

## Installation Instructions

# EBM Fan Control Adapter Kits

Used with Precedent™ Units

### Kit 16189

T/YSC120E/F3/4/WE  
T/YHC092/102/120E/F3/4E Electromechanical Controls

### Used With:

### Kit 16268

T/YSC120E/F3/4/WR  
T/YHC092/102/120E/F3/4R ReliaTel™ Controls  
WSC120E3/4/WR

### 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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## 1 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:

<b>WARNING</b>	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
<b>CAUTION</b>	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 equipment or property-damage only accidents.
<b>NOTICE</b>	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.

## 2 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 electrical codes.

## WARNING

**Personal Protective Equipment Required!**  
Installing/servicing this unit could result in exposure to electrical, mechanical and chemical hazards. Before installing/servicing this unit, technicians MUST put on all Personal Protective Equipment (PPE) recommended for the work being undertaken. ALWAYS refer to appropriate SDS sheets and OSHA guidelines for proper PPE. When working with or around hazardous chemicals, ALWAYS refer to the appropriate SDS sheets and OSHA guidelines for information on allowable personal exposure levels, proper respiratory protection and handling recommendations. If there is a risk of arc or flash, technicians MUST put on all necessary Personal Protective Equipment (PPE) in accordance with NFPA70E for arc/flash protection PRIOR to servicing the unit. Failure to follow recommendations could result in death or serious injury.

## 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.

## 3 Model Number Description

All products are identified by a multiple-character model number that precisely identifies a particular type of unit. Its use will enable the owner/operator, installing contractors, and service engineers to define the operation, specific components, and other options for any specific unit. When ordering replacement parts or requesting service, be sure to refer to the specific model number and serial number printed on the unit nameplate.

### Parts List

#### Kit 16189 includes:

- 1 - Installation Instructions
- 1 - ECM Engine Module
- 1 - ECM Engine Adapter Harness (4366-7497)
- 1 - ECM Engine Adapter Bracket (4366-7424)
- 2 - #6-32 Screws for Mounting ECM bracket in MMC Location for D cabinet
- 2 - #8-32 Screws for Mounting ECM bracket in Fan Relay Location for E cabinet
- 4 - Wire ties
- 6 - Wire nuts
- 1 - EBM Fan Control Label
- 1 - ECM Engine Parameter Label

#### Kit 16268 includes:

- 1 - Installation Instructions
- 1 - ReliaTel™ Refrigeration Module (RTRM) X13650867-120 or newer
- 1 - ReliaTel™ Options Module (RTOM) X13650868-070 or newer
- 3 - #6-32 Screws for Mounting RTOM
- 1 - RTOM Adapter Harness (4366-7902)
- 1 - RTOM Gender Changer Harness (4366-1172)
- 4 - Wire ties
- 6 - Wire nuts
- 1 - EBM Fan Control Label

## 4 Procedure for Kit 16189

### 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.

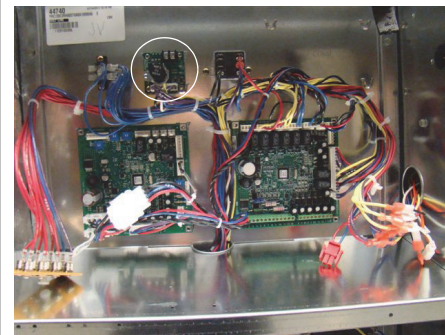
Refer to the attached pictures and instructions for installation instructions.

1. Disconnect and lockout power to the unit.
2. Remove unit indoor fan and compressor access panel covers.
3. Turn unit power on, then measure and record current motor RPM setting on the MMC board by measuring the DC voltage between terminals VT and COM. MMC board is located in the low voltage section of control box for E cabinet units and on the ID fan panel for D cabinet units (refer to pictures below).

Figure 1. MMC board in D cabinet



## 5 Figure 2. MMC board in E cabinet



4. Disconnect and lockout power to the unit.
5. Unplug MMC connector and all wires connected to the "F" relay. Remove MMC board and fan relay.
6. First, mount the ECM adapter bracket on the panel. Next, mount the ECM engine on the bracket (see picture below for correct module orientation).
  - E cabinet units - Using the side mounting holes, take 2 fan relay screws and mount the adapter bracket to the panel where the fan relay was positioned.
  - D cabinet units - Using the top and bottom holes, take the 2 MMC screws and mount the adapter bracket to the panel where the MMC used to be.

