

WARNING

Risk of Electric Shock.

Disconnect the power supply before making electrical connections. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

CAUTION

Risk of Personal Injury or Property Damage.

For use in a controlled environment only. Refer to installation instructions for environmental conditions.

NOTICE

Risk of Property Damage.

Use a 24 VAC minimum 30 VA Class 2, LPS or Limited Energy transformer for the monitor. Failure to follow the wiring diagrams may result in damage to the monitor and could void your warranty.

Risk of Property Damage.

Do not apply power to the system before checking all wiring connections. Short circuited or improperly connected wires may result in permanent damage to the equipment.

Risk of Property Damage.

Do not run low-voltage cable in the same conduit or wiring troughs with high-voltage wires. Running low- and high-voltage wires in the same conduit or wiring troughs may damage the equipment or cause system malfunction.

Risk of Property Damage.

Ensure that the power source conforms to the requirements of the equipment. Failure to use a correct power source may result in permanent damage to the equipment.

Risk of Property Damage.

Do not run network communication cables in the same conduit, raceway, or panel with any high-voltage (greater than 30 VAC) wiring. Isolate all network wiring and all network devices from high-voltage wiring and equipment. Failure to isolate network wiring and network devices from high-voltage wiring and equipment can result in damage to network devices or poor network performance.

Risk of Property Damage.

Label all wires prior to disconnecting the equipment. Failure to label the wires may cause improper equipment operation after reconnecting the equipment.

Risk of Property Damage.

Do not connect the 24 VAC power supply directly to the FMS-2000M display four-position terminal block. You must terminate the power at the remote sensor's nine-position terminal block on the +Vin and -Vin terminals. Failure to follow the wiring instructions may cause permanent damage to the FMS-2000M monitor and void your warranty.

IMPORTANT: Do not install or use this FMS-2000M Critical Environment Monitor in or near environments where corrosive substances or vapors could be present. Exposure of the FMS-2000M monitor to corrosive environments may damage the device's internal components and will void the warranty.

IMPORTANT: Do not install this FMS-2000M Critical Environment Monitor in condensing, wet, or damp environments. Moisture may cause damage to the FMS-2000M monitor.

IMPORTANT: Only qualified personnel should install or service Johnson Controls® products. These instructions are a guide for such personnel. Carefully follow all instructions in this document and all instructions for the FMS-2000M Critical Environment Monitor.

IMPORTANT: Use copper conductors only. Make all wiring connections in accordance with local, national, and regional regulations. Do not exceed the FMS-2000M Critical Environment Monitor's electrical ratings.

IMPORTANT: Do not install the FMS-2000M Critical Environment Monitor where the maximum temperature exceeds 125°F (52°C). Installing the device where maximum temperatures exceed 125°F (52°C) may cause damage to the FMS-2000M Critical Environment Monitor and may void the warranty.

IMPORTANT: Make all wiring connections in accordance with the National Electrical Code and local regulations. Use proper Electrostatic Discharge (ESD) precautions during installation and servicing to avoid damaging the electronic circuits of the FMS-2000M Critical Environment Monitor.

IMPORTANT: Maintain proper polarity and voltage or current ratings. Improper polarity or exceeding the voltage or current ratings will void the warranty.

IMPORTANT: Install the FMS-2000M Critical Environment Monitor with a Class 2, Limited Energy, or LPS isolated power supply and connect it to an electrical circuit protected by a minimum 20 A circuit breaker. Mount the circuit breaker in an approved electrical enclosure located separately, but in close proximity, to the FMS-2000M monitor.

AVERTISSEMENT

Risque de décharge électrique.

Débrancher l'alimentation avant de réaliser tout branchement électrique. Tout contact avec des composants conducteurs de tensions dangereuses risque d'entraîner une décharge électrique et de provoquer des blessures graves, voire mortelles.

ATTENTION

Risque de blessure corporelle ou de dommages matériels.

Pour utilisation dans un environnement contrôlé uniquement. Consulter le guide d'installation pour les conditions environnementales.

AVIS

Risque de dégâts matériels.

Utilisez un transformateur de classe 2 à 24 V minimum CA 30 VA, à limitation d'alimentation ou LPS pour le moniteur. Ne pas respecter les schémas de câblage peut causer des dommages au moniteur et peut annuler votre garantie.

Risque de dégâts matériels.

Ne pas mettre le système sous tension avant d'avoir vérifié tous les raccords de câblage. Des fils formant un court-circuit ou connectés de façon incorrecte risquent d'endommager irrémédiablement l'équipement.

Risque de dégâts matériels.

Ne pas faire courir un câble basse tension dans les mêmes gaines ou goulottes électriques que des câbles haute tension. L'installation de fils basse tension et haute tension dans les mêmes gaines ou goulottes électriques risque d'endommager l'équipement ou de provoquer des dysfonctionnements du système.

Risque de dégâts matériels.

S'assurer que la source d'alimentation électrique est conforme aux spécifications de l'équipement. L'utilisation d'une source d'alimentation électrique inappropriée risque d'endommager irrémédiablement l'équipement.

Risque de dégâts matériels.

Ne passez pas les câbles de communication réseau dans les mêmes gaines, chemins de câbles ou panneaux que les câbles à haute tension (supérieure à 30 Vca). Isolez tous les câbles et appareils réseau des câbles et appareils à haute tension. Un défaut d'isolement des câbles et appareils à haute tension peut provoquer des dommages aux appareils réseau et réduire les performances du réseau.

Risque de dégâts matériels.

Étiquetez tous les câbles avant de débrancher l'équipement. Le non-respect de cette précaution peut amener un fonctionnement anormal après redémarrage de l'équipement.

Risque de dégâts matériels.

Ne pas brancher le bloc d'alimentation de 24 V CA directement au bornier à quatre positions de l'écran du FMS-2000M. Vous devez raccorder l'alimentation aux bornes +Vin et -Vin du bornier à neuf positions du capteur à distance. Ne pas respecter les instructions de câblage peut causer des dommages permanents au moniteur FMS-2000M et annuler votre garantie.

IMPORTANT : N'installez ou n'utilisez pas FMS-2000M Critical Environment Monitor dans, ou près, d'environnements où des substances ou vapeurs corrosives peuvent être présentes. L'exposition du FMS-2000M à des environnements corrosifs peut endommager les composants internes de l'appareil et annulera la garantie.

IMPORTANT : N'installez pas FMS-2000M Critical Environment Monitor dans un environnement humide, mouillé ou il se produit de la condensation. L'humidité peut causer des dommages au FMS-2000M.

IMPORTANT : Seul le personnel qualifié peut installer et entretenir les produits Johnson Controls. Ces instructions constituent un guide pour ce type de personnel. Suivez attentivement toutes les instructions de ce document et toutes les instructions du FMS-2000M Critical Environment Monitor.

IMPORTANT : N'utilisez que des conducteurs en cuivre. Assurez-vous que tous les branchements de câbles sont effectués selon les réglementations locales, nationales et régionales. Ne dépassez pas les spécifications électriques du FMS-2000M Critical Environment Monitor.

IMPORTANT : N'installez pas le contrôleur d'environnement critique FMS-2000M où la température maximum dépasse 52 °C (125 °F). Installer l'appareil dans un environnement où la température maximum dépasse 52 °C (125 °F) peut endommager FMS-2000M Critical Environment Monitor et peut annuler la garantie.

IMPORTANT : Assurez-vous que tous les branchements de câbles sont effectués selon le Code national de l'électricité et les réglementations locales. Utilisez une bonne protection contre les décharges électrostatiques (ESD) pendant l'installation et l'entretien pour éviter d'endommager les circuits électroniques du FMS-2000M Critical Environment Monitor.

IMPORTANT : Conservez la bonne polarité et la bonne tension ou le bon courant. Une mauvaise polarité ou le dépassement de la tension ou du courant annulera la garantie.

IMPORTANT : Installez le FMS-2000M Critical Environment Monitor en utilisant un bloc d'alimentation de classe 2, à limitation d'alimentation ou LPS et raccordez-le à un circuit électrique protégé par un disjoncteur d'un minimum de 20 A. Placez le disjoncteur du FMS-2000M dans un panneau électrique approuvé et situé à l'écart, mais à proximité.

