



**Air Pressure Sensing Switch with Fixed Set Point**

**Application**

Model FS-751-112 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 barbed sample connections located on each side of the diaphragm accept flexible tubing.

**General Description & Operation**

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

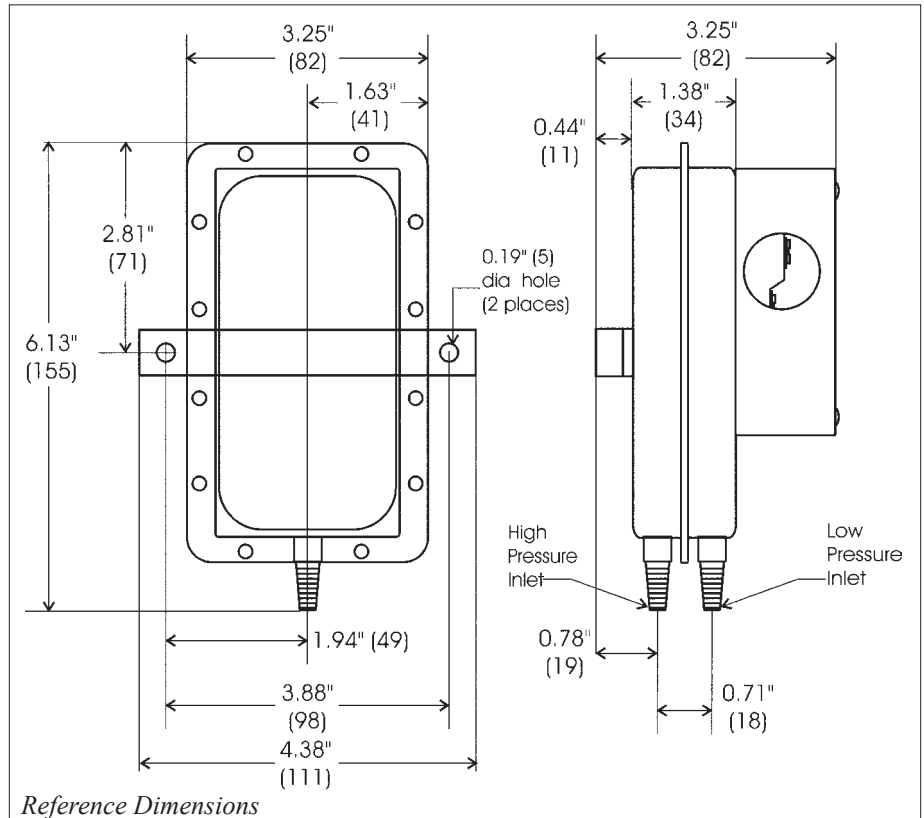
The SPDT snap action switch operates on pressure rise of 0.05" w.c., + 0.02" w.c.

**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-751-112 is designed to accept flexible tubing by means of barbed 1/4" slip-on connections. 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.

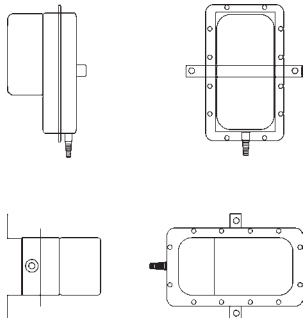


Figure 1

**INLET H:**  
positive only  
lower negative  
higher positive

**INLET L:**  
negative only  
higher negative  
lower positive

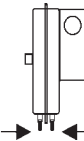


Figure 2

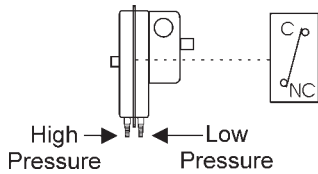
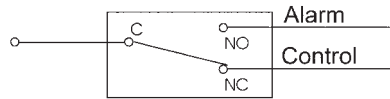


Figure 3

To prove excessive air flow or pressure:



To prove insufficient air flow or pressure:

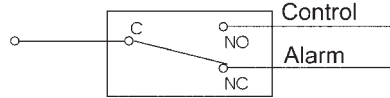


Figure 4

## SPECIFICATIONS

### Model FS-751-112 Air Pressure Sensing Switch with Fixed Set Point

**SET POINT:**

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

**SWITCH DIFFERENTIAL**

(APPROXIMATE):

$0.02 \pm 0.01$ "w.c. ( $0.508 \pm 0.254$  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:**

Two barbed  $\frac{1}{4}$ " slip-on connectors, suitable for flexible tubing.

**SHIPPING WEIGHT:** 1.2 lbs

**APPROVALS:** UL, CSA

#### PRESSURE CONVERSION TABLE

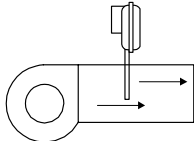
1" H<sub>2</sub>O = 0.0361 lbs/sq. in. = 0.0735 in. Hg

1 in Hg = 0.491 lbs/sq. in. = 13.6 in H<sub>2</sub>O

1 psi = 27.7 in. H<sub>2</sub>O = 2.036 in. Hg

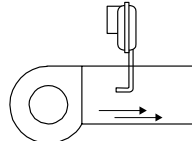
#### Location of Sample Lines for Typical Applications

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

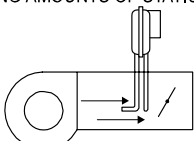


PROBE MUST BE PERPENDICULAR TO FLOW.

FAN OPERATION OR AIR FLOW WITH NO STATIC PRESSURE.

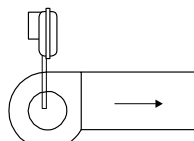


FAN OPERATION AND TRUE AIR FLOW WITH VARYING AMOUNTS OF STATIC PRESSURE.

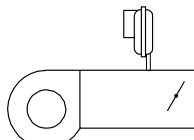


PROBE MUST BE PERPENDICULAR TO FLOW.

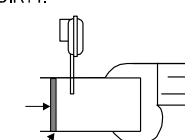
SUCTION OR FAN OPERATION.



PROVE POSITIVE STATIC PRESSURE.



NEGATIVE PRESSURE INCREASES AS FILTER GETS DIRTY.



FILTER



**Cleveland Controls**

DIVISION OF UNICONTROL INC.

1111 Brookpark Rd  
Cleveland OH 44109

Tel: 216-398-0330

Fax: 216-398-8558

Email: [salesvac@unicontrolinc.com](mailto:salesvac@unicontrolinc.com)

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

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