FMS-2000C

Critical Environment Controller

Installation Guide

LIT-12013531
July 2023

⚠ 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.

Risk of Electric Shock.
Disconnect all electric power sources from the FMS-2000C Critical Environment Controller before removing the FMS-2000C controller cover. Contact with internal 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.
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 use a single transformer to power both the actuator and the controller. Use a 24 VAC minimum 30 VA Class 2, Limited Energy, or LPS for the controller, and a separate 24 VAC 20 VA Class 2, Limited Energy, or LPS for the actuator. Failure to follow the wiring diagrams may result in damage to the actuator, the transformer, the controller, or all devices and could void your warranty.

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

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

IMPORTANT: Only qualified personnel should install or service Triatek products. These instructions are a guide for such personnel. Carefully follow all instructions in this document and all instructions for the FMS-2000C Critical Environment Controller.

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

IMPORTANT: Do not install the FMS-2000C Critical Environment Controller 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-2000C Critical Environment Controller 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-2000C Critical Environment Controller.

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

⚠ 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.

Risque de décharge électrique.
Déconnecter toutes les sources d'alimentation électrique du FMS-2000C Critical Environment Controller avant de ouvrir le capot du FMS-2000C controller. Tout contact avec des composants internes 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.
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.
Etiquetez 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 dommage à la propriété
N'utilisez pas un seul transformateur pour alimenter à la fois l'actionneur et le régulateur. Utilisez un transformateur de classe 2 à 24 V CA minimum 30 VA, à limitation d'alimentation ou LPS pour le régulateur et un transformateur de classe 2 à 24 V CA 20 VA à limitation d'alimentation ou LPS séparé pour l'actionneur. Ne pas respecter les schémas de câblage peut causer des dommages à l'actionneur, le transformateur, le régulateur ou tous les appareils et peut annuler votre garantie.

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

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

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

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-2000C Critical Environment Controller.

IMPORTANT : N'installez pas le contrôleur d'environnement critique FMS-2000C 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-2000C Critical Environment Controller 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-2000C Critical Environment Controller.

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.

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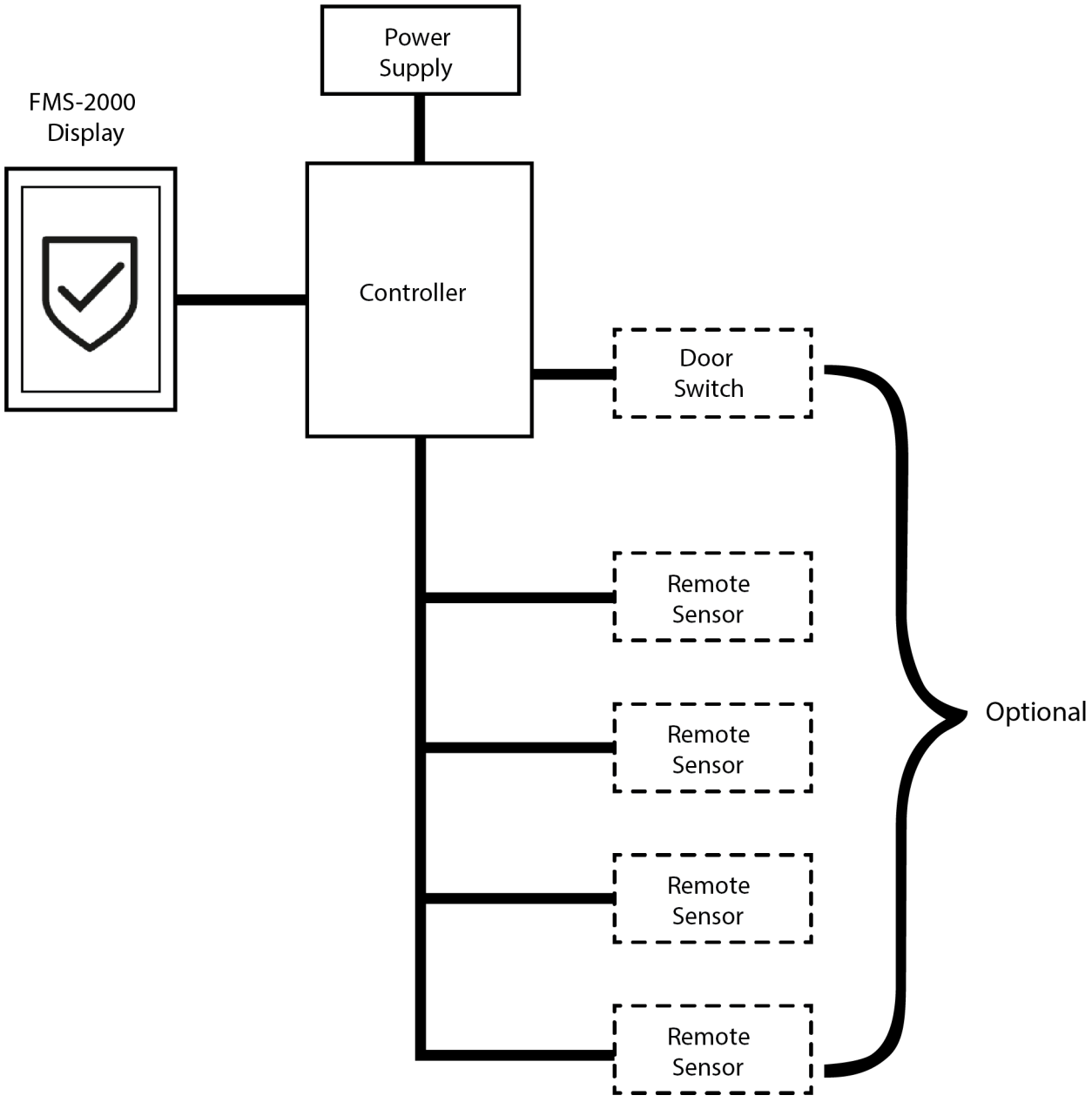
Introduction

The FMS-2000C Critical Environment Controller ensures laboratory and healthcare settings are safe for all occupants by the continuous verification of room pressure and airflow. The controller can precisely control and monitor six parameters that includes differential pressure, temperature, humidity, CO_2, airflow, and air changes per hour. One controller can control or monitor up to four spaces simultaneously for any of the six parameters. This controller has a display flow resolution down to 0.0001 in. W.C. or 0.0249 in Pa, and instantly updates as conditions change.

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

Figure 1: FMS-2000C Critical Environment Controller setup overview



Location considerations

- Install the FMS-2000C controller outside the controlled space in the ceiling.
- Install the display outside the room, at the nurses' station, in the engineering office, or at any other location as needed.
- Install the sensor in a location that is away from any moving air source to prevent unstable sensor behavior. For example, ceiling air registers that faces the reference space, corridor, or anteroom and the monitored plate that faces the patient room.

Ferrite Installation Instructions for FMS-2000C series

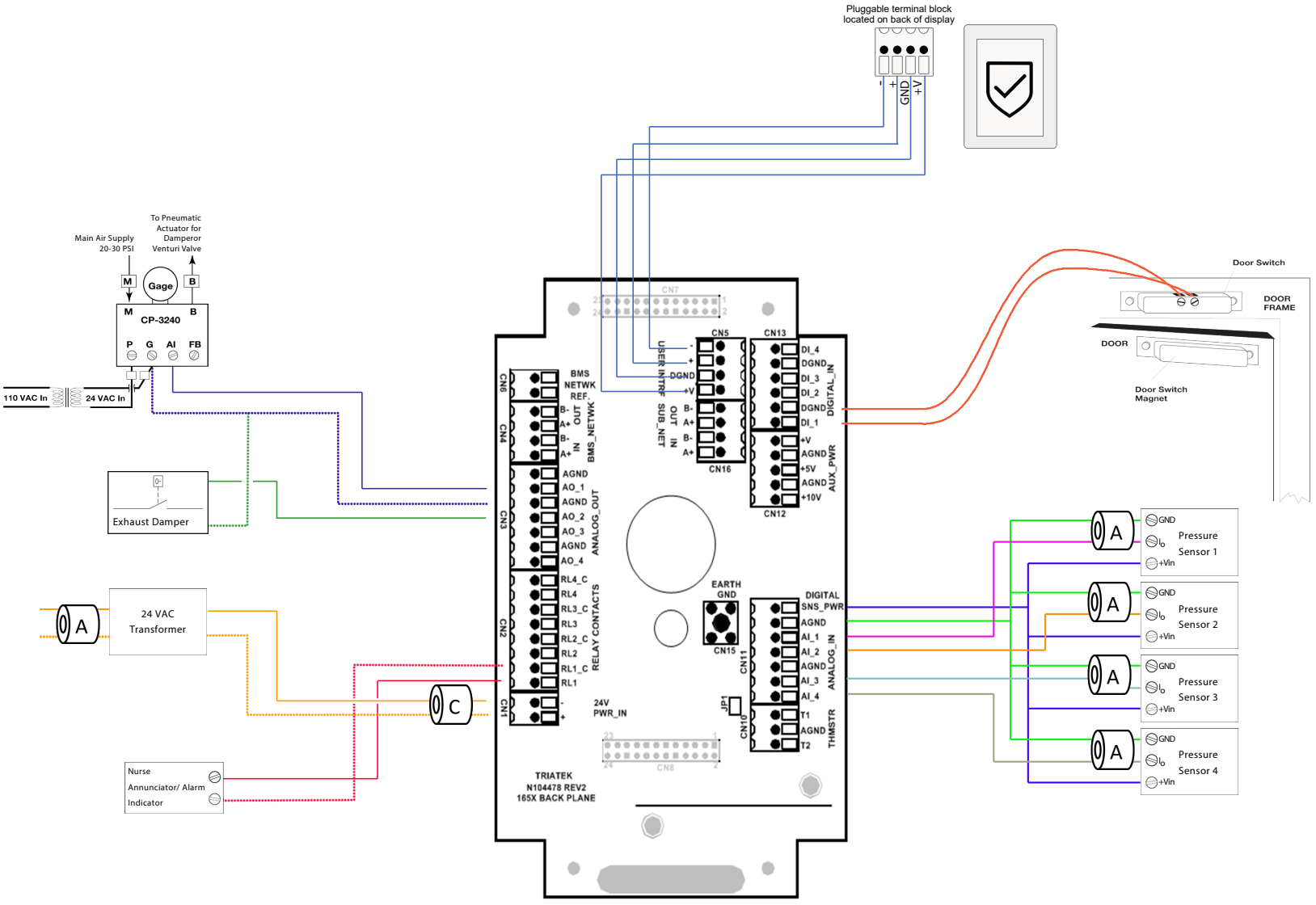
To provide FCC and CE compliance for the FMS-2000C critical environment controller and its application, you must use the cable ferrites included in the package in the installation as described. Included are two cable ferrites for the AC input and output wiring to and from the isolated power supply module, along with one additional cable ferrite for each remote pressure sensor. Install these cable ferrites on the wiring supplying 24 VAC power to the controller module, and one cable ferrite for each differential pressure sensor included in the package. The 24 VAC supply power terminal is the orange 2-terminal connector on the backplane of the controller module.

AC input power supply cable ferrite

The package includes two cable ferrites.To attach the AC input power supply cable ferrite, complete the following steps:

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

Figure 2: Cable ferrite installation on supply power wiring



AC output power supply cable ferrite

To attach the AC output power supply cable ferrite, complete the following steps:
1. Install the cable ferrite C on the two wires that provide 24 VAC power from the isolated power supply to the controller module as shown in Figure 2.
2. Unlatch the clasp on the side of the ferrite to expose the core.
3. Place the clasp on the two wires about 10 inches from the ends, and complete one wrap or loop. Leave at least 8-10 inches to connect to the orange 24 VAC power supply terminals on the controller module backplane.
4. Close the cable ferrite around the wires. Ensure that the clasp latches securely.

Pressure sensor cable ferrite

To attach a pressure sensor cable ferrite:
1. Install the cable ferrites A on the sensor end of the 3-conductor sensor cabling between the controller module and each differential pressure sensor.
2. For each ferrite, unlatch the clasp on the side of the ferrite to expose the core.
3. Place the clasp on the sensor cabling as shown in Figure 3. Leave at least four inches of length to connect to the green terminal block on the pressure sensor.
4. Close the cable ferrite around the sensor cable. Ensure that the clasp latches securely. Repeat this procedure for each pressure sensor included in the package.

Installing the FMS-2000C thin mount display for a retrofit application

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

Before you begin:
Determine the required location of the FMS-2000C display and the device orientation. The default mode for the FMS-2000C controller is portrait. After you install the display, you can adjust the interface orientation to landscape mode in the initial setup.

To mount the FMS-2000C controller display for a retrofit application, ensure you have the following tools:

- #2 Phillips head screwdriver
- 1/16 in. hex wrench
- Drywall saw or oscillating tool with a drywall blade

To install the FMS-2000C thin mount display, complete the following steps:
1. Orient the retrofit ring in the required orientation and ensure that the ring is level. Mark both screw holes and the corners of the rectangular section.
2. Use a drywall saw or oscillating tool to cut out the entire rectangular section inside the marked opening and drill the screw holes.
3. Pull the four-conductor wire from the controller and the RS-485 BACnet® MS/TP wires through the opening in the retrofit ring.
4. Peel the backing from the adhesive strips and insert the retrofit ring through the opening. Ensure the four tabs connect with the inside of the opening and pull the retrofit ring flush against the inside of the wall.
5. Use the four mounting screws to attach the mounting bracket to the retrofit ring.
6. Use a #2 Phillips head screwdriver to secure both the retrofit ring and the bracket and sandwich the drywall between retrofit ring and bracket.
   Note: To avoid warping the mounting bracket, do not over-tighten the screws.
7. Attach the four-conductor wire from the controller and the RS-485 BACnet® MS/TP wires on the back of the display. For more information, refer to the label on the back of the display.
8. Align the two slots on the back of the display with the tabs on the bracket and swing the display towards the wall so that the single tab on the bracket slots into the back of the display.
9. Once the display is sits flush against the wall, insert the set screw into the hole on the side or bottom of the display housing. Use a 1/16 in. hex wrench to drive the screw into the display until it engages with the tab.

After you mount the FMS-2000C display, apply power to the FMS-2000C. The initial splash screen displays the Triatek® logo and the 360° Safety Halo bezel lights up to represent the current system status.

Figure 3: Retrofit application dimensions

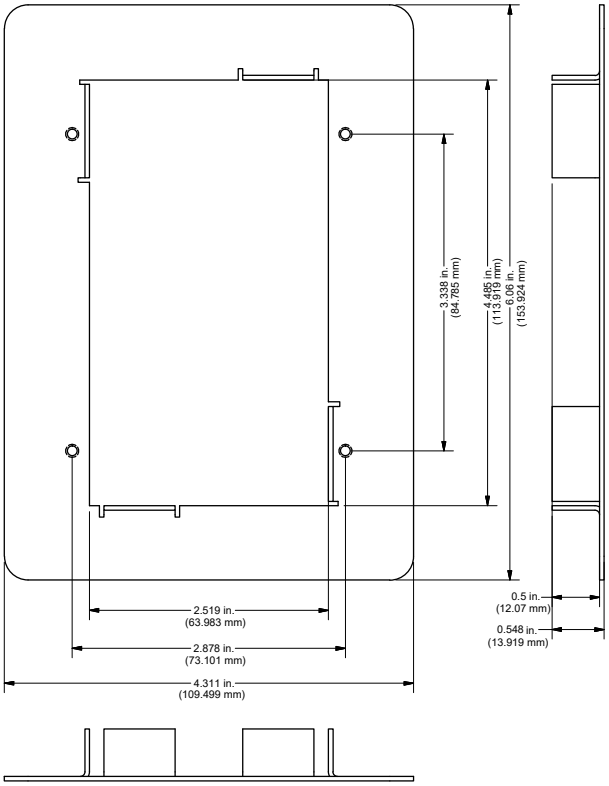


Figure 4: Retrofit ring

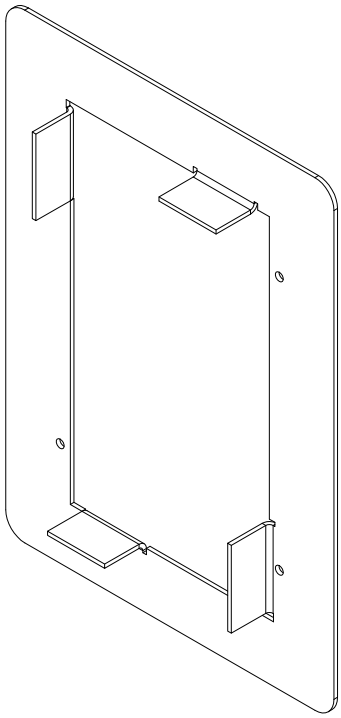


Figure 5: FMS-2000C Critical Environment Controller display side view of a retrofit application

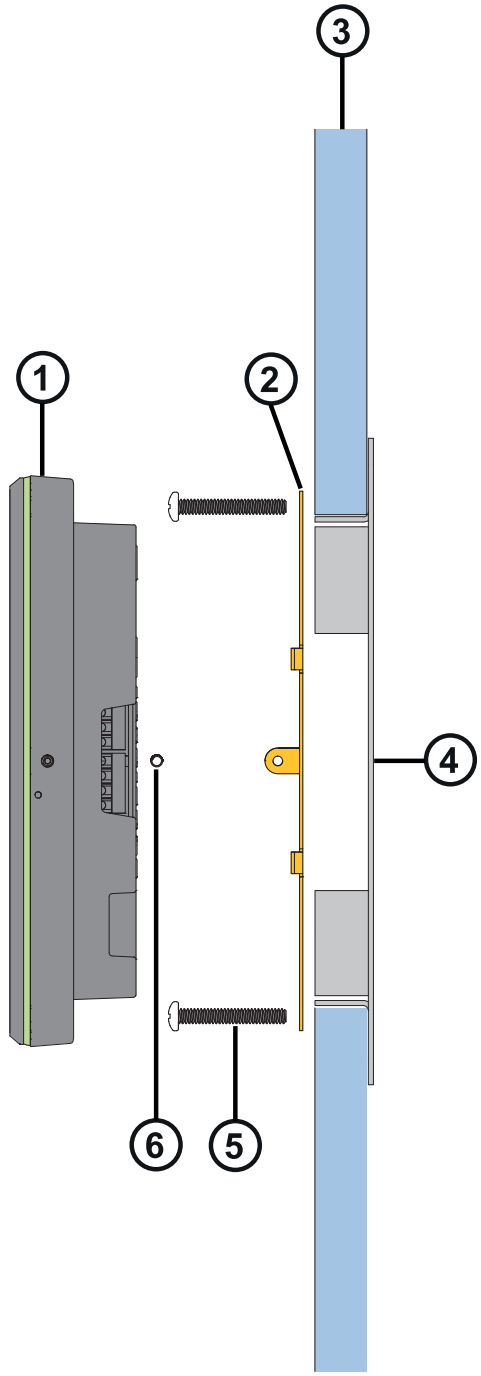


Table 1: FMS-2000C Critical Environment Controller components for a retrofit application

Item	Component
1	FMS-2000C Critical Environment Controller display
2	Display bracket
3	Wall
4	Retrofit ring
5	Mounting screw
6	Set screw

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

Use the rough-in box for new construction applications when the walls have not yet been installed.
Determine the required location of the FMS-2000C display and the device orientation. The default mode for the FMS-2000C controller is portrait. After you install the display, you can adjust the interface orientation to landscape mode during the initial setup.
To complete the mounting of the FMS-2000C controller display for a new application, ensure you have the following tools:

- #2 Phillips head screwdriver
- 1/16 in. hex wrench
- Drywall saw or oscillating tool with a drywall blade

To install the FMS-2000C thin mount display, complete the following steps:

1. Mount the rough-in box to the side of a framing stud adjacent to the entry door to the monitored space. Consider the thickness of the wall and ensure the front surface is flush or slightly recessed to fit with the drywall surface that you install later.
2. Pull the four-conductor interface cable from the controller and the RS-485 BACnet MS/TP wires through the opening in the rough-in box. The assembly includes a 10 ft cable to connect the display to the controller.
3. Install the drywall and insure that the mounting surface is flush with the finished surface of the drywall, and the opening fits precisely with the rough-in box.
4. Take the display's mounting bracket and align it 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. Ensure the bracket is level.
   Note: To avoid warping the mounting bracket, do not over-tighten the screws.
5. Attach the four-conductor interface cable from the controller and the RS-485 BACnet MS/TP wires on the back of the display. For more information, refer to the label on the back of the display.
6. Align the two slots on the back of the display with the tabs on the bracket and swing the display towards the wall so that the single tab on the bracket slots into the back of the display.
7. Once the display sits flush against the wall, insert the set screw into the hole in the display housing. Use a 1/16 in. hex wrench to drive the screw into the display until it engages with the tab on the bracket.