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Introduction

The FMS-2000M Critical Environment Monitor is a BACnet® MS/TP differential pressure monitoring solution that can also display temperature, humidity, air flow, air changes and CO₂ from a building management system (BMS) for up to four spaces. The monitor can measure differential pressure as low as 0.0001 in. W.C. or 0.0249 Pa and display measurements on a 5 in. (12.7 cm) diagonal touch screen.

The FMS-2000M provides maximum room status awareness with the color coded visual alarms that display on screen, and the 360° Safety Halo illuminated edge which you can use to easily monitor spaces down long corridors. You can put the audible alarm into snooze mode with one tap to the screen. The FMS-2000M features two password-protected access levels, one for administrators and one for restricted level users, such as nurses.

Figure 1: FMS-2000M system diagram

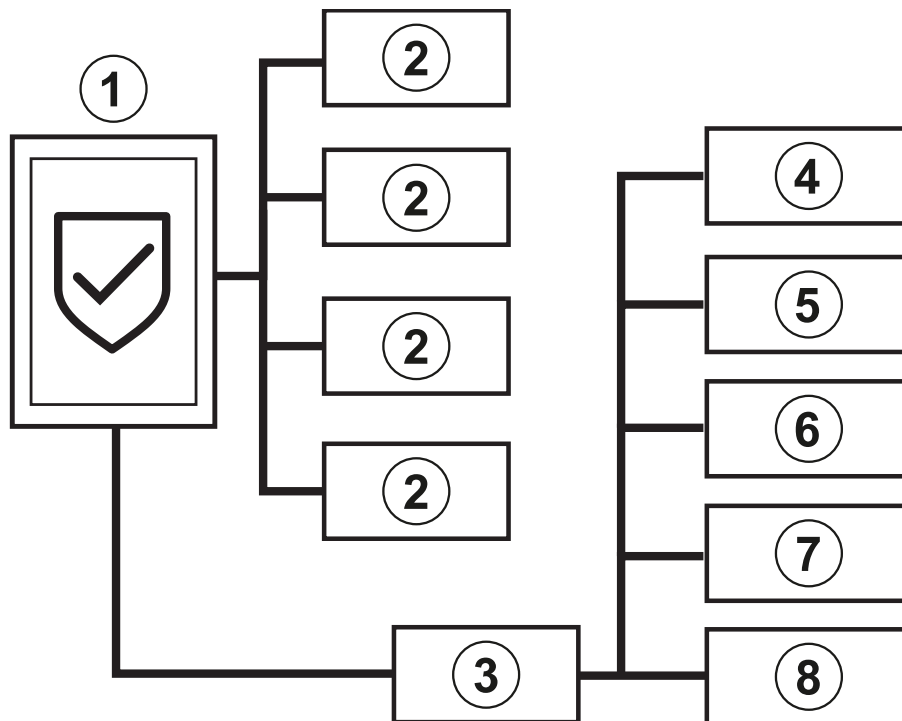


Table 1: FMS-2000M system diagram

Item	Component
1	FMS-2000M monitor
2	Remote pressure sensor
3	Building automation system (BAS)
4	Temperature sensor
5	Humidity sensor
6	Air flow sensor
7	Air changes
8	CO ₂ sensor

Location considerations

Install the FMS-2000M monitor directly outside the monitored space, at the nurses' station, in the engineering office, or at any other location that you need. Place the sensors away from any moving air source such as ceiling air registers, because this can cause unstable sensor behavior.

The FMS-2000M monitor includes a pre-wired 10-ft (3.04-m) interface cable to connect the monitor to the sensor network. The monitor comes pre-configured for portrait mode but you can also install the monitor in landscape mode. After you install the monitor, you can adjust the interface orientation to landscape mode during the initial setup.

Ferrite Installation Instructions for FMS-2000M series

To provide FCC and CE compliance for the FMS-2000M critical environment monitor and its application, use the cable ferrites that are included in the package for the installation as described. Install the three cable ferrites included on the AC input cable to the isolated power supply module, and on the wires that supply 24 VAC power to the pressure sensor module.

Power Supply Input Cable Ferrite

1. Install the cable ferrite A on the cable to provide power to the isolated power supply module.
2. Unlatch the clasp on the side of the ferrite to expose the core.
3. Place it on the power cable near to the power supply enclosure as shown in Figure 2
4. Close the ferrite around the cable. Ensure that the clasp latches securely.

Power Supply Output Cable Ferrites

1. Install the cable ferrite B on the two 24 VAC supply power wires to provide power to the remote pressure sensor as shown in the Figure 2.
2. Locate the cable ferrite about 10-12 inches away from the end of the two wires.
3. Unlatch the clasp on the side of the ferrite to expose the core.
4. Place it over the two supply power wires and close the ferrite around the wires. Ensure that the clasp latches securely.
5. Install the cable ferrite labeled C about an inch after ferrite B and complete one wrap or loop of the two 24 VAC supply power wires.
6. Leave at least four inches of length to connect to the green terminal block.

For more information on pressure sensor to monitor installation with cable ferrites, see *Wiring remote pressure sensors to the monitor*.

Figure 2: Cable ferrite installation

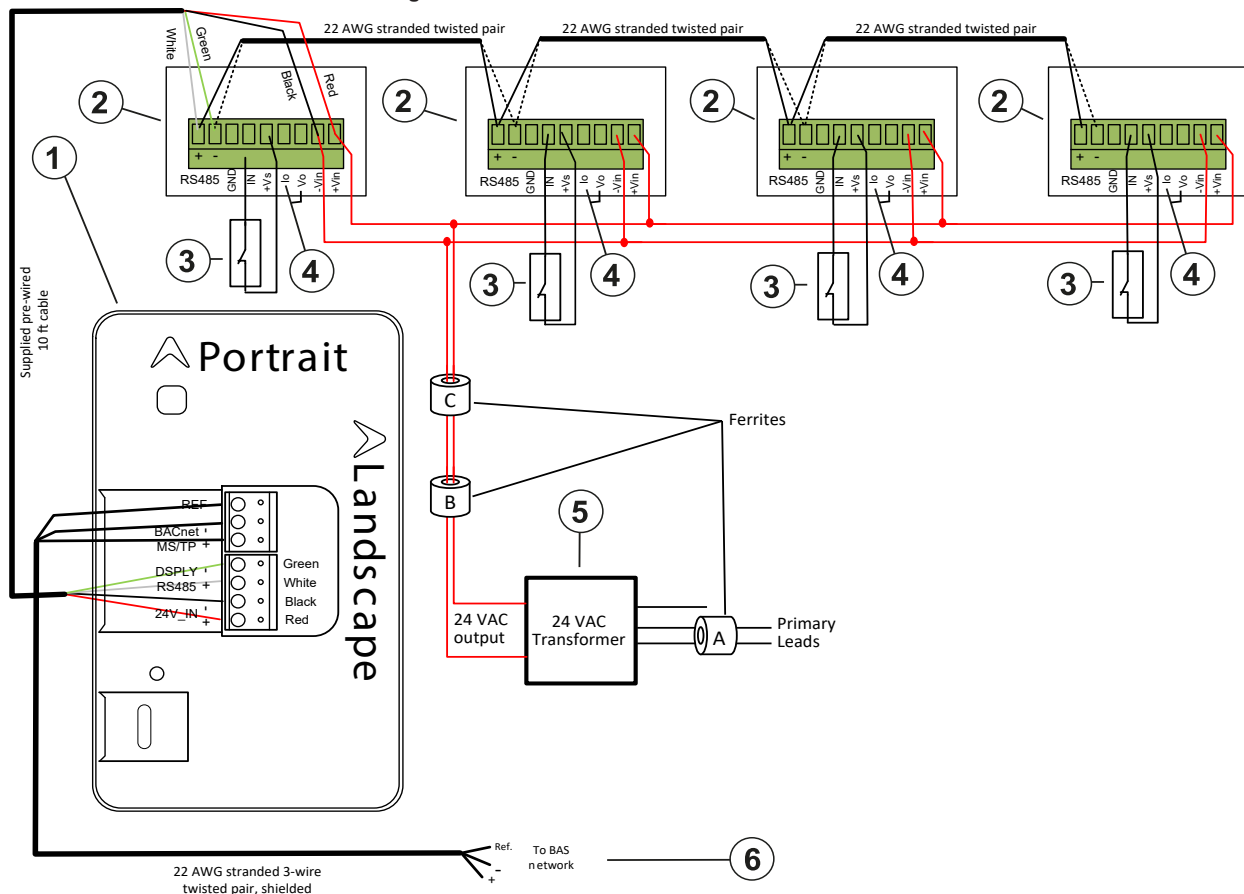


Table 2: FMS-2000M Critical Environment Monitor components

Callout	Component
1	FMS-2000M monitor
2	Supplied remote pressure sensors 1, 2, 3, and 4, in order from left to right
3	Optional door switch Note: Configure the door switch setting on the monitor. It can be normally closed or normally open.
4	Io terminal and Vo terminal Note: Analog signals are present at the sensor's Io terminal, 4mA - 20mA, and Vo terminal, 0 VDC - 5 VDC, which represents the monitored room pressure. You can use it in conjunction with the GND terminal to remotely monitor room pressure when you connect the terminal to a third party controller on the BAS network.
5	Supplied power supply
6	BACnet MS/TP

■ Installing the FMS-2000M Thin Mount display for a retrofit application

Use the retrofit ring in applications when the wall is existing.

