FMS-2000C

Critical Environment Controller

Installation Guide

LIT-12013531
September 2020

⚠ 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 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.

Note: The actuator is sold separately.

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 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.

Remarque : L'actionneur est vendu séparément.

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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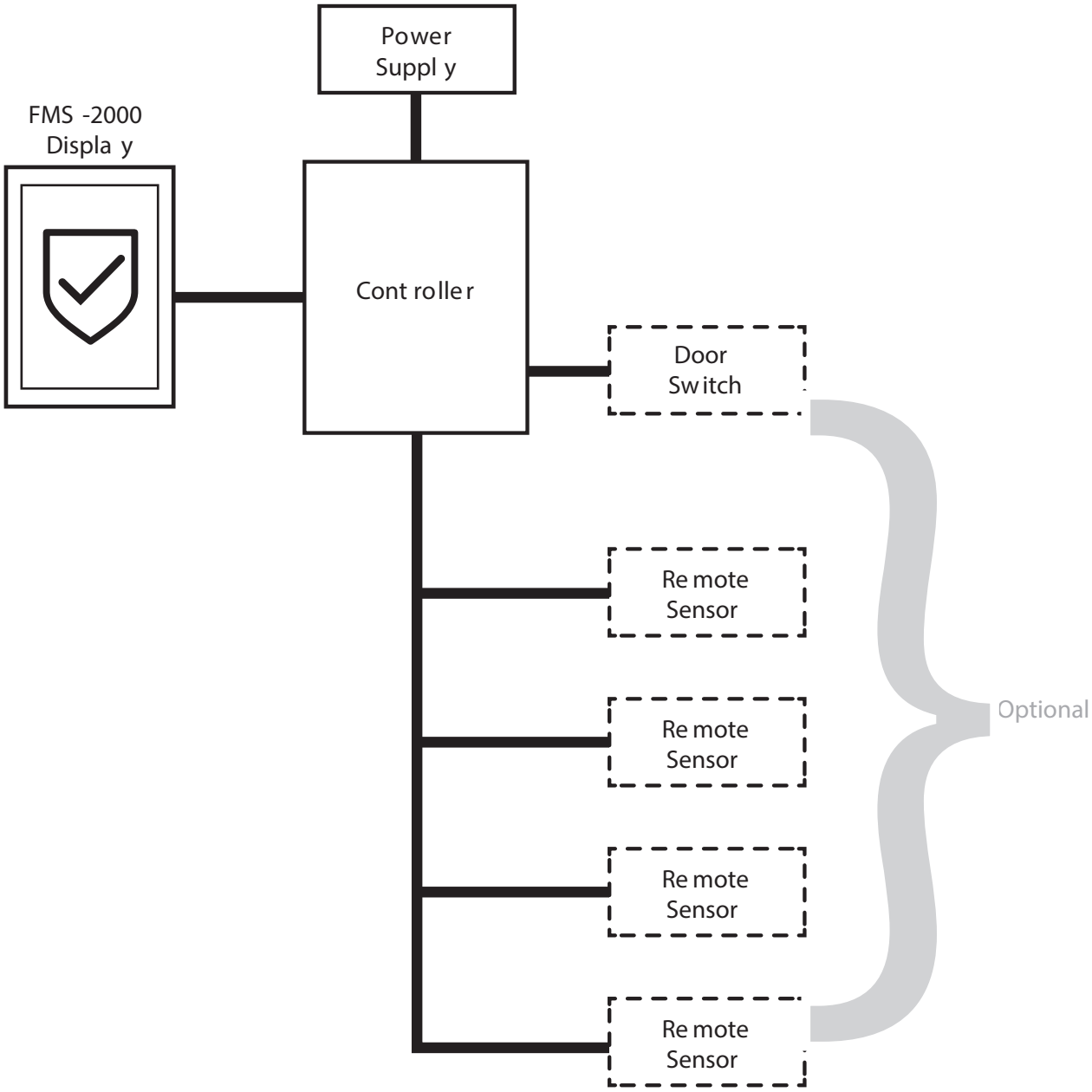
Introduction

The FMS-2000C Critical Environment Controller ensures laboratory and healthcare settings are safe for all occupants by continuously verifying room pressure and airflow. It can precisely control and monitor six parameters including 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 displayed flow resolution down to 0.0001 in. W.C. 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. The audible alarm can be muted with one tap to the screen to help reduce audible alarm fatigue. 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.
- The display can be installed 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 like ceiling air registers facing the reference space, corridor, or anteroom as well as the monitored plate facing the patient room. This can cause unstable sensor behavior.

Mounting the FMS-2000C display for a retrofit application

Before you begin:
Determine the desired location of the FMS-2000C display and the device orientation. The FMS-2000C controller display comes pre-configured for portrait mode but you can also install it in landscape mode. After installing 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 retrofit application, make sure you have the following tools:

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

1. Orient the retrofit ring in the desired orientation and make sure to keep the ring 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. Make sure the four tabs make contact with the inside of the opening and then pull the retrofit ring flush against the inside of the wall.
5. Take the display's mounting bracket and attach it to the retrofit ring using the four mounting screws included.
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: Do not over tighten the screws or the mounting bracket could get warped.

7. Attach the four-conductor wire from the controller and the RS-485 BACnet MS/TP wires on the back of the display. See label on the back of the display for more information.
8. Align the two slots on the back of the display with the tabs on the bracket, then 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 sitting 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 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 2: Retrofit application dimensions

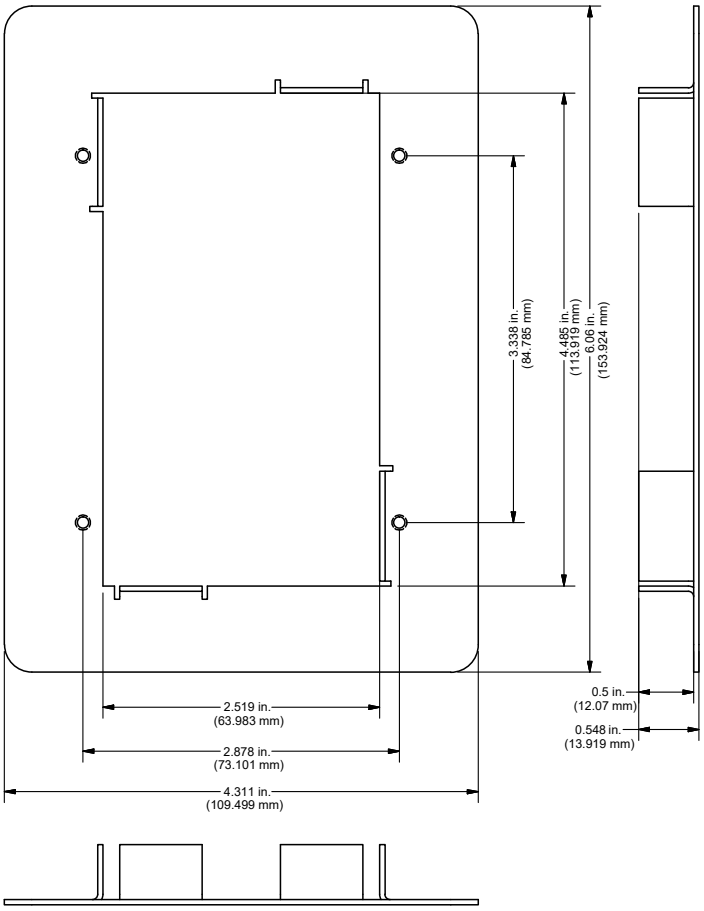


Figure 3: Retrofit ring

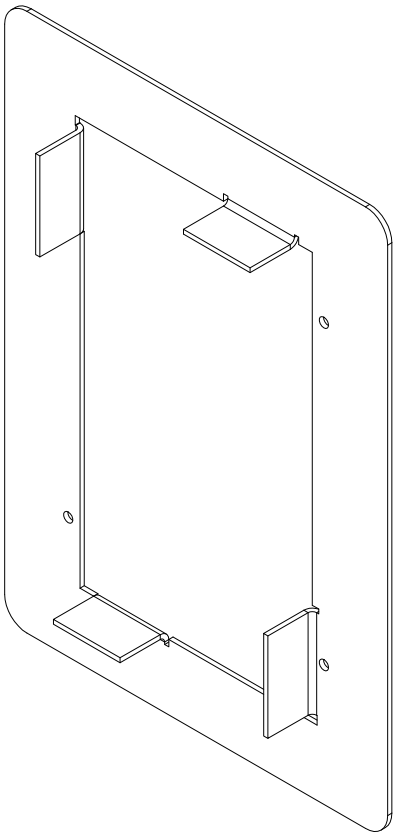


Figure 4: FMS-2000C Critical Environment Controller display side view of a retrofit application

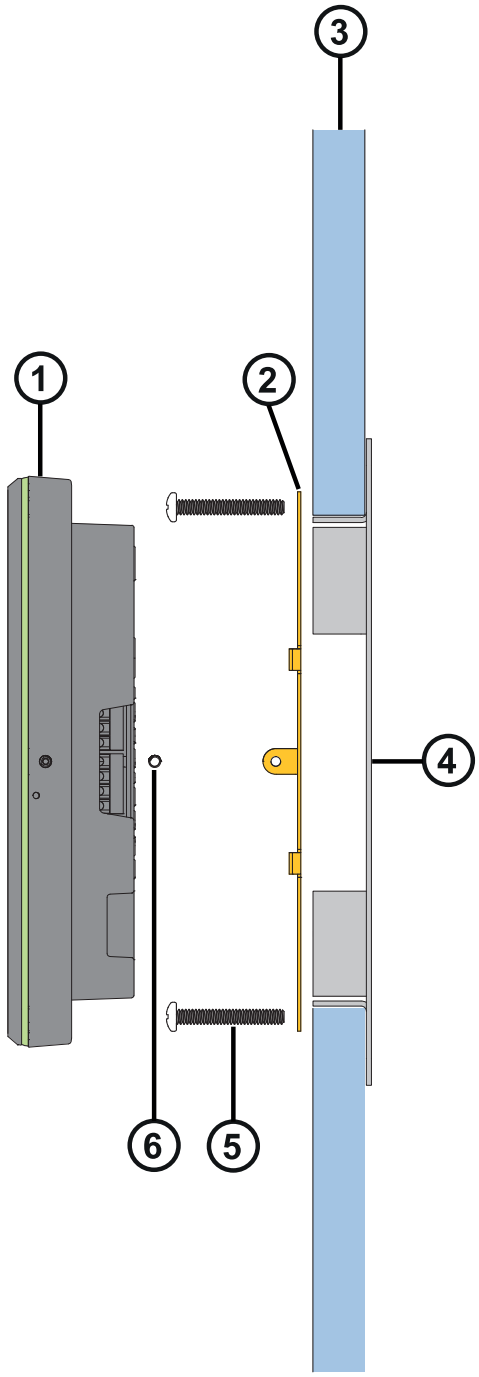


Table 1: FMS-2000C Critical Environment Controller components for a retrofit application

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

Mounting the FMS-2000C controller display for a new application

Determine the desired location of the FMS-2000C display and the device orientation. The FMS-2000C controller display comes pre-configured for portrait mode but you can also install it in landscape mode. After installing 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, make sure you have the following tools:

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

1. Mount the rough-in box to the side of a framing stud adjacent to entry door to the monitored space. Take the thickness of the wall into consideration and make sure 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 ensuring 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: Do not over tighten the screws or the mounting bracket could get warped.

5. Attach the four-conductor interface cable from the controller and the RS-485 BACnet MS/TP wires on the back of the display. See label on the back of the display for more information.
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 5: Rough-in box dimensions

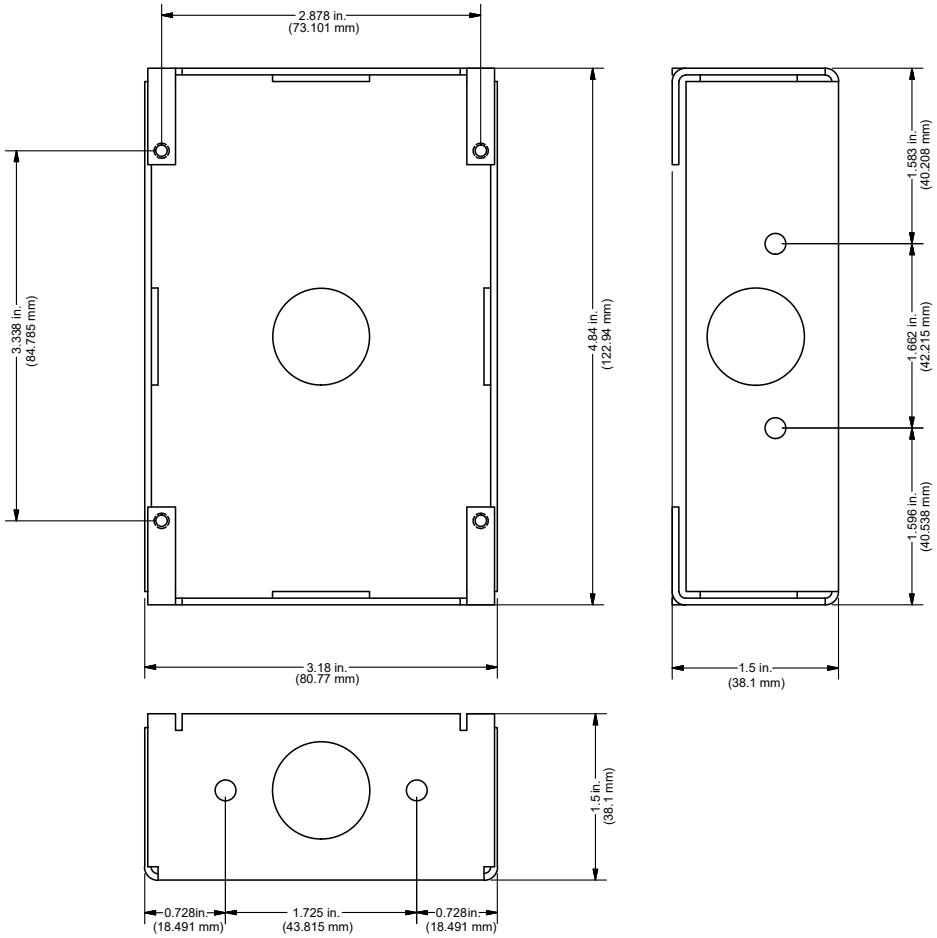


Figure 6: Rough-in box

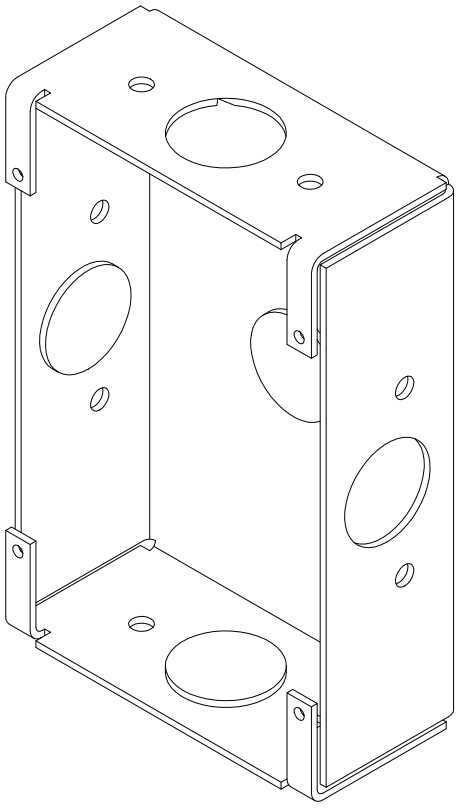


Figure 7: FMS-2000C Critical Environment Controller display side view of a new application