After mounting the FMS-2000C display, apply power to the FMS-2000C. The initial splash screen displays the Triatek logo and the 360° Safety Halo bezel lights up to represent the current system status.

Figure 6: Rough-in box dimensions

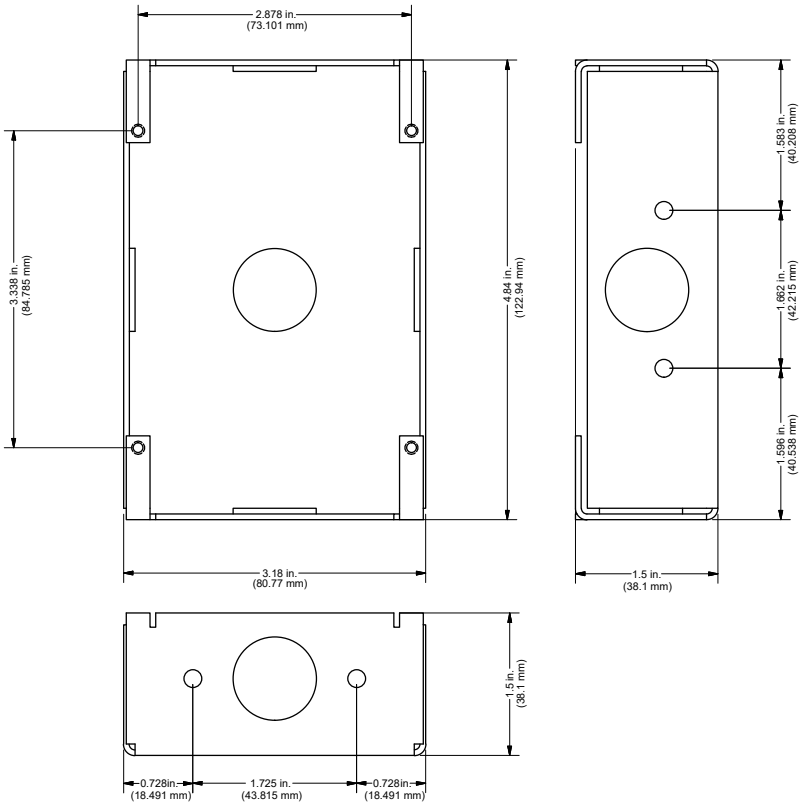


Figure 7: Rough-in box

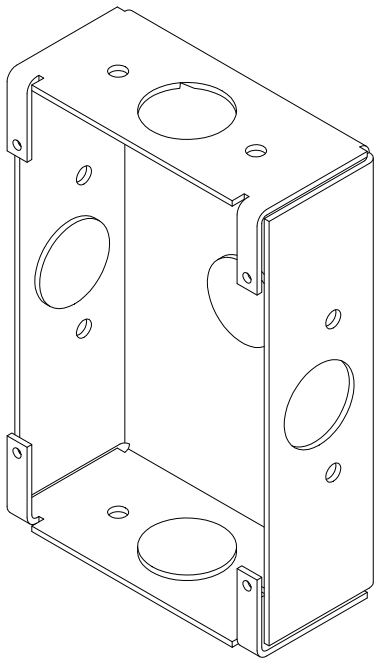


Figure 8: FMS-2000C Critical Environment Contoroller display side view of a new application

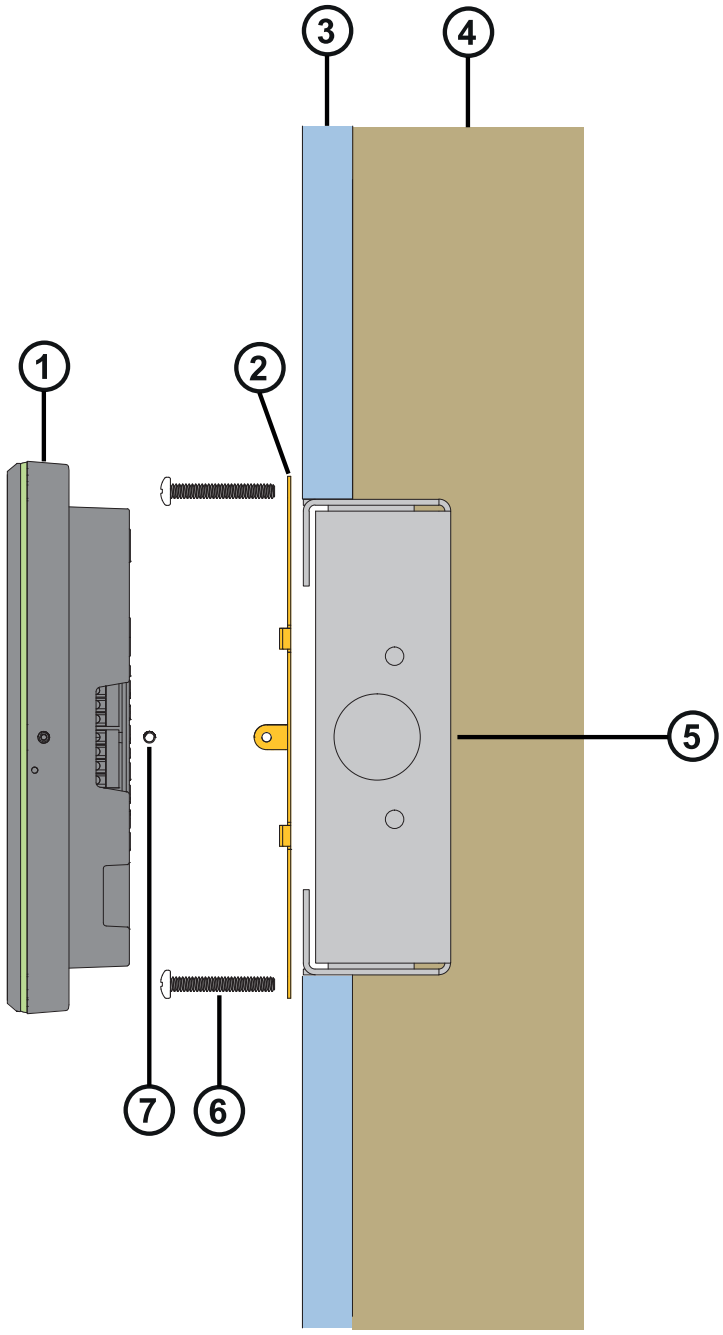


Table 2: FMS-2000C Critical Environment Controller components for a new application

Item	Component
1	FMS-2000C Critical Environment Controller display
2	Display bracket
3	Wall
4	Stud
5	Rough-in box
6	Mounting screw
7	Set screw

Mounting the FMS-2000C Surface Mount Display

Surface mounts are only available for FMS-1655 RMA replacements where the wall box is already in place.

Before you begin, ensure you have the following tools:

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

To mount the FMS-2000C Surface Mount Display, complete the following steps:

1. Determine the location where you want to place the FMS-2000C monitor.
   Note: The default orientation is portrait, but you can also use landscape orientation.
2. Remove the mounting plate from the back of the display. The plate fits a single wall box or a similar mounting arrangement.
3. Use the mounting plate to mark necessary openings. Orient the plate against the wall in the required place and mark both slots and the oval center opening. The slots indicate where to put the screws for mounting the plate to the wall and the central oval indicates where to route the necessary wires for connecting the display.
4. Attach the mounting plate to the wall. Before you tighten the screws, check the plate for level and adjust if necessary. Pull the pre-wired 4-conductor interface cable and the RS-485 BACnet MS/TP wires through the center hole and attach them to the appropriate connections on the rear of the display.
5. **Optional:** If the 2-conductor power cable terminates at the monitor, pull the 2-conductor power cable through the opening.
6. Attach the display to the mounting plate. Align the tab in the back of the display housing to the slots in the mounting plate and ease the display flush against the wall. Use the included hex key to insert the set screw into the hole in the center of either the bottom (portrait) or left (landscape) side of the display until it is flush with the surface.
7. After you mount the FMS-2000C monitor, apply power to the monitor. The initial splash screen displays the Triatek logo and the Safety Halo bezel is green to represent the current system status.

Figure 9: Surface mount dimensions

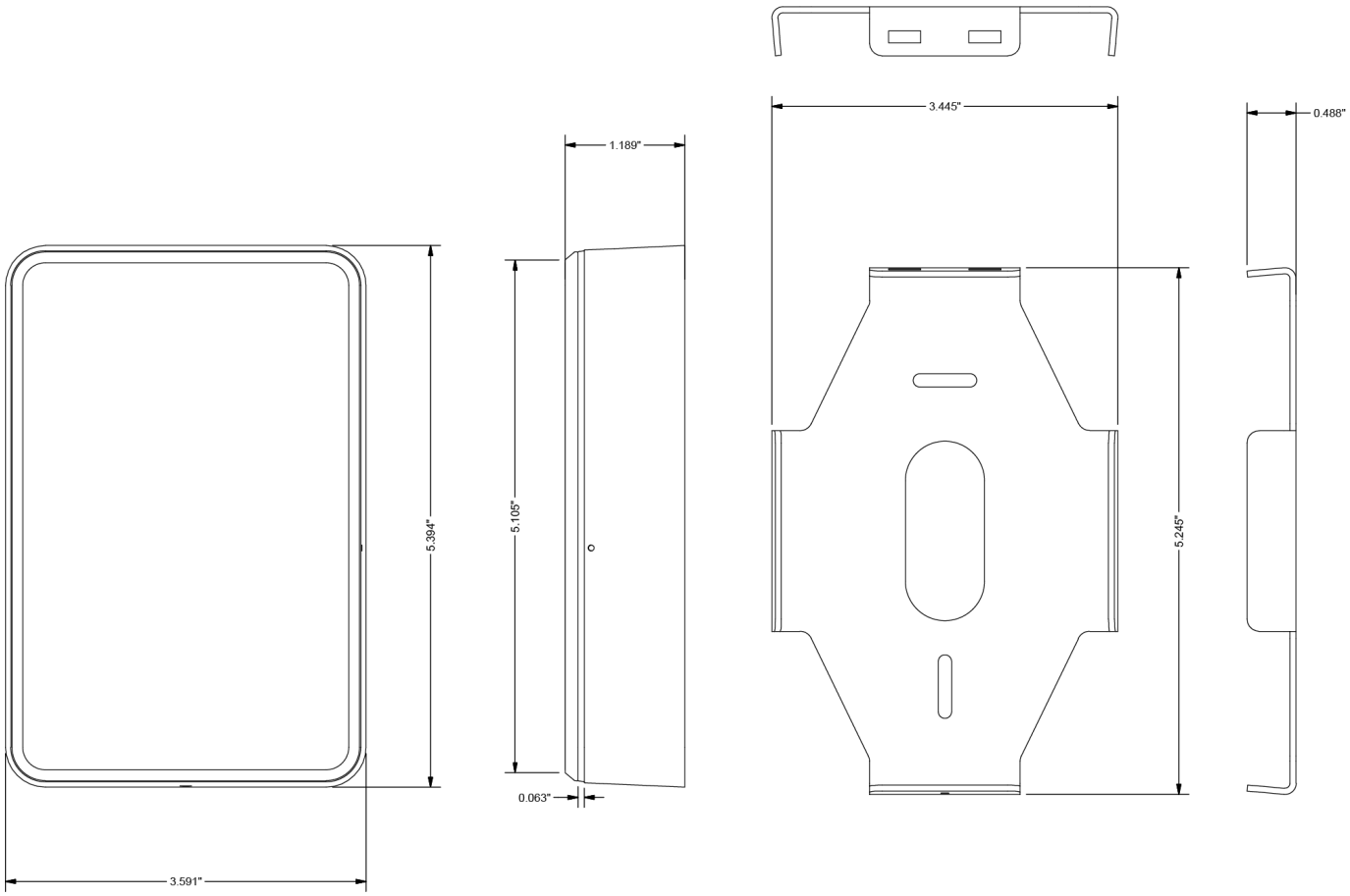


Figure 10: Surface mount assembly

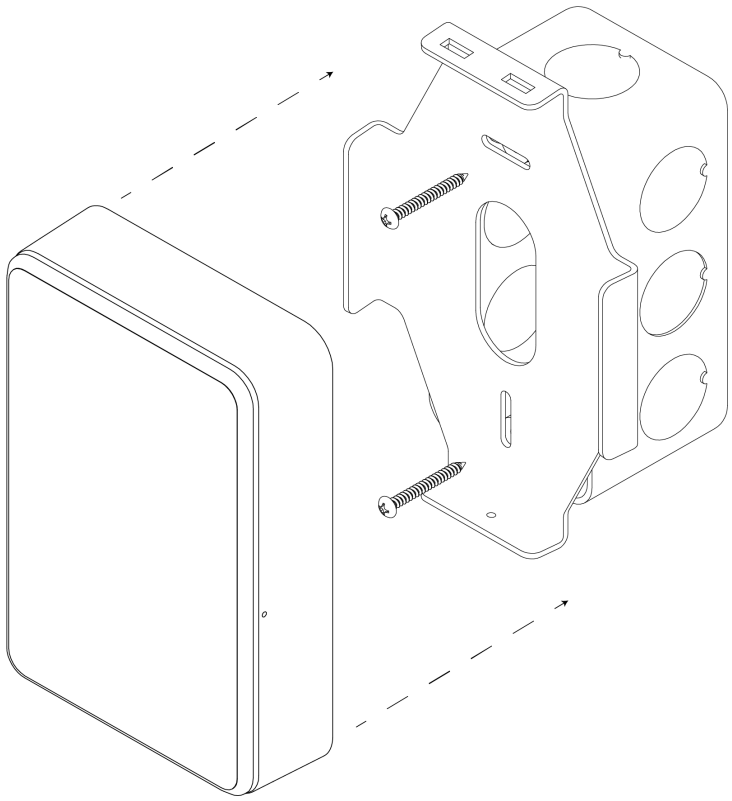


Figure 11: Surface mount display side view

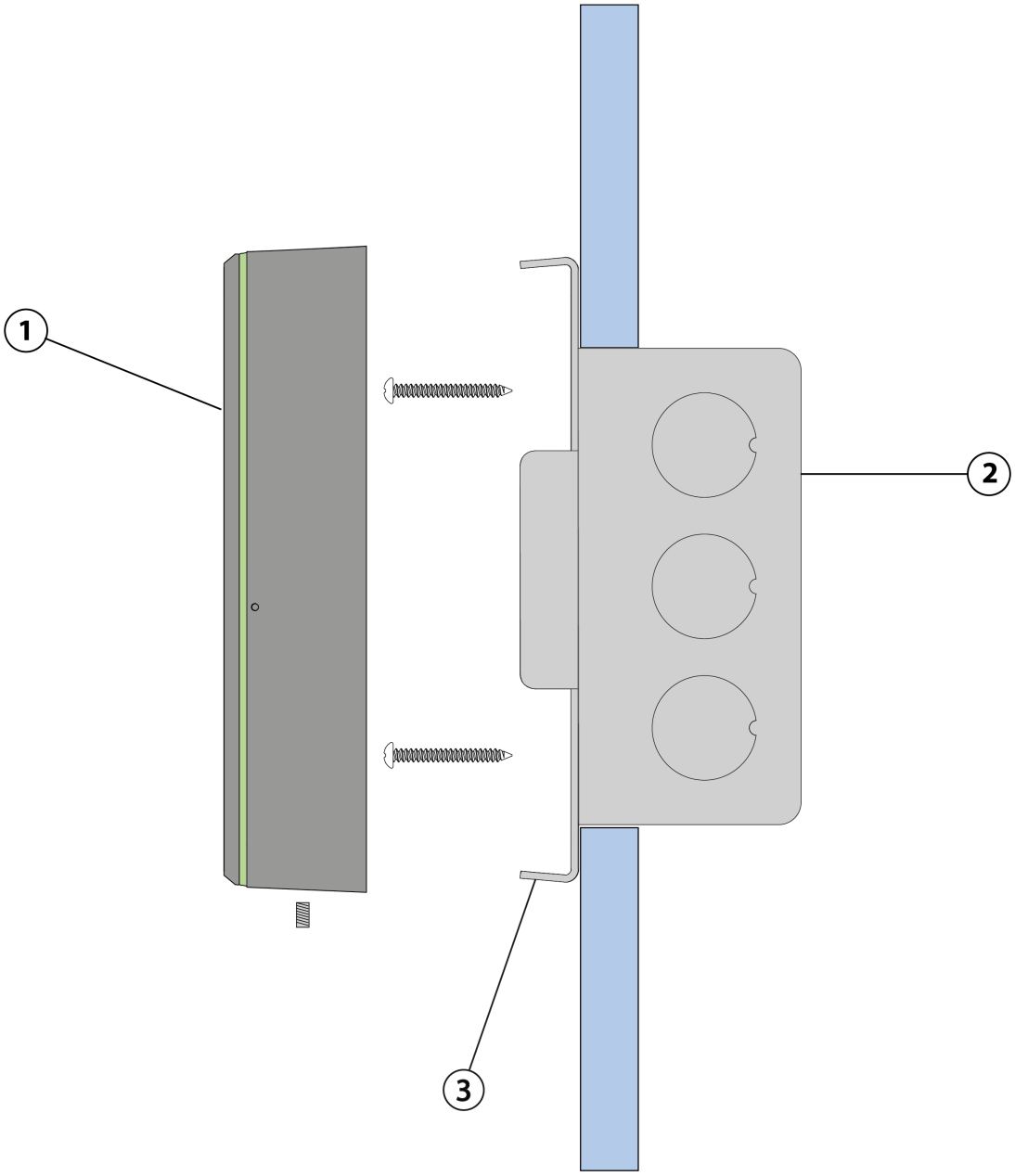


Table 3: Surface mount display side view

Number	Description
1	Surface mount display
2	Existing wall box
3	Mounting plate

Mounting the remote sensor

The FMS-2000C Critical Environment Controller includes up to four remote sensors to measure the differential pressure of the controlled space. Install the remote sensor module in the wall that faces the monitored space such as an isolation room. Install the flow tube mounting plate that faces 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 6* for more information.

