R160 Differential Air Pressure Sensor

RF CODE Sensors

The R160 Differential Air Pressure Sensor monitors and reports the differential air pressure reading between two points, enabling greatly enhanced data center air pressure/air flow monitoring and optimization.

Features & Benefits

- Wire-free Sensor Provides Wireless Differential Pressure Data
- Ideal for Optimizing Data Center Air Flow and Cooling Systems
- Reports Differential Air Pressure Between Two Points
- Fully Compatible with RF Code's CenterScape and Asset Manager Software Solutions
- Easy-to-Deploy, "Wire-free" Monitoring
- Sensor Easily Mounts to Flat Surfaces, Walls or Pipes
- Tubing Can Be Routed Above / Below Floors, along Walls, Plenums or Air Ducts
- Low Power Consumption for Long Battery Life

RF Code's R160 Differential Air Pressure Sensor monitors and reports the differential air pressure reading between two points (e.g., above vs. below a raised floor or room vs. plenum). While the pressure ranges found in the data center can exceed 0-0.5" H20/0-125 Pa, the pressure differentials found in the plenum are often only 0.01" H20/2.5 Pa, requiring a sensor to be both accurate and precise in order to assure proper monitoring. Periodically reporting its unique ID along with the data observed by the sensor, the R160 is designed for use in combination with an RF Code fixed reader infrastructure and the RF Code software stack (Zone Manager, CenterScape or Asset Manager).

The R160 sensor is housed in an impact-resistant, flame-retardant ABS plastic enclosure that can be mounted with strong adhesive on the back of the case, or via hardware/screws or zip-ties through the mounting holes. The unit ships with 8 feet of flexible tubing (plenum rated UL 94V2, UL 1820) to achieve physical separation between the +/- sensor terminals (e.g., position the end of the "+ tube" below a raised floor and affix the "- tube" above the raised floor).

The sensor is designed for years of reliable performance with a battery life that exceeds 5 years in most deployment environments. The sensor is powered by three (3) CR2032 replaceable batteries with a very low duty cycle and a 10-second beacon rate. The R160's form factor ensures clear signal transmission in high-density deployments; install the sensor above the raised floor for best RF transmissions (assuming the readers are also above the raised floor).

The wire-free R160 Differential Air Pressure Sensor gives you real-time data on the air pressure conditions inside your data center, enabling effortless air pressure monitoring and greatly enhancing your ability to optimize air pressure and air flow in your data center.

Featuring a low-battery alert, the sensor will continue to report pressure data for at least three months following the initial alert.
After that, the sensor will broadcast its unique ID and a low battery indication with each beacon, but will not report pressure data until the batteries are replaced. Exposure to extreme temperatures will shorten the battery life. RF Code warrants all sensors to be free from defects in materials and workmanship for a period of 1 year.

In the typical data center, there may be little variation in pressure above the raised floor, but air pressure under the raised floor varies significantly. Placement of air conditioning units and cable routing can create air dams, blockages, and hot spots; voids can create moving eddies. Differences in air flow rate through perforated tiles makes it difficult to manage the proper placement of servers.

Typically, when differential air pressure is monitored for control purposes, one channel (tube) of the pressure sensor is placed on a wall or column above the raised floor and the other pressure channel (tube) is placed under the raised floor. The highest pressure zones exist near the CRACs; it is best to install sensor tubes no closer than 10 feet from the CRAC.

RF Code R160 Differential Air Pressure Sensor Specifications

OPERATION	
Operating Frequency	433.92 MHz
Unique Sensor ID Codes	> 540,000 unique IDs per Group Code
Typical Transmission Range	> 30 ft in the data center
Radiated Emissions	71.8 dBuV/m at 3 meters (maximum)
Stability	Saw stabilized
Differential Pressure Range	+/- 2.0" H2O or +/- 500 Pa
Zero Point Accuracy	0.001" H20 or 0.2 Pa
Span Accuracy	±3.0% of reading
Resolution	±0.001"H2O or ±0.25 Pa
Sampling Rate	60 seconds

ENCLOSURE	
Width	4.25 in (107.95 mm)
Depth	2.25 in (57.15 mm)
Height	1.00 in (25.4 mm)
Case Weight (with sensor)	3.25 oz (92 grams)
Tubing Length	8 feet (2.44 meters)
Tubing Plenum Rating	UL 94V2, UL 1820
Construction	Injection-molded flame-retardant ABS enclosure, UL rating: 94-5VA
Durability	Tough, impact resistant and temperature stable
Mounting Options	Industrial-strength adhesive or screw-mountable or zip-tie through mounting holes

ENVIRONMENTAL	
Operating Temperature	-20° C to +70° C (-4° F to +158° F)
Storage Temperature	-40° C to +80° C (-40° F to +176° F)

POWER	
Battery Type	Three (3) Lithium CR2032 replaceable coin cells
Smart Sensor Features	Low battery indication
Battery Life	> 5 years (typical)

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