Installation Instructions

Tracer® Communication Module (CM3I)

Ordering Number:

X13651812001	Kit Communications USB to Isolated COMM3 (module, USB cable, chassis wire along with Phoenix connector)
MOD04065	Module; Kit, Tracer COMM3 Isolator (CMI3)

⚠ SAFETY WARNING

Only qualified personnel should install and service the equipment. The installation, starting up, and servicing of heating, ventilating, and air-conditioning equipment can be hazardous and requires specific knowledge and training. Improperly installed, adjusted or altered equipment by an unqualified person could result in death or serious injury. When working on the equipment, observe all precautions in the literature and on the tags, stickers, and labels that are attached to the equipment.

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Warnings, Cautions, and Notices

Read this manual thoroughly before operating or servicing this unit. Safety advisories appear throughout this manual as required. Your personal safety and the proper operation of this machine depend upon the strict observance of these precautions.

The three types of advisories are defined as follows:

⚠ WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury. It could also be used to alert against unsafe practices.

NOTICE Indicates a situation that could result in equipment or property-damage only accidents.

Important Environmental Concerns

Scientific research has shown that certain man-made chemicals can affect the earth's naturally occurring stratospheric ozone layer when released to the atmosphere. In particular, several of the identified chemicals that may affect the ozone layer are refrigerants that contain Chlorine, Fluorine and Carbon (CFCs) and those containing Hydrogen, Chlorine, Fluorine and Carbon (HCFCs). Not all refrigerants containing these compounds have the same potential impact to the environment. Trane advocates the responsible handling of all refrigerants.

Important Responsible Refrigerant Practices

Trane believes that responsible refrigerant practices are important to the environment, our customers, and the air conditioning industry. All technicians who handle refrigerants must be certified according to local rules. For the USA, the Federal Clean Air Act (Section 608) sets forth the requirements for handling, reclaiming, recovering and recycling of certain refrigerants and the equipment that is used in these service procedures. In addition, some states or municipalities may have additional requirements that must also be adhered to for responsible management of refrigerants. Know the applicable laws and follow them.

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⚠ WARNING

Proper Field Wiring and Grounding Required!

Failure to follow code could result in death or serious injury. All field wiring MUST be performed by qualified personnel. Improperly installed and grounded field wiring poses FIRE and ELECTROCUTION hazards. To avoid these hazards, you MUST follow requirements for field wiring installation and grounding as described in NEC and your local/state/national electrical codes.

⚠ WARNING

Personal Protective Equipment (PPE) Required!

Failure to wear proper PPE for the job being undertaken could result in death or serious injury. Technicians, in order to protect themselves from potential electrical, mechanical, and chemical hazards, MUST follow precautions in this manual and on the tags, stickers, and labels, as well as the instructions below:

- **Before installing/servicing this unit, technicians MUST put on all PPE required for the work being undertaken (Examples; cut resistant gloves/sleeves, butyl gloves, safety glasses, hard hat/bump cap, fall protection, electrical PPE and arc flash clothing). ALWAYS refer to appropriate Safety Data Sheets (SDS) and OSHA guidelines for proper PPE.**
- **When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS and OSHA/GHS (Global Harmonized System of Classification and Labeling of Chemicals) guidelines for information on allowable personal exposure levels, proper respiratory protection and handling instructions.**
- **If there is a risk of energized electrical contact, arc, or flash, technicians MUST put on all PPE in accordance with OSHA, NFPA 70E, or other country-specific requirements for arc flash protection, PRIOR to servicing the unit. NEVER PERFORM ANY SWITCHING, DISCONNECTING, OR VOLTAGE TESTING WITHOUT PROPER ELECTRICAL PPE AND ARC FLASH CLOTHING. ENSURE ELECTRICAL METERS AND EQUIPMENT ARE PROPERLY RATED FOR INTENDED VOLTAGE.**

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⚠ WARNING

Follow EHS Policies!

Failure to follow instructions below could result in death or serious injury.

