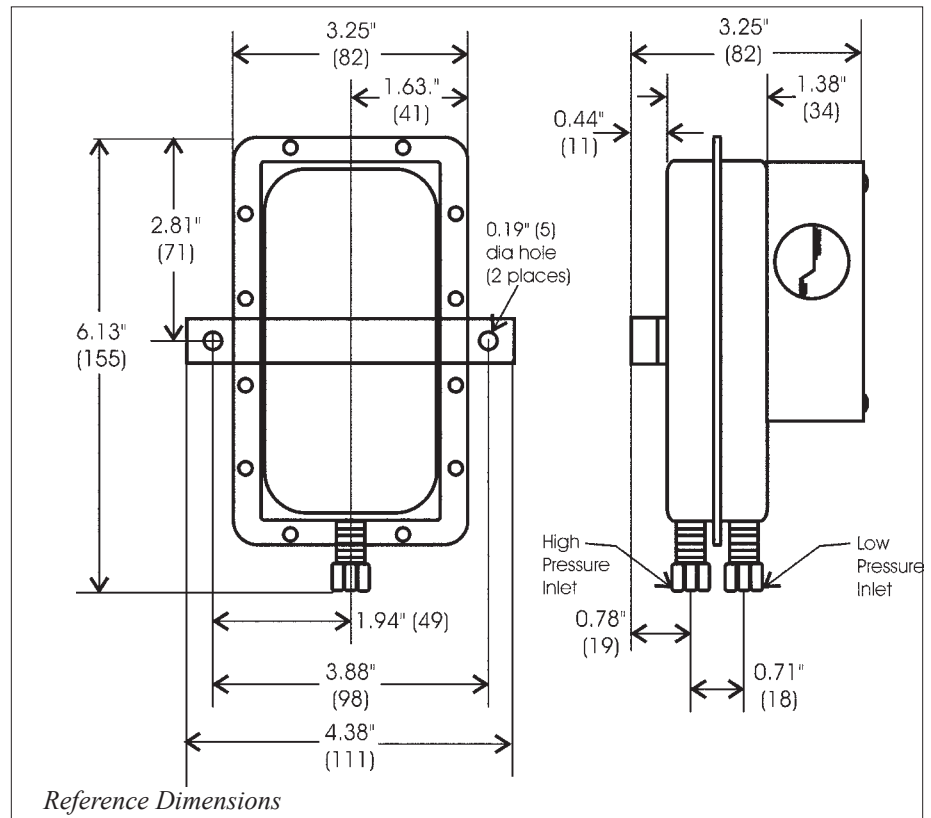
The SPDT snap action switch operates on pressure rise of 0.05" w.c., + 0.02" w.c.

Mounting (Figure 1)

Select a mounting location which is free from vibration. Mount with the diaphragm in any vertical plane in order to maintain the specified operating set point. Avoid mounting with the sample line connections in the "up" position. Surface mount via the two 3/16" diameter holes on the zinc-plated strap bracket. The mounting holes are 3-7/8" apart.

Electrical Connections (Figures 3 & 4)

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



Air Sampling Connection (Figure 2)

Model FS-751 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: order part number 18311. 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). Connect the sample lines as follows:

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.

Mount with the diaphragm in any vertical plane.

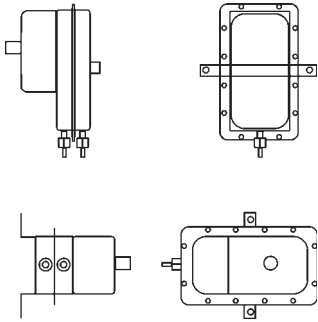


Figure 1

INLET H:
positive only
negative lower
higher positive

INLET L:
negative only
higher negative
lower positive

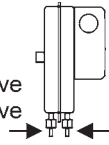


Figure 2

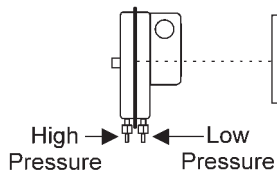
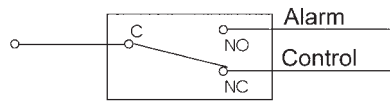


Figure 3

To prove excessive air flow or pressure:



To prove insufficient air flow or pressure:

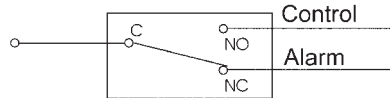


Figure 4

SPECIFICATIONS

Model FS-751 Air Pressure Sensing Switch with Fixed Set Point

SET POINT:

Fixed to operate on pressure rise at 0.05 ± 0.02 "w.c. (1.27 ± 0.508 mm)

SWITCH DIFFERENTIAL

(APPROXIMATE):

0.02 ± 0.01 "w.c. (0.508 ± 0.254 mm w.c.)

MAXIMUM PRESSURE:

$\frac{1}{2}$ psi (0.03 bar)

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-top terminals with cup washers.

OPERATING TEMPERATURE RANGE:

-40F to 180F
(-40.0 C to 82.2C)

MOUNTING POSITION:

Diaphragm in any vertical plane to obtain specified operating set point.

SAMPLE LINE CONNECTORS:

Ferrule and nut compression-type connectors will accept 0.25" OD rigid tubing.

SHIPPING WEIGHT: 1.2 lbs

APPROVALS: UL, CSA

PRESSURE CONVERSION TABLE

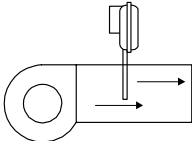
1" H₂O = 0.0361 lbs/sq. in. = 0.0735 in. Hg

1 in Hg = 0.491 lbs/sq. in. = 13.6 in H₂O

1 psi = 27.7 in. H₂O = 2.036 in. Hg

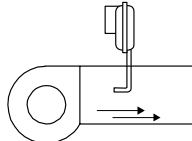
Location of Sample Lines for Typical Applications

FAN OPERATION OR TRUE AIR FLOW WITH LITTLE OR NO STATIC PRESSURE.

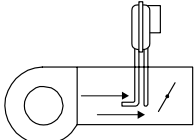


PROBE MUST BE PERPENDICULAR TO FLOW.

FAN OPERATION OR AIR FLOW WITH NO STATIC PRESSURE.

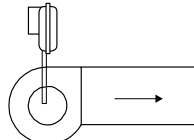


FAN OPERATION AND TRUE AIR FLOW WITH VARYING AMOUNTS OF STATIC PRESSURE.

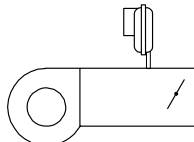


PROBE MUST BE PERPENDICULAR TO FLOW.

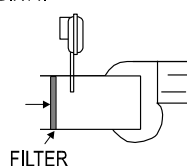
SUCTION OR FAN OPERATION.



PROVE POSITIVE STATIC PRESSURE.



NEGATIVE PRESSURE INCREASES AS FILTER GETS DIRTY.



Cleveland Controls

DIVISION OF UNICONTROL INC.

1111 Brookpark Rd
Cleveland OH 44109

Tel: 216-398-0330

Fax: 216-398-8558

Email: salesvac@unicontrolinc.com

Web page: <http://www.clevelandcontrols.com>

Are you reading a FAX or a COPY of this bulletin? **DOWNLOAD** the full-color PDF version of this and other literature at our website!