

CMS-2000

CENTRAL MONITORING STATION INSTALLATION GUIDE



INSTALLATION CHECKLIST



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 PERSONAL INJURY OR PROPERTY DAMAGE.

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



RISK OF PROPERTY DAMAGE.

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

RISK OF PROPERTY DAMAGE.

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

RISK OF PROPERTY DAMAGE.

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

RISK OF PROPERTY DAMAGE.

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

RISK OF PROPERTY DAMAGE.

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

RISK OF PROPERTY DAMAGE.

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

RISK OF PROPERTY DAMAGE.

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



Do not install or use this CMS-2000 Central Monitoring System in or near environments where corrosive substances or vapors could be present. Exposure of the CMS-2000 monitor to corrosive environments may damage the device's internal components and will void the warranty.



Do not install this CMS-2000 Central Monitoring System in condensing, wet, or damp environments. Moisture may cause damage to the CMS-2000 monitor.



Only qualified personnel should install or service Johnson Controls® products. These instructions are a guide for such personnel. Carefully follow all instructions in this document and all instructions for the CMS-2000 Central Monitoring System.



Use copper conductors only. Make all wiring connections in accordance with local, national, and regional regulations. Do not exceed the CMS-2000 Central Monitoring System's electrical ratings.



Do not install the CMS-2000 Central Monitoring System 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 CMS-2000 Central Monitoring System and may void the warranty.



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 CMS-2000 Central Monitoring System.



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

INSTALLATION CHECKLIST



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 BLESSURE CORPORELLE OU DE DOMMAGES MATÉRIELS.

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



RISQUE DE DÉGÂTS MATÉRIELS.

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

RISQUE DE DÉGÂTS MATÉRIELS.

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

RISQUE DE DÉGÂTS MATÉRIELS.

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

RISQUE DE DÉGÂTS MATÉRIELS.

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

RISQUE DE DÉGÂTS MATÉRIELS.

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

RISQUE DE DÉGÂTS MATÉRIELS.

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



RISQUE DE DÉGÂTS MATÉRIELS.

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



N'installez ou n'utilisez pas CMS-2000 Central Monitoring System dans, ou près, d'environnements où des substances ou vapeurs corrosives peuvent être présentes. L'exposition du CMS-2000 à des environnements corrosifs peut endommager les composants internes de l'appareil et annuler la garantie.



N'installez pas CMS-2000 Central Monitoring System dans un environnement humide, mouillé ou il se produit de la condensation. L'humidité peut causer des dommages au CMS-2000.



Seul le personnel qualifié peut installer et entretenir les produits Johnson Controls. Ces instructions constituent un guide pour ce type de personnel. Suivez attentivement toutes les instructions de ce document et toutes les instructions du CMS-2000 Central Monitoring System.



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 CMS-2000 Central Monitoring System.



N'installez pas le contrôleur d'environnement critique CMS-2000 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 CMS-2000 Central Monitoring System et peut annuler la garantie.



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 CMS-2000 Central Monitoring System.



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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DESCRIPTION

The CMS-2000 Central Monitoring Station provides instant monitoring for up to eight rooms or fume hoods, or a combination of rooms and hoods. Use the CMS-2000 at nurses' stations, or to monitor multiple spaces in large laboratories.

The CMS-2000 creates a centralized location to easily access critical information like room pressure, isolation mode, exhaust air flow, face velocity, and alarm status of multiple spaces and fume hoods. Users can access vital information on a single screen and quickly make informed decisions, and ensure their critical spaces are kept safe.

The CMS-2000 communicates on its own subnet with the FMS and HMS family of controllers.

If a monitored parameter goes outside its prescribed range, the CMS-2000 activates an audible and visual alarm, that alerts staff to the alarm condition. The CMS-2000 features the patented 360° Safety Halo™ edge lighting, which enables staff to monitor spaces down long corridors with a simple glance. The green, yellow, and red visual alarms also help to reduce audible alarm fatigue, as you can silence the audible alarm with the tap of a finger.