- **All Trane personnel must follow the company's Environmental, Health and Safety (EHS) policies when performing work such as hot work, electrical, fall protection, lockout/tagout, refrigerant handling, etc. Where local regulations are more stringent than these policies, those regulations supersede these policies.**
- **Non-Trane personnel should always follow local regulations.**

Revision History

- Added service mnemonic part number on the front cover,
- Added Wiring Termination section.
- Updated CM3I dimensions, mounting or removing CM3I from DIN, and CM3I module connection with Tracer® SC+ figures.

General Information

The Tracer® CM3I (Isolated Comm3) module provides the communication interface between the Tracer® SC+ and Isolated Comm3 devices. The CM3I module can be connected to any Synchrony USB port.

Packaged Contents

- Tracer® Communication Module (CM3I)
- USB Cable
- Phoenix Connector with Chassis Ground Wire
- Installation Instructions

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Important: *Visually inspect contents for obvious defects or damage. All components have been thoroughly inspected before leaving the factory. Any claims for damage incurred during shipment should be filed immediately with the carrier.*

Required Tools for Mounting and Wiring

A 1/8-inch (3 mm), flat-bladed screwdriver is required to perform functions such as removing or repositioning the module on DIN rail.

Storage and Operating Environment Specifications

Table 1. Storage and operating environment specifications

Storage	
Temperature	-67°F to 203°F (-55°C to 95°C)
Relative Humidity	5% to 95% (non-condensing)
Operation	
Temperature	-40°F to 158°F (-40°C to 70°C)
Power	USB 5V, 50mA, PELV Class 2
Mounting Weight of Module	Mounting surface must support; 0.17 lb (0.077 kg)
Environmental Rating (Enclosure)	NEMA 1
Pollution	U.L. 840: Degree 2
Agency Compliance	
• UL-916 • UL94-5VA Flammability • CE Marked per EN61326-1 • FCC Part 15, Subpart B, Class B Limit • CUL C22.2-signal devices • AS/NZS CISPR 32:2015 Class B Limit • VCCI-CISPR 32:2016: Class B Limit • CAN ICES-003(B)/NMB-003(B)	

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CM3I Dimensions

Figure 1. CM3I dimensions

* DIN Standard 43 880, Built-in Equipment for Electrical Installations, Overall Dimensions, and Related Mounting Dimensions.

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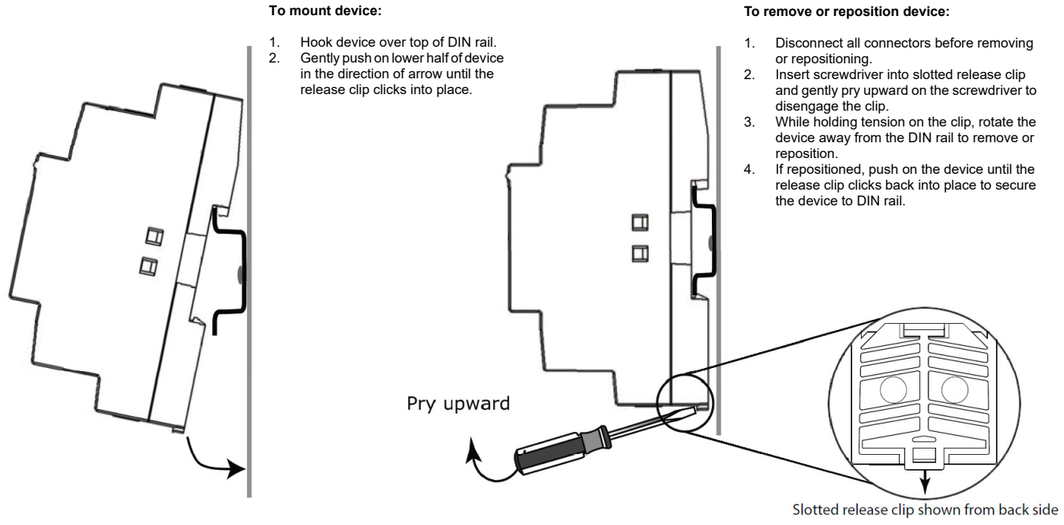
Mounting or Removing the CM3I

To mount or remove the CM3I from DIN rail, follow the illustrated instructions below.

Figure 2. Mounting or removing CM3I from DIN



To mount device:

1. Hook device over top of DIN rail.
2. Gently push on lower half of device in the direction of arrow until the release clip clicks into place.