## 6 Figure 3. ECM module bracket

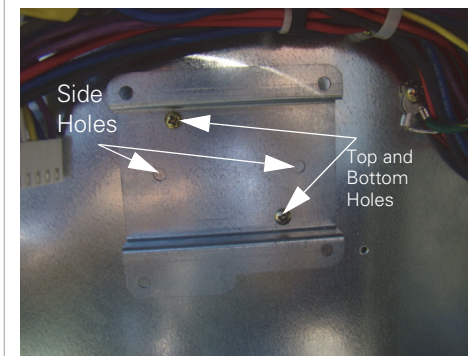
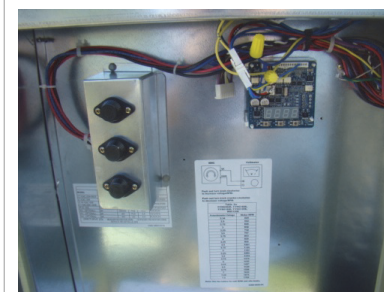


Figure 4. ECM module mounted on bracket



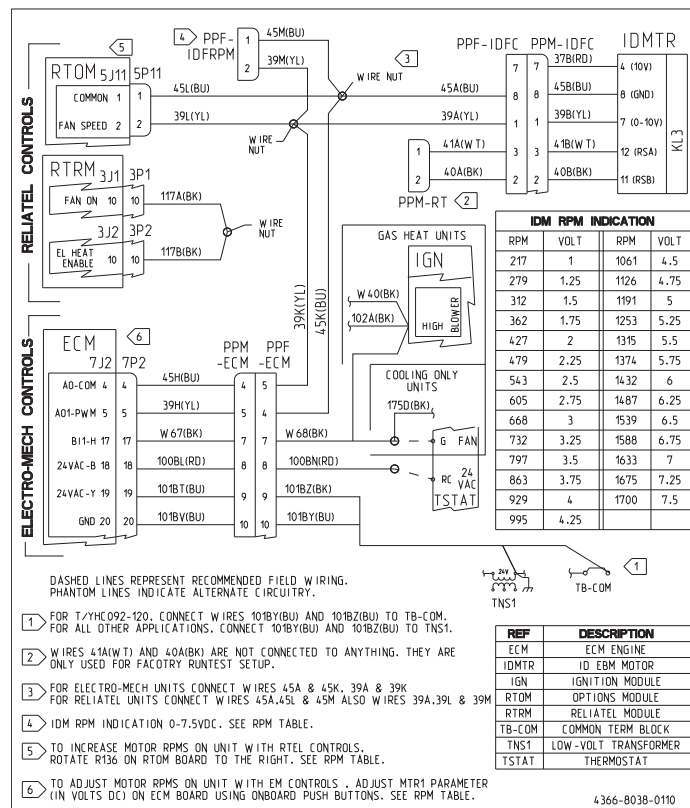
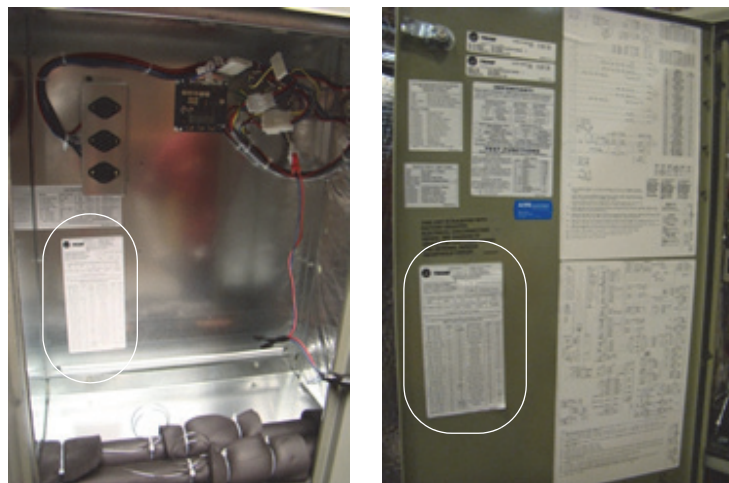
7. Turn unit power on and configure the ECM engine module by adjusting the highlighted parameters on the ECM parameter label. The procedure is as follows:

- a. While the unit remains on, Push and hold the SET button for 3 sec. (Display will show the first parameter name: **Hi 1**)
- b. Push **SET** again to display the parameter's current value.
- c. Push **+ or -** button to adjust parameter to desired value.
- d. Push and hold **SET** button for 3 sec to "save" the value. After save is complete, the name of the changed parameter will display.
- e. To double check if parameter value was changed, **repeat** steps a and b.
- f. **Repeat** steps a through e to adjust all highlighted parameters on the ECM parameter label.