FEATURES AND BENEFITS

TABLE 1: FEATURES AND BENEFITS

Features	Benefits
Parameters	Monitors up to eight FMS-2000C Critical Environment Controllers or HMS-1655 Fume Hood controllers, or any combination of eight controlled parameters in total. No additional power is necessary
Lighting	360° Safety Halo illuminated edge that helps staff monitor spaces down long corridors
Design	Intuitive user interface for fast and easy setup
Display	Thin, full color 5 in. (127 mm) diagonal, high definition (720 px x 1280 px) touch screen display that works with rubber, nitrile and latex gloves
Non-volatile Memory	Saves user settings in case of a power outage
Password Protection	Two access levels to prevent unauthorized access
Global Release	Offers a user interface in 17 languages
Alarms	Visual and audible alarm for pressure
Demonstration Video	End user demonstration video accessible from the display

APPLICATIONS

- Airborne infection isolation (AII) rooms - negative pressure
- Protective environment (PE) isolation rooms - positive pressure
- AII and PE room with an anteroom
- Operating rooms (ORs)
- Compounding pharmacies
- Pandemic preparedness rooms
- Intensive care units
- Laboratories and vivariums
- Burn units
- Bronchoscopy suites
- Mortuary preparation rooms and autopsy rooms
- Data centers
- Laundry areas, food prep, construction

INSTALLING THE CMS-2000 THIN MOUNT DISPLAY FOR A RETROFIT APPLICATION

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

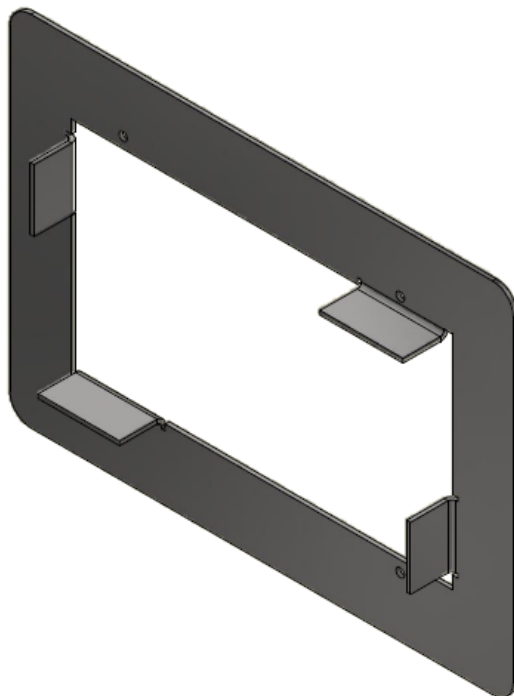
Before you begin, make sure you have the following tools:

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

1. Choose the location where you want to place the CMS-2000 monitor.
Note: You can only install the CMS-2000 in landscape orientation.
2. Place the retrofit ring in the location that you want and keep the ring level.
3. Mark both screw holes and the corners of the rectangular section.
4. Use a drywall saw or oscillating tool to cut out the entire rectangular section inside the marked opening and drill the screw holes.
5. Pull the pre-wired 4-conductor interface cable with the 4-pin terminal block for power, and the 3-pin terminal block for the RS-485 subnet coms through the retrofit ring.
6. If the 2-conductor power cable terminates at the monitor, pull the 2-conductor power cable through the retrofit ring.
7. Insert the retrofit ring through the opening. Make sure that the four tabs make contact with the inside of the opening and then pull the retrofit ring flush against the inside of the wall.
8. Use the four included mounting screws to attach the monitor's mounting bracket to the retrofit ring. Use a #2 Phillips head screwdriver to secure both the box and the bracket.
Note: To avoid warping the mounting bracket, do not over-tighten the screws.
9. Connect the wires to the back of the monitor.
10. Align the two slots on the back of the monitor with the tabs on the bracket, then swing the monitor towards the wall so that the single tab on the bracket slots into the back of the monitor.
11. When the monitor sits flush against the wall, insert the set screw into the hole on the side or bottom of the monitor's housing. Use a 1/16 in. hex wrench to drive the screw into the monitor until it engages with the tab.