To remove or reposition device:

1. Disconnect all connectors before removing or repositioning.
2. Insert screwdriver into slotted release clip and gently pry upward on the screwdriver to disengage the clip.
3. While holding tension on the clip, rotate the device away from the DIN rail to remove or reposition.
4. If repositioned, push on the device until the release clip clicks back into place to secure the device to DIN rail.

Important: *Follow recommended installation procedures if using other manufacturers DIN rails and enclosures.*

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CM3I Module Installation Guidelines and General Information

Install the CM3I in a location that is:

- Protected from weather elements
- Restricted from public access to minimize tampering and vandalism
- Near the SC+ controller to reduce wire usage
- Easily accessible by service technicians

Installation Instructions

1. Connect the USB-C end of the cable to the CM3I module.
2. Connect the USB-A end of the cable to a USB port on the controller.

Important:

- *Route the USB cable such that it does not get damaged by panel doors or similar obstructions. Cables that are severely kinked, cut, or otherwise damaged should be replaced, even if they appear to be in working order.*
- *Do not route the USB cable in close proximity with electrically noisy cables such as AC power (24, 120, 240 VAC), or wires that are switched by relays or contactors. Maintain a minimum distance of 150 mm between the USB cable and these types of cables and wires.*

3. Mount on DIN rail horizontally or vertically (allow for proper ventilation clearance).

Wiring Termination

A termination resistor must be placed on an isolated Comm3 communication link. Determine the resistance value and location based on Configuration Type and Wire length.

Configuration Type: Daisy Chain

- Wire length 0 to 800 ft. (0 to 244 m): 270 to 330 Ω, on the last device on the link.
- Wire length 800 to 2,500 ft. (244 to 762 m): 3 kΩ, at the CM3I.
- Wire length > 2,500 ft. (> 762 m): 100 Ω, on the last device of the link.

Configuration Type: Branch

Wire length any: 270 to 330 Ω at the end of 1 branch or at the CM3I. Additional resistors at the ends of other branches are optional and should be added only if absolutely necessary.

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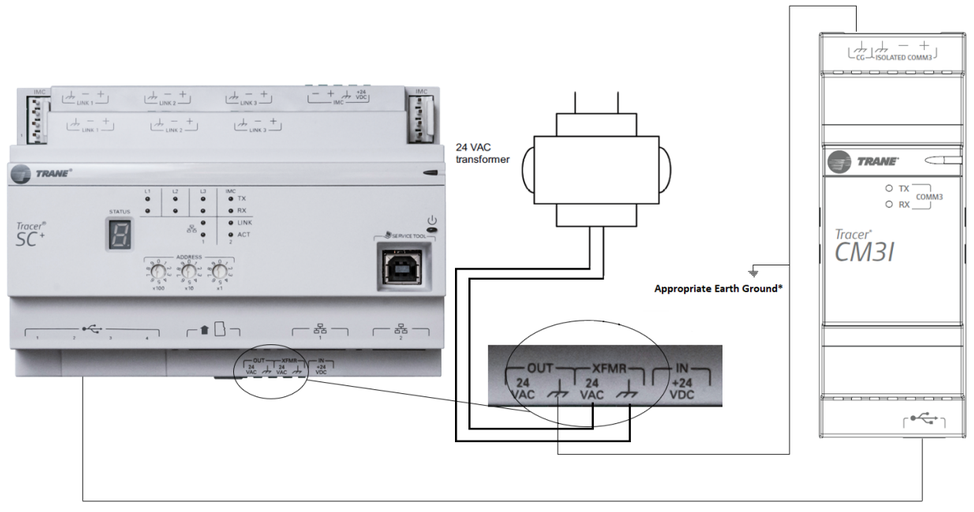
Figure 3. CM3I module connection with Tracer® SC+



⚠ WARNING

Proper Ground Connection Required!
Failure to follow instructions below could result in death or serious injury.
The factory-supplied ground wire must be connected to any chassis ground connection on the devices to an appropriate earth ground.

