

50HC


Single Package Rooftop

Cooling Only

with Puron® (R-410A) Refrigerant

Sizes: 04, 05, 06



turn to the experts 

Installation Instructions

NOTE: Read the entire instruction manual before starting the installation

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SAFETY CONSIDERATIONS

Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock or other conditions which may cause personal injury or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory-authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloths for brazing operations and have a fire extinguisher available. Read these instructions thoroughly and follow all warnings or cautions attached to the unit. Consult local building codes and appropriate national electrical codes (in USA, ANSI/NFPA 70, National Electrical Code (NEC); in Canada, CSA C22.1) for special requirements.

It is important to recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, CAUTION, and NOTE. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices, which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could cause personal injury or death.

Before performing service or maintenance operations on unit, turn off main power switch to unit and install lock(s) and lockout tag(s). Ensure electrical service to rooftop unit agrees with voltage and amperage listed on the unit rating plate. Unit may have more than one power switch.

WARNING

UNIT OPERATION AND SAFETY HAZARD

Failure to follow this warning could cause personal injury, death and/or equipment damage.

Puron® (R-410A) refrigerant systems operate at higher pressures than standard R-22 systems. Do not use R-22 service equipment or components on Puron refrigerant equipment.

WARNING

PERSONAL INJURY AND ENVIRONMENTAL HAZARD

Failure to follow this warning could cause personal injury or death.

Relieve pressure and recover all refrigerant before system repair or final unit disposal.

Wear safety glasses and gloves when handling refrigerants. Keep torches and other ignition sources away from refrigerants and oils.

CAUTION

CUT HAZARD

Failure to follow this caution may result in personal injury.

Sheet metal parts may have sharp edges or burrs. Use care and wear appropriate protective clothing, safety glasses and gloves when handling parts and servicing air conditioning equipment.

Position:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Example:	5	0	H	C	B	A	0	4	A	2	A	6	A	0	A	3	B	0

Unit Heat Type

50 - Electric Heat
Packaged Rooftop

Model Series - WeatherMaster™

HC - High Efficiency

Heat Options

- - None (Field Installed Accessory)
A = Low Electric Heat
B = Medium Electric Heat
C = High Electric Heat

Refrig. Systems Options

A = Single stage cooling models
B = Single stage cooling models with Humidi-MiZer®
F = Single stage cooling models with MotorMaster Low Ambient Controller

Cooling Tons

04 - 3 ton
05 - 4 ton
06 - 5 ton

Sensor Options

A = None
B = RA Smoke Detector
C = SA Smoke Detector
D = RA + SA Smoke Detector
E = CO₂
F = RA Smoke Detector and CO₂
G = SA Smoke Detector and CO₂
H = RA + SA Smoke Detector and CO₂

Indoor Fan Options: 3, 4, 5 Ton Models Only*

0 = Electric (Direct) Drive x13 Motor
2 = Medium Static Option - Belt Drive
3 = High Static Option - Belt Drive

Coil Options (RTPF) (Outdoor - Indoor - Hail Guard)

A = Al/Cu - Al/Cu
B = Precoat Al/Cu - Al/Cu
C = E-coat Al/Cu - Al/Cu
D = E-coat Al/Cu - E-coat Al/Cu
E = Cu/Cu - Al/Cu
F = Cu/Cu - Cu/Cu
M = Al/Cu -Al/Cu — Louvered Hail Guard
N = Precoat Al/Cu - Al/Cu — Louvered Hail Guard
P = E-coat Al/Cu - Al/Cu — Louvered Hail Guard
Q = E-coat Al/Cu - E-coat Al/Cu — Louvered Hail Guard
R = Cu/Cu - Al/Cu — Louvered Hail Guard
S = Cu/Cu - Cu/Cu — Louvered Hail Guard

Factory Assigned

0 = Standard
1 = LTL

Electrical Options

A = None
B = HACR Breaker
C = Non-Fused Disconnect
D = Thru-The-Base Connections
E = HACR and Thru-The-Base Connections
F = Non-Fused Disconnect and Thru-The-Base Connections

Service Options

0 = None
1 = Unpowered Convenience Outlet
2 = Powered Convenience Outlet
3 = Hinged Panels
4 = Hinged Panels and Unpowered Convenience Outlet
5 = Hinged Panels and Powered Convenience Outlet
C = Foil Faced Insulation
D = Foil Faced Insulation with Unpowered Convenience Outlet
E = Foil Faced Insulation with Powered Convenience Outlet

Intake / Exhaust Options

A = None
B = Temperature Economizer w/ Barometric Relief
F = Enthalpy Economizer w/ Barometric Relief
K = 2-Position Damper

Base Unit Controls

0 = Base Electromechanical Controls
1 = PremierLink Controller
2 = RTU Open Multi-Protocol Controller
D = ComfortLink Controls

Design Revision

A = Factory Design Revision

Voltage

1 = 575/3/60
3 = 208-230/1/60
5 = 208-230/3/60
6 = 460/3/60

Note: On single phase (-3 voltage code) models, the following are not available as a factory installed option:

- Humidi-MiZer®
- Coated Coils or Cu Fin Coils
- Louvered Hail Guards
- Economizer or 2 Position Damper
- Powered 115 Volt Convenience Outlet



50HC

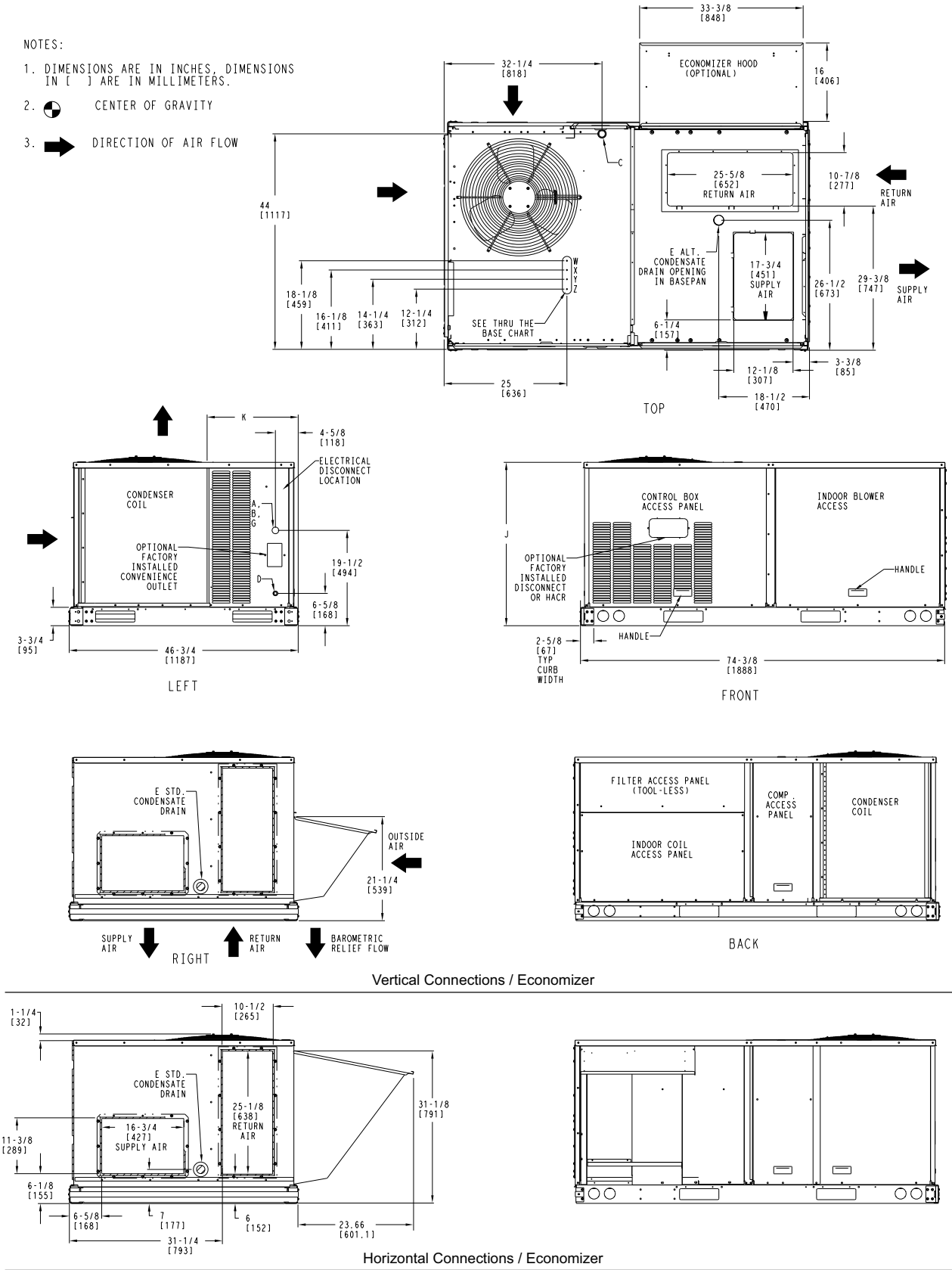
Fig. 1 - 50HC 04-06 Model Number Nomenclature (Example)

C12238

50HC

NOTES:

1. DIMENSIONS ARE IN INCHES, DIMENSIONS IN [] ARE IN MILLIMETERS.
2.  CENTER OF GRAVITY
3.  DIRECTION OF AIR FLOW



CONNECTION SIZES	
A	1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B	2" [51] DIA POWER SUPPLY KNOCKOUT
C	1 3/4" [44] DIA GAUGE ACCESS PLUG
D	7/8" [22] DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
G	2 1/2" [64] DIA POWER SUPPLY KNOCK-OUT

THRU-THE-BASE CHART THESE HOLES REQUIRED FOR USE CRBTMPWR001A01			
	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
W	1/2"	ACC.	7/8" [22.2]
X	1/2"	24V	7/8" [22.2]
Y *	3/4" (001)	POWER	1 1/8" [28.4]
FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X & Y ARE PROVIDED			
* SELECT EITHER 3/4" OR 1/2" FOR POWER, DEPENDING ON WIRE SIZE			

UNIT	J	K
50HC-A04	33 3/8 [847]	18 5/8 [472]
50HC-A05	41 3/8 [1051]	14 7/8 [377]
50HC-A06	41 3/8 [1051]	14 7/8 [377]

Fig. 2 - Unit Dimensional Drawing

UNIT	STD. UNIT WEIGHT*		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
50HC-A04	458	208	128	58	109	49	101	46	120	54	34 1/8 [867]	22 1/2 [572]	19 3/4 [502]
50HC-A05	545	247	156	71	135	61	118	54	136	62	34 5/8 [879]	21 3/4 [552]	20 7/8 [530]
50HC-A06	550	249	160	73	136	62	117	53	138	63	34 1/8 [867]	21 5/8 [549]	20 1/4 [514]

* STANDARD UNIT WEIGHT IS WITHOUT ELECTRIC HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTIONS AND ACCESSORIES REFER TO THE PRODUCT DATA CATALOG.

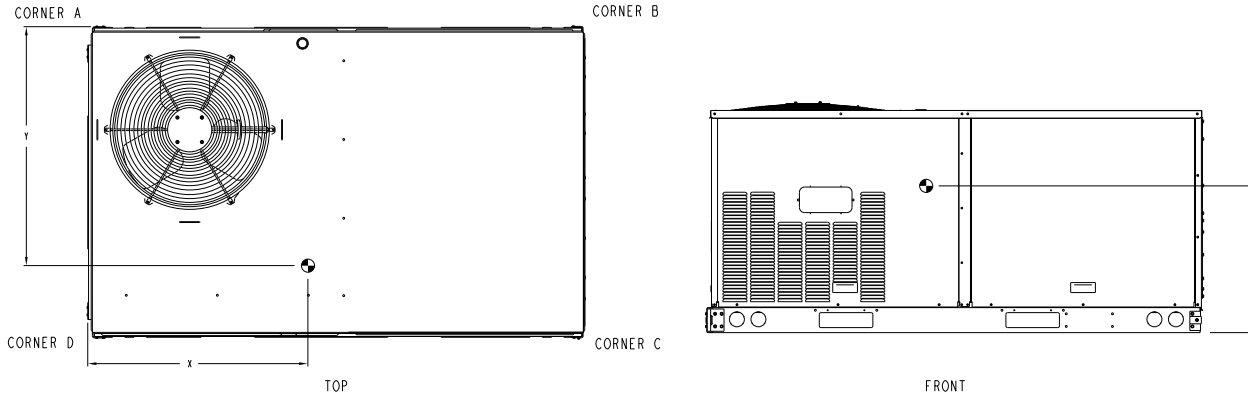
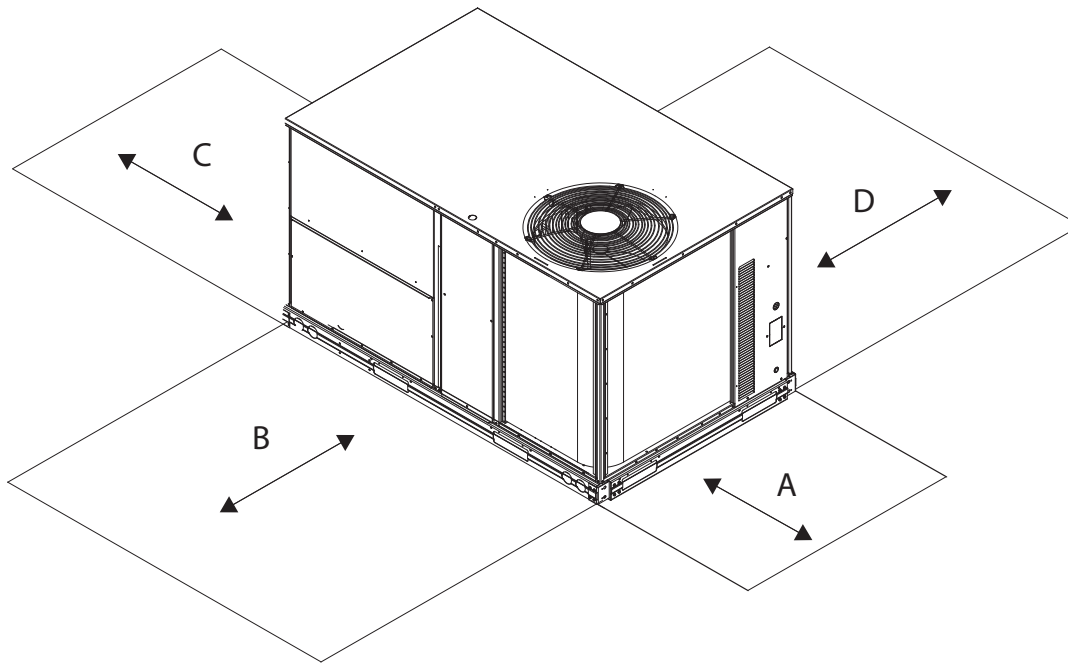


Fig. 1 - Unit Dimensional Drawing (cont.)

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LOCATION	DIMENSION	CONDITION
A	48-in (1219 mm)	Unit disconnect is mounted on panel
	18-in (457 mm)	No disconnect, convenience outlet option
	18-in (457 mm)	Recommended service clearance
	12-in (305 mm)	Minimum clearance
B	40-in (1067 mm)	Surface behind servicer is grounded (e.g., metal, masonry wall)
	36-in (914 mm)	Surface behind servicer is electrically non-conductive (e.g., wood, fiberglass)
C	36-in (914 mm)	Side condensate drain is used
	18-in (457 mm)	Minimum clearance
D	42-in (1067 mm)	Surface behind servicer is grounded (e.g., metal, masonry wall, another unit)
	36-in (914 mm)	Surface behind servicer is electrically non-conductive (e.g., wood, fiberglass)

NOTE: Unit not designed to have overhead obstruction. Contact Application Engineering for guidance on any application planning overhead obstruction or for vertical clearances.

Fig. 3 - Service Clearance Dimensional Drawing

INSTALLATION

Jobsite Survey

Complete the following checks before installation.

1. Consult local building codes and the NEC (National Electrical Code) (ANSI/NFPA 70) for special installation requirements.
2. Determine unit location (from project plans) or select unit location.
3. Check for possible overhead obstructions which may interfere with unit lifting or rigging.

Step 1 — Plan for Unit Location

Select a location for the unit and its support system (curb or other) that provides for minimum clearances required for safety (including clearance to combustible surfaces), unit performance and service access below, around and above unit as specified in unit drawings. See Fig. 3.

NOTE: Consider also the effect of adjacent units.

Unit may be installed directly on wood flooring or on Class A, B, or C roof-covering material when roof curb is used.

Do not install unit in an indoor location. Do not locate air inlets near exhaust vents or other sources of contaminated air.

Although unit is weatherproof, avoid locations that permit water from higher level runoff and overhangs to fall onto unit.

Select a unit mounting system that provides adequate height to allow installation of condensate trap per

requirements. Refer to Step 10 — Install External Condensate Trap and Line – for required trap dimensions.

Roof Mount —

Check building codes for weight distribution requirements. Unit operating weight is shown in Table 1.

Step 2 — Plan for Sequence of Unit Installation

The support method used for this unit will dictate different sequences for the steps of unit installation. For example, on curb-mounted units, some accessories must be installed on the unit before the unit is placed on the curb. Review the following for recommended sequences for installation steps.

Curb-mounted Installation —

Install curb

Install field-fabricated ductwork inside curb

Install accessory thru-base service connection package (affects curb and unit) (refer to accessory installation instructions for details)

Prepare bottom condensate drain connection to suit planned condensate line routing (refer to Step 10 for details)

Rig and place unit

Install outdoor air hood

Install condensate line trap and piping

Make electrical connections

Install other accessories

Table 1 – Operating Weights

50HC—*	UNITS LB (KG)		
	04	05	06
Base Unit	458 (208)	545 (247)	550 (249)
Economizer			
Vertical	50 (23)	50 (23)	50 (23)
Horizontal	80 (36)	80 (36)	80 (36)
Humidi-MiZer [®] System	27 (10)	34 (13)	34 (13)
Cu Fins	25 (11)	43 (20)	56 (25)
Powered Outlet	32 (15)	32 (15)	32 (15)
Curb			
14-in/356 mm	110 (50)	110 (50)	110 (50)
24-in/610 mm	145 (66)	145 (66)	145 (66)

Pad-mounted Installation —

- Prepare pad and unit supports
- Check and tighten the bottom condensate drain connection plug
- Rig and place unit
- Convert unit to side duct connection arrangement
- Install field-fabricated ductwork at unit duct openings
- Install outdoor air hood
- Install condensate line trap and piping
- Make electrical connections
- Install other accessories

Frame-mounted installation —

Frame-mounted applications generally follow the sequence for a curb installation. Adapt as required to suit specific installation plan.

Step 3 — Inspect unit

Inspect unit for transportation damage. File any claim with transportation agency.

Confirm before installation of unit that voltage, amperage and circuit protection requirements listed on unit data plate agree with power supply provided.

On units with hinged panel option, check to be sure all latches are snug and in closed position.

Locate the carton containing the outside air hood parts; see Fig. 9. Do not remove carton until unit has been rigged and located in final position.

Step 4 — Provide Unit Support

Roof Curb Mount —

Accessory roof curb details and dimensions are shown in Fig. 4. Assemble and install accessory roof curb in accordance with instructions shipped with the curb.

Curb should be level. This is necessary for unit drain to function properly. Unit leveling tolerances are shown in Fig. 5. Refer to Accessory Roof Curb Installation Instructions for additional information as required.

Install insulation, cant strips, roofing felt, and counter flashing as shown. *Ductwork must be attached to curb and not to the unit. The accessory thru-the-base power and gas connection package must be installed before the unit is set on the roof curb.*

If electric and control wiring is to be routed through the basepan, attach the accessory thru-the-base service connections to the basepan in accordance with the accessory installation instructions.

NOTE: The gasketing of the unit to the roof curb is critical for a watertight seal. Install gasket supplied with the roof curb as shown in Fig. 4. Improperly applied gasket can also result in air leaks and poor unit performance.

Slab Mount (Horizontal Units Only) —

Provide a level concrete slab that extends a minimum of 6 in. (150 mm) beyond unit cabinet. Install a gravel apron in front of condenser coil air inlet to prevent grass and foliage from obstructing airflow.

NOTE: Horizontal units may be installed on a roof curb if required.

Alternate Unit Support (In Lieu of Curb or Slab Mount) —


A non-combustible sleeper rail can be used in the unit curb support area. If sleeper rails cannot be used, support the long sides of the unit with a minimum of 3 equally spaced 4-in. x 4-in. (102 mm x 102 mm) pads on each side.

CONNECTOR PKG. ACCY.	B	C	D ALT DRAIN HOLE	POWER	CONTROL	ACCESSORY POWER
CRBTMPWR001A01	1'-9 11/16" [551]	1'-4" [406]	1 3/4" [44.5]	3/4" [19] NPT	1/2" [12.7] NPT	1/2" [12.7] NPT
CRBTMPWR003A01				1 1/4" [31.7]		

ROOFCURB ACCESSORY	A	UNIT SIZE
CRRFCURB001A01	1'-2" [356]	50HC**04-06
CRRFCURB002A01	2'-0" [610]	

50HC

NOTES:

1. Roof curb accessory is shipped disassembled.
2. Insulated panels.
3. Dimensions in [] are in millimeters.
4. Roof curb: galvanized steel.
5. Attach ductwork to curb (flanges to duct rest on curb).
6. Service clearance: 4 ft on each side.
7.  Direction of airflow.

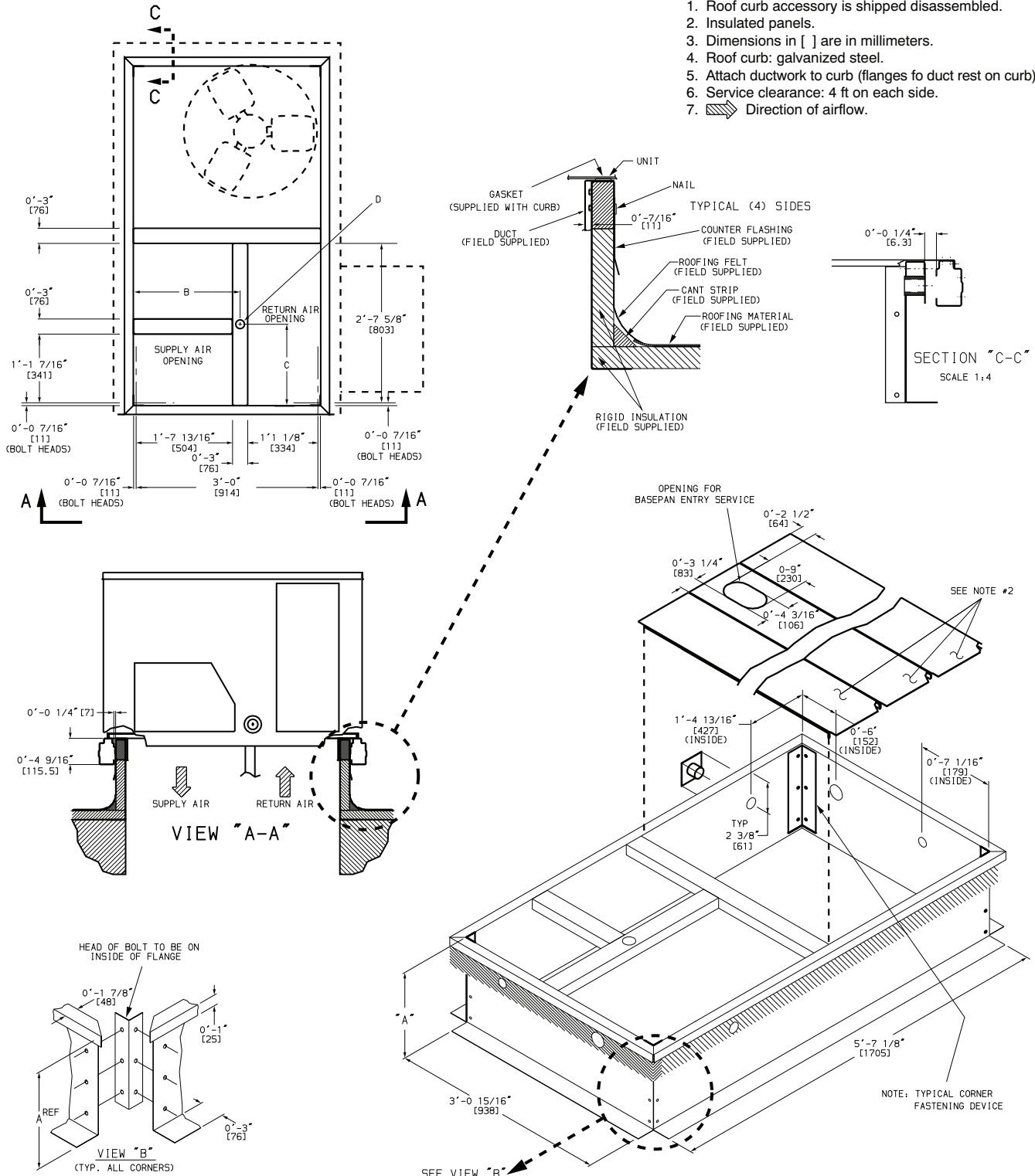


Fig. 4 - Roof Curb Details

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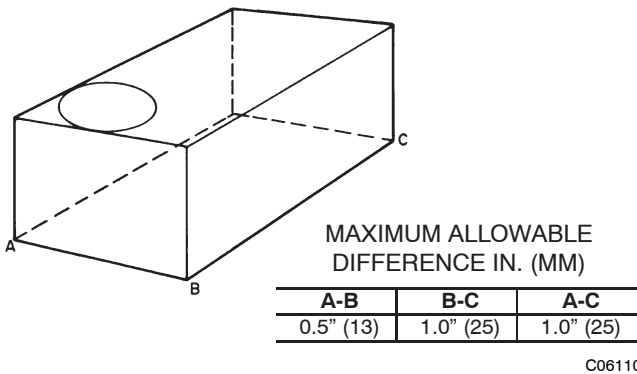


Fig. 5 - Unit Leveling Tolerances

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Step 5 — Field Fabricate Ductwork

Cabinet return-air static pressure (a negative condition) shall not exceed 0.35 in. wg (87 Pa) with economizer or 0.45 in. wg (112 Pa) without economizer.

For vertical ducted applications, secure all ducts to roof curb and building structure. *Do not connect ductwork to unit.*

Fabricate supply ductwork so that the cross sectional dimensions are equal to or greater than the unit supply duct opening dimensions for the first 18 in. (458 mm) of duct length from the unit basepan.

Insulate and weatherproof all external ductwork, joints, and roof openings with counter flashing and mastic in accordance with applicable codes.

Ducts passing through unconditioned spaces must be insulated and covered with a vapor barrier.

If a plenum return is used on a vertical unit, the return should be ducted through the roof deck to comply with applicable fire codes.

⚠ CAUTION

PROPERTY DAMAGE HAZARD

Failure to follow this caution may result in damage to roofing materials.

Membrane roofs can be cut by sharp sheet metal edges. Be careful when placing any sheet metal parts on such roof.

For Units with Accessory or Optional Electric Heaters —

All installations require a minimum clearance to combustible surfaces of 1-in (25 mm) from duct for first 12-in (305 mm) away from unit.

Outlet grilles must not lie directly below unit discharge.

NOTE: A 90-degree elbow must be provided in the ductwork to comply with UL (Underwriters Laboratories) code for use with electric heat.

⚠ WARNING

PERSONAL INJURY HAZARD

Failure to follow this warning could cause personal injury.

For vertical supply and return units, tools or parts could drop into ductwork and cause an injury. Install a 90-degree turn in the return ductwork between the unit and the conditioned space. If a 90-degree elbow cannot be installed, then a grille of sufficient strength and density should be installed to prevent objects from falling into the conditioned space. Due to electric heater, supply duct will require 90-degree elbow.

50HC

Step 6 — Rig and Place Unit

Keep unit upright and do not drop. Spreader bars are not required if top crating is left on unit. Rollers may be used → to move unit across a roof. Rigging materials under unit (cardboard or wood) must be removed **PRIOR** to placing the unit on the roof curb. Level by using unit frame as a reference. See Table 1 and Fig. 6 for additional information.

Lifting holes are provided in base rails as shown in Fig. 6. Refer to rigging instructions on unit.

Before setting the unit onto the curb, recheck gasketing on curb.

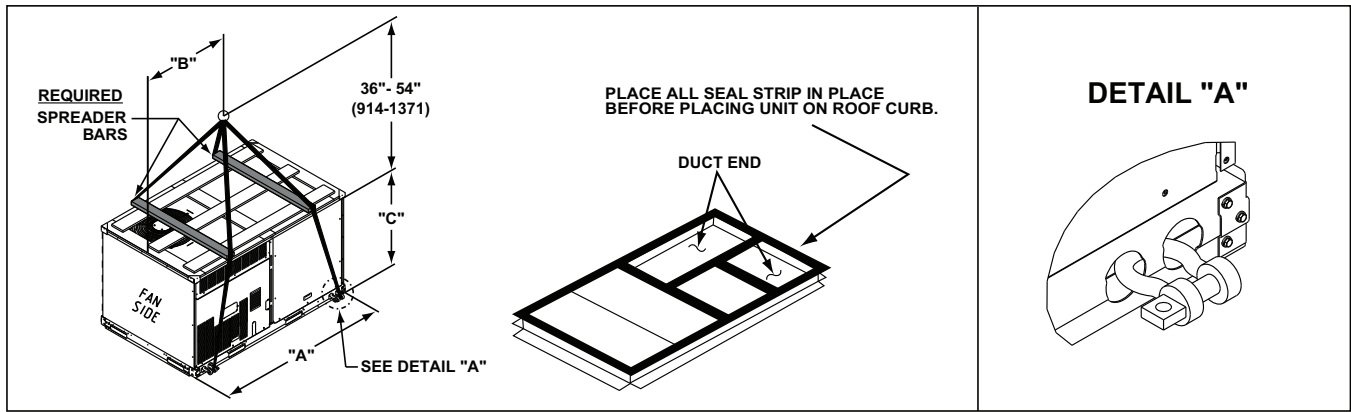
⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage.

All panels must be in place when rigging. Unit is not designed for handling by fork truck when panels or packaging are removed.

If using top crate as spreader bar, once unit is set, carefully lower wooden crate off building roof top to ground. Ensure that no people or obstructions are below prior to lowering the crate.



C11292

UNIT	MAX WEIGHT		DIMENSION					
			A		B		C	
	LB	KG	IN	MM	IN	MM	IN	MM
50HC-A04	700	318	74.5	1890	36.5	925	33.5	850
50HC-A05	830	377	74.5	1890	36.5	925	41.5	1055
50HC-A06	865	393	74.5	1890	36.0	915	41.5	1055

NOTES:

1. SPREADER BARS REQUIRED — Top damage will occur if spreader bars are not used.
2. Dimensions in () are in millimeters.
3. Hook rigging shackles through holes in base rail, as shown in detail "A." Holes in base rails are centered around the unit center of gravity. Use wooden top to prevent rigging straps from damaging unit.

Fig. 6 - Rigging Details

Positioning on Curb —

Position unit on roof curb so that the following clearances are maintained: 1/4 in. (6.4 mm) clearance between the roof curb and the base rail inside the front and rear, 0.0 in. clearance between the roof curb and the base rail inside on the duct end of the unit. This will result in the distance between the roof curb and the base rail inside on the condenser end of the unit being approximately equal to Fig. 4, section C-C.

Although unit is weatherproof, guard against water from higher level runoff and overhangs.