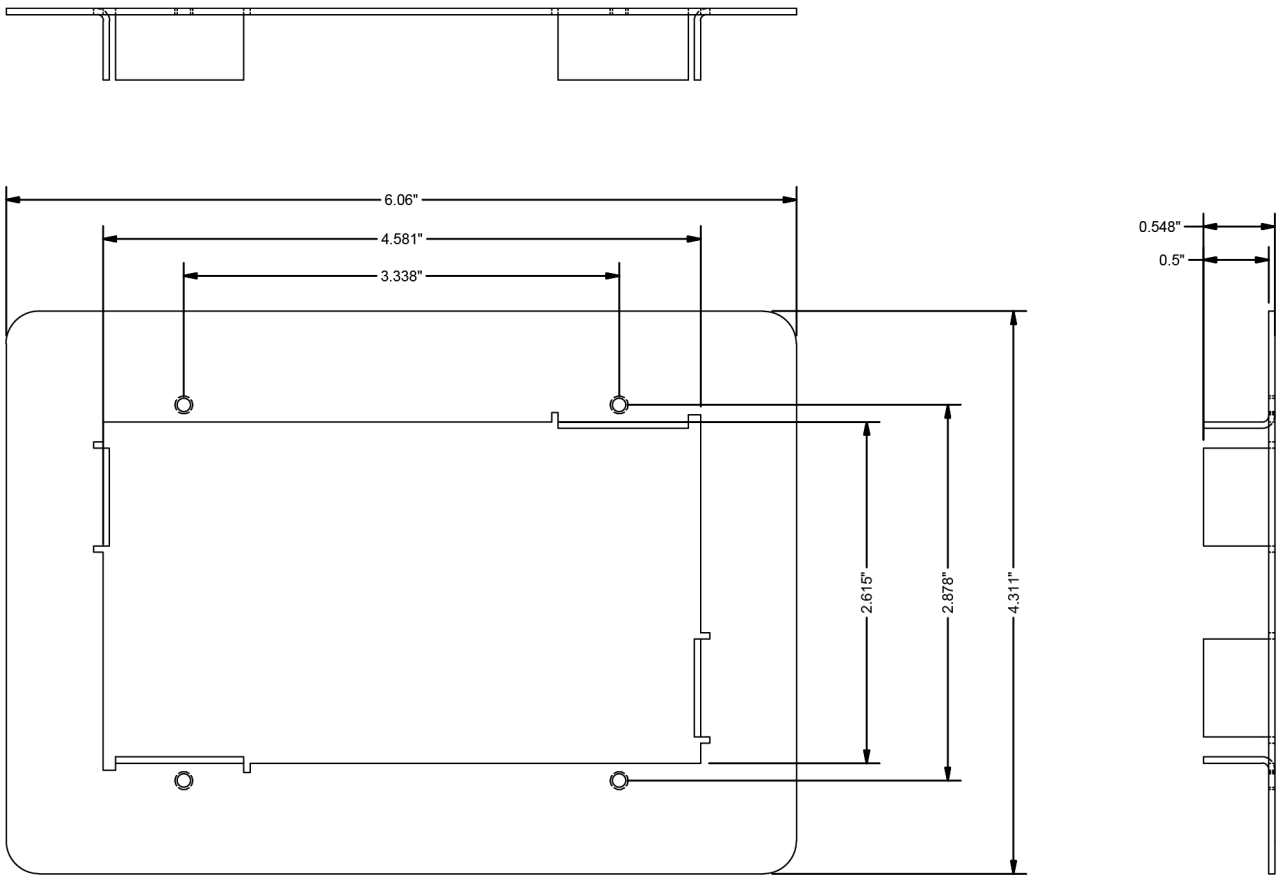
After you mount the CMS-2000 monitor, apply power to the monitor. The initial splash screen displays the Titus logo and the Safety Halo bezel lights up green to represent the current system status.

