

Installation Instructions

Part No.: 00EFN900000300A

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SAFETY CONSIDERATIONS

Installation of this accessory can be hazardous due to system pressures, electrical components, and equipment location (such as a roof or elevated structure).

Only trained, qualified installers and service technicians should install, start up, and service this equipment.

When installing this accessory, observe precautions in the literature, labels attached to the equipment, and any other safety precautions that apply.

- Follow all safety codes.
- Wear safety glasses and work gloves.
- Use care in handling and installing this accessory.

⚠ WARNING

Electrical shock can cause personal injury and death. Shut off all power to this equipment during installation. There may be more than one disconnect switch. Tag all disconnect locations to alert others not to restore power until work is completed.

GENERAL

The standard *ComfortLink* controls software provided on all 30RB and 30XA fixed speed chillers, or Touch Pilot™ controls software on 30XA variable speed chillers (30XA chillers with Greenspeed® intelligence) is programmed to accept various accessory temperature reset options that reset the leaving chilled water temperature (LCWT). The Energy Management Module (EMM) board is required for 2-step or 4 to 20 mA demand limit control, chilled water temperature reset by outside-air temperature. Chilled water temperature reset by return water or cooler delta T does not require the addition of this accessory.

See Table 1 for EMM functions by unit. The following functions are available with the EMM board:

- 4 to 20 mA Temperature Set Point — Allows field determination of the chilled water set point from a 4 to 20 mA signal. 30RB, 30XA fixed speed only.
- Chilled Water Temperature Reset — Resets the chilled water set point under less than full load capacity conditions by the following methods:
 - 4 to 20 mA Input: A field-supplied signal generator and 1/2-watt, 250-ohm resistor are required.
 - Space Temperature: A field-supplied space temperature sensor is required.
- Demand Limit — Limits the capacity of the machine, from either unit capacity (30RB, 30XA) or compressor current (30XA) by the following methods:
 - 4 to 20 mA Input: A field-supplied signal generator and 1/2-watt, 250-ohm resistor are required.
 - 3-Step Switch Control: A field-supplied dry contact switch is required (One-Step Demand Limit does not require the EMM board).
- Occupancy Override — Extends the occupied period for machine operation. A field-supplied dry contact switch is required.
- Remote Chiller Lockout — Disables the chiller when closed. A field-supplied dry contact switch is required.
- Ice Done Control Switch — Signals the machine to exit the Ice Build mode and enter an unoccupied time period. A field-supplied dry contact switch is required.

The following status functions are available with the EMM board:

- Capacity Output Signal — A 0 to 10 vdc analog output signal indicating chiller capacity is available.
- Shutdown Status Relay — A 24 vac output signal indicating that the machine is shutting down.
- Running Status Relay — A 24 vac output signal indicating that the machine is on and producing chilled water. 30RB, 30XA fixed speed only.
- Alert Relay — A 24 vac output signal indicating the unit has an active alert. 30XA variable speed only.
- Compressor Run Status — A 24 vac output signal (one for compressor A, one for compressor B), indicating the compressor is on. 30XA variable speed only.

The EMM board can be configured with the Touch Pilot™ or Navigator™ module on fixed speed 30XA units, the Touch Pilot module on variable speed 30XA units, or the scrolling marquee or Navigator module on 30RB units.

Package Contents — Examine the package contents for correct part numbers. Refer to Table 2 for package contents and usage. If any of the components are damaged, file a claim with the shipping company and notify your Carrier representative.

Table 1 — EMM Functions by Unit

INPUT/OUTPUT		30RB	30XA FIXED SPEED	30XA VARIABLE SPEED
INPUTS	Demand Limit, 2 or 3-Step	X	X	X
	Demand Limit, 4-20 mA	X	X	X
	Ice Done	X	X	X
	Occupancy Override	X	X	X
	Space Temperature Thermistor	X	X	X
	Remote Chiller Lockout	X	X	X
	Temperature Reset, 4-20 mA Signal	X	X	X
	Temperature Set Point, 4-20 mA Signal	X	X	
OUTPUTS	Alert Relay			X
	Compressor A Run Status			X
	Compressor B Run Status			X
	Running Status Relay	X	X	
	Shutdown Status Relay	X	X	X
	Total Capacity Output, 0-10 vdc	X	X	X

Table 2 — Accessory Package Contents and Usage

DESCRIPTION	PART NO.	QTY	USED ON							
			30RB				30XA FIXED SPEED			30XA VARIABLE SPEED
			060,070	080-120 (200,230V)	080-120 (380,460, 575V)	130-390	080-122 (200,230, 380V)	080-122 (460,575V)	140-501	140-352
ENERGY MANAGEMENT BOARD	00PSN500038300A	1	X	X	X	X	X	X	X	X
TERMINAL BLOCK (TB6)	HY84FE029	1	X	X	X	X				
	HY84HA101	1					X	X	X	X
WIRING HARNESSES	SF703002	1		X		X				
	SF703003	1	X		X					
	HA-XA-212964	1					X		X	
	TH70400796	1						X		
	HA-XAV-217802	1								X
TERMINAL BLOCK MOUNTING SCREWS, NO. 8	A6X10004352	3	X	X	X	X	X	X	X	X
EMM BOARD MOUNTING SPACERS	A6X10004424	6	X	X	X	X	X	X	X	X
EMM BOARD MOUNTING SCREWS	A6X10004375	6	X	X	X	X	X	X	X	X
STAR TOOTH LOCK WASHER	YK-021-01133-000	6	X	X	X	X				
HEX NUT	YK-021-08661-000	6	X	X	X	X				
TB6 MOUNTING BRACKET	30RA500121	1		X		X				
CIRCUIT BREAKER CB8	HH83ZB010	1					X	X	X	X