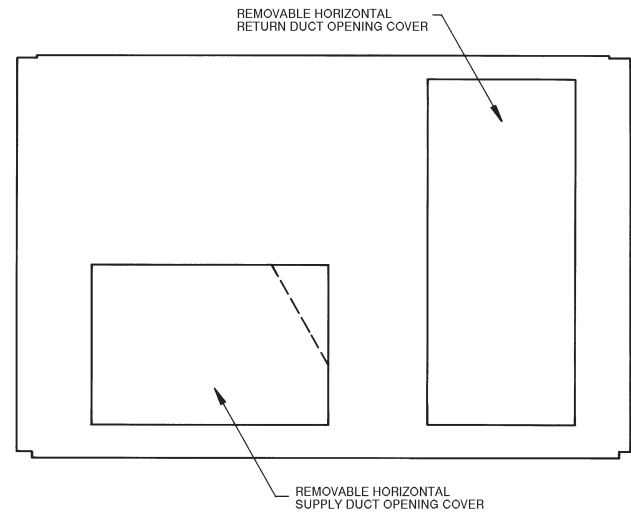
⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in equipment damage.

All panels must be in place when rigging. Unit is not designed for handling by fork truck when panels or packaging are removed.

remove screws from side duct opening covers and remove covers. Using the same screws, install covers on vertical duct openings with the insulation-side down. Seals around duct openings must be tight. See Fig. 7.



C06108

Fig. 7 - Horizontal Conversion Panels

After unit is in position, remove rigging skids and shipping materials.

Step 7 — Convert to Horizontal and Connect Ductwork (when required)

Unit is shipped in the vertical duct configuration. Unit without factory-installed economizer or return air smoke detector option may be field-converted to horizontal ducted configuration. To convert to horizontal configuration,

Field-supplied flanges should be attached to horizontal duct openings and all ductwork should be secured to the flanges. Insulate and weatherproof all external ductwork, joints, and roof or building openings with counter flashing and mastic in accordance with applicable codes.

Do not cover or obscure visibility to the unit's informative data plate when insulating horizontal ductwork.

Step 8 — Install Outside Air Hood

Economizer and Two Position Damper Hood Package Removal and Setup - Factory Option

NOTE: Economizer and two position damper are not available as factory installed options for single phase (-3 voltage code) models.

1. The hood is shipped in knock-down form and must be field assembled. The indoor coil access panel is used as the hood top while the hood sides, divider and filter are packaged together, attached to a metal support tray using plastic stretch wrap, and shipped in the return air compartment behind the indoor coil access panel. The hood assembly's metal tray is attached to the basepan and also attached to the damper using two plastic tie-wraps.
2. To gain access to the hood, remove the filter access panel. (See Fig. 8.)

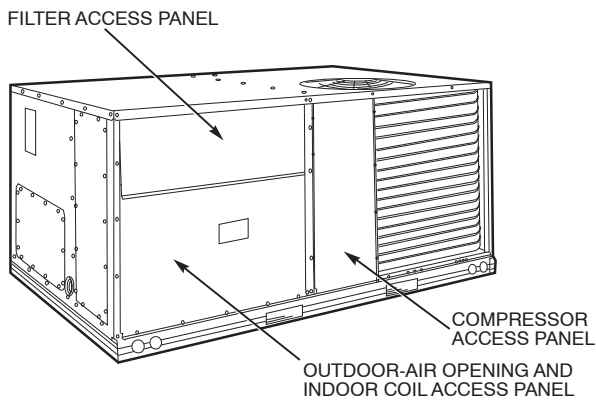


Fig. 8 - Typical Access Panel Locations

C06023

3. Locate the (2) screws holding the metal tray to the basepan and remove. Locate and cut the (2) plastic tie-wraps securing the assembly to the damper. (See Fig. 9) Be careful to not damage any wiring or cut tie-wraps securing any wiring.

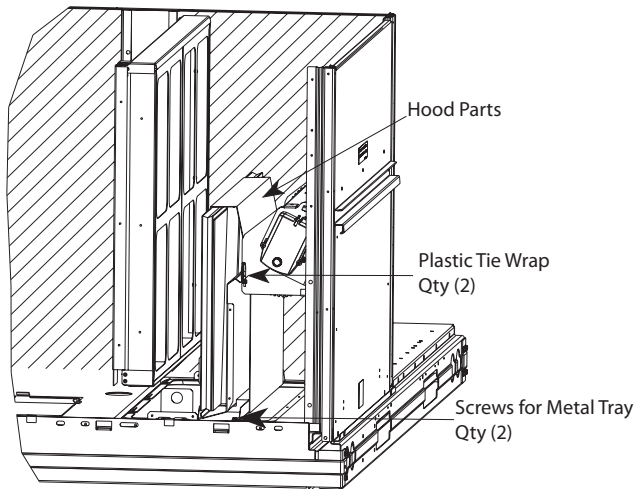


Fig. 9 - Economizer and Two-Position Damper Hood Parts Location

C08639

4. Carefully lift the hood assembly (with metal tray) through the filter access opening and assemble per the

steps outlined in *Economizer Hood and Two-Position Hood*, below.

Economizer Hood and Two-Position Hood —

NOTE: If the power exhaust accessory is to be installed on the unit, the hood shipped with the unit will not be used and must be discarded. Save the aluminum filter for use in the power exhaust hood assembly.

1. The indoor coil access panel will be used as the top of the hood. Remove the screws along the sides and bottom of the indoor coil access panel. See Fig. 10.

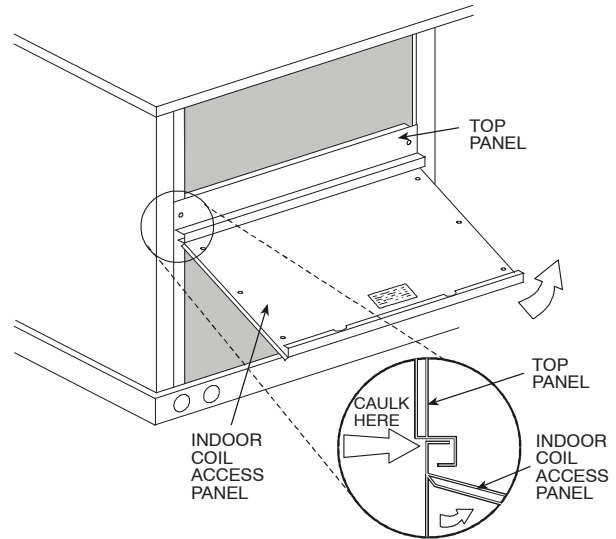


Fig. 10 - Indoor Coil Access Panel Relocation

C06025

2. Swing out indoor coil access panel and insert the hood sides under the panel (hood top). Use the screws provided to attach the hood sides to the hood top. Use screws provided to attach the hood sides to the unit. See Fig. 11.

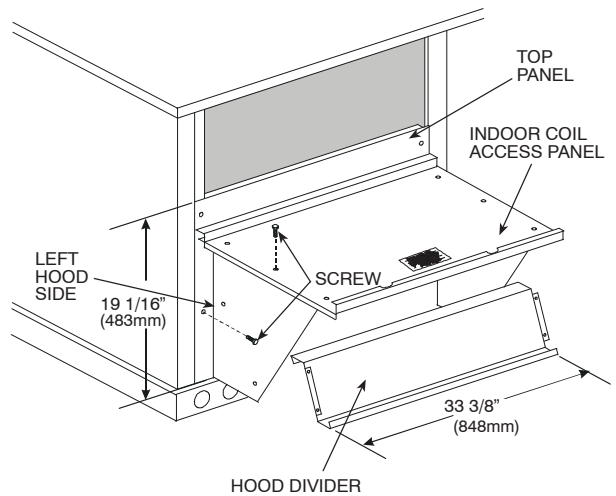


Fig. 11 - Economizer Hood Construction

C06026

3. Remove the shipping tape holding the economizer barometric relief damper in place (economizer only).
4. Insert the hood divider between the hood sides. See Fig. 11 and Fig. 12. Secure hood divider with 2 screws on each hood side. The hood divider is also used as the bottom filter rack for the aluminum filter.

- Open the filter clips which are located underneath the hood top. Insert the aluminum filter into the bottom filter rack (hood divider). Push the filter into position past the open filter clips. Close the filter clips to lock the filter into place. See Fig. 12.
- Caulk the ends of the joint between the unit top panel and the hood top.
- Replace the filter access panel.

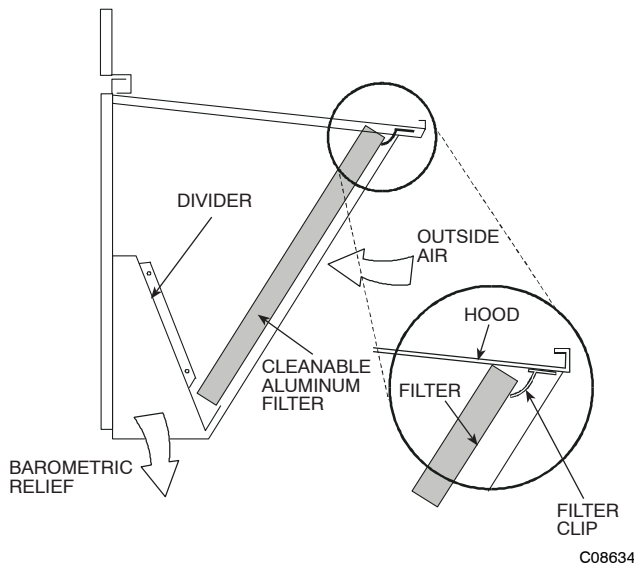


Fig. 12 - Economizer Filter Installation

Step 9 — Units with Hinged Panels Only

Relocate latch shipped inside the compressor compartment behind the hinged compressor door to location shown in Fig. 13 after unit installation.

If the unit does not have hinged panels, skip this step and continue at step 10.

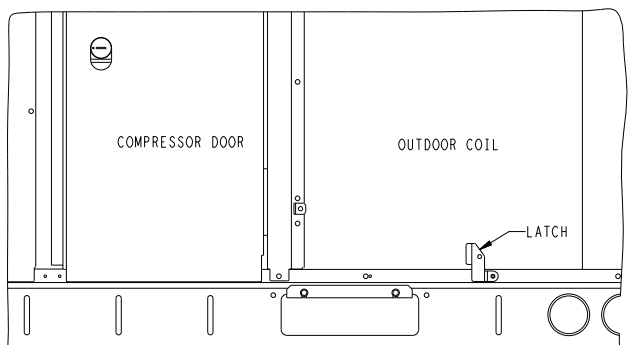


Fig. 13 - Compressor Door Latch Location

Step 10 — Install External Condensate Trap & Line

The unit has one 3/4-in. condensate drain connection on the end of the condensate pan and an alternate connection on the bottom. See Fig. 14. Unit airflow configuration does not determine which drain connection to use. Either drain connection can be used with vertical or horizontal applications.

When using the standard side drain connection, ensure the red plug in the alternate bottom connection is tight. Do this before setting the unit in place. The red drain pan plug can be tightened with a 1/2-in. square socket drive extension.

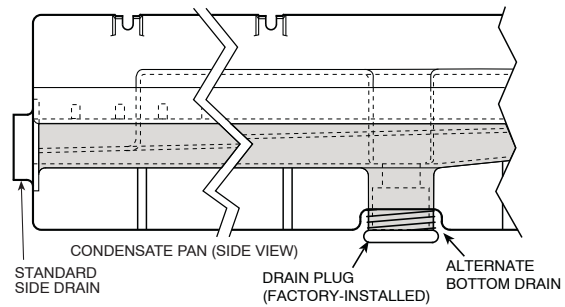
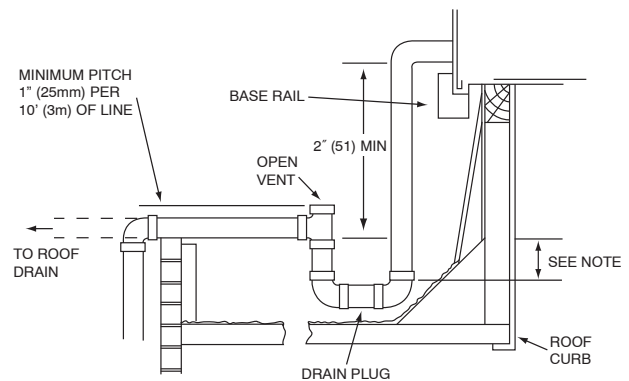


Fig. 14 - Condensate Drain Pan (Side View)

To use the alternate bottom drain connection, remove the red drain plug from the bottom connection (use a 1/2-in. square socket drive extension) and install it in the side drain connection.

The piping for the condensate drain and external trap can be completed after the unit is in place. See Fig. 15.



NOTE: Trap should be deep enough to offset maximum unit static difference. A 4" (102) trap is recommended

Fig. 15 - Condensate Drain Piping Details

All units must have an external trap for condensate drainage. Install a trap at least 4-in. (102 mm) deep and protect against freeze-up. If drain line is installed downstream from the external trap, pitch the line away from the unit at 1-in. per 10 ft (25 mm in 3 m) of run. Do not use a pipe size smaller than the unit connection (3/4-in.).

Step 11 — Make Electrical Connections

⚠ WARNING

ELECTRICAL SHOCK HAZARD

Failure to follow this warning could result in personal injury or death.

Unit cabinet must have an uninterrupted, unbroken electrical ground to minimize the possibility of personal injury if an electrical fault should occur. This ground may consist of electrical wire connected to unit ground lug in control compartment, or conduit approved for electrical ground when installed in accordance with NEC; ANSI/NFPA 70, latest edition (in Canada, Canadian Electrical Code CSA [Canadian Standards Association] C22.1), and local electrical codes.

NOTE: Field-supplied wiring shall conform with the limitations of minimum 63°F (33°C) rise.

Field Power Supply —

If equipped with optional Powered Convenience Outlet: The power source leads to the convenience outlet's transformer primary are not factory connected. Installer must connect these leads according to required operation of the convenience outlet. If an always-energized convenience outlet operation is desired, connect the source leads to the line side of the unit-mounted disconnect. (Check with local codes to ensure this method is acceptable in your area.) If a de-energize via unit disconnect switch operation of the convenience outlet is desired, connect the source leads to the load side of the unit disconnect. On a unit without a unit-mounted disconnect, connect the source leads to compressor contactor C and indoor fan contactor IFC pressure lugs with unit field power leads.

Refer to Fig. 24 for power transformer connections and the discussion on connecting the convenience outlet on page 15.

Field power wires are connected to the unit at line-side pressure lugs on compressor contactor C and indoor fan contactor IFC (see wiring diagram label for control box component arrangement) or at factory-installed option non-fused disconnect switch or HACR. Max wire size is #2ga AWG (copper only) per pole on contactors. #2ga AWG (copper only) per pole on optional disconnect or HACR and 4/0 AWG (copper only) per pole on terminal or fuse block on units with single point box. See Fig. 16 and unit label diagram for field power wiring connections.

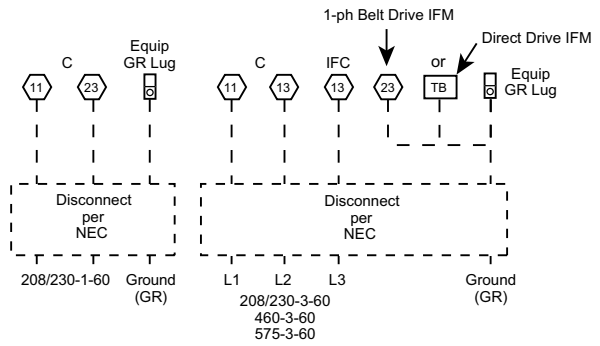
NOTE: TEST LEADS - Unit may be equipped with short leads (pigtailed) on the field line connection points on contactor C or optional disconnect switch. These leads are for factory run-test purposes only; remove and discard before connecting field power wires to unit connection points. Make field power connections directly to line connection pressure lugs only.

Units With Factory-Installed Non-Fused Disconnect or HACR —

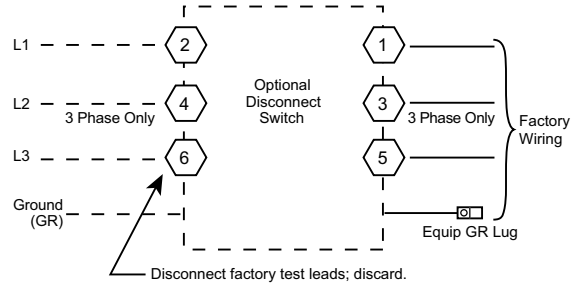
The factory-installed optional non-fused disconnect (NFD) or HACR switch is located in a weatherproof enclosure located under the main control box. The manual switch handle and shaft are shipped in the disconnect or HACR enclosure. Assemble the shaft and handle to the switch at this point. Discard the factory test leads (see Fig. 16).

Connect field power supply conductors to LINE side terminals when the switch enclosure cover is removed to attach the handle.

Units Without Single Point Box, Disconnect or HACR Option



Units With Disconnect or HACR Option



Units With Electric Heat Option with Single Point Box and Without Disconnect or HACR Option

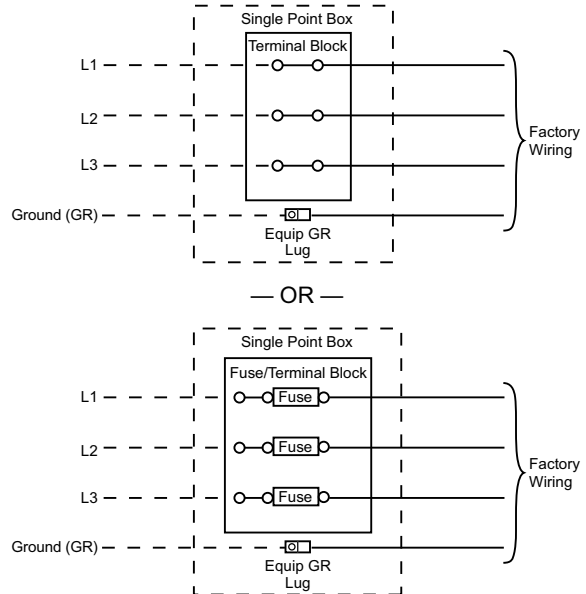


Fig. 16 - Power Wiring Connections

C12112

⚠ WARNING

FIRE HAZARD

Failure to follow this warning could result in intermittent operation or performance satisfaction.

Do not connect aluminum wire between disconnect switch and air conditioning unit. Use only copper wire. (See Fig. 17.)

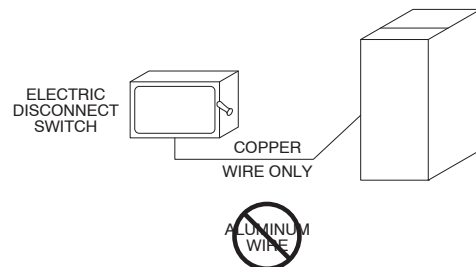
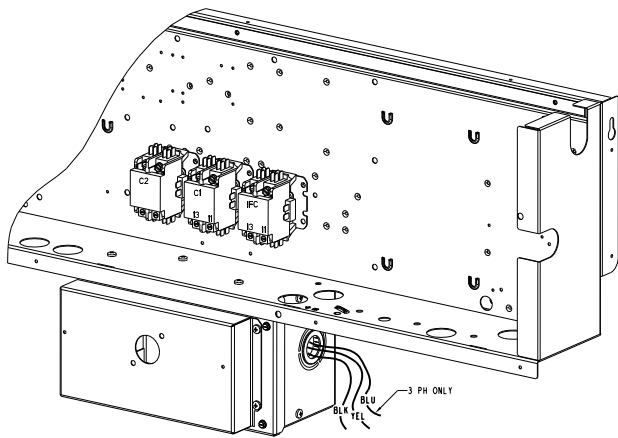


Fig. 17 - Disconnect Switch and Unit

A93033

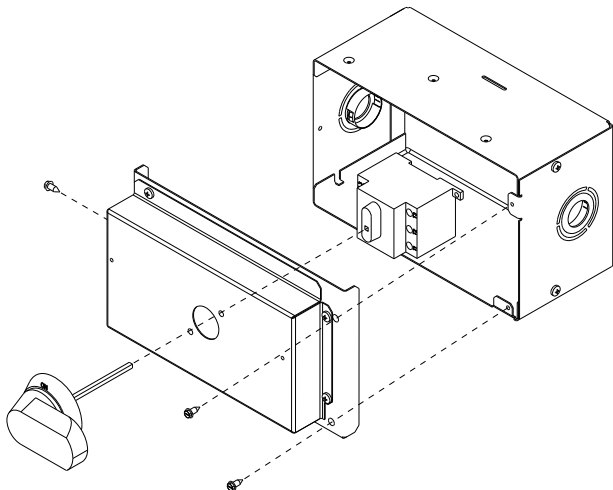
50HC



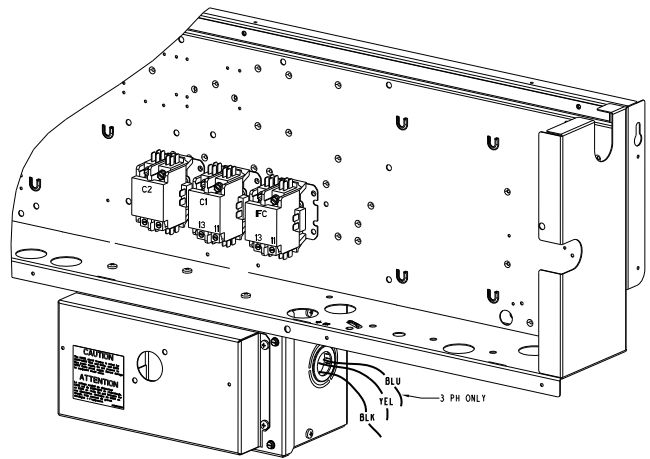
C12284

Fig. 18 - Location of Non-Fused Disconnect Enclosure**To field install the NFD shaft and handle:**

1. Remove the unit front panel (see Fig. 2).
2. Remove (3) hex screws on the NFD enclosure - (2) on the face of the cover and (1) on the left side cover.
3. Remove the front cover of the NFD enclosure.
4. Make sure the NFD shipped from the factory is at OFF position (the arrow on the black handle knob is at OFF).
5. Insert the shaft with the cross pin on the top of the shaft in the horizontal position.
6. Measure from the tip of the shaft to the top surface of the black pointer; the measurement should be 3.75 - 3.88 in. (95 - 99 mm).
7. Tighten the locking screw to secure the shaft to the NFD.
8. Turn the handle to the OFF position with red arrow pointing at OFF.
9. Install the handle on to the painted cover horizontally with the red arrow pointing to the left.
10. Secure the handle to the painted cover with (2) screws and lock washers supplied.
11. Engaging the shaft into the handle socket, re-install (3) hex screws on the NFD enclosure.
12. Re-install the unit front panel.



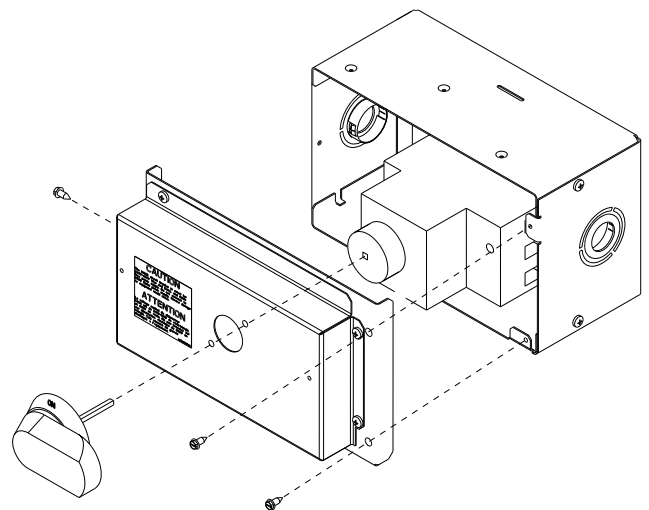
C12279

Fig. 19 - Handle and Shaft Assembly for NFD

C12285

Fig. 20 - Location of HACR Enclosure**To field install the HACR shaft and handle:**

1. Remove the unit front panel (see Fig. 2).
2. Remove (3) hex screws on the HACR enclosure - (2) on the face of the cover and (1) on the left side cover.
3. Remove the front cover of the HACR enclosure.
4. Make sure the HACR shipped from the factory is at OFF position (the white arrow pointing at OFF).
5. Insert the shaft all the way with the cross pin on the top of the shaft in the horizontal position.
6. Tighten the locking screw to secure the shaft to the HACR.
7. Turn the handle to the OFF position with red arrow pointing at OFF.
8. Install the handle on to the painted cover horizontally with the red arrow pointing to the left.
9. Secure the handle to the painted cover with (2) screws and lock washers supplied.
10. Engaging the shaft into the handle socket, re-install (3) hex screws on the HACR enclosure.
11. Re-install the unit front panel.



C12281

Fig. 21 - Handle and Shaft Assembly for HACR

Units Without Factory-Installed Non-Fused Disconnect or HACR —

When installing units, provide a disconnect switch per NEC (National Electrical Code) of adequate size. Disconnect sizing data is provided on the unit informative plate. Locate on unit cabinet or within sight of the unit per national or local codes. Do not cover unit informative plate if mounting the disconnect on the unit cabinet.

All Units —

All field wiring must comply with NEC and all local codes. Size wire based on MCA (Minimum Circuit Amps) on the unit informative plate. See Fig. 16 and the unit label diagram for power wiring connections to the unit power terminal blocks and equipment ground. Maximum wire size is #2ga AWG (copper only) per pole on contactors. #2ga AWG (copper only) per pole on optional disconnect or HACR and 4/0 AWG (copper only) per pole on terminal or fuse block on units with single point box. See Fig. 16 and unit label diagram for field power wiring connections.

Provide a ground-fault and short-circuit over-current protection device (fuse or breaker) per NEC Article 440 (or local codes). Refer to unit informative data plate for MOCP (Maximum Over-current Protection) device size.

NOTE: Units ordered with factory installed HACR do not need an additional ground-fault and short-circuit over-current protective device unless required by local codes.

All field wiring must comply with the NEC and local requirements.

All units except 208/230-v units are factory wired for the voltage shown on the nameplate. *If the 208/230-v unit is to be connected to a 208-v power supply, the control transformer must be rewired by moving the black wire with the 1/4-in. female spade connector from the 230-v connection and moving it to the 200-v 1/4-in. male terminal on the primary side of the transformer.* Refer to unit label diagram for additional information. Field power wires will be connected line-side pressure lugs on the power terminal block or at factory-installed option non-fused disconnect.

NOTE: Check all factory and field electrical connections for tightness.

Convenience Outlets —

⚠ WARNING

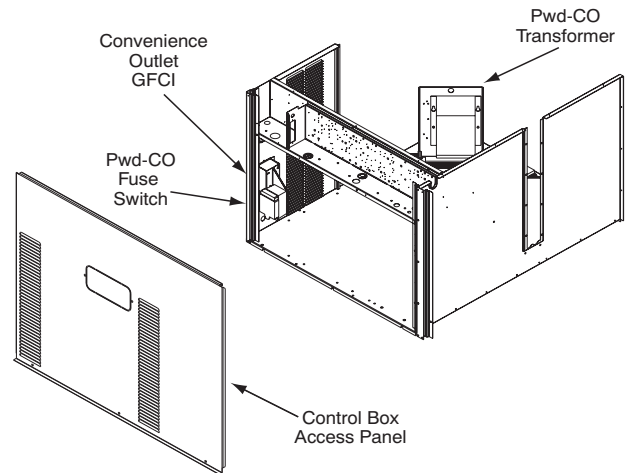
ELECTRICAL OPERATION HAZARD

Failure to follow this warning could result in personal injury or death.

Units with convenience outlet circuits may use multiple disconnects. Check convenience outlet for power status before opening unit for service. Locate its disconnect switch, if appropriate, and open it. Lock-out and tag-out this switch, if necessary.

Two types of convenience outlets are offered on 50HC models: Non-powered and unit-powered. Both types provide a 125-volt GFCI (ground-fault circuit-interrupter) duplex receptacle rated at 15-A behind a hinged waterproof access cover, located on the end panel of the unit. See Fig. 22.

NOTE: Unit powered convenience outlets are not available as factory installed options for single phase (-3 voltage code) models.



C08128

Fig. 22 - Convenience Outlet Location

Installing Weatherproof Cover: A weatherproof while-in-use cover for the factory-installed convenience outlets is now required by UL standards. This cover cannot be factory-mounted due its depth; it must be installed at unit installation. For shipment, the convenience outlet is covered with a blank cover plate.

The weatherproof cover kit is shipped in the unit's control box. The kit includes the hinged cover, a backing plate and gasket.

DISCONNECT ALL POWER TO UNIT AND CONVENIENCE OUTLET. LOCK-OUT AND TAG-OUT ALL POWER.

Remove the blank cover plate at the convenience outlet; discard the blank cover.

Loosen the two screws at the GFCI duplex outlet, until approximately 1/2-in (13 mm) under screw heads are exposed. Press the gasket over the screw heads. Slip the backing plate over the screw heads at the keyhole slots

and align with the gasket; tighten the two screws until snug (do not over-tighten).

Mount the weatherproof cover to the backing plate as shown in Fig. 23. Remove two slot fillers in the bottom of the cover to permit service tool cords to exit the cover. Check for full closing and latching.

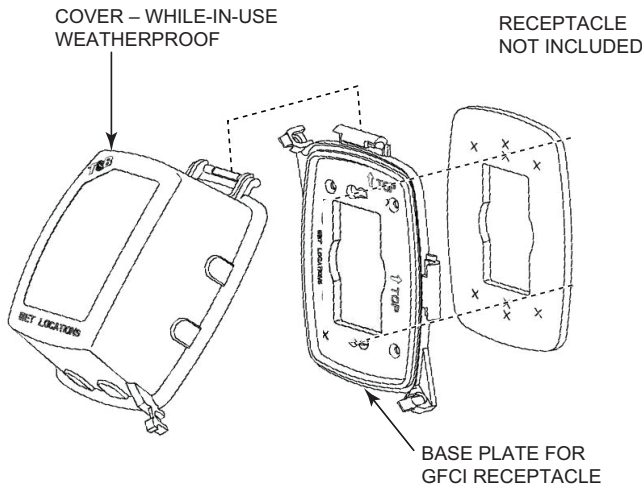


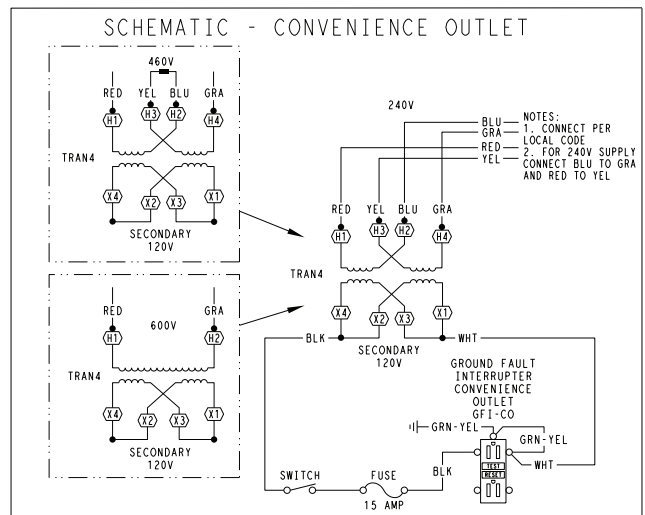
Fig. 23 - Weatherproof Cover Installation

Non-powered type: This type requires the field installation of a general-purpose 125-volt 15-A circuit powered from a source elsewhere in the building. Observe national and local codes when selecting wire size, fuse or breaker requirements and disconnect switch size and location. Route 125-v power supply conductors into the bottom of the utility box containing the duplex receptacle.

Unit-powered type: A unit-mounted transformer is factory-installed to stepdown the main power supply voltage to the unit to 115-v at the duplex receptacle. This option also includes a manual switch with fuse, located in a utility box and mounted on a bracket behind the convenience outlet; access is through the unit's control box access panel. See Fig. 22.