FIGURE 1: RETROFIT RING



INSTALLING THE CMS-2000 THIN MOUNT DISPLAY FOR A RETROFIT APPLICATION

FIGURE 2: RETROFIT APPLICATION DIMENSIONS



INSTALLING THE CMS-2000 THIN MOUNT DISPLAY FOR A NEW APPLICATION

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

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

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

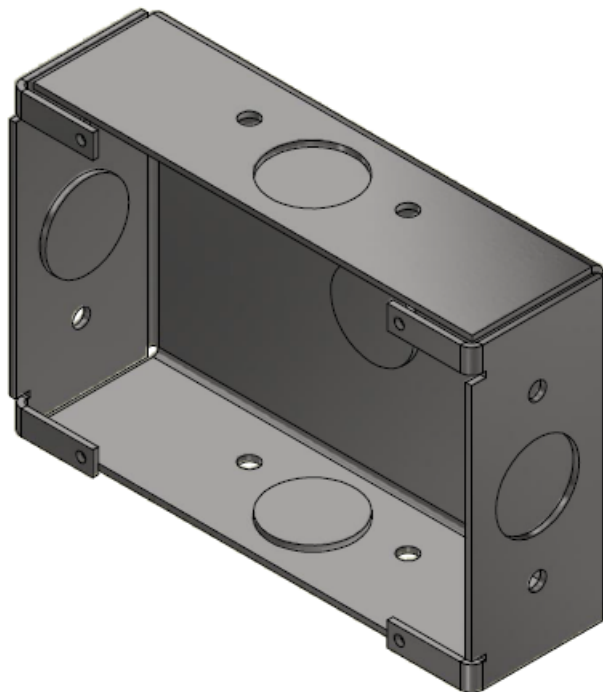
1. Choose the location where you want to place the CMS-2000 monitor.

Note: You can only install the CMS-2000 in landscape orientation.

2. Mount the rough-in box to the side of a stud. Make sure the front surface is flush, or slightly recessed, to fit with the drywall surface that you install later.
3. Pull the pre-wired 4-conductor interface cable with the 4-pin terminal block for power, and the 3-pin terminal block for the RS-485 subnet coms through the opening in the rough-in box.
4. If the 2-conductor power cable terminates at the monitor, pull the 2-conductor power cable through the opening in the rough-in box.
5. Install the drywall. Make sure that the mounting surface is flush with the finished surface of the drywall, and the opening fits precisely with the rough-in box.
6. Align the monitor's mounting bracket to the four screw holes on the mounting tabs of the rough-in box. Use a #2 Phillips head screwdriver to secure the bracket with the screws provided. Make sure the bracket is level.
Note: To avoid warping the mounting bracket, do not over-tighten the screws.
7. Connect the wires to the back of the monitor.
8. Align the two slots on the back of the monitor with the tabs on the bracket and swing the monitor towards the wall so that the single tab on the bracket slots into the back of the monitor.
9. Insert the set screw into the hole in the monitor's housing when the monitor sits flush against the wall. Use a 1/16 in. hex wrench to drive the screw into the monitor until it engages with the tab on the bracket.