Before you begin:
Determine the sensor location and the number of cables that you need. To complete the mounting of the remote pressure sensor for a remote sensor application, make sure you have the following tools:

- #2 Phillips head screwdriver
- Drywall saw or oscillating tool with a drywall blade

To mount the remote sensor, complete the following steps:

1. Connect a 3-conductor or 22 AWG cable between the remote sensor module and the main controller module for each sensor included with the unit. The length of the cable should not exceed 1,000 ft.
2. Unscrew the sensor's louvered cover plate and the sensor's 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 sensor electronics. Nominal hole dimensions are 3.65 in. (92.71 mm) H x 2.15 in. (54.61 mm) W.
4. Use the rotating clamps to secure the bracket to the wall safely.
5. Drill a 7/16 in. (11.1133 mm) hole through the opposite wall for the flow tube.
6. Pull the 3-conductor signal cable through the cut out.
7. Install the mounting bracket in the drywall opening and pull the 3-conductor signal cable through the mounting bracket.
8. Push a length of the supplied flow tube through the hole and the 7/16 in. (11.1133 mm) 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 flow 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. On the opposite side of the monitored 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 and 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 12: Standard remote sensor 9 pin side view

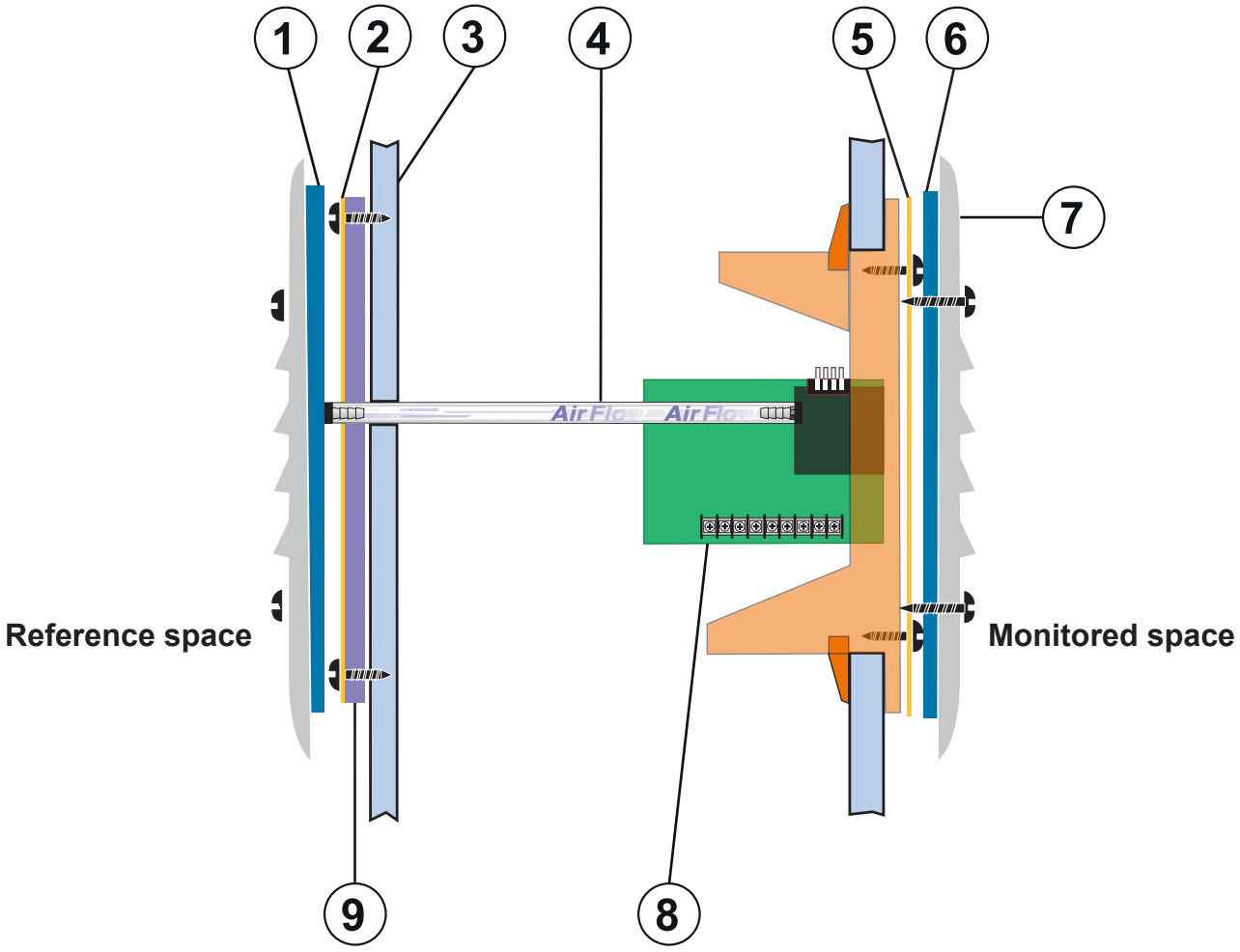


Table 4: Remote sensor installation components

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	Terminal block
9	Thin silicone caulking

Wiring diagrams guide

Table 5: Symbols for wiring diagrams

Symbol	Description
NC	No connection to field wiring
	Field wiring with space for number
	Internal wiring
	Screw terminal
	Air flow to and from unit between room and corridor

Note: Use this wiring diagrams guide for all of the following wiring diagrams.

Figure 13: Back pane wiring diagram located on the interior back housing of the controller

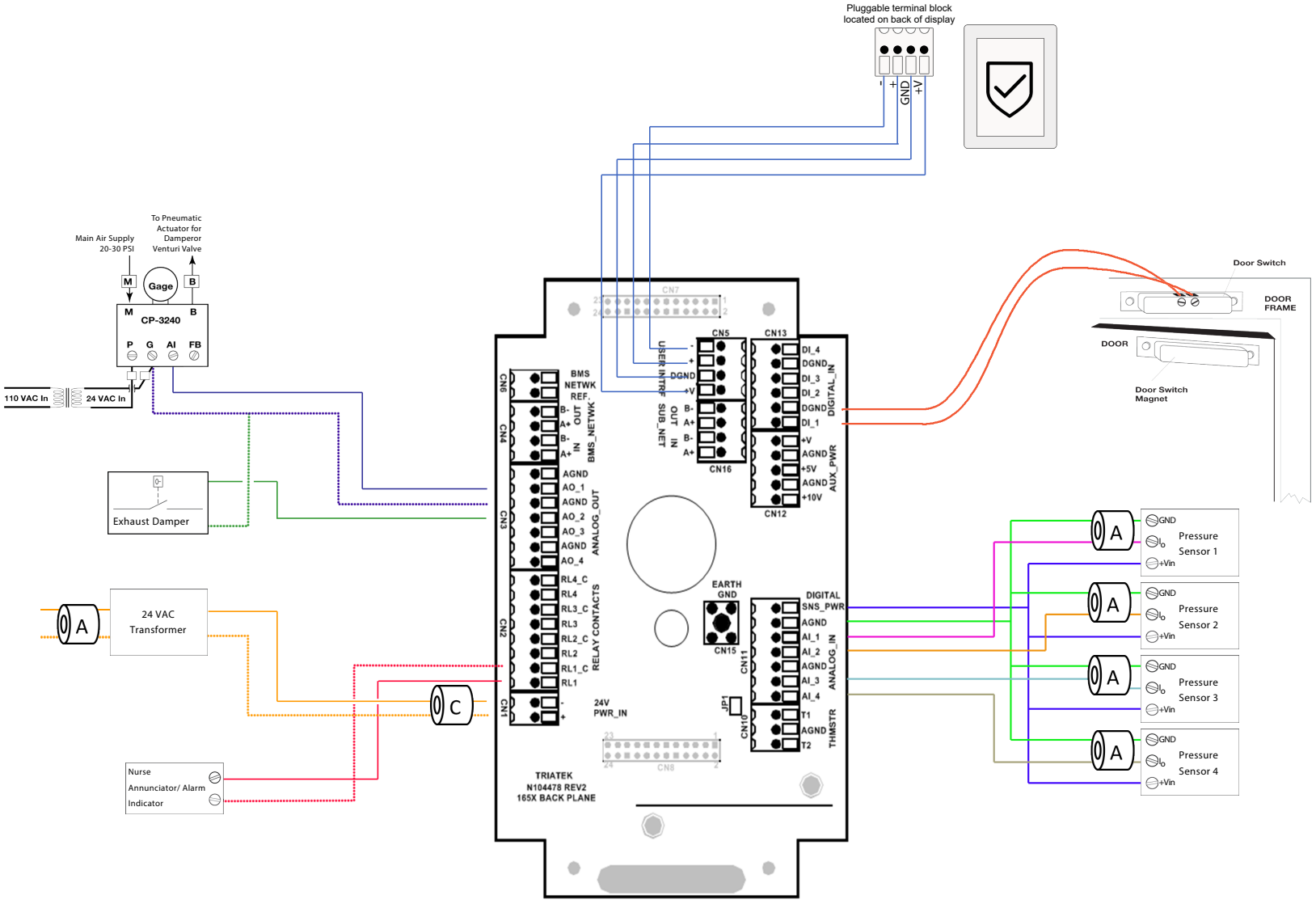


Figure 14: Back pane wiring diagram located on the interior back housing of the controller

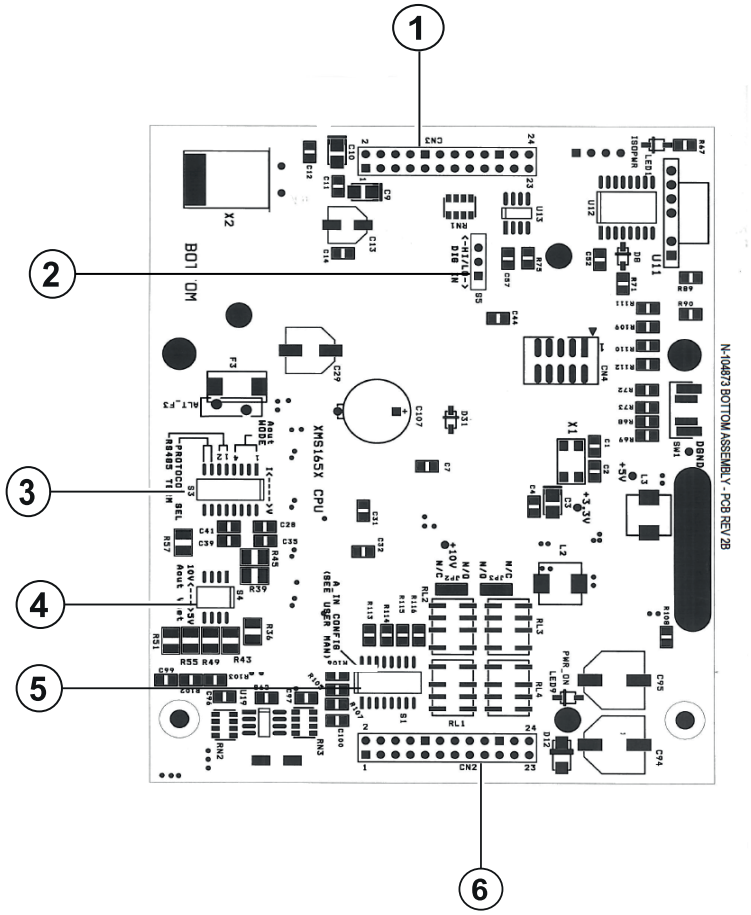


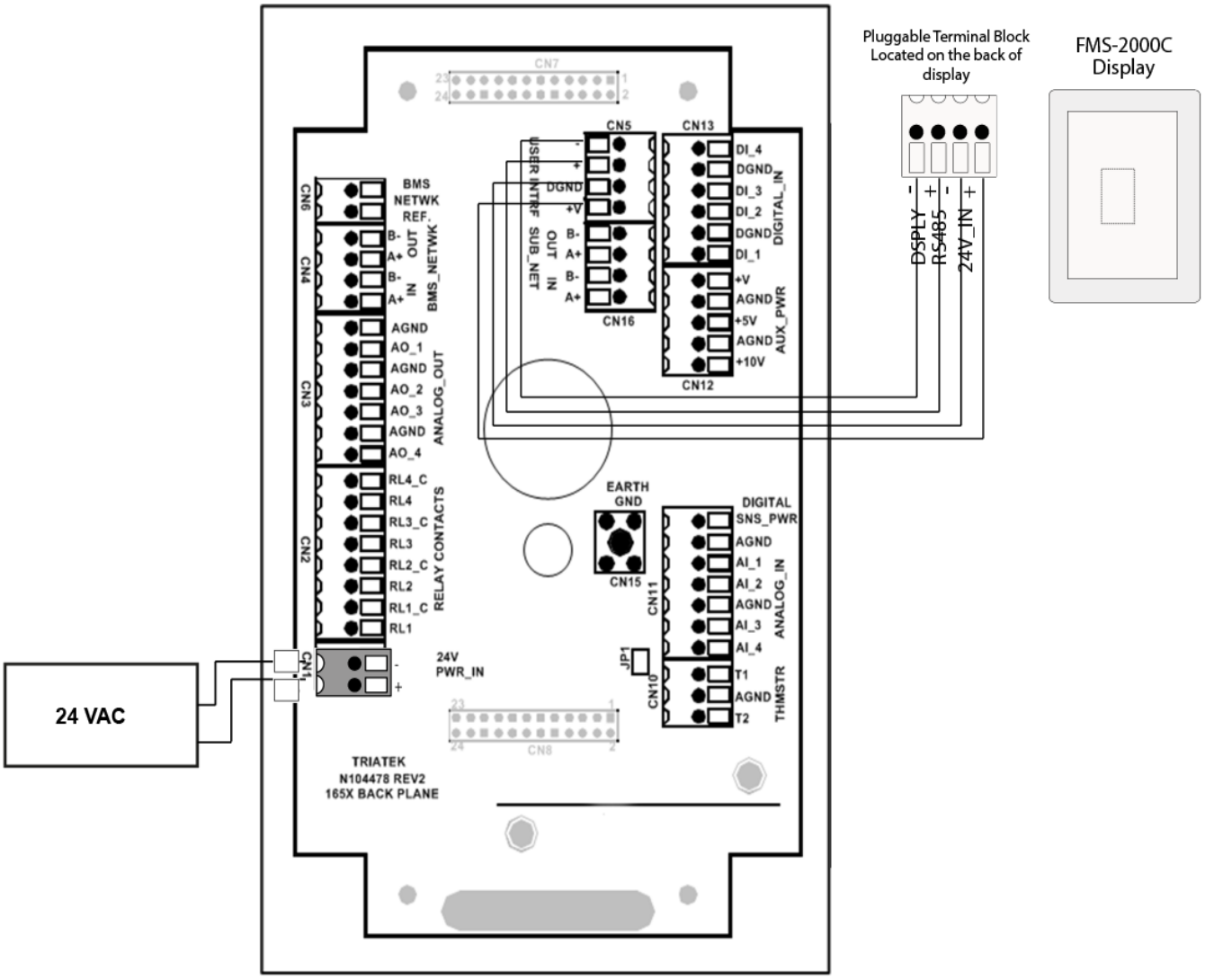
Table 6: DIP switches and connectors

Item	DIP switch or connector
1	Back plane interface connector
2	S5 digital input switch
3	S3 analog output configuration, bus termination selection, and protocol selection DIP switch
4	S4 analog output range DIP switch
5	S1 analog input configuration DIP switch
6	Back plane interface connector

Wiring the FMS-2000C controller display to the FMS-2000C controller

The following figure shows the wiring diagram for the display to controller:

Figure 15: Display to controller wiring diagram



Wiring the analog output to a pneumatic damper actuator

The following figures show the wiring diagrams for the pneumatic damper actuator, and the variable speed drive:

Figure 16: Pneumatic damper actuator wiring diagram

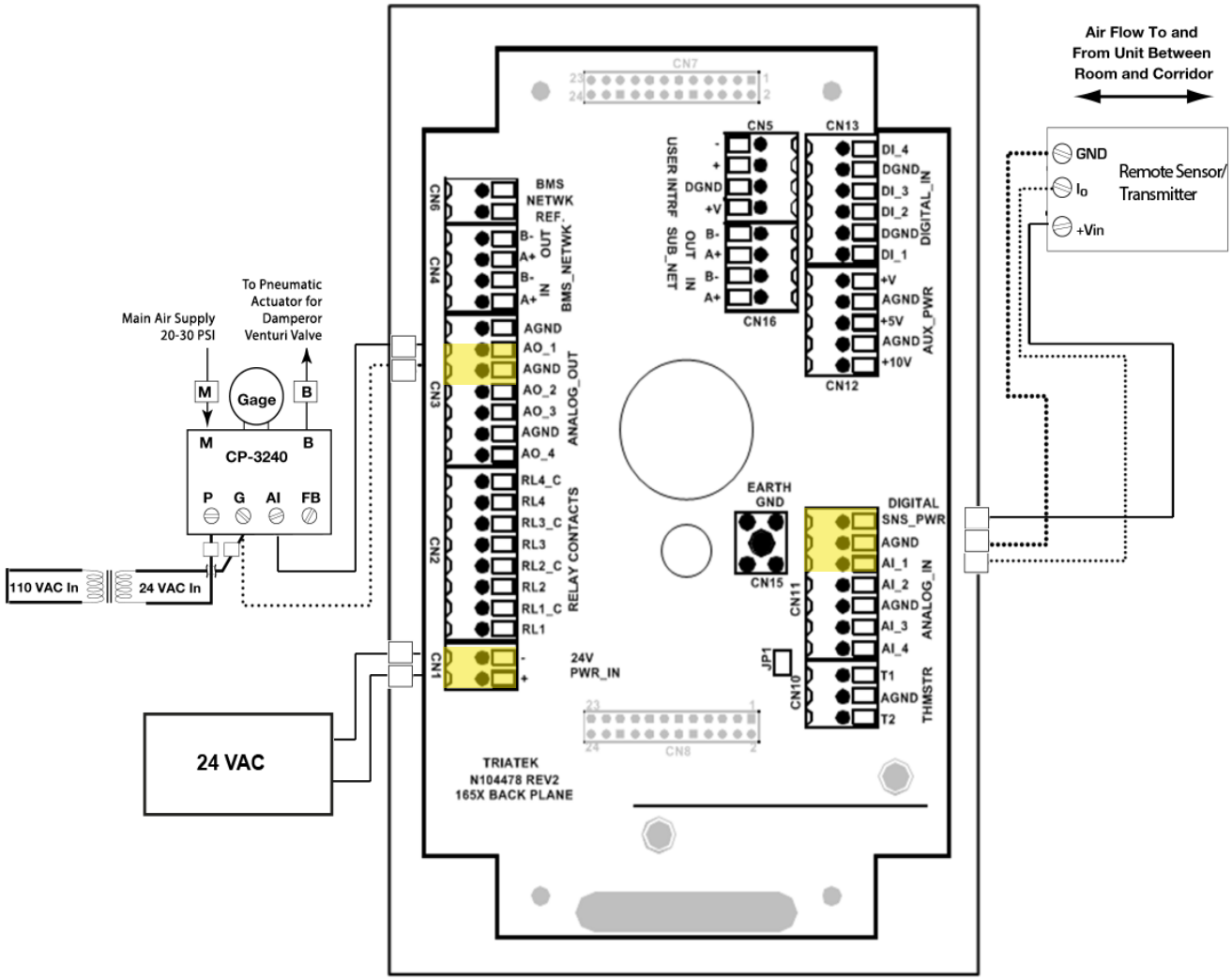


Table 7: Controller configuration DIP switch settings

DIP switch	ON or OFF	Input or output configuration
S1 position 1	ON	AI-1 set as 4 mA to 20 mA input
S1 position 5	OFF	
S4 position 1	ON	AO-1 set as voltage output

