

Installation Instructions

Part No.: 30XV70000701

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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 and lock all disconnect locations to alert others not to restore power until work is completed.

GENERAL

The standard Touch Pilot™ controls software provided on all 30XV chillers is programmed to accept various options to modify the unit operation. The Energy Management Module (EMM) board is required for 4 to 20 mA, 2 or 3-step demand limit control, chilled water temperature reset by space temperature or 4 to 20 mA, and Ice Mode. 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. The following functions are available with the EMM board:

- 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 unit capacity by the following methods:
 - 4 to 20 mA Input: A field-supplied signal generator and 1/2-watt, 250-ohm resistor are required.
 - 2 or 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.
- Alert Relay — A 24 vac output signal indicating the unit has an active alert.
- Compressor Run Status — A 24 vac output signal (one for compressor A, one for compressor B), indicating the compressor is on.

The EMM board can be configured with the Touch Pilot module.

Table 1 — EMM Functions

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

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 2 — 30XV Accessory Package Contents and Usage

DESCRIPTION	PART NO.	QTY	USED ON		
			140-325 (30XVA)	140-325 (30XVB)	350-500 (30XVA/XVB)
ENERGY MANAGEMENT BOARD	00PSN500038300A	1	X	X	X
TERMINAL BLOCK (TB6)	30XV50074301*	1	X	X	X
WIRING HARNESSES	30XV50074001 (30XVHSAAE--A00)	1	X		
	30XV50074101 (30XVHLAAE--A00)	1			X
	30XV50120101 (30XVHVAAE--A00)	1		X	
TERMINAL BLOCK MOUNTING SCREWS, NO. 8	A6X10004352	3	X	X	X
EMM BOARD MOUNTING SCREWS 8-32 X 0.38 IN. LONG	AC41AB100	6	X	X	X
CIRCUIT BREAKER CB5	HH83ZB010	1	X	X	X

*Terminal Block (TB6, P/N 30XV50074301) is pre-wired with wiring harness assembly for P/Ns 30XV50074001, 30XV50074101, and 30XV50120101.

INSTALLATION

1. Disconnect unit power. Follow proper lockout/tag-out procedures.
2. Locate the control panel enclosure. See Fig. 1-3 for control panel layout and location for installation of EMM board and TB6.
3. Install EMM board in the location shown in Fig. 1 (30XVA140-325), Fig. 2 (30XVB140-325), or Fig. 3 (30XVA/XVB350-500) using the screws included in the accessory package.
4. See Table 3 for TB6 mounting tools and location. Install TB6 in the location shown in Fig. 1 (30XVA140-325), Fig. 2 (30XVB140-325), or Fig. 3 (30XVA/XVB350-500) using the screws included in the accessory package. TB6 should have harness already attached as shown in Table 4. Correct connections should be verified.
5. Install circuit breaker CB5 in the hole on the display mounting bracket. See Fig. 1-3 for location. Locate the accessory-supplied wiring harness 30XV50074001 (30XVA140-325), 30XV50074101 (30XVA/XVB350-500), or 30XV50120101 (30XVB140-325) and install 2-pin power plug labeled EMM-J1 on the EMM board terminal J1. Connect the 2 red wires labeled CB5 to the installed CB5 circuit breaker. Run red wires labeled TB11-X1 and brown wires labeled TB11-X2 to the terminal blocks with matching labels.
6. Also, the red (+), black (-) and white (G) wires labeled TBC should be connected to the appropriate terminals with matching labels. See Fig. 4. Locate the plug labeled EMM-J9B in the accessory-supplied wiring harness and connect it to the EMM board.
7. Each of the remaining accessory-supplied EMM board wiring harness connectors labeled J2A, J3, J4, J5, J6, J7A, J7B, and J8 should be connected to their respective connectors on the EMM board.

Table 3 — 30XV TB6 Installation

UNITS	MOUNTING LOCATION	SEE FIG. NO.
30XVA140-500, 30XVA/XVB350-500	Locate terminal block TB5 in the low voltage section of the powerbox (upper left door for 30XVA140-325 units and top middle door for 30XVA/XVB350-500 units). Using the accessory-supplied mounting screws, mount terminal block TB6 to the open spot on the bracket below TB5.	1, 3
30XVB140-325	Locate terminal block TB5 in the low voltage section of the power box (upper right of enclosure). Using the accessory-supplied mounting screws, mount terminal block TB6 to the open spot on bracket below TB5.	2

Table 4 — EMM Board Wiring

UNIT	WIRING HARNESS	EMM BOARD CONNECTION LOCATION	WIRE COLOR	CONNECTION LOCATION
30XVA140-325 (All Voltages)	30XV50074001	EMM-J4-1	BLUE	TB6-12
		EMM-J4-2	BLUE	TB6-13
		EMM-J4-3	RED	TB6-14
		EMM-J4-4	RED	TB6-15
		EMM-J4-5	VIOLET	TB6-5
		EMM-J4-6	VIOLET	TB6-6
		EMM-J4-7	GRAY	TB6-9
		EMM-J4-8	GRAY	TB6-10
		EMM-J1-1	RED	CB5
		EMM-J1-2	BRN	TB11-X2
		EMM-J3-4	BLACK	TB6-18
		EMM-J3-3	RED	TB6-19
		EMM-J3-2	BLACK	TB6-20
		EMM-J3-1	RED	TB6-21
		EMM-J2A-5	BLACK	TB6-22
		EMM-J2A-6	RED	TB6-23
		EMM-J2A-7	BLACK	TB6-24
		EMM-J2A-8	RED	TB6-25
		EMM-J5-11B-9	RED	EMM-J5-10
		EMM-J6-6	ORANGE	TB6-8
		EMM-J6-5	ORANGE	TB6-7
		