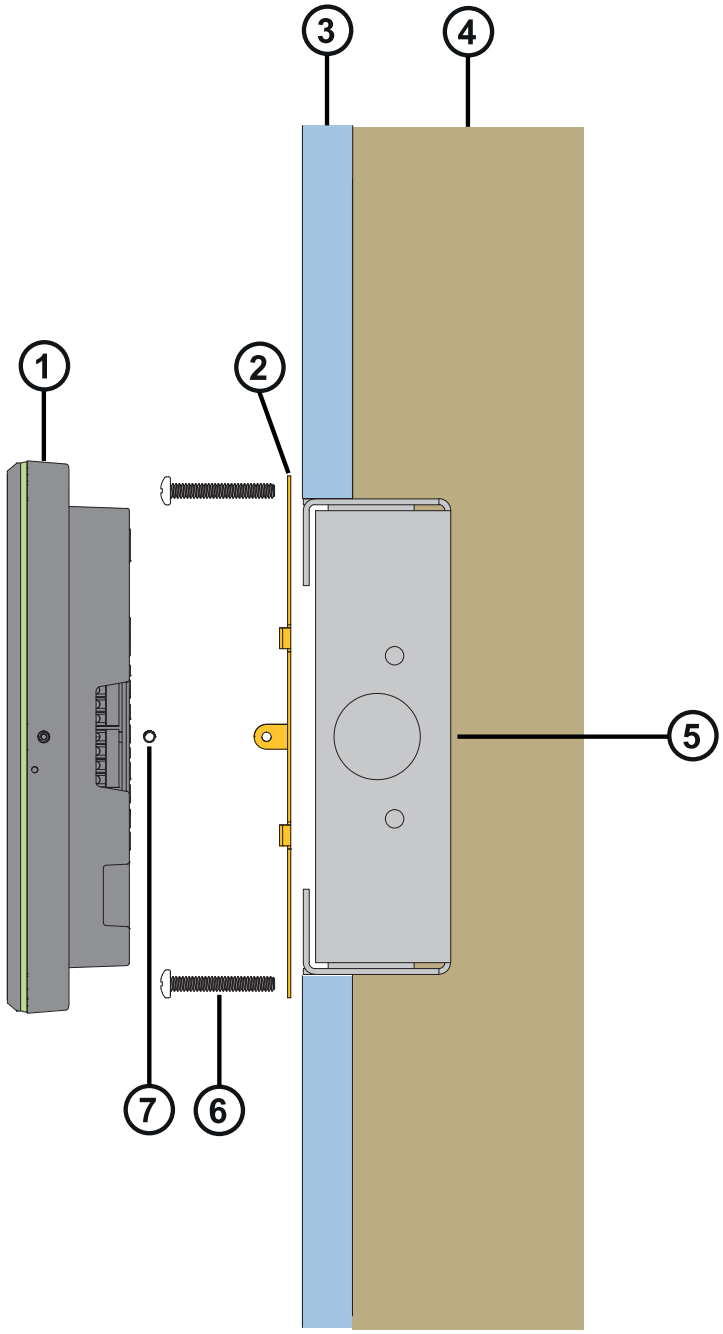


Table 2: FMS-2000C Critical Environment Controller components for a new application

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 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 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 Table 8 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. (11.113 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. (11.113 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.
15. Refer to *Wiring the remote sensor* and *Wiring the analog input to remote pressure sensors* for more information wiring the remote sensor.

Figure 8: Standard remote sensor 9-pin side view

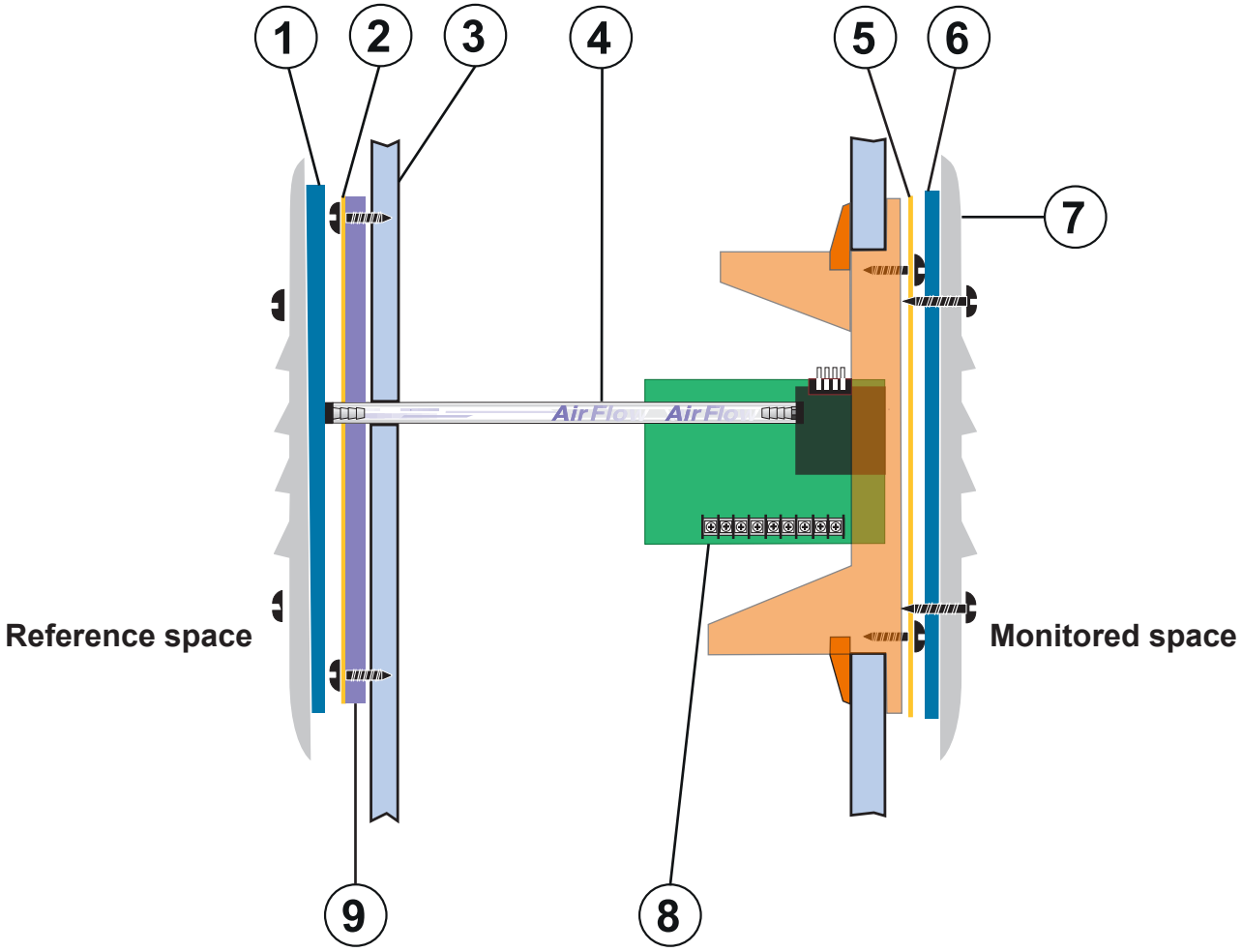


Table 3: Remote sensor installation components

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 4: 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 9: Back plane wiring diagram located on the interior back housing of the controller

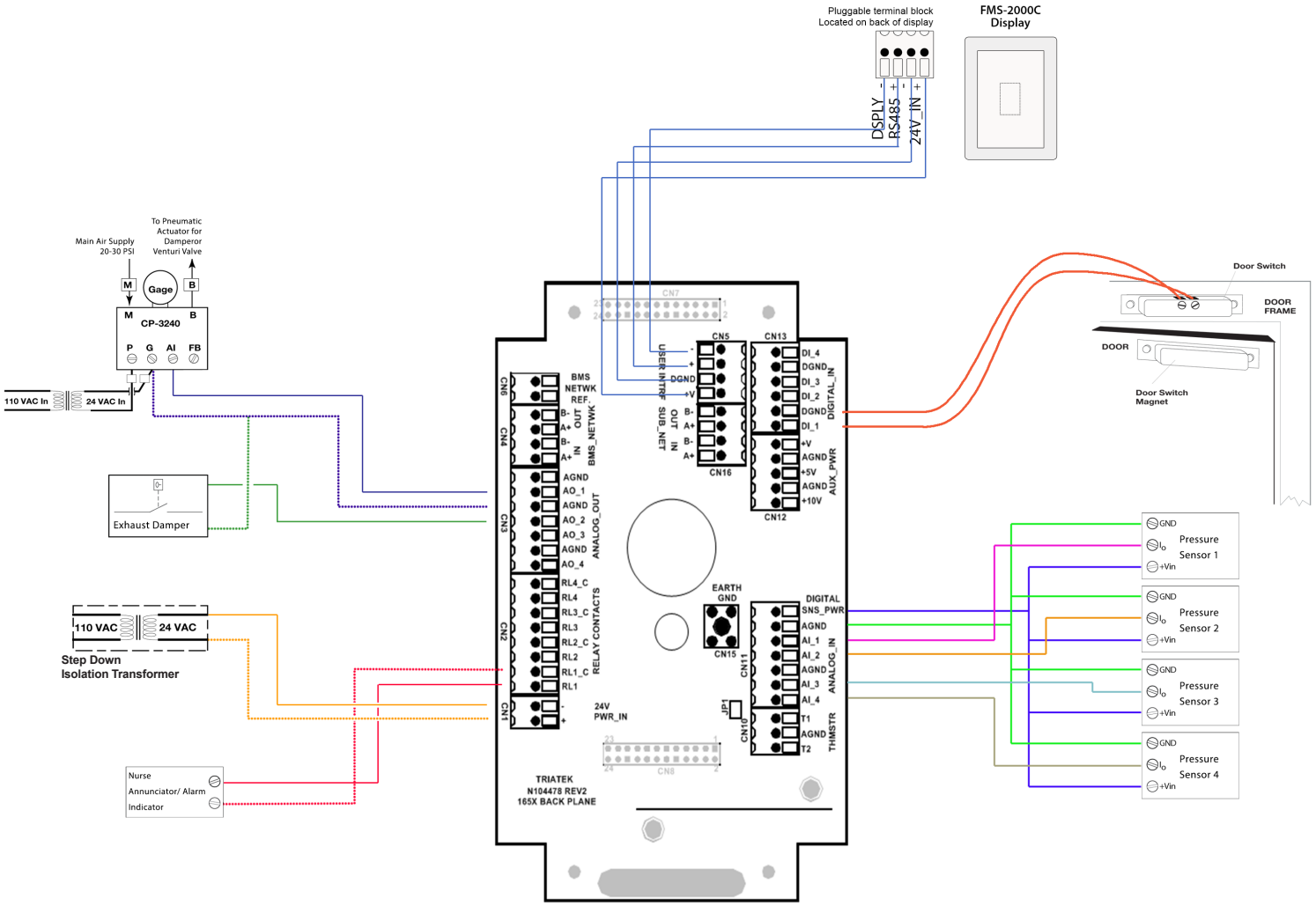


Figure 10: Front plane wiring diagram located on the interior front housing of the controller

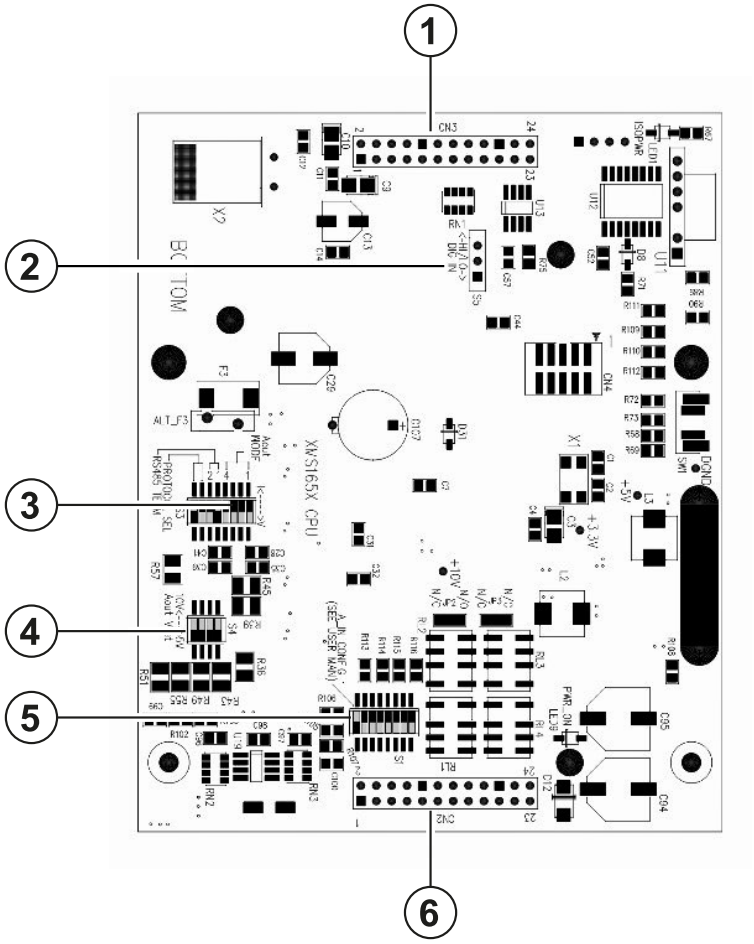
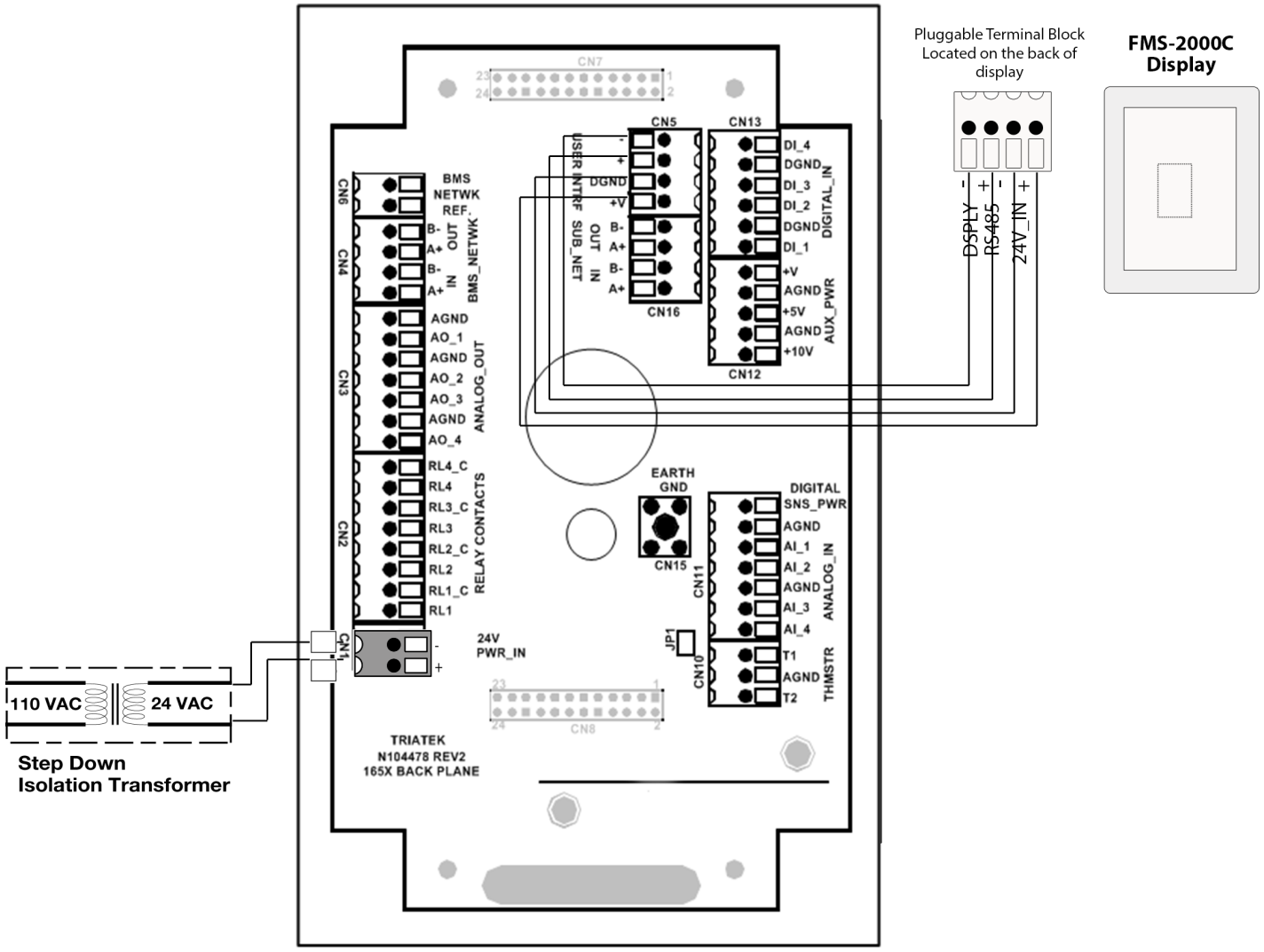