The primary leads to the convenience outlet transformer are not factory-connected. Selection of primary power source is a customer-option. If local codes permit, the transformer primary leads can be connected at the line-side terminals on the unit-mounted non-fused disconnect or HACR breaker switch; this will provide service power to the unit when the unit disconnect switch or HACR switch is open. Other connection methods will result in the convenience outlet circuit being de-energized when the unit disconnect or HACR switch is open. See Fig. 24.

Using unit-mounted convenience outlets: Units with unit-mounted convenience outlet circuits will often require that two disconnects be opened to de-energize all power to the unit. Treat all units as electrically energized until the convenience outlet power is also checked and de-energization is confirmed. Observe National Electrical Code Article 210, Branch Circuits, for use of convenience outlets.



UNIT VOLTAGE	CONNECT AS	PRIMARY CONNECTIONS	TRANSFORMER TERMINALS
208, 230	240	L1: RED + YEL L2: BLU + GRA	H1 + H3 H2 + H4
460	480	L1: RED Splice BLU + YEL L2: GRA	H1 H2 + H3 H4
575	600	L1: RED L2: GRA	H1 H2

Fig. 24 - Powered Convenience Outlet Wiring

Fuse on power type: The factory fuse is a Bussman "Fusetron" T-15, non-renewable screw-in (Edison base) type plug fuse.

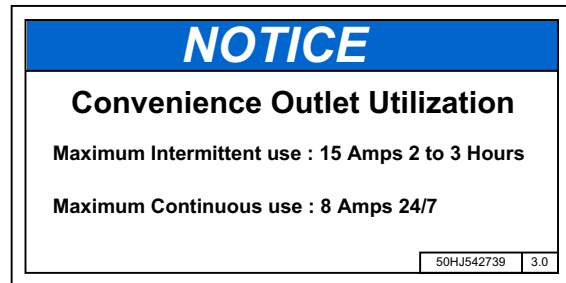


Fig. 25 - Convenience Outlet Utilization Notice Label

Duty Cycle: the unit-powered convenience outlet has a duty cycle limitation. The transformer is intended to provide power on an intermittent basis for service tools, lamps, etc; it is not intended to provide 15-amps loading for continuous duty loads (such as electric heaters for overnight use). Observe a 50% limit on circuit loading above 8-amps.

Convenience outlet usage rating:

Continuous usage: 8 amps maximum

Intermittent usage: up to 15 amps maximum for up to 2 hours maximum

Test the GFCI receptacle by pressing the TEST button on the face of the receptacle to trip and open the receptacle. Check for proper grounding wires and power line phasing if the GFCI receptacle does not trip as required. Press the RESET button to clear the tripped condition.

HACR —

The amp rating of the HACR factory installed option is based on the size, voltage, indoor motor and other electrical options of the unit as shipped from the factory. If field installed accessories are added or changed in the field (i.e. electric heat, power exhaust, ERV), the HACR may no longer be of the proper amp rating and therefore will need to be removed from the unit. See unit nameplate and label on factory installed HACR for the amp rating of the HACR that was shipped with the unit from the factory. See unit nameplates for the proper fuse, HACR or maximum over-current protection device required on the unit with field installed accessories.

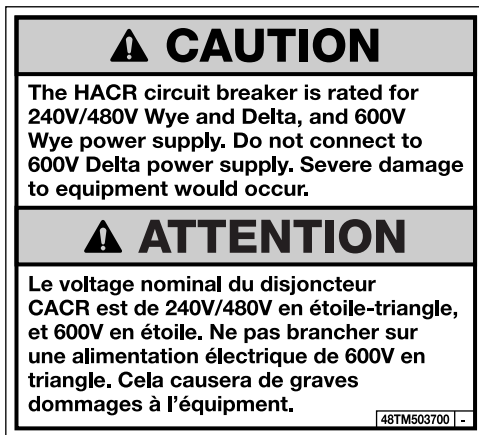
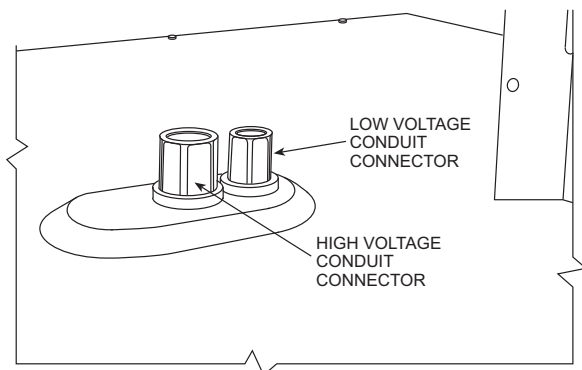


Fig. 26 - HACR Caution Label

C12105

Factory-Option Thru-Base Connections —

This service connection kit consists of a $\frac{1}{2}$ -in electrical bulkhead connector and a $\frac{3}{4}$ -in electrical bulkhead connector, all factory-installed in the embossed (raised) section of the unit basepan in the condenser section. The $\frac{3}{4}$ -in bulkhead connector enables the low-voltage control wires to pass through the basepan. The $\frac{1}{2}$ -in electrical bulkhead connector allows the high-voltage power wires to pass through the basepan. See Fig. 27.



C08637

Fig. 27 - Thru-Base Connection Fittings

Check tightness of connector lock nuts before connecting electrical conduits.

Field-supplied and field-installed liquid tight conduit connectors and conduit may be attached to the connectors on the basepan. Pull correctly rated high voltage and low

voltage through appropriate conduits. Connect the power conduit to the internal disconnect (if unit is so equipped) or to the external disconnect (through unit side panel). A hole must be field cut in the main control box bottom on the left side so the 24-v control connections can be made. Connect the control power conduit to the unit control box at this hole.

Units without Thru-Base Connections —

1. Install power wiring conduit through side panel openings. Install conduit between disconnect and control box.
2. Install power lines to terminal connections as shown in Fig. 16.

Voltage to compressor terminals during operation must be within voltage range indicated on unit nameplate. See Table 10. On 3-phase units, voltages between phases must be balanced within 2% and the current within 10%. Use the formula shown in the legend for Table 10, Note 2 to determine the percent of voltage imbalance. Operation on improper line voltage or excessive phase imbalance constitutes abuse and may cause damage to electrical components. Such operation would invalidate any applicable Carrier warranty.

Field Control Wiring —

The 50HC unit requires an external temperature control device. This device can be a thermostat (field-supplied) or a PremierLink controller (available as factory-installed option or as field-installed accessory, for use on a Carrier Comfort Network or as a stand alone control) or the RTU Open Controller for Building Management Systems using non-CCN protocols (RTU Open is available as a factory-installed option only).

Thermostat —

Select a Carrier-approved accessory thermostat. When electric heat is installed in the 50HC unit, the thermostat must be capable of energizing the G terminal (to energize the Indoor Fan Contactor) whenever there is a space call for heat (energizing the W1 terminal). The accessory thermostats listed on the unit price pages can provide this signal but they are not configured to enable this signal as shipped.

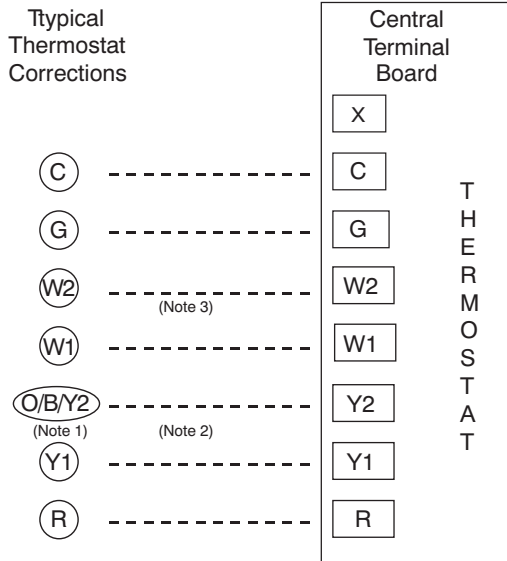
Install the accessory thermostat according to installation instructions included with the accessory.

Locate the thermostat accessory on a solid wall in the conditioned space to sense average temperature in accordance with the thermostat installation instructions.

If the thermostat contains a logic circuit requiring 24-v power, use a thermostat cable or equivalent single leads of different colors with minimum of seven leads. If the thermostat does not require a 24-v source (no "C" connection required), use a thermostat cable or equivalent with minimum of six leads. Check the thermostat installation instructions for additional features which might require additional conductors in the cable.

For wire runs up to 50 ft. (15 m), use no. 18 AWG (American Wire Gage) insulated wire [35°C (95°F) minimum]. For 50 to 75 ft. (15 to 23 m), use no. 16 AWG insulated wire [35°C (95°F) minimum]. For over 75 ft.

(23 m), use no. 14 AWG insulated wire [35°C (95°F) minimum]. All wire sizes larger than no. 18 AWG cannot be directly connected to the thermostat and will require a junction box and splice at the thermostat.



- Note 1: Typical multi-function marking. Follow manufacturer's configuration instructions to select Y2.
- Note 2: Y2 to Y2 connection required on single-stage cooling units when integrated economizer function is desired
- Note 3: W2 connection not required on units with single-stage heating.
- - - Field Wiring

Fig. 28 - Low-Voltage Connections

C08575

Unit without Thru-Base Connection Kit —

Pass the thermostat control wires through the hole provided in the corner post; then feed the wires through the raceway built into the corner post to the control box. Pull the wires over to the terminal strip on the upper-left corner of the Controls Connection Board. See Fig. 29.

NOTE: If thru-the-bottom connections accessory is used, refer to the accessory installation instructions for information on routing power and control wiring.

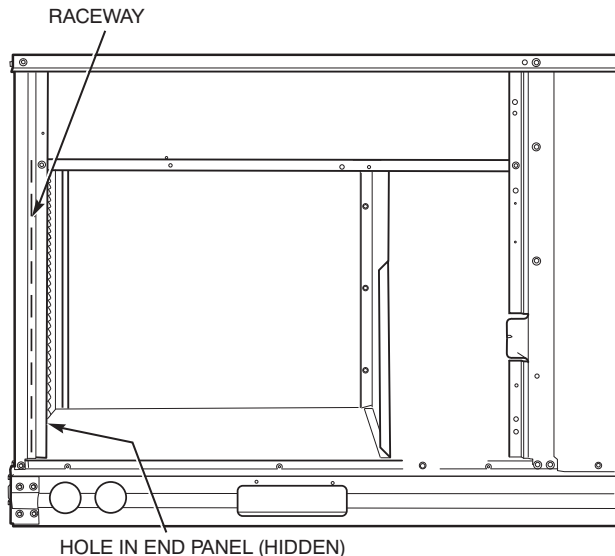


Fig. 29 - Field Control Wiring Raceway

C08027

Heat Anticipator Settings —

Set heat anticipator settings at 0.14 amp for the first stage and 0.14 amp for second-stage heating, when available.

Electric Heaters

50HC units may be equipped with factory or field-installed electric heaters. The heaters are modular in design, with heater frames holding open coil resistance wires strung through ceramic insulators, line-break limit switches and a control contactor. One or two heater modules may be used in a unit.

Heater modules are installed in the compartment below the indoor (supply) fan outlet. Access is through the indoor access panel. Heater modules slide into the compartment on tracks along the bottom of the heater opening. See Fig. 30, Fig. 31 and Fig. 32.

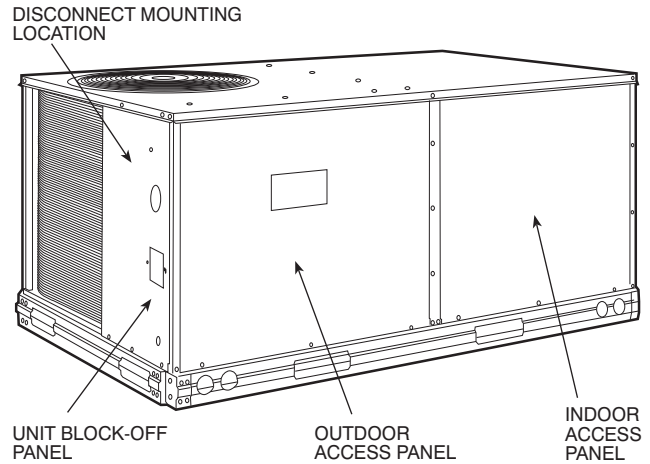


Fig. 30 - Typical Access Panel Location (3-5 Ton)

C08133

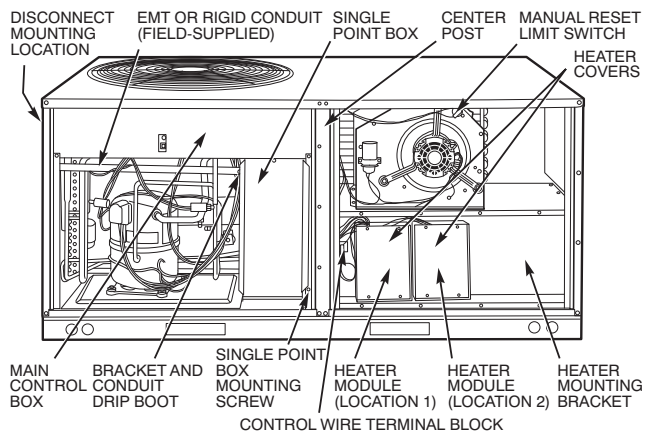
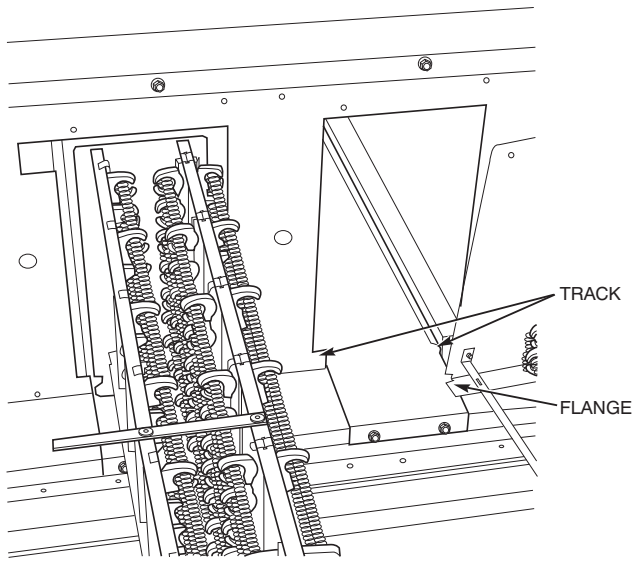


Fig. 31 - Typical Component Location

C08134



C08135

Fig. 32 - Typical Module Installation

Not all available heater modules may be used in every unit. Use only those heater modules that are UL listed for use in a specific size unit. Refer to the label on the unit cabinet for the list of approved heaters.

Unit heaters are marked with Heater Model Numbers. But accessory heaters are ordered as and shipped in cartons marked with a corresponding heater Sales Package part number. See Table 2 for correlation between heater Model Number and Sales Package part number.

NOTE: The value in position 9 of the part number differs between the sales package part number (value is 1) and a bare heater model number (value is 0).

Table 2 – Heater Model Number

Bare Heater Model Number	C	R	H	E	A	T	E	R	0	0	1	A	0	0
Heater Sales Package PNO Includes: Bare Heater Carton and packing materials Installation sheet	C	R	H	E	A	T	E	R	1	0	1	A	0	0

50HC

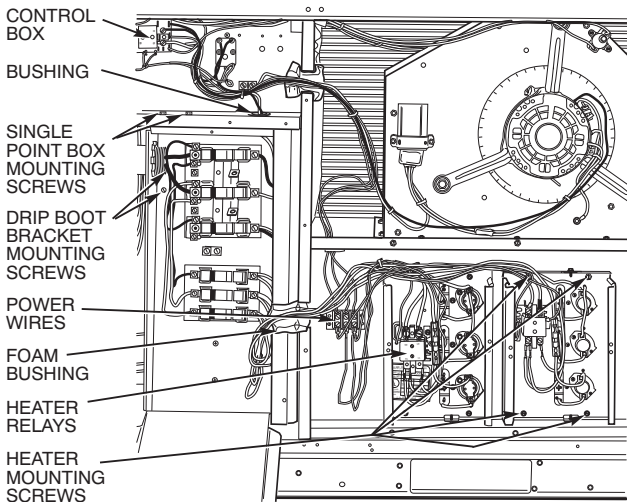
Single Point Boxes and Supplementary Fuses —

When the unit MOCB device value exceeds 60-A, unit-mounted supplementary fuses are required for each heater circuit. These fuses are included in accessory Single Point Boxes, with power distribution and fuse blocks. The single point box will be installed directly under the unit control box, just to the left of the partition separating the indoor section (with electric heaters) from the outdoor section. The Single Point Box has a hinged access cover. See Fig. 33. The Single Point Box also includes a set of power taps and pigtailed to complete the wiring between the Single Point Box and the unit's main control box terminals. Refer to the accessory heater and Single Point Box installation instructions for details on tap connections on field installed electric heat accessory.

All fuses on 50HC units are 60-A. (Note that all heaters are qualified for use with a 60-A fuse, regardless of actual heater ampacity, so only 60-A fuses are necessary.)

Single Point Boxes without Fuses —

Some unit heater applications not requiring supplemental fuses require a special Single Point Box without any fuses. The accessory Single Point Boxes contain a set of power taps and pigtailed to complete the wiring between the Single Point Box and the unit's main control box terminals. Refer to accessory heater and Single Point Box installation instructions for details on tap connections on field installed electric heat accessory.



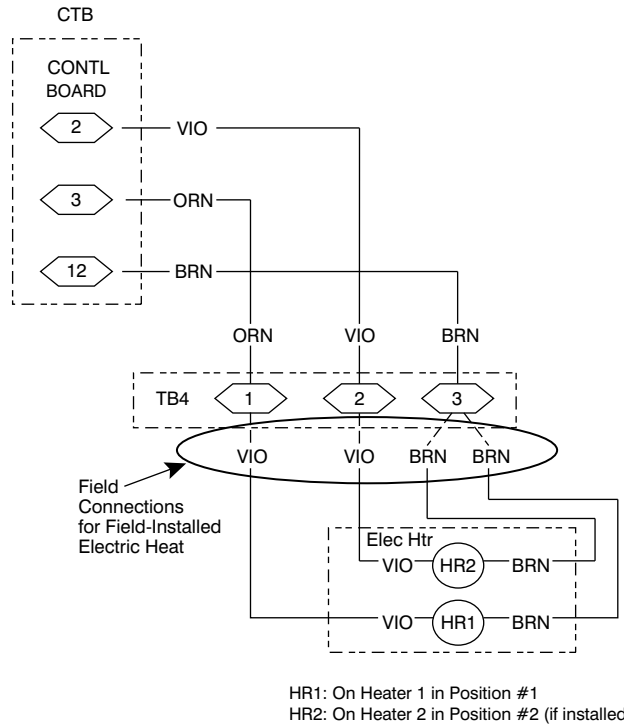
C08136

Fig. 33 - Typical Single Point Installation

Low-Voltage Control Connections —

All units except size 06, 575V:

Pull the low-voltage control leads from the heater module(s) - VIO and BRN (two of each if two modules are installed; identify for Module #1) - to the 4-pole terminal board TB4 located on the heater bulkhead to the left of Heater #1. Connect the VIO lead from Heater #1 to terminal TB4-1. For 2 stage heating, connect the VIO lead from Heater #2 to terminal TB4-2. For 1 stage heating with 2 heater modules connect the VIO lead from both Heater #1 and #2 to terminal TB4-1. Connect both BRN leads to terminal TB4-3. See Fig. 34.

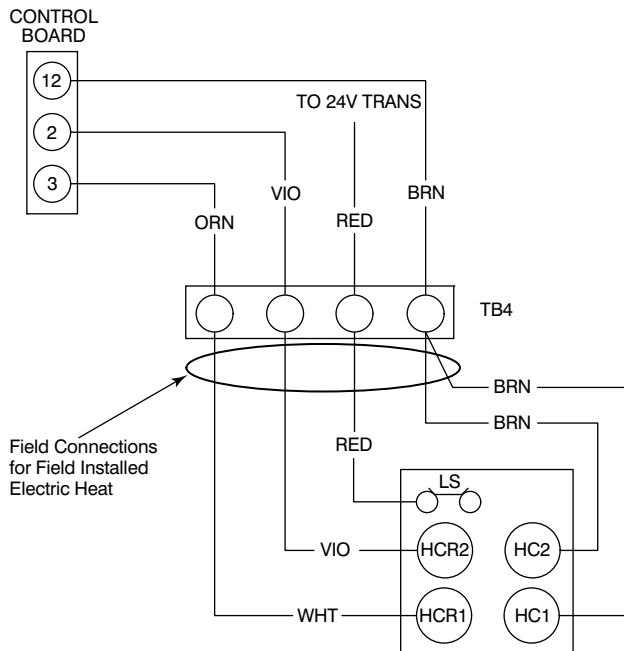


C12106

Fig. 34 - Accessory Electric Heater Control Connections (all units except size 06, 575V) - 2 Stage Heat Shown

Size 06, 575V units only:

Pull the low-voltage control leads from the heater module(s) - VIO, WHT and BRN (two of each if two modules are installed; identify for Module #1) - to the 4-pole terminal board TB4 located on the heater bulkhead to the left of Heater #1. Connect the WHT lead from Heater #1 to TB4 where ORN is. For 2 stage heating, connect the VIO lead from Heater #2 to the terminal that has VIO from the unit. For 1 stage heating with 2 heater modules connect the VIO lead from Heater #2 to the same terminal with WHT lead from Heater #1 (see Fig. 35).



C12107

Fig. 35 - Accessory Electric Heater Control Connections (Size 06, 575V only) - 2 Stage Heat Shown

Humidi-MiZer® Control Connections

Humidi-MiZer – Space RH Controller —

NOTE: The Humidi-MiZer is a factory installed option which is only available for units equipped with belt-drive motors. Humidi-MiZer is not available for single phase (-3 voltage code) models.

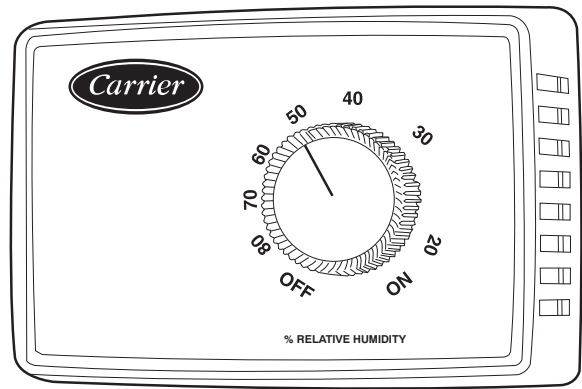
The Humidi-MiZer dehumidification system requires a field-supplied and -installed space relative humidity control device. This device may be a separate humidistat control (contact closes on rise in space RH above control setpoint) or a combination thermostat-humidistat control device such as Carrier's EDGE® Pro Thermidistat with isolated contact set for dehumidification control. The humidistat is normally used in applications where a temperature control is already provided (units with PermierLink™ control).

To connect the Carrier humidistat (HL38MG029):

1. Route the humidistat 2-conductor cable (field-supplied) through the hole provided in the unit corner post.
2. Feed wires through the raceway built into the corner post (see Fig. 29) to the 24-v barrier located on the left side of the control box. The raceway provides the UL-required clearance between high-voltage and low-voltage wiring.
3. Use wire nuts to connect humidistat cable to two PINK leads in the low-voltage wiring as shown in Fig. 38.

To connect the Thermidistat device (33CS2PPRH-01):

1. Route the Thermidistat multi-conductor thermostat cable (field-supplied) through the hole provided in the unit corner post.
2. Feed wires through the raceway built into the corner post (see Fig. 29) to the 24-v barrier located on the left side of the control box. The raceway provides the UL-required clearance between high-voltage and low-voltage wiring.
3. The Thermidistat has dry contacts at terminals D1 and D2 for dehumidification operation (see Fig. 39). The dry contacts must be wired between CTB terminal R and the PINK lead to the LTLO switch with field-supplied wire nuts. Refer to the installation instructions included with the Carrier Edge Thermidistat device (Form 33CS-65SI or latest) for more information.



C09295

Fig. 36 - Accessory Field-Installed Humidistat



C09296

Fig. 37 - EDGE Pro Thermidistat

50HC

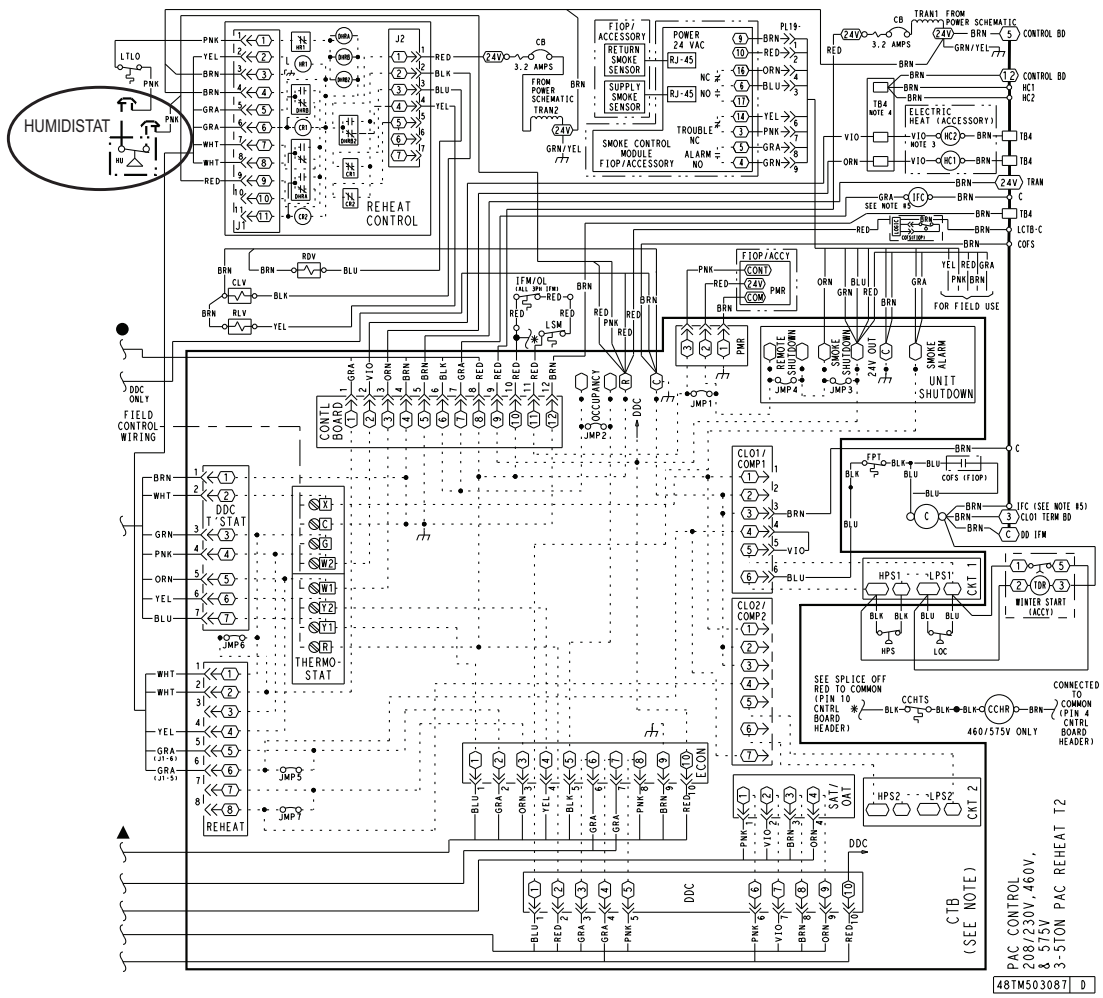
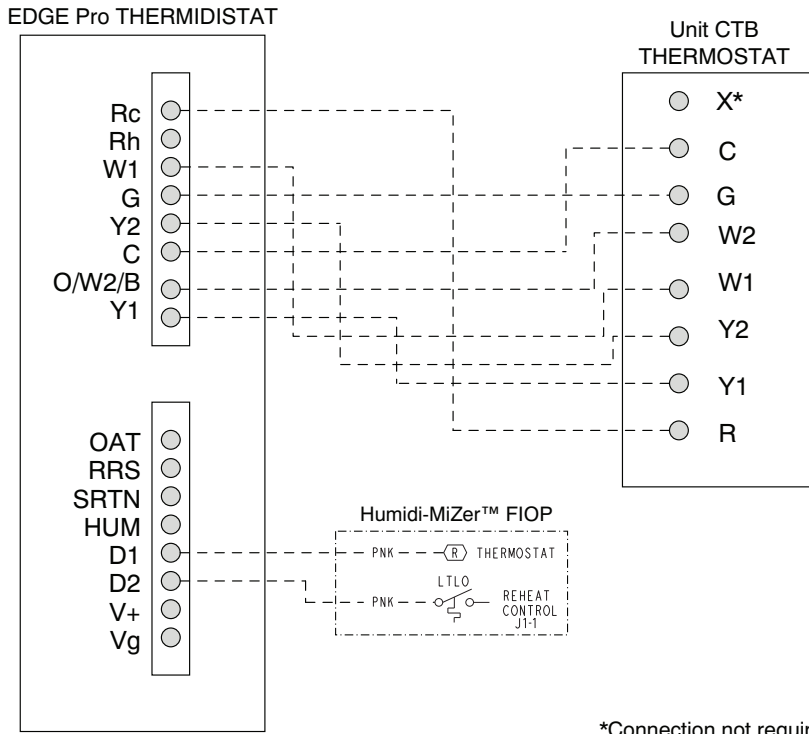


Fig. 38 - Typical Humidi-MiZer® Adaptive Dehumidification System Humidistat Wiring

C11057



*Connection not required.

Fig. 39 - Typical Rooftop Unit with Humidi-MiZer Adaptive Dehumidification System with EDGE Pro Thermidistat Device

C09298

Low Ambient Control (Factory Option)

If the unit comes with Electro-Mechanical (EM) control, then no adjustment is necessary.

If the unit comes with PremierLink or RTU Open control system, then refer to its installation control manual for details on adjusting “Cooling Lock-Out” setting and configure for your specific job requirements.

ComfortLink (Factory Option)

For details on operating 50HC units equipped with the factory installed *ComfortLink* option, refer to *Controls, Start-Up, Operation and Troubleshooting for 48/50HC 04-28 Single Package Rooftop Unit with ComfortLink Controls* (Catalog No. 48-50HC-C02T, or later).