Before you begin, make sure you have the following tools:

- a drywall saw or an oscillating tool with a drywall saw blade
- a drill and a 7/16 in. drill bit
- a #2 Phillips head screwdriver
- a 1/16 in. hex wrench

1. Choose the location where you want to place the FMS-2000M monitor.
2. Orient the retrofit ring in the location that you want and keep the ring level. The default orientation is portrait, but you can also choose to use landscape orientation.
3. Mark both screw holes and the corners of the rectangular section.
4. Use a drywall saw or oscillating tool to cut out the entire rectangular section inside the marked opening and drill the screw holes.
5. Pull the pre-wired 4-conductor interface cable and the RS-485 BACnet MS/TP wires through the retrofit ring.
6. If the 2-conductor power cable terminates at the monitor, pull the 2-conductor power cable through the retrofit ring.
7. Insert the retrofit ring through the opening. Make sure that the four tabs make contact with the inside of the opening and then pull the retrofit ring flush against the inside of the wall.
8. Attach the monitor's mounting bracket to the retrofit ring with the four included mounting screws. Use a #2 Phillips head screwdriver to secure both the box and the bracket.
Note: To avoid warping the mounting bracket, do not over-tighten the screws.
9. Connect the wires to the back of the monitor. For more information, see Figure 5.
10. Align the two slots on the back of the monitor with the tabs on the bracket, then swing the monitor towards the wall so that the single tab on the bracket slots into the back of the monitor.
11. Insert the set screw into the hole on the side or bottom of the monitor's housing when the monitor sits flush against the wall. Use a 1/16 in. hex wrench to drive the screw into the monitor until it engages with the tab.

After you mount the FMS-2000M monitor, apply power to the monitor. The initial splash screen displays the Triatek logo and the Safety Halo bezel lights up green to represent the current system status.

Figure 3: Retrofit application dimensions

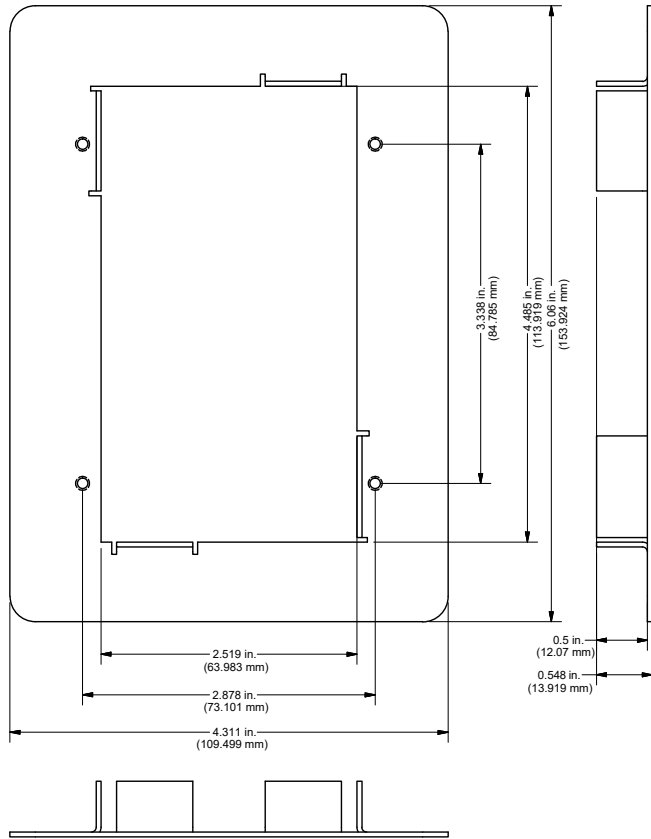


Figure 4: Retrofit ring

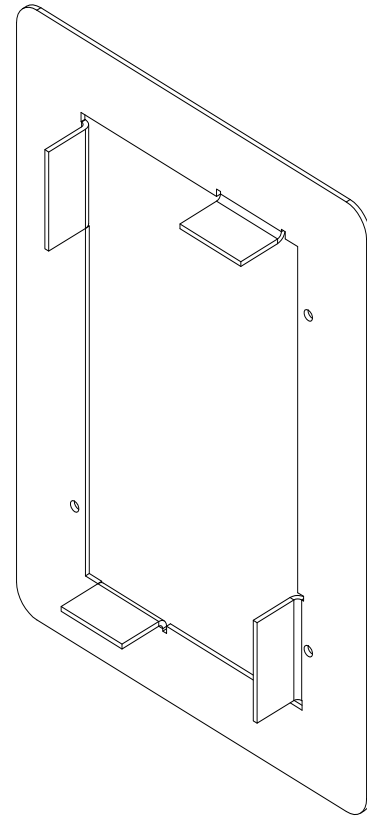


Figure 5: FMS-2000M Critical Environment Monitor components for a retrofit application

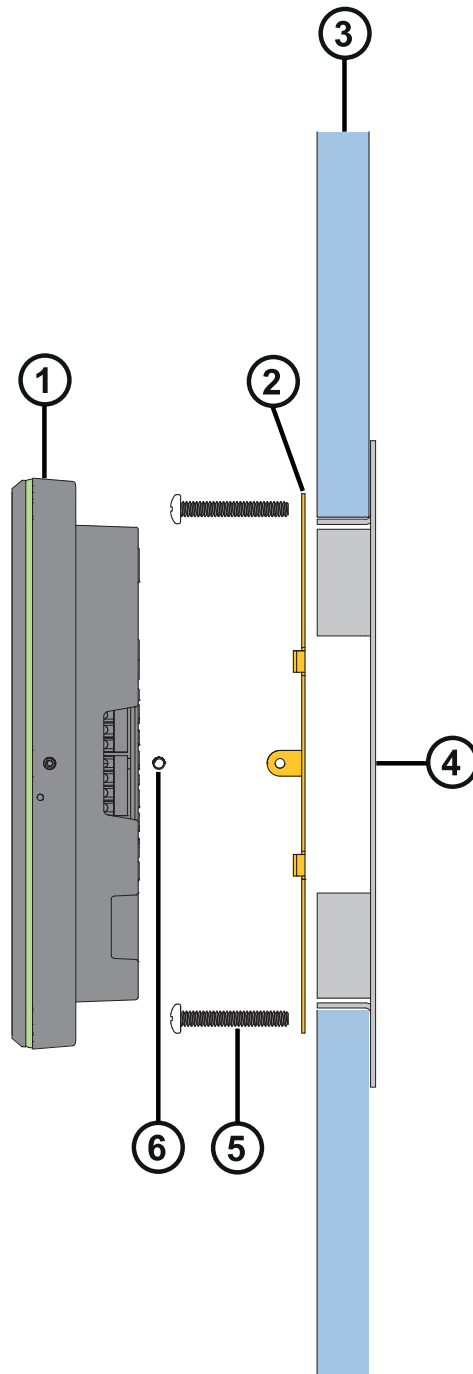


Table 3: FMS-2000M Critical Environment Monitor components for a retrofit application

Item	Component
1	FMS-2000M Critical Environment Monitor
2	Monitor bracket
3	Wall
4	Retrofit ring
5	Mounting screw
6	Set screw

■ Installing the FMS-2000M Thin Mount display for a new application

Use the rough-in box for new construction applications when the walls have not yet been installed.