Table 5: Controller configuration DIP switch settings

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

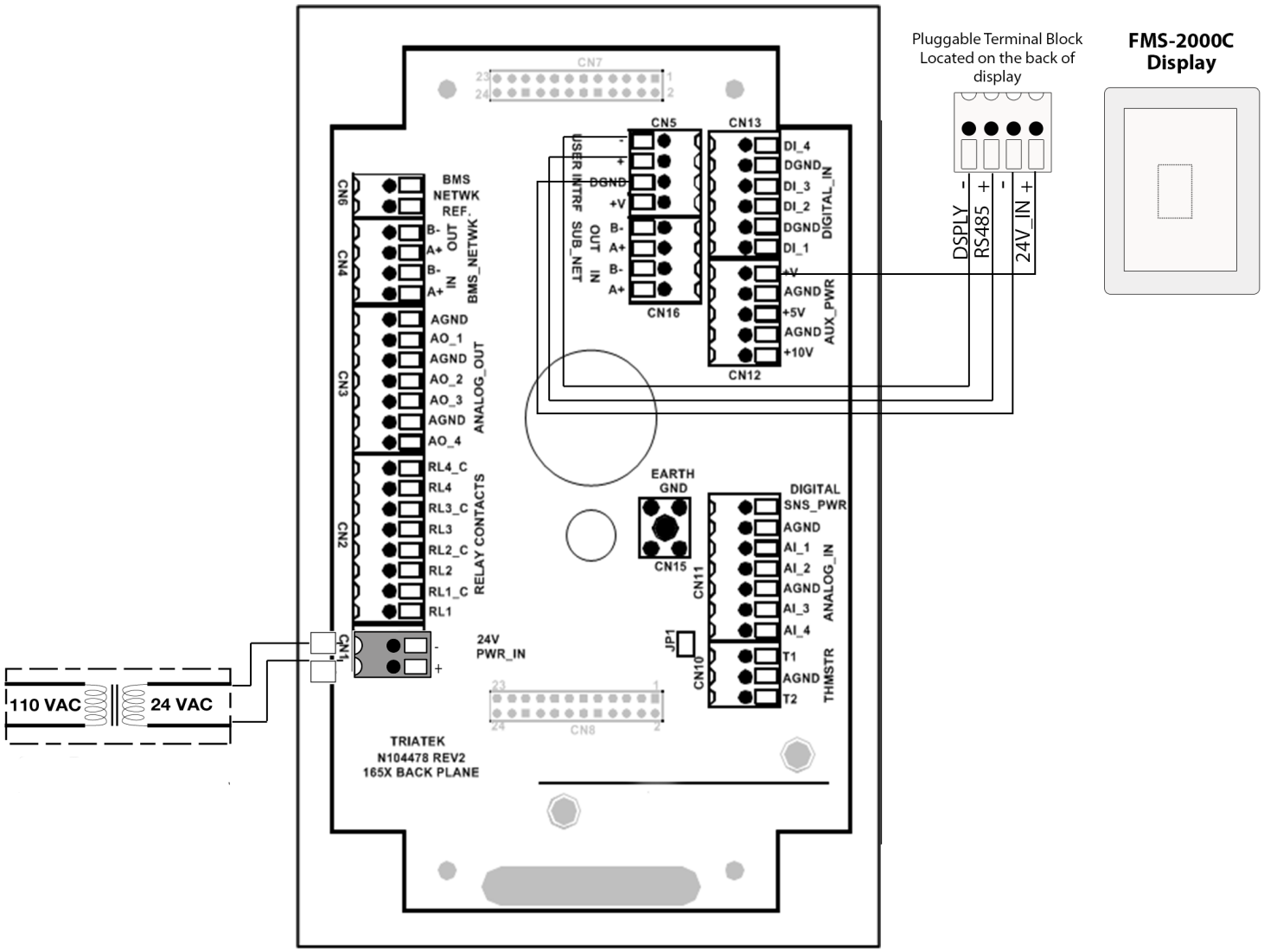
Figure 11: Display to controller wiring diagram



Retrofit of FMS-1655 controller display to FMS-2000C controller display

If you update an existing FMS-1655 Room Pressure Controller display with the FMS-2000C Critical Environment Controller display, move the red power wire to the aux power terminal block marked +V to bypass the watchdog originally designed for the FMS-1655 controller system which is no longer necessary. If you want to take advantage of the more advanced BACnet MS/TP communications on the FMS-2000C controller display, move the BACnet wiring from the controller to the back of the display. See *Wiring communications to BACnet MS/TP* for more information.

Figure 12: Retrofit of FMS-1655 controller display to FMS-2000C controller display wiring diagram



Wiring the analog output to a pneumatic damper actuator

Figure 13: Pneumatic damper actuator wiring diagram

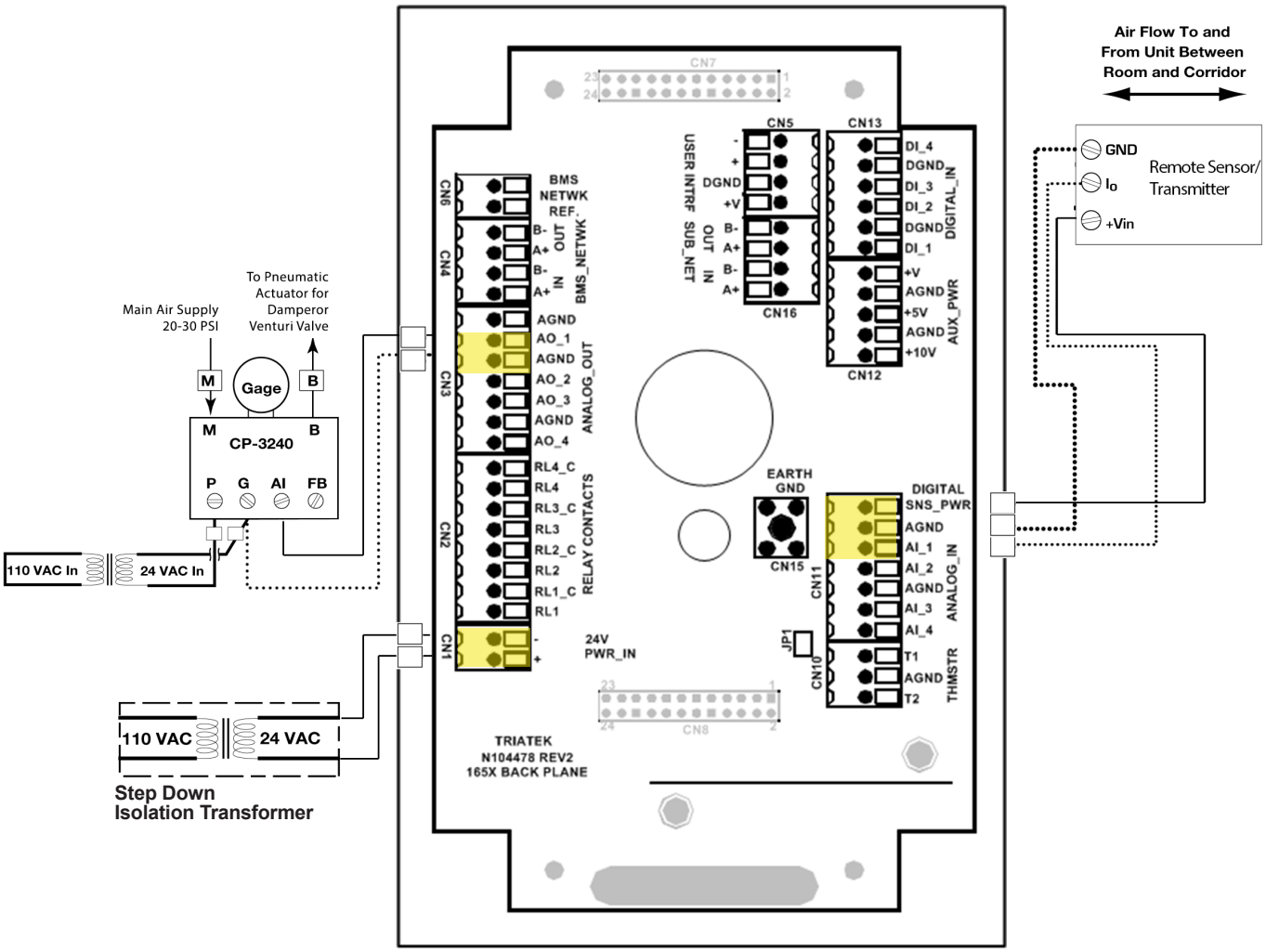


Table 6: Controller configuration DIP switch settings

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

Figure 14: Variable speed drive wiring diagram

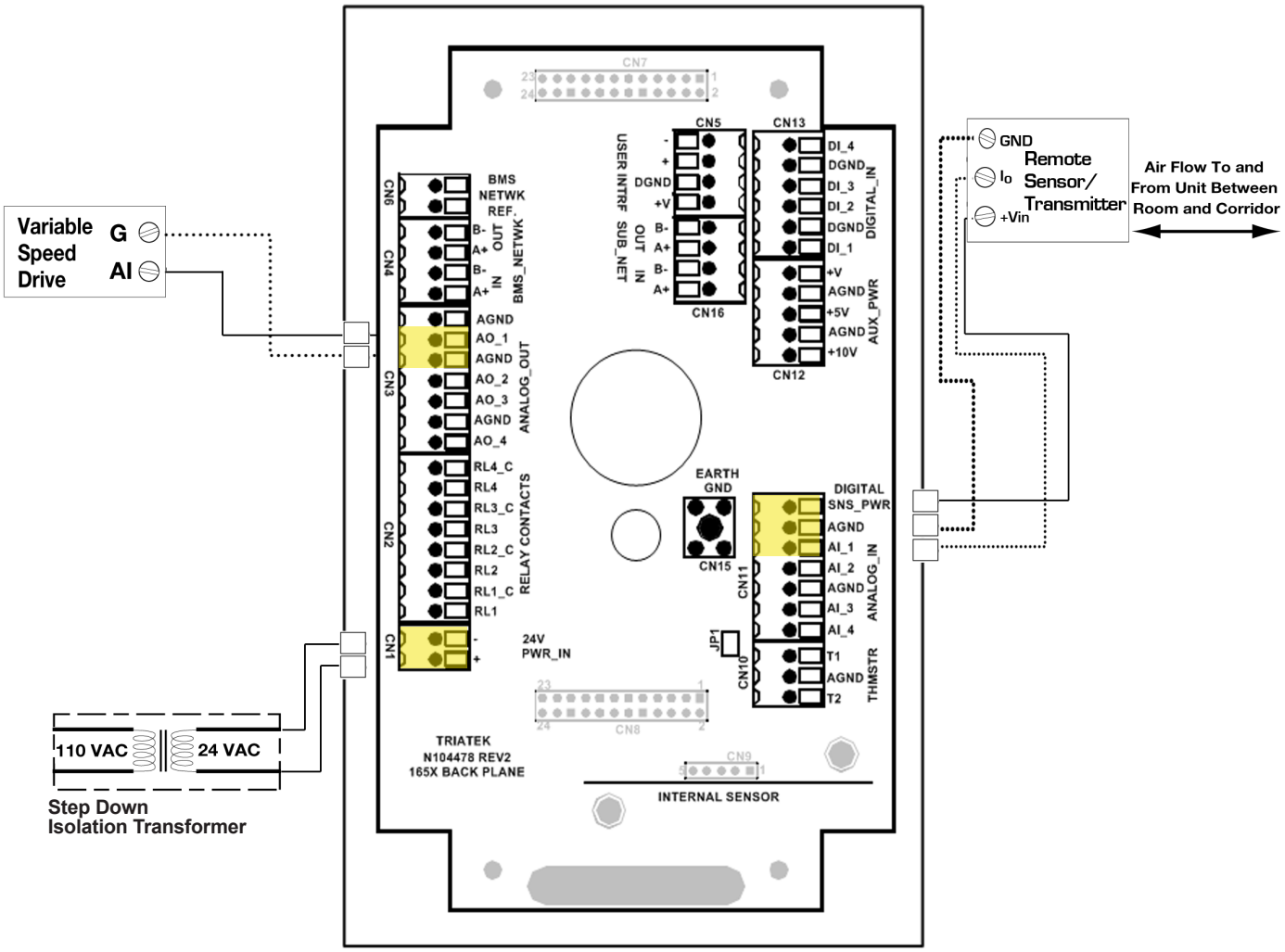


Table 7: Controller configuration DIP switch settings

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

Wiring the remote sensor

See Figure 9 for the electrical connections made via 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 15: Wiring the analog input to a single remote pressure sensor with a 4 mA to 20 mA output signal

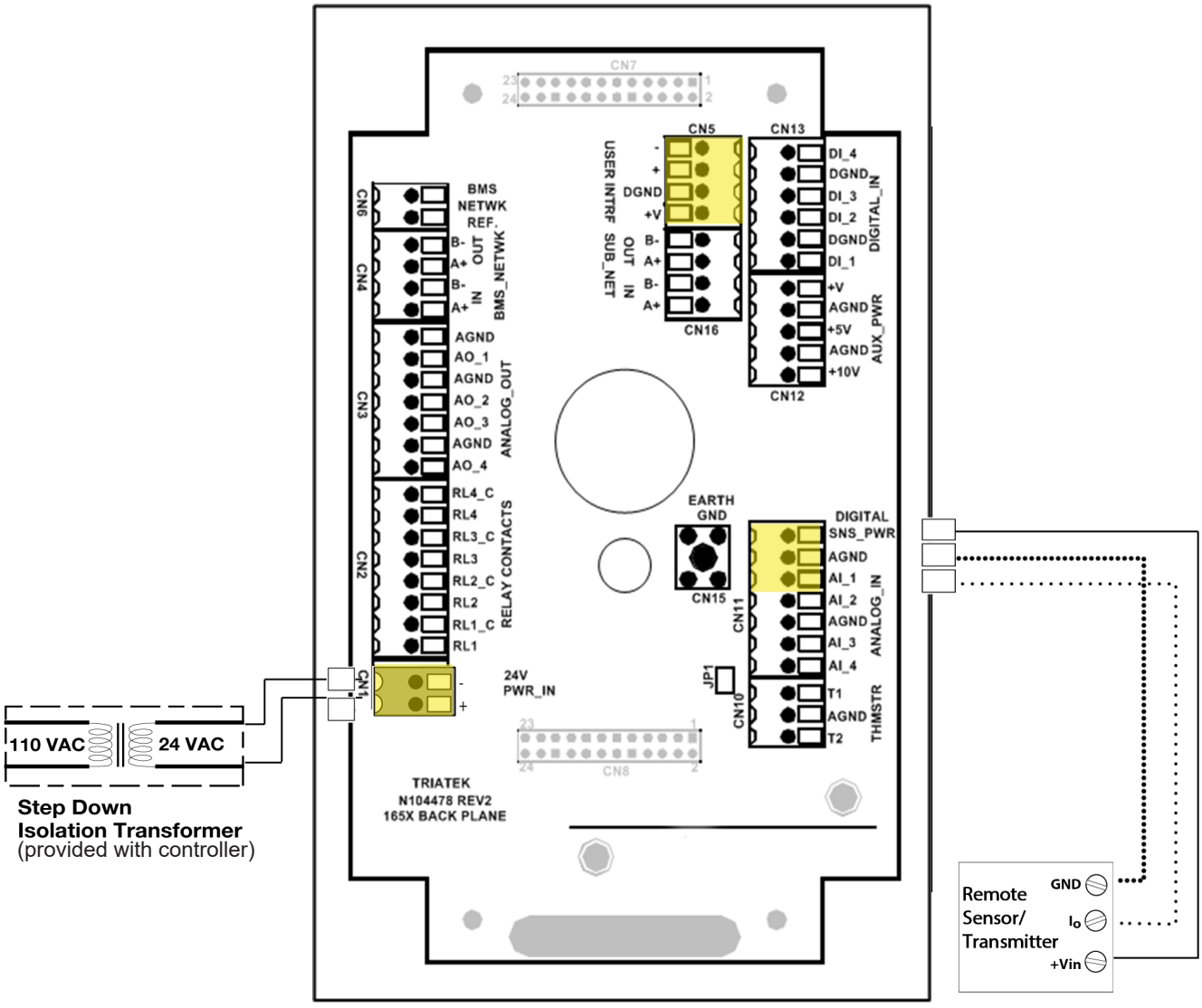


Table 8: Controller configuration DIP switch settings

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

Figure 16: Wiring the analog input to two remote pressure sensors with a 4 mA to 20 mA output signal