**Note:** Ensure the measured DC voltage setpoint from Step 3 matches parameter value Hi 1.



Figure 5. EBM fan control label

Figure 6. [Left] ECM label - T/YSC120E/F3/4/WE units  
Figure 7. [Right] ECM label - T/YHC092/102/120E/F3/4E or T/YHC074F3/4 units

- Check unit controls harness to see if there is an existing 20 pin ECM connector (some harnesses contain both MMC and ECM connectors). If there is a 20 pin ECM connector, connect it to the ECM board and skip the installation of adapter harness 4366-7497. If there is no 20 pin ECM connector on the controls harness, proceed with Step 9 (installation of adapter harness 4366-7497).
- Plug the 20 pin ECM operation connector on the adapter harness 4366-7497 to the ECM board and route the rest of the wires to control box.
- Plug the 20 pin ECM operation connector on the harness to the ECM board and route the rest of the wires to control box.

- Cut and strip wires 45A(BU) and 39A(YL) from MMC connector. Place 45A(BU) and 45K(BU) into one wire nut and 39A(YL) and 39K(YL) into another wire nut.
- Connect wire 100BN(RD) to R/24VAC on the thermostat using a wire nut.
- Connect wires 101BY(BU) and 101BZ(BU) from ECM connector to TB-COM for T/YHC092/102/120E/F3/4E units or to TNS1-COM for T/YSC120E/F3/4/WE units. See Figure 8 and Figure 9.

Figure 8. TB-COM in T/YHC092/102/120E/F3/4E or T/YHC074F3/4 units

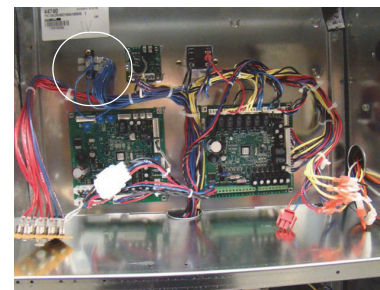
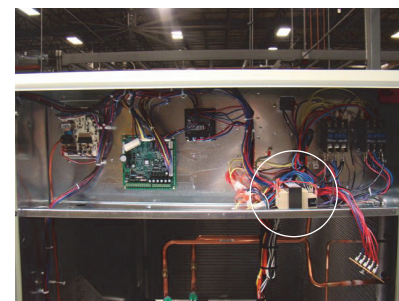


Figure 9. TNS1 in T/YSC120E/F3/4/WE units



- Do the following unit modifications:

**For YSC120 or YHC092/102/120 or YHC074F3/4 units:**

- Connect wire W68(BK) from ECM connector to IGN BLOWER-HI terminal.
- Disconnect wires 102A(BK) and W40(BK) from fan relay, strip wires and put both wires in a wire nut provided in kit.
- Disconnect 101BA(BU) from fan relay and isolate with black tape.

**For TSC120 or THC092/102/120 or THC074F3/4 units:**

- Connect wire W68(BK) from ECM connector to wire 175D(BK) on the Thermostat.
- Disconnect wires 175A(BK) and 175J(BK) from fan relay, strip wires and put both wires in a wire nut provided in kit.
- Disconnect wire 101BA(BU) from fan relay and isolate with electric tape.
- Disconnect wire 101W(BU) from fan relay and connect to TB-COM / TNS1-COM. See EBM motor controls diagram.

- Verify operation and proper RPM/CFM setting of signal to plenum fan motor.

- The ECM engine display should show a looping status indicator as follows (ID motor OFF)

a. MTR1----> 0.00 ----> MTR2 ----> 0.00---->FST1---->ON---->FST2---->ON/OFF---->EhEn---->ON/OFF

- Go to test mode by providing 24VAC to 175D(BK) - Thermostat on Electromechanical units

- In Test Mode Check Correct Board Display with ID motor ON. It should display (ID fan ON):

a. MTR 1----> 5.00----> MTR2 ----> 0.00---->FST1---->ON---->FST2---->ON/OFF---->EhEn---->ON/OFF

**Note:** MTR1 parameter should display the value measured during Step 3. (The factory setting is 5.00 volts DC)

**Note:** Precedent™ units utilize only 1 ID fan which corresponds to MTR1. MTR2 is not used.

- The motor will ramp up or down to adjust to the MTR1 input signal.