Before you begin, make sure you have the following tools:

- a drywall saw or an oscillating tool with a drywall saw blade
 - a drill and a 7/16 in. drill bit
 - a #2 Phillips head screwdriver
 - a 1/16 in. hex wrench
1. Determine the location where you want to place the FMS-2000M monitor. The default orientation is portrait, but you can also choose to use landscape orientation.
 2. Mount the rough-in box to the side of a stud. Make sure the front surface is flush, or slightly recessed, to fit with the drywall surface that you install later.
 3. Pull the pre-wired 4-conductor interface cable and the RS-485 BACnet MS/TP wires through the opening in the rough-in box.
 4. If the 2-conductor power cable terminates at the monitor, pull the 2-conductor power cable through the opening in the rough-in box.
 5. Install the drywall. Make sure that the mounting surface is flush with the finished surface of the drywall, and the opening fits precisely with the rough-in box.
 6. Align the monitor's mounting bracket to the four screw holes on the mounting tabs of the rough-in box. Use a #2 Phillips head screwdriver to secure the bracket with the screws provided. Make sure the bracket is level.
Note: To avoid warping the mounting bracket, do not over-tighten the screws.
 7. Connect the wires to the back of the monitor. For more information, see Figure 8.
 8. Align the two slots on the back of the monitor with the tabs on the bracket and swing the monitor towards the wall so that the single tab on the bracket slots into the back of the monitor.
 9. Insert the set screw into the hole in the monitor's housing when the monitor sits flush against the wall. Use a 1/16 in. hex wrench to drive the screw into the monitor until it engages with the tab on the bracket.

After you mount the FMS-2000M monitor, apply power to the monitor. The initial splash screen displays the Triatek logo and the Safety Halo bezel lights up green to represent the current system status.

Figure 6: Rough-in box dimensions

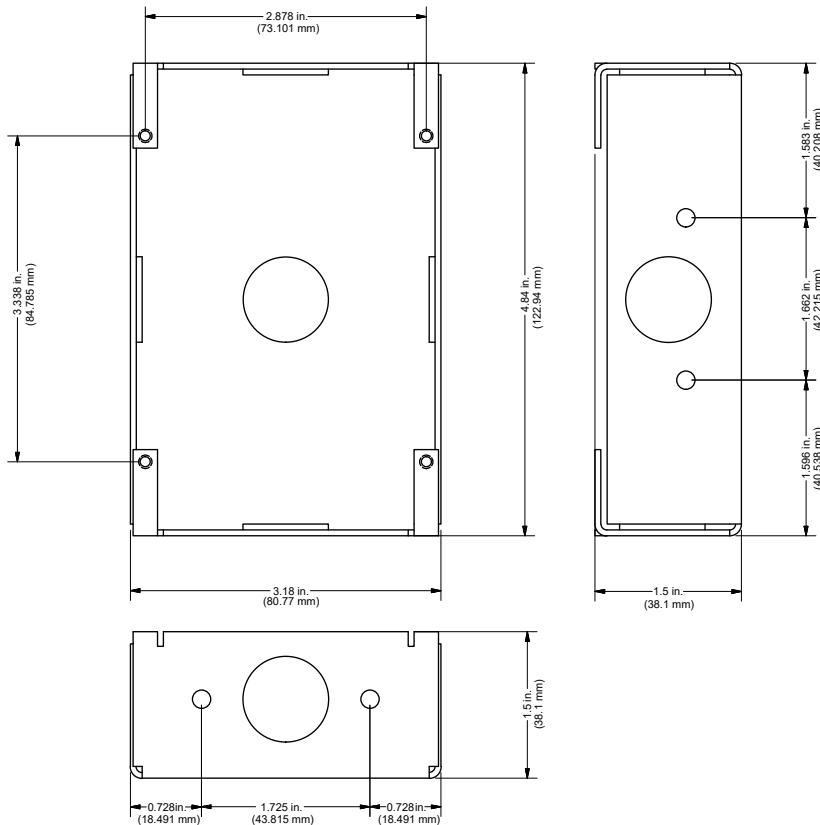


Figure 7: Rough-in box

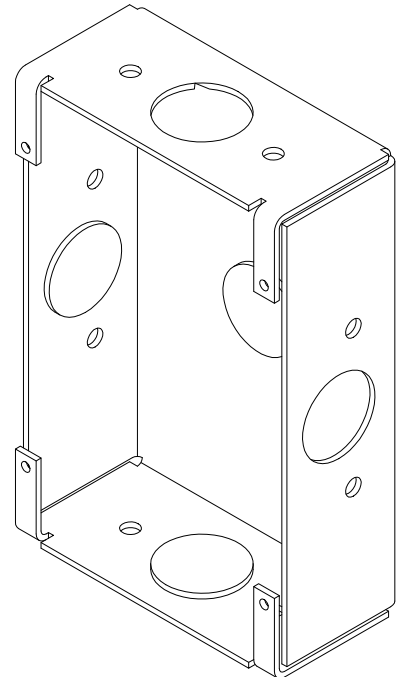


Figure 8: FMS-2000M Critical Environment Monitor components for a new application

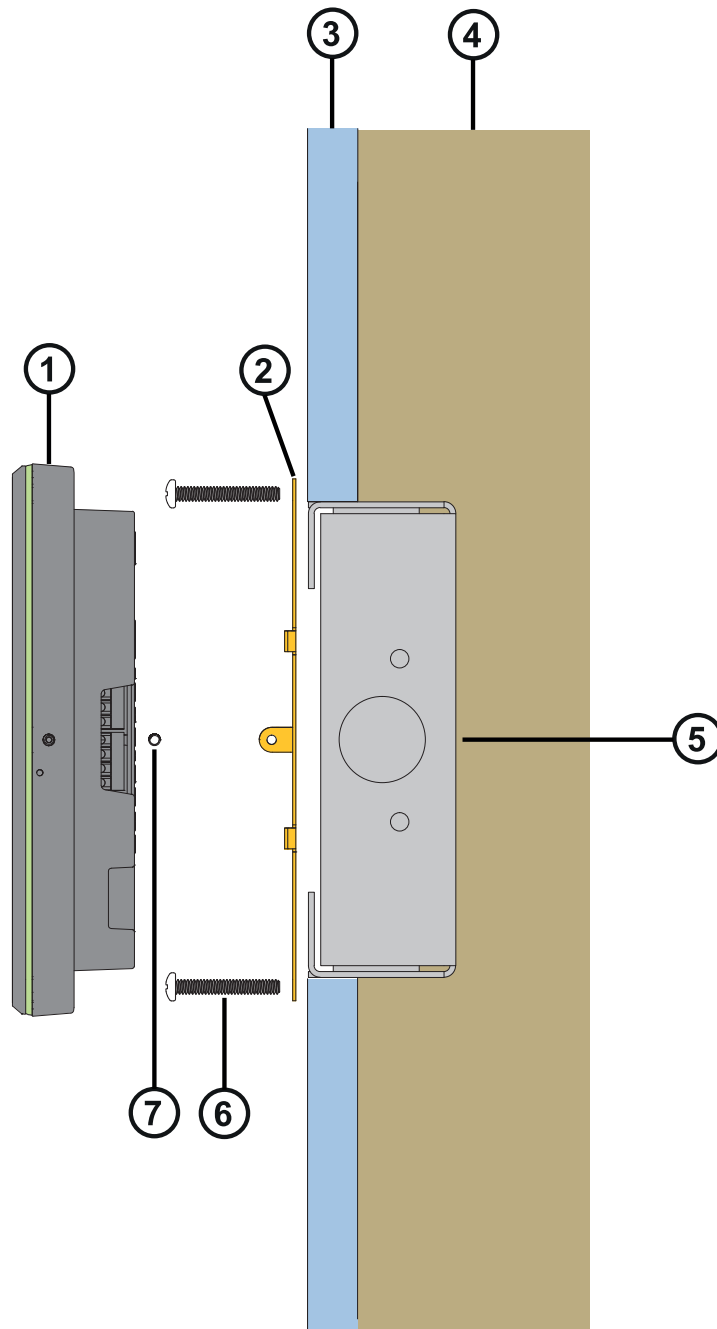


Table 4: FMS-2000M Critical Environment Monitor components for a new application

Item	Component
1	FMS-2000M Critical Environment Monitor
2	Mounting bracket
3	Wall
4	Stud
5	Rough-in box
6	Mounting screw
7	Set screw

■ Mounting the remote pressure sensor

The FMS-2000M Critical Environment Monitor includes one to four remote pressure sensors to measure the differential pressure of the monitored spaces. Install the remote pressure sensor module in the wall facing the monitored space such as an isolation room. Install the flow tube mounting plate facing the adjoining reference space such as the corridor or anteroom. With this sensor orientation, a positive pressure value indicates that the monitored space is positive with respect to the reference space. Choose a location that is away from any moving air source such as ceiling-mounted air registers. This can cause unstable sensor behavior. See Figure 8 for more information.