INSTALLATION

Installation (Fixed Speed 30XA Units and 30RB Units)

1. Disconnect unit power. Follow proper lockout-tagout procedures.
2. Locate the main base board (MBB) in the control panel end of the 30RB unit. Refer to Table 3 for the MBB location in 30XA fixed speed units.
3. The EMM board is installed over a pattern of holes through which the MBB is mounted. Remove each screw shown in Fig. 1 and save for later use. As each screw is removed, thread the accessory-supplied spacers into the mounting locations. This way, the MBB never becomes fully dismounted. Place the EMM board over the spacer holes and insert the saved screws. The EMM board should be installed with the power connection plug (J1) facing in the same direction as MBB-J1. See Fig. 2.
4. For 30RB units, remove the cover from the adjacent panduit (wire tray) and locate the 2-pin power plug labeled EMM-J1 inside. Plug the EMM-J1 2-pin power plug into J1 on the EMM board. See Fig. 2.
For 30XA units, install the circuit breaker (CB8) in the hole on the display mounting bracket. Connect the main unit harness EMM-J1 2-pin power plug to J1 on the EMM board. Connect the red and brown wires from the 2-pin connector to the installed CB8. From CB8, run red and brown wires to the terminal blocks described in Table 4. See Fig. 3 and 4 for component layout.
5. Locate the 6-pin communication connector J9 on Fan Board 1 (30RB units) or Fan Board A (30XA units). Find the factory-installed wires (black, red, and white) that go back to connector MBB-J9B, on the MBB. Remove this plug from the MBB-J9B and connect to the EMM board at connector EMM-J9A.
6. Using the accessory-supplied black, red, and white wire harness, connect the plug marked EMM-J9B on the EMM board to the now empty MBB-J9B. See Fig. 2.
7. Each of the remaining accessory-supplied EMM board wiring harnesses' connectors are labeled J4, J5, J6, J7A and J7B. Connect these to their respective connectors on the EMM board. See Fig. 2 and 5.
8. Install the accessory-supplied terminal block (TB6) as explained in Table 5, which describes TB6 installation and references proper application in the figures. In all cases, make sure the jumpers between terminals TB6-5,6 and TB6-13,14 have been removed.

9. The opposite ends of the wiring harnesses connected to J4, J5, J6, J7A, and J7B utilize 1/4-in. spade connectors. Connect these 1/4-in. spade connectors to TB6-1 through 15 as described in Table 6. See Fig. 6 and 7 for 30RB and Fig. 3 and 4 for 30XA fixed speed.

Installation (30XA Variable Speed Units Only)

1. Disconnect unit power. Follow proper lockout-tagout procedures.
2. Locate the control panel enclosure. See Fig. 8 for control panel layout.
3. Install EMM board in location shown in Fig. 8.
4. Install circuit breaker CB-8 in the hole on the display mounting bracket. See Fig. 8 for location. Connect the accessory-supplied EMM-J1 2-pin power plug to J1 on the EMM board. Connect the red and brown wires from the 2-pin connector to the installed CB-8. From CB-8, run red and brown wires to terminal blocks described in Table 4. See Fig. 8 for component layout.
5. Using the accessory-supplied black, red, and white wiring harness, connect the plug marked EMM-J9B on the EMM board. See Fig. 2 for location.
6. Each of the remaining accessory-supplied EMM board wiring harness connectors are labeled J4, J5, J6, J7A, and J7B. Connect these to their respective connectors on the EMM board. See Fig. 2 and 5.
7. Install the accessory-supplied terminal block (TB-6) as explained in Table 5, which describes TB6 installation and references proper application in the figures. In all cases, make sure the jumpers between terminals TB6-5,6 and TB6-13,14 have been removed.
8. The opposite ends of the wiring harnesses connected to J4, J5, J6, J7A, and J7B utilize 1/4-in. spade connectors. Connect these spade connectors to TB6-1 through TB6-15 as described in Table 6.

Table 3 — Main Base Board Location on 30XA Units

UNIT	UNIT SIZE	VOLTAGE	MAIN BASE BOARD LOCATION
30XA Fixed Speed	080-122	200,230, 380V	Upper right corner of the large control panel on the end of the chiller
		460,575V	Small display control box on the end of the chiller
	140-501	ALL	Small display control box on the compressor side of the chiller
30XA Variable Speed	140-352	ALL	Small display control box on the compressor side of the chiller