Wiring the analog output to a variable speed drive

The following figure shows the wiring diagram for the analog output to a variable speed drive:

Figure 20: Variable speed drive wiring diagram

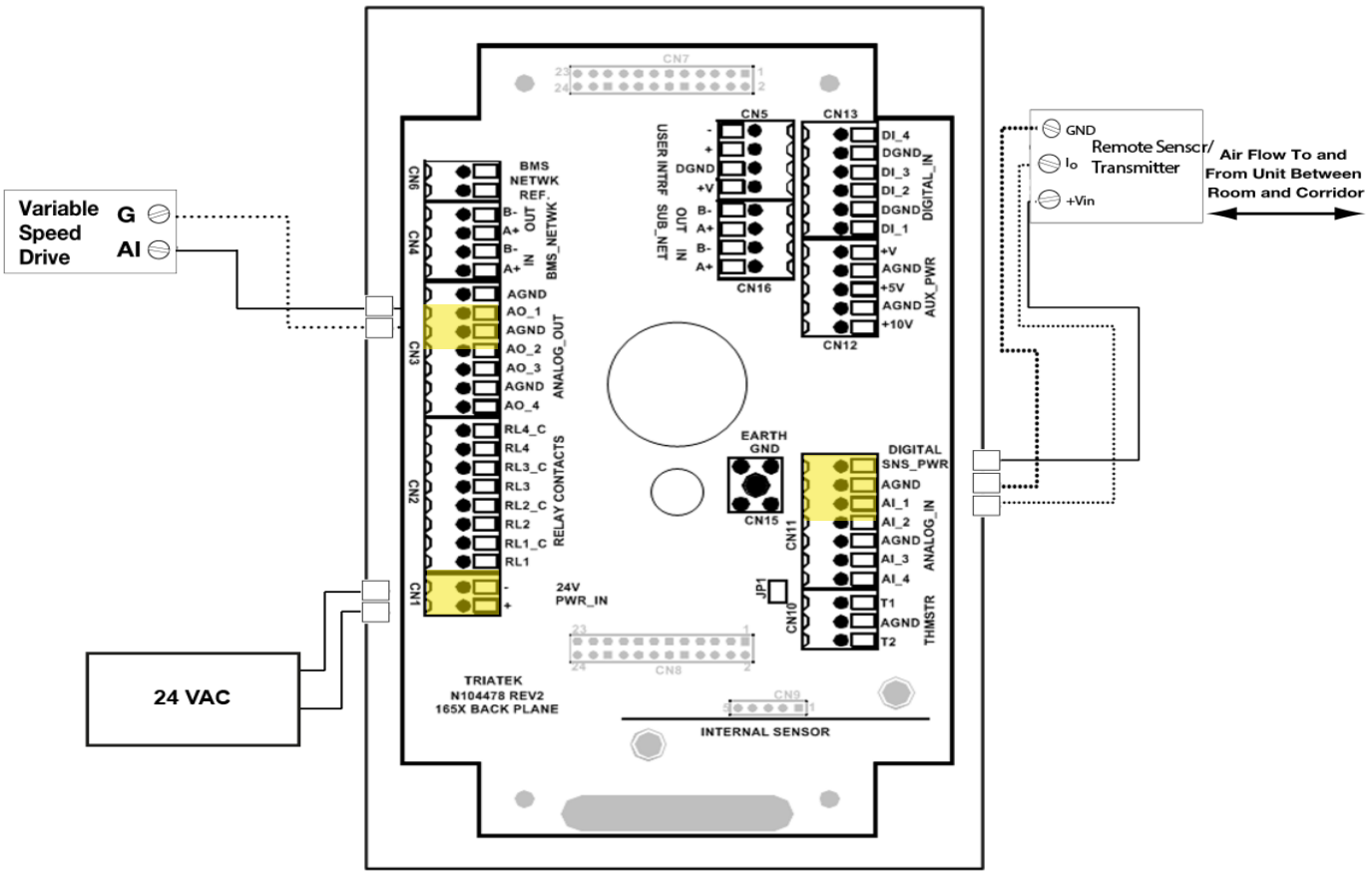


Table 8: Controller configuration DIP switch settings

DIP switch	ON or OFF	Input or output configuration
S1 position 1	ON	AI-1 set as 20 mA input
S1 position 5	OFF	
S4 position 1	ON	AO-1 set as voltage output

Wiring the remote sensor

See Figure 7 for the electrical connections made through a backplate assembly to the FMS-2000C controller. Make sure all wiring conforms to the local regulations and National Electric Code. Take care not to run sensor wiring in the same conduit as the line voltage or other conductors that supply highly inductive loads such as generators, motors, solenoids, and contactors. Use a 22 AWG cable or larger.

Figure 21: Wiring the analog input to a single remote pressure sensor with a 4mA to 20mA output signal

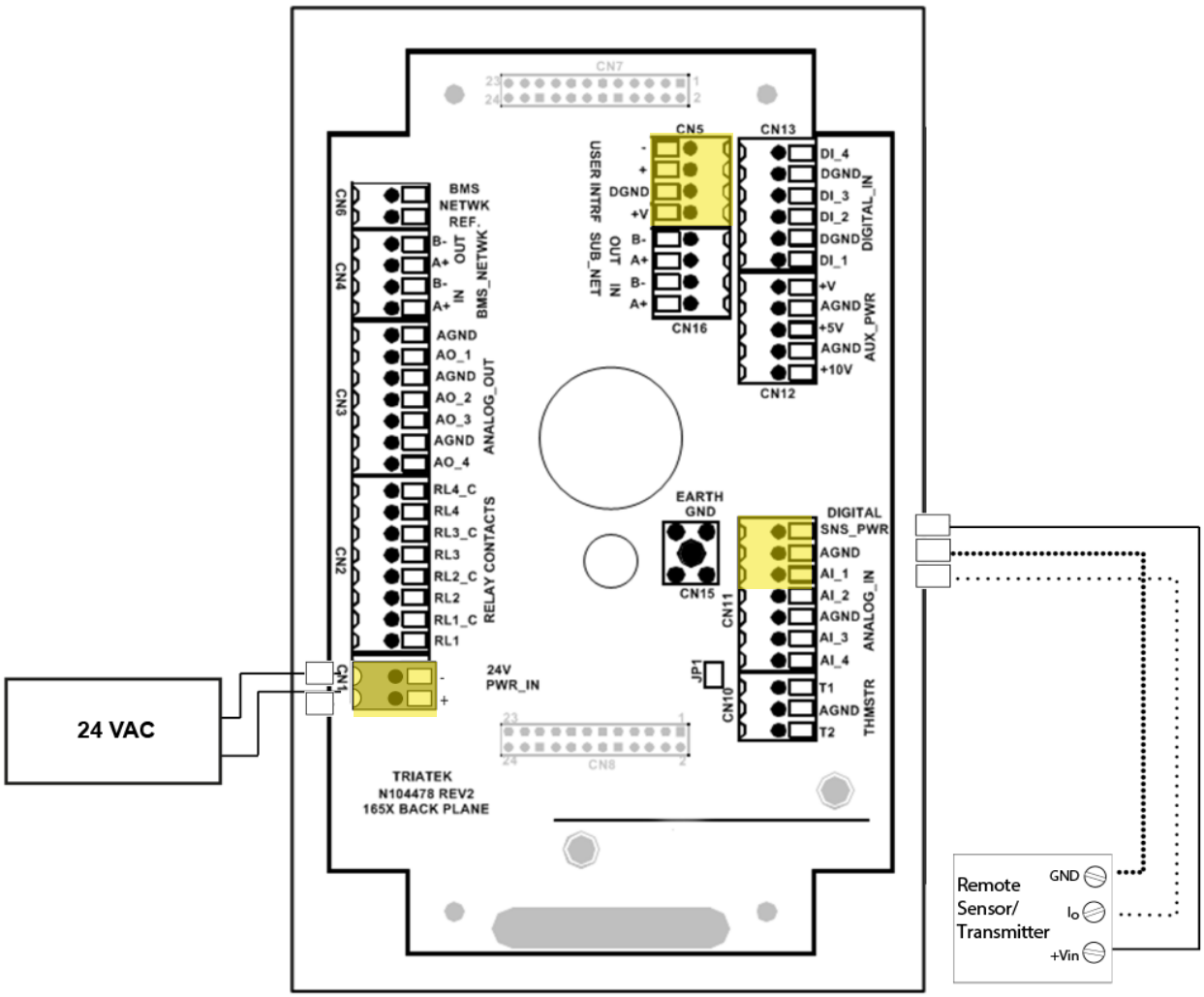


Table 9: Controller configuration DIP switch settings

DIP switch	ON or OFF	Input or output configuration
S1 position 1	ON	AI-1 set as 4 mA to 20 mA input
S1 position 5	OFF	

Wiring the analog input to remote pressure sensors

The following figures show the wiring diagrams for the analog input to remote pressure sensors:

Figure 22: Wiring the analog input to two remote pressure sensors with a 4 mA to 20 mA output signal

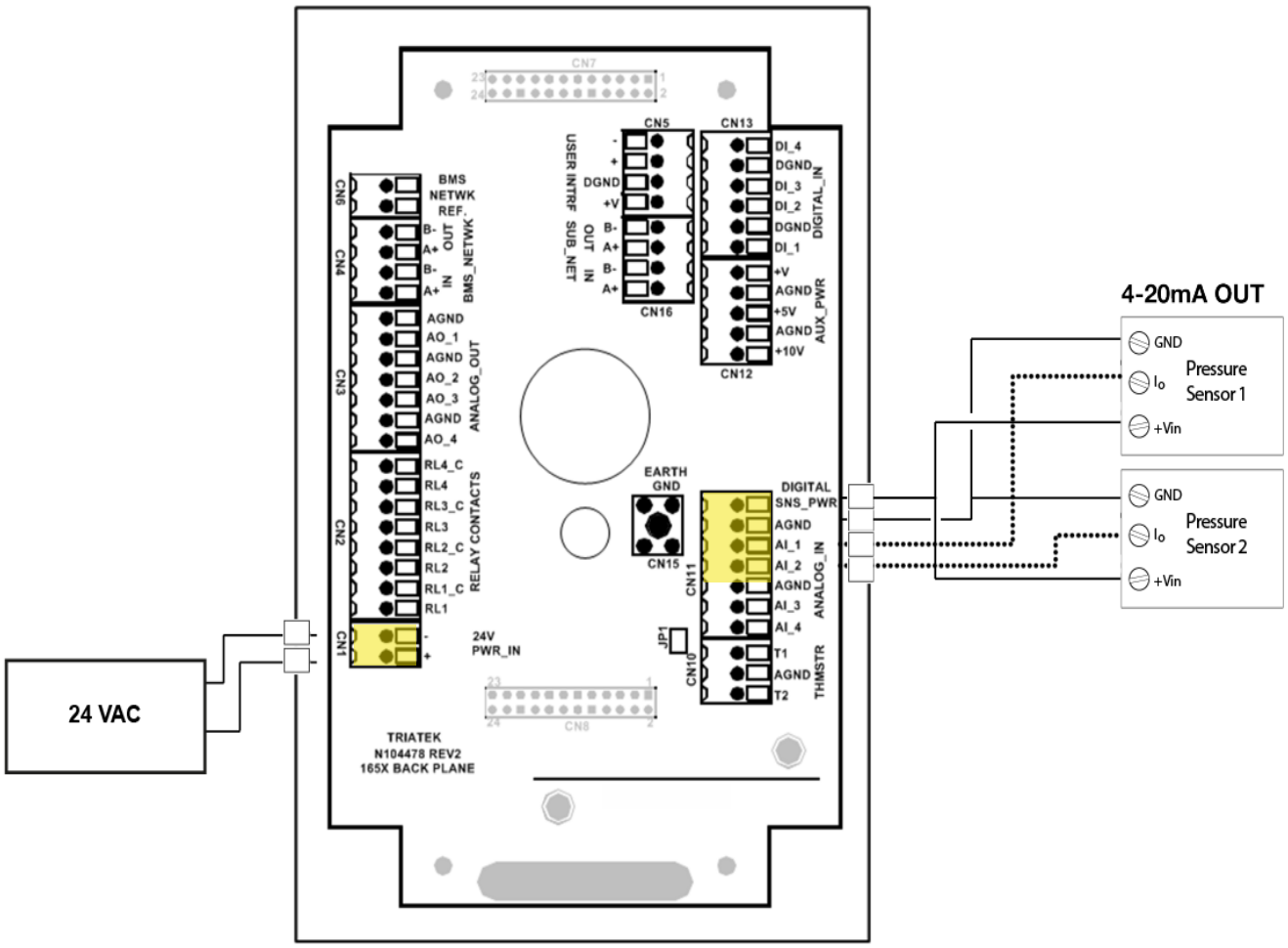


Table 10: Controller configuration DIP switch settings

DIP switch	ON or OFF	Input or output configuration
S1 position 1	ON	AI-1 set as 4 mA to 20 mA input
S1 position 5	OFF	
S1 position 2	ON	AI-2 set as 4 mA to 20 mA input
S1 position 6	OFF	

Figure 23: Wiring the analog input to three remote pressure sensors with a 4 mA to 20 mA output signal

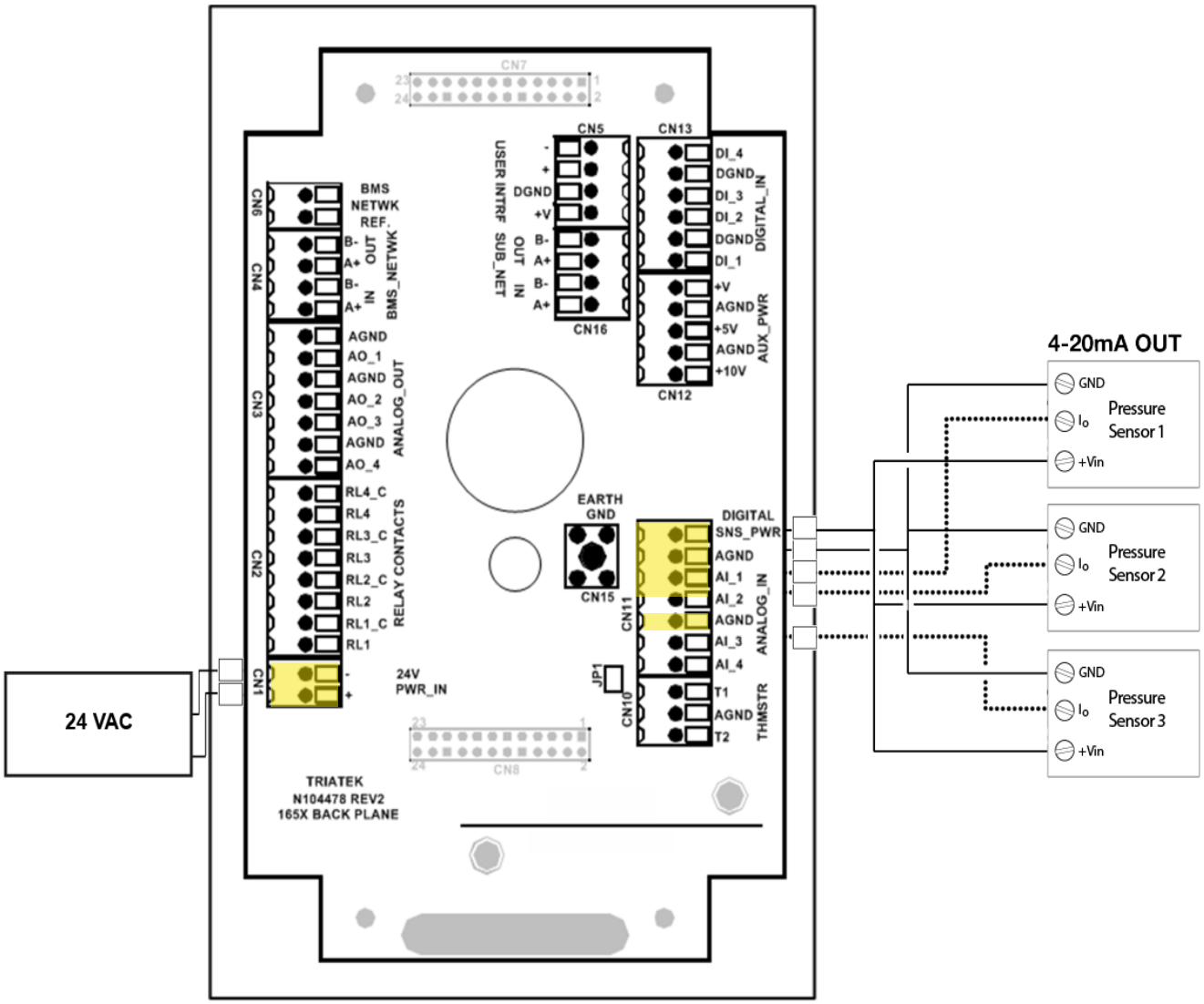


Table 11: Controller configuration DIP switch settings

DIP switch	ON or OFF	Input or output configuration
S1 position 1	ON	AI-1 set as 4 mA to 20 mA input
S1 position 5	OFF	
S1 position 2	ON	AI-2 set as 4 mA to 20 mA input
S1 position 6	OFF	
S1 position 3	ON	AI-3 set as 4 mA to 20 mA input
S1 position 7	OFF	