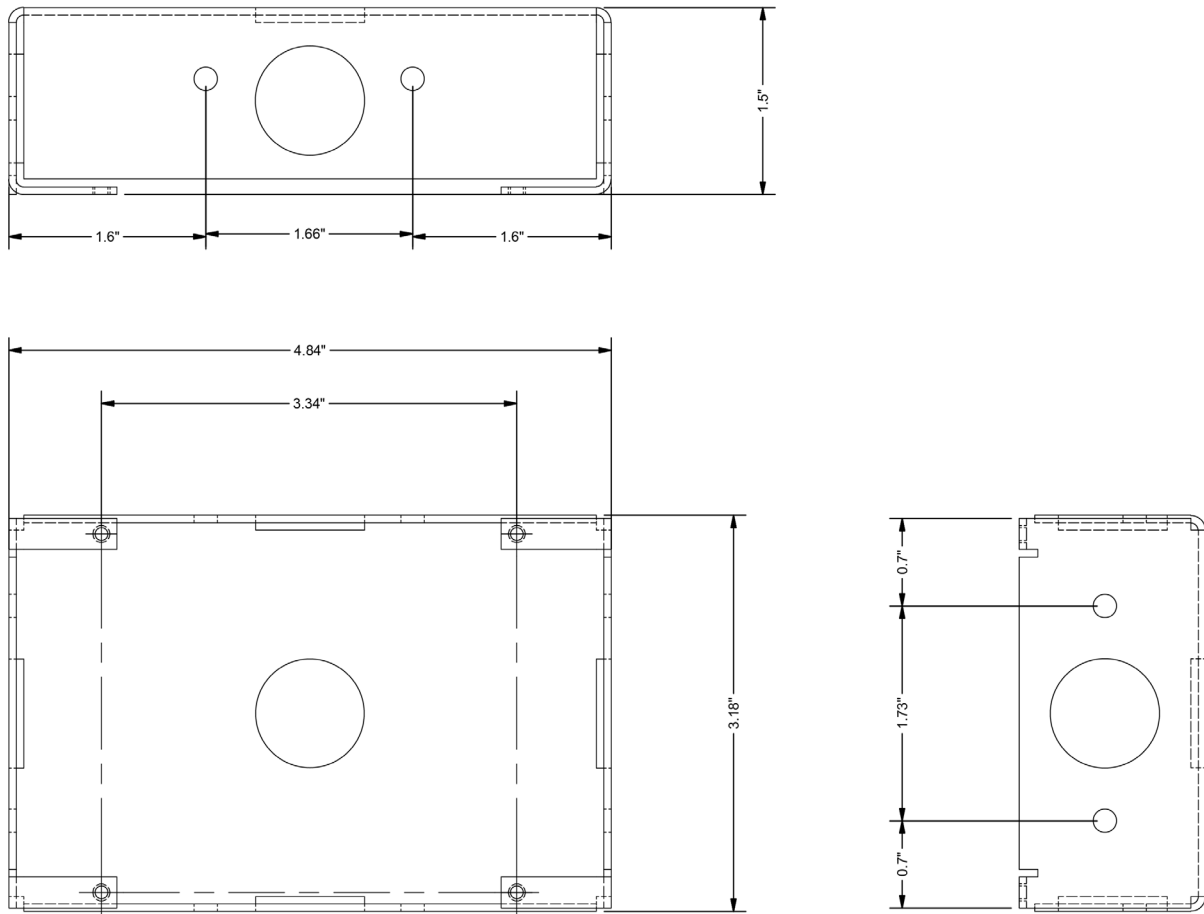
After you mount the CMS-2000 monitor, apply power to the monitor. The initial splash screen displays the Titus logo and the Safety Halo bezel is green to represent the current system status.

FIGURE 3: ROUGH-IN BOX DIMENSIONS



INSTALLING THE CMS-2000 THIN MOUNT DISPLAY FOR A NEW APPLICATION

FIGURE 4: ROUGH-IN BOX DIMENSIONS



CONFIGURING THE DISPLAY MODULE SETTINGS

TABLE 2: MONITOR DIP SWITCH CONFIGURATIONS FOR THE OPERATING MODE

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

SYSTEM DIAGRAM

In Figure 5, you can see an overview of how the system operates with all the different devices.