Before you begin, determine the sensor location and the number of cables that you need. To mount the remote pressure sensor, make sure you have the following tools:

- a drill and a 7/16 in. drill bit
- a #2 Phillips head screwdriver
- a drywall saw or an oscillating tool with a drywall saw blade

To mount the remote pressure sensor, complete the following steps:

1. Connect a 4-conductor 22 AWG cable between the primary remote pressure sensor module and any additional remote pressure sensor module included with the unit. The length of the cable should not exceed 1,000 ft.
2. Remove each sensor's louvered cover plate and stainless steel backplate from the orange wall bracket.
3. Cut an opening in the wall of the monitored space for the orange low voltage mounting bracket and for the remote pressure sensor electronics. Nominal hole dimensions are 3.65 in. (9.271 cm) H x 2.15 in. (5.461 cm) W.
4. Use the rotating clamps to secure the bracket to the wall safely.
5. Drill a 7/16 in. hole through the opposite wall for the flow tube.
6. Pull the 4-conductor signal wire through the cut out.
7. Install the mounting bracket in the drywall opening and pull the 4-conductor signal cable through the mounting bracket.
8. Push a length of flow tube through the hole and the 7/16 in. hole in the opposite wall.
9. Attach the flow tube to the sensor port. When you install the mounting plate directly opposite the sensor, cut the flow tubing as short as possible to prevent kinks.
10. Push the tube and sensor module into place and secure it with the two #6-32 x 3/4 in. screws supplied.
11. Screw the louvered cover plate to the front.
12. In the reference space, attach the flow tube to the barbed fitting of the flow tube mounting plate. Apply thin silicone caulking around the tube, between the stainless steel plate and the wall to seal against penetration.
13. Press the mounting plate into place. Allow the excess tube length to go into the wall space. Secure the mounting plate with the screws and anchors.
14. Screw the louvered cover plate to the front.

