

The FSR400 Fan Static Reset Kit measures the static pressure drop across a venturi air valve and provides feedback to the Building Automation System (BAS) to optimize fan control. The sensor is housed in a rugged polycarbonate enclosure, which mounts directly to the valve base channel with a 3-wire connection to the valve mounted controller for power and signal. Two lengths of pneumatic tubing are included to obtain pressure readings by mounting to the venturi valve's upstream and downstream pressure ports. One device with a range of 0.0 to 4.0" WC covers the differential pressure (dp) ranges of both medium and low pressure valves, allowing for dynamic fan control to reduce energy consumption under varying flow conditions.

## FEATURES

- Precision sensor provides accurate dp feedback value.
- Sensor mounts directly on valve base channel.
- Differential pressure value is available network wide.
- BAS can monitor valve pressure and control fan static.
- Maximize energy savings by running fans at lowest possible static.
- Includes high-accuracy, piezoresistive, silicon sensing element.
- Push-button zero function conveniently located on front cover.
- Calibrated using NIST Certified equipment.

## SPECIFICATIONS

### Pressure Transmitter

- Pressure Range: 0 to 4" WC (0 to 0.996 Pa)
- Output Voltage: 0 to 5.0 Vdc
- Accuracy: +/- 0.5% FSO
- Proof Pressure (performance will be affected): 350" WC (87.12 kPa)
- Burst Pressure (permanent damage will occur): 550" WC (136.9 kPa)
- Corrosion Resistance: Pressure sensor is suitable for clean, non-corrosive, non-condensing air only.
- Zero Function: Push-button Zero Function recommended after 15 minutes warm up.
  - Response Time (T95): 4 seconds
  - Warm Up Time: 15 minutes
  - Output Update Rate: 500 ms
- Thermal Effects: +/- 0.056% FSO F (+/- 0.10% FSO C)

### Power Requirements

- Supply Voltage: 12 - 36 Vdc or 24 Vac +/- 10%, 50/60 Hz
- Power Consumption: 5 mA (0.18 VA) maximum

### Environmental

- Operating Temperature: 35 to 122 °F (2 to 50°C)
- Storage Temperature: -40 to 122 °F (-40 to 50°C)

### Enclosure

- Housing Material: Polycarbonate
- Housing Material Rating: UL94, V-0
- Transducer Dimensions: 4.210" x 2.085 x 1.340" (106.94 mm x 52.96 mm x 34.04 mm)

### Tubing

- ID/OD: 0.1875" (4.76 mm) I.D. x 0.250" (6.35 mm) O.D.; Push-on Medical grade PVC
- Maximum operating pressure: 39 PSI @70°F (21.1°C)
- Tubing color: Clear



## Regulatory Compliance



WEEE Directive 2012/19/EC  
Waste Electrical and Electronic  
Equipment directive

At the end of the product life dispose of the packaging and product in a corresponding recycling center. Do not dispose of the unit with the usual domestic refuse. Do not burn the product.

- RoHS3
- Reach
- FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

- EU Contact Address:  
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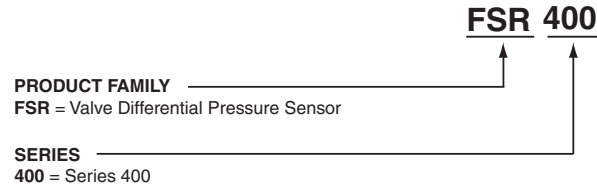
## ISO

Phoenix Controls Designs, Develops, Manufactures, and sells products, systems, and service to control the environment and airflow of critical spaces. Phoenix Controls is registered to ISO 9001:2008.

## Warranty

Phoenix Controls Warrants all FSR400s against defects in material and workmanship for a period of 5 years.

## ORDERING GUIDE



## APPLICATIONS

The FSR400 measures the pressure drop across Phoenix Controls venturi valves and passes this value across the network to allow the BAS to monitor the conditions of the duct pressure dynamically and potentially save energy by optimizing fan speed control. By continuously monitoring the differential pressure of the valves at the lowest point in the system, the BAS can trim fan speed as flow conditions and static pressure in the system changes. The intent is to control the fans at the lowest practical speed to gain energy savings where possible while ensuring specified valve differential pressure for the mechanically pressure independent venturi cone assembly to maintain the desired flow.

The FSR400 is intended to be installed across the venturi valves in the duct runs believed to have the lowest differential pressure or throughout a system to get a profile of the duct pressure. Typical valves with lowest pressure drop would be located furthest from the fans or with the greatest number transitions, turns, or filters between the fan and the valve. A review of the duct layout drawings can provide clues to the location of the valve that will see the lowest system pressure, however, the lowest point may change based on different operational conditions (i.e., loading filters, opening fumehoods, etc.). One prudent approach is to select a number of locations to install FSR400s and perform a low-select as system conditions vary. "More is better"- the greater number of valves that report dp feedback to the BAS will show a clearer picture of total system pressure.

The FSR400 is intended for installation on valves moving clean, dry air (i.e., supplies, general exhausts, or returns). Construction materials for the pressure sensor, pickup ports, and tubing are not suitable for applications with corrosive or condensing vapors such as those typically seen in fume hoods. Additionally, fume hood valve controllers do not have inputs available to accept pressure sensor feedback or variables for passing it across the network. Therefore the FSR400 should not be used on fume hood applications.

The FSR400 mounts on the venturi valve base channel. The pressure hoses can be connected directly to the venturi valve pressure pickup ports for relative pressure measurement or, if more accurate results are desired, to field installed pickup ports (provided by others) in the duct work upstream and downstream of the valve. Three wires connect the pressure sensor to power and an available universal input on the Phoenix Controls valve controller. The dp feedback signal is then scaled in the Configuration Plug-in program according to actual field measurements of pressure from the sensor.

Recognizing accuracies, errors, and tolerances, as well as response times throughout the entire sensing and control system is important when choosing a static pressure control setpoint. If the total potential error (transmitter accuracy and temperature error) is  $\pm 0.1$  inch WC and the valves have a 1 second speed of response while the fan speed controller may require 20 to 30 seconds to respond to a change in setpoint, there must be sufficient safety margin in the setpoint to ensure the specified static pressure across the valve is never compromised.

## WIRING