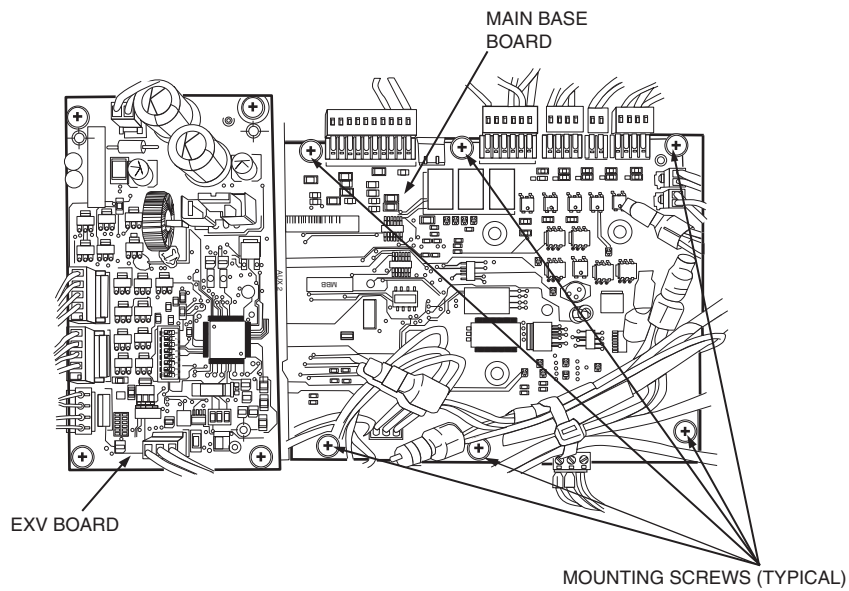


Fig. 1 — Location Above Main Base Board for EMM Mounting (30RB Unit Shown)

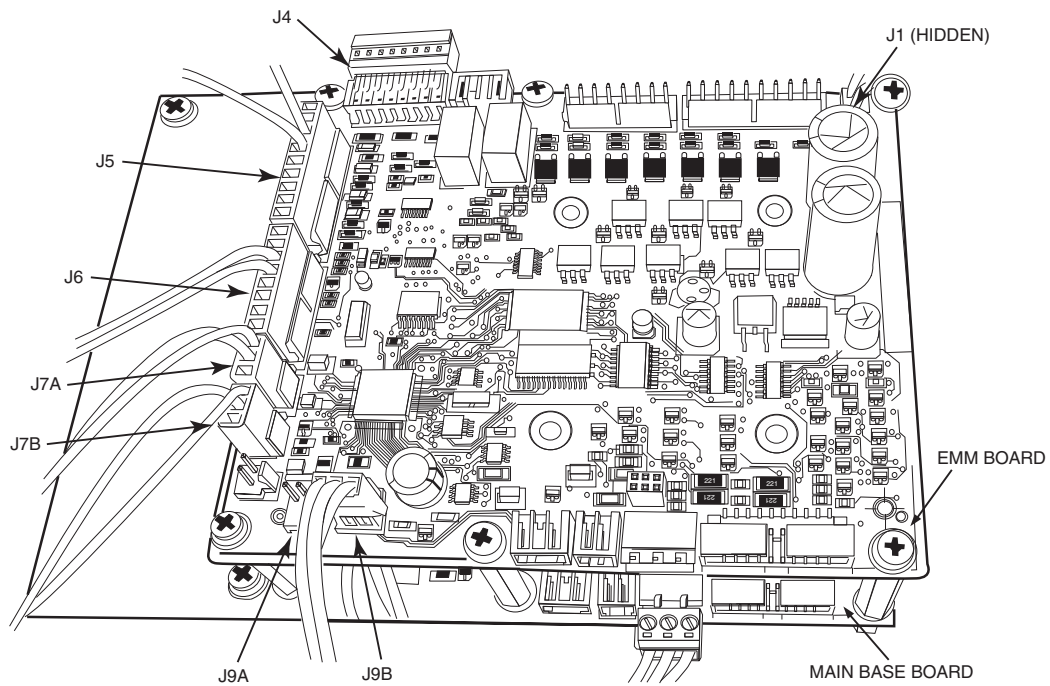


Fig. 2 — EMM Mounted Over Main Base Board

Table 4 — 30XA Units: Connect 2-Pin Wires to TB10, TB11

30XA UNIT SIZE	VOLTAGE	2-PIN WIRES	TERMINAL BLOCK
080-122	200, 230, 380 v	RED	TB11-X1
		BROWN	TB11-X2
	460, 575 v	RED	TB10-X1
		BROWN	TB10-X2
140-501 Fixed Speed	ALL	RED	TB11-X1
		BROWN	TB11-X2
140-352 Variable Speed	380,460,575 v	RED	TB10-X1
		BROWN	TB10-X2

NOTE: TB10 and TB11 are separate from the MBB and EMM board. See Fig. 3 for TB10 Fixed Speed, Fig. 4 for TB11, and Fig. 8 for TB10 Variable Speed.