Figure 9: Standard remote sensor 9-pin view

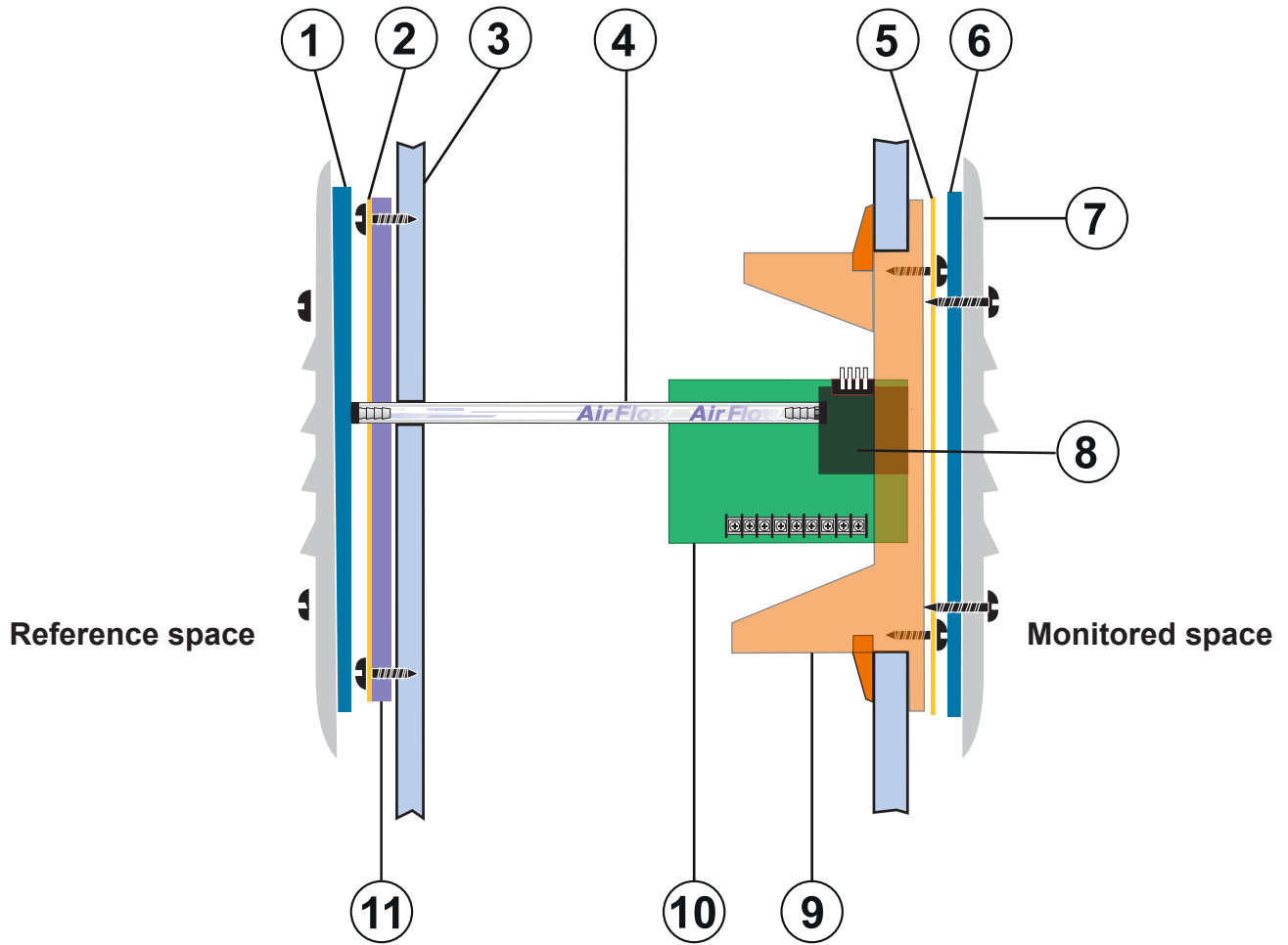


Table 5: Remote pressure sensor installation components

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

■ Wiring the system and BACnet MS/TP communications

Figure 10: BACnet MS/TP wiring diagram

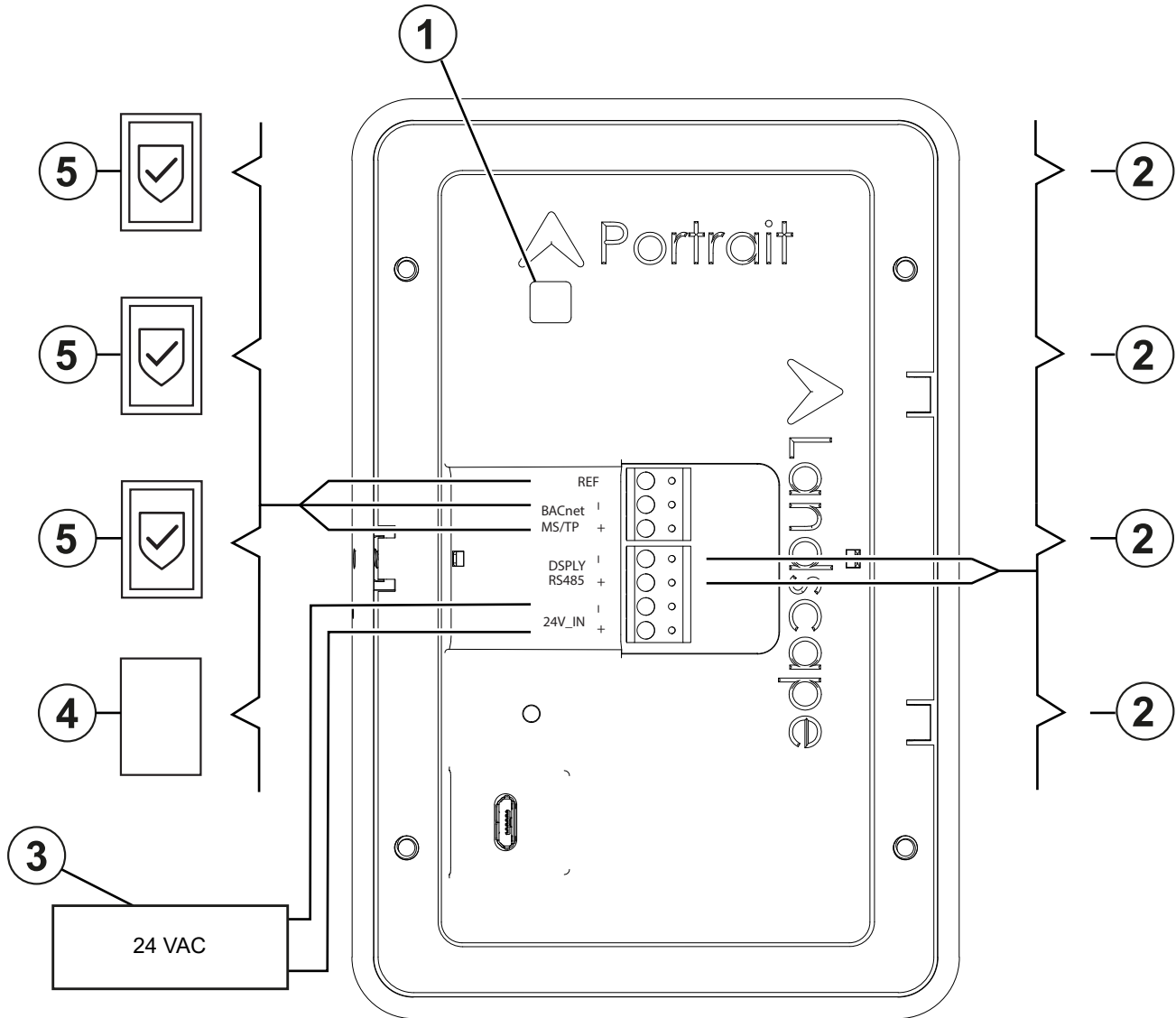


Table 6:

Callout	Component
1	DIP switch. See Table 8 for more information.
2	Remote pressure sensor
3	Power supply Note: The figure shows a 24 VAC transformer as an example. For information about correct power supply termination, see the following wiring information: <ul style="list-style-type: none"> Wiring remote pressure sensors to the monitor
4	Supervisory device
5	FMS-2000M Critical Environment Monitor. Note: The FMS-2000M does not have an internal end of line resistor. If it is the last device on a trunk segment, install an external resistor. For example, a MS-BACEOL-0.

■ Wiring remote pressure sensors to the monitor

Note: For optimum network communications, connect the reference signal (REF) to the COM terminal on the supervisory device's FC bus terminal block.

Figure 11: Wiring four remote pressure sensors to the monitor

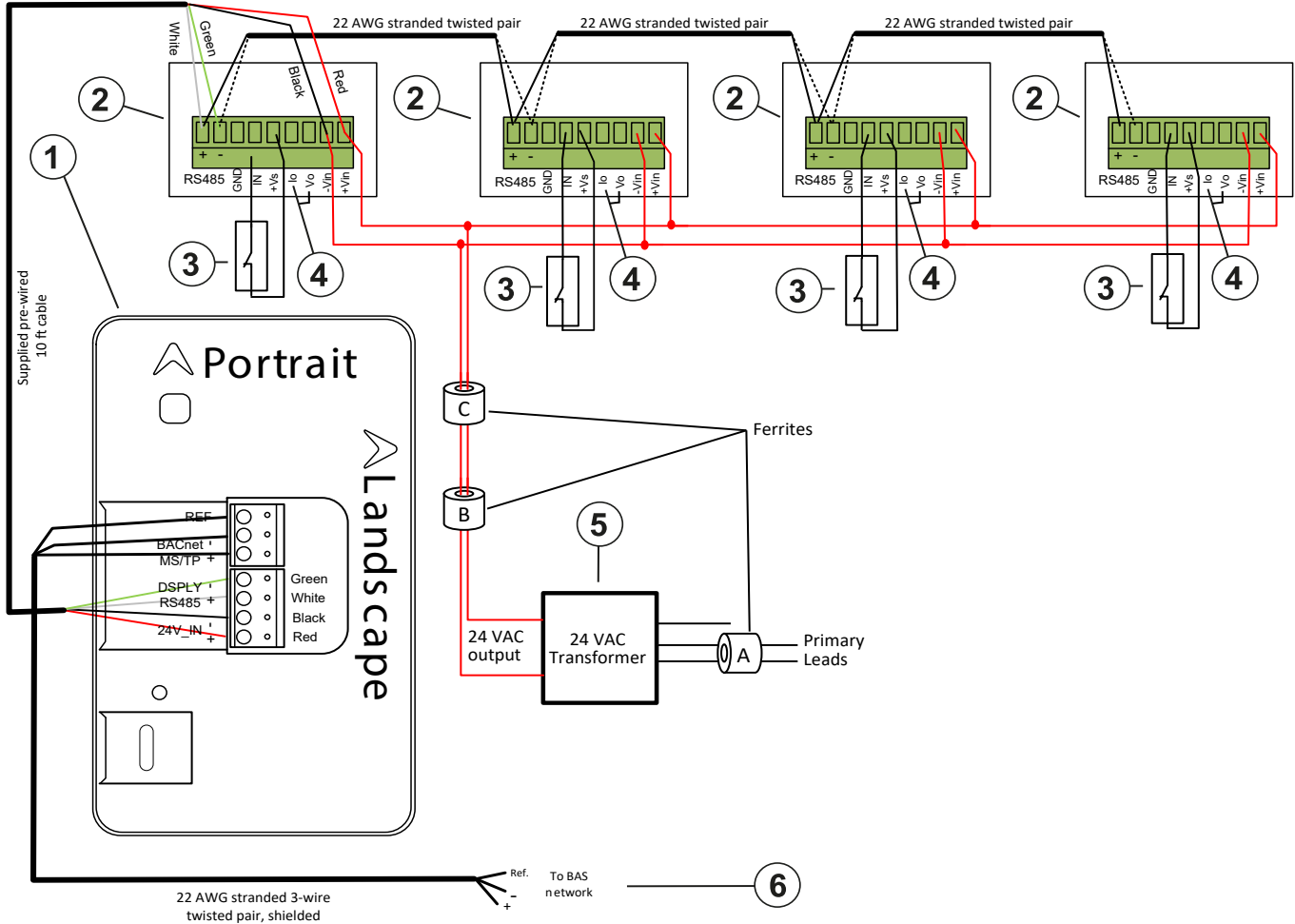


Table 7: Wiring remote pressure sensors to the monitor

Callout	Component
1	FMS-2000M monitor
2	Supplied remote pressure sensors 1, 2, 3, and 4, in order from left to right
3	Optional door switch
	Note: Configure the door switch setting on the monitor. It can be normally closed or normally open.
4	Io terminal and Vo terminal
	Note: Analog signals are present at the sensor's Io terminal, 4mA - 20mA, and Vo terminal, 0 VDC - 5 VDC, which represents the monitored room pressure. You can use it in conjunction with the GND terminal to remotely monitor room pressure when you connect the terminal to a third party controller on the BAS network.
5	Power supply
6	BACnet MS/TP

Figure 12: Remote pressure sensor DIP switch configuration for four-sensor models

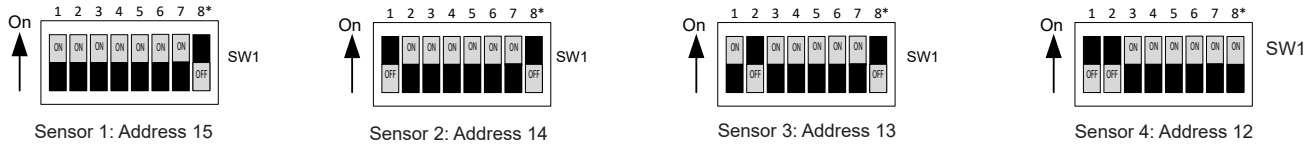


Table 8: Remote pressure sensor DIP switch configuration for four-sensor models

Switch	Description	Sensor 1	Sensor 2	Sensor 3	Sensor 4
1	Sensor address	On	Off	On	Off
2		On	On	Off	Off
3		On	On	On	On
4		On	On	On	On
5	Sensor mode: Set the switch to On for normal or Off for inverted. After you change the sensor mode with switch 5, cycle power to the sensor for the mode change to take effect.	On or off	On or off	On or off	On or off
6	Reserved	n/a	n/a	n/a	n/a
7	Reserved	n/a	n/a	n/a	n/a
8	Sensor communications termination	See note	See note	See note	See note

Note: Only turn DIP switch 8 on when a sensor is physically at the end of the sensor bus daisy-chain. Turn DIP switch 8 Off in all other sensors.

