

Installation Instructions

CO₂ Sensing Kit

Precedent™ Packaged Rooftop Units with
Symbio™ 700
3 to 12.5 Tons

Model Number:

FIACO2K001*

FIACO2K002*

Used With:

Precedent with wall mount sensor

Precedent with duct mount CO₂ 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.

Introduction

Read this manual thoroughly before operating or servicing this unit.

Warnings, Cautions, and Notices

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:



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



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.

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 Labelling 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.**

⚠ 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.

⚠ WARNING

R-454B Flammable A2L Refrigerant!

Failure to use proper equipment or components as described below could result in equipment failure, and possibly fire, which could result in death, serious injury, or equipment damage.

The equipment described in this manual uses R-454B refrigerant which is flammable (A2L). Use ONLY R-454B rated service equipment and components. For specific handling concerns with R-454B, contact your local representative.

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Revision History

Corrected the model numbers listed on the front cover.

General Information

Note: *An economizer must be installed and functional before attempting to install a CO₂ sensing kit.*

- Carefully review installation instructions.
- These sensors detect and control the carbon dioxide level in the conditioned space by the following:
 - Measuring CO₂ concentration.
 - Comparing it with a user-adjustable set point.
 - Sending a corresponding control signal to the economizer module.
- This causes the economizer damper to be positioned to introduce sufficient air into the conditioned space. This will reduce and maintain the CO₂ concentration to a minimum level as selected by the user.

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.

Parts List

Table 1. CO₂ sensor — FIACO2K001*

Qty	Description
1	CO2 Demand-controlled ventilation wall-sensor (41904100) with instructions and mounting hardware

Table 2. CO₂ sensor — FIACO2K002*

Qty	Description
1	Demand-controlled ventilation duct -sensor (41904101) with instructions and mounting hardware
1	CO2 Kit Has Been Installed label

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 CO₂ and ventilation override wiring diagram label next to the main unit wiring diagram label, located on compressor access panel.
2. Apply CO₂ Kit Has Been Installed label next to the main unit wiring diagram label.
3. Install CO₂ 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 and secure low voltage external field wiring with existing low voltage zone sensor or thermostat wiring.
6. Replace any access panels removed for kit installation.

CO₂ 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-CO₂ 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-CO₂ sensing systems minimum damper position - 10%, or more, down to 0% open.

When the CO₂ level is greater than or equal to the DCV Minimum CO₂ 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 airflow and reducing the CO₂ level in the space. The damper will only open up to the Design Minimum Position Setpoint. If the CO₂ level drops below the DCV Minimum CO₂ Setpoint - 50 ppm the fresh air damper will drive to the DCV Minimum Position. If CO₂ level rises above the building CO₂ setpoint the fresh air damper will open to the Design Minimum Position setpoint.

DCV Setup, Damper Position, and CO₂ Setpoint

Before beginning, turn the fan **ON** and conduct the Minimum Position Setpoint procedure used without CO₂ 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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