FIGURE 5: SYSTEM DIAGRAM

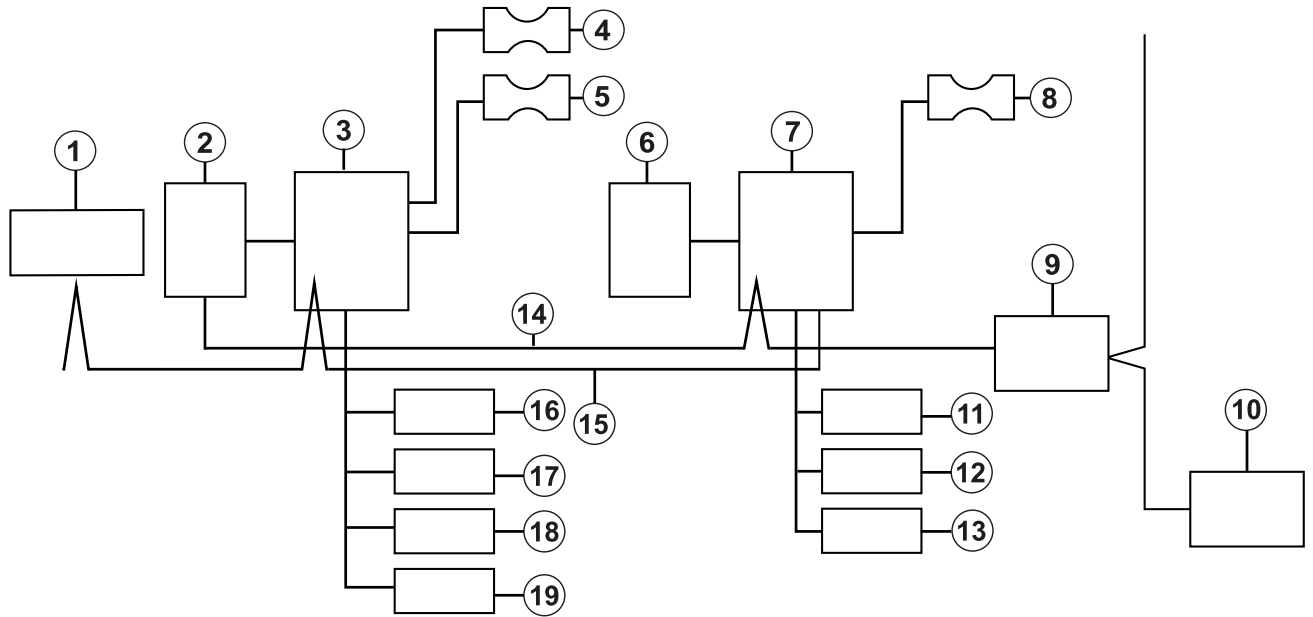


TABLE 3: SYSTEM DIAGRAM

Callout	Description
1	CMS-2000 display
2	FMS-2000C display
3	FMS-2000C controller
4	Supply
5	Exhaust
6	HMS-1655 display
7	HMS-1655 controller
8	Exhaust
9	Supervisory device
10	Building automation system (BAS)
11	Sash sensor
12	Sidewall sensor
13	Occupancy sensor
14	Subnet
15	BACnet MS/TP
16	Pressure sensor
17	Temperature sensor
18	Humidity sensor
19	CO ₂ sensor

WIRING THE CMS-2000 TO THE NEAREST FMS-2000C OR HMS-1655 CONTROLLER

Identify the controller closest to the installed CMS-2000. Connect the CMS-2000 to the SUB_NET and AUX_PWR terminals on the backplane of the controller. If there are multiple FMS-2000C or HMS-1655 controller units, daisy chain the SUB_Net on the backplanes. For more information, see Figure 7.

WARNING: The electrical connections to the CMS-2000 are made through convenient terminal block connectors. All wiring must conform to local regulations and to the National Electrical Code (NEC). Precautions must be taken to avoid running communications wiring in the same conduit as line voltage or other conductors that supply highly inductive loads such as generators, motors, solenoids, contactors, and other sources of induced noise. Use 22 AWG or larger for all electrical wiring terminations.

