



Cleveland Controls

Division of UniControl Inc.

Series PAS

PNEUMATIC SENSING SWITCH WITH ADJUSTABLE SET POINT RANGE

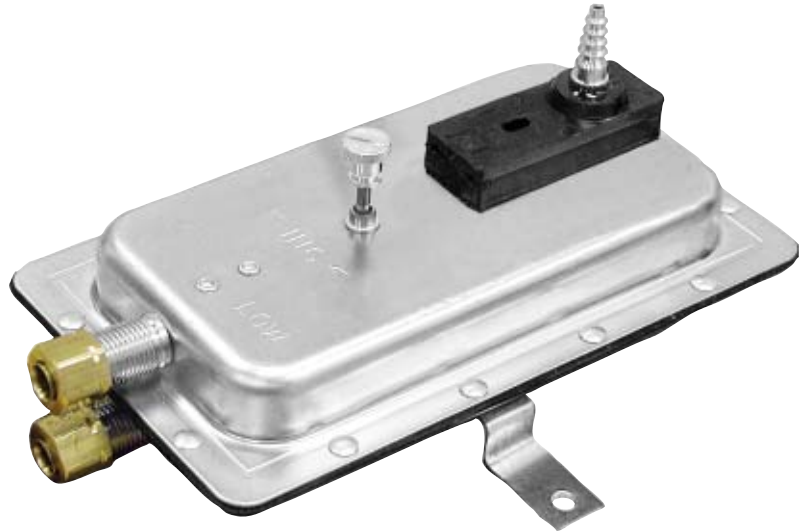
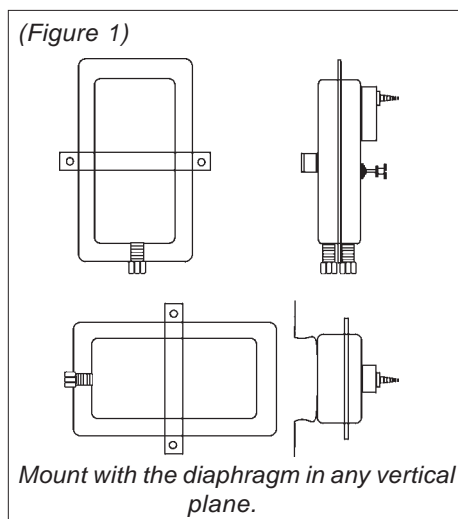
APPLICATION

Series PAS-2100 Pneumatic Sensing Switches are general purpose proving switches for the HVAC and Energy Management industry. They sense the flow of air and provide a proportional pneumatic signal for applications where pneumatic actuation is required (such as intrinsically safe environments or any area where it is desirable to avoid electrical arcing).

GENERAL DESCRIPTION & OPERATION

Series PAS switches may be used to sense static or differential air pressure up to 2.0" w.c. (PAS-2100 models) or 12.0" w.c. (PAS-2200 models). The pneumatic switch vents a restricted compressed air source until reaching set point; switch actuation occurs at set point, closing the vent and sending a full pressure pneumatic signal to an electrical switch outside of the hazardous area, **or** actuating a pneumatically driven element directly.

The plated housing contains a diaphragm, a calibration spring and a pneumatic module with a 5-barbed connector suitable for flexible tubing, ranging from 0.125" ID to 0.25" ID.



The sample connections located on each side of the diaphragm accept 0.25" OD metallic tubing via the integral compression ferrule and nut.

MOUNTING (FIGURE 1)

Select a mounting location which is free from vibration. **Series PAS** switches 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 (FIGURE 2)

Series PAS switches are designed to accept firm-wall sample lines of 0.25" OD tubing by means of ferrule and nut compression connections. For sample lines of up to 10 feet, 0.25" OD tubing is acceptable. For lines up to 20 feet, use 0.25" ID tubing. For lines up to 60 feet, use 0.50" ID tubing. A 0.25" 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 five application options listed below, 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.



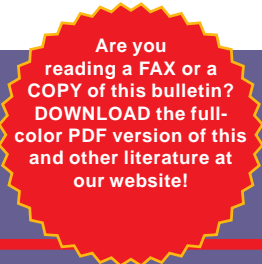
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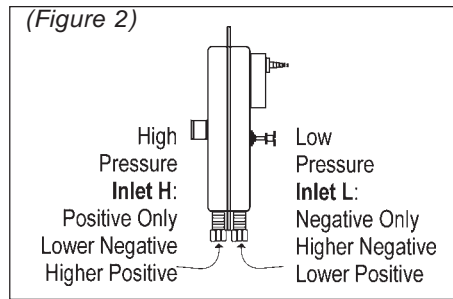
Web page: <http://www.clevelandcontrols.com>