Figure 24: Wiring the analog input to four remote pressure sensors with a 4mA to 20mA output signal

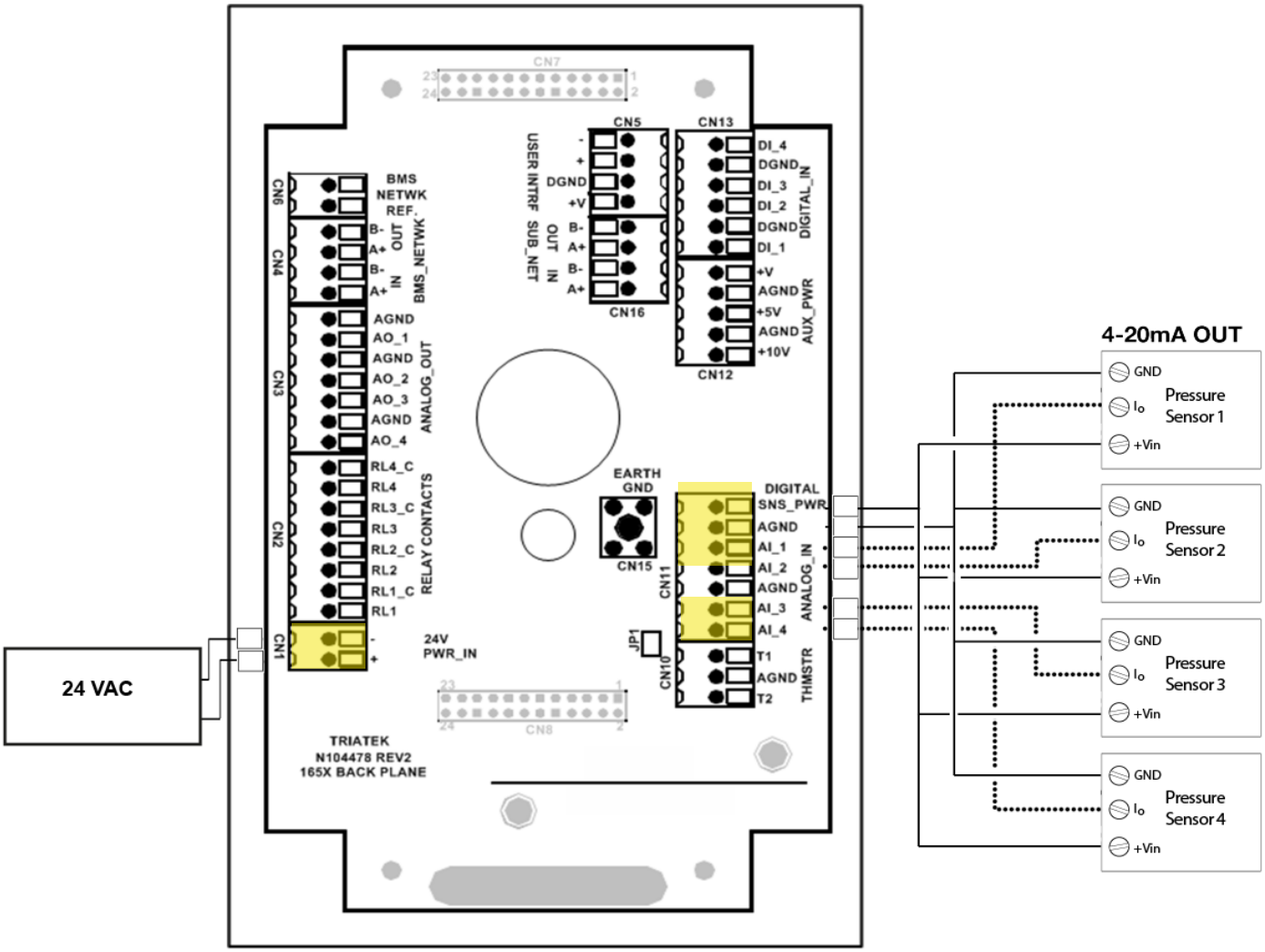


Table 12: Controller configuration DIP switch settings

DIP switch	ON or OFF	Input or output configuration
S1 position 1	ON	AI-1 set as 4 mA to 20 mA input
S1 position 5	OFF	
S1 position 2	ON	AI-2 set as 4 mA to 20 mA input
S1 position 6	OFF	
S1 position 3	ON	AI-3 set as 4 mA to 20 mA input
S1 position 7	OFF	
S1 position 4	ON	AI-4 set as 4 mA to 20 mA input
S1 position 8	OFF	

Wiring the analog input to third-party sensor

See Table 15 for third-party remote sensor guidelines.

Figure 25: Third-party sensor wiring diagram

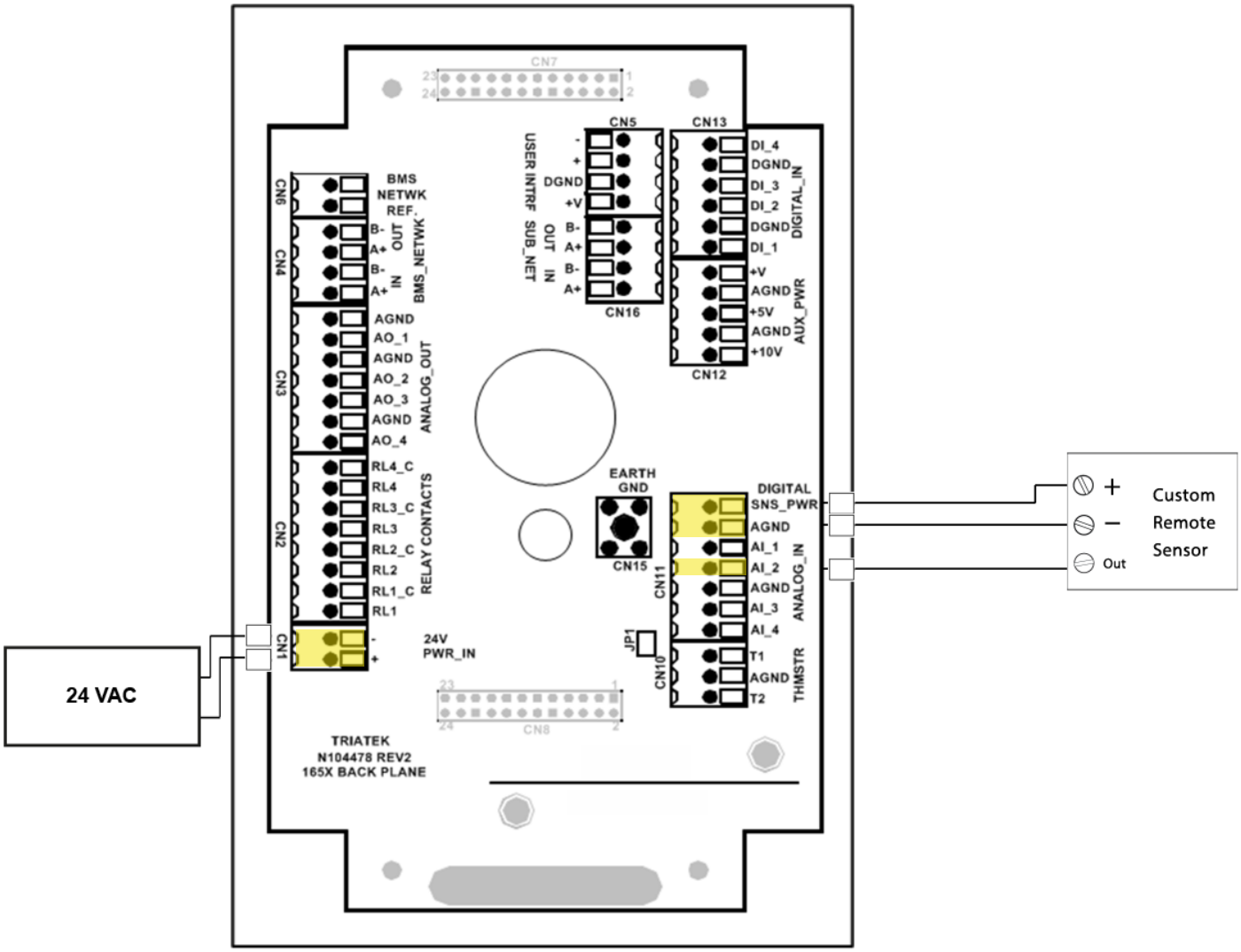


Table 13: Controller configuration DIP switch settings

DIP switch	ON or OFF	Input or output configuration
S1 position 2	OFF	AI-2 set as 0 V to 10 V input
S1 position 6	ON	
S1 position 2	ON	AI-2 set as 4 mA to 20 mA input
S1 position 6	OFF	

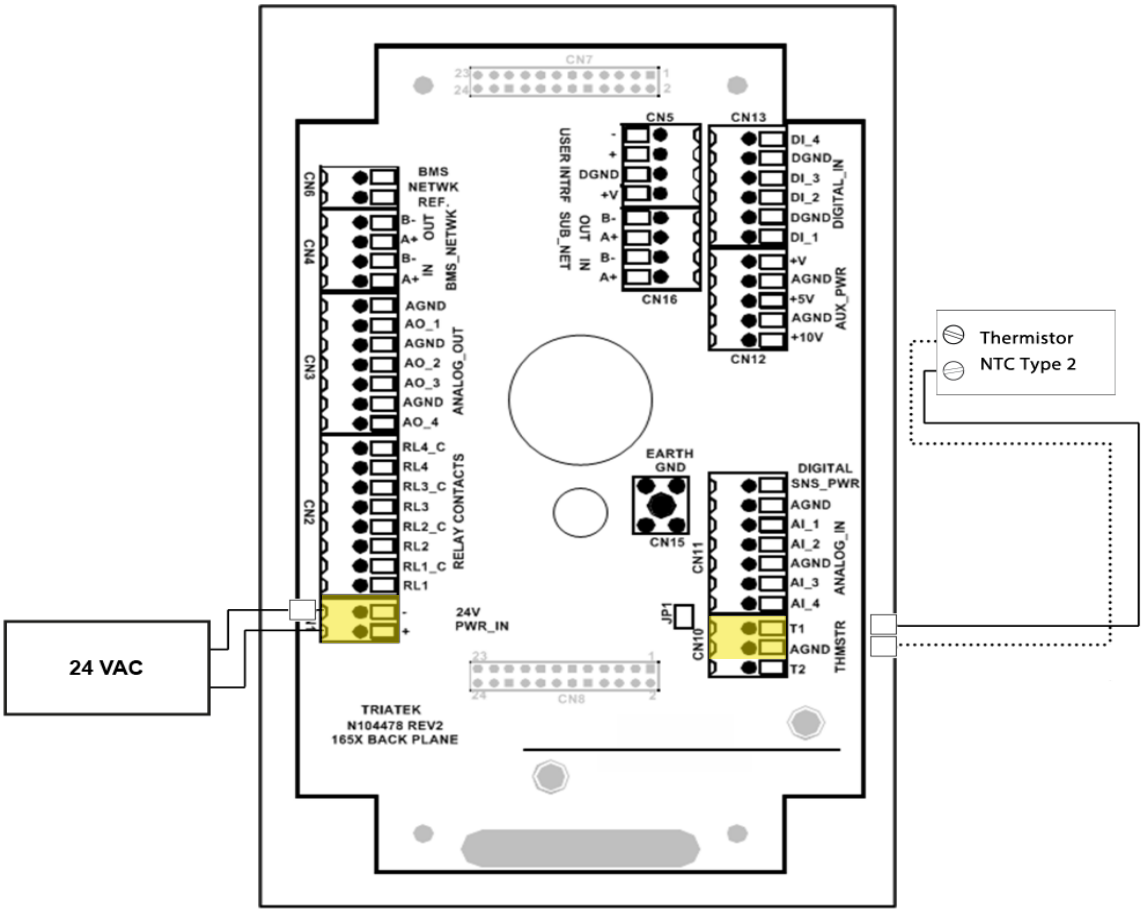
Note: *Figure 16* and Table 15 show the use of AI-2 for a retrofit application as an example.

Table 14: Remote pressure sensor guidelines

Analog input	Pressure range	Voltage range
AI-1	±0.01 in. W.C. (±2.49 Pa) ±0.05 in. W.C. (±12.4 Pa) ±0.10 in. W.C. (±24.9 Pa) ±0.20 in. W.C. (±49.8 Pa) ±0.25 in. W.C. (±62.3 Pa)	4 mA - 20 mA, default 0 mA - 20 mA 0 VDC - 5 VDC 0 VDC - 10 VDC 1 VDC - 5 VDC 2 VDC - 10 VDC
AI-2, AI-3, AI-4	Configurable. Both unidirectional and bidirectional pressure ranges supported.	4 mA - 20 mA 0 mA - 20 mA 0 VDC - 5 VDC (default) 0 VDC - 10 VDC 1 VDC - 5 VDC 2 VDC - 10 VDC

Wiring the analog input for temperature or using a thermistor

Figure 26: Temperature sensor wiring diagram

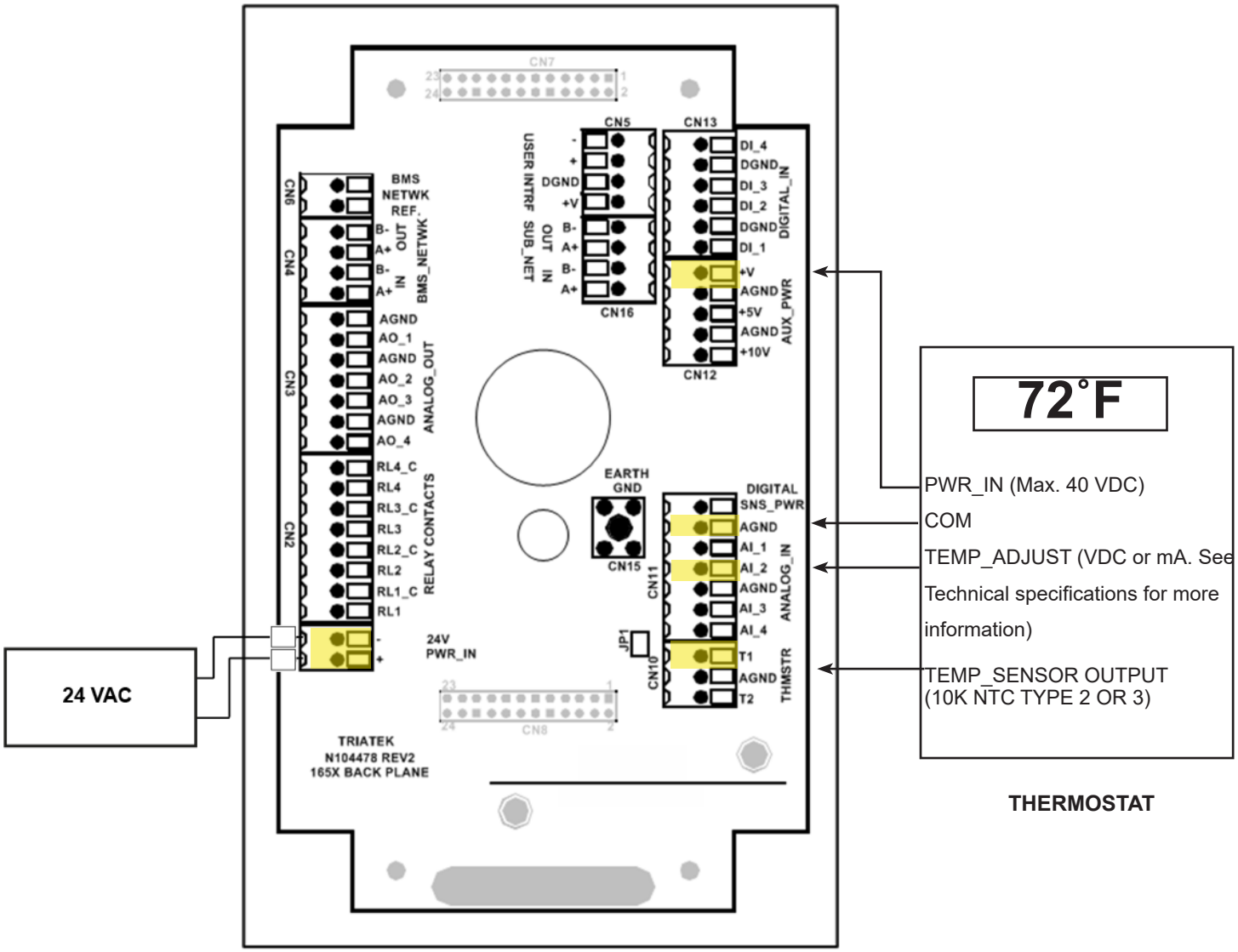


Note: This wiring diagram associates the thermistor with contacts **T1** and **AGND** for illustrative purposes only. You can use either of the two thermistors.