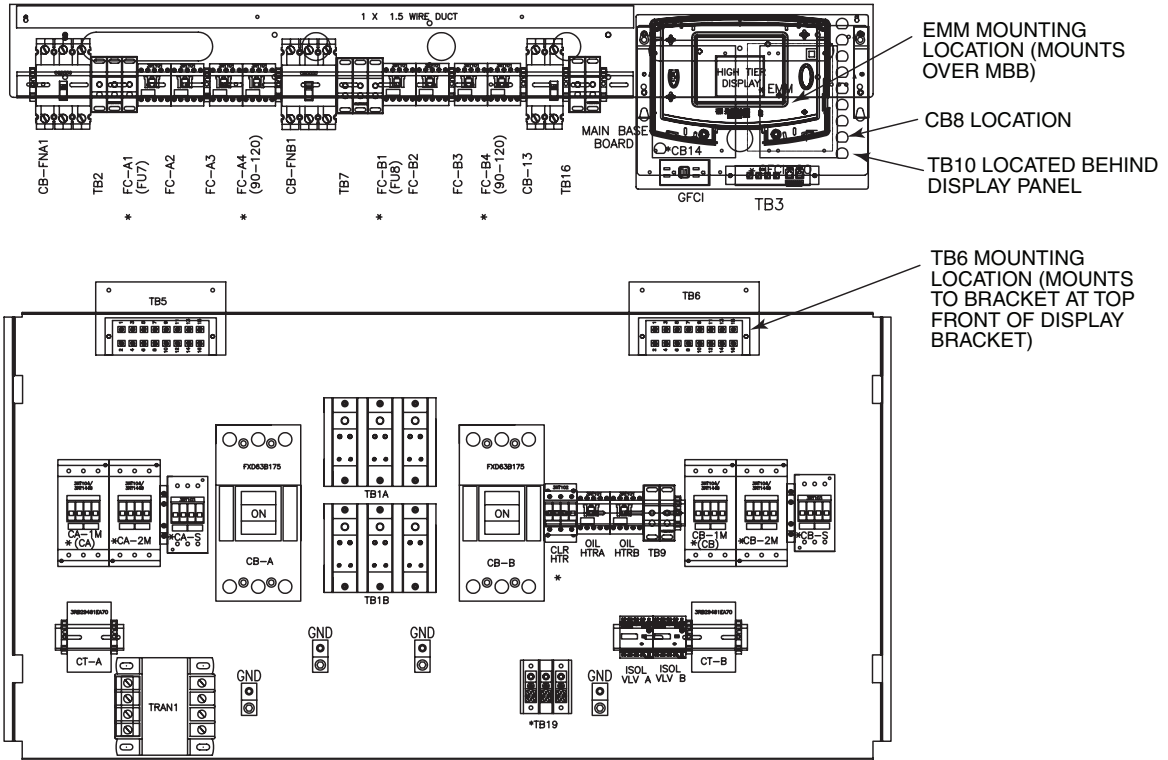


Fig. 3 — Component Layout — 30XA080-122 (460, 575 v) Units

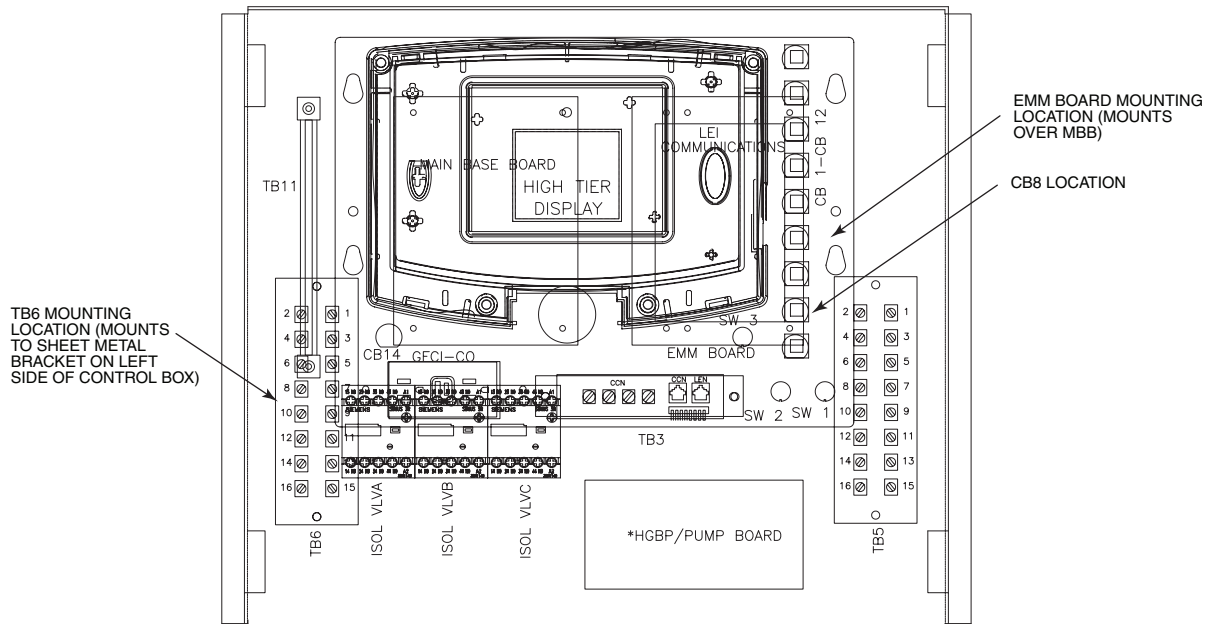
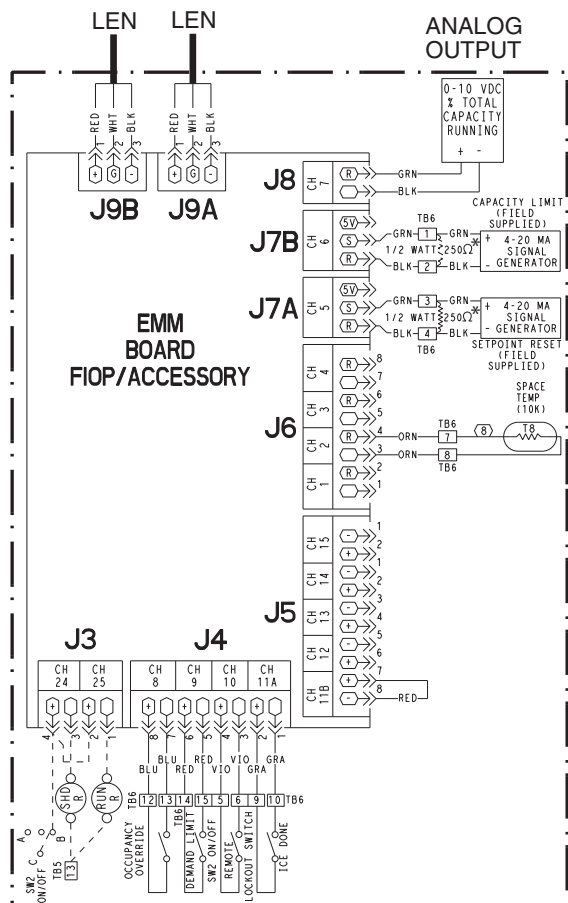
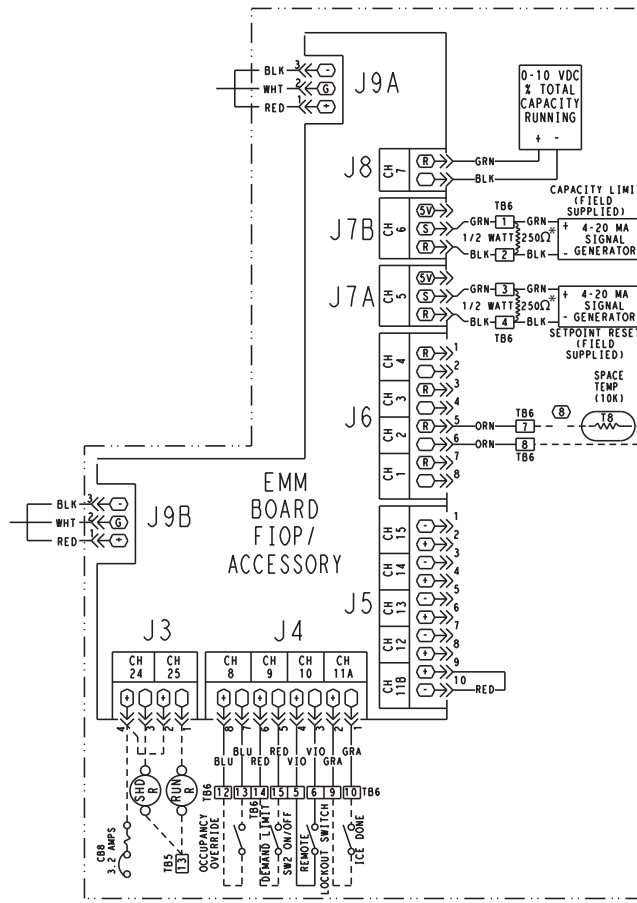