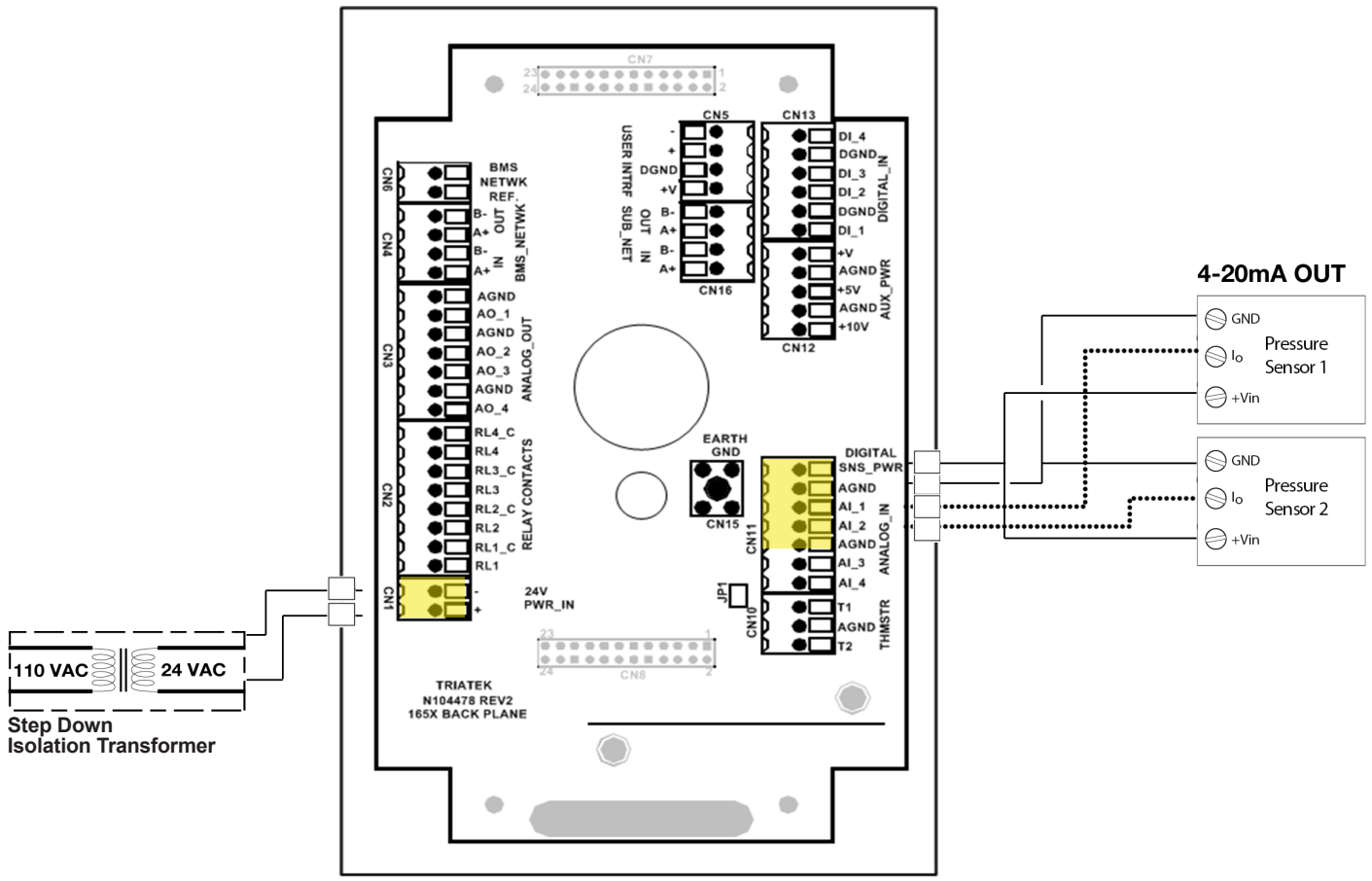


Table 9: Controller configuration DIP switch settings

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	
S1 position 2	ON	AI-2 set as 4 mA to 20 mA input
S1 position 6	OFF	

Figure 17: Wiring the analog input to three remote pressure sensors with a 4 mA to 20 mA output signal

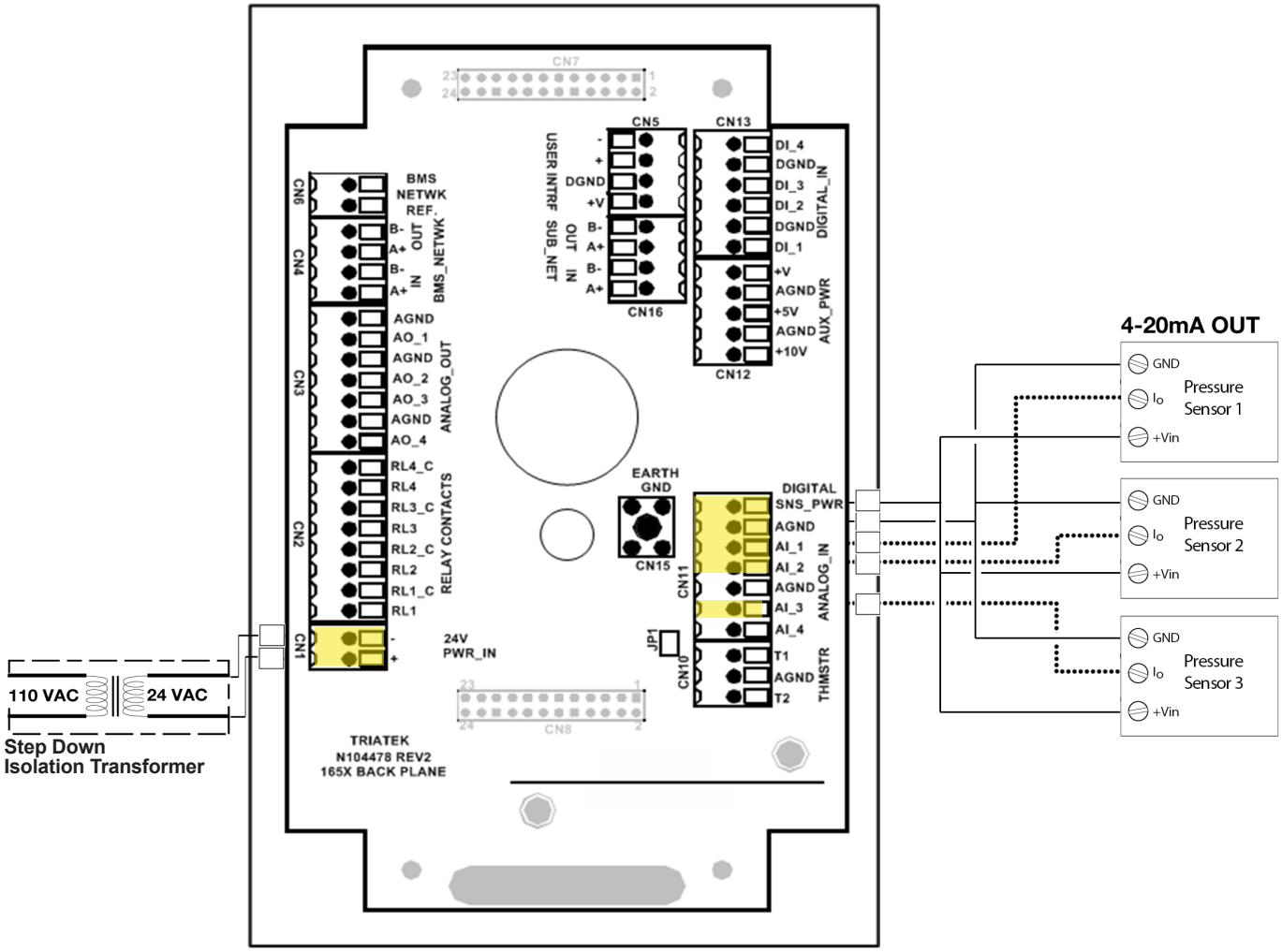


Table 10: Controller configuration DIP switch settings

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	
S1 position 3	ON	AI-3 set as 4 mA to 20 mA input
S1 position 7	OFF	

Figure 18: Wiring the analog input to four remote pressure sensors with a 4 mA to 20 mA output signal

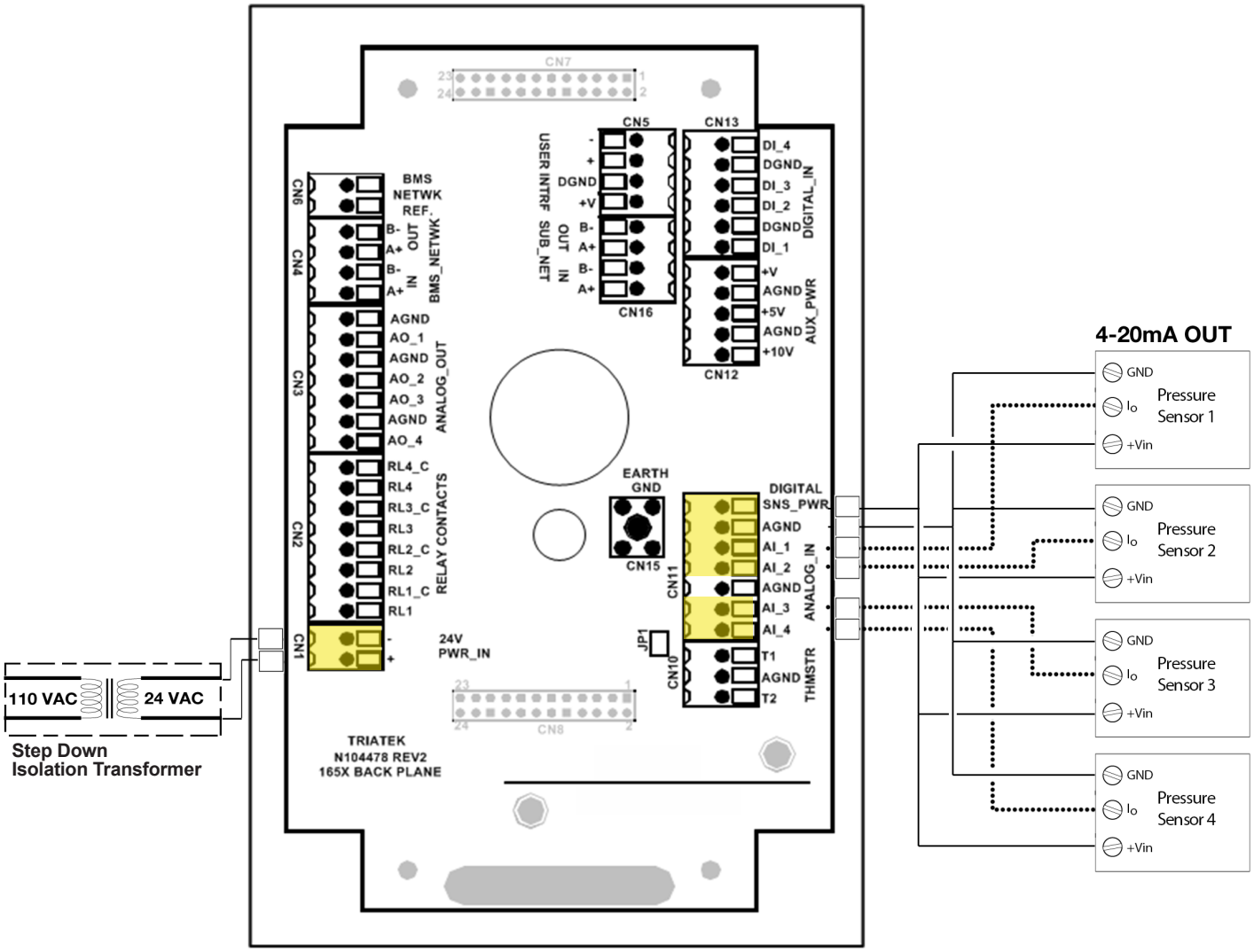


Table 11: Controller configuration DIP switch settings

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	
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 13 for third-party remote sensor guidelines.