Wiring the analog input to a room thermostat

The following shows the wiring diagram for the analog input to a room thermostat:

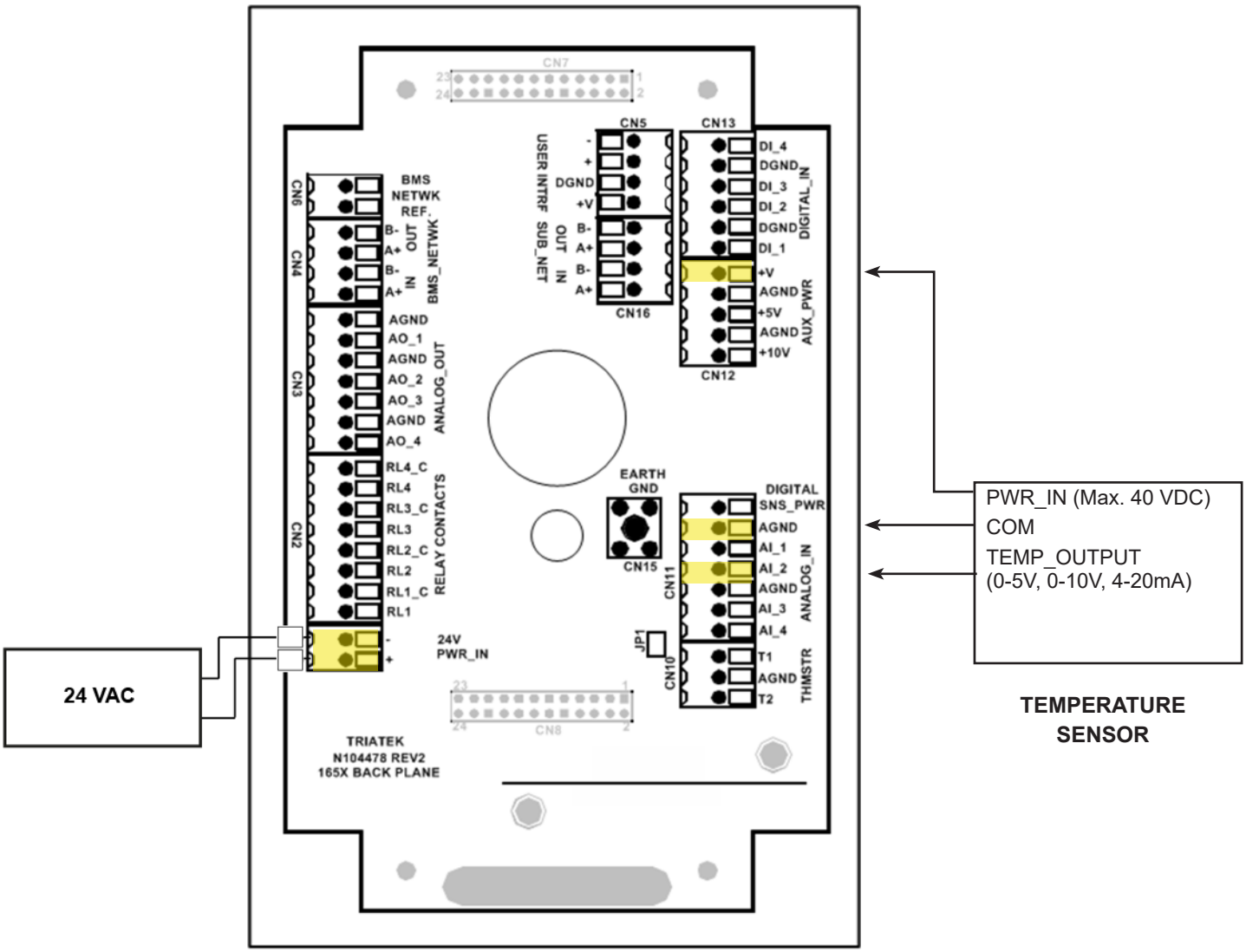
Figure 27: Room thermostat wiring diagram



Wiring the analog input for precision temperature

The following figure shows the wiring diagram for the analog input for precision temperature:

Figure 28: Precision temperature wiring diagram



Note: You can wire precision temperature on AI_2, AI_3 and AI_4.

Wiring the digital input to door switch

You can use a switch with normally open or normally close contacts with the FMS-2000C controller to serve as a timed alarm buzzer inhibitor, when the room door has been opened. Refer to the *FMS-2000C Critical Environment Controller User's Guide* for more information on how to program the door switch.

Figure 29: Door switch wiring diagram

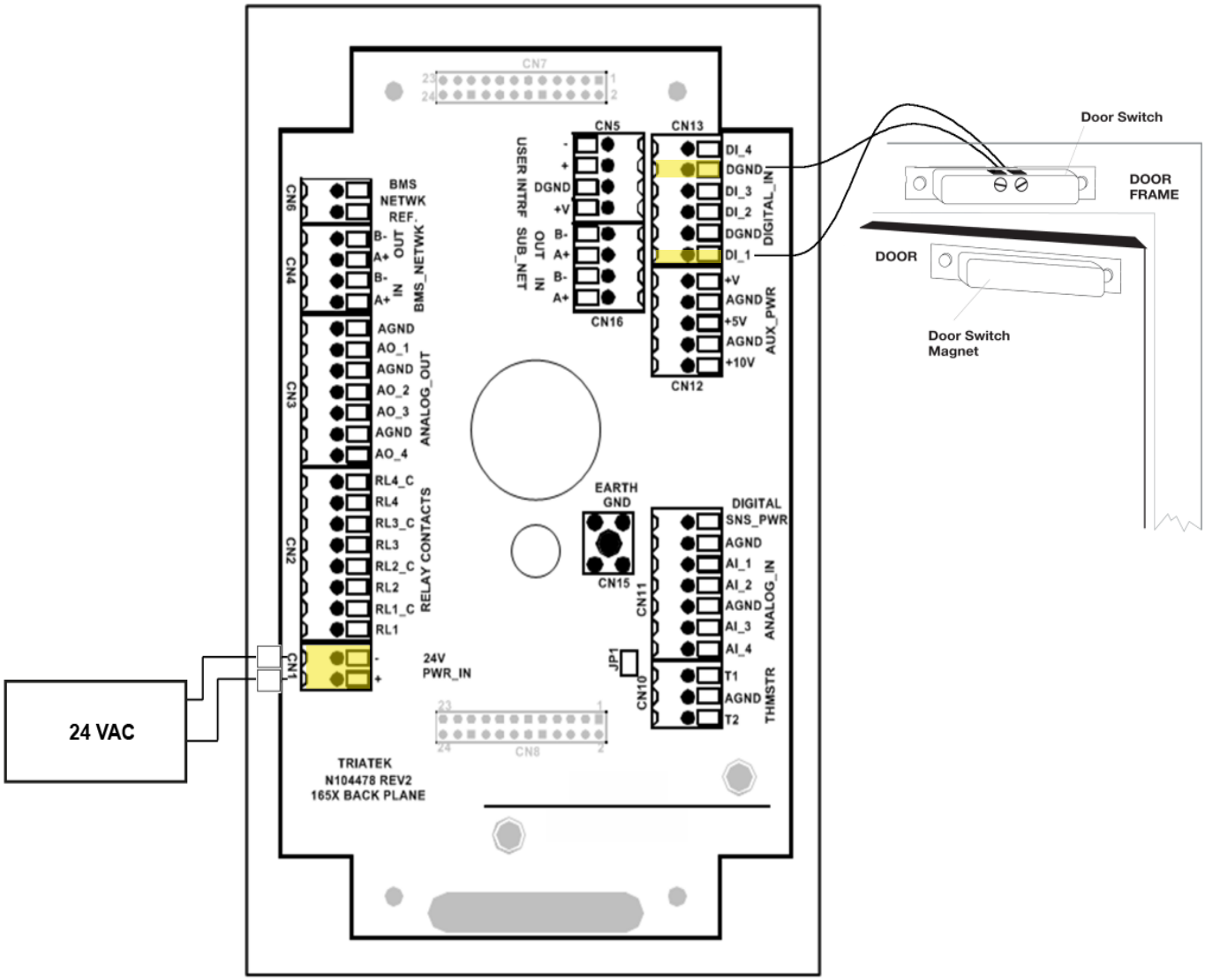


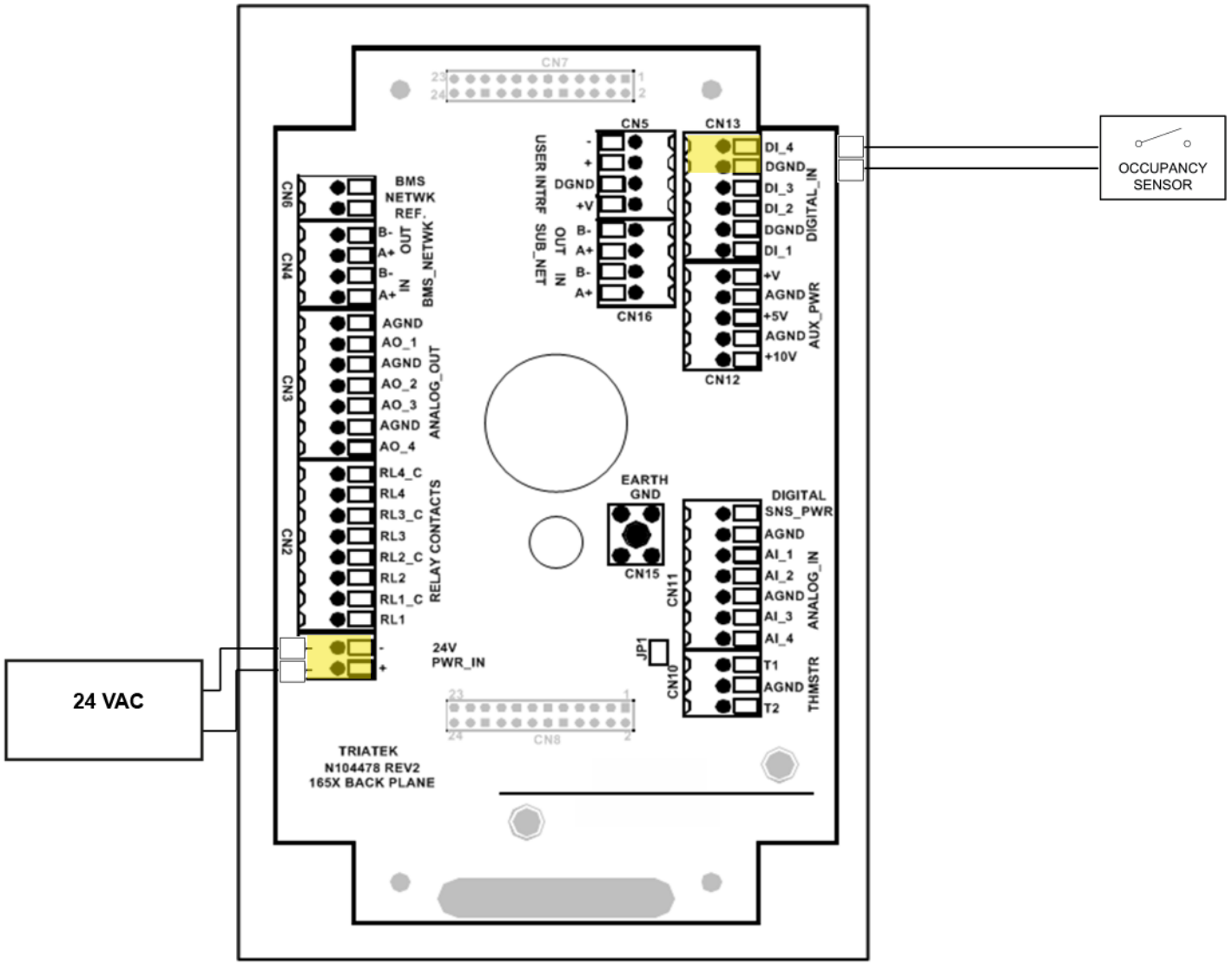
Table 15: Controller configuration slide switch settings

Slide switch	Left or right	Input or output configuration
S5	Left	Active high digital input

Wiring the digital input to occupancy sensor

The following figure shows the wiring diagram for the digital input to occupancy sensor:

Figure 30: Occupancy sensor wiring diagram



Note: This wiring diagram associates the occupancy sensor with contacts DI_4 and DGND for illustrative purposes only. You can use digital inputs DI_2 or DI_3.

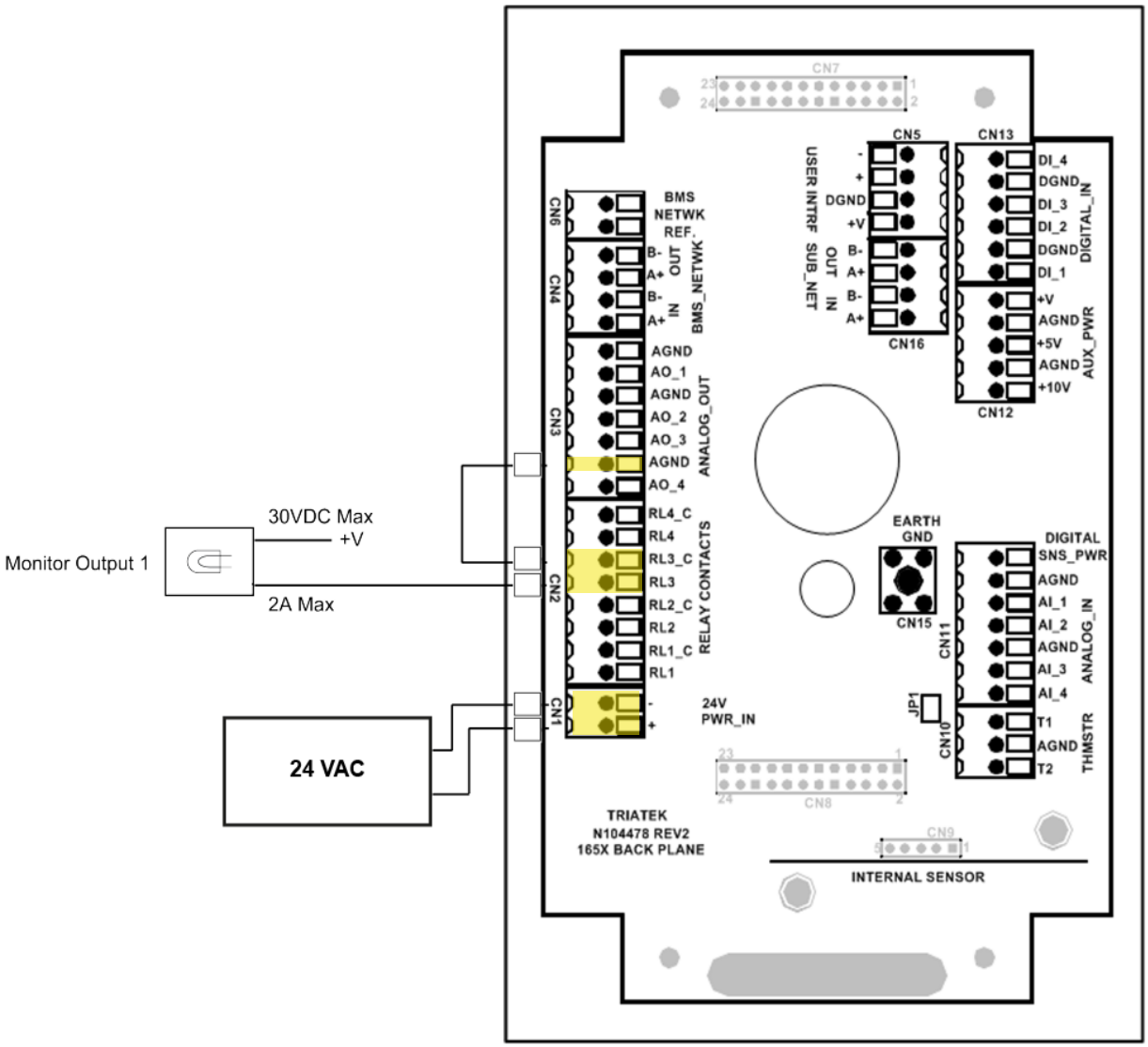
Table 16: Controller configuration slide switch settings

Slide switch	Left or right	Input or output configuration
S5	Left	Active high digital input

Wiring the relay output to alarm

The following figure shows the wiring diagram for the relay output to alarm:

Figure 31: Alarm wiring diagram

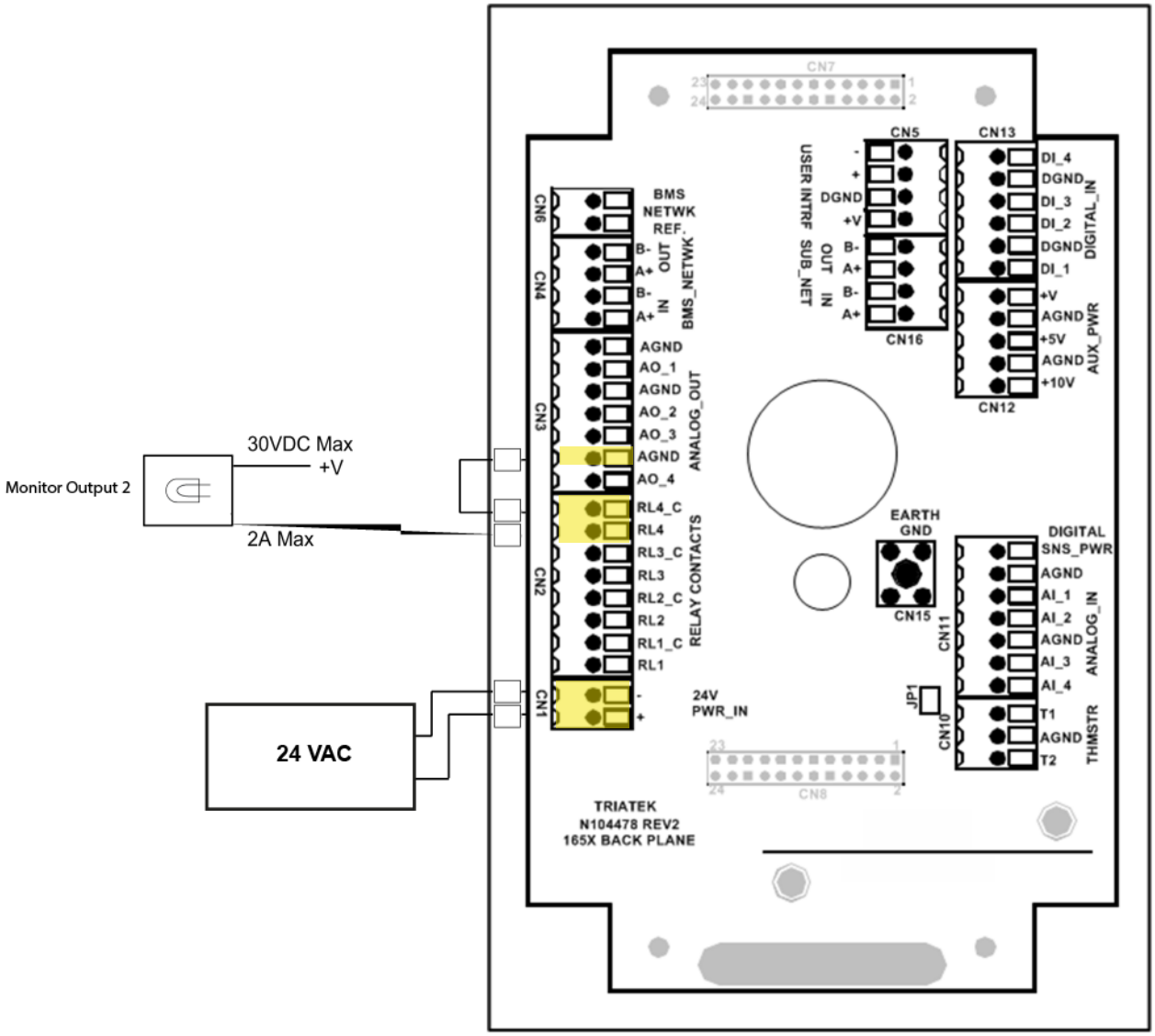


Note: This wiring diagram associates monitor output 1 with contacts RL3 and RL3_C for illustrative purposes only. You can use any of the four relays and the corresponding relay C.

