

Installation Instructions

# CO<sub>2</sub> Sensing Kit

6 to 25 Ton Packaged Units with Symbio™ 700 Controls

Model Number: FIACO2K001\*  
FIACO2K002\*\*

Used With: Precedent™ with wall mount sensor  
Precedent™ with duct mount CO<sub>2</sub> sensor

 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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- ### Inspection
1. Unpack all components of the kit.
  2. Check carefully for shipping damage. If any damage is found, report it immediately, and file a claim against the transportation company.
  3. Visually inspect the components for shipping damage as soon as possible after delivery, before it is stored. Concealed damage must be reported within 15 days.
  4. If concealed damage is discovered, stop unpacking the shipment.
  5. Do not remove damaged material from the receiving location. Take photos of the damage, if possible. The owner must provide reasonable evidence that the damage did not occur after delivery.
  6. Notify the carrier's terminal of damage immediately by phone and by mail. Request an immediate joint inspection of the damage by the carrier and the consignee.

**Note:** Do not attempt to repair any damaged parts until the parts are inspected by the carrier's representative.

### Parts List

- CO<sub>2</sub> Sensor:
- FIACO2K001\*
- One (1) CO<sub>2</sub> Demand-Controlled Ventilation Wall-Sensor (4190 4100) with instructions and mounting hardware.
- FIACO2K002\*
- One (1) CO<sub>2</sub> Demand-Controlled Ventilation Duct -Sensor (4190 4101) with instructions and mounting hardware.
  - One (1) "CO<sub>2</sub> Kit Has Been Installed" Label



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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.

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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-including industry replacements for CFCs such as HCFCs and HFCs.

### 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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### Installation


 WARNING

**Hazardous Voltage w/Capacitors!**  
Failure to disconnect power and discharge capacitors before servicing could result in death or serious injury.


Disconnect all electric power, including remote disconnects and discharge all motor start/run capacitors before servicing. Follow proper lockout/ tagout procedures to ensure the power cannot be inadvertently energized. Verify with a CAT III or IV voltmeter rated per NFPA 70E that all capacitors have discharged.

1. Apply provided CO<sub>2</sub> and ventilation override wiring diagram label next to the main unit wiring diagram label, located on compressor access panel.
2. Apply "CO<sub>2</sub> kit Has Been Installed" label next to the main unit wiring diagram label.
3. Install CO<sub>2</sub> sensor in conditioned space or return air duct according to instructions packed with the sensor.
4. Make field wiring connections to Symbio™ 700 UC J22 pins 1-3. Refer to main unit schematic sheet 3 and in this guide.
5. Route low voltage external field wiring along with and secure to existing low voltage zone sensor or thermostat wiring.
6. Replace any access panels removed for kit installation.

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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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### CO<sub>2</sub> Sensor Operation for Symbio™ 700 with Economizer

#### Demand Control Ventilation (DCV)


DCV eliminates over-ventilating the space by allowing the fresh air damper to close further than non-CO<sub>2</sub> sensing systems, which reduces power consumption. DCV adjusts the fresh air damper between a DCV Minimum Position and Design Minimum Position. DCV Minimum Position equals non-CO<sub>2</sub> sensing systems minimum damper position - 10%, or more, down to 0% open.

When the CO<sub>2</sub> level is greater than or equal to the DCV Minimum CO<sub>2</sub> setpoint the supply fan is energized and the fresh air damper modulates between the DCV Minimum Position Setpoint and the Design Minimum Setpoint, increasing the amount of outdoor air flow and reducing the CO<sub>2</sub> level in the space. The damper will only open up to the Design Minimum Position Setpoint. If the CO<sub>2</sub> level drops below the DCV Minimum CO<sub>2</sub> Setpoint - 50ppm the fresh air damper will drive to the DCV Minimum Position. If CO<sub>2</sub> level rises above the Building CO<sub>2</sub> setpoint the fresh air damper will open to the Design Minimum Position setpoint.

### DCV Setup, Damper Position and CO<sub>2</sub> Setpoint

Before beginning, turn the fan **ON** and conduct the Minimum Position Setpoint procedure used WITHOUT CO<sub>2</sub> to obtain and record visually the Minimum Position Setpoint setting and/or the corresponding DC voltage settings for the min and max required to meet ASHRAE standards.

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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.

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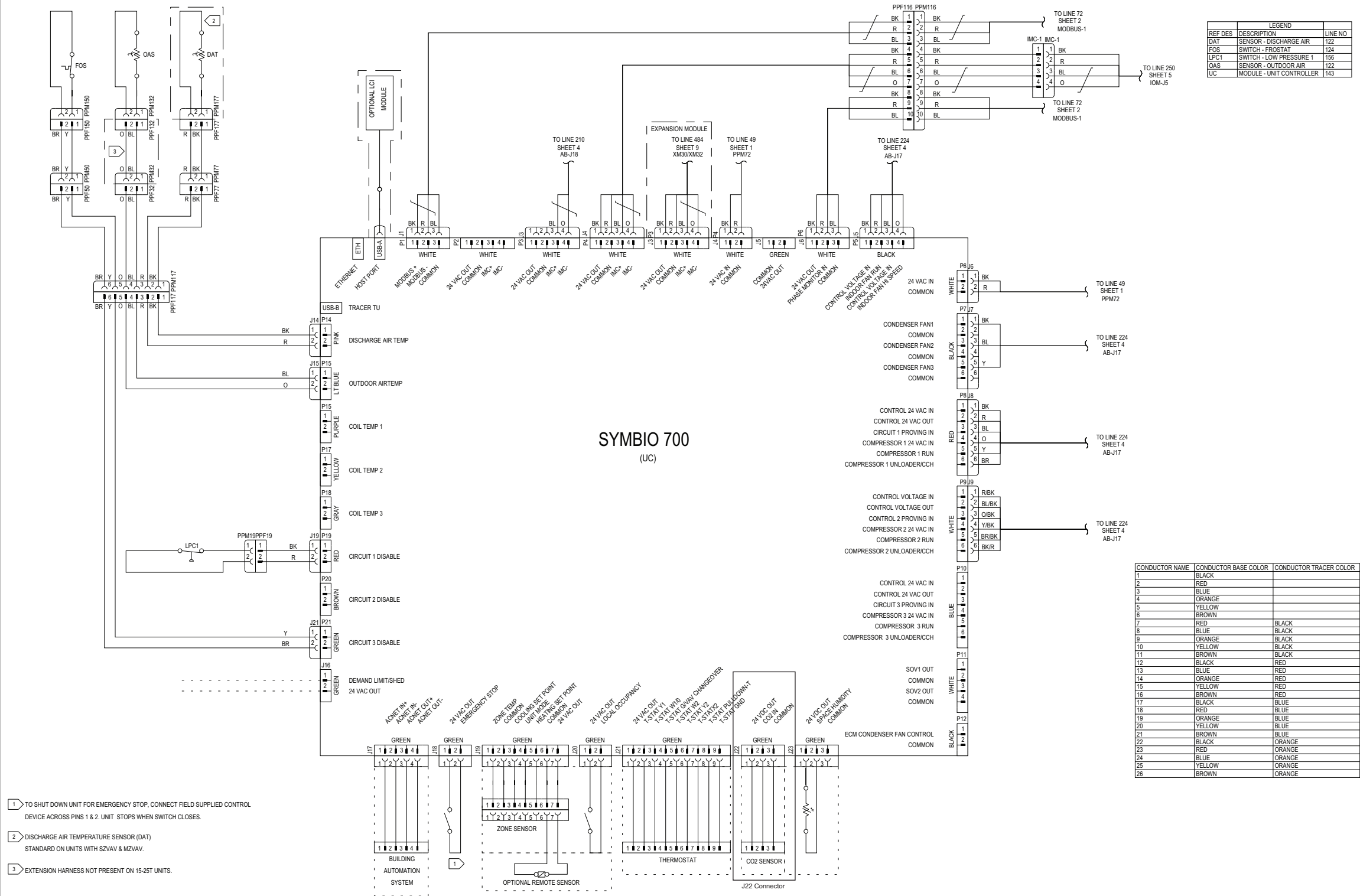
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### General

**Note:** An economizer must be installed and functional before attempting to install a CO<sub>2</sub> sensing kit.

These sensors detect and control the carbon dioxide level in the conditioned space by measuring CO<sub>2</sub> concentration, comparing it with a user-adjustable set point and sending a corresponding control signal to the economizer module. This causes the economizer damper to be positioned so that sufficient fresh air is introduced into the conditioned space to reduce and maintain the CO<sub>2</sub> concentration to a minimum level as selected by the user.



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