FIGURE 6: WIRING THE CMS-2000 TO THE NEAREST FMS-2000C OR HMS-1655 CONTROLLER

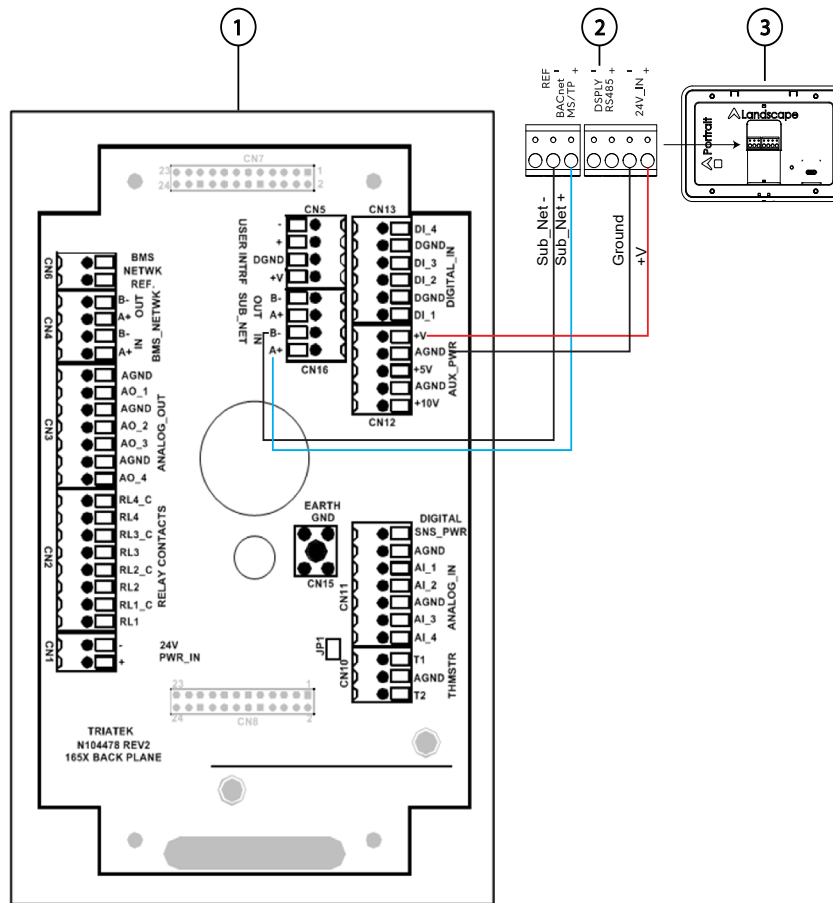


TABLE 4: WIRING THE CMS-2000 TO THE NEAREST FMS-2000C OR HMS-1655 CONTROLLER

Callouts	Description
1	Controller backplane
2	Pluggable terminal blocks located inside the user interface
3	CMS-2000 display