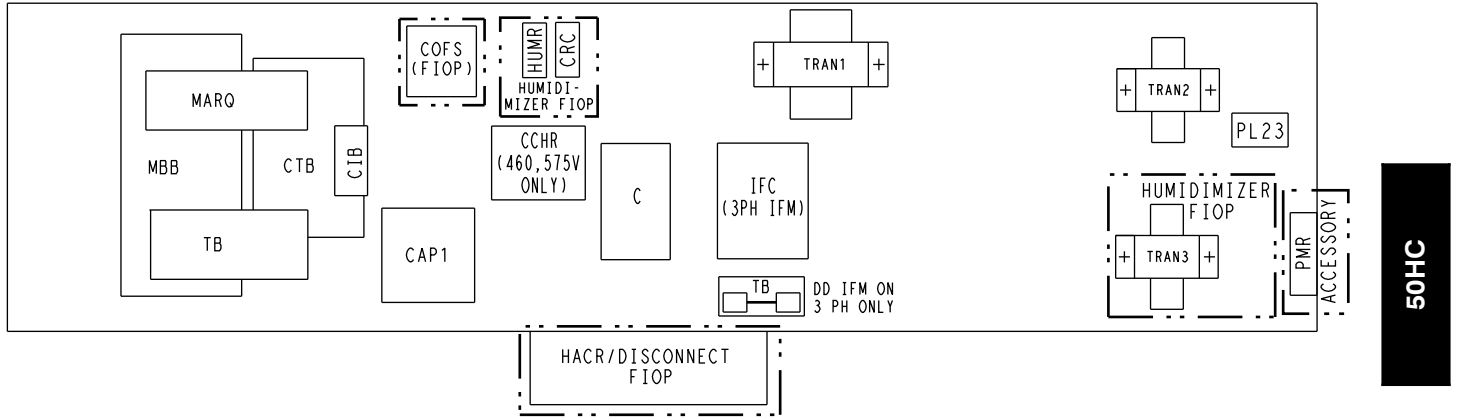


Fig. 40 - 50HC Control Box Component Locations with *ComfortLink*

C12240

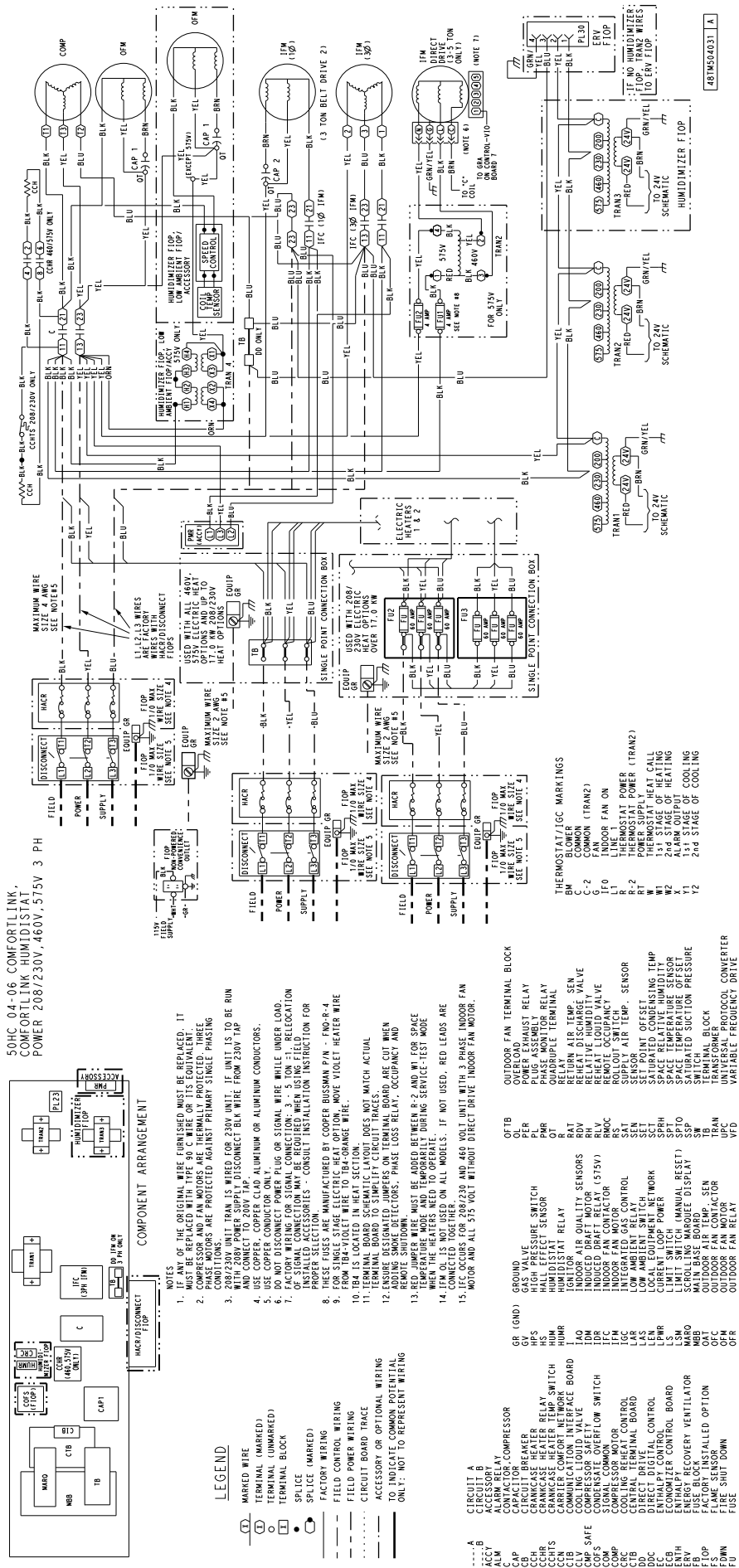
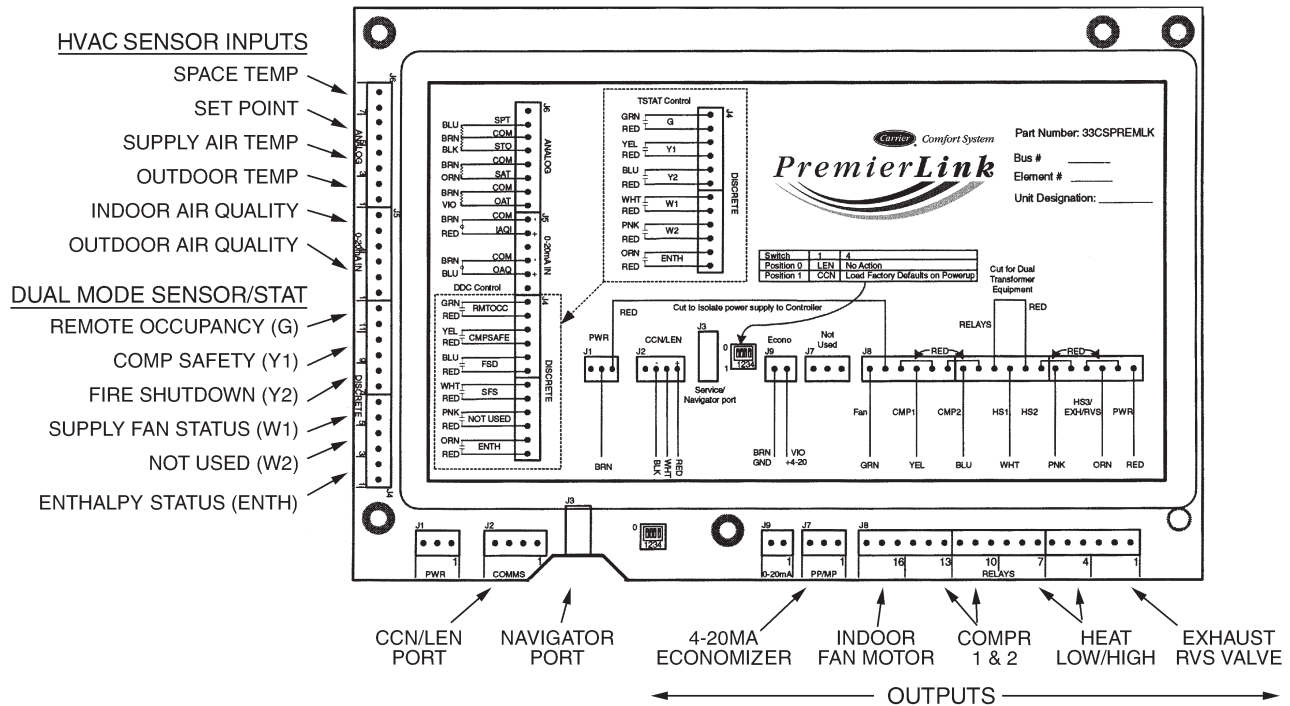


Fig. 42 - 50HC ComfortLink with Humidistat — Power Wiring Diagram, 208/230V, 460V, 575V 3 Phase

PremierLink™ (Factory-Option)



50HC

Fig. 44 - PremierLink Controller

C08199

The PremierLink controller (see Fig. 44) is compatible with Carrier Comfort Network® (CCN) devices. This control is designed to allow users the access and ability to change factory-defined settings, thus expanding the function of the standard unit control board. CCN service access tools include System Pilot (TM), Touch Pilot (TM) and Service Tool. (Standard tier display tools Navigator™ and Scrolling Marquee are not suitable for use with latest PremierLink controller (Version 2.x).)

The PremierLink control is factory-mounted in the 50HC unit's main control box to the left of the Central Terminal Board (CTB). Factory wiring is completed through harnesses connected to the CTB thermostat. Field connections are made at a 16-pole terminal block (TB1) located on the bottom shelf of the unit control box in front

of the PremierLink controller. The factory-installed PremierLink control includes the supply-air temperature (SAT) sensor. The outdoor air temperature (OAT) sensor is included in the FIOP/accessory EconoMi\$er™ 2 package.

The PremierLink controller requires the use of a Carrier electronic thermostat or a CCN connection for time broadcast to initiate its internal timeclock. This is necessary for broadcast of time of day functions (occupied/unoccupied).

NOTE: PremierLink controller is shipped in Sensor mode. To be used with a thermostat, the PremierLink controller must be configured to Thermostat mode. Refer to PremierLink Configuration instructions for Operating Mode.

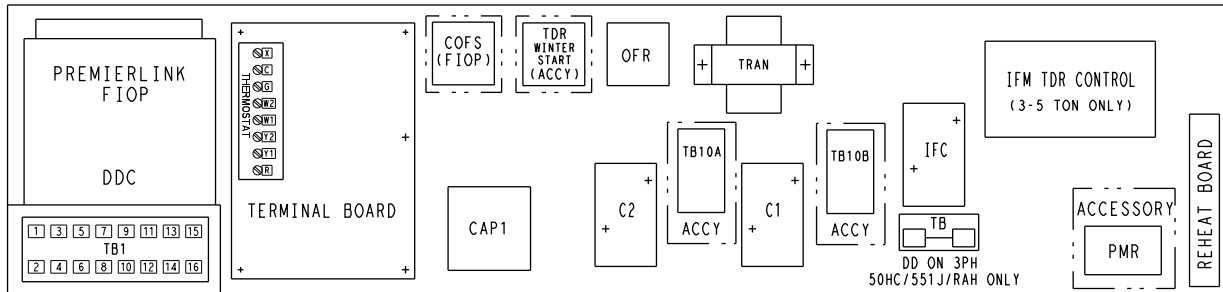


Fig. 45 - 50HC Control Box Component Locations with PremierLink

C12244

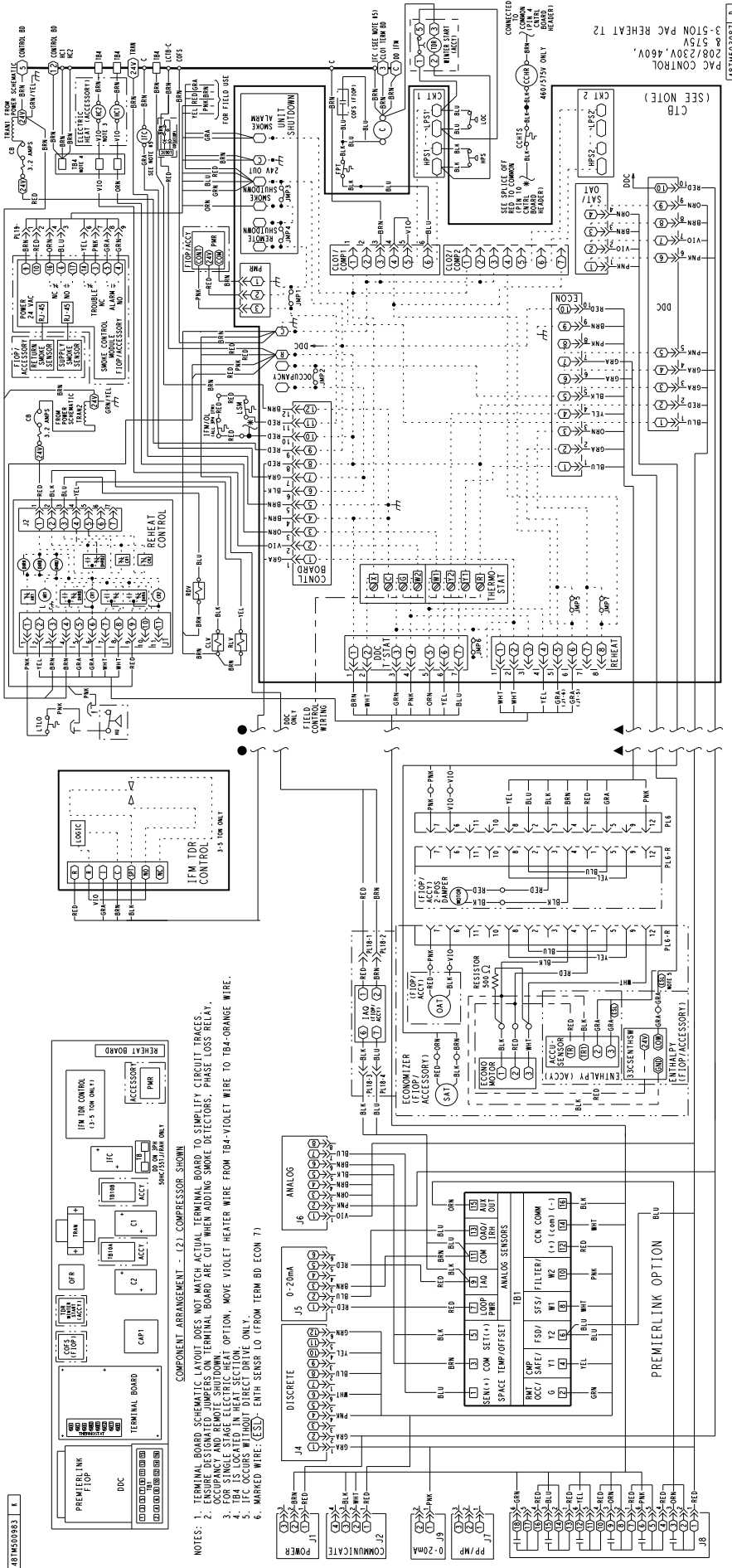


Fig. 47 - PremierLink Wiring Schematic with Humidi-MiZer®

Supply Air Temperature (SAT) Sensor —

On FIOP-equipped 50HC unit, the unit is supplied with a supply-air temperature (SAT) sensor (33ZCSENSAT). This sensor is a tubular probe type, approx 6-inches (152 mm) in length. It is a nominal 10-k ohm thermistor.

The SAT is factory-wired. The SAT probe is wire-tied to the supply-air opening (on the horizontal opening end) in its shipping position. Remove the sensor for installation. Re-position the sensor in the flange of the supply-air opening or in the supply air duct (as required by local codes). Drill or punch a 1/2-in. hole in the flange or duct. Use two field-supplied, self-drilling screws to secure the sensor probe in a horizontal orientation. See Fig. 48.

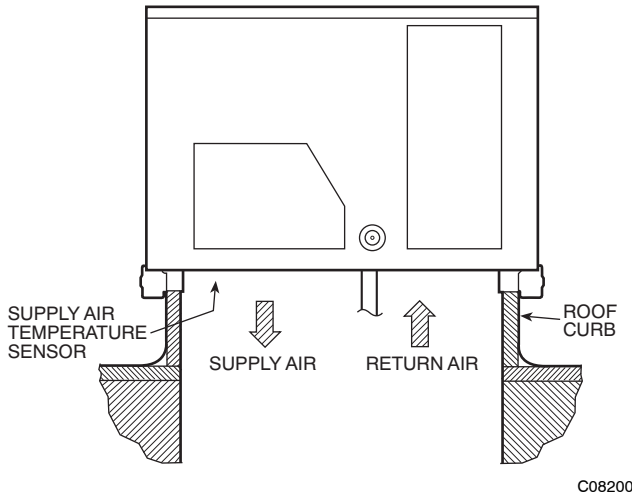


Fig. 48 - Typical Mounting Location for Supply Air Temperature (SAT) Sensor on Small Rooftop Units

NOTE: Refer to Form 33CS-67SI for complete PremierLink configuration, operating sequences and troubleshooting information. Have a copy of this manual available at unit start-up.

NOTE: The sensor must be mounted in the discharge airstream downstream of the cooling coil and any heating devices. Be sure the probe tip does not come in contact with any of the unit’s heater surfaces.

Outdoor Air Temperature (OAT) Sensor —

The OAT is factory-mounted in the EconoMi\$er2 (FIOP or accessory). It is a nominal 10k ohm thermistor attached to an eyelet mounting ring.

EconoMi\$er2 —

The PremierLink control is used with EconoMi\$er2 (option or accessory) for outdoor air management. The damper position is controlled directly by the PremierLink control; EconoMi\$er2 has no internal logic device.

Outdoor air management functions can be enhanced with field-installation of these accessory control devices:

- Enthalpy control (outdoor air or differential sensors)
- Space CO₂ sensor
- Outdoor air CO₂ sensor

Refer to Table 3 for accessory part numbers.

Field Connections

Field connections for accessory sensor and input devices are made at the 16-pole terminal block (TB1) located on the control box bottom shelf in front of the PremierLink control (See Fig. 46 or Fig. 47). Some input devices also require a 24-vac signal source; connect at CTB terminal R at “THERMOSTAT” connection strip for this signal source. See connections figures on following pages for field connection locations (and for continued connections at the PremierLink board inputs).

Table 4 provides a summary of field connections for units equipped with Space Sensor. Table 5 provides a summary of field connections for units equipped with Space Thermostat.

Table 3 – PremierLink Sensor Usage

APPLICATION	OUTDOOR AIR TEMPERATURE SENSOR	RETURN AIR TEMPERATURE SENSOR	OUTDOOR AIR ENTHALPY SENSOR	RETURN AIR ENTHALPY SENSOR
Differential Dry Bulb Temperature with PremierLink (PremierLink requires 4–20 mA Actuator)	Included – CRTEMPN001A00	Required – 33ZCT55SPT or equivalent	–	–
Single Enthalpy with PremierLink (PremierLink requires 4–20mA Actuator)	Included – Not Used	–	Requires – 33CSENTHSW	–
Differential Enthalpy with PremierLink (PremierLink requires 4–20mA Actuator)	Included – Not Used	–	Requires – 33CSENTHSW or equivalent	Requires – 33CSENTSEN or equivalent

NOTES:

CO₂ Sensors (Optional):

- 33ZCSENC02 – Room sensor (adjustable). Aspirator box is required for duct mounting of the sensor.
- 33ZCASPC02 – Aspirator box used for duct-mounted CO₂ room sensor.
- 33ZCT55CO2 – Space temperature and CO₂ room sensor with override.
- 33ZCT56CO2 – Space temperature and CO₂ room sensor with override and setpoint.

Table 4 – Space Sensor Mode

TB1 TERMINAL	FIELD CONNECTION	INPUT SIGNAL
1	T55 – SEN/T56 – SEN	Analog (10k thermistor)
2	RMTOCC	Discrete, 24VAC
3	T55 – SEN/T56 – SEN	Analog (10k thermistor)
4	CMPSAFE	Discrete, 24VAC
5	T56 – SET	Analog (10k thermistor)
6	FSD	Discrete, 24VAC
7	LOOP – PWR	Analog, 24VDC
8	SPS	Discrete, 24VAC
9	IAQ – SEN	Analog, 4 – 20mA
10	FILTER	Discrete, 24VAC
11	IAQ – COM/OAQ – COM/RH – COM	Analog, 4 – 20mA
12	CCN + (RED)	Digital, , 5VDC
13	OAQ – SEN/RH – SEN	Analog, 4 – 20mA
14	CCN Gnd (WHT)	Digital, 5VDC
15	AUX OUT (Power Exhaust)	(Output) Discrete 24VAC
16	CCN – (BLK)	Digital, 5VDC

LEGEND:

- | | | | |
|---------|---|-----|--|
| T55 | – Space Temperature Sensor | FSD | – Fire Shutdown |
| T56 | – Space Temperature Sensor | IAQ | – Indoor Air Quality (CO ₂) |
| CCN | – Carrier Comfort Network (communication bus) | OAQ | – Outdoor Air Quality (CO ₂) |
| CMPSAFE | – Compressor Safety | RH | – Relative Humidity |
| FILTER | – Dirty Filter Switch | SFS | – Supply Fan Status |

Table 5 – Thermostat Mode

TB1 TERMINAL	FIELD CONNECTION	INPUT SIGNAL
1	RAT SEN	Analog (10k thermistor)
2	G	Discrete, 24VAC
3	RAT SEN	Analog (10k thermistor)
4	Y1	Discrete, 24VAC
5		
6	Y2	Discrete, 24VAC
7	LOOP – PWR	Analog, 24VDC
8	W1	Discrete, 24VAC
9	IAQ – SEN	Analog, 4 – 20mA
10	W2	Discrete, 24VAC
11	IAQ – COM/OAQ – COM/RH – COM	Analog, 4 – 20mA
12	CCN + (RED)	Digital, 5VDC
13	OAQ – SEN/RH – SEN	Analog, 4 – 20mA
14	CCN Gnd (WHT)	Digital, 5VDC
15	AUX OUT (Power Exhaust)	(Output) Discrete 24VAC
16	CCN – (BLK)	Digital, 5VDC

LEGEND:

- | | | | |
|-----|---|----|---------------------------|
| CCN | – Carrier Comfort Network (communication bus) | RH | – Relative Humidity |
| G | – Thermostat Fan | W1 | – Thermostat Heat Stage 1 |
| IAQ | – Indoor Air Quality (CO ₂) | W2 | – Thermostat Heat Stage 2 |
| OAQ | – Outdoor Air Quality (CO ₂) | Y1 | – Thermostat Cool Stage 1 |
| RAT | – Return Air Temperature | Y2 | – Thermostat Cool Stage 2 |

50HC

Space Sensors —

The PremierLink controller is factory-shipped configured for Space Sensor Mode. A Carrier T-55 or T-56 space sensor must be used. T-55 space temperature sensor provides a signal of space temperature to the PremierLink control. T-56 provides same space temperature signal plus it allows for adjustment of space temperature setpoints from the face of the sensor by the occupants.

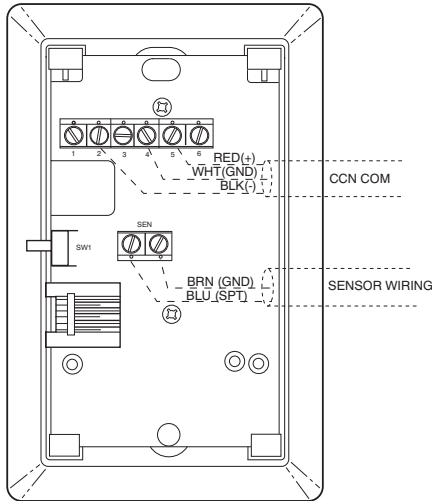


Fig. 49 - T-55 Space Temperature Sensor Wiring

Connect T-55: See Fig. 49 for typical T-55 internal connections. Connect the T-55 SEN terminals to TB1 terminals 1 and 3 (see Fig. 50).

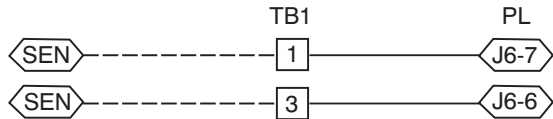


Fig. 50 - PremierLink T-55 Sensor

Connect T-56: See Fig. 51 for T-56 internal connections. Install a jumper between SEN and SET terminals as illustrated. Connect T-56 terminals to TB1 terminals 1, 3 and 5 (see Fig. 52).

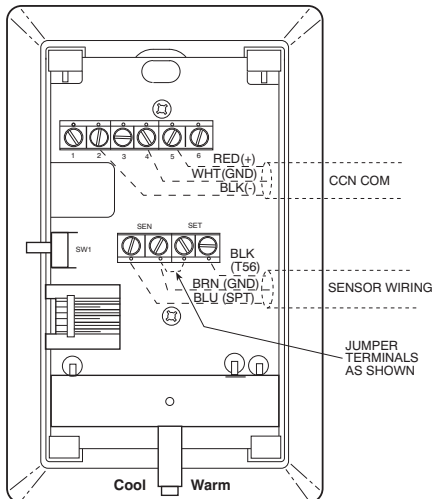


Fig. 51 - T-56 Internal Connections

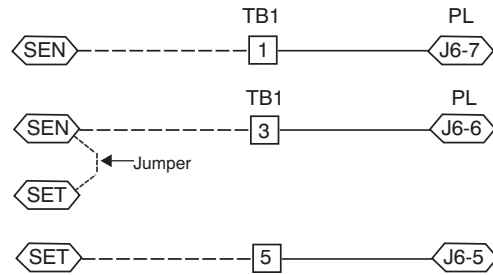


Fig. 52 - PremierLink T-56 Sensor

Connect Thermostat —

A 7-wire thermostat connection requires a 24-v power source and a common connection. Use the R and C terminals on the CTB's THERMOSTAT connection strip for these. Connect the thermostat's Y1, Y2, W1, W2 and G terminals to PremierLink TB1 as shown in Fig. 53.

If the 50HC unit is equipped with factory-installed smoke detector(s), disconnect the factory BLU lead at TB1-6 (Y2) before connecting the thermostat. Identify the BLU lead originating at CTB-DDC-1; disconnect at TB1-6 and tape off. Confirm that the second BLU lead at TB1-6 remains connected to PremierLink J4-8.

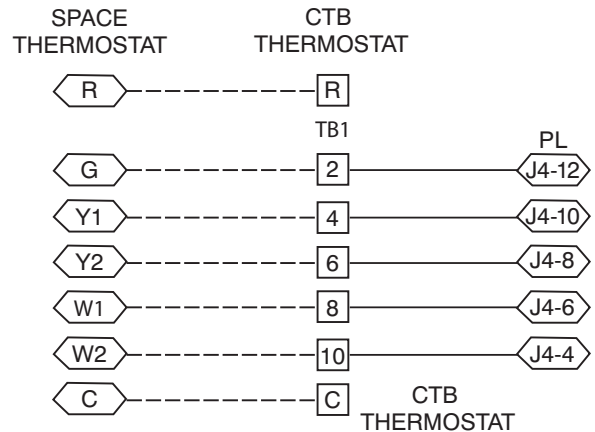


Fig. 53 - Space Thermostat Connections

If the 50HC unit has an economizer system and free-cooling operation is required, a sensor representing Return Air Temperature must also be connected (field-supplied and installed). This sensor may be a T-55 Space Sensor (see Fig. 49) installed in the space or in the return duct, or it may be sensor PNO 33ZCSENSAT, installed in the return duct. Connect this sensor to TB1-1 and TB1-3 per Fig. 50.

Configure the Unit for Thermostat Mode —

Connect to the CCN bus using a CCN service tool and navigate to PremierLink Configuration screen for Operating Mode. Default setting is Sensor Mode (value 1). Change the value to 0 to reconfigure the controller for Thermostat Mode.

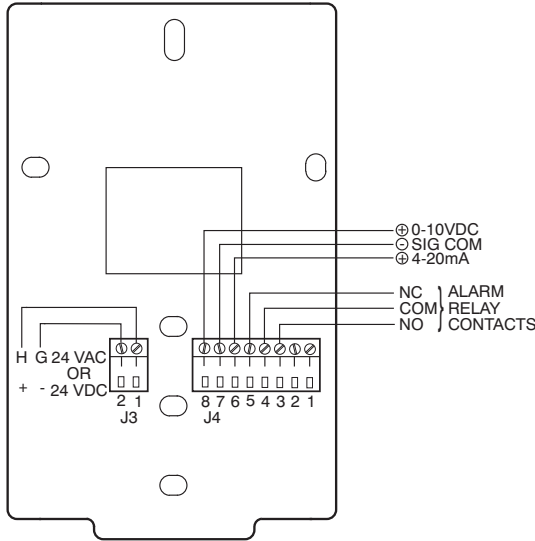
When the PremierLink is configured for Thermostat Mode, these functions are not available: Fire Shutdown (FSD), Remote Occupied (RMTOCC), Compressor Safety (CMPSAFE), Supply Fan Status (SFS), and Filter Pressure Switch (FILTER).

Economizer Controls

Indoor Air Quality (CO₂) Sensor —

The indoor air quality sensor accessory monitors space carbon dioxide (CO₂) levels. This information is used to monitor IAQ levels. Several types of sensors are available, for wall mounting in the space or in return duct, with and without LCD display, and in combination with space temperature sensors. Sensors use infrared technology to measure the levels of CO₂ present in the space air.

The CO₂ sensors are all factory set for a range of 0 to 2000 ppm and a linear mA output of 4 to 20. Refer to the instructions supplied with the CO₂ sensor for electrical requirements and terminal locations. See Fig. 54 for typical CO₂ sensor wiring schematic.



C08635

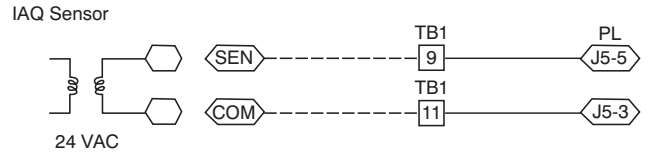
Fig. 54 - Indoor/Outdoor Air Quality (CO₂) Sensor (33ZCSENCO2) - Typical Wiring Diagram

To accurately monitor the quality of the air in the conditioned air space, locate the sensor near a return-air grille (if present) so it senses the concentration of CO₂ leaving the space. The sensor should be mounted in a location to avoid direct breath contact.

Do not mount the IAQ sensor in drafty areas such as near supply ducts, open windows, fans, or over heat sources. Allow at least 3 ft (0.9 m) between the sensor and any corner. Avoid mounting the sensor where it is influenced by the supply air; the sensor gives inaccurate readings if the supply air is blown directly onto the sensor or if the supply air does not have a chance to mix with the room air before it is drawn into the return airstream.

Wiring the Indoor Air Quality Sensor: For each sensor, use two 2-conductor 18 AWG (American Wire Gauge) twisted-pair cables (unshielded) to connect the separate isolated 24 vac power source to the sensor and to connect the sensor to the control board terminals.

To connect the sensor to the control, identify the positive (4 to 20 mA) and ground (SIG COM) terminals on the sensor. See Fig. 54. Connect the 4-20 mA terminal to terminal TB1-9 and connect the SIG COM terminal to terminal TB1-11. See Fig. 55.



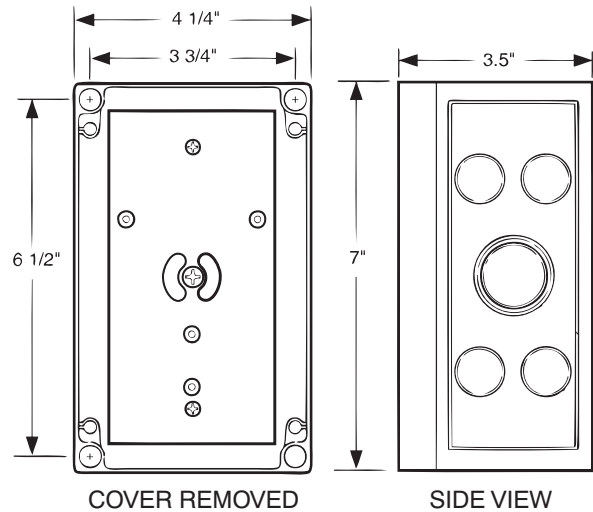
C08636

Fig. 55 - Indoor CO₂ Sensor (33ZCSENCO2) Connections

Refer to Form 33CS-67SI, PremierLink Installation, Start-up, and Configuration Instructions, for detailed configuration information

Outdoor Air Quality Sensor (PNO 33ZCSENCO2 plus weatherproof enclosure) —

The outdoor air CO₂ sensor is designed to monitor carbon dioxide (CO₂) levels in the outside ventilation air and interface with the ventilation damper in an HVAC system. The OAQ sensor is packaged with an outdoor cover. See Fig. 56. The outdoor air CO₂ sensor must be located in the economizer outside air hood.