Figure 19: Third-party sensor wiring diagram

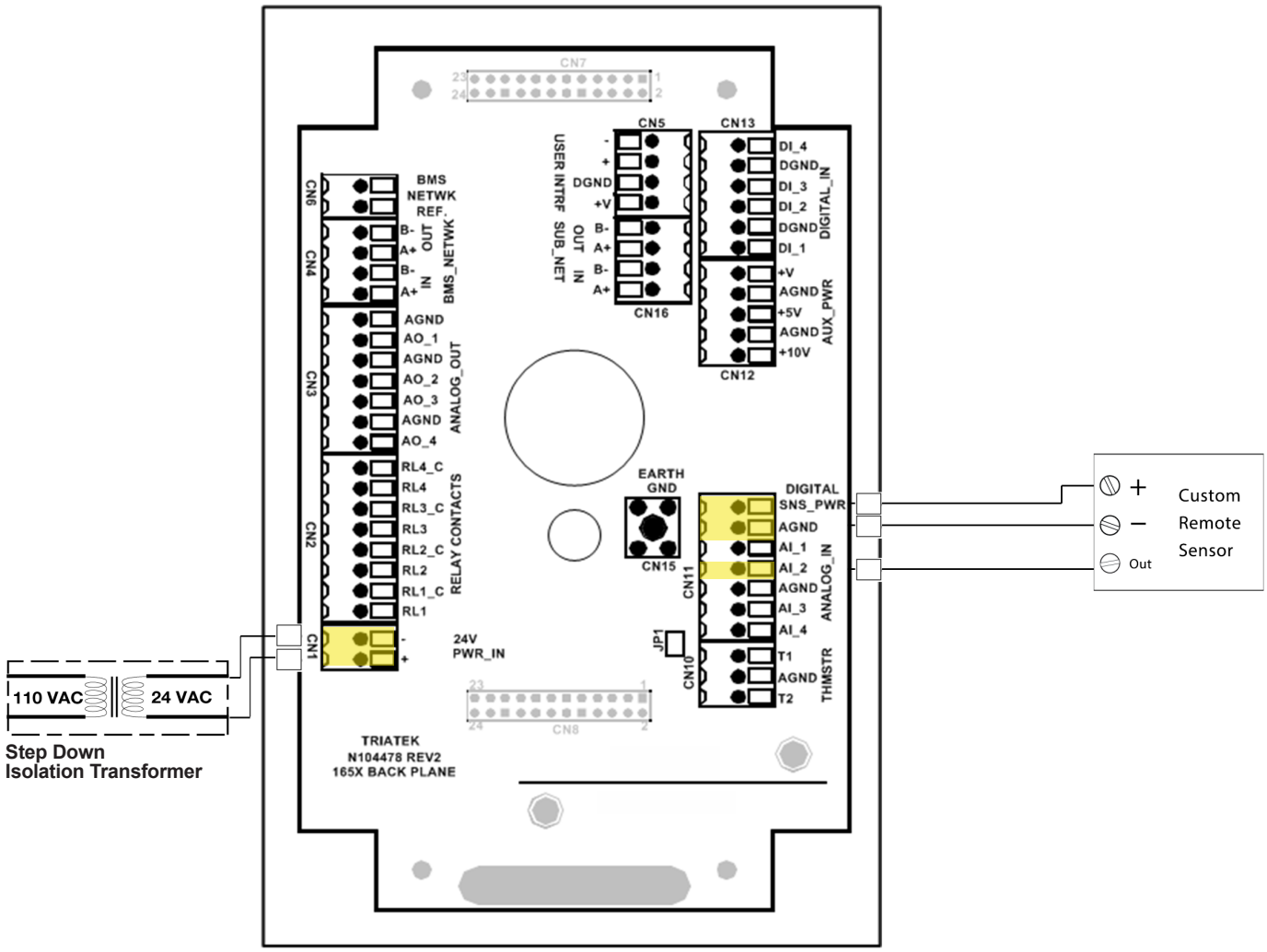


Table 12: Controller configuration DIP switch settings

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	

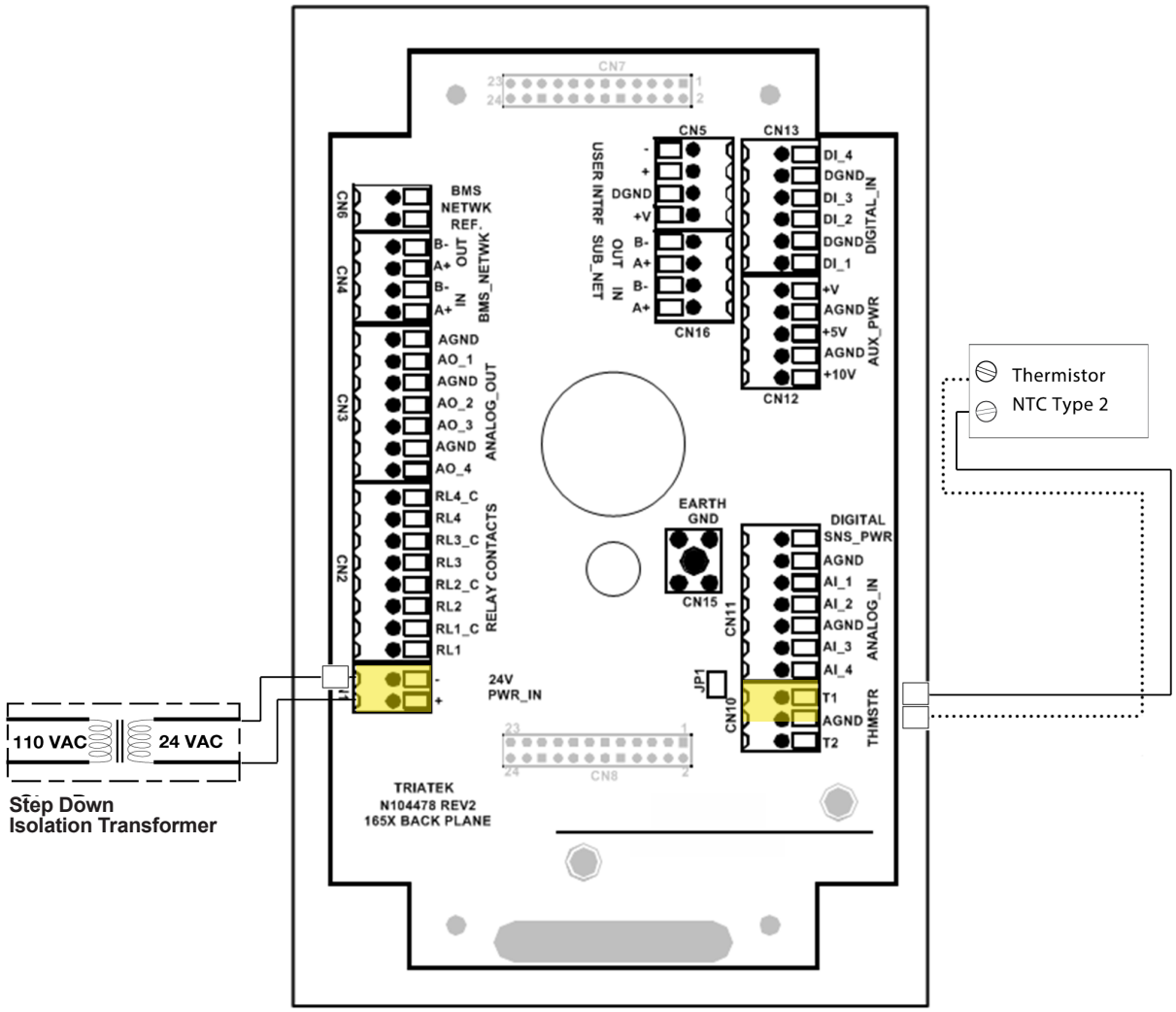
Note: Figure 19 and Table 12 show the use of AI-2 for a retrofit application as an example.

Table 13: Remote sensor guidelines

Analog input	Sensor type	Pressure range	Voltage range
Analog input 1	Differential pressure	+/- 0.01 in. (0.25 mm) +/- 0.05 in. (1.27 mm) +/- 0.10 in. (2.54 mm) +/- 0.20 in. (5.08 mm) +/- 0.25 in. (6.35 mm)	4 mA - 20 mA, default 0 mA - 20mA 0 V - 5 V 0 V - 10 V 1 V - 5 V 2 V - 10 V
Analog Input 2, 3, 4	Differential pressure Flow, air changes display supported Temperature Humidity CO_2, AI - 3 and AI - 4 only Thermostat, AI - 2 only	+/- 0.01 in. (0.25 mm) +/- 0.05 in. (1.27 mm) +/- 0.10 in. (2.54 mm) +/- 0.20 in. (5.08 mm) +/- 0.25 in. (6.35 mm)	0 V - 5 V 0 V - 10 V 0 mA - 20 mA 1 V - 5 V 2 V - 10 V 4 mA - 20 mA

Wiring the analog input for temperature or using a thermistor

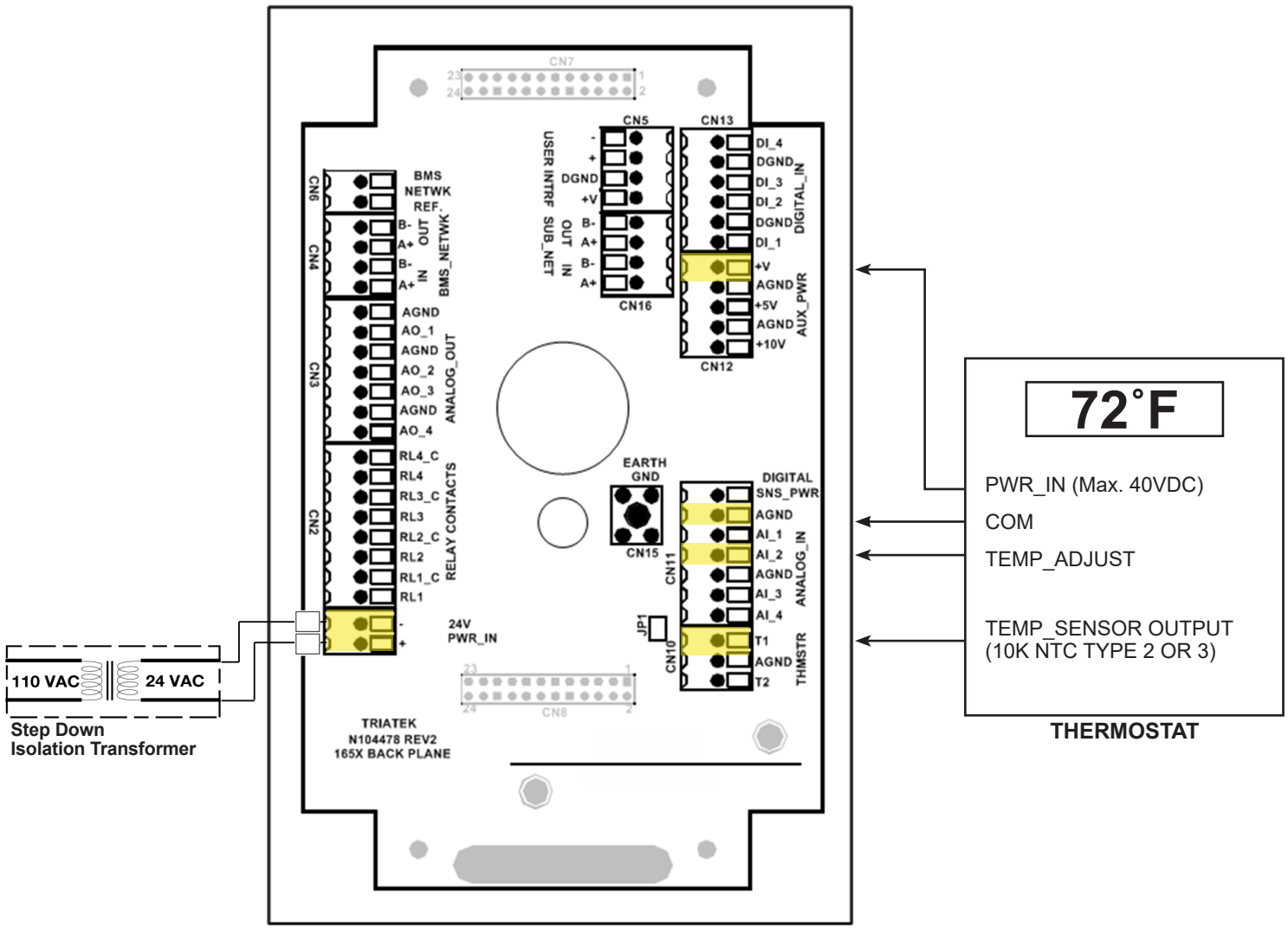
Figure 20: Temperature sensor wiring diagram



Note: This wiring diagram associates the thermistor with contacts **T1** and **AGND** for illustrative purposes only. In fact, either of the two thermistors can be used.

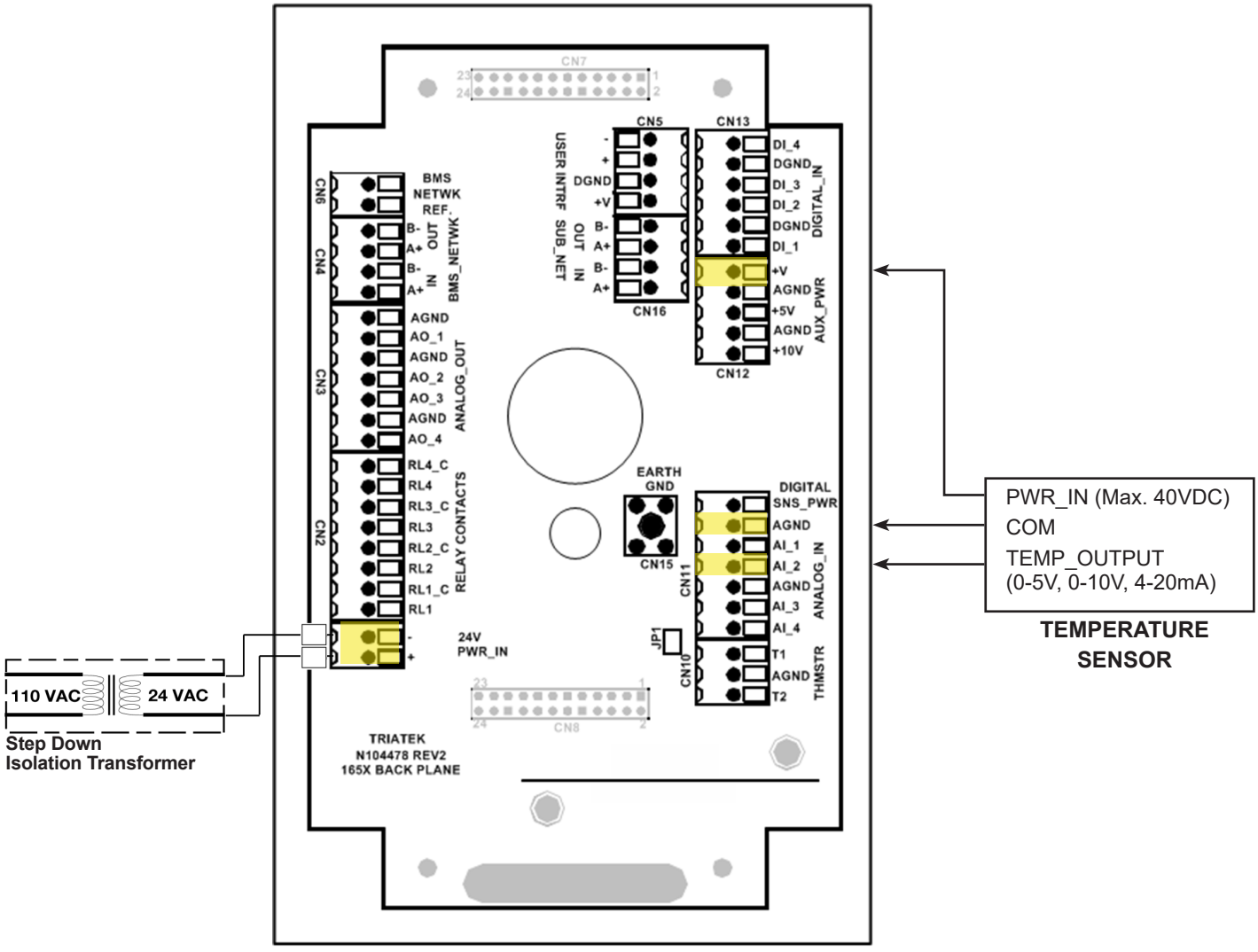
Wiring the analog input to a room thermostat

Figure 21: Room thermostat wiring diagram



Wiring the analog input for precision temperature

Figure 22: 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

A switch with normally-open or normally close contacts can be used 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 23: Door switch wiring diagram