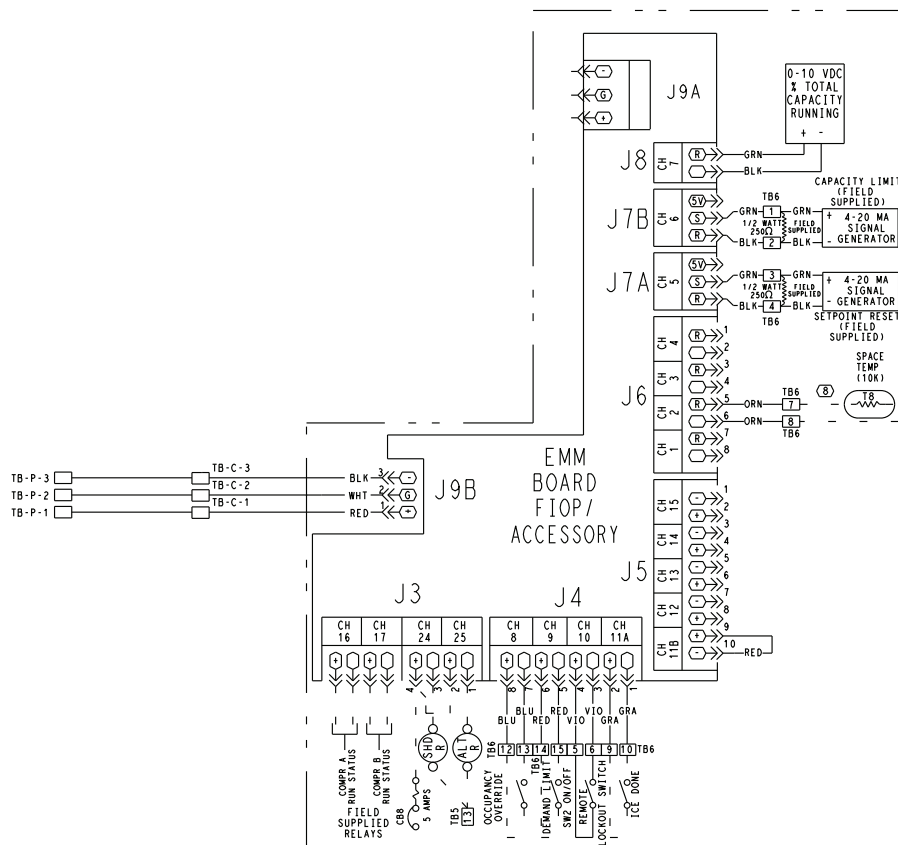
Fig. 4 — Component Layout — 30XA080-122 (200, 230, 380 v) and 30XA Fixed Speed 140-501 Units



30RB060-390



30XA080-501 Fixed Speed Units



30XA140-352 Variable Speed Units

- LEGEND**
- EMM — Energy Management Module
 - FIOP — Factory-Installed Option
 - LEN — Local Equipment Network
 - TB — Terminal Block

*Field supplied.