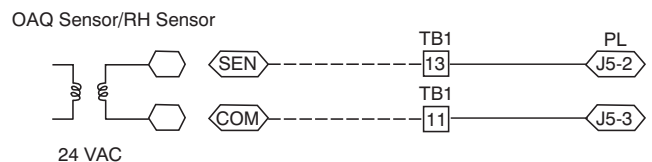


C07135

Fig. 56 - Outdoor Air Quality Sensor Cover

Wiring the Outdoor Air CO₂ Sensor: A dedicated power supply is required for this sensor. A two-wire cable is required to wire the dedicated power supply for the sensor. The two wires should be connected to the power supply and terminals 1 and 2.

To connect the sensor to the control, identify the positive (4 to 20 mA) and ground (SIG COM) terminals on the OAQ sensor. See Fig. 54. Connect the 4 to 20 mA terminal to the TB1-13 terminal of the 50HC. Connect the SIG COM terminal to the TB1-11 terminal of the 50HC. See Fig. 57.



C08275

Fig. 57 - Outdoor CO₂ Sensor Connections

Space Relative Humidity Sensor or Humidistat Connections —

NOTE: The accessory space relative humidity sensor and humidistat are not available for single phase (-3 voltage code) models.

Space Relative Humidity Sensor connections: The accessory space relative humidity sensor (33ZCSENSRH-01) is installed on an interior wall to measure the relative humidity of the air within the occupied space.

The use of a standard 2 X 4 inch electrical box to accommodate the wiring is recommended for installation. The sensor can be mounted directly on the wall, if acceptable by local codes.

50HC

⚠ CAUTION

UNIT DAMAGE HAZARD

Failure to follow this caution may result in permanent damage to the sensor.

DO NOT clean or touch the sensing element with chemical solvents as they can permanently damage the sensor.

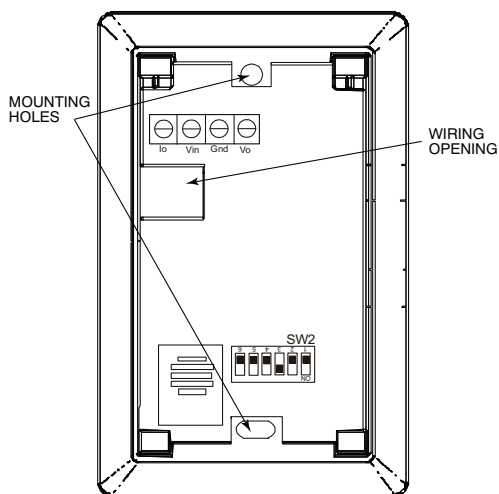
⚠ CAUTION

UNIT PERFORMANCE HAZARD

Failure to follow this caution will result in inaccurate sensor readings.

DO NOT mount the sensor in drafty areas such as near heating or air-conditioning ducts, open windows, fans, or over heat sources such as baseboard heaters, radiators, or wall-mounted dimmers. Sensors mounted in those areas will produce inaccurate readings.

If the sensor is installed directly on a wall service, install the humidity sensor using 2 screws and 2 hollow wall anchors (field supplied). Do not over tighten screws. See Fig. 58.



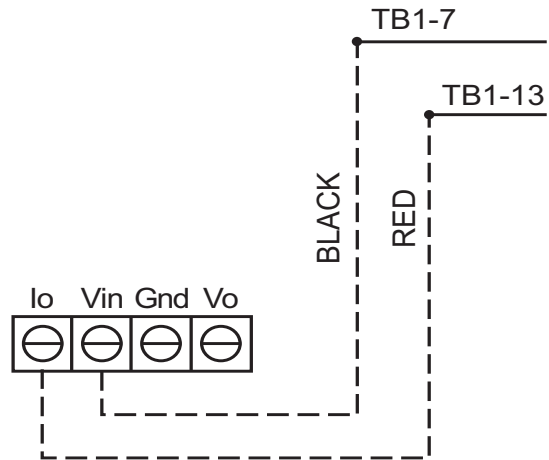
C11084

Fig. 58 - Space Relative Humidity Sensor Installation

The sensor must be mounted vertically on the wall. The Carrier logo should be orientated correctly when the sensor is properly mounted.

Avoid corner locations. Allow at least 4 ft between the sensor and any corner. Airflow near corners tends to be reduced, resulting in erratic sensor readings. The sensor should be vertically mounted approximately 5 ft up from the floor, beside the space temperature sensor.

For wiring distances up to 500 feet (152 m), use a 3-conductor, 18 or 20 AWG cable. ACCN communication cable can be used, although the shield is not required. The shield must be removed from the sensor end of the cable if this cable is used. See Fig. 59 for wiring details.



C11180

Fig. 59 - Space Relative Humidity Sensor Connection

The power for the sensor is provided by the PremierLink control on terminal J5-4 (+33 to +35vdc).

To wire the sensor:

1. At the sensor, remove 4 inches of the jacket from the cable. Strip ¼ inch of insulation from each conductor. Route the cable through the wire clearance opening in the center of the sensor. See Fig. 58.
2. Connect a field-supplied BLACK wire to the sensor screw terminal marked Vin.
3. Connect a field-supplied RED wire into the sensor screw terminal marked Io.
4. Connect the field-supplied RED wire from the sensor to TB1-13.
5. Connect the field-supplied BLACK wire from the sensor to TB1-7.

Smoke Detector/Fire Shutdown (FSD) —

This function is available only when PremierLink is configured for (Space) Sensor Mode. The unit is factory-wired for PremierLink FSD operation when PremierLink is factory-installed.

On 50HC units equipped with factory-installed Smoke Detector(s), the smoke detector controller implements the unit shutdown through its NC contact set connected to the unit's CTB input. The FSD function is initiated via the smoke detector's Alarm NO contact set. The PremierLink communicates the smoke detector's tripped status to the CCN building control. See Fig. 46 or Fig. 47 (PremierLink wiring schematic).

Filter Status Switch —

This function is available only when PremierLink is configured for (Space) Sensor Mode.

PremierLink control can monitor return filter status in two ways: By monitoring a field-supplied/installed filter pressure switch or via supply fan runtime hours.

Using switch input: Install the dirty filter pressure switch according to switch manufacturer's instructions, to measure pressure drop across the unit's return filters. Connect one side of the switch's NO contact set to CTB's THERMOSTAT-R terminal. Connect the other side of the NO contact set to TB1-10. Setpoint for Dirty Filter is set at the switch. See Fig. 60

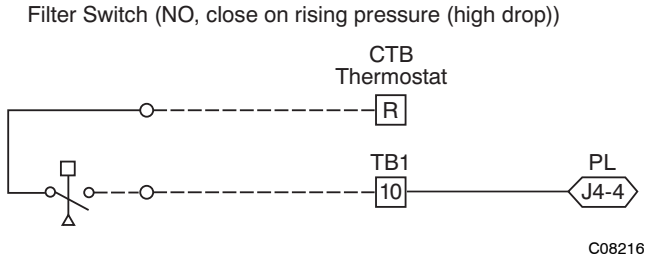


Fig. 60 - PremierLink Filter Switch Connection

When the filter switch's NO contact set closes as filter pressure drop increases (indicating dirt-laden filters), the input signal to PremierLink causes the filter status point to read "DIRTY".

Using Filter Timer Hours: Refer to Form 33CS-67SI for instructions on using the PremierLink Configuration screens and on unit alarm sequence.

Supply Fan Status Switch —

The PremierLink control can monitor supply fan operation through a field-supplied/installed differential pressure switch. This sequence will prevent (or interrupt) operation of unit cooling, heating and economizer functions until the pressure switch contacts are closed indicating proper supply fan operation.

Install the differential pressure switch in the supply fan section according to switch manufacturer's instructions. Arrange the switch contact to be open on no flow and to close as pressure rises indicating fan operation.

Connect one side of the switch's NO contact set to CTB's THERMOSTAT-R terminal. Connect the other side of the NO contact set to TB1-8. Setpoint for Supply Fan Status is set at the switch. See Fig. 61.

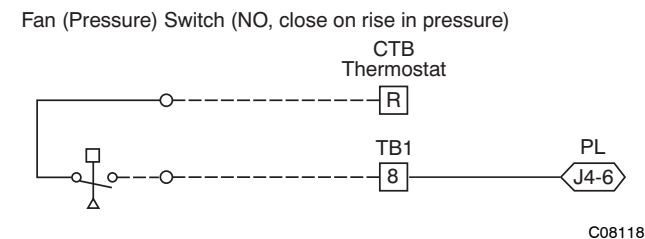


Fig. 61 - PremierLink Wiring Fan Pressure Switch Connection

Remote Occupied Switch —

The PremierLink control permits a remote timeclock to override the control's on-board occupancy schedule and place the unit into Occupied mode. This function may also provide a "Door Switch" time delay function that will terminate cooling and heating functions after a 2-20 minute delay.

Connect one side of the NO contact set on the timeclock to CTB's THERMOSTAT-R terminal. Connect the other side of the timeclock contact to the unit's TB1-2 terminal (see Fig. 62).

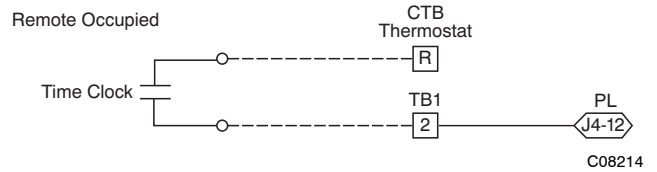


Fig. 62 - PremierLink Wiring Remote Occupied

Refer to Form 33CS-67SI for additional information on configuring the PremierLink control for Door Switch timer function.

Power Exhaust (output) —

Connect the accessory Power Exhaust contactor coils(s) per Fig. 63.

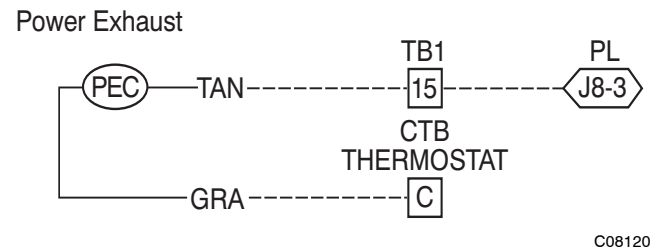


Fig. 63 - PremierLink Power Exhaust Output Connection

NOTE: The Power Exhaust and Humidi-MiZer[®] options can not be used with PremierLink at the same time as both options require connection at TB1-15 (AUX OUT).

CCN Communication Bus —

The PremierLink controller connects to the bus in a daisy chain arrangement. Negative pins on each component must be connected to respective negative pins, and likewise, positive pins on each component must be connected to respective positive pins. The controller signal pins must be wired to the signal ground pins. Wiring connections for CCN must be made at the 3-pin plug.

At any baud (9600, 19200, 38400 baud), the number of controllers is limited to 239 devices maximum. Bus length may not exceed 4000 ft, with no more than 60 total devices on any 1000-ft section. Optically isolated RS-485 repeaters are required every 1000 ft.

NOTE: Carrier device default is 9600 band.

50HC

Communications Bus Wire Specifications: The CCN Communication Bus wiring is field-supplied and field-installed. It consists of shielded 3-conductor cable with drain (ground) wire. The cable selected must be identical to the CCN Communication Bus wire used for the entire network.

See Table 6 for recommended cable.

Table 6 – Recommended Cables

MANUFACTURER	CABLE PART NO.
Alpha	2413 or 5463
American	A22503
Belden	8772
Columbia	02525

NOTE: Conductors and drain wire must be at least 20 AWG, stranded, and tinned copper. Individual conductors must be insulated with PVC, PVC/nylon, vinyl, Teflon, or polyethylene. An aluminum/polyester 100% foil shield and an outer jacket of PVC, PVC/nylon, chrome vinyl, or Teflon with a minimum operating temperature range of -20°C to 60°C is required. Do not run communication wire in the same conduit as or next to any AC voltage wiring.

The communication bus shields must be tied together at each system element. If the communication bus is entirely within one building, the resulting continuous shield must be connected to ground at only one single point. If the communication bus cable exits from one building and enters another building, the shields must be connected to the grounds at a lightning suppressor in each building (one point only).

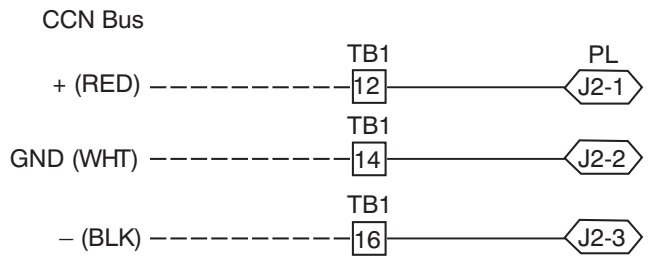
Connecting CCN bus:

NOTE: When connecting the communication bus cable, a color code system for the entire network is recommended to simplify installation and checkout. See Table 7 for the recommended color code.

Table 7 – Color Code Recommendations

SIGNAL TYPE	CCN BUS WIRE COLOR	CCN PLUG PIN NUMBER
+	Red	1
Ground	White	2
-	Black	3

Connect the CCN (+) lead (typically RED) to the unit's TB1-12 terminal. Connect the CCN (ground) lead (typically WHT) to the unit's TB1-14 terminal. Connect the CCN (-) lead (typically BLK) to the unit's TB1-16 terminal. See Fig. 64.



C08276

Fig. 64 - PremierLink CCN Bus Connections

RTU Open Control System

The RTU Open control is factory-mounted in the 50HC unit's main control box, to the left of the CTB. See Fig. 66. Factory wiring is completed through harnesses connected to the CTB. Field connections for RTU Open sensors will be made at the Phoenix connectors on the RTU Open board. The factory-installed RTU Open control includes the supply-air temperature (SAT) sensor. The outdoor air temperature (OAT) sensor is included in the FIOP/accessory EconoMi\$er2 package.

The RTU Open controller is an integrated component of the Carrier rooftop unit. Its internal application programming provides optimum performance and energy efficiency. RTU Open enables the unit to run in 100% stand-alone control mode, Carrier's I-Vu Open network, or a Third Party Building Automation System (BAS). On-board DIP switches allow you to select your protocol (and baud rate) of choice among the four most popular protocols in use today: BACnet, Modbus, Johnson N2 and LonWorks. (See Fig. 65.)

Refer to Table 8, RTU Open Controller Inputs and Outputs for locations of all connections to the RTU Open board.

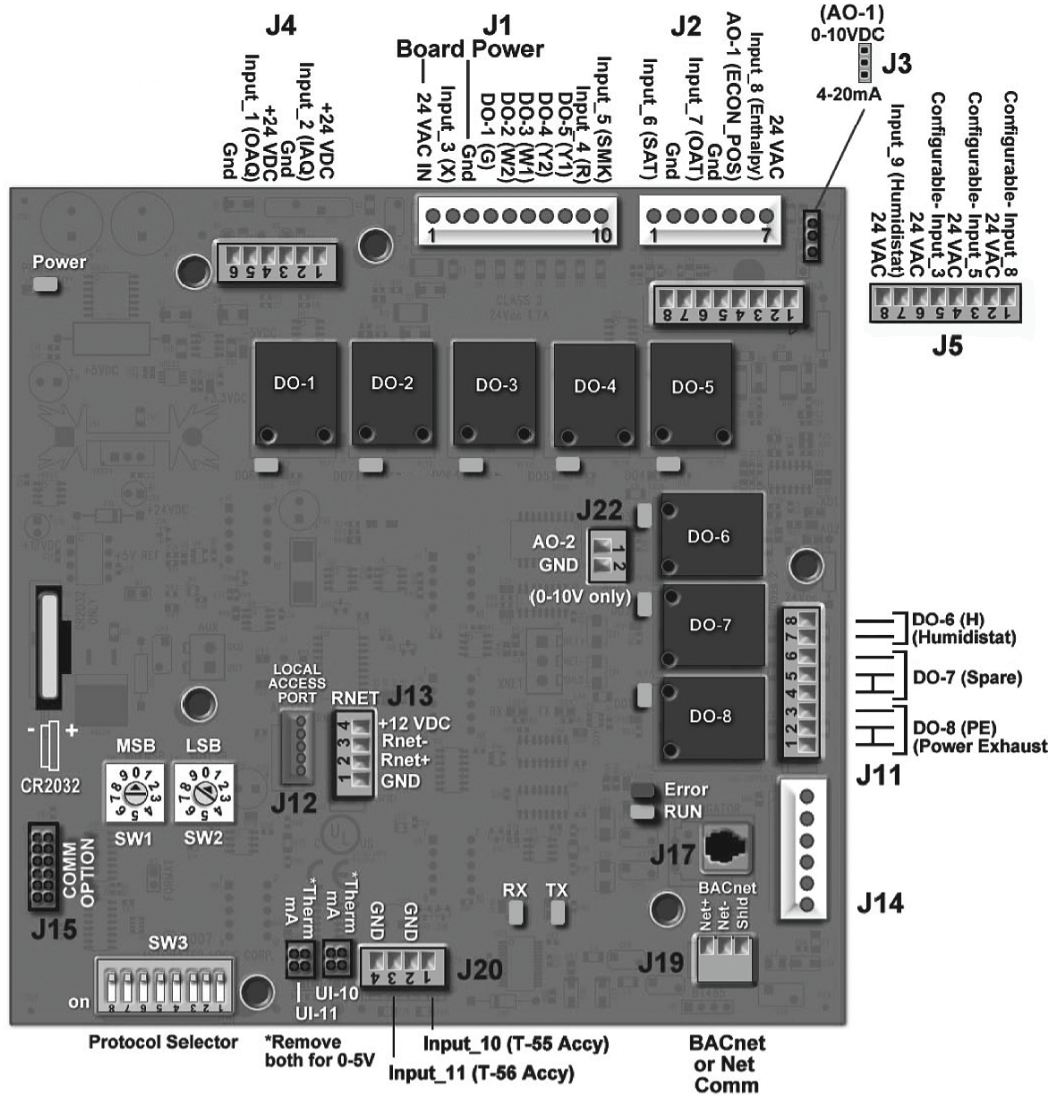


Fig. 65 - RTU Open Multi-Protocol Control Board

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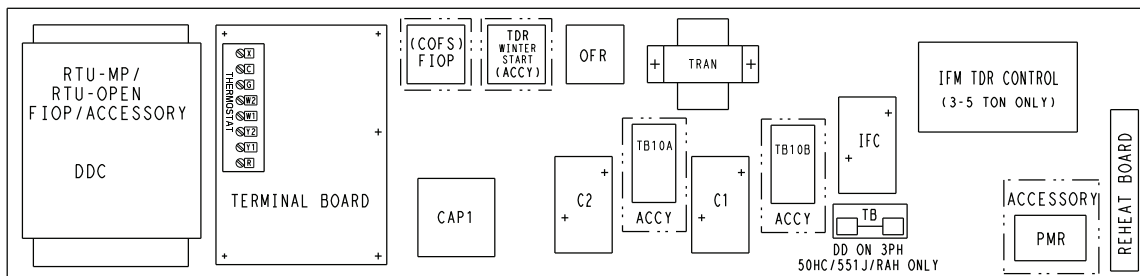
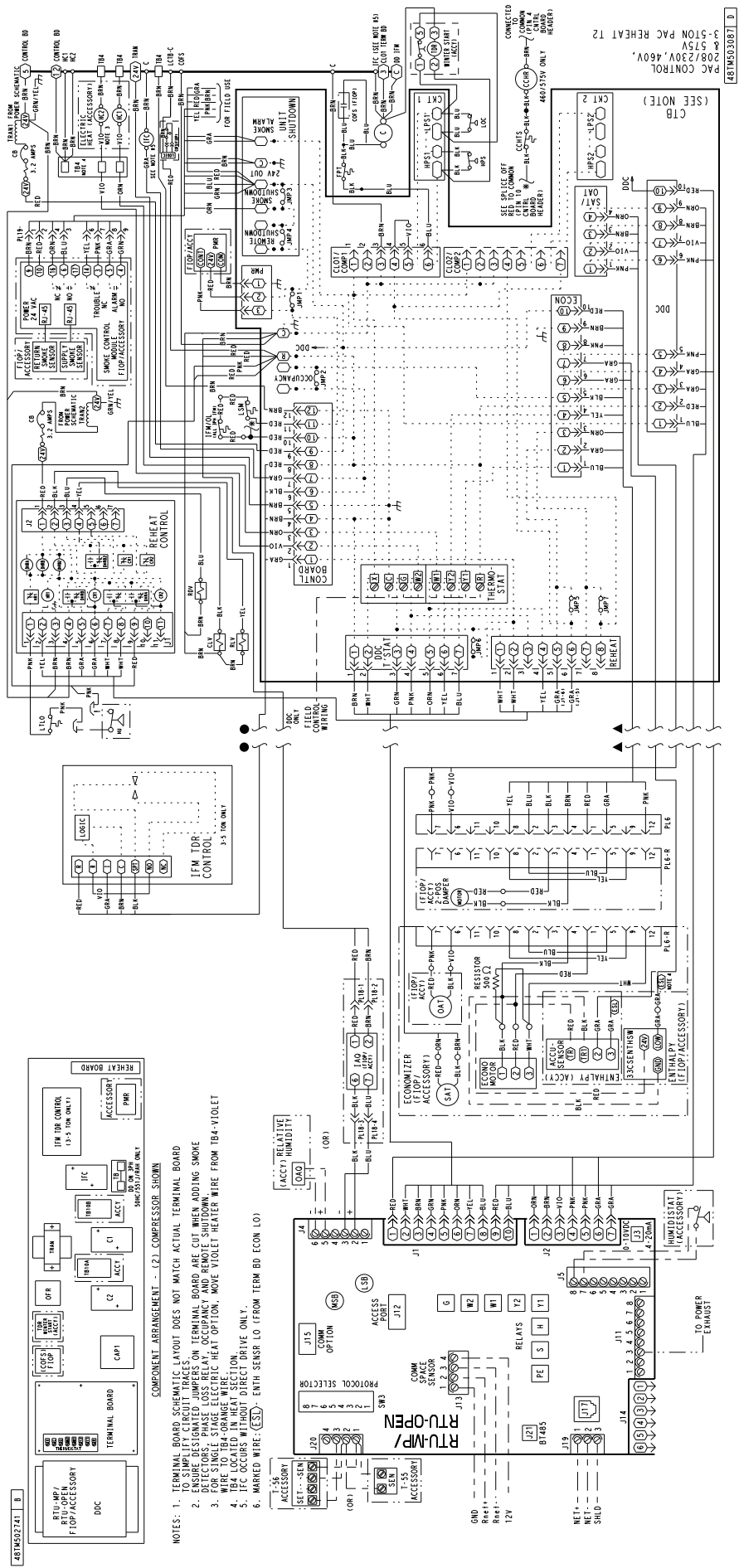


Fig. 66 - 50HC Control Box Component Locations with RTU Open

C11056

50HC



- COMPONENT ARRANGEMENT - (2) COMPRESSOR SHOWN
- NOTES:
1. TERMINAL BOARD SCHEMATIC LAYOUT DOES NOT MATCH ACTUAL TERMINAL BOARD TO SIMPLY FACILITATE WIRING.
 2. ENSURE DESIGNATED JUMPERS ON TERMINAL BOARD ARE CUT WHEN ADDING SMOKE DETECTORS, PHASE LOSS RELAY, OCCUPANCY AND REMOTE SHUTDOWN.
 3. WIRE TO TB4 ORANGE WIRE TO HEAT OPTION, NOTE VIOLET HEATER WIRE FROM TB4-VIOLET WIRE TO TB4 ORANGE WIRE.
 4. TB4 LOCATED IN HEAT SECTION.
 5. IFC OCCURS WITHOUT DIRECT DRIVE ONLY.
 6. MARKED WIRE (EST) - ENTH SENSOR LO (FROM TERM BD ECON LO)

Fig. 68 - RTU Open System Control Wiring Diagram with Humidi-MiZer®

Table 8 – RTU Open Controller Inputs and Outputs

POINT NAME	BACnet OBJECT NAME	TYPE OF I/O	CONNECTION PIN NUMBER(S)
DEDICATED INPUTS			
Space Temp / Zone Temp	zone_temp	AI (10K Thermistor)	J20–1, 2
Supply Air Temperature	sa_temp	AI (10K Thermistor)	J2–1, 2
Outdoor Air Temperature	oa_temp	AI (10K Thermistor)	J2–3, 4
Space Temperature Offset Pot	stpt_adj_offset	AI (100K Potentiometer)	J20–3
Safety Chain Feedback	safety_status	DI (24 VAC)	J1–9
Compressor Safety Status	comp_status	DI (24 VAC)	J1–2
Fire Shutdown Status	firedown_status	DI (24 VAC)	J1–10
Enthalpy Status	enthalpy_status	DI (24 VAC)	J2–6
Humidistat Input Status	humstat_status	DI (24 VAC)	J5–7
CONFIGURABLE INPUTS			
Indoor Air CO2	iaq	AI (4–20 ma)	J4–2 or J4–5
Outdoor Air CO2	oaq	AI (4–20 ma)	
Space Relative Humidity	space_rh	AI (4–20 ma)	
Supply Fan Status*	sfan_status	DI (24 VAC)	J5–1 or J5–3 or J5 5 or J5–7
Filter Status*	filter_status	DI (24 VAC)	
Door Contact Input*	door_contact_status	DI (24 VAC)	
Occupancy Contact*	occ_contact_status	DI (24 VAC)	
OUTPUTS			
Economizer Output	econ_output	AO (4–20ma)	J2–5
Supply Fan Relay State	sfan	DO Relay (24VAC , 1A)	J1–4
Compressor 1 Relay State	comp_1	DO Relay (24VAC , 1A)	J1–8
Compressor 2 Relay State	comp_2	DO Relay (24VAC , 1A)	J1–7
Heat Stage 1 Relay State	heat_1	DO Relay (24VAC , 1A)	J1–6
Heat Stage 2 Relay State	heat_2	DO Relay (24VAC , 1A)	J1–5
Power Exhaust Relay State	pexh	DO Relay (24VAC , 1A)	J11–3
Dehumidification Relay State	dehum	DO Relay (24VAC, 1A)	J11–7, 8

LEGEND

- AI** – Analog Input
- AO** – Analog Output
- DI** – Discrete Input
- DO** – Discrete Output

* These inputs (if installed) take the place of the default input on the specific channel according to schematic. Parallel pins J5–1 = J2–6, J5–3 = J1–10, J5–5 = J1–2 are used for field–installation.

The RTU Open controller requires the use of a Carrier space sensor. A standard thermostat cannot be used with the RTU Open system.

Supply Air Temperature (SAT) Sensor —

On FIOP-equipped 50HC unit, the unit is supplied with a supply-air temperature (SAT) sensor (33ZCSENSAT). This sensor is a tubular probe type, approx 6-inches (152 mm) in length. It is a nominal 10-k ohm thermistor.

The SAT is factory-wired. The SAT probe is wire-tied to the supply-air opening (on the horizontal opening end) in its shipping position. Remove the sensor for installation. Re-position the sensor in the flange of the supply-air opening or in the supply air duct (as required by local codes). Drill or punch a 1/2-in. hole in the flange or duct. Use two field-supplied, self-drilling screws to secure the sensor probe in a horizontal orientation. See Fig. 48.

Outdoor Air Temperature (OAT) Sensor —

The OAT is factory-mounted in the EconoMiSer2 (FIOP or accessory). It is a nominal 10k ohm thermistor attached to an eyelet mounting ring.

EconoMiSer2 —

The RTU Open control is used with EconoMiSer2 (option or accessory) for outdoor air management. The damper position is controlled directly by the RTU Open control; EconoMiSer2 has no internal logic device.

Outdoor air management functions can be enhanced with field-installation of these accessory control devices:

- Enthalpy control (outdoor air or differential sensors)
- Space CO₂ sensor
- Outdoor air CO₂ sensor

50HC

Field Connections

Field connections for accessory sensors and input devices are made the RTU Open, at plugs J1, J2, J4, J5, J11 and J20. All field control wiring that connects to the RTU Open must be routed through the raceway built into the corner post as shown in Fig. 29. The raceway provides the UL required clearance between high- and low-voltage wiring. Pass the control wires through the hole provided in the corner post, then feed the wires thorough the raceway to the RTU Open. Connect to the wires to the removable Phoenix connectors and then reconnect the connectors to the board.

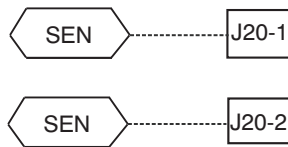
Space Temperature (SPT) Sensors —

There are two types of SPT sensors available from Carrier, resistive input non-communicating (T55, T56, and T59) and Rnet communicating (SPS, SPPL, SPP, and SPPF) sensors. Each type has a variety of options consisting of: timed override button, set point adjustment, a LCD screen, and communication tie in. Space temperature can be also be written to from a building network or zoning system. However, it is still recommended that return air duct sensor be installed to allow stand-alone operation for back-up. Refer to the configuration section for details on controller configurations associated with space sensors.

- 33ZCT55SPT, space temperature sensor with override button
- 33ZCT56SPT, space temperature sensor with override button and setpoint adjustment
- 33ZCT59SPT, space temperature sensor with LCD (liquid crystal display) screen, override button, and setpoint adjustment

Use 20 gauge wire to connect the sensor to the controller. The wire is suitable for distances of up to 500 ft. Use a three-conductor shielded cable for the sensor and setpoint connections. If the setpoint adjustment (slidebar) is not required, then an unshielded, 18 or 20 gauge, two-conductor, twisted pair cable may be used.

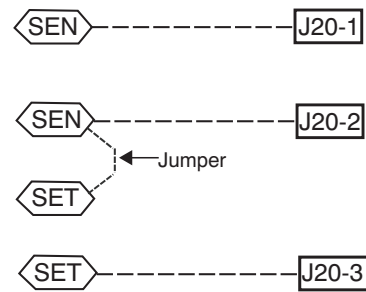
Connect T-55: See Fig. 49 for typical T-55 internal connections. Connect the T-55 SEN terminals to RTU Open J20-1 and J20-2. See Fig. 69.



C08460

Fig. 69 - RTU Open T-55 Sensor Connections

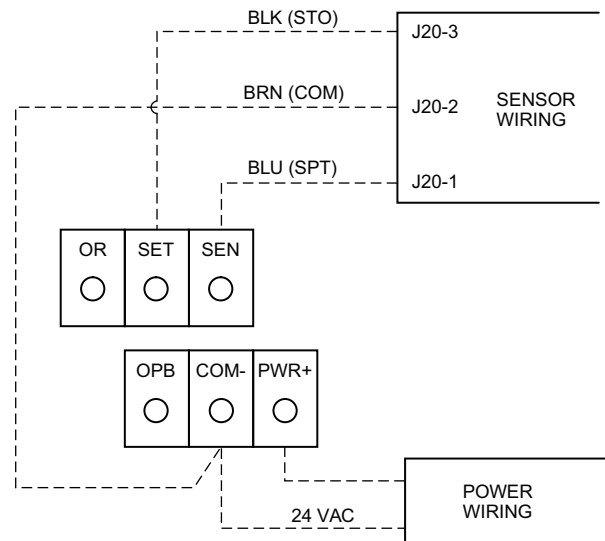
Connect T-56: See Fig. 51 for T-56 internal connections. Install a jumper between SEN and SET terminals as illustrated. Connect T-56 terminals to RTU Open J20-1, J20-2 and J20-3 per Fig. 70.



C08461

Fig. 70 - RTU Open T-56 Sensor Connections

Connect T-59: The T-59 space sensor requires a separate, isolated power supply of 24 VAC. See Fig. 71 for internal connections at the T-59. Connect the SEN terminal (BLU) to RTU Open J20-1. Connect the COM terminal (BRN) to J20-2. Connect the SET terminal (STO or BLK) to J20-3.



NOTE: Must use a separate isolated transformer.

C10291

Fig. 71 - Space Temperature Sensor Typical Wiring (33ZCT59SPT)

Indoor Air Quality (CO₂) Sensor —

The indoor air quality sensor accessory monitors space carbon dioxide (CO₂) levels. This information is used to monitor IAQ levels. Several types of sensors are available, for wall mounting in the space or in return duct, with and without LCD display, and in combination with space temperature sensors. Sensors use infrared technology to measure the levels of CO₂ present in the space air.