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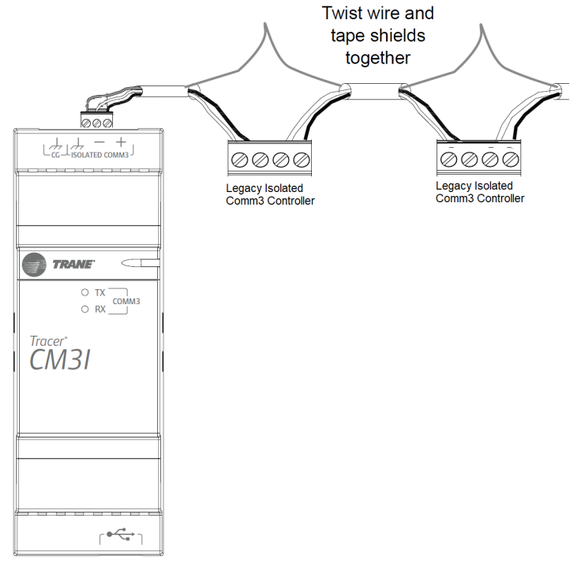
Figure 4. CM3I network wiring details



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Isolated Comm3 Device Network Wiring Configurations

To confirm proper network communication, the selection of the appropriate cable and length limitations must be considered. The maximum length of an 18 AWG network wire is 4,000 feet. The maximum length of a 22 AWG network wire is 2,000 feet. Running wire longer than recommended may result in communication issues.

Note: *Do not mix isolated and non-isolated device types on a single link.*

1. Attach the communication wire between two adjacent devices on the link and verify that polarity of the wires is maintained.
2. At each unit controller, join the shield wires together and insulate the connection with electrical tape to prevent accidental shorting of the wire.
3. Repeat Step 1 and Step 2 for each unit controller on the link.

Note: *For more information about the specific unit controller you are wiring, see the installation guide for the specific controller. Follow these steps to connect communication wiring as shown in Figure 4, p. 2.*

AC Power Warnings, Cautions, and Notices

⚠ WARNING

Hazardous Voltage!
Failure to disconnect power before servicing could result in death or serious injury.
Disconnect all electric power, including remote disconnects before servicing. Follow proper lockout/ tagout procedures to ensure the power can not be inadvertently energized. Verify that no power is present with a voltmeter.

⚠ WARNING

Proper Ground Connection Required!
Failure to follow instructions below could result in death or serious injury.
After installation, ensure that the 24 Vac transformer is grounded through the controller. Measure the voltage between chassis ground and any ground terminal on the controller. Expected result: Vac <4.0 volt.

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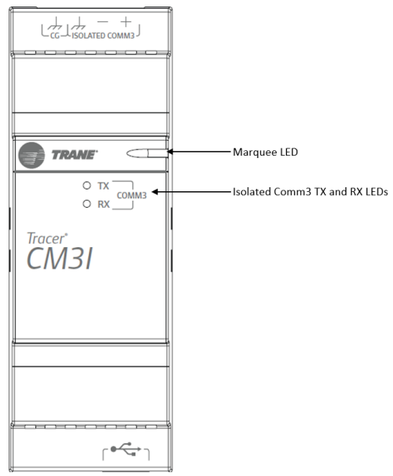
NOTICE

Equipment Damage!
Failure to follow instructions below could result in damage to the controller, power transformer, or input/output devices due to inadvertent connections to power circuits.
Remove power to the controller before making input/output connections.

Connecting, Addressing, and Discovering the CM3I

Figure 5. CM3I LEDs



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Power up the Tracer SC+ controller. The transmitting (TX) and receiving (RX) LEDs blink when communication occurs between the devices. Note the following LED activities on the front of the CM3I.

Marquee LED

- Green - Indicates that USB power is present.

Isolated Comm3 TX and RX LED

When Isolated Comm 3 device connection is established:

- TX LED - Blinks at the data transfer rate when the unit transfers data to other devices on the link. Regardless of connectivity, this LED constantly blinks as it continually looks for devices to communicate with.
- RX LED - Blinks at the data transfer rate when the unit receives data from other devices on the link.

If the LEDs are not lit:

- Determine if an Isolated Comm3 device is attempting to talk to a controller or if it is capable of talking to the controller.
- Determine if the communication status shows down all the time.

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