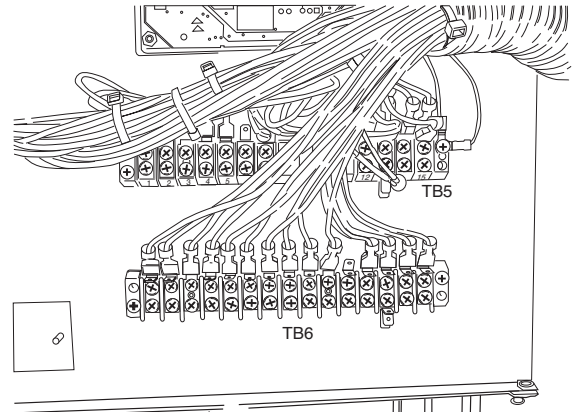
Fig. 5 — 30RB and 30XA EMM Board Wiring

Table 5 — TB6 Installation

UNIT	VOLTAGE	MOUNTING TOOLS AND LOCATION	SEE FIG. NO.
30RB060,070	200,230V	Locate terminal block TB5 in the control panel. Remove the thumbscrew holding the display bracket and mount the accessory-supplied terminal block (TB6) to the back of the panel below TB5.	7
	380,460,575V		7
30RB080-120	200,230V	Locate terminal block TB5 in the control panel. Use the bracket and hardware supplied to mount the bracket above TB5 and mount the accessory-supplied terminal block (TB6) to the bracket.	6
	380,460,575V	Locate terminal block TB5 in the control panel. Remove the thumbscrew holding the display bracket and mount the accessory-supplied terminal block (TB6) to the back of the panel below TB5.	7
30RB130-390	ALL	Locate terminal block TB5 in the control panel. Use the bracket and hardware supplied to mount the bracket above TB5 and mount the accessory-supplied terminal block (TB6) to the bracket.	6
30XA080-122	200,230,380V	Mount as shown in figure.	4
	460, 575V	Mount as shown in figure.	3
30XA140-501 FIXED SPEED	ALL	Mount as shown in figure.	4
30XA140-352 VARIABLE SPEED	380,460,575V	Mount as shown in figure.	8