The CO₂ sensors are all factory set for a range of 0 to 2000 ppm and a linear mA output of 4 to 20. Refer to the instructions supplied with the CO₂ sensor for electrical requirements and terminal locations. See Fig. 54 for typical CO₂ sensor wiring schematic.

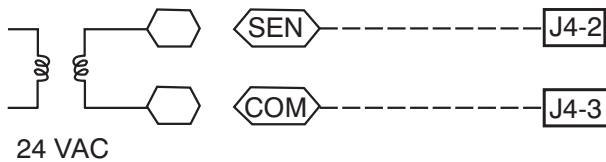
To accurately monitor the quality of the air in the conditioned air space, locate the sensor near a return-air grille (if present) so it senses the concentration of CO₂ leaving the space. The sensor should be mounted in a location to avoid direct breath contact.

Do not mount the IAQ sensor in drafty areas such as near supply ducts, open windows, fans, or over heat sources. Allow at least 3 ft (0.9 m) between the sensor and any corner. Avoid mounting the sensor where it is influenced by the supply air; the sensor gives inaccurate readings if the supply air is blown directly onto the sensor or if the supply air does not have a chance to mix with the room air before it is drawn into the return airstream.

Wiring the Indoor Air Quality Sensor: For each sensor, use two 2-conductor 18 AWG (American Wire Gage) twisted-pair cables (unshielded) to connect the separate isolated 24 vac power source to the sensor and to connect the sensor to the control board terminals.

To connect the sensor to the control, identify the positive (4 to 20 mA) and ground (SIG COM) terminals on the sensor. See Fig. 54. Connect the 4-20 mA terminal to RTU Open J4-2 and connect the SIG COM terminal to RTU Open J4-3. See Fig. 72.

IAQ Sensor



C08462

Fig. 72 - RTU Open / Indoor CO₂ Sensor (33ZCSENCO2) Connections

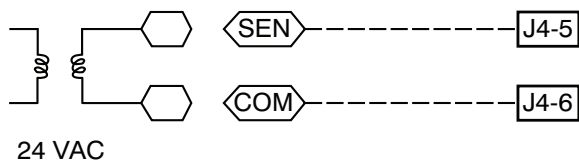
Outdoor Air Quality Sensor (PNO 33ZCSENCO2 plus weatherproof enclosure) —

The outdoor air CO₂ sensor is designed to monitor carbon dioxide (CO₂) levels in the outside ventilation air and interface with the ventilation damper in an HVAC system. The OAQ sensor is packaged with an outdoor cover. See Fig. 56. The outdoor air CO₂ sensor must be located in the economizer outside air hood.

Wiring the Outdoor Air CO₂ Sensor: A dedicated power supply is required for this sensor. A two-wire cable is required to wire the dedicated power supply for the sensor. The two wires should be connected to the power supply and terminals 1 and 2.

To connect the sensor to the control, identify the positive (4 to 20 mA) and ground (SIG COM) terminals on the OAQ sensor. See Fig. 54. Connect the 4 to 20 mA terminal to RTU Open J4-5. Connect the SIG COM terminal to RTU Open J4-6.

OAQ Sensor



C11086

Fig. 73 - RTU Open / Outdoor CO₂ Sensor (33ZCSENCO2) Connections

Space Relative Humidity Sensor or Humidistat —

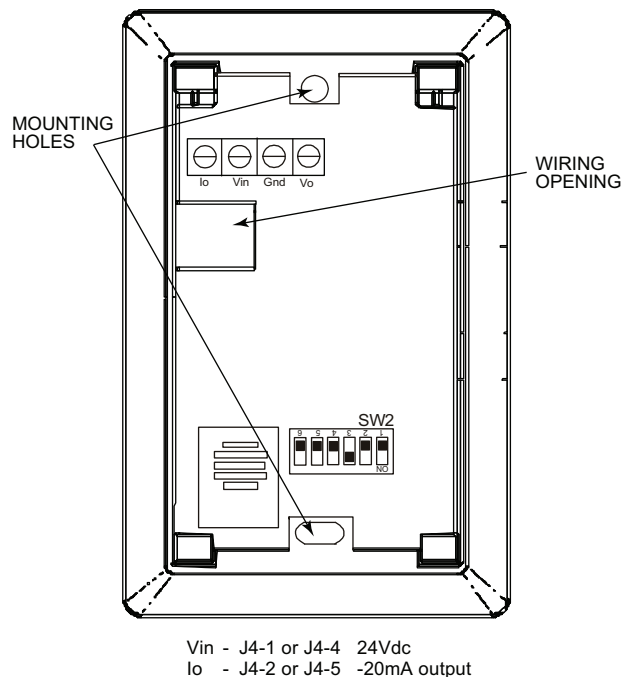
NOTE: The accessory space relative humidity sensor and humidistat are not available for single phase (-3 voltage code) models.

Humidi-MiZer[®] Control Wiring: In units equipped with the Humidi-MiZer option there are two pink (PNK) wires loose in the control box used to control the dehumidification function of the unit. These pink wires are meant to be tied to a space humidistat or thermidistat on an electromechanical unit. On RTU Open equipped units these pink wires must be connected to J11-7 & 8 to allow the Open board to operate the dehumidification function for the unit. Disconnect the J11 Phoenix style connector from the board and use the plug screws to secure the pink wires in pins 7 and 8, reconnect the plug to the board at J11.

Relative Humidity Sensors (Space or Duct Mounted): The accessory space humidity sensor (33ZCSENSRH-01) or duct humidity sensor (33ZCSENDRH-01) is used to measure the relative humidity of air within the space or return air duct. The RH reading is used to control the Humidi-MiZer option of the rooftop unit. For wiring distances up to 500 ft (152 m), use a 3-conductor, 18 or 20 AWG shielded cable. The shield must be removed from the sensor end of the cable and grounded at the unit end. The current loop power for sensor is provided by the RTU Open controller as 24vdc. Refer to the instructions supplied with the RH sensor for the electrical requirements and terminal locations. RTU Open configurations must be changed after adding an RH sensor. See Fig. 74 and 75 for typical RH sensor wiring.

- J4-1 or J4-4 = 24vdc loop power
- J4-2 or J4-5 = 4-20mA signal input

NOTE: The factory default for dehumidification control is normally open humidistat.



Vin - J4-1 or J4-4 24Vdc
lo - J4-2 or J4-5 -20mA output

C11087

Fig. 74 - Space Relative humidity Sensor Typical Wiring

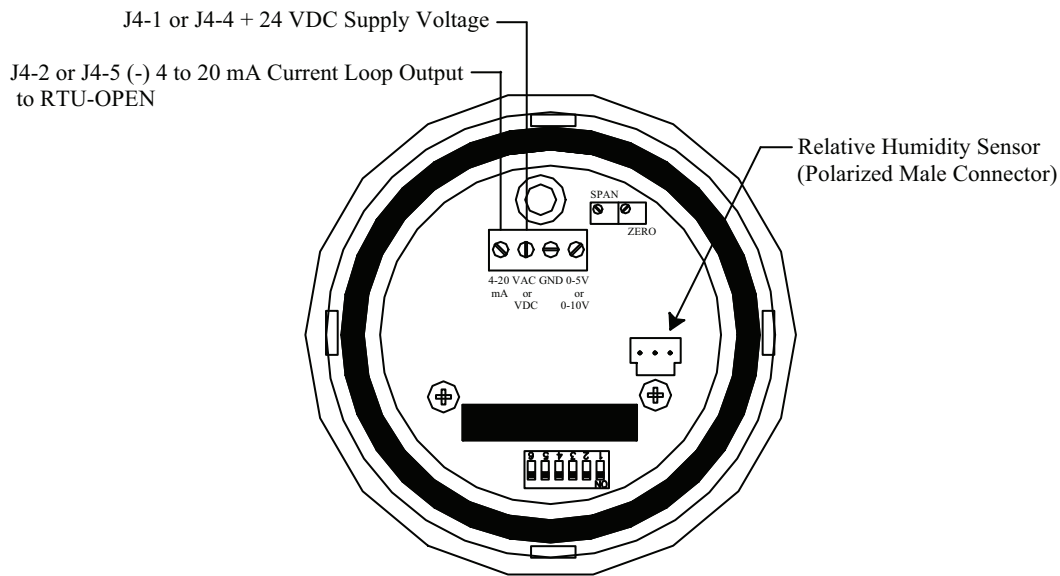


Fig. 75 - Duct Relative Humidity Sensor Typical Wiring

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Humidistat: The accessory humidistat provides the RTU Open insight to the relative humidity in the space. The humidistat reads the RH level in the space and compares it to its setpoint to operate a dry contact. The humidistat is a dedicated input on the configurable input 9 and tells the RTU Open when the RH level is HIGH or LOW. The normal condition for humidity is LOW. A normally open humidistat is the factory default control for the Humidi-MiZer[®] option.

To wire in the field:

- J5-8 = 24 VAC source for dry contact
- J5-7 = Signal input

Smoke Detector/Fire Shutdown (FSD) —

On 50HC units equipped with factory-installed Smoke Detector(s), the smoke detector controller implements the unit shutdown through its NC contact set connected to the unit's CTB input. The FSD function is initiated via the smoke detector's Alarm NO contact set. The RTU Open controller communicates the smoke detector's tripped status to the BAS building control. See Fig. 67 or Fig. 68 (RTU Open System Control wiring schematics).

The Fire Shutdown Switch configuration, *MENU* → *Config* → *Inputs* → *input 5*, identifies the normally open status of this input when there is no fire alarm.

Connecting Discrete Inputs —

Filter Status: The filter status accessory is a field-installed accessory. This accessory detects plugged filters. When installing this accessory, the unit must be configured for filter status by setting *MENU* → *Config* → *Inputs* → *input 3, 5, 8, or 9* to Filter Status and normally open (N/O) or normally closed (N/C). Input 8 or 9 is recommended for easy of installation. Refer to Fig. 65 and Fig. 67 or Fig. 68 for wire terminations at J5.

Fan Status: The fan status accessory is a field-installed accessory. This accessory detects when the indoor fan is blowing air. When installing this accessory, the unit must be configured for fan status by setting *MENU* → *Config* → *Inputs* → *input 3, 5, 8, or 9* to Fan Status and normally open (N/O) or normally closed (N/C). Input 8 or 9 is recommended for easy of installation. Refer to Fig. 65 and Fig. 67 or Fig. 68 for wire terminations at J5.

Remote Occupancy: The remote occupancy accessory is a field-installed accessory. This accessory overrides the unoccupied mode and puts the unit in occupied mode. When installing this accessory, the unit must be configured for remote occupancy by setting *MENU* → *Config* → *Inputs* → *input 3, 5, 8, or 9* to Remote Occupancy and normally open (N/O) or normally closed (N/C).

Also set *MENU* → *Schedules* → *occupancy source* to DI on/off. Input 8 or 9 is recommended for easy of installation. Refer to Fig. 65 and Table 8 for wire terminations at J5.

Power Exhaust (output): The relay used by the RTU Open board to control power exhaust is a dry contact which means it does not have 24vac. This 24vac must be connected to the relay to allow it to operate the power exhaust relay in the PE accessory. A 24vac source must be provided to J11-2 on the RTU Open control board. This can be provided by the unit's transformer from various sources. The "R" terminal on the unit's low voltage terminal board (LVTB) is a logical source. Refer to Fig. 65 and Fig. 67 or Fig. 68 for wire terminations at J11.

Communication Wiring - Protocols

General —

Protocols are the communication languages spoken by control devices. The main purpose of a protocol is to communicate information in the most efficient method possible. Different protocols exist to provide different kinds of information for different applications. In the BAS application, many different protocols are used, depending on manufacturer. Protocols do not change the function of a controller; just make the front end user different.

The RTU Open can be set to communicate on four different protocols: BACnet, Modbus, N2, and LonWorks. Switch 3 (SW3) on the board is used to set protocol and baud rate. Switches 1 and 2 (SW1 and SW2) are used to set the board's network address. See Fig. 76 and 77 for protocol switch settings and address switches. The 3rd party connection to the RTU Open is through plug J19. See Fig. 78 for wiring.

NOTE: Power must be cycled after changing the SW1-3 switch settings.

Refer to the *RTU Open Controller Integration Guide* (Catalog No. 11-808-428-01) for more detailed information on protocols, 3rd party wiring, and networking.

SW3 Protocol Selection

PROTOCOL	DS8	DS7	DS6	DS5	DS4	DS3	DS2	DS1
BACnet MS/TP (Master)	Unused	OFF	OFF	OFF	ON	OFF	Select Baud	Select Baud
Modbus (Slave)	Unused	OFF	OFF	ON	ON	OFF	Select Baud	Select Baud
N2 (Slave)	Unused	OFF	OFF	OFF	ON	ON	OFF	OFF
LonWorks	Unused	ON	ON	OFF	ON	OFF	OFF	OFF

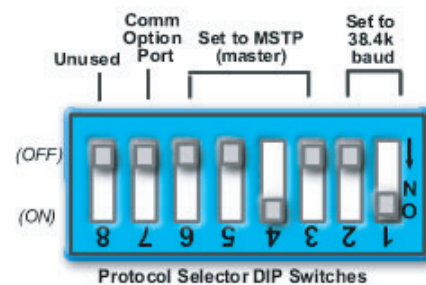
NOTE:

DS = Dip Switch

BACnet MS/TP SW3 example shown

Baud Rate Selections

BAUD RATE	DS2	DS1
9600	OFF	OFF
19,200	ON	OFF
38,400	OFF	ON
76,800	ON	ON



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Fig. 76 - RTU Open SW3 Dip Switch Settings



C10815

Fig. 77 - RTU Open Address Switches

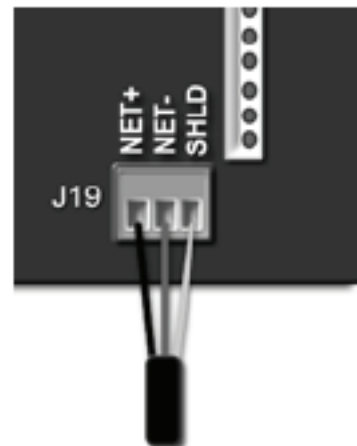


Fig. 78 - Network Wiring

C10816

Local Access

BACview⁶ Handheld: The BACview⁶ is a keypad/display interface used to connect to the RTU Open to access the control information, read sensor values, and test the RTU, see Fig. 79. This is an accessory interface that does not come with the RTU Open controller and can only be used at the unit. Connect the BACview⁶ to the RTU Open J12 local access port. There are two password protected levels in the display (User and Admin). The user password is defaulted to 0000 but can be changed. The Admin password is 1111 and cannot be changed. There is a 10 minute auto logout if a screen is idle. See Form 48-50HCTQ-01T, Appendix A for navigation and screen content.

Virtual BACview: Virtual BACview is a freeware computer program that functions as the BACview⁶ Handheld. The USB Link interface (USB-L) is required to connect a

computer to the RTU Open board. The link cable connects a USB port to the J12 local access port. This program functions and operates identical to the handheld.

RTU Open Troubleshooting —

Communication LEDs: The LEDs indicate if the controller is speaking to the devices on the network. The LEDs should reflect communication traffic based on the baud rate set. The higher the baud rate the more solid the LEDs will appear. See Table 9.

NOTE: Refer to Catalog No. 48-50HCTQ-01T for complete configuration of RTU Open, operating sequences and troubleshooting information. Refer to *RTU Open Controller Integration Guide* (Catalog No. 11-808-428-01) for details on configuration and troubleshooting of connected networks. Have a copy of these manuals available at unit start-up.

50HC

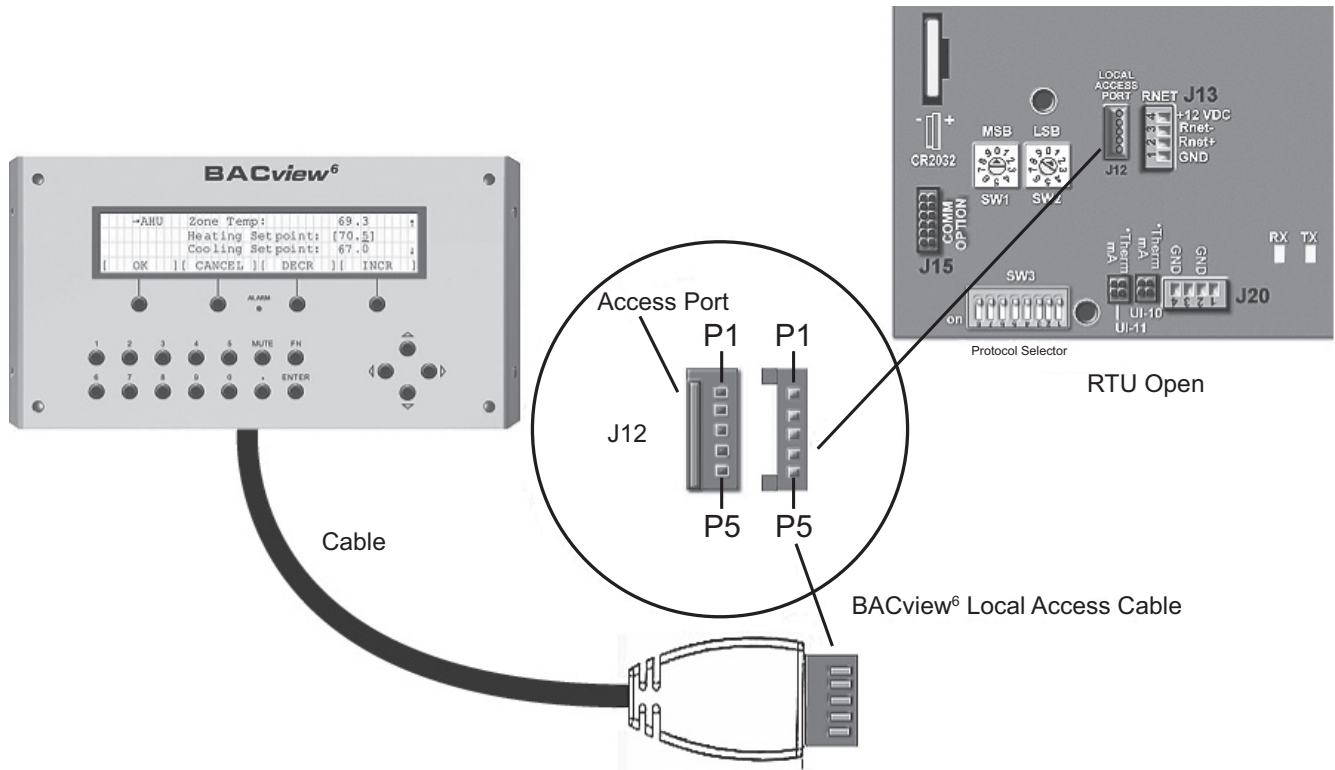


Fig. 79 - BACview⁶ Handheld Connections

C10812

Table 9 – LEDs
The LEDs on the RTU Open show the status of certain functions

If this LED is on...	Status is...
Power	RTU Open has power
Rx	RTU Open is receiving data from the network segment
Tx	RTU Open is transmitting data over the network segment
DO#	The digital output is active

The **Run** and **Error** LEDs indicate control module and network status

If Run LED shows...	And Error LED shows...	Status is...
2 flashes per second	Off	Normal
2 flashes per second	2 flashes, alternating with Run LED	Five minute auto-restart delay after system error
2 flashes per second	3 flashes, then off	Control module has just been formatted
2 flashes per second	4 flashes, then pause	Two or more devices on this network have the same ARC156 network address
2 flashes per second	On	Exec halted after frequent system errors or control programs halted
5 flashes per second	On	Exec start-up aborted, Boot is running
5 flashes per second	Off	Firmware transfer in progress, Boot is running
7 flashes per second	7 flashes per second, alternating with Run LED	Ten second recovery period after brownout
14 flashes per second	14 flashes per second, alternating with Run LED	Brownout
On	On	Failure. Try the following solutions: <ul style="list-style-type: none"> • Turn RTU Open off, then on. • Format RTU Open. • Download memory to RTU Open. • Replace RTU Open.

50HC

Outdoor Air Enthalpy Control (PNO 33CSENTHSW)

The enthalpy control (33CSENTHSW) is available as a field-installed accessory to be used with the EconoMi\$er2 damper system. The outdoor air enthalpy sensor is part of the enthalpy control. (The separate field-installed accessory return air enthalpy sensor (33CSENSEN) is required for differential enthalpy control. See Fig. 80.)

Locate the enthalpy control in the economizer next to the Actuator Motor. Locate two GRA leads in the factory harness and connect the gray lead labeled “ESL” to the terminal labeled “LOW”. See Fig. 80. Connect the enthalpy control power input terminals to economizer actuator power leads RED (connect to 24V) and BLK (connect to GND).

The outdoor enthalpy changeover setpoint is set at the enthalpy controller.

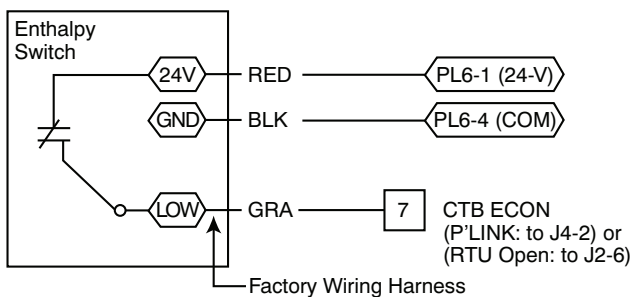


Fig. 80 - Enthalpy Switch (33CSENTHSW) Connections

C11160

Differential Enthalpy Control —

Differential enthalpy control is provided by sensing and comparing the outside air and return air enthalpy conditions. Install the outdoor air enthalpy control as described above. Add and install a return air enthalpy sensor.

Return Air Enthalpy Sensor —

Mount the return-air enthalpy sensor (33CSENSEN) in the return-air section of the economizer. The return air sensor is wired to the enthalpy controller (33CSENTHSW). See Fig. 81.

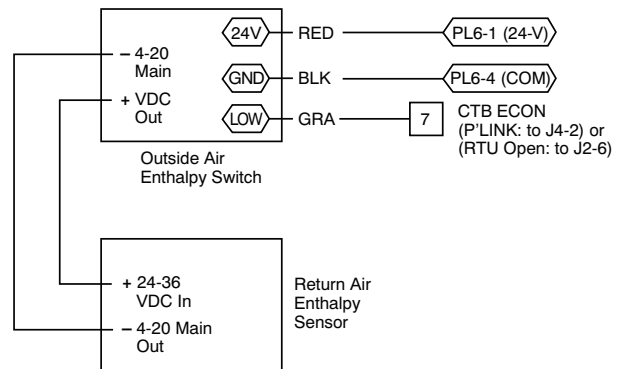


Fig. 81 - Outside and Return Air Enthalpy Sensor Wiring

C11161

To wire the return air enthalpy sensor, perform the following:

1. Use a 2-conductor, 18 or 20 AWG, twisted pair cable to connect the return air enthalpy sensor to the enthalpy controller.
2. Connect the field-supplied RED wire to (+) spade connector on the return air enthalpy sensor and the (+) terminal on the enthalpy controller. Connect the BLK wire to (-) spade connector on the return air enthalpy sensor and the (-) terminal on the enthalpy controller.

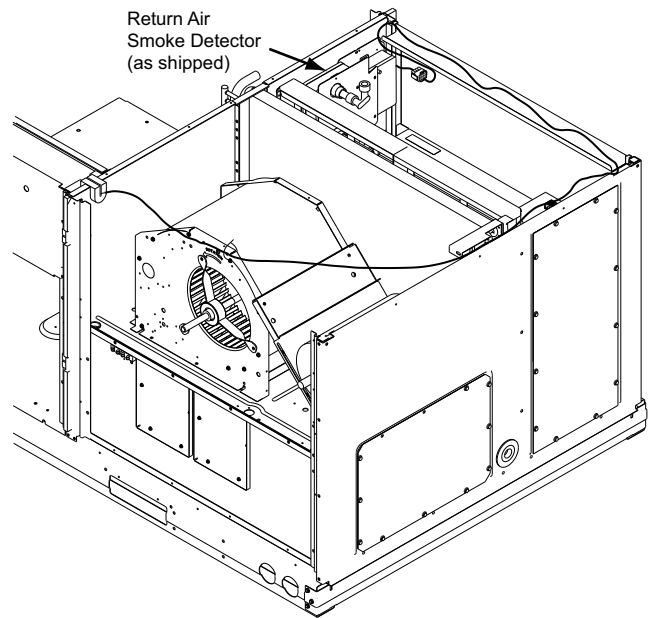
Smoke Detectors

Smoke detectors are available as factory-installed options on 48HC models. Smoke detectors may be specified for Supply Air only or for Return Air without or with economizer or in combination of Supply Air and Return Air. Return Air smoke detectors are arranged for vertical return configurations only. All components necessary for operation are factory-provided and mounted. The unit is factory-configured for immediate smoke detector shutdown operation; additional wiring or modifications to unit terminal board may be necessary to complete the unit and smoke detector configuration to meet project requirements.

Units equipped with factory-optional Return Air smoke detectors require a relocation of the sensor module at unit installation. See Fig. 82 for the as shipped location.

Completing Installation of Return Air Smoke Sensor:

1. Unscrew the two screws holding the Return Air Smoke Detector assembly. See Fig. 83, Step 1. Save the screws.
2. Turn the assembly 90 and then rotate end to end. Make sure that the elbow fitting is pointing down. See Fig. 83, Step 2.
3. Screw the sensor and detector plate into its operating position using screws from Step 1. See Fig. 83, Step 3.
4. Connect the flexible tube on the sampling inlet to the sampling tube on the basepan.



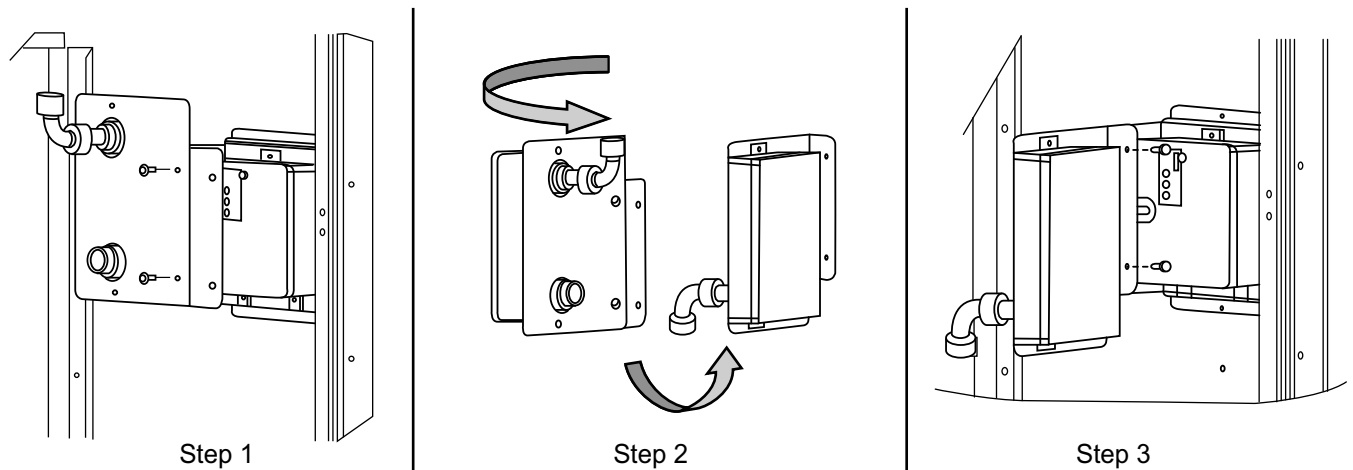
C12282

Fig. 82 - Return Air Smoke Detector, Shipping Position

50HC

Additional Application Data —

Refer to Catalog No. HKRNKA-1XA for discussions on additional control features of these smoke detectors including multiple unit coordination.