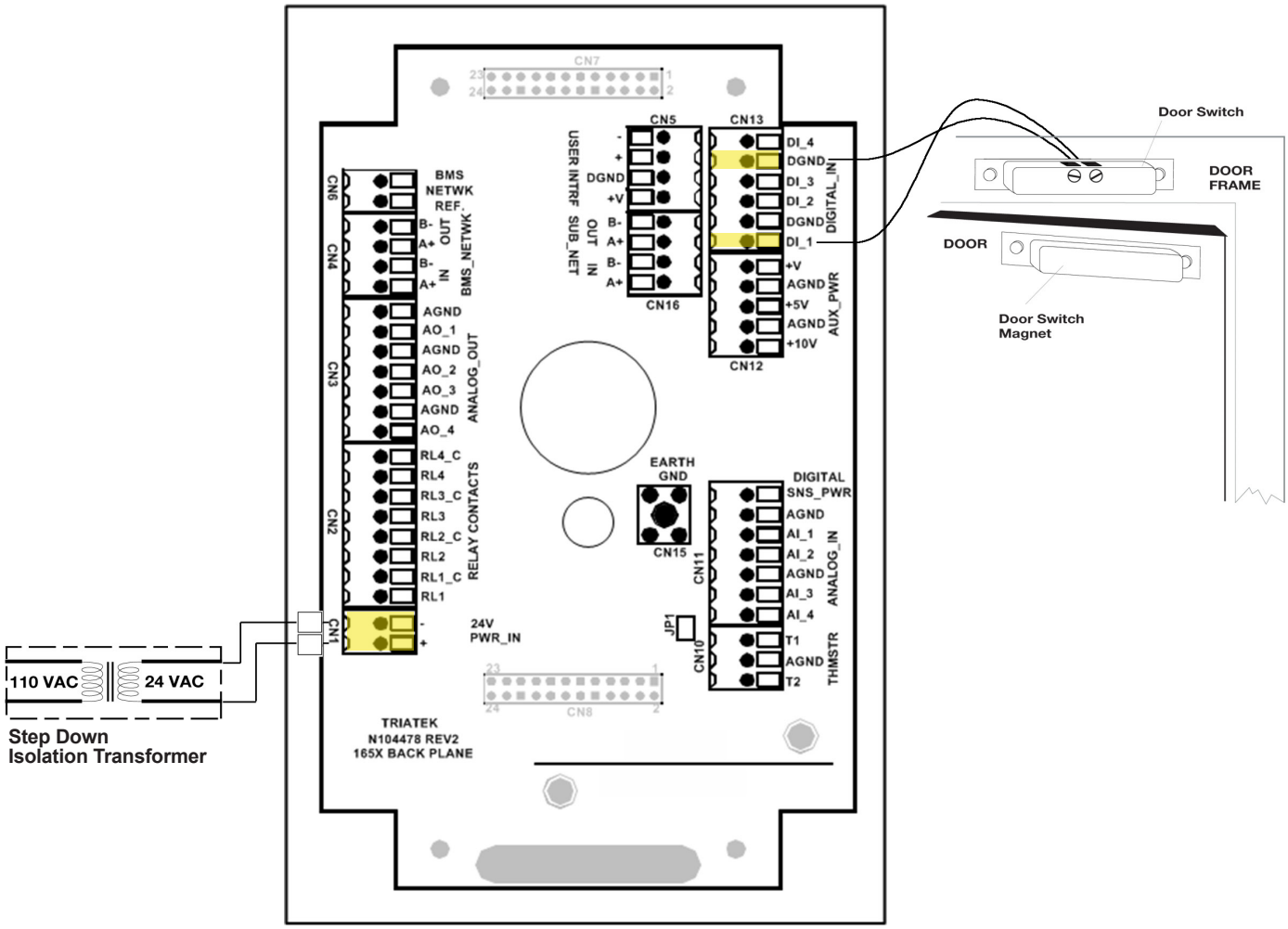
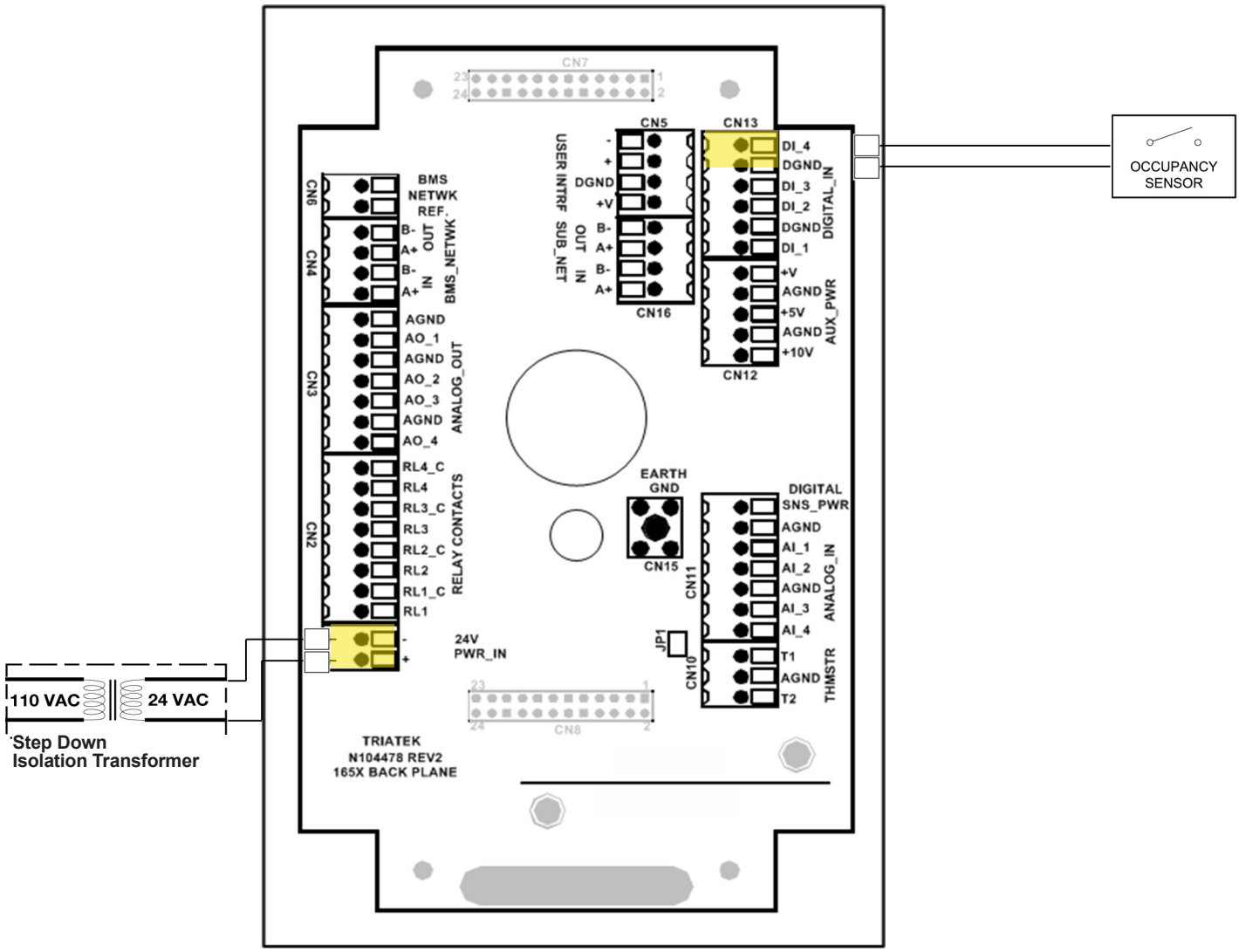


Table 14: Controller configuration slide switch settings

Slide switch	Up or down	Input or output configuration
S5	Up	active, low digital input

Wiring the digital input to occupancy sensor

Figure 24: Occupancy sensor wiring diagram



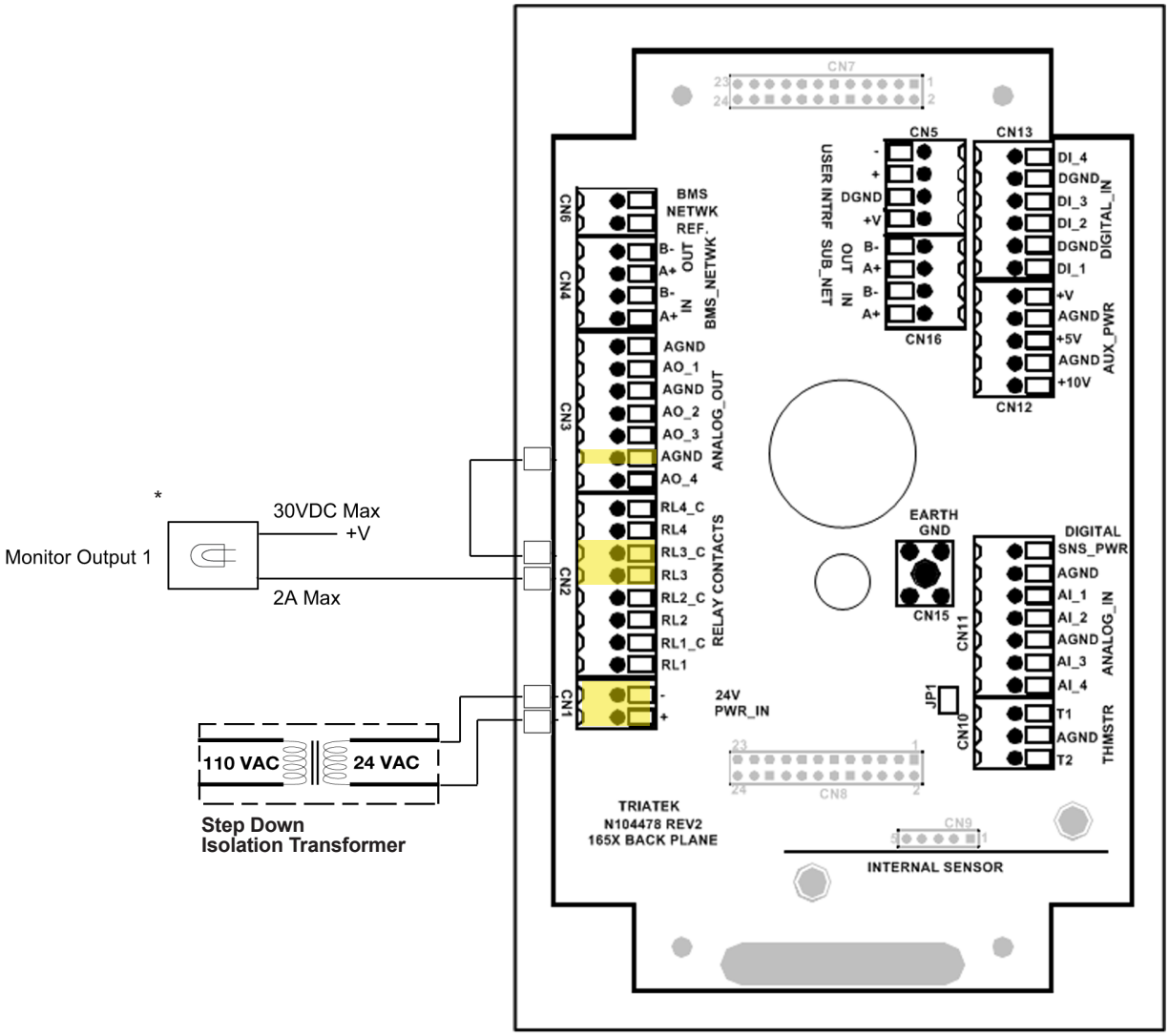
Note: This wiring diagram associates the occupancy sensor with contacts **DI_4** and **DGND** for illustrative purposes only. Digital inputs DI_2 or DI_3 can be used.

Table 15: Controller configuration slide switch settings

Slide switch	Up or down	Input or output configuration
S5	Up	active, low digital input

Wiring the relay output to alarm

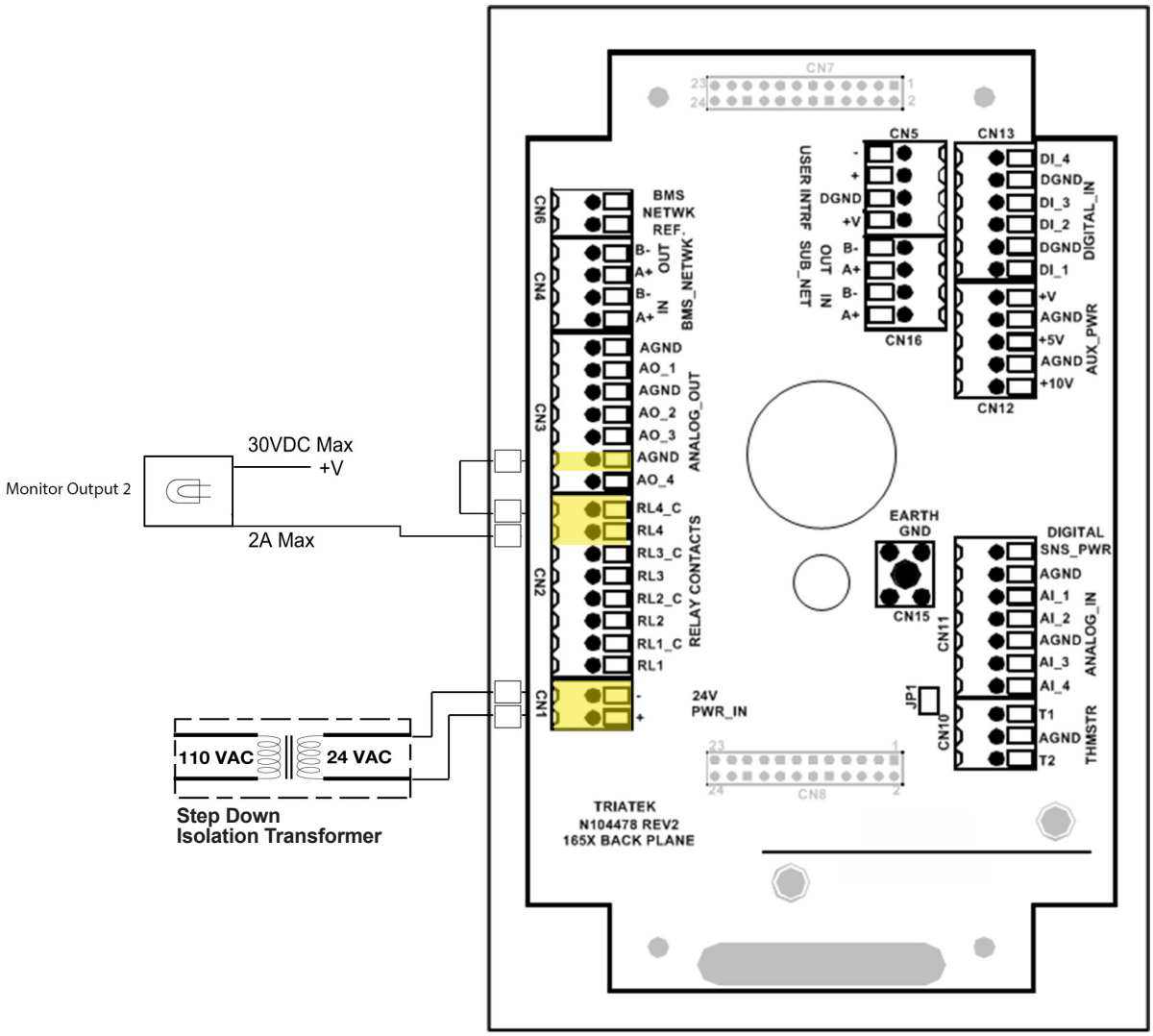
Figure 25: Alarm wiring diagram



Note: This wiring diagram associates monitor output 1 with contacts **RL3** and **RL3_C** for illustrative purposes only. Any of the four relays and the corresponding relay C can be used.

