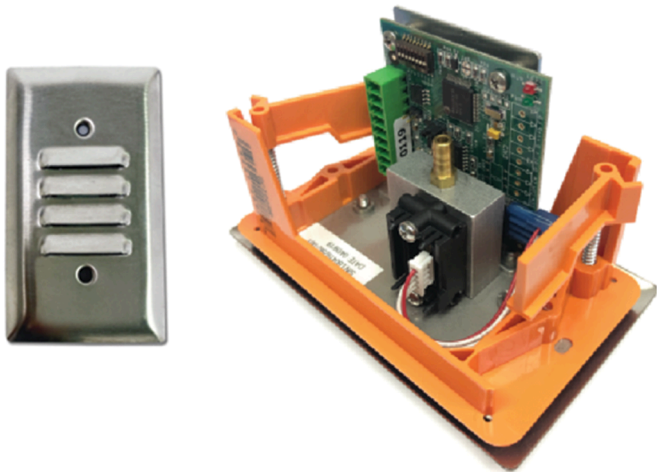
Room Differential Pressure Sensor Installation Guide



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Description

The Room Differential Pressure Sensor is a mass air flow sensor designed to measure the pressure differential between reference space and monitored space.

The integrated patented CMOSens technology combines sensor element, signal processing, and digital calibration on a single, fourth-generation silicon microchip for high performance. The chip is highly sensitive; it requires only a small amount of air flow for high accuracy readings.

To create a safe critical environment, the Room Differential Pressure Sensor has fast response times, within 4.6 ms, which ensures proper room differential pressure is maintained. When compared to membrane-based sensors, the sensor has a superior dynamic range and long-term stability. Each sensor comes with a five-point calibration certificate.

ⓘ **Note:** If you use the sensor with an FMS-1655, FMS-2000C, FMS-1655M, or FMS-2000M, refer to the relevant installation guide in the following table for more information.

Table 1: Controller installation guides

Controller	Installation guide
FMS-1655	*FMS-1655 Room Pressure Controller Installation Guide, LIT-12013231*
FMS-1655M	*FMS-1655M Room Monitor Installation Guide, LIT-12013298*
FMS-2000C	*FMS-2000C Critical Environment Controller Installation Guide, LIT-12013531*
FMS-2000M	*FMS-2000M Critical Environment Monitor Installation Guide, LIT-12013578*

Installing the room sensor

Before you begin:
It is best practice to install the remote sensor module in the monitored space, for example an isolation room. Insert the flow tube through the wall to the adjoined reference space, for example a corridor or ante room. With this sensor orientation, a positive pressure value indicates that the monitored space is positive with respect to the reference space.

ⓘ **Note:** Do not locate the sensor near an air circulation source, for example, ceiling-mounted air registers. This can cause unstable sensor behavior.

Equipment checklist

You require the following equipment to complete the installation of the remote pressure sensor for a remote sensor application:

- A drill and a 7/16 in. (11 mm) drill bit
- #2 Phillips head screwdriver
- Drywall saw or oscillating tool with a drywall blade