■ Upgrading an FMS-1655M monitor to an FMS-2000M monitor

Figure 13: Upgrading an FMS-1655M monitor to an FMS-2000M monitor

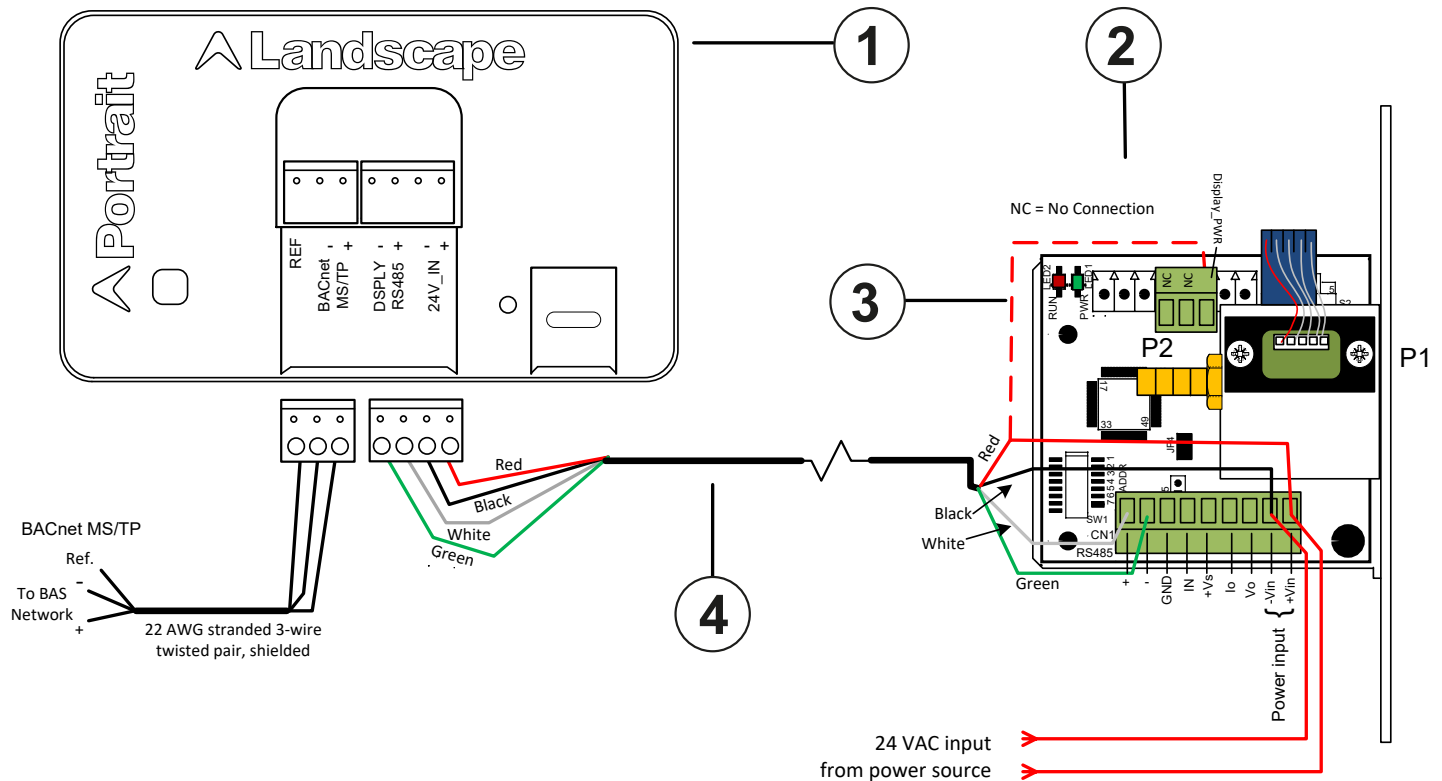


Table 9: Upgrade wiring diagram callouts

Callout	Description
1	FMS-2000M monitor
2	FMS-1655M remote pressure sensor
3	Red display power wire. If the sensor includes a 3-position terminal block with display power installed, remove the wire and connect it at the +Vin terminal of the 9-position terminal block as shown.
4	Display-to-sensor interface cable. Supplied cable: 10 ft (3.04 m)

1. Shut down the FMS-1655M unit and remove the monitor from the wall.
2. Remove the back cover from the display enclosure.
3. Unplug the 4-position terminal block from the display circuit board, with the wires from the interface cable still connected. If you use a BACnet network, unplug the 3-position terminal block.
4. Prepare the opening in the wall to mount the display unit. For instructions, see *Installing the FMS-2000M Thin Mount display for a retrofit application*.
5. Pull the existing FMS-1655M monitor cables through the opening in the wall.
6. At the back of the FMS-2000M monitor, remove the 4-position terminal block plug from the pin header. If you use a BACnet network, then remove the 3-position terminal block as well.
7. Connect the 4-position terminal block at the end of the interface cable to the 4-pin header at the back of the FMS-2000M display. If you use a BACnet network, connect the networking cable to the 3-pin header. See Figure 13.
8. After installing the new display, it is necessary to remove the old device and its associated points from the BAS and remap the new device and its associated points. To complete the installation, see *Installing the FMS-2000M Thin Mount display for a retrofit application*.

■ Configuring the display module settings

Figure 14: Run mode and demo mode DIP switches



Table 10: Monitor DIP switch configurations for the operating modes

FMS-2000M DIP switch position	Demo mode	Run mode
Position 1	On	On
Position 2	On	On
Position 3	Off	On
Position 4	On	Off

■ BACnet objects

Table 11: Analog inputs for integration in a BAS

Objects	Analog inputs	Read/Write	Availability of analog input objects			
			FMS2M-Bx1x	FMS2M-Bx2x	FMS2M-Bx3x	FMS2M-Bx4x
AI-1	Analog input 1, differential pressure	Read only	Yes	Yes	Yes	Yes
AI-2	Analog input 2, differential pressure	Read only	No	Yes	Yes	Yes
AI-3	Analog input 3, differential pressure	Read only	No	No	Yes	Yes
AI-4	Analog input 4, differential pressure	Read only	No	No	No	Yes

Table 12: Binary inputs for integration in a BAS

Objects	Binary inputs	Read/Write	Availability of binary input objects			
			FMS2M-Bx1x	FMS2M-Bx2x	FMS2M-Bx3x	FMS2M-Bx4x
BI-1	Digital input 1, door switch 1	Read only	Yes	Yes	Yes	Yes
BI-2	Digital input 2, door switch 2	Read only	No	Yes	Yes	Yes
BI-3	Digital input 3, door switch 3	Read only	No	No	Yes	Yes
BI-4	Digital input 4, door switch 4	Read only	No	No	No	Yes

Table 13: Analog values for integration in a BAS

Objects	Analog values	Read/Write	Availability of analog value objects			
			FMS2M-Bx1x	FMS2M-Bx2x	FMS2M-Bx3x	FMS2M-Bx4x
AV-1	Network Variable temperature 1	Read or write	Yes	Yes	Yes	Yes
AV-2	Differential Pressure low alarm setpoint 1	Read or write	Yes	Yes	Yes	Yes
AV-3	Differential Pressure low warning setpoint 1	Read or write	Yes	Yes	Yes	Yes
AV-4	Differential Pressure high warning setpoint 1	Read or write	Yes	Yes	Yes	Yes
AV-5	Differential Pressure high alarm setpoint 1	Read or write	Yes	Yes	Yes	Yes
AV-6	Network Variable humidity 1	Read or write	Yes	Yes	Yes	Yes
AV-7	Network Variable Temperature 2	Read or write	No	Yes	Yes	Yes
AV-8	Differential Pressure low alarm setpoint 2	Read or write	No	Yes	Yes	Yes
AV-9	Differential Pressure low warning setpoint 2	Read or write	No	Yes	Yes	Yes
AV-10	Differential Pressure high warning setpoint 2	Read or write	No	Yes	Yes	Yes
AV-11	Differential Pressure high alarm setpoint 2	Read or write	No	Yes	Yes	Yes