Wiring the relay output to warn

The following figure shows the wiring diagram for the relay output to warn:

Figure 32: Warning wiring diagram

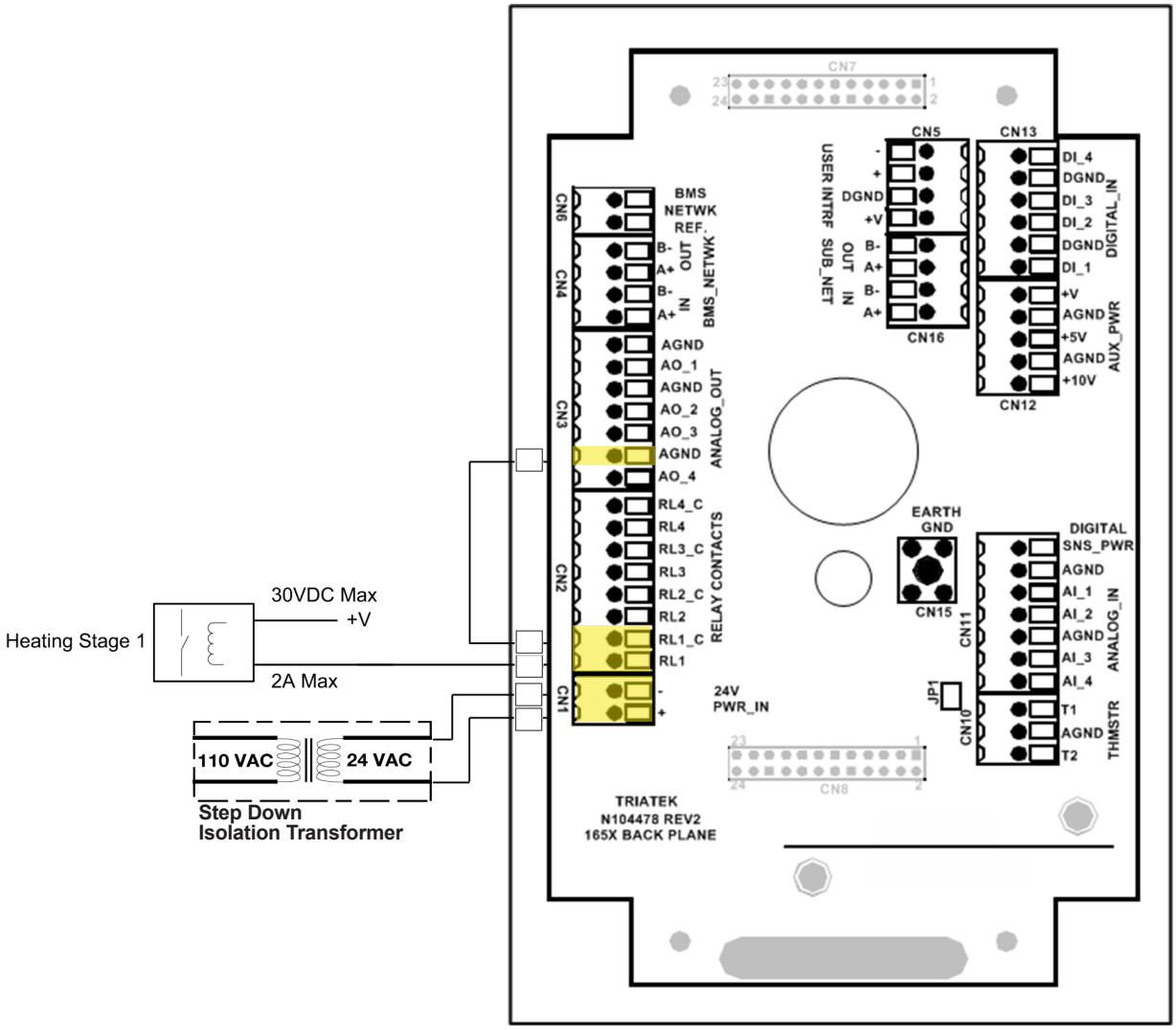


Note: The wiring diagram associates monitor output 2 with contacts RL4 and RL4_C for illustrative purposes only. You can use any of the four relays and the corresponding relay C.

Wiring relay output 1

The following figure shows the wiring diagram for relay output 1:

Figure 33: Relay output 1 wiring diagram

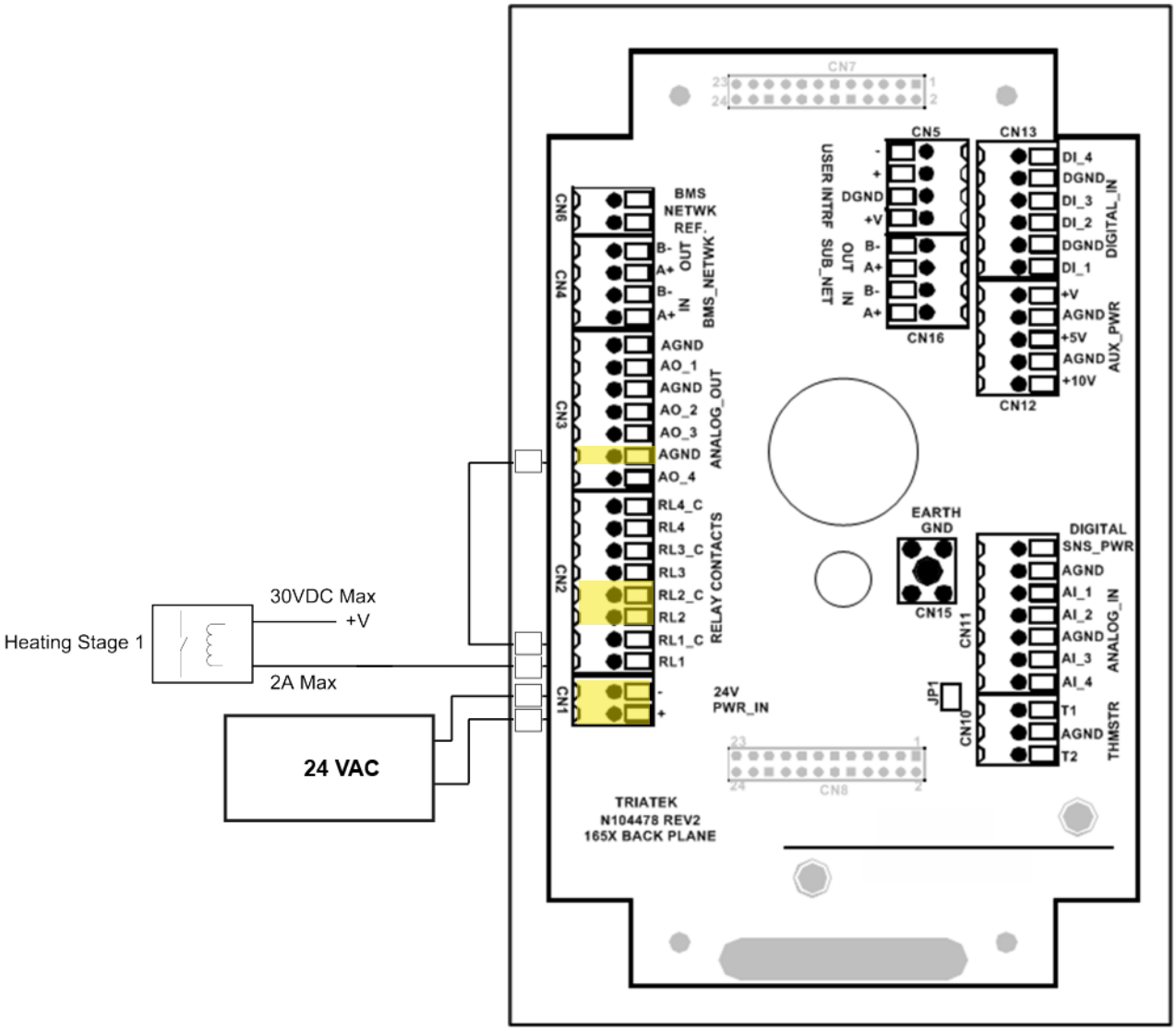


Note: The above example associates Heating State 1 with contacts **RL1** and **RL1_C** for illustrative purposes only. Any of the four relays and the corresponding relay C can be used.

Wiring the relay output 2

The following figure shows the wiring diagram for relay output 2:

Figure 34: Relay output 2 wiring diagram

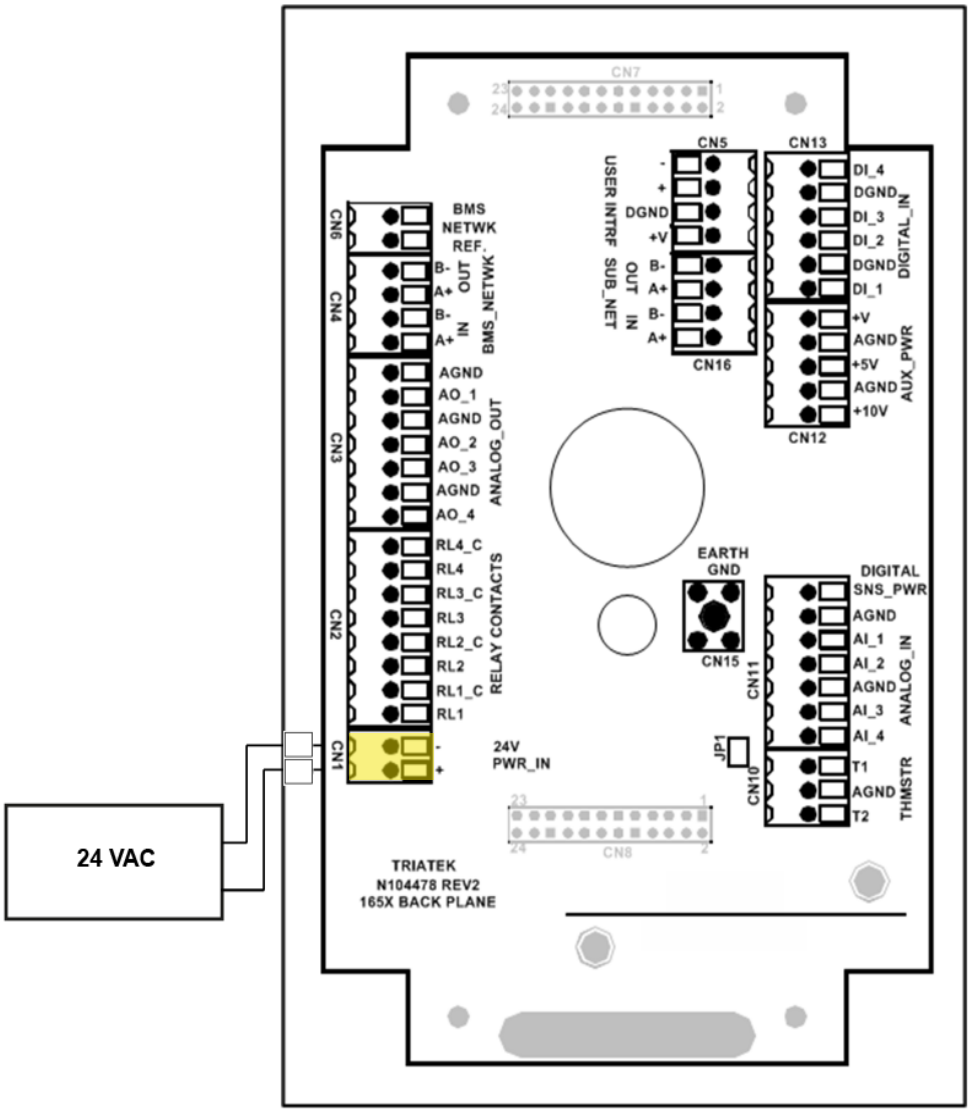


Note: The wiring diagram associates heating state 2 with contacts RL2 and RL2_C for illustrative purposes only. You can use any of the four relays and the corresponding relay C.

Wiring power

The following figure shows the diagram for wiring power:

Figure 35: Power wiring diagram



IMPORTANT: When powering daisy-chained controllers with your own 24 VAC power supplies, be sure to maintain consistency when connecting the two secondary leads AC1 and AC2 to each controller. For example, if AC1 and AC2 are the two leads of your 24 VAC power supply, AC1 should be connected to the +24V_PWR _IN terminal and AC2 should be connected to the -24V_PWR_IN terminal, or vice versa. Reversing these leads could permanently damage the controller module.

IMPORTANT : Lors de l'alimentation des contrôleurs branchés en cascade avec vos propres blocs d'alimentation de 24 V CA, assurez-vous de maintenir la cohérence lors du branchement des deux conducteurs secondaires AC1 et AC2 à chaque contrôleur. Par exemple, si AC1 et AC2 sont les deux conducteurs de votre bloc d'alimentation de 24 V CA, AC1 devrait être branché à la borne +24V_PWR _IN et AC2 devrait être branché à la borne -24V_PWR_IN ou vice versa. Inverser ces conducteurs peut endommager de façon permanente le module de contrôle.

Wiring communications to BACnet MS/TP

The following figure shows the wiring diagram for the BACnet MS/TP:

Figure 38: BACnet MS/TP wiring diagram

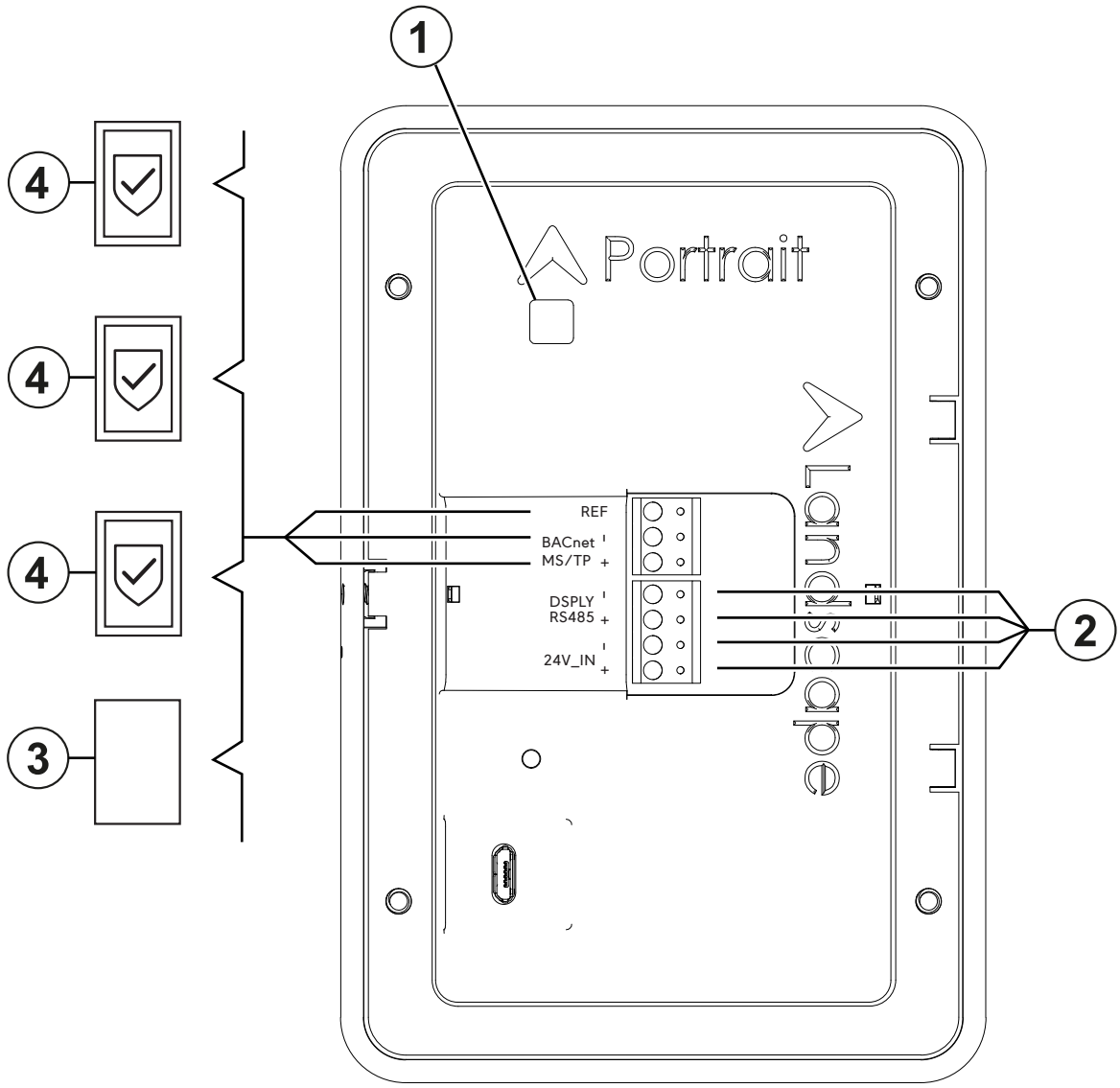


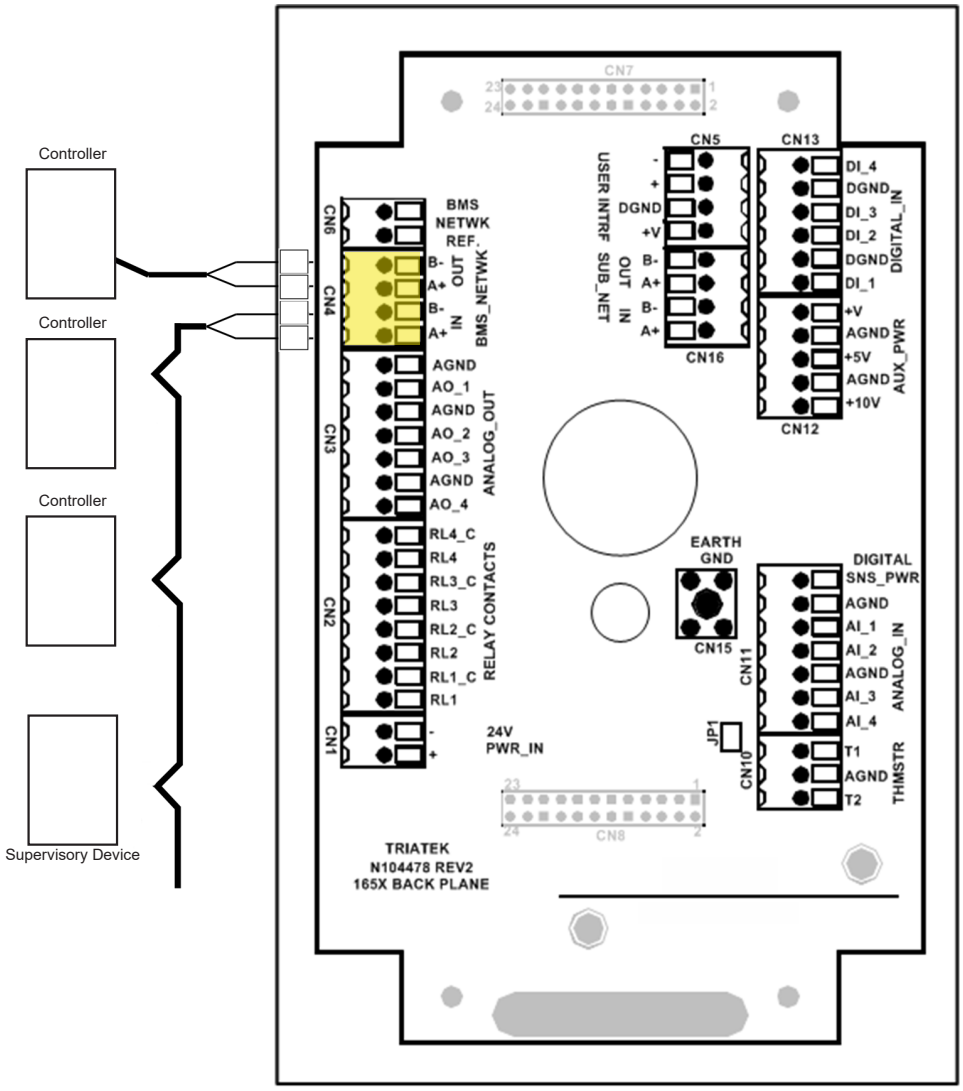
Table 17: BACnet MS/TP wiring components

Number	Component
1	DIP switch. See Table 19 for more information.
2	Controller
3	Supervisory device
4	FMS-2000C Critical Environment Controller. **Note:** The FMS-2000C 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 communications to Metasys N2 open

The following figure shows the wiring diagram for the Metasys N2 open:

Figure 39: Metasys N2 open wiring diagram



Note: For optimum network communications, connect the reference signal REF to the NETWK REF terminals at the backplane.