WIRING THE CMS-2000 TO THE NEAREST FMS-2000C OR HMS-1655 CONTROLLER

FIGURE 7: DAISY CHAIN OF FMS AND/OR HMS CONTROLLERS

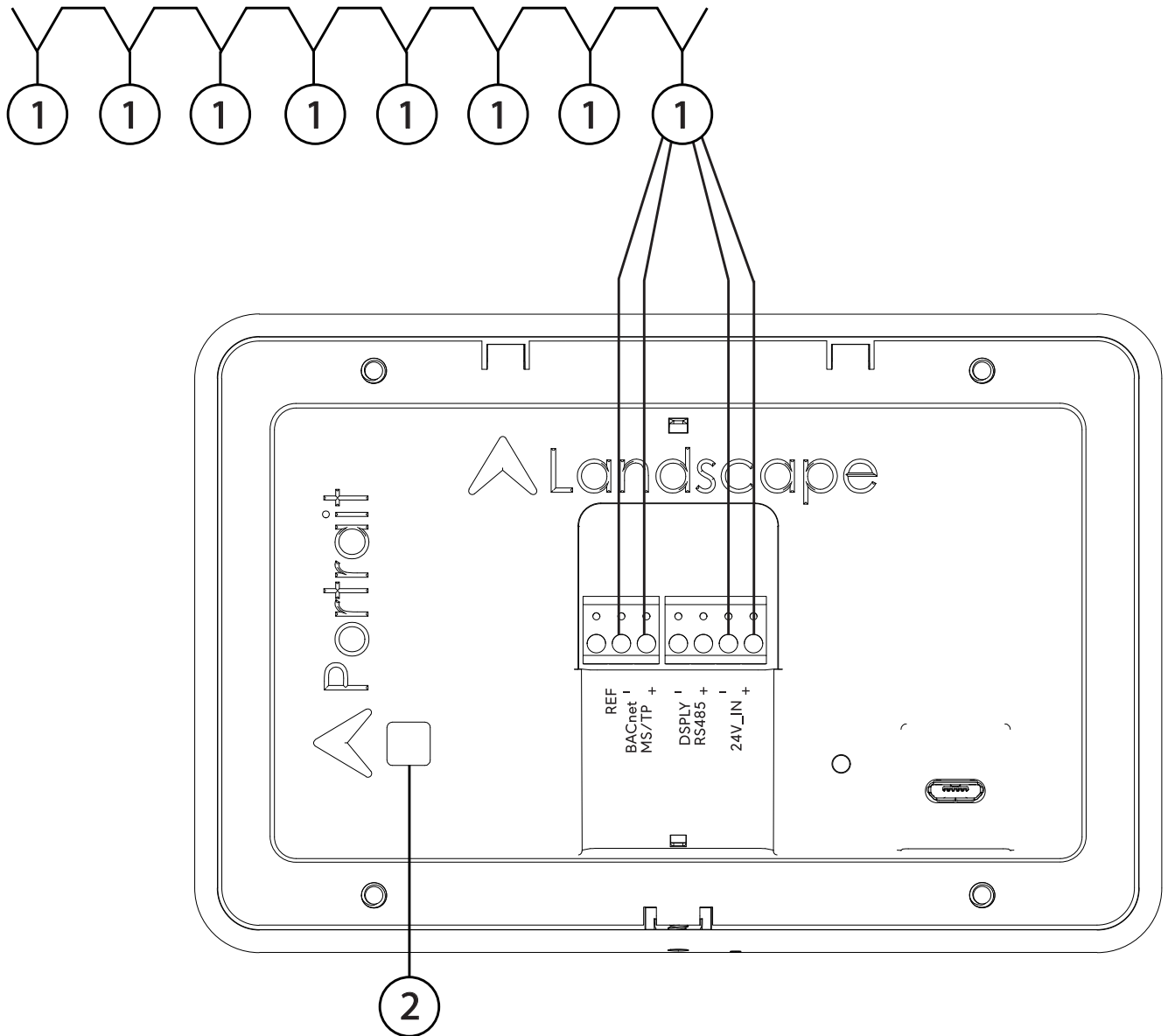



TABLE 5: DAISY CHAIN OF FMS AND/OR HMS CONTROLLERS

Callouts	Description
1	Daisy chained FMS or HMS controllers
2	DIP switches

TECHNICAL SPECIFICATIONS

TABLE 6: TECHNICAL SPECIFICATIONS

Specification		Description
Intended use		Indoor use
Overvoltage category		II
Monitoring capability		Up to eight FMS-2000C Critical Environment Controllers or HMS-1655 Fume Hood controllers. No additional power is needed.
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 CMS-1655 RMA only
Alarm indication		Audible and visual 360° Safety Halo illuminated edge
Alarm silence		Touchscreen, auto-reset
Password protection		Two access levels to prevent unauthorized access
Power requirement		Powered by nearest monitored FMS or HMS controller
Pollution degree		2
Display resolution		720 pixels x 1280 pixels
Pluggable screw terminal blocks		18 AWG to 22 AWG (1 mm to 0.6 mm diameter)
Display dimensions (height x width x depth)		5.3 in. x 3.5 in. x 1.17 in. (134.62 mm x 88.9 mm x 29.72 mm)
Mounted depth		Thin mount: 0.58 in (14.73 mm)
Compliance 	United States	UL Listed to UL 61010-1; FCC 47CFR Part 15
	Canada	cUL Listed to CAN/CSA C22.2 NO. 61010-1; ICES-003
	Europe	CE (EMC Directive) to EN 61326-1
	United Kingdom	UK Conformity Assessed
	Australia and New Zealand	RCM Mark (Australian Radiocommunications Act) to EN 61326-1

PRODUCT CODE MATRIX

TABLE 7: ORDERING GUIDE

Feature	Code letter or number and description	Product code number example: CMS2-TB
Brand	Blank = Titus	No prefix
Unit	CMS = Central Monitoring Station (CMS)	CMS
Series	2 = 2000	2
Mounting style	T = Thin	T
Color	B = Black	B

MOUNTING HARDWARE

The CMS-2000 Thin mount requires one of the following mounting hardware for installation:

TABLE 8: MOUNTING HARDWARE

Ordering code	Description
RFINMT-2	Rough in box for new construction where walls are not installed
RTROMT-2	Retrofit ring where walls are already installed

CLEANING THE DISPLAY



- 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 acidic or alkaline. Use neutral pH cleaner.
- Do not use organic chemicals such as: paint thinner, acetone, toluene, xylene, propyl or isopropyl alcohol, or kerosene.



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

To clean the display, complete the following steps:

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

NORTH AMERICAN EMISSIONS COMPLIANCE

UNITED STATES

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

CANADA

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

REPAIR INFORMATION

REPAIR INFORMATION

If you purchased a service agreement, contact your Titus representative for a replacement unit. If you do not have a service agreement, contact tu@titus-hvac.com.

PATENTS

Patents: <https://jciapat.com>

SOFTWARE TERMS

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

PRODUCT WARRANTY

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

CONTACT INFORMATION

Contact your local Titus representative

Contact Support: Call (+1) 972-212-4800 or email tu@titus-hvac.com