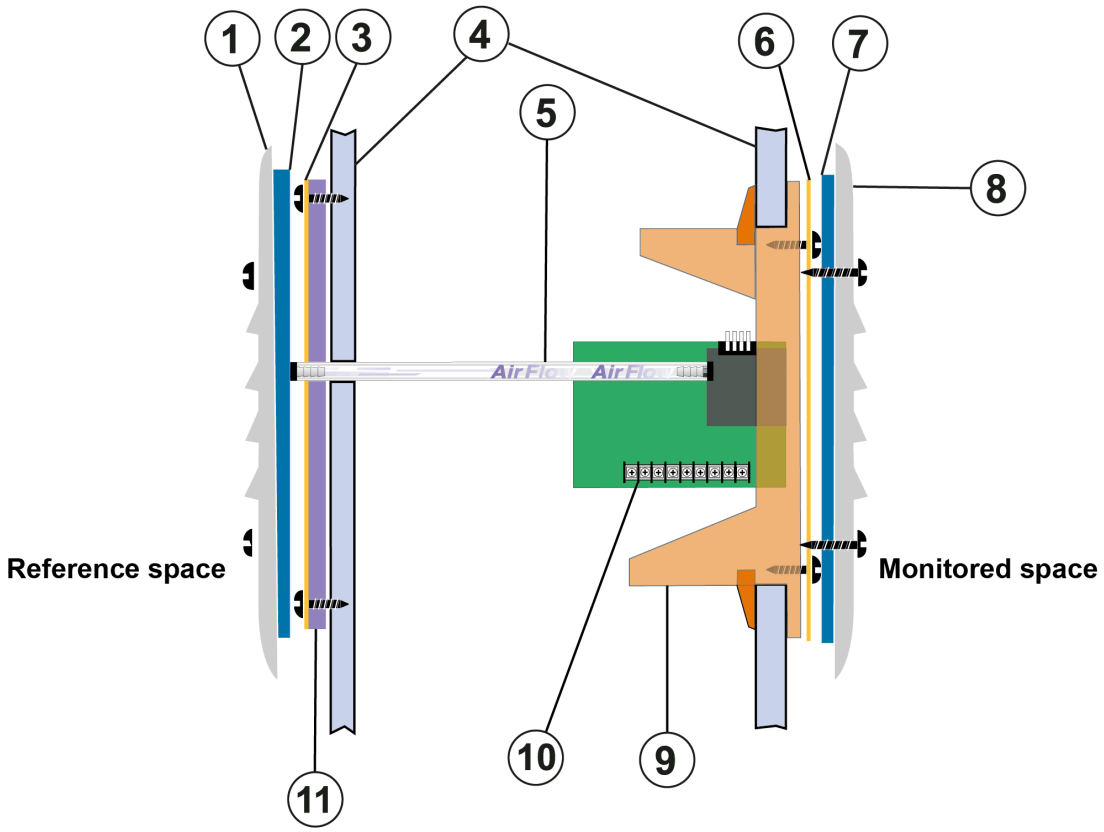
Installing the remote sensor

To install the remote sensor, complete the following steps:

1. Connect a 22 AWG cable, with the appropriate number of conductors, between the remote sensor module and the main controller module for each sensor included with the unit. 1,000 ft (304.8 m) is the maximum length of the cable.
2. Unscrew the sensor's louvered cover plate and stainless steel back plate from the orange wall bracket.
3. Cut a hole in the drywall of the monitored space for the orange low voltage mounting bracket and the remote sensor electronics. The nominal cutout dimensions are H x W. They are 3.65 in. (92.71 mm) and 2.15 in. (54.61 mm).
4. To install the bracket to the wall safely, use the rotating clamps to secure the bracket to the drywall cutout.
5. Drill a 7/16 in. (11 mm) cutout through the opposite wall for the flow tube.
6. Pull the 22 AWG cable through the bracket.
7. Push a length of the supplied flow tube through the drywall cutout and the 7/16 in. (11 mm) cutout in the opposite wall.
8. Attach the flow tube and sensor module into place. Secure the tube and module with the #6/32 in. x 0.75 in. (813 mm x 19.1 mm) screws supplied.
9. Screw the stainless steel back plate to the back of the sensor.
10. Attach the flow tube to the barbed fitting of the flow tube mounting plate on the opposite side of the monitored space. To seal against penetration, apply a thin bead of silicone caulk around the tube between the stainless steel plate and the wall.
11. Press the mounting plate into place and push the excess tube length into the wall space. Ensure the tubing does not kink inside the wall. Secure the mounting plate with the screws and anchors.
12. Screw the louvered cover plate to the front of the sensor.

Remote sensor diagram

Figure 1: Standard remote sensor 9-pin side view



Number	Description
1	Back plate
2	Gasket
3	Stainless steel flow tube mounting plate
4	Wall section in cut away view
5	Flow tube
6	Stainless steel mounting plate
7	Gasket
8	Louvered cover plate
9	Bracket
10	Terminal block
11	Thin silicone caulking

Terminal block diagram

Figure 2: Terminal block

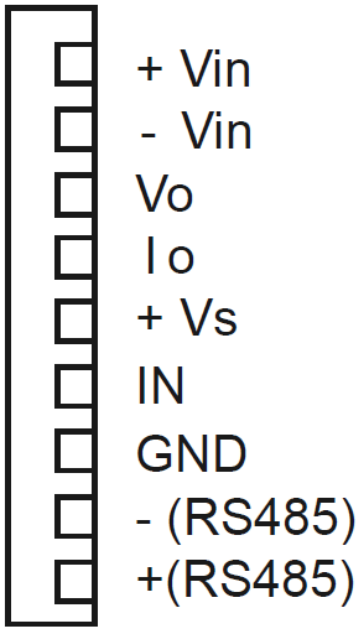


Table 2: Terminal block description

Terminal	Description	Product usage
+Vin	Power input range: 24 VAC or 24 VDC	FMS-2000C, FMS-2000M, CCM09090, or other
-Vin		FMS-2000M
Vo	Sensor output range: 0 VDC - 5 VDC	CCM09090 or other
Io	Sensor output range: 4 mA - 20 mA for +/-.25 in. W.C. (62.21 Pa)	FMS-2000C, CCM09090, or other
+Vs	Door switch (dry contact)	FMS-2000M
IN		
GND	Ground for power and signal	FMS-2000C, CCM09090, or other
-(RS485)	Serial communication at 2400 baud rate	FMS-2000M
+(RS485)		

North American emissions compliance

United States

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area may cause harmful interference, in which case the users will be required to correct the interference at their own expense.

Canada

This Class (A) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.
Cet appareil numérique de la Classe (A) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable end-user license, open-source software information, and other terms set forth at www.johnsoncontrols.com/techterms. Your use of this product constitutes an agreement to such terms.

Patents

Patents: https://jcipat.com

Single point of contact

APAC	EU	UK	NA/SA
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Contact information

Contact your local branch office: www.johnsoncontrols.com/locations

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