Objects	Analog values	Read/Write	Availability of analog value objects			
			FMS2M-Bx1x	FMS2M-Bx2x	FMS2M-Bx3x	FMS2M-Bx4x
AV-12	Network Variable humidity 2	Read or write	No	Yes	Yes	Yes
AV-13	Network Variable temperature 3	Read or write	No	No	Yes	Yes
AV-14	Differential Pressure low alarm setpoint 3	Read or write	No	No	Yes	Yes
AV-15	Differential Pressure low warning setpoint 3	Read or write	No	No	Yes	Yes
AV-16	Differential Pressure high warning setpoint 3	Read or write	No	No	Yes	Yes
AV-17	Differential Pressure high alarm setpoint 3	Read or write	No	No	Yes	Yes
AV-18	Network Variable humidity 3	Read or write	No	No	Yes	Yes
AV-19	Network Variable temperature 4	Read or write	No	No	No	Yes
AV-20	Differential Pressure low alarm setpoint 4	Read or write	No	No	No	Yes
AV-21	Differential Pressure low warning setpoint 4	Read or write	No	No	No	Yes
AV-22	Differential Pressure high warning setpoint 4	Read or write	No	No	No	Yes
AV-23	Differential Pressure high alarm setpoint 4	Read or write	No	No	No	Yes
AV-24	Network Variable humidity 4	Read or write	No	No	No	Yes
AV-25	Network Variable Flow 1	Read or write	Yes	Yes	Yes	Yes
AV-26	Network Variable Air changes 1	Read or write	Yes	Yes	Yes	Yes
AV-27	Network Variable CO ₂ 1	Read or write	Yes	Yes	Yes	Yes
AV-28	Network Variable Flow 2	Read or write	No	Yes	Yes	Yes
AV-29	Network Variable Air changes 2	Read or write	No	Yes	Yes	Yes
AV-30	Network Variable CO ₂ 2	Read or write	No	Yes	Yes	Yes
AV-31	Network Variable Flow 3	Read or write	No	No	Yes	Yes
AV-32	Network Variable Air changes	Read or write	No	No	Yes	Yes
AV-33	Network Variable Air changes	Read or write	No	No	Yes	Yes
AV-34	Network Variable Flow 4	Read or write	No	No	No	Yes
AV-35	Network Variable Air changes 4	Read or write	No	No	No	Yes
AV-36	Network Variable CO ₂ 4	Read or write	No	No	No	Yes

Table 14: Multistate objects for integration in a BAS

Objects	Multistate objects	Read/Write	Availability of multistate objects			
			FMS2M-Bx1x	FMS2M-Bx2x	FMS2M-Bx3x	FMS2M-Bx4x
MV-1	Isolation mode: 1 = positive, 2 = negative, 3 = neutral	Read or write	Yes	Yes	Yes	Yes
MV-2	Status 1: 1 = normal, 2 = warning, 3 = alarm	Read only	Yes	Yes	Yes	Yes
MV-3	Status 2: 1 = normal, 2 = warning, 3 = alarm	Read only	No	Yes	Yes	Yes
MV-4	Status 3: 1 = normal, 2 = warning, 3 = alarm	Read only	No	No	Yes	Yes
MV-5	Status 4: 1 = normal, 2 = warning, 3 = alarm	Read only	No	No	No	Yes

Technical specifications

Table 15: FMS-2000M Critical Environment Monitor technical specifications

Intended use	Indoor use	
Overvoltage category	II	
Altitude	Up to 2000 m (6562 ft)	
Pressure range	± 0.2500 in. W.C. (± 62.27 Pa)	
Alarm range	± 0.2500 in. W.C. (± 62.27 Pa)	
Display range	± 0.2500 in. W.C. (± 62.27 Pa)	
Accuracy	± 0.5% full scale	
Air flow sensor type	Digital differential pressure sensor features no offset, zero drift and is hysteresis free	
Displayed pressure resolution	± 0.0001 in. W.C (± 0.0249 Pa)	
Monitoring capability	Up to 4 independent spaces	
I/O Resources	One digital input for a door switch on each remote pressure sensor Remote monitoring output for each remote pressure sensor, VDC or mA	
Operating temperature	32°F to 104°F (0°C to 40°C)	
Operating humidity	10% to 95% relative humidity, non-condensing	
Mounting	Thin mount for shallow wall cavities	
Alarm indication	Safety Halo color coded visual, audible alarm	
Alarm silence	Touchscreen, auto-reset	
Password protection	Up to 50 user passwords with 2 access levels (administrator and restricted)	
Communications protocol	BACnet MS/TP (to BAS) 76.8k, 38.4k, 19.2k, 9600 baud	
Power requirement	24 VAC (nominal, 21.6 VAC minimum/26.4 VAC maximum), 50/60 Hz 30 VA power supply, Class 2, Limited Energy, LPS isolated power supply, or minimum power 30 VA transformer.	
Power consumption	30 VA maximum	
Pollution degree	2	
Display resolution	720 pixels x 1280 pixels	
Pluggable screw terminal blocks	18 AWG to 22 AWG (1 mm to 0.6 mm diameter)	
Display dimensions (height x width x depth)	5.3 in. x 3.5 in. x 1.17 in. (134.62 mm x 88.9 mm x 29.72 mm)	
Mounted depth	Thin mount: 0.58 in (14.73 mm)	
Compliance     	United States	UL Listed (E515759) to UL 61010-1; FCC 47CFR Part 15; BTL Listed (BTL-30774)
	Canada	cUL Listed (E515759) to CAN/CSA C22.2 NO. 61010-1; ICES-003
	Europe (CE)	Low Voltage Directive [2014/35/EU] per EN 61010-1 EMC Directive [2014/30/EU] per EN 61326-1 + EN 55011
	United Kingdom (UKCA)	Electrical Equipment (Safety) Regulations per EN 61010-1 EMC Regulations per EN 61326-1 + EN 55011
	International Standards	Product fulfils the requirements of IEC 61010-1 as recognized by national or regional authorities.
	BACnet International (BTL)	BACnet Testing Laboratories (BTL) 135-2021 Listed BACnet Application Specific Controller (B-ASC)

Product code matrix

Table 16: FMS-2000M Critical Environment Monitor ordering guide

Feature	Code letter or number and description	Product code number example: FMS2M-BT40
Brand	Triatek	no prefix
Unit	FMS = Flow Monitor Station (FMS)	FMS
Series	2 = 2000 M = Monitor	2M
Communications protocol	B = BACnet MS/TP	B
Mounting style	T = Thin	T
Remote pressure sensors	1 = One remote pressure sensor 2 = Two remote pressure sensors 3 = Three remote pressure sensors 4 = Four remote pressure sensors	4
ISO power supply	0 = Power supply not included	0

Cleaning the display

IMPORTANT:

- Do not apply cleaner directly to the touch panel surface. If cleaner spills onto the touch panel, soak up the cleaner immediately with an absorbent cloth.
- Do not use cleaner that is either acid or alkali. Use neutral pH cleaner.
- Do not use organic chemicals such as paint thinner, acetone, toluene, xylene, propyl or isopropyl alcohol, or kerosene.

IMPORTANT :

- N'appliquez pas de nettoyant directement sur la surface du panneau tactile. Si du nettoyant pénètre dans le panneau tactile, essuyez immédiatement le nettoyant à l'aide d'un chiffon absorbant.
- N'utilisez aucun nettoyant qui est acide ou alcalin. Utilisez un nettoyant dont le pH est neutre.
- N'utilisez pas de produits chimiques organiques comme le diluant pour peinture, l'acétone, le toluène, le xylène, l'alcool propylique ou isopropylique, ou le kérosène.

To clean the display, complete the following steps:

1. Use a dry or lightly dampened microfiber cloth with a mild cleaner or ethanol.
2. Make sure the cloth is only lightly dampened, not wet.
3. Wipe the surface gently. If there is a directional surface texture, wipe in the same direction as the texture.

■ 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 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.

Patents

Patents: <https://jciapat.com>

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.

Product warranty

This product is covered by a limited warranty. Contact your representative/branch for more details.

Contact information

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