**Fig. 6 — TB6 in Fan Box Above TB5
(30RB130-390 Units — 380, 460, 575 v and
30RB080-390 Units — 200, 230 v)**



**Fig. 7 — TB6 On Display Panel Below TB5
(30RB060-120 Units — 380, 460, 575 v and
30RB060,070 Units — 200, 230 v)**

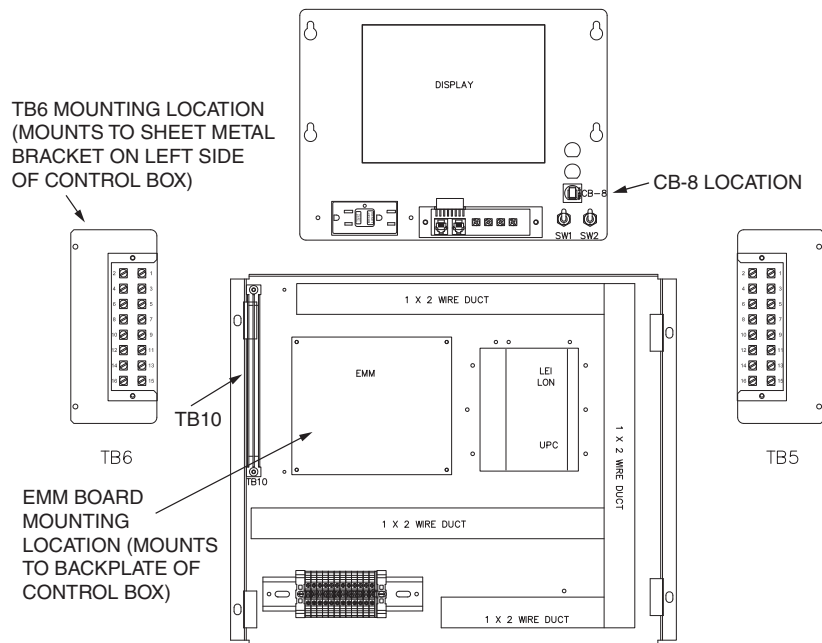


Fig. 8 — Component Layout — 30XA Variable Speed 140-352 Units

Table 6 — EMM Board Wiring

UNIT	WIRING HARNESS	EMM BOARD CONNECTION LOCATION	WIRE COLOR	MBB CONNECTION LOCATION
30XA080-501 Fixed Speed (All Voltages)	HA-XA-212964 or TH70400796	EMM-J4-1	GRAY	TB6-10
		EMM-J4-2	GRAY	TB6-9
		EMM-J4-3	VIOLET	TB6-6
		EMM-J4-4	VIOLET	TB6-5
		EMM-J4-5	RED	TB6-15
		EMM-J4-6	RED	TB6-14
		EMM-J4-7	BLUE	TB6-13
		EMM-J4-8	BLUE	TB6-12
		EMM-J5-9	RED	EMM-J5-10
		EMM-J6-6	ORANGE	TB6-8
		EMM-J6-5	ORANGE	TB6-7
		EMM-J7B-2	GREEN	TB6-1
		EMM-J7B-3	BLACK	TB6-2
		EMM-J7A-2	GREEN	TB6-3
		EMM-J7A-3	BLACK	TB6-4
30XA140-352 Variable Speed (All Voltages)	HA-XAV-217802	EMM-J4-1	GRAY	TB6-10
		EMM-J4-2	GRAY	TB6-9
		EMM-J4-3	VIOLET	TB6-6
		EMM-J4-4	VIOLET	TB6-5
		EMM-J4-5	RED	TB6-15
		EMM-J4-6	RED	TB6-14
		EMM-J4-7	BLUE	TB6-13
		EMM-J4-8	BLUE	TB6-12
		EMM-J5-9	RED	EMM-J5-10
		EMM-J6-6	ORANGE	TB6-8
		EMM-J6-5	ORANGE	TB6-7
		EMM-J7B-2	GREEN	TB6-1
		EMM-J7B-3	BLACK	TB6-2
		EMM-J7A-2	GREEN	TB6-3
		EMM-J7A-3	BLACK	TB6-4
30RB060-300 (All Voltages)	SF703002 or SF703003	EMM-J4-1	GRAY	TB6-10
		EMM-J4-2	GRAY	TB6-9
		EMM-J4-3	VIOLET	TB6-6
		EMM-J4-4	VIOLET	TB6-5
		EMM-J4-5	RED	TB6-15
		EMM-J4-6	RED	TB6-14
		EMM-J4-7	BLUE	TB6-13
		EMM-J4-8	BLUE	TB6-12
		EMM-J5-7	RED	EMM-J5-8
		EMM-J6-6	ORANGE	TB6-8
		EMM-J6-5	ORANGE	TB6-7
		EMM-J7B-2	GREEN	TB6-1
		EMM-J7B-3	BLACK	TB6-2
		EMM-J7A-2	GREEN	TB6-3
		EMM-J7A-3	BLACK	TB6-4

Configuration (All Sizes) — The controls must be configured to recognize the EMM board. The scrolling marquee, Navigator™ module, or Touch Pilot™ display may be used to do this. See the Controls, Start-Up, Operation, Service and Troubleshooting guide for configuration information.

Temperature Reset

4 TO 20 mA — A field-supplied and generated, externally powered 4 to 20 mA signal can be used to provide leaving fluid temperature reset. The signal must be connected to TB6-3,4 (positive, negative). A field-supplied 1/2-watt, 250-ohm resistor must also be connected across terminals TB6-3,4. See Fig. 5 for 30RB, 30XA fixed and variable speed units. Refer to the Controls, Start-Up, Operation, Service and Troubleshooting guide for configuration information.

CAUTION

Care should be taken when interfacing with other control systems due to possible power supply differences such as a full wave bridge versus a half wave rectification. Connection of control devices with different power supplies may result in permanent damage. *ComfortLink* controls incorporate power supplies with half wave rectification. A signal isolation device should be utilized if the signal generator incorporates a full wave bridge rectifier.

SPACE TEMPERATURE — A field-supplied 10K thermistor can be used to provide leaving fluid temperature reset. The thermistor must be connected to TB6-7,8. See Fig. 5 for 30RB, 30XA fixed and variable speed units. See the Controls, Start-Up, Operation, Service and Troubleshooting guide for configuration information.

Demand Limit

4 TO 20 mA — A field-supplied and generated, externally powered 4 to 20 mA signal can be used to provide a demand limit signal for chiller capacity reduction. The signal must be connected to TB6-1, 2 (positive, negative). A field-supplied 1/2-watt, 250-ohm resistor must also be connected across terminals TB6-1,2. See Fig. 5. See the Controls, Start-Up, Operation, Service and Troubleshooting guide for configuration information.

CAUTION

Care should be taken when interfacing with other control systems due to possible power supply differences such as a full wave bridge versus a half wave rectification. Connection of control devices with different power supplies may result in permanent damage. *ComfortLink* controls incorporate power supplies with half wave rectification. A signal isolation device should be utilized if the signal generator incorporates a full wave bridge rectifier.

SWITCH CONTROLLED — A field-supplied set of dry contacts can be used to provide up to three steps of chiller capacity reduction. The three steps are achieved through two sets of dry contacts. The contacts for Demand Limit Switch 1 must be connected to TB5-5,14 and are on the standard unit. The contacts for Demand Limit Switch 2 must be connected to TB6-14,15. See Fig. 5. The position

of these contacts will allow for up to three steps of demand limit according to the following:

CONTACT	AMOUNT OF CAPACITY REDUCTION			
	None	Switch Limit Setpoint 1	Switch Limit Setpoint 2	Switch Limit Setpoint 3
Switch 1	Open	Close	Open	Close
Switch 2	Open	Open	Close	Close

Refer to the Controls, Start-Up, Operation, Service and Troubleshooting guide for configuration information.

Additional EMM Functions

INPUTS — A field-supplied set of dry contacts can be used to provide an occupancy override signal (TB6-12,13), remote chiller lockout (TB6-5,6) or ice done signal (TB6-9,10) to the controls. See Fig. 5. The occupancy override switch can be used to put the chiller in an occupied mode during a normally scheduled unoccupied mode of operation. The remote chiller lockout function will disable the chiller when closed. With the ice mode configuration enabled and this contact open, a brine chiller will be able to operate as desired during off peak times in conjunction with an ice storage system. Operation in ice mode ends when the contact closes. Refer to the Controls, Start-Up, Operation, Service and Troubleshooting guide supplied with the chiller for more information on the correct configuration of these options.