C12283

Fig. 83 - Completing Installation of Return Air Smoke Sensor

Table 10 Unit Wire/Fuse or HACR Breaker Sizing Data (cont)

UNIT	NO M, V-PH-HZ	IFM TYPE	ELEC. HTR		NO C.O. or UNPWR C.O.										w/ PWRD C.O.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
			CRHEATER***A00	Nom (kW)	FLA	NO P.E.				w/ P.E. (pwrd fr/unit)				NO P.E.				w/ P.E. (pwrd fr/unit)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
						MCA	FUSE or HACR BRKR	FLA	DISC. SIZE	MCA	FUSE or HACR BRKR	FLA	LRA	MCA	FUSE or HACR BRKR	FLA	LRA	MCA	FUSE or HACR BRKR	FLA	LRA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
50HC-A/B/F04	460-3-60	DD-STD	NONE	-	-	12	43	13	44	14	15	14	45	15	15	14	46	16	15	14	47	15	15	48	16	15	14	49	16	15	14	50	16	15	14	51	16	15	14	52	16	15	14	53	16	15	14	54	16	15	14	55	16	15	14	56	16	15	14	57	16	15	14	58	16	15	14	59	16	15	14	60	16	15	14	61	16	15	14	62	16	15	14	63	16	15	14	64	16	15	14	65	16	15	14	66	16	15	14	67	16	15	14	68	16	15	14	69	16	15	14	70	16	15	14	71	16	15	14	72	16	15	14	73	16	15	14	74	16	15	14	75	16	15	14	76	16	15	14	77	16	15	14	78	16	15	14	79	16	15	14	80	16	15	14	81	16	15	14	82	16	15	14	83	16	15	14	84	16	15	14	85	16	15	14	86	16	15	14	87	16	15	14	88	16	15	14	89	16	15	14	90	16	15	14	91	16	15	14	92	16	15	14	93	16	15	14	94	16	15	14	95	16	15	14	96	16	15	14	97	16	15	14	98	16	15	14	99	16	15	14	100	16	15	14	101	16	15	14	102	16	15	14	103	16	15	14	104	16	15	14	105	16	15	14	106	16	15	14	107	16	15	14	108	16	15	14	109	16	15	14	110	16	15	14	111	16	15	14	112	16	15	14	113	16	15	14	114	16	15	14	115	16	15	14	116	16	15	14	117	16	15	14	118	16	15	14	119	16	15	14	120	16	15	14	121	16	15	14	122	16	15	14	123	16	15	14	124	16	15	14	125	16	15	14	126	16	15	14	127	16	15	14	128	16	15	14	129	16	15	14	130	16	15	14	131	16	15	14	132	16	15	14	133	16	15	14	134	16	15	14	135	16	15	14	136	16	15	14	137	16	15	14	138	16	15	14	139	16	15	14	140	16	15	14	141	16	15	14	142	16	15	14	143	16	15	14	144	16	15	14	145	16	15	14	146	16	15	14	147	16	15	14	148	16	15	14	149	16	15	14	150	16	15	14	151	16	15	14	152	16	15	14	153	16	15	14	154	16	15	14	155	16	15	14	156	16	15	14	157	16	15	14	158	16	15	14	159	16	15	14	160	16	15	14	161	16	15	14	162	16	15	14	163	16	15	14	164	16	15	14	165	16	15	14	166	16	15	14	167	16	15	14	168	16	15	14	169	16	15	14	170	16	15	14	171	16	15	14	172	16	15	14	173	16	15	14	174	16	15	14	175	16	15	14	176	16	15	14	177	16	15	14	178	16	15	14	179	16	15	14	180	16	15	14	181	16	15	14	182	16	15	14	183	16	15	14	184	16	15	14	185	16	15	14	186	16	15	14	187	16	15	14	188	16	15	14	189	16	15	14	190	16	15	14	191	16	15	14	192	16	15	14	193	16	15	14	194	16	15	14	195	16	15	14	196	16	15	14	197	16	15	14	198	16	15	14	199	16	15	14	200	16	15	14	201	16	15	14	202	16	15	14	203	16	15	14	204	16	15	14	205	16	15	14	206	16	15	14	207	16	15	14	208	16	15	14	209	16	15	14	210	16	15	14	211	16	15	14	212	16	15	14	213	16	15	14	214	16	15	14	215	16	15	14	216	16	15	14	217	16	15	14	218	16	15	14	219	16	15	14	220	16	15	14	221	16	15	14	222	16	15	14	223	16	15	14	224	16	15	14	225	16	15	14	226	16	15	14	227	16	15	14	228	16	15	14	229	16	15	14	230	16	15	14	231	16	15	14	232	16	15	14	233	16	15	14	234	16	15	14	235	16	15	14	236	16	15	14	237	16	15	14	238	16	15	14	239	16	15	14	240	16	15	14	241	16	15	14	242	16	15	14	243	16	15	14	244	16	15	14	245	16	15	14	246	16	15	14	247	16	15	14	248	16	15	14	249	16	15	14	250	16	15	14	251	16	15	14	252	16	15	14	253	16	15	14	254	16	15	14	255	16	15	14	256	16	15	14	257	16	15	14	258	16	15	14	259	16	15	14	260	16	15	14	261	16	15	14	262	16	15	14	263	16	15	14	264	16	15	14	265	16	15	14	266	16	15	14	267	16	15	14	268	16	15	14	269	16	15	14	270	16	15	14	271	16	15	14	272	16	15	14	273	16	15	14	274	16	15	14	275	16	15	14	276	16	15	14	277	16	15	14	278	16	15	14	279	16	15	14	280	16	15	14	281	16	15	14	282	16	15	14	283	16	15	14	284	16	15	14	285	16	15	14	286	16	15	14	287	16	15	14	288	16	15	14	289	16	15	14	290	16	15	14	291	16	15	14	292	16	15	14	293	16	15	14	294	16	15	14	295	16	15	14	296	16	15	14	297	16	15	14	298	16	15	14	299	16	15	14	300	16	15	14	301	16	15	14	302	16	15	14	303	16	15	14	304	16	15	14	305	16	15	14	306	16	15	14	307	16	15	14	308	16	15	14	309	16	15	14	310	16	15	14	311	16	15	14	312	16	15	14	313	16	15	14	314	16	15	14	315	16	15	14	316	16	15	14	317	16	15	14	318	16	15	14	319	16	15	14	320	16	15	14	321	16	15	14	322	16	15	14	323	16	15	14	324	16	15	14	325	16	15	14	326	16	15	14	327	16	15	14	328	16	15	14	329	16	15	14	330	16	15	14	331	16	15	14	332	16	15	14	333	16	15	14	334	16	15	14	335	16	15	14	336	16	15	14	337	16	15	14	338	16	15	14	339	16	15	14	340	16	15	14	341	16	15	14	342	16	15	14	343	16	15	14	344	16	15	14	345	16	15	14	346	16	15	14	347	16	15	14	348	16	15	14	349	16	15	14	350	16	15	14	351	16	15	14	352	16	15	14	353	16	15	14	354	16	15	14	355	16	15	14	356	16	15	14	357	16	15	14	358	16	15	14	359	16	15	14	360	16	15	14	361	16	15	14	362	16	15	14	363	16	15	14	364	16	15	14	365	16	15	14	366	16	15	14	367	16	15	14	368	16	15	14	369	16	15	14	370	16	15	14	371	16	15	14	372	16	15	14	373	16	15	14	374	16	15	14	375	16	15	14	376	16	15	14	377	16	15	14	378	16	15	14	379	16	15	14	380	16	15	14	381	16	15	14	382	16	15	14	383	16	15	14	384	16	15	14	385	16	15	14	386	16	15	14	387	16	15	14	388	16	15	14	389	16	15	14	390	16	15	14	391	16	15	14	392	16	15	14	393	16	15	14	394	16	15	14	395	16	15	14	396	16	15	14	397	16	15	14	398	16	15	14	399	16	15	14	400	16	15	14	401	16	15	14	402	16	15	14	403	16	15	14	404	16	

Table 10 Unit Wire/Fuse or HACR Breaker Sizing Data (cont)

UNIT	NO M, V-PH-HZ	ELEC. HTR				NO C.O. or UNPWR C.O.						w/ PWRD C.O.									
		CRHEATER***A00	Nom (kW)	FLA	NO PE.			w/ P.E. (pwrd fr/unit)			NO PE.			w/ P.E. (pwrd fr/unit)							
					MCA	FUSE or BRKR	DISC. SIZE	MCA	FUSE or BRKR	DISC. SIZE	MCA	FUSE or BRKR	DISC. SIZE	MCA	FUSE or BRKR	DISC. SIZE					
IFM TYPE				FLA	FLA	LRA	MCA	FUSE or BRKR	DISC. SIZE	FLA	LRA	MCA	FUSE or BRKR	DISC. SIZE	FLA	LRA	DISC. SIZE				
DD-STD	NO M, V-PH-HZ	NONE	-	-	37	35	127	38	50	37	129	41	41	60	41	132	43	60	43	134	
		101A	3.9/4.4	15.9/18.3	37/37	35/35	127/127	38/38	50/50	37/37	129/129	41/41	132/132	43/43	60/60	41/41	132/132	43/43	60/60	43/43	134/134
		103B	6.5/6.7	31.4/36.3	49/55	45/50	127/127	51/57	60/60	47/52	129/129	55/61	132/132	57/63	60/70	50/56	132/132	60/70	60/70	52/58	134/134
		102A+102A	9.8/13.0	46.9/54.2	68/77	62/71	127/127	71/80	80/80	65/73	129/129	74/83	132/132	77/86	80/90	68/76	132/132	80/90	80/90	70/79	134/134
		103B+103B	13.1/17.4	62.8/72.5	88/100	81/92	127/127	91/103	100/110	83/94	129/129	94/106	132/132	97/109	100/110	86/97	132/132	100/110	100/110	88/100	134/134
		104B+104B	15.8/21.0	75.8/87.5	104/119	96/109	127/127	107/121	110/125	98/111	129/129	110/125	132/132	113/127	125/125	101/115	132/132	125/150	103/117	103/117	134/134
		NONE	-	-	34	32	132	36	50	35	134	39	137	41	60	38	137	41	60	40	139
		101A	3.9/4.4	15.9/18.3	34/34	32/32	132/132	36/36	50/50	35/35	134/134	39/39	137/137	41/41	60/60	38/38	137/137	41/41	60/60	40/40	139/139
		103B	6.5/6.7	31.4/36.3	46/52	42/47	132/132	48/54	60/60	44/50	134/134	52/58	137/137	54/60	60/60	47/53	137/137	54/60	60/60	49/55	139/139
		102A+102A	9.8/13.0	46.9/54.2	65/74	60/68	132/132	68/77	70/80	62/70	134/134	71/80	137/137	74/83	80/80	65/73	137/137	74/83	80/90	67/76	139/139
		103B+103B	13.1/17.4	62.8/72.5	85/97	78/89	132/132	87/100	90/100	80/91	134/134	91/103	137/137	93/106	100/110	83/95	137/137	93/106	100/110	86/97	139/139
		104B+104B	15.8/21.0	75.8/87.5	101/116	93/106	132/132	104/118	110/125	95/108	134/134	107/122	137/137	110/124	110/125	88/112	137/137	110/124	110/125	101/114	139/139
DD-STD	NO M, V-PH-HZ	NONE	-	-	26	26	93	28	40	28	95	31	31	40	31	98	33	45	34	100	
		102A	4.9/6.5	13.6/15.6	27/29	26/26	93/93	29/32	40/40	28/29	95/95	33/35	33/35	40/40	31/32	98/98	35/38	45/45	34/34	100/100	
		103B	6.5/6.7	18.1/20.9	32/36	29/33	93/93	35/38	50/60	32/35	100/100	38/42	41/44	60/60	35/38	98/98	41/44	45/45	37/40	100/100	
		105A	12.0/16.0	33.4/38.5	51/58	47/53	93/93	54/60	60/60	49/55	100/100	57/64	60/66	80/90	60/70	52/58	103/103	60/66	60/70	55/60	100/100
		104B+104B	15.8/21.0	43.8/50.5	64/73	59/67	93/93	67/75	70/80	61/69	100/100	70/79	73/81	80/80	80/80	64/72	98/98	73/81	80/90	67/74	100/100
		NONE	-	-	24	23	98	26	30	25	100	29	103	31	40	29	103	31	40	31	105
		102A	4.9/6.5	13.6/15.6	24/26	23/24	98/98	26/28	30/30	25/26	100/100	30/32	103/103	32/34	40/40	29/29	103/103	32/34	40/40	31/31	105/105
		103B	6.5/6.7	18.1/20.9	29/33	26/30	98/98	32/35	35/40	29/32	100/100	35/39	103/103	38/41	40/40	32/35	103/103	38/41	40/45	34/37	105/105
		105A	12.0/16.0	33.4/38.5	48/55	44/50	98/98	51/57	60/60	46/52	100/100	54/61	103/103	57/63	60/70	50/55	103/103	57/63	60/70	52/58	105/105
		104B+104B	15.8/21.0	43.8/50.5	61/70	56/64	98/98	64/72	70/80	58/66	100/100	67/76	103/103	70/78	70/80	62/69	103/103	70/78	70/80	64/71	105/105
		NONE	-	-	24	23	105	26	30	26	107	29	110	31	40	29	110	31	40	31	112
		102A	4.9/6.5	13.6/15.6	24/26	23/24	105/105	26/29	30/30	26/26	107/107	30/32	110/110	32/35	40/40	29/29	110/110	32/35	40/40	31/31	112/112
103B	6.5/6.7	18.1/20.9	30/33	27/30	105/105	32/35	35/40	29/32	107/107	36/39	110/110	38/41	40/40	32/36	110/110	38/41	40/45	35/38	112/112		
105A	12.0/16.0	33.4/38.5	49/55	44/50	105/105	51/57	60/60	47/52	107/107	55/61	110/110	57/63	60/70	50/56	110/110	57/63	60/70	52/58	112/112		
104B+104B	15.8/21.0	43.8/50.5	62/70	56/64	105/105	64/72	70/80	59/66	107/107	68/76	110/110	70/78	70/80	62/70	110/110	70/78	70/80	64/72	112/112		
HIGH	NO M, V-PH-HZ	NONE	-	-	26	26	142	28	40	28	144	31	31	40	32	147	33	45	34	149	
		102A	4.9/6.5	13.6/15.6	27/29	26/27	142/142	29/32	40/40	28/29	144/144	33/35	35/38	45/45	34/34	147/147	35/38	45/45	34/34	149/149	
		103B	6.5/6.7	18.1/20.9	32/36	29/33	142/142	35/38	40/40	32/35	144/144	38/42	41/44	60/60	40/45	35/38	41/44	45/45	37/40	149/149	
		105A	12.0/16.0	33.4/38.5	52/58	47/53	142/142	54/60	60/60	49/55	144/144	58/64	60/66	80/90	60/70	53/58	147/147	60/66	60/70	55/61	149/149
		104B+104B	15.8/21.0	43.8/50.5	65/73	59/67	142/142	67/75	70/80	61/69	144/144	71/79	73/81	80/80	80/80	65/72	147/147	73/81	80/90	67/74	149/149

See "Legend and Notes for Tables 10 and 11" on page 60.

† Drive package is only available on Humidi-MiZer[®] equipped units.

* Single phase units are no longer available with factory installed Powered 115 Volt Convenience Outlet option.

Table 10 Unit Wire/Fuse or HACR Breaker Sizing Data (cont)

UNIT	NO M, V-PH-HZ	ELEC. HTR			NO C.O. or UNPWR C.O.						w/ PWRD C.O.												
		CRHEATER***A00	Nom (kW)	FLA	NO PE.			w/ P.E. (pwrd fr/unit)			NO PE.			w/ P.E. (pwrd fr/unit)									
					MCA	FUSE or HACR BRKR	DISC. SIZE FLA LRA	MCA	FUSE or HACR BRKR	DISC. SIZE FLA LRA	MCA	FUSE or HACR BRKR	DISC. SIZE FLA LRA	MCA	FUSE or HACR BRKR	DISC. SIZE FLA LRA							
50HC-A/B/F05	DD-STD	NONE	-	-	13	15	13	47	14	20	14	48	15	20	15	49	16	20	16	20	16	50	
		108A	6.0	7.2	14	15	13	47	14	20	14	48	15	20	15	49	18	20	17	20	17	50	
		108A	11.5	13.8	23	25	20	47	25	23	25	48	25	24	23	25	49	27	30	24	30	24	50
		108A+108A	14.0	16.8	26	30	24	47	28	30	25	48	29	30	26	29	49	30	30	28	30	28	50
	STD	108A+108A	23.0	27.7	40	40	40	47	41	45	38	48	43	45	44	39	49	44	45	40	45	40	50
		NONE	-	-	11	15	11	49	12	15	15	50	13	15	15	13	51	14	20	14	20	14	52
		108A	6.0	7.2	12	15	11	49	13	15	15	50	15	15	15	13	51	16	20	14	20	14	52
		108A	11.5	13.8	20	20	18	49	22	25	19	50	23	25	21	24	51	24	25	22	25	22	52
	MED	108A	14.0	16.8	24	25	22	49	23	25	20	50	24	25	20	21	51	25	25	20	25	22	52
		108A+108A	23.0	27.7	38	40	34	49	39	40	35	50	40	45	40	37	51	42	45	38	45	38	52
NONE		-	-	12	15	11	52	13	15	12	53	14	20	14	14	54	15	20	15	20	15	55	
108A		6.0	7.2	13	15	11	52	14	15	12	53	15	20	14	14	54	17	20	15	20	15	55	
HIGH	108A	11.5	13.8	21	22	19	52	21	25	19	53	23	25	21	54	25	25	21	25	23	25	55	
	108A	14.0	16.8	25	25	22	52	26	30	23	53	27	30	25	54	29	30	26	30	26	55		
	108A+108A	23.0	27.7	39	40	35	52	40	40	36	53	41	45	37	54	42	45	39	45	39	55		
	NONE	-	-	13	15	12	71	14	15	13	72	15	20	15	15	73	16	20	16	20	16	74	
DD-STD	108A	6.0	7.2	14	15	12	71	15	15	13	72	16	20	15	73	18	20	16	20	16	74		
	108A	11.5	13.8	22	25	20	71	23	25	21	72	25	25	22	73	26	30	23	30	23	74		
	108A	14.0	16.8	26	30	23	71	27	30	24	72	28	30	26	73	30	30	27	30	27	74		
	108A+108A	23.0	27.7	39	40	36	71	41	45	37	72	42	45	38	73	43	45	39	45	39	74		
575-3-60	DD-STD	NONE	-	-	11	15	11	39	13	15	13	41	13	15	13	41	13	15	13	15	13	43	
		297A	9.2	9.2	17	20	15	39	19	20	17	41	19	20	17	41	21	25	19	25	19	43	
		298A	13.8	13.8	23	25	20	39	25	25	23	41	25	25	22	41	27	30	25	30	25	43	
		NONE	-	-	9	15	9	40	11	15	11	42	11	15	11	42	13	15	13	15	13	44	
575-3-60	STD	297A	9.2	9.2	14	15	13	40	17	20	15	42	16	20	15	42	19	20	17	20	17	44	
		298A	13.8	13.8	20	20	18	40	22	25	20	42	22	25	20	42	25	25	22	25	22	44	
		NONE	-	-	9	15	8	42	11	15	11	44	11	15	10	44	13	15	13	15	13	46	
		297A	9.2	9.2	14	15	12	42	16	20	15	44	16	20	14	44	18	20	17	20	17	46	
575-3-60	MED	298A	13.8	13.8	20	20	18	42	22	25	20	44	22	25	20	44	24	25	22	25	22	46	
		NONE	-	-	10	15	10	57	12	15	12	59	12	15	12	59	14	15	14	15	14	61	
		297A	9.2	9.2	15	15	14	57	18	20	16	59	18	20	16	59	20	20	18	20	18	61	
		298A	13.8	13.8	21	25	19	57	24	25	21	59	23	25	21	59	26	30	23	30	23	61	

See "Legend and Notes for Tables 10 and 11" on page 60.



Table 10 Unit Wire/Fuse or HACR Breaker Sizing Data (cont)

UNIT	NO M, V-PH-HZ	ELEC. HTR				NO C.O. or UNPWR C.O.						NO PWR C.O.									
		CRHEATER***A00	Nom (kW)	FLA	NO PE.			w/ P.E. (pwrd fr/unit)			NO PE.			w/ P.E. (pwrd fr/unit)							
					MCA	FUSE or BRKR	DISC. SIZE	MCA	FUSE or BRKR	DISC. SIZE	MCA	FUSE or BRKR	DISC. SIZE	MCA	FUSE or BRKR	DISC. SIZE					
			FLA	FLA	FLA	LRA	MCA	FUSE or BRKR	DISC. SIZE	FLA	LRA	MCA	FUSE or BRKR	DISC. SIZE	FLA	LRA	MCA	FUSE or BRKR	DISC. SIZE		
50HC-A/B/F06	DD-STD	NONE	-	-	39	144	41	146	45	60	44	149	47	60	44	149	47	60	44	151	
		102A	4.9/6.5	23.5/27.1	39/40	144/144	41/42	146/146	45/50	60/60	44/45	149/149	47/52	60/60	44/45	149/149	47/52	60/60	44/45	151/151	
		103B	6.5/6.7	31.4/36.3	45/50	144/144	47/52	146/146	55/61	60/60	50/56	149/149	57/63	60/60	50/56	149/149	57/63	60/60	50/56	151/151	
		102A+102A	9.8/13.0	46.9/54.2	62/71	144/144	65/73	146/146	74/83	80/80	68/76	149/149	80/90	80/80	68/76	149/149	80/90	80/80	68/76	151/151	
		103B+103B	13.1/17.4	62.8/72.5	81/92	144/144	83/94	146/146	94/106	100/110	83/94	149/149	100/110	97/109	100/110	83/94	149/149	97/109	100/110	83/94	151/151
		104B+104B	15.8/21.0	75.8/87.5	96/109	144/144	98/111	146/146	110/125	110/125	98/111	149/149	125/125	110/125	125/125	101/115	149/149	113/127	125/150	103/117	151/151
		NONE	-	-	36	149	38	151	43	60	42	154	45	60	42	154	45	60	42	156	
		102A	4.9/6.5	23.5/27.1	36/37	149/149	38/39	151/151	43/46	60/60	42/42	154/154	45/49	60/60	42/42	154/154	45/49	60/60	42/42	156/156	
		103B	6.5/6.7	31.4/36.3	42/47	149/149	44/50	151/151	52/58	60/60	47/53	154/154	54/60	60/60	47/53	154/154	54/60	60/60	47/53	156/156	
		102A+102A	9.8/13.0	46.9/54.2	60/68	149/149	62/70	151/151	71/80	80/80	65/73	154/154	74/83	80/80	65/73	154/154	74/83	80/80	65/73	156/156	
		103B+103B	13.1/17.4	62.8/72.5	78/89	149/149	80/91	151/151	91/103	100/110	80/91	154/154	93/106	100/110	80/91	154/154	93/106	100/110	80/91	156/156	
		104B+104B	15.8/21.0	75.8/87.5	93/106	149/149	95/108	151/151	107/122	110/125	95/108	154/154	110/124	110/125	110/125	101/114	154/154	110/124	110/125	156/156	
50HC-A/B/F06	MED†	NONE	-	-	38	174	41	176	45	60	44	179	47	60	44	179	47	60	44	181	
		102A	4.9/6.5	23.5/27.1	38/39	174/174	41/41	176/176	45/49	60/60	44/45	179/179	47/51	60/60	44/45	179/179	47/51	60/60	44/45	181/181	
		103B	6.5/6.7	31.4/36.3	44/50	174/174	46/52	176/176	54/61	60/60	50/55	179/179	52/58	60/60	50/55	179/179	52/58	60/60	50/55	181/181	
		102A+102A	9.8/13.0	46.9/54.2	62/70	174/174	64/73	176/176	74/83	80/80	68/76	179/179	76/85	80/80	68/76	179/179	76/85	80/80	68/76	181/181	
		103B+103B	13.1/17.4	62.8/72.5	80/91	174/174	82/94	176/176	94/106	100/110	82/94	179/179	96/108	100/110	82/94	179/179	96/108	100/110	82/94	181/181	
		104B+104B	15.8/21.0	75.8/87.5	95/109	174/174	97/111	176/176	110/125	110/125	95/109	179/179	112/127	110/125	110/125	101/114	179/179	112/127	110/125	101/114	181/181
		NONE	-	-	28	120	31	122	34	40	34	125	36	40	34	125	36	40	34	127	
		102A	4.9/6.5	13.6/15.6	28/28	120/120	31/32	122/122	34/35	40/40	31/31	125/125	36/38	40/40	31/31	125/125	36/38	40/40	31/31	127/127	
		104B	7.9/10.5	21.9/25.3	34/38	120/120	39/44	122/122	43/47	50/60	36/40	125/125	45/50	50/60	36/40	125/125	45/50	50/60	36/40	127/127	
		105A	12.0/16.0	33.4/38.5	47/53	120/120	54/60	122/122	57/64	60/70	49/55	125/125	60/66	60/70	49/55	125/125	60/66	60/70	49/55	127/127	
		104B+104B	15.8/21.0	43.8/50.5	59/67	120/120	67/75	122/122	70/79	80/90	61/69	125/125	73/81	80/90	61/69	125/125	73/81	80/90	61/69	127/127	
		104B+105A	19.9/26.5	55.2/63.8	72/82	120/120	81/92	122/122	85/95	90/100	74/84	125/125	87/98	90/100	74/84	125/125	87/98	90/100	74/84	127/127	
208/230-3-60	STD	NONE	-	-	26	125	28	127	31	40	31	130	33	40	31	130	33	40	33		
		102A	4.9/6.5	13.6/15.6	26/26	125/125	29/29	127/127	31/32	40/40	28/28	130/130	33/34	40/40	28/28	130/130	33/34	40/40	33/33		
		104B	7.9/10.5	21.9/25.3	31/35	125/125	36/41	127/127	40/44	50/60	33/37	130/130	42/47	50/60	33/37	130/130	42/47	50/60	33/33		
		105A	12.0/16.0	33.4/38.5	44/50	125/125	51/57	127/127	54/61	60/70	46/52	130/130	57/63	60/70	46/52	130/130	57/63	60/70	46/52		
		104B+104B	15.8/21.0	43.8/50.5	56/64	125/125	64/72	127/127	67/76	70/80	58/66	130/130	70/78	70/80	58/66	130/130	70/78	70/80	58/66		
		104B+105A	19.9/26.5	55.2/63.8	69/79	125/125	78/89	127/127	82/92	90/100	71/81	130/130	84/95	90/100	71/81	130/130	84/95	90/100	71/81		
		NONE	-	-	26	143	29	145	32	40	28	148	34	40	28	148	34	40	28	150	
		102A	4.9/6.5	13.6/15.6	26/26	143/143	29/29	145/145	32/32	40/40	28/28	148/148	34/35	40/40	28/28	148/148	34/35	40/40	28/28	150/150	
		104B	7.9/10.5	21.9/25.3	31/35	143/143	37/41	145/145	40/45	50/60	33/37	148/148	43/47	50/60	33/37	148/148	43/47	50/60	33/37	150/150	
		105A	12.0/16.0	33.4/38.5	44/50	143/143	51/57	145/145	55/61	60/70	47/52	150/150	57/63	60/70	47/52	150/150	57/63	60/70	47/52		
		104B+104B	15.8/21.0	43.8/50.5	56/64	143/143	64/72	145/145	68/76	70/80	59/66	150/150	70/78	70/80	59/66	150/150	70/78	70/80	59/66		
		104B+105A	19.9/26.5	55.2/63.8	69/79	143/143	78/89	145/145	82/93	90/100	72/82	150/150	84/95	90/100	72/82	150/150	84/95	90/100	72/82		
208/230-3-60	MED	NONE	-	-	29	169	31	171	34	40	34	174	36	40	34	174	36	40	36		
		102A	4.9/6.5	13.6/15.6	29/29	169/169	31/32	171/171	34/35	40/40	31/31	174/174	36/38	40/40	31/31	174/174	36/38	40/40	36/36		
		104B	7.9/10.5	21.9/25.3	37/41	169/169	40/44	171/171	43/47	50/60	36/40	174/174	46/50	50/60	36/40	174/174	46/50	50/60	36/36		
		105A	12.0/16.0	33.4/38.5	47/53	169/169	54/60	171/171	59/64	60/70	49/55	174/174	53/58	60/70	49/55	174/174	53/58	60/70	49/55		
		104B+104B	15.8/21.0	43.8/50.5	59/67	169/169	67/75	171/171	71/79	70/80	61/69	174/174	73/81	70/80	61/69	174/174	73/81	70/80	61/69		
		104B+105A	19.9/26.5	55.2/63.8	72/82	169/169	81/92	171/171	85/96	90/100	74/84	174/174	87/98	90/100	74/84	174/174	87/98	90/100	74/84		
		NONE	-	-	29	169	31	171	34	40	29	171	36	40	29	171	36	40	29	176	
		102A	4.9/6.5	13.6/15.6	29/29	169/169	31/32	171/171	34/35	40/40	29/29	174/174	36/38	40/40	29/29	174/174	36/38	40/40	29/29	176/176	
		104B	7.9/10.5	21.9/25.3	37/41	169/169	40/44	171/171	43/47	50/60	36/40	174/174	46/50	50/60	36/40	174/174	46/50	50/60	36/36		
		105A	12.0/16.0	33.4/38.5	47/53	169/169	54/60	171/171	59/64	60/70	49/55	174/174	53/58	60/70	49/55	174/174	53/58	60/70	49/55		
		104B+104B	15.8/21.0	43.8/50.5	59/67	169/169	67/75	171/171	71/79	70/80	61/69	174/174	73/81	70/80	61/69	174/174	73/81	70/80	61/69		
		104B+105A	19.9/26.5	55.2/63.8	72/82	169/169	81/92	171/171	85/96	90/100	74/84	174/174	87/98	90/100	74/84	174/174	87/98	90/100	74/84		

See "Legend and Notes for Tables 10 and 11" on page 60.

† Drive package is only available on Humiditi-MiZer® equipped units.

* Single phase units are no longer available with factory installed Powered 115 Volt Convenience Outlet option.

Table 10 Unit Wire/Fuse or HACR Breaker Sizing Data (cont)

UNIT	NO M, V-PH-HZ	ELEC. HTR			NO C.O. or UNPWR C.O.						w/ PWRD C.O.											
		IFM TYPE	CRHEATER***A00	Nom (kW)	FLA	NO PE.			w/ P.E. (pwrd fr/unit)			NO PE.			w/ P.E. (pwrd fr/unit)							
						MCA	FUSE or HACR BRKR	DISC. SIZE FLA LRA	MCA	FUSE or HACR BRKR	DISC. SIZE FLA LRA	MCA	FUSE or HACR BRKR	DISC. SIZE FLA LRA	MCA	FUSE or HACR BRKR	DISC. SIZE FLA LRA					
50HC-A/B/F06	DD-STD	NONE	-	-	-	14	20	14	58	15	20	15	59	16	20	16	60	17	20	17	61	
		108A	6.0	7.2	14	20	14	58	16	20	15	20	59	16	20	16	60	18	20	17	61	
		108A	11.5	13.8	23	25	20	58	22	25	20	23	59	22	25	23	60	27	30	24	30	28
		108A	14.0	16.8	26	30	24	58	30	30	25	30	59	29	30	26	60	30	30	28	30	30
		108A+108A	23.0	27.7	40	40	36	58	41	45	38	44	59	43	45	39	60	44	45	40	45	40
		108A+108A	25.5	30.7	44	45	40	58	45	45	41	50	59	47	47	42	60	48	50	44	44	44
	460-3-60	STD	NONE	-	-	-	12	15	12	60	13	15	13	61	14	20	14	62	15	20	15	63
			108A	6.0	7.2	12	15	12	60	13	15	13	61	14	20	14	62	16	20	15	20	15
			108A	11.5	13.8	20	20	18	60	22	25	20	23	61	21	25	21	62	24	25	22	25
			108A	14.0	16.8	24	25	22	60	25	25	23	61	27	30	24	30	62	28	30	25	30
			108A+108A	23.0	27.7	38	40	34	60	39	40	35	40	41	40	45	37	62	42	45	38	45
			108A+108A	25.5	30.7	41	45	38	60	43	45	39	45	61	44	45	40	62	45	50	41	41
50HC-A/B/F06	MED	NONE	-	-	-	13	15	12	69	14	20	13	70	15	20	15	71	16	20	16	72	
		108A	6.0	7.2	13	15	12	69	14	20	13	70	70	15	20	15	71	17	20	16	72	
		108A	11.5	13.8	21	25	19	69	22	25	20	23	70	21	25	21	71	25	25	22	25	
		108A	14.0	16.8	25	25	22	69	26	30	23	70	27	30	25	30	71	29	30	26	30	
		108A+108A	23.0	27.7	38	40	35	69	40	40	36	70	41	41	45	45	37	71	42	45	39	45
		108A+108A	25.5	30.7	42	45	38	69	43	45	39	70	45	45	45	45	41	71	46	50	42	42
575-3-60	DD-STD	NONE	-	-	-	14	20	13	82	15	20	14	83	16	20	16	84	17	20	17	85	
		108A	6.0	7.2	14	20	13	82	15	20	14	83	83	16	20	16	84	18	20	17	85	
		108A	11.5	13.8	22	25	20	82	23	25	21	83	22	25	22	22	84	26	30	23	30	
		108A	14.0	16.8	26	30	23	82	27	30	24	83	28	30	26	30	84	30	30	27	30	
		108A+108A	23.0	27.7	39	40	36	82	41	45	37	83	42	45	38	45	84	43	45	39	45	
		108A+108A	25.5	30.7	43	45	39	82	44	45	40	83	46	50	42	50	84	47	50	43	43	
575-3-60	STD	NONE	-	-	-	12	15	12	46	14	15	14	48	13	15	13	48	15	20	16	50	
		298A	13.8	13.8	23	25	20	46	25	25	23	48	48	25	25	22	48	27	30	25	50	
		301A	23.0	23.1	34	35	31	46	37	40	33	48	36	40	40	33	48	39	40	35	50	
		NONE	-	-	10	15	9	47	12	15	11	49	11	15	11	15	49	13	15	13	51	
		298A	13.8	13.8	20	20	18	47	22	25	20	49	22	25	20	25	49	25	25	22	22	
		301A	23.0	23.1	32	35	29	47	34	35	31	49	34	35	31	35	49	36	40	33	51	
575-3-60	MED	NONE	-	-	-	10	15	9	53	12	15	11	55	11	15	11	55	13	15	13	57	
		298A	13.8	13.8	20	20	18	53	23	25	20	55	22	25	20	25	55	25	25	22	22	
		301A	23.0	23.1	32	35	29	53	34	35	31	55	34	35	31	35	55	36	40	33	57	
		NONE	-	-	11	15	10	64	12	15	12	66	12	15	12	15	66	14	15	14	68	
		298A	13.8	13.8	21	25	19	64	24	25	21	66	23	25	21	25	66	26	30	23	30	
		301A	23.0	23.1	33	35	30	64	35	35	32	66	35	35	32	35	66	37	40	34	40	

See "Legend and Notes for Tables 10 and 11" on page 60.



Table 11 - Unit Wire Sizing Data with Factory-Installed HACR Breaker (cont)

UNIT	NO M, V-PH-HZ	IFM TYPE	ELEC. HTR			NO C.O. or UNPWR C.O.						w/ PWRD C.O.														
			CRHEATER***A00	Nom (kW)	FLA	NO PE.			w/ P.E. (pwrd fr/unit)			NO PE.			w/ P.E. (pwrd fr/unit)											
						MCA	HACR BRKR	DISC. SIZE FLA LRA	MCA	HACR BRKR	DISC. SIZE FLA LRA	MCA	HACR BRKR	DISC. SIZE FLA LRA	MCA	HACR BRKR	DISC. SIZE FLA LRA									
50HC-A/B/F04	460-3-60	DD-STD	NONE	-	-	12	15	12	13	44	13	15	14	14	20	14	15	16	46	16	20	16	46			
			108A	6.0	7.2	13	15	13	14	44	14	15	14	15	15	20	15	16	45	15	20	17	46			
			107A	8.8	10.6	17	20	17	21	44	18	20	19	18	19	25	20	20	23	45	21	25	21	46		
			108A	11.5	13.8	20	25	20	24	44	24	25	25	23	23	30	25	27	45	25	30	24	24	46		
			109A	14.0	16.8	24	30	24	24	43	28	30	25	29	29	30	30	30	30	45	30	30	28	28	46	
	575-3-60	DD-STD	NONE	-	-	10	15	11	11	46	11	15	13	12	15	13	14	15	47	13	15	14	48	13	48	
			108A	6.0	7.2	11	15	11	12	46	12	15	14	13	14	20	15	16	47	14	20	16	48	14	48	
			107A	8.8	10.6	15	20	15	16	46	16	20	19	18	17	20	20	20	47	18	20	18	48	18	48	
			108A	11.5	13.8	18	25	19	19	46	19	25	23	23	21	25	25	24	25	47	24	25	22	48	22	48
			109A	14.0	16.8	22	25	22	23	46	25	25	27	27	24	30	30	28	28	47	28	30	25	25	48	25
50HC-A/B/F04	460-3-60	MED	NONE	-	-	10	15	10	11	46	11	15	11	11	15	13	14	47	13	15	14	48	13	48		
			108A	6.0	7.2	11	15	11	12	46	12	15	14	13	14	20	15	16	47	14	20	14	48	14	48	
			107A	8.8	10.6	15	20	15	16	46	16	20	19	18	17	20	20	20	47	18	20	18	48	18	48	
			108A	11.5	13.8	18	25	19	19	46	19	25	23	23	21	25	25	24	24	47	24	25	22	48	22	48
			109A	14.0	16.8	22	25	22	23	46	25	25	27	27	24	30	30	28	28	47	28	30	25	25	48	25
	575-3-60	STD	NONE	-	-	10	15	10	11	55	11	15	13	11	15	15	14	14	56	13	15	14	57	13	57	
			108A	6.0	7.2	11	15	11	12	55	12	15	14	13	14	20	15	16	56	14	20	15	57	14	57	
			107A	8.8	10.6	15	20	15	16	55	16	20	18	18	18	20	20	20	56	18	20	19	57	19	57	
			108A	11.5	13.8	19	25	19	20	55	20	25	21	21	21	25	25	25	56	21	25	23	57	23	57	
			109A	14.0	16.8	22	25	22	23	55	23	30	25	27	25	30	30	29	56	25	30	26	57	26	57	
50HC-A/B/F04	460-3-60	DD-STD	NONE	-	-	10	15	10	12	44	12	15	12	12	15	13	14	44	12	15	14	46	12	46		
			108A	6.0	7.2	11	15	11	12	44	12	15	14	13	14	20	15	16	44	14	20	14	46	14	46	
			107A	8.8	10.6	15	20	15	16	44	16	20	18	18	17	20	20	20	44	17	20	19	46	19	46	
			108A	11.5	13.8	18	25	18	19	44	19	25	23	23	21	25	25	24	44	21	25	22	46	22	46	
			109A	14.0	16.8	22	25	22	23	44	25	25	27	27	24	30	30	28	44	25	30	25	25	25	46	25
	575-3-60	STD	NONE	-	-	7	15	7	9	45	9	15	9	9	15	15	14	45	9	15	11	14	11	47		
			108A	6.0	7.2	8	15	8	9	45	10	15	9	9	15	20	15	16	45	11	20	17	47	11	47	
			107A	8.8	10.6	13	20	13	14	45	14	20	15	15	15	20	20	19	45	15	20	17	47	15	47	
			108A	11.5	13.8	18	25	18	20	45	18	25	20	22	20	25	25	25	45	20	25	22	47	22	47	
			109A	14.0	16.8	22	25	22	23	45	22	30	20	22	20	30	30	29	45	25	30	22	47	25	47	
50HC-A/B/F04	460-3-60	MED	NONE	-	-	7	15	7	9	45	9	15	9	15	15	14	45	9	15	11	14	11	47			
			108A	6.0	7.2	8	15	8	9	45	10	15	9	9	15	20	15	16	45	11	20	17	47	11	47	
			107A	8.8	10.6	13	20	13	14	45	14	20	15	15	15	20	20	19	45	15	20	17	47	15	47	
			108A	11.5	13.8	18	25	18	20	45	18	25	20	22	20	25	25	25	45	20	25	22	47	22	47	
			109A	14.0	16.8	22	25	22	23	45	22	30	20	22	20	30	30	29	45	25	30	22	47	25	47	
	575-3-60	HIGH	NONE	-	-	7	15	7	9	51	9	15	9	9	15	15	14	51	9	15	11	14	11	53		
			108A	6.0	7.2	8	15	8	9	51	10	15	9	9	15	20	15	16	51	11	20	17	53	11	53	
			107A	8.8	10.6	13	20	13	14	51	14	20	15	15	15	20	20	19	51	15	20	17	53	15	53	
			108A	11.5	13.8	18	25	18	20	51	18	25	20	22	20	25	25	25	51	20	25	22	53	22	53	
			109A	14.0	16.8	22	25	22	23	51	22	30	20	22	20	30	30	29	51	25	30	22	53	25	53	

See "Legend and Notes for Tables 10 and 11" on page 60.
† Drive package is only available on Humidi-MiZe[®] equipped units.



Table 11 - Unit Wire Sizing Data with Factory-Installed HACR Breaker (cont)

UNIT	NO M, V-PH-HZ	ELEC. HTR				NO C.O. or UNPWR C.O.														
		CRHEATER***A00	Nom (kW)	FLA	NO PE.			w/ P.E. (pwrd fr/unit)			NO PE.			w/ PWRD C.O.						
					MCA	HACR BRKR	DISC. SIZE FLA LRA	MCA	HACR BRKR	DISC. SIZE FLA LRA	MCA	HACR BRKR	DISC. SIZE FLA LRA	MCA	HACR BRKR	DISC. SIZE FLA LRA				
50HC-A/B/F05	DD-STD	NONE	-	-	37	50	37	129	38	50	37	129	38	41	60	43	60	43	134	
		101A	3.9/4.4	15.9/18.3	37/37	50/50	35/35	127/127	38/38	50/50	37/37	129/129	38/38	41/41	60/60	43/43	60/60	43/43	134/134	
		103B	6.5/6.7	31.4/36.3	55/55	60/60	45/50	127/127	57/57	60/60	45/50	129/129	57/57	50/56	70/70	52/58	70/70	52/58	134/134	
		102A+102A	9.8/13.0	46.9/54.2	77/77	80/80	62/71	127/127	80/80	80/80	62/71	129/129	80/80	68/76	90/90	70/79	90/90	70/79	134/134	
		103B+103B	13.1/17.4	62.8/72.5	100/100	100/100	81/92	127/127	103/103	100/100	100/100	83/94	129/129	106/106	110/110	86/97	110/110	86/97	139/139	
		104B+104B	15.8/21.0	75.8/87.5	119/119	125/125	96/109	127/127	121/121	125/125	125/125	98/111	129/129	125/125	101/115	150/150	103/117	150/150	134/134	
	208/230-1-60*	STD†	NONE	-	-	34	50	32	132	36	50	35	134	39	38	60	41	60	40	139
			101A	3.9/4.4	15.9/18.3	34/34	50/50	32/32	132/132	36/36	50/50	35/35	134/134	39/39	38/38	60/60	41/41	60/60	40/40	139/139
			103B	6.5/6.7	31.4/36.3	52/52	60/60	42/47	132/132	54/54	60/60	44/50	134/134	58/58	47/53	60/60	49/55	60/60	49/55	139/139
			102A+102A	9.8/13.0	46.9/54.2	74/74	80/80	60/68	132/132	77/77	80/80	62/70	134/134	80/80	65/73	83/83	90/90	67/76	90/90	139/139
			103B+103B	13.1/17.4	62.8/72.5	97/97	100/100	78/89	132/132	100/100	100/100	80/91	134/134	103/103	83/95	110/110	86/97	110/110	86/97	139/139
			104B+104B	15.8/21.0	75.8/87.5	116/116	125/125	93/106	132/132	118/118	125/125	125/125	95/108	134/134	122/122	98/112	125/125	101/114	125/125	139/139
50HC-A/B/F05	MED†	NONE	-	-	26	30	26	93	28	40	28	95	31	31	60	41	60	40	139	
		101A	3.9/4.4	15.9/18.3	26/26	30/30	26/26	93/93	28/28	40/40	28/29	95/95	31/31	31/32	60/60	41/41	60/60	40/40	139/139	
		103B	6.5/6.7	31.4/36.3	36/36	40/40	29/33	93/93	38/38	40/40	32/35	95/95	42/42	35/38	60/60	49/55	60/60	49/55	139/139	
		102A+102A	9.8/13.0	46.9/54.2	74/74	80/80	60/68	132/132	77/77	80/80	62/70	134/134	80/80	65/73	83/83	90/90	67/76	90/90	139/139	
		103B+103B	13.1/17.4	62.8/72.5	97/97	100/100	78/89	132/132	100/100	100/100	80/91	134/134	103/103	83/95	110/110	86/97	110/110	86/97	139/139	
		104B+104B	15.8/21.0	75.8/87.5	116/116	125/125	93/106	132/132	118/118	125/125	125/125	95/108	134/134	122/122	98/112	125/125	101/114	125/125	139/139	
208/230-3-60	DD-STD	NONE	-	-	24	30	23	98	26	40	25	100	29	29	40	31	40	31	105	
		102A	4.9/6.5	13.6/15.6	26/26	30/30	23/24	98/98	28/28	40/40	25/26	100/100	32/32	29/29	40/40	31/31	40/40	31/31	105/105	
		103B	6.5/6.7	18.1/20.9	33/33	35/35	26/30	98/98	35/35	40/40	29/32	100/100	39/39	32/35	40/40	45/45	34/37	45/45	105/105	
		105A	12.0/16.0	33.4/38.5	55/55	60/60	44/50	98/98	57/57	60/60	46/52	100/100	61/61	50/55	70/70	52/58	70/70	52/58	105/105	
		104B+104B	15.8/21.0	43.8/50.5	73/73	80/80	59/67	93/93	75/75	80/80	61/69	95/95	79/79	64/72	80/80	67/74	80/80	64/71	105/105	
		104B+104B	15.8/21.0	43.8/50.5	70/70	70/70	56/64	98/98	72/72	80/80	58/66	100/100	76/76	62/69	80/80	67/74	80/80	64/71	105/105	
208/230-3-60	STD	NONE	-	-	24	30	23	105	26	40	26	107	29	29	40	31	40	31	112	
		102A	4.9/6.5	13.6/15.6	26/26	30/30	23/24	105/105	29/29	40/40	26/26	107/107	32/32	29/29	40/40	31/31	40/40	31/31	112/112	
		103B	6.5/6.7	18.1/20.9	33/33	35/35	27/30	105/105	35/35	40/40	29/32	107/107	39/39	32/36	40/40	45/45	35/38	45/45	112/112	
		105A	12.0/16.0	33.4/38.5	55/55	60/60	44/50	105/105	57/57	60/60	47/52	107/107	61/61	50/56	70/70	52/58	70/70	52/58	112/112	
		104B+104B	15.8/21.0	43.8/50.5	70/70	70/70	56/64	105/105	72/72	80/80	59/66	107/107	76/76	62/70	80/80	64/72	80/80	64/72	112/112	
		104B+104B	15.8/21.0	43.8/50.5	73/73	80/80	59/67	105/105	75/75	80/80	61/69	107/107	79/79	65/72	80/80	67/74	80/80	64/71	112/112	
208/230-3-60	MED	NONE	-	-	26	30	26	142	28	40	28	144	31	31	40	33	40	33	149	
		102A	4.9/6.5	13.6/15.6	26/26	30/30	26/27	142/142	32/32	40/40	28/29	144/144	35/35	32/32	40/40	34/34	45/45	34/34	149/149	
		103B	6.5/6.7	18.1/20.9	36/36	40/40	29/33	142/142	38/38	40/40	32/35	144/144	42/42	35/38	45/45	37/40	45/45	37/40	149/149	
		105A	12.0/16.0	33.4/38.5	58/58	60/60	47/53	142/142	60/60	60/60	49/55	144/144	64/64	53/58	70/70	55/61	70/70	55/61	149/149	
		104B+104B	15.8/21.0	43.8/50.5	73/73	80/80	59/67	142/142	75/75	80/80	61/69	144/144	79/79	65/72	80/80	67/74	80/80	64/71	149/149	
		104B+104B	15.8/21.0	43.8/50.5	70/70	70/70	56/64	142/142	72/72	80/80	58/66	144/144	76/76	62/70	80/80	67/74	80/80	64/71	149/149	

See "Legend and Notes for Tables 10 and 11" on page 60.

† Drive package is only available on Humidi-MiZer® equipped units.

* Single phase units are no longer available with factory installed Powered 115 Volt Convenience Outlet option.

Table 11 - Unit Wire Sizing Data with Factory-Installed HACR Breaker (cont)

UNIT	NO M, V-PH-HZ	ELEC. HTR			NO C.O. or UNPWR C.O.						w/ PWRD C.O.												
		IFM TYPE	CRHEATER***A00	Nom (kW)	FLA	NO PE.			w/ P.E. (pwrd fr/unit)			NO PE.			w/ P.E. (pwrd fr/unit)								
						MCA	HACR BRKR	DISC. SIZE FLA LRA	MCA	HACR BRKR	DISC. SIZE FLA LRA	MCA	HACR BRKR	DISC. SIZE FLA LRA	MCA	HACR BRKR	DISC. SIZE FLA LRA						
50HC-A/B/F05	DD-STD	NONE	-	-	-	13	15	13	14	20	14	20	15	15	16	20	16	20	16	20	16	50	
		108A	6.0	7.2	7.2	13	15	13	14	20	16	12	20	15	15	18	20	17	20	17	20	50	
		108A	11.5	13.8	13.8	23	25	22	25	30	22	28	30	25	25	24	30	23	30	24	30	50	
		108A+108A	14.0	16.8	16.8	26	30	24	28	30	25	38	30	26	29	29	30	26	30	28	30	28	50
	STD	NONE	-	-	-	40	40	36	41	45	48	43	45	39	44	44	45	40	45	40	45	40	50
		108A	6.0	7.2	7.2	11	15	11	12	15	49	13	15	50	14	14	20	13	15	14	20	52	
		108A	11.5	13.8	13.8	18	20	18	22	25	49	23	25	50	24	24	25	21	25	24	25	52	
		108A+108A	14.0	16.8	16.8	24	25	22	27	28	25	27	30	28	30	28	30	25	30	25	30	25	52
	MED	NONE	-	-	-	38	40	34	39	40	49	40	45	35	40	42	45	37	45	42	45	38	52
		108A	6.0	7.2	7.2	11	15	11	12	15	52	13	15	53	14	14	20	14	15	17	20	55	
		108A	11.5	13.8	13.8	21	25	19	22	25	52	22	25	24	23	25	21	25	23	25	23	55	
		108A+108A	14.0	16.8	16.8	25	25	22	26	30	52	26	27	28	27	29	30	25	30	26	30	26	55
HIGH	NONE	-	-	-	38	40	35	40	40	52	41	45	36	40	42	45	37	45	42	45	39	55	
	108A	6.0	7.2	7.2	12	15	12	13	15	71	14	15	72	15	15	20	15	17	20	16	74		
	108A	11.5	13.8	13.8	20	25	20	23	25	71	23	25	21	23	25	22	22	26	30	23	74		
	108A+108A	14.0	16.8	16.8	26	30	23	27	30	72	27	28	24	28	30	26	30	27	30	27	27	74	
DD-STD	NONE	-	-	-	39	40	36	41	45	71	41	45	37	42	45	38	43	43	45	39	74		
	297A	9.2	9.2	9.2	11	15	11	13	15	39	13	15	41	13	15	20	13	15	20	15	43		
	298A	13.8	13.8	13.8	23	25	20	23	25	39	19	20	17	19	21	20	17	21	25	19	43		
	NONE	-	-	-	9	15	9	11	15	40	11	15	42	11	15	20	11	15	20	13	44		
STD	297A	9.2	9.2	9.2	14	15	13	15	20	40	17	20	15	16	19	20	15	19	20	17	44		
	298A	13.8	13.8	13.8	20	20	18	22	25	40	22	25	20	22	25	20	20	25	25	22	44		
	NONE	-	-	-	9	15	8	11	15	42	11	15	44	11	15	20	10	13	15	13	46		
	297A	9.2	9.2	9.2	14	15	12	16	20	42	16	20	15	16	18	20	14	18	20	17	46		
MED	298A	13.8	13.8	13.8	20	20	18	22	25	42	22	25	20	22	25	20	20	24	25	22	46		
	NONE	-	-	-	10	15	10	12	15	57	12	15	59	12	15	20	12	14	15	14	61		
	297A	9.2	9.2	9.2	15	15	14	18	20	57	18	20	16	18	20	16	18	20	20	18	61		
	298A	13.8	13.8	13.8	21	25	19	24	25	57	24	25	21	23	25	21	21	23	30	23	23	61	

See "Legend and Notes for Tables 10 and 11" on page 60.
 † Drive package is only available on Humidi-MiZe[®] equipped units.



Table 11 - Unit Wire Sizing Data with Factory-Installed HACR Breaker (cont)

UNIT	NO M, V-PH-HZ	ELEC. HTR			NO C.O. or UNPWR C.O.						NO P.E.						w/ PWRD C.O.									
		IFM TYPE	CRHEATER***A00	Nom (kW)	FLA	NO P.E.			w/ P.E. (pwrd fr/unit)			NO P.E.			w/ P.E. (pwrd fr/unit)			NO P.E.			w/ P.E. (pwrd fr/unit)					
						MCA	HACR BRKR	FLA	LRA	DISC. SIZE	MCA	HACR BRKR	FLA	LRA	DISC. SIZE	MCA	HACR BRKR	FLA	LRA	DISC. SIZE	MCA	HACR BRKR	FLA	LRA	DISC. SIZE	
50HC-A/B/F06	DD-STD	NONE	-	-	-	14	20	14	58	15	20	15	59	16	20	16	60	17	20	17	61	17	20	17	61	
		108A	6.0	7.2	7.2	14	20	14	58	15	20	15	59	16	20	16	60	17	20	17	61	17	20	17	61	
		108A	11.5	13.8	13.8	23	25	22	58	22	25	23	59	23	25	23	60	27	30	27	30	24	30	24	30	
		108A	14.0	16.8	16.8	26	30	24	58	28	30	25	59	29	29	26	30	60	30	30	28	28	30	28	30	
	460-3-60	STD	108A+108A	23.0	27.7	40	40	40	36	41	45	45	38	44	43	44	44	43	44	44	45	44	45	44	45	44
			108A+108A	25.5	30.7	44	45	40	58	45	45	45	41	59	47	47	50	42	48	48	50	44	44	44	44	
			NONE	-	-	12	15	12	60	13	15	13	61	14	14	20	14	62	15	20	15	63	15	20	15	63
			108A	6.0	7.2	12	15	12	60	13	15	13	61	14	14	20	14	62	15	20	15	63	15	20	15	63
	50HC-A/B/F06	MED	108A	6.0	7.2	13	15	12	69	14	20	13	70	15	15	20	15	71	16	20	16	72	16	20	16	72
			108A	11.5	13.8	21	25	19	69	22	25	20	70	24	25	21	25	21	25	25	22	25	25	25	25	
			108A	14.0	16.8	25	25	22	69	26	30	23	70	27	27	27	30	25	29	29	26	26	30	26	26	
			108A+108A	23.0	27.7	38	40	35	69	40	40	36	70	41	41	41	45	37	42	42	45	39	45	39	45	
575-3-60	HIGH	108A+108A	25.5	30.7	42	45	38	69	43	45	39	70	45	45	45	41	46	47	50	46	47	50	46	47		
		NONE	-	-	14	20	13	82	15	20	14	83	16	16	20	16	84	17	20	17	85	17	20	17	85	
		108A	6.0	7.2	14	20	13	82	15	20	14	83	16	16	20	16	84	17	20	17	85	17	20	17	85	
		108A	11.5	13.8	22	25	20	82	23	25	21	83	25	25	22	25	22	84	26	30	23	25	25	25	25	
575-3-60	DD-STD	108A	14.0	16.8	26	30	23	82	27	30	24	83	28	28	30	26	84	30	30	27	27	30	27	27		
		108A+108A	23.0	27.7	39	40	36	82	41	45	37	83	42	42	45	38	84	43	45	39	39	45	39	45		
		108A+108A	25.5	30.7	43	45	39	82	44	45	40	83	46	46	50	42	84	47	50	43	43	50	43	45		
		NONE	-	-	12	15	12	46	14	15	13	48	13	13	15	13	48	15	20	16	16	20	16	20		
575-3-60	STD	298A	13.8	13.8	23	25	20	46	25	25	23	48	25	25	22	48	27	30	25	27	30	25	25	25		
		301A	23.0	23.1	34	35	31	46	37	40	33	48	36	40	33	48	39	40	35	40	35	40	35	40		
		NONE	-	-	10	15	9	47	12	15	11	49	11	15	11	49	13	15	15	13	15	15	13	15		
		298A	13.8	13.8	20	20	18	47	22	25	20	49	22	25	20	49	25	25	25	25	25	25	25	25		
575-3-60	MED	301A	23.0	23.1	32	35	29	47	34	35	31	49	34	35	31	49	36	40	36	40	33	40	33	40		
		NONE	-	-	10	15	9	53	12	15	11	55	11	15	11	55	13	15	15	13	15	15	13	15		
		298A	13.8	13.8	20	20	18	53	23	25	20	55	22	25	20	55	25	25	25	25	25	25	25	25		
		301A	23.0	23.1	32	35	29	53	34	35	31	55	34	35	31	55	36	40	36	40	33	40	33	40		
575-3-60	HIGH	NONE	-	-	11	15	10	64	12	15	12	66	12	15	12	66	14	15	14	14	14	15	14	15		
		298A	13.8	13.8	21	25	19	64	24	25	21	66	23	25	21	66	26	30	26	30	23	30	23	30		
		301A	23.0	23.1	33	35	30	64	35	35	32	66	35	35	32	66	37	40	37	40	34	40	34	40		

See "Legend and Notes for Tables 10 and 11" on page 60.
 † Drive package is only available on Humidi-Mizer[®] equipped units.



Legend and Notes for Tables 10 & 11

LEGEND:

- BD - Belt drive indoor fan motor
- BRKR - Circuit breaker
- CO - Convenient outlet
- DD - Direct drive indoor fan motor
- DISC - Disconnect
- FLA - Full load amps
- IFM - Indoor fan motor
- LRA - Locked rotor amps
- MCA - Minimum circuit amps
- PE - Power exhaust
- PWRD CO - Powered convenient outlet
- UNPWR CO - Unpowered convenient outlet



NOTES:

1. In compliance with NEC requirements for multimotor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. Canadian units may be fuse or circuit breaker.
2. **Unbalanced 3-Phase Supply Voltage**
Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percentage of voltage imbalance.

$$\% \text{ Voltage Imbalance} = 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 230-3-60



AB = 224 v
BC = 231 v
AC = 226 v

$$\begin{aligned} \text{Average Voltage} &= \frac{(224 + 231 + 226)}{3} = \frac{681}{3} \\ &= 227 \end{aligned}$$

Determine maximum deviation from average voltage.

(AB) 227 - 224 = 3 v Maximum deviation is 4 v.

(BC) 231 - 227 = 4 v Determine percent of voltage imbalance.

$$\begin{aligned} \% \text{ Voltage Imbalance} &= 100 \times \frac{4}{227} \\ &= 1.76\% \end{aligned}$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

Step 12 — Adjust Factory-Installed Options

Smoke Detectors —

Smoke detector(s) will be connected at the Controls Connections Board, at terminals marked “Smoke Shutdown”. Remove jumper JMP 3 when ready to energize unit.

EconoMi\$er IV Occupancy Switch —

Refer to Fig. 84 for general EconoMi\$er IV wiring. External occupancy control is managed through a connection on the Controls Connections Board.

If external occupancy control is desired, connect a time clock or remotely controlled switch (closed for Occupied, open for Unoccupied sequence) at terminals marked OCCUPANCY. Remove or cut jumper JMP 2 to complete the installation.

Step 13 — Install Accessories

Available accessories include:

Curb

Thru-base connection kit (must be installed before unit is set on curb)

Electric heaters and single-point connection kits
 Manual outside air damper
 Two-Position motorized outside air damper
 EconoMi\$er IV (with control)
 EconoMi\$er2 (without control/for external signal)
 Power Exhaust
 Differential dry-bulb sensor (EconoMi\$er IV)
 Outdoor enthalpy sensor
 Differential enthalpy sensor
 CO2 sensor
 DDC interface (PremierLink)
 Louvered hail guard
 Motormaster head pressure controls
 Phase monitor control
 EnergyX Recovery Ventilation (ERV)

Refer to separate installation instructions for information on installing these accessories.

Pre-Start and Start-Up —

This completes the mechanical installation of the unit. Refer to the unit’s Service Manual for detailed Pre-Start and Start-Up instructions. Download the latest versions from HVAC Partners (www.hvacpartners.com).

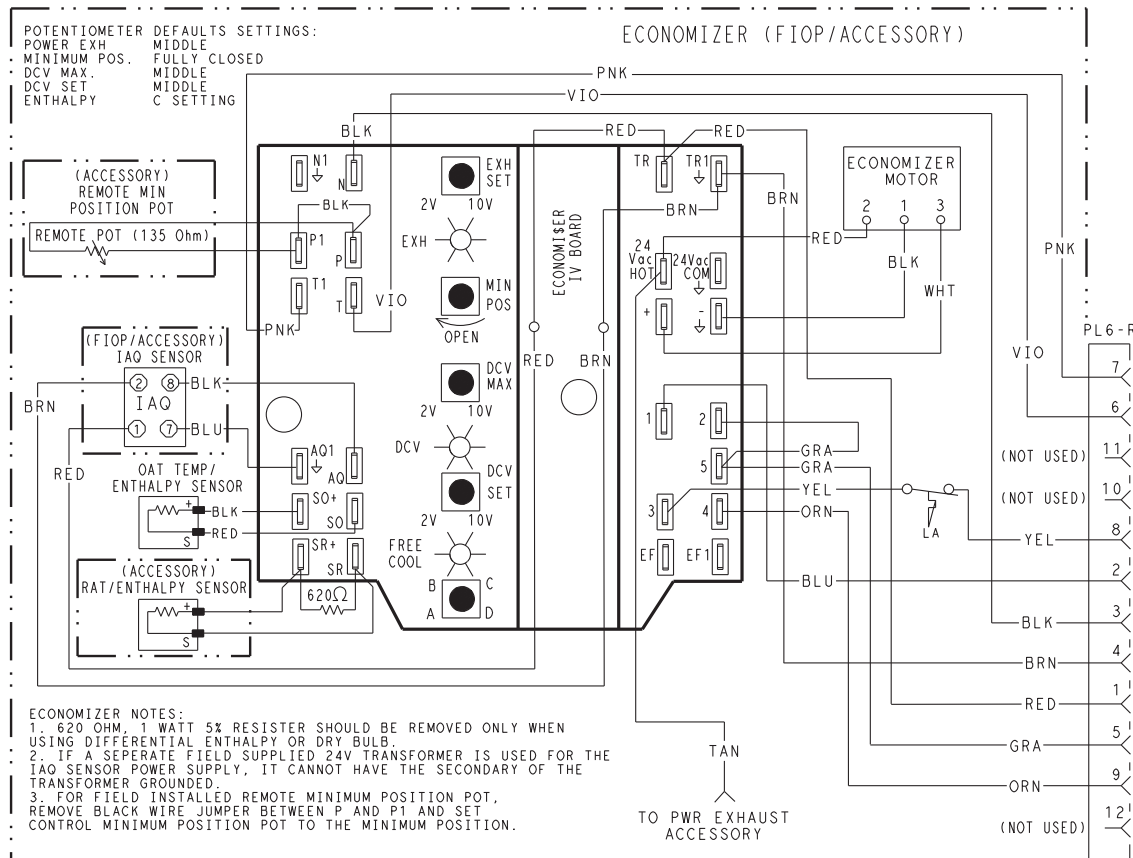


Fig. 84 - EconoMi\$er IV Wiring

C09302

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START-UP CHECKLIST

(Remove and Store in Job File)

I. PRELIMINARY INFORMATION

MODEL NO.: _____ SERIAL NO.: _____
 DATE: _____ TECHNICIAN: _____

II. PRE-START-UP (insert checkmark in box as each item is completed)

- VERIFY THAT JOBSITE VOLTAGE AGREES WITH VOLTAGE LISTED ON RATING PLATE
- VERIFY THAT ALL PACKAGING MATERIALS HAVE BEEN REMOVED FROM UNIT
- REMOVE ALL SHIPPING HOLD DOWN BOLTS AND BRACKETS PER INSTALLATION INSTRUCTIONS
- VERIFY THAT CONDENSATE CONNECTION IS INSTALLED PER INSTALLATION INSTRUCTIONS
- CHECK REFRIGERANT PIPING FOR INDICATIONS OF LEAKS; INVESTIGATE AND REPAIR IF NECESSARY
- CHECK ALL ELECTRICAL CONNECTIONS AND TERMINALS FOR TIGHTNESS
- CHECK THAT RETURN (INDOOR) AIR FILTERS ARE CLEAN AND IN PLACE
- VERIFY THAT UNIT INSTALLATION IS LEVEL
- CHECK FAN WHEELS AND PROPELLER FOR LOCATION IN HOUSING/ORIFICE AND SETSCREW TIGHTNESS
- CHECK TO ENSURE THAT ELECTRICAL WIRING IS NOT IN CONTACT WITH REFRIGERANT LINES OR SHARP METAL EDGES
- CHECK PULLEY ALIGNMENT AND BELT TENSION PER INSTALLATION INSTRUCTIONS

III. START-UP (Refer to Unit Service/Maintenance Manual for Start-up Instructions)

ELECTRICAL

SUPPLY VOLTAGE	L1-L2	_____	L2-L3	_____	L3-L1	_____
CIRCUIT 1 COMPRESSOR AMPS	L1	_____	L2	_____	L3	_____
CIRCUIT 2 COMPRESSOR AMPS	L1	_____	L2	_____	L3	_____
INDOOR-FAN AMPS		_____		_____		_____
OUTDOOR-FAN AMPS	NO. 1	_____	NO. 2	_____		_____

TEMPERATURES

OUTDOOR-AIR TEMPERATURE	_____ DB	_____ WB
RETURN-AIR TEMPERATURE	_____ DB	_____ WB
COOLING SUPPLY AIR	_____ DB	_____ WB

PRESSURES (Cooling Mode)

REFRIGERANT SUCTION, CIRCUIT 1	_____ PSIG	_____ F
REFRIGERANT DISCHARGE, CIRCUIT 1	_____ PSIG	_____ F

- VERIFY THAT 3-PHASE FAN MOTOR AND BLOWER ARE ROTATING IN CORRECT DIRECTION.
- VERIFY THAT 3-PHASE SCROLL COMPRESSOR IS ROTATING IN THE CORRECT DIRECTION
- VERIFY REFRIGERANT CHARGE USING CHARGING CHARTS

GENERAL

- SET ECONOMIZER MINIMUM VENT AND CHANGEOVER SETTINGS TO MATCH JOB REQUIREMENTS (IF EQUIPPED)

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