Table 18: Controller configuration DIP switch settings

DIP switch	ON or OFF	Protocol
S3 position 7	ON	Metasys N2 protocol selected
S3 position 8	OFF	

Configuring display module settings

Figure 40: Run mode and demo mode DIP switches

Table 19: Options DIP switch S2 mode configuration

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

Configuring main controller module settings

Table 20: Analog input configuration DIP switch S1

Switch position	Configuration setting	OFF position	ON position
1	AI-1 mode selection	OFF = voltage input	ON = current input
2	AI-2 mode selection	OFF = voltage input	ON = current input
3	AI-3 mode selection	OFF = voltage input	ON = current input
4	AI-4 mode selection	OFF = voltage input	ON = current input
5	AI-1 voltage range selection	OFF = 0 VDC - 5 VDC	ON = 0 VDC - 10 VDC
6	AI-2 voltage range selection	OFF = 0 VDC - 5 VDC	ON = 0 VDC - 10 VDC
7	AI-3 voltage range selection	OFF = 0 VDC - 5 VDC	ON = 0 VDC - 10 VDC
8	AI-4 voltage range selection	OFF = 0 VDC - 5 VDC	ON = 0 VDC - 10 VDC

Notes:
- To configure the FMS-2000C controller for a remote sensor, set the DIP switch position 1 ON and DIP switch position 5 OFF. See Table 23 for other inputs.
- FMS-1655 Remote Pressure Controller flush mount with internal sensor does not support the FMS-2000C controller display
- To view the DIP switch banks locations, see Figure 14.

Table 21: Analog output configuration DIP switch S3

Switch position	Configuration setting	OFF position	ON position
1	AO-1 mode selection	OFF = current output	ON = voltage output
2	AO-2 mode selection	OFF = current output	ON = voltage output
3	AO-3 mode selection	OFF = current output	ON = voltage output
4	AO-4 mode selection	OFF = current output	ON = voltage output

Table 22: Network configuration DIP switch S3

Switch position	Configuration setting	OFF position	ON position
5	RS485 network termination	OFF = disabled	ON = enabled
6	RS485 display termination	OFF = disabled	ON = enabled

Note: See Table 24 for protocol selection settings.

Configurations and settings

The following tables show the different configurations and settings:

Table 23: Analog input configuration settings DIP switch S1

Mode	S1 - 1	S1 - 2	S1 - 3	S1 - 4	S1 - 5	S1 - 6	S1 - 7	S1 - 8
AI-1 5 VDC	OFF				OFF			
AI-1 20 mA	ON				OFF			
AI-1 10 VDC	OFF				ON			
Not valid	ON				ON			
AI-2 5 VDC		OFF				OFF		
AI-2 20 mA		ON				OFF		
AI-2 10 VDC		OFF				ON		
Not valid		ON				ON		
AI-3 5 VDC			OFF				OFF	
AI-3 20 mA			ON				OFF	
AI-3 10 VDC			OFF				ON	
Not valid			ON				ON	
AI-4 5 VDC				OFF				OFF
AI-4 20 mA				ON				OFF
AI-4 10 VDC				OFF				ON
Not valid				ON				ON

Table 24: Protocol selection settings DIP switch S3

Protocol Selection	S3 position 7	S3 position 8
Reserved	OFF	OFF
Metasys N2	ON	OFF
BACnet MS/TP default	ON	ON

Table 25: Analog output range configuration DIP switch S4

AO-1 voltage range selection	OFF = 0 VDC - 10 VDC	ON = 0 VDC - 5 VDC
AO-2 voltage range selection	OFF = 0 VDC - 10 VDC	ON = 0 VDC - 5 VDC
AO-3 voltage range selection	OFF = 0 VDC - 10 VDC	ON = 0 VDC - 5 VDC
AO-4 voltage range selection	OFF = 0 VDC - 10 VDC	ON = 0 VDC - 5 VDC

Table 26: Digital input configuration slide switch S5

Direction	Description
Left	Digital inputs pulled high triggered by active low input is default
Right	Digital inputs pulled low triggered by active high input, up to 24 VDC

BACnet objects

See Table 27 to Table 32 for a list of points available for integration in a building automation system (BAS). These points contain the objects for open BACnet integration.

Table 27: Analog inputs for integration in a BAS

Object	Analog inputs	Read or write
AI-1	Analog input 1, default: isolation pressure	Read only
AI-2	Analog input 2	Read only
AI-3	Analog input 3	Read only
AI-4	Analog input 4	Read only
AI-5	Thermistor input 1	Read only
AI-6	Thermistor input 2	Read only

Table 28: Analog outputs for integration in a BAS

Object	Analog outputs	Read or write
AO-1	Analog output 1, default: damper position	Read only
AO-2	Analog output 2, default: anteroom damper control	Read only
AO-3	Analog output 3, spare control output	Read only
AO-4	Analog output 4, spare control output	Read only

Table 29: Binary inputs for integration in a BAS

Object	Binary inputs	Read or write
BI-1	Digital input 1, default: door switch	Read only
BI-2	Digital input 2, default: anteroom door switch	Read only
BI-3	Digital input 3, spare digital input	Read only
BI-4	Digital input 4, spare digital input	Read only

Table 30: Binary outputs for integration in a BAS

Object	Binary outputs	Read or write
BO-1	Relay output 1, default: primary alarm relay output	Read only
BO-2	Relay output 2, default: spare relay output	Read only
BO-3	Relay output 3, spare relay output	Read only
BO-4	Relay output 4, spare relay output	Read only

Table 31: Analog values for integration in a BAS

Object	Analog values	Read or write
AV-1	AI-1 setpoint for room pressure	Read or write
AV-2	AI-2 setpoint	Read or write
AV-3	AI-3 setpoint	Read or write
AV-4	AI-4 setpoint	Read or write
AV-5	TI-1 setpoint	Read or write
AV-6	TI-2 setpoint	Read or write
AV-7	Air change rate based on flow input at AI-1	Read only
AV-8	Air change rate based on flow input at AI-2	Read only
AV-9	Air change rate based on flow input at AI-3	Read only
AV-10	Air change rate based on flow input at AI-4	Read only
AV-11	Alarm relay 1 high setpoint	Read or write

Object	Analog values	Read or write
AV-12	Alarm relay 1 low setpoint	Read or write
AV-13	Alarm relay 2 high setpoint	Read or write
AV-14	Alarm relay 2 low setpoint	Read or write
AV-15	Alarm relay 3 high setpoint	Read or write
AV-16	Alarm relay 3 low setpoint	Read or write
AV-17	Alarm relay 4 high setpoint	Read or write
AV-18	Alarm relay 4 low setpoint	Read or write
AV-19	AI-1 low alarm setpoint for low pressure alarm	Read or write
AV-20	AI-1 low warning setpoint for low pressure warning	Read or write
AV-21	AI-1 high warning setpoint for high pressure warning	Read or write
AV-22	AI-1 high alarm setpoint for high pressure alarm	Read or write
AV-23	AI-2 low alarm setpoint	Read or write
AV-24	AI-2 low warning setpoint	Read or write
AV-25	AI-2 high warning setpoint	Read or write
AV-26	AI-2 high alarm setpoint	Read or write
AV-27	AI-3 low alarm setpoint	Read or write
AV-28	AI-3 low warning setpoint	Read or write
AV-29	AI-3 high warning setpoint	Read or write
AV-30	AI-3 high alarm setpoint	Read or write
AV-31	AI-4 low alarm setpoint	Read or write
AV-32	AI-4 low warning setpoint	Read or write
AV-33	AI-4 high warning setpoint	Read or write
AV-34	AI-4 high alarm setpoint	Read or write
AV-35	TI-1 low alarm setpoint	Read or write
AV-36	TI-1 low warning setpoint	Read or write
AV-37	TI-1 high warning setpoint	Read or write
AV-38	TI-1 high alarm setpoint	Read or write
AV-39	TI-2 low alarm setpoint	Read or write
AV-40	TI-2 low warning setpoint	Read or write
AV-41	TI-2 high warning setpoint	Read or write
AV-42	TI-2 high alarm setpoint	Read or write
AV-43	Network variable humidity	Read or write
AV-44	Network variable temperature	Read or write
AV-45	Network variable air changes	Read or write
AV-46	Network variable pressure	Read or write
AV-48	Duct air flow based on AI-1 flow input	Read only
AV-49	Duct air flow based on AI-2 flow input	Read only
AV-50	Duct air flow based on AI-3 flow input, supply flow	Read only
AV-51	Duct air flow based on AI-4 flow input, exhaust flow	Read only
AV-52	Volumetric offset, supply flow - exhaust flow	Read only
AV-53	Volumetric offset setpoint	Read or write
AV-54	AO-1 override level	Read or write
AV-55	AO-2 override level	Read or write
AV-56	AO-3 override level	Read or write

Object	Analog values	Read or write
AV-57	AO-4 override level	Read or write
AV-58	AI-1 deadband setting	Read or write
AV-59	AI-2 deadband setting	Read or write
AV-60	AI-3 deadband setting	Read or write
AV-61	AI-4 deadband setting	Read or write
AV-62	TI-1 deadband setting	Read or write
AV-63	TI-2 deadband setting	Read or write
AV-64	AI-1 override value	Read or write
AV-65	AI-2 override value	Read or write
AV-66	AI-3 override value	Read or write
AV-67	AI-4 override value	Read or write

Table 32: Multistate objects for integration in a BAS

Object	Multistate objects	Read or write
MV-1	Primary isolation mode	Read or write
MV-2	Secondary isolation mode	Read or write
MV-3	Primary alarm status	Read only
MV-4	Secondary alarm status	Read only
MV-5	AI-3 alarm status	Read only
MV-6	AI-4 alarm status	Read only
MV-7	TI-1 alarm status	Read only
MV-8	TI-2 alarm status	Read only
MV-9	Volumetric offset control status	Read only

Metasys N2 objects

See Table 33 to Table 38 for a list of points available for integration in a BAS. These points contain the objects for open N2 integration.

Table 33: Analog inputs for integration in a BAS

Object instance	Analog inputs	Read or write
AI-1	Analog input 1, default: primary pressure	Read only
AI-17	Analog input 2	Read only
AI-18	Analog input 3	Read only
AI-19	Analog input 4	Read only
AI-20	Thermistor input 1	Read only
AI-21	Thermistor input 2	Read only

Table 34: Analog outputs for integration in a BAS

Object instance	Analog outputs	Read or write
AO-1	Analog output 1, default: primary damper control	Read only
AO-11	Analog output 2, default: supply or exhaust damper control	Read only
AO-12	Analog output 3, spare control output	Read only
AO-13	Analog input 4, spare control output	Read only

Table 35: Binary inputs for integration in a BAS

Object instance	Binary inputs	Read or write
BI-3	Digital input 1, default: primary room switch	Read only
BI-4	Digital input 2, default: secondary room switch	Read only
BI-5	Digital input 3, spare digital input	Read only
BI-6	Digital input 4, spare digital input	Read only

Table 36: Binary outputs for integration in a BAS

Object instance	Binary outputs	Read or write
BO-1	Relay output 1, default: primary alarm relay output	Read only
BO-2	Relay output 2, spare relay output	Read only
BO-3	Relay output 3, spare relay output	Read only
BO-4	Relay output 4, spare relay output	Read only

Table 37: Internal float values for integration in a BAS

Object instance	Internal float values	Read or write
ADF-1	PID Control loop 1 setpoint, primary pressure	Read or write
ADF-2	Primary room alarm relay high setpoint	Read or write
ADF-3	Primary room alarm relay low setpoint	Read or write
ADF-4	Secondary room alarm relay high setpoint	Read or write
ADF-5	Secondary alarm relay low setpoint	Read or write
ADF-8	Primary room low alarm setpoint	Read or write
ADF-9	Primary room low warning setpoint	Read or write
ADF-10	Primary room high warning setpoint	Read or write
ADF-11	Primary room high alarm setpoint	Read or write
ADF-13	PID control loop 2 setpoint	Read or write
ADF-14	PID control loop 3 setpoint	Read or write

Object instance	Internal float values	Read or write
ADF-15	PID control loop 4 setpoint	Read or write
ADF-16	Air change rate based on flow input at AI-1	Read only
ADF-17	Air change rate based on flow input at AI-2	Read only
ADF-18	Air change rate based on flow input at AI-3	Read only
ADF-19	Air change rate based on flow input at AI-4	Read only
ADF-20	Alarm relay 3 high setpoint	Read or write
ADF-21	Alarm relay 3 low setpoint	Read or write
ADF-22	Alarm relay 4 high setpoint	Read or write
ADF-23	Alarm relay 4 low setpoint	Read or write
ADF-24	AI-2 low alarm setpoint	Read or write
ADF-25	AI-2 low warning setpoint	Read or write
ADF-26	AI-2 high warning setpoint	Read or write
ADF-27	AI-2 high alarm setpoint	Read or write
ADF-28	AI-3 low alarm setpoint	Read or write
ADF-29	AI-3 low warning setpoint	Read or write
ADF-30	AI-3 high warning setpoint	Read or write
ADF-31	AI-3 high alarm setpoint	Read or write
ADF-32	AI-4 low alarm setpoint	Read or write
ADF-33	AI-4 low warning setpoint	Read or write
ADF-34	AI-4 high warning setpoint	Read or write
ADF-35	AI-4 high alarm setpoint	Read or write
ADF-36	TI-1 low alarm setpoint	Read or write
ADF-37	TI-2 low warning setpoint	Read or write
ADF-38	TI-1 high warning setpoint	Read or write
ADF-39	TI-1 high alarm setpoint	Read or write
ADF-40	TI-2 high alarm setpoint	Read or write
ADF-41	TI-2 low warning setpoint	Read or write
ADF-42	TI-2 high warning setpoint	Read or write
ADF-43	TI-2 high alarm setpoint	Read or write
ADF-44	Humidity network variable, writable	Read or write
ADF-45	Temperature network variable, writable	Read or write
ADF-46	Air changes network variable, writable	Read or write
ADF-47	Differential pressure network variable, writable	Read or write
ADF-48	Air flow based on flow input at AI-1	Read only
ADF-49	Air flow based on flow input at AI-2	Read only
ADF-50	Air flow based on flow input at AI-3, default: supply flow	Read only
ADF-51	Air flow based on flow input at AI-4, default: exhaust flow	Read only
ADF-52	Volumetric offset, supply flow - exhaust flow	Read only
ADF-53	Volumetric offset setpoint	Read or write
ADF-54	AO-1 override level	Read or write
ADF-55	AO-2 override level	Read or write
ADF-56	AO-3 override level	Read or write
ADF-57	AO-4 override level	Read or write
ADF-58	AI-1 deadband setting	Read or write

Object instance	Internal float values	Read or write
ADF-59	AI-2 deadband setting	Read or write
ADF-60	AI-3 deadband setting	Read or write
ADF-61	AI-4 deadband setting	Read or write
ADF-62	TI-1 deadband setting	Read or write

Table 38: Internal integer values for integration in a BAS

Object instance	Internal integer values	Read or write
ADI-1	AI-1 isolation mode: 1 = positive, 2 = negative, 3 = neutral	Read or write
ADI-2	AI-1 alarm status: 1 = normal, 2 = warning, 3 = alarm	Read only
ADI-7	AI-2 isolation mode: 1 = positive, 2 = negative, 3 = neutral	Read or write
ADI-8	AI-2 alarm status: 1 = normal, 2 = warning, 3 = alarm	Read only
ADI-9	AI-3 alarm status: 1 = normal, 2 = warning, 3 = alarm	Read only
ADI-10	AI-4 alarm status: 1 = normal, 2 = warning, 3 = alarm	Read only
ADI-11	TI-1 alarm status: 1 = normal, 2 = warning, 3 = alarm	Read only
ADI-12	TI-2 alarm status: 1 = normal, 2 = warning, 3 = alarm	Read only

Technical specifications

Table 39: FMS-2000C Critical Environment Controller 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 features no offset, zero drift and is hysteresis free
Flow control resolution	± 0.0010 in. W.C. (± 0.2491 Pa)
Displayed pressure resolution	± 0.0001 in. W.C. (± 0.0249 Pa)
Control capability	Up to 4 independent spaces
I/O Resources	4 universal inputs (0 mA – 20 mA, 4 mA – 20 mA, 0 VDC – 5 VDC, 0 VDC – 10 VDC, 1 VDC – 5 VDC, 2 VDC – 10 VDC) 2 thermistor inputs (NTC Type 2 or 3, 10K at 77° F) 4 digital inputs (active-high or active-low) 4 universal outputs (0 mA – 20 mA, 4 mA – 20 mA, 0 VDC – 5 VDC, 0 VDC – 10 VDC, 1 VDC – 5 VDC, 2 VDC – 10 VDC) 4 relay outputs (NO or NC contacts 1A at 24 VDC)
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, 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 (1.0 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		0.58 in. (14.73 mm)
Controller dimensions (height x width x depth)		6.56 in. x 5.5 in. x 1.88 in. (166.62 mm x 139.7 mm x 47.75 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 fulfills 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 40: FMS-2000C Critical Environment Controller ordering guide

Feature	Code letter or number and description	Product code number example: FMS2C-BT20
Unit	FMS = Flow Monitor Station (FMS)	FMS
Series	2 = 2000 C = Controller	2C
Network	B = BACnet MS/TP	B
Mounting style	T = Thin	T
Remote sensor[1]	0 = No remote sensors 1 = One remote sensor 2 = Two remote sensors 3 = Three remote sensors 4 = Four remote sensors	2
ISO power	0 = 24 V 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, tolulene, xylene, propyl or isopropyl alchohol, 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 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://jcipat.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

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

Contact Johnson Controls: www.johnsoncontrols.com/contact-us

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