OUTPUTS — One analog and two or three discrete outputs are available from the Energy Management Module. The analog output indicates percentage of total capacity with a 0 to 10 vdc signal. For 30RB and 30XA fixed speed units, the two discrete outputs, running relay, and shutdown relay indicate unit operation. For 30XA variable speed units, three discrete outputs, Compressor A Run Status, Compressor B Run Status, alert relay, and shutdown relay indicate unit operation. All three or four outputs are to assist with remote monitoring of chiller operation.

Percent Total Capacity — This feature allows the unit control to provide a 0 to 10 vdc signal based on the unit capacity. The signal is a linear function from 0 to 10 vdc, with 0 vdc representing 0% capacity and 10 vdc representing 100% capacity. For 30RB and 30XA units, a field-supplied and wired two-pin plug is required to connect to the EMM-J8 plug. The housing (Carrier part number HY07MP520), terminal pins (Carrier part number HY57MP007), and field-supplied wire are required. The housing and terminals are included in the EMM connection kit, Carrier part number 32MP660031. See Fig. 9 for wiring.

30RB and 30XA Wiring

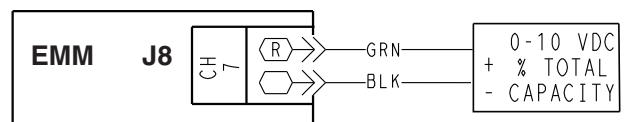


Fig. 9 — 0-10 vdc % Total Capacity Wiring

Running Relay (30RB and 30XA Fixed Speed Units Only) — This feature provides an output signal whenever the unit capacity is greater than 0%. The maximum load for this relay is 10 VA sealed, 25 VA inrush at 24 vac. For connection information, see the EMM-J3 Connection section below.

Shutdown Relay (All Units) — This feature provides an output signal whenever the unit is in an alarm condition and at 0% capacity. The maximum load for this relay is 10 VA sealed, 25 VA inrush at 24 vac. For connection information, see the EMM-J3 Connection section below.

Alert Relay (30XA Variable Speed Units Only) — This feature provides an output signal to indicate that at least 1 circuit is off due to an alert. The maximum load for this relay is 10 VA sealed, 25 VA inrush at 24 vac. For connection information, see the EMM-J3 Connection section below.

EMM-J3 Connection (30RB and 30XA Only) — To utilize this connection, field-supplied wiring and the EMM-J3 connector are required. The EMM-J3 connector (Carrier part number 734-104) is included as part of the EMM accessory. Wire the power from SW2-B (30RB) or CB8 (30XA) to both EMM-J3-2 and EMM-J3-4. Wire the shutdown relay (SHD R) between EMM-J3-3 and TB5-13. Wire the running relay (RUN R) (30RB and 30XA fixed speed only) or alert relay (ALT R) (30XA variable speed only) between EMM-J3-1 and TB5-13. See Fig. 10-12.

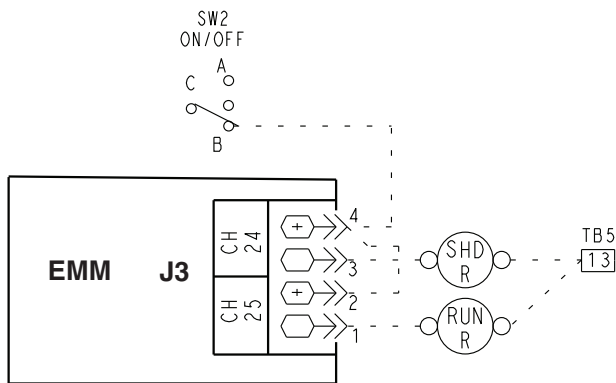


Fig. 10 — 30RB Shutdown and Running Relay Wiring

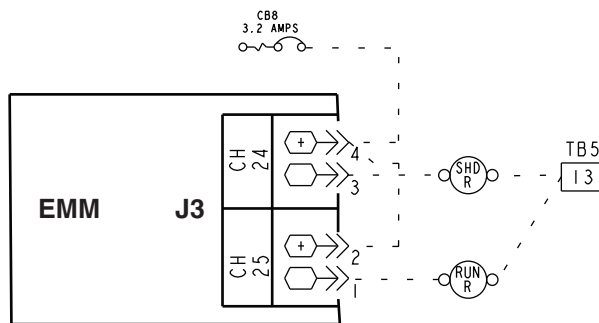


Fig. 11 — 30XA Fixed Speed Shutdown and Running Relay Wiring

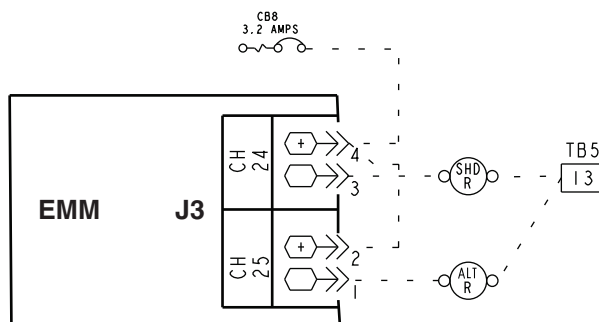


Fig. 12 — 30XA Variable Speed Shutdown and Alert Relay Wiring