FIELD ADJUSTMENT

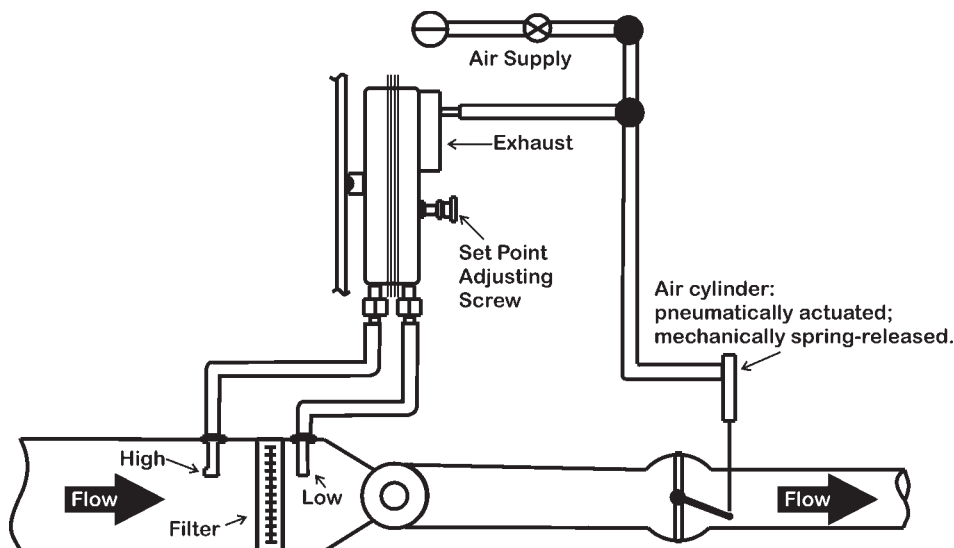
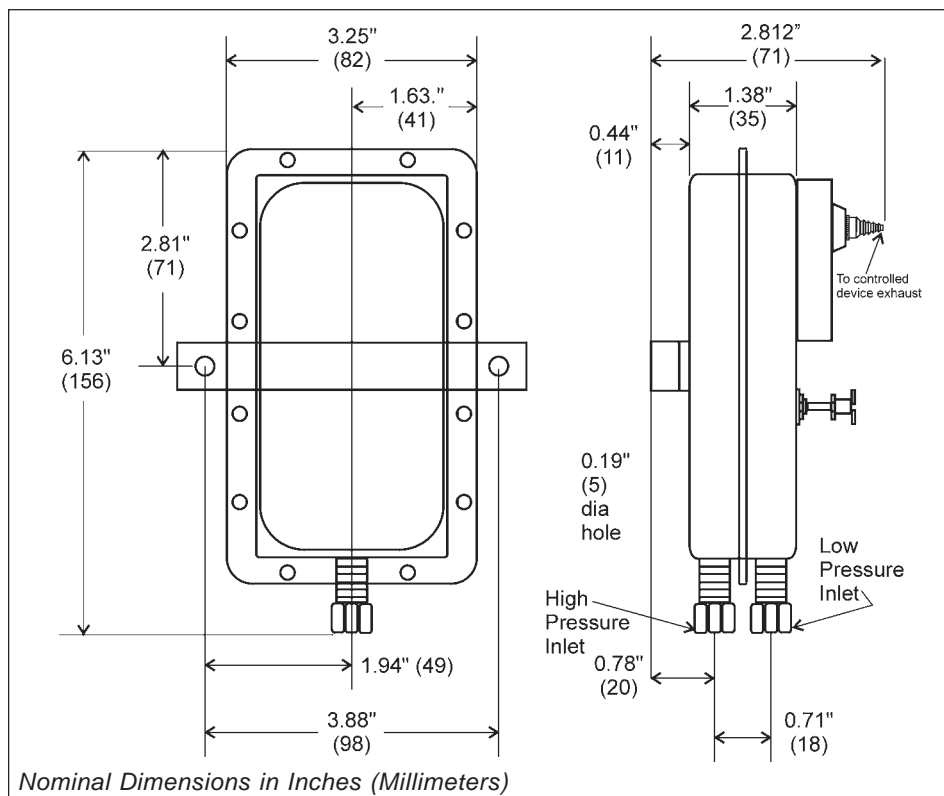
The adjustment range of a **PAS-2100** Air Switch is 0.15 ± 0.01 to 2.0 " w.c. To adjust the set point, turn the adjusting screw counterclockwise until motion has stopped. Next, turn the adjusting screw 4 complete turns in a clockwise direction to engage the spring. From this point, the next ten turns will be used for the actual calibration. **Each full turn represents approximately 0.2 " w.c.**

The adjustment range of a **PAS-2200** Air Switch is 0.15 ± 0.01 to 12.0 " w.c. To adjust the set point, 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 1.2 " 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

SERIES PAS PNEUMATIC SENSING SWITCHES WITH ADJUSTABLE SET POINT RANGES

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

Set Point Range: 0.15 ± 0.01 " w.c. to 2.0 " w.c. (PAS-2100 models) or 0.15 ± 0.01 " w.c. to 12.0 " w.c. (PAS-2200 models)

Output:

Fan ON and Air Flow: 20 psig @ 0.15 " w.c. or higher

Fan OFF and no Air Flow: $\frac{1}{4}$ psig @ 0.015 " w.c. or lower

Measured Media: Air

Maximum Pressure: 1 psi (0.06 bar)

Operating Temperature Range:

0 F to 135 F (-17.8 C to 57.2 C)

Life: 100,000 cycles minimum at 1 psi maximum pressure each cycle and at maximum rated load.

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

Sample Line Connections: Connectors will accept $\frac{1}{4}$ " OD rigid or semirigid tubing.

Shipping Weight: 1.2 lbs.

Accessories:

- P/N 18311 Slip-on $\frac{1}{4}$ " OD Tubing Adapter, suitable for slipping on flexible plastic tubing.
- Sample line probes.
- Orifice plugs (pulsation dampeners).