Wiring the relay output to warn

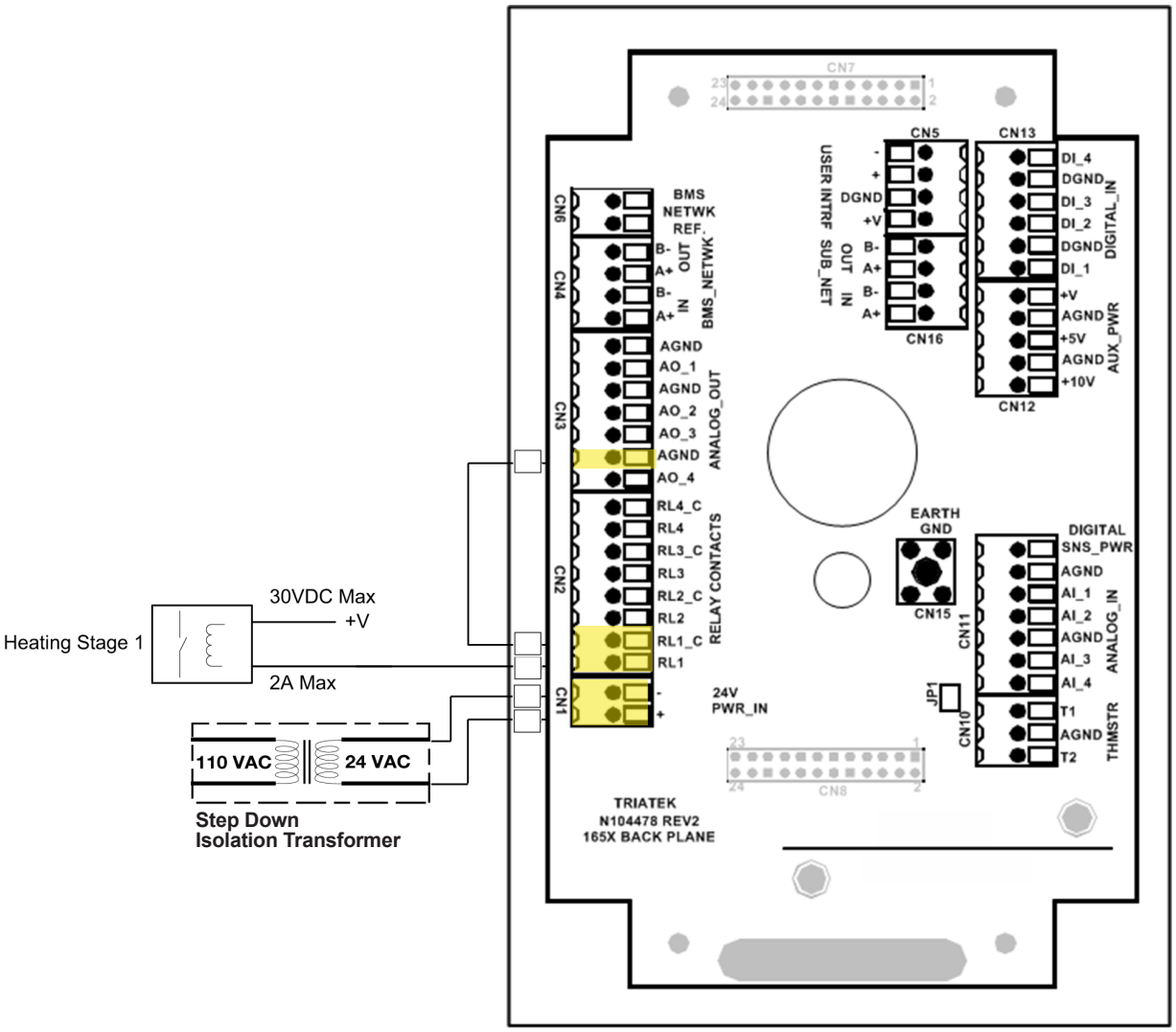
Figure 26: Warning wiring diagram



Note: The above example associates monitor output 2 with contacts **RL4** and **RL4_C** for illustrative purposes only. Any of the four relays and the corresponding relay C can be used.

Wiring relay output 1

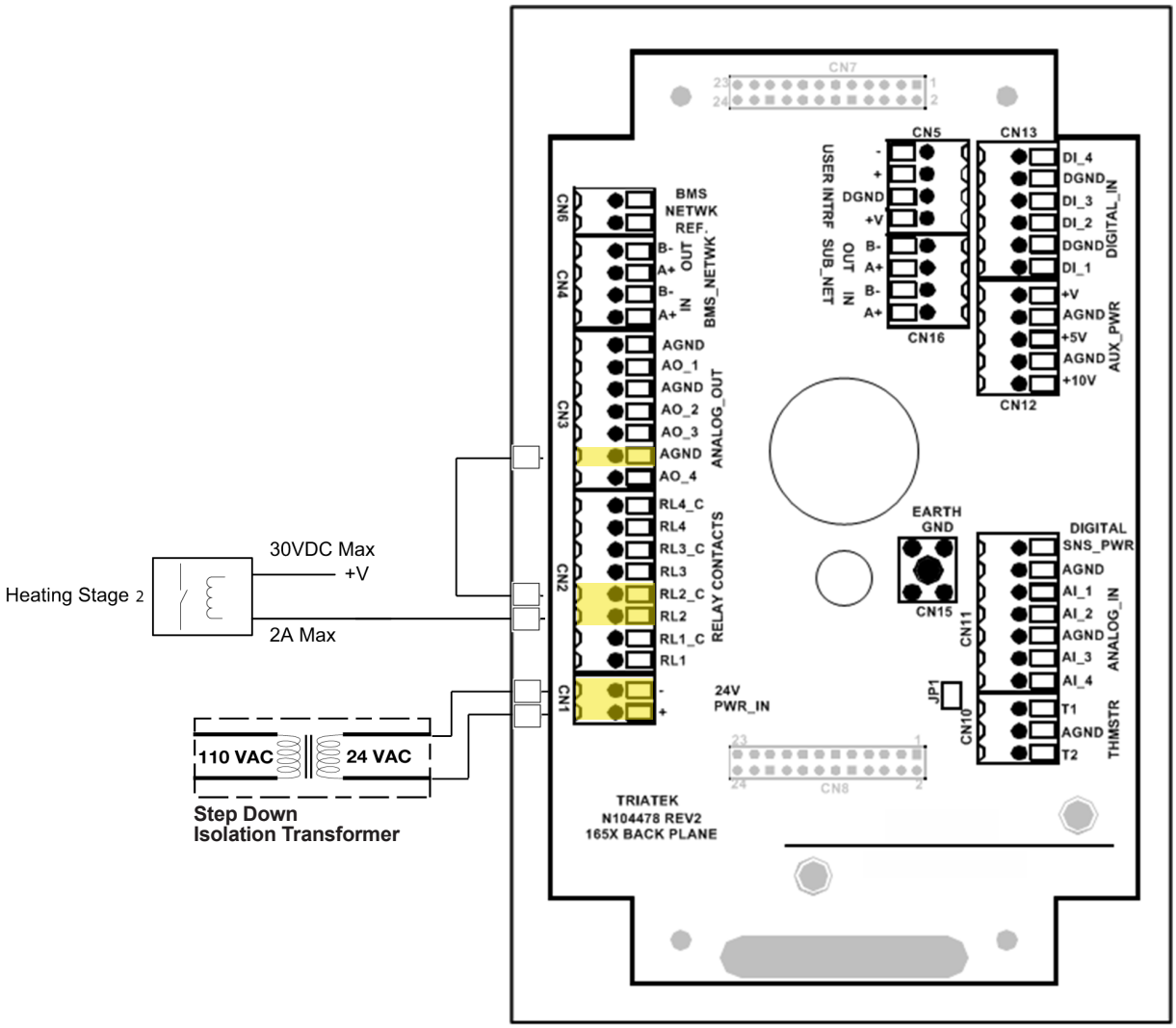
Figure 27: Relay output wiring diagram



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

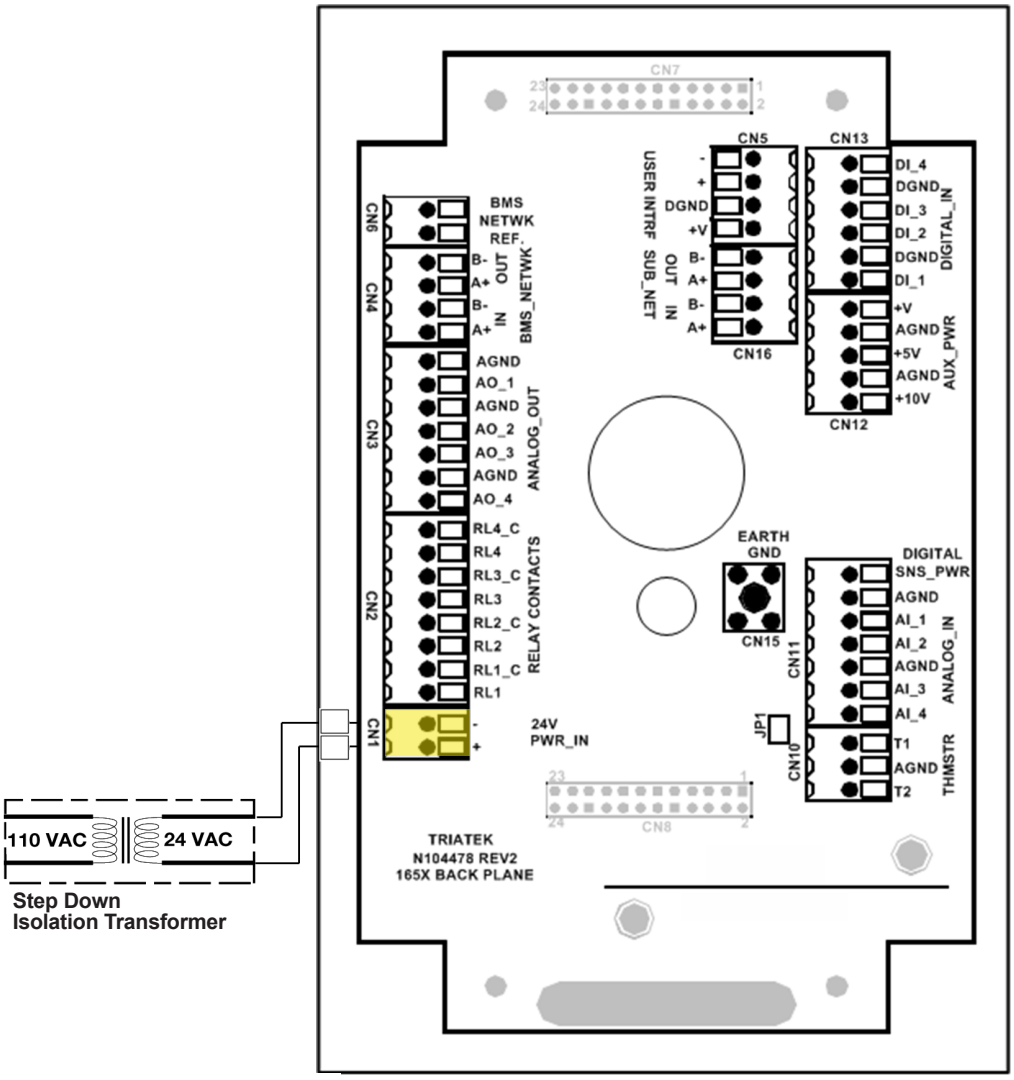
Figure 28: Relay output 2 wiring diagram



Note: The above example associates heating state 2 with contacts **RL2** and **RL2_C** for illustrative purposes only. Any of the four relays and the corresponding relay C can be used.

Wiring power

Figure 29: 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 the Universal 120 V/240 V to 24 V stepdown isolation transformer

Install the FMS-2000C Critical Environment Controller 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-2000C controller. To check if your FMS-2000C includes an isolated power supply, see *Product code matrix*.

Figure 30: Universal 120 V/240 V to 24 V stepdown isolation transformer

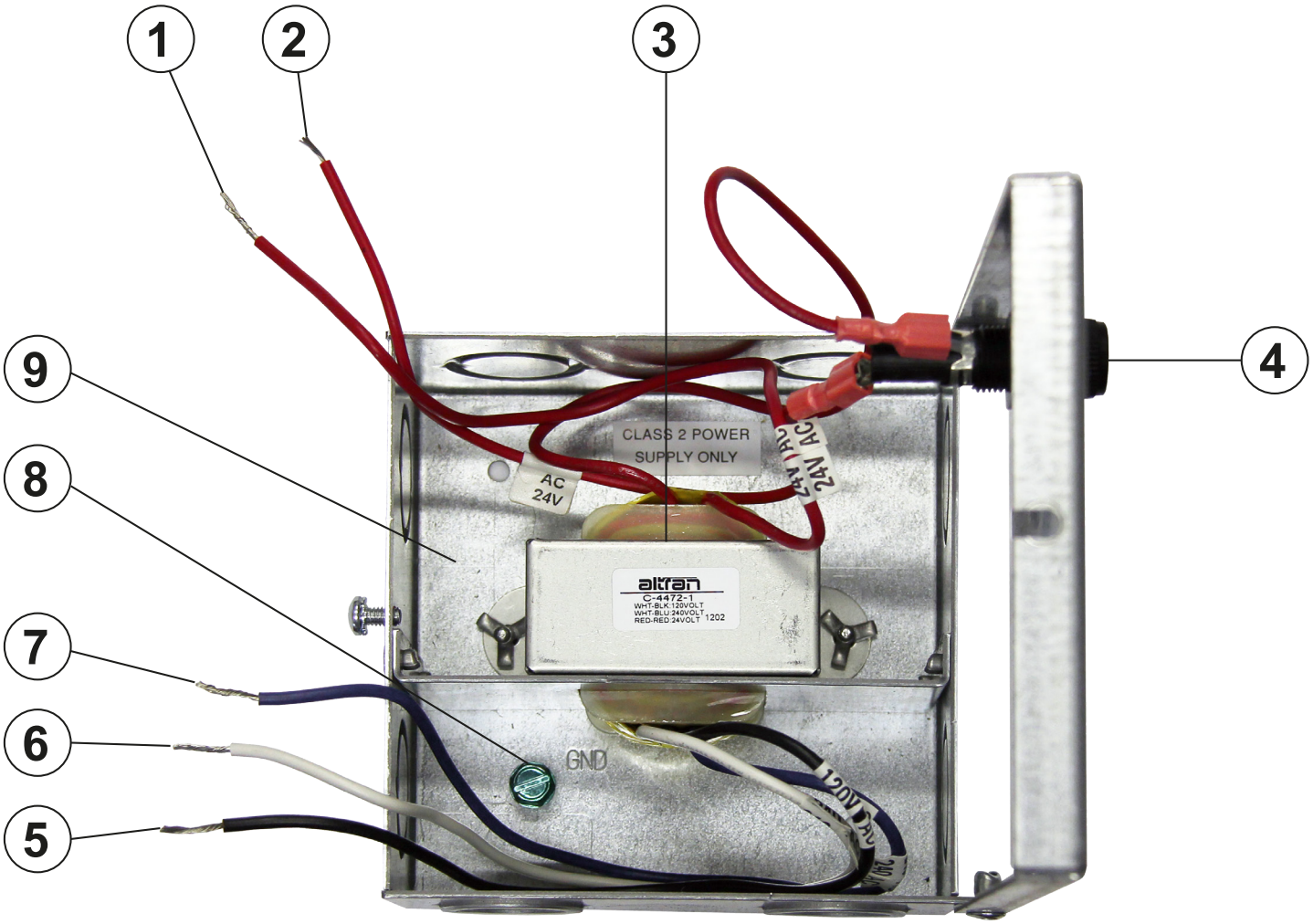


Table 16: Universal 120 V/240 V to 24 V stepdown isolation transformer

Item	Description
1	Red, 24 VAC connected to FMS-2000C controller
2	Red, 24 VAC connected to FMS-2000C controller
3	Transformer 50 Hz/60 Hz
4	1 A slow blow fuse
5	Black, 120 VAC, 50 Hz/60 Hz
6	White, VAC common for 120 VAC and 240 VAC, 50 Hz/60 Hz
7	Blue, 240 VAC, 50 Hz/60 Hz
8	Ground
9	Only Class 2, Limited Energy, or LPS isolated power supply wiring in this compartment

Wiring the 24 V to 24 V isolation transformer

Figure 31: 24 V to 24 V isolation transformer

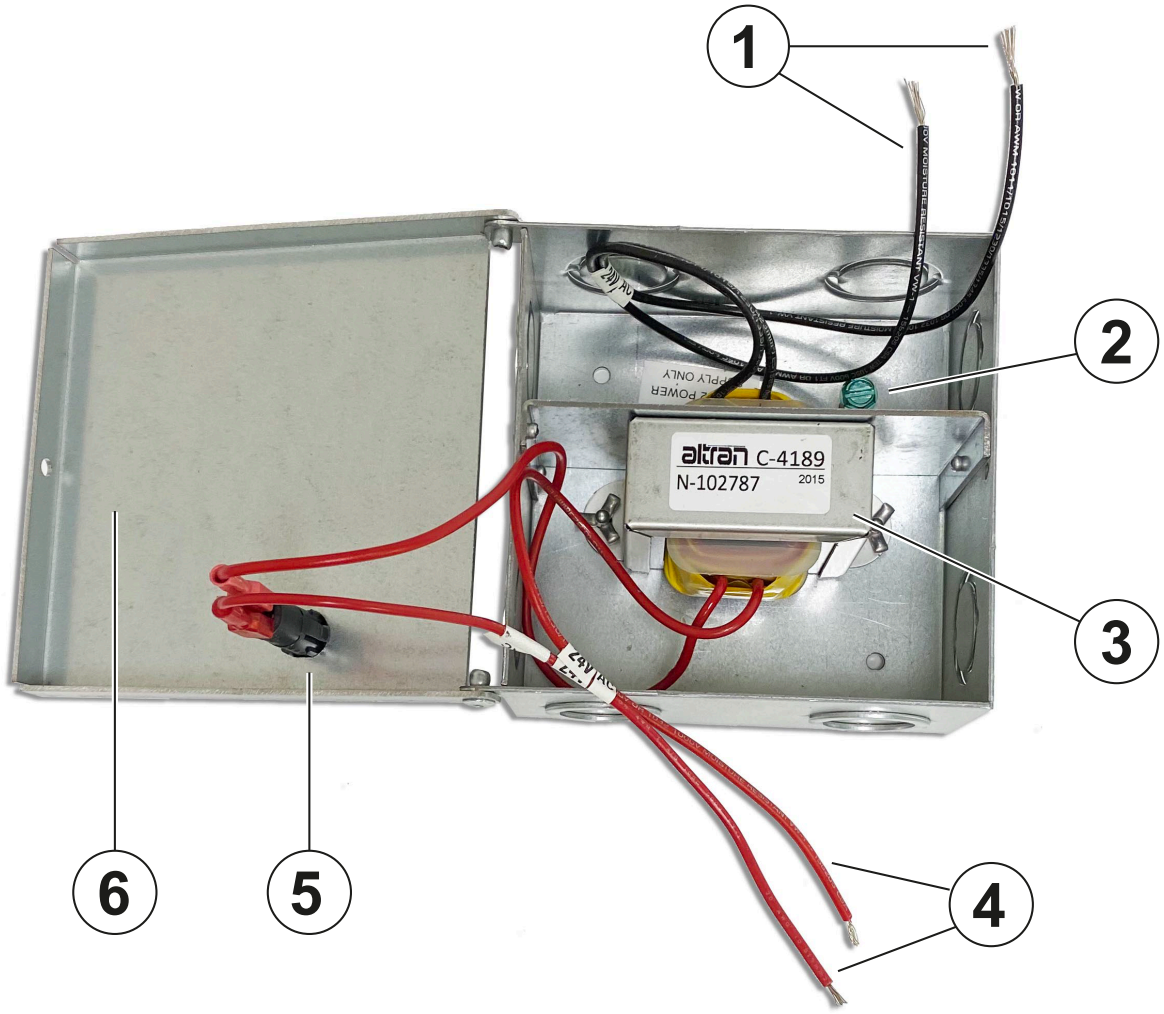


Table 17: 24 V to 24 V isolation transformer

Item	Description
1	Black, 24 VAC input, 50 Hz/60 Hz
2	Ground
3	Isolation transformer, 24 VAC to 24 VAC, 30 VA
4	Red, 24 VAC output, 50 Hz/60 Hz
5	1 A slow blow fuse
6	Class 2, Limited Energy, or LPS isolated power supply wiring in this compartment

IMPORTANT: Install the FMS-2000C Critical Environment Controller 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-2000C controller.

IMPORTANT : Installez le FMS-2000C Critical Environment Controller 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 contrôleur FMS-2000C dans un panneau électrique approuvé et situé à l'écart, mais à proximité.

Wiring communications to BACnet MS/TP

Figure 32: BACnet MS/TP wiring diagram

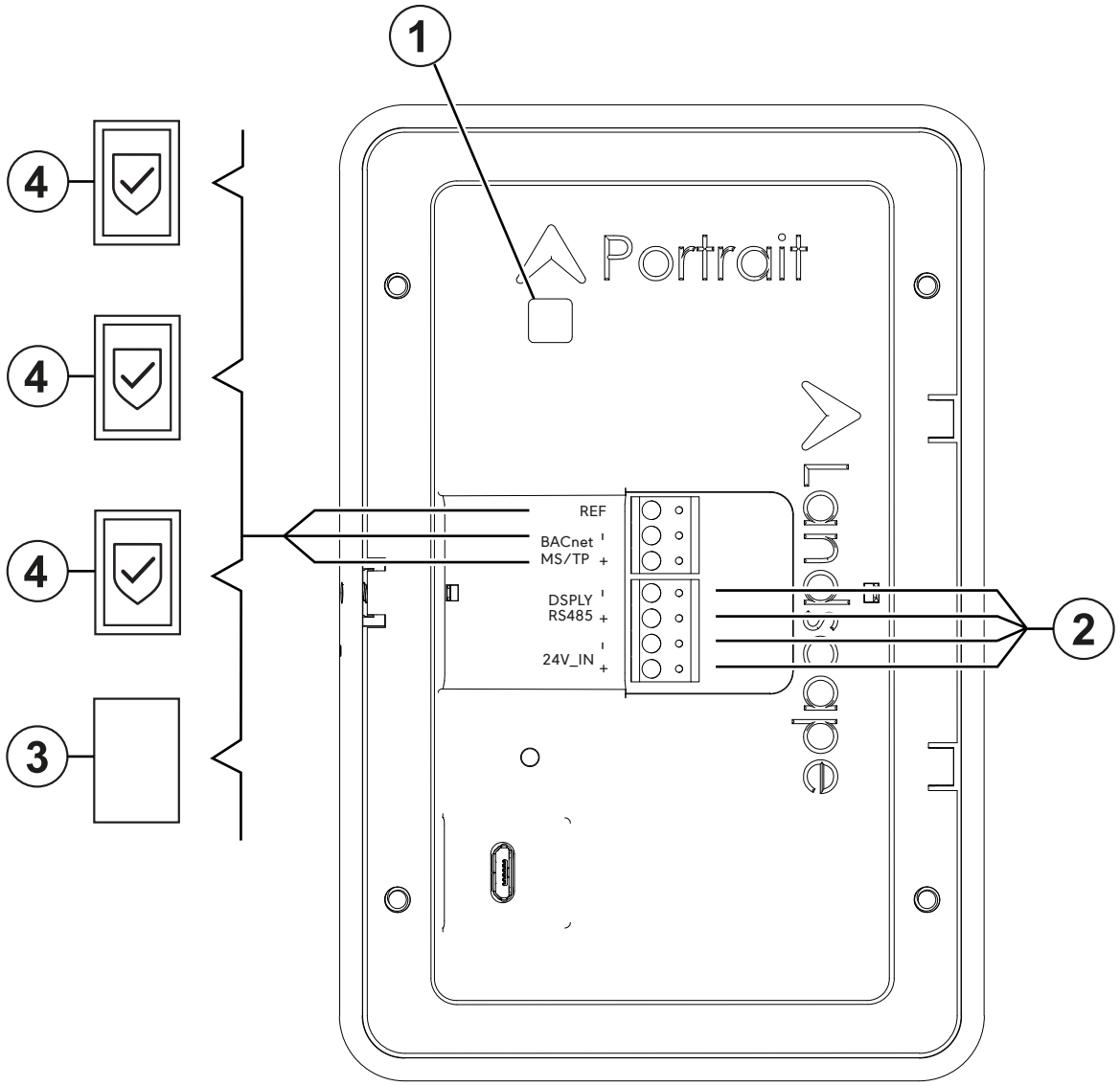
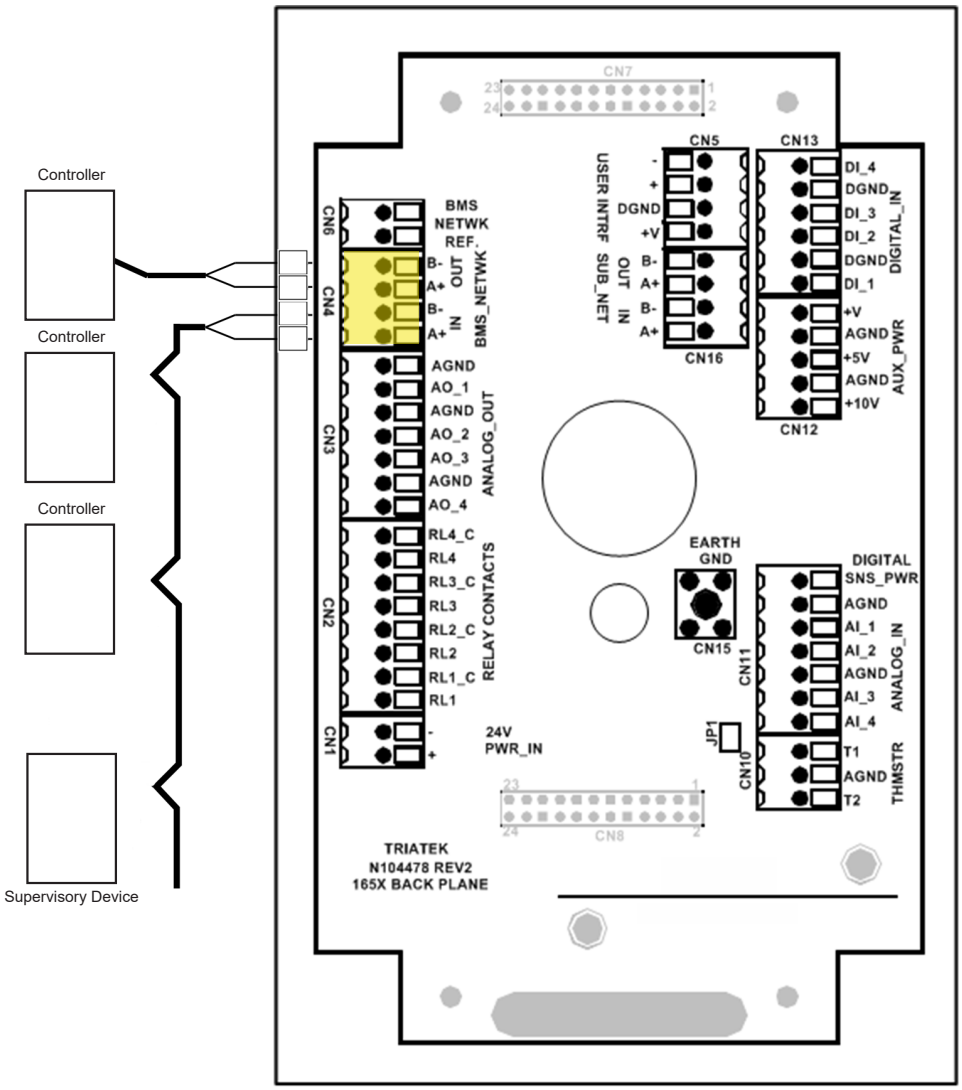


Table 18: BACnet MS/TP wiring components

Number	Component
1	DIP switch
2	Controller
3	Supervisory device
4	FMS-2000C Critical Environment Controller

Wiring communications to Metasys N2 open

Figure 33: Metasys N2 open wiring diagram



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

Table 19: 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

Table 20: Options DIP switch S2 mode configuration

Product type	OFF = FMS	ON = N/A
Mode select	OFF = FMS-2000C	ON = N/A
Operational mode	OFF = Demo mode	ON = Run mode

Configuring main controller module settings

Table 21: 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 24 for other inputs.
- FMS-1655 Remote Pressure Controller flush mount with internal sensor does not support the FMS-2000C controller display.

Table 22: 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 23: Network configuration DIP switch S3

RS485 network termination	OFF = disabled	ON = enabled
RS485 display termination	OFF = disabled	ON = enabled

Note: See Table 25 for protocol selection settings.

Configurations and settings

Table 24: Analog input configuration settings 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 25: Protocol selection settings

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

Table 26: Controller 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 27: Controller 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 28 to Table 33 for a list of points available for integration in a building management system (BMS). They contain the objects for open BACnet integration.

Table 28: Analog inputs for integration in a BMS

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 29: Analog outputs for integration in a BMS

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 30: Binary inputs for integration in a BMS

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 31: Binary outputs for integration in a BMS

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 32: Analog values for integration in a BMS

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-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
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

Object	Analog values	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 33: Multistate objects for integration in a BMS

Object	Multistate objects	Read or write
MV-1	Primary isolation mode	Read only
MV-2	Secondary isolation mode	Read only
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 34 to Table 39 for a list of points available for integration in a BMS. They contain the objects for open N2 integration.

Table 34: Analog inputs for integration in a BMS

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 35: Analog outputs for integration in a BMS

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 36: Binary inputs for integration in a BMS

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 37: Binary outputs for integration in a BMS

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 38: Internal float values for integration in a BMS

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 39: Internal integer values for integration in a BMS

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

Intended use	Indoor use
Overvoltage category	II
Altitude	Up to 2000 m
Pressure range	± 0.2500 in. W.C.
Alarm range	± 0.2500 in. W.C.
Display range	± 0.2500 in. W.C.
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.
Displayed pressure resolution	± 0.0001 in. W.C.
Control capability	Up to 4 independent spaces
I/O Resources	4 universal inputs (0 mA to 20 mA, 4 mA to 20 mA, 0 VDC to 5 VDC, 0 VDC to 10 VDC) 2 thermistor inputs (NTC Type 2 or 3, 10K at 77° F) 4 digital inputs (active-high or active-low 0 VDC to 5 VDC or 0 VDC to 24 VDC) 4 universal outputs (0 mA to 20 mA, 4 mA to 20 mA, 0 VDC to 5 VDC, 0 VDC to 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, surface mount for mounting to standard single-gang wall box
Alarm indication	360° 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, Metasys N2 open
Power requirement	24 VAC (nominal, 21.6 VAC minimum/26.4 VAC maximum), 50/60 Hz 30 VA power supply, Class 2, Limited Energy, or LPS

Power consumption		30 VA maximum
Optional input power supply		Universal 120 VAC/240 VAC-to-24 VAC, 30 VA step-down isolation transformer
		24 VAC-to-24 VAC, 30 VA isolation transformer
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)
Power supply enclosure dimensions (height x width x depth)		5 in. x 4.7 in. 2.3 in. (127 mm x 119.38 mm x 58.42 mm)
Compliance CE	**United States**	UL Listed to UL 61010-1; FCC 47CFR Part 15; BTL Listed
	Canada	cUL Listed to CAN/CSA C22.2 NO. 61010-1; ICES-003
	Europe	CE (EMC Directive) to EN 61326-1
	Australia and New Zealand	RCM Mark (Australian Radiocommunications Act) to EN 61326-1

Product code matrix

Table 40: FMS-2000C Critical Environment Controller ordering guide

Feature	Code letter or number and description	Product code number example: FMS2C-BT21
Unit	FMS = Flow Monitor Station (FMS)	FMS
Series	2 = 2000 C = Controller	2C
Network	B = BACnet/N2 (Controller included)	B
Mounting style	T = Thin S = Surface	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 by others 1 = 120 V to 240 V/24 V 2 = 24 V/24 V	1

[1] If you plan to use third party sensors, select 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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