- Apply ECM label to the unit as shown in Figure 6 and Figure 7.

- Apply EBM fan label near the ECM parameter label in any available space.

- Re-install unit access panel covers.

## Procedure for KIT16268

### 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.

Refer to the attached pictures and instructions for installation instructions.

- Disconnect and lock-out power to the unit
- Remove unit indoor fan and compressor access panel covers.
- Turn power on, then measure and record current motor RPM setting on the MMC board.
- Disconnect and lock-out power to the unit.
- Replace current module RTRM with an upgraded version 120 or newer (provided in the kit).

Figure 10. RTRM board location in T/YSC120 unit

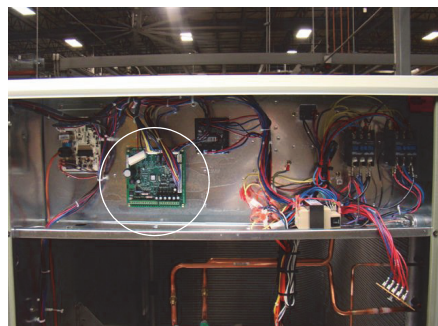
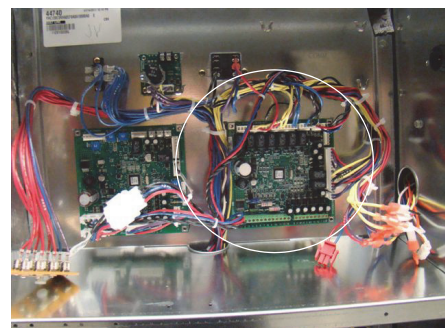


Figure 11. RTRM board location in T/YHC092/102/120, T/YHC074F3/4 or WSC120 unit

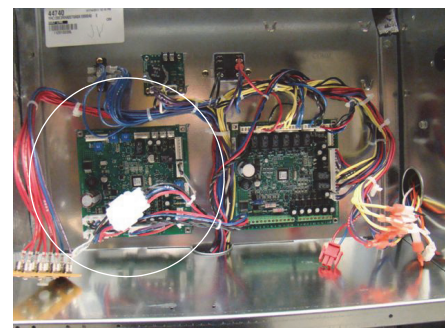


- Install or replace module RTOM with upgraded version 070 or newer, provided in the KIT. Install the gender changer harness (4366-1172) per unit wiring diagram.

Figure 12. RTOM board in T/YSC120 unit



Figure 13. RTOM board in T/YHC092/102/120, T/YHC074F3/4 or WSC120 unit



**Note:** 2 pin connector with wires 39M(YL) and 45M(BU) is not connected to anything. This connector is used to measure Supply Fan Volts DC in the field.

- Unplug MMC connector and all wires connected to "F" relay. Remove MMC board and fan relay. See Figure 1 and Figure 2 for locating the MMC in the unit.
- Cut wires 39A(YL) and 45A(BU) from MMC connector and strip them. Take wires 39A(YL), 39L(YL) and 39M(YL) place them in a wire nut provided in the KIT. Then take wires 45A(BU), 45L(BU) and 45M(BU) place them in another wire nut provided in the KIT. Secure the MMC connector to the unit wire harness.
- Take wires 117A(BK) and 117B(BK) from fan relay, cut and strip them, then put them in a wire nut. Isolate and secure wires 37A(RD), 38A(PR) and 101BA(BU).
- Restore power to the unit and go to test mode by jumpering Test 1 and Test 2 terminals on the low voltage terminal board (LTB1) located in control box.
- In test mode verify operation and proper RPM of signal to plenum fan motor. Measure DC volts on the unused 2 pin connector from harness 4366-7902.
- Install harness 4366-7902 per EBM fan control label included in the kit.

- If measured voltage does not equal the original unit setting measured in Step 3, adjust potentiometer R136 to match original unit setting.
- Apply EBM fan label on the compressor access panel in any available space.
- Re-install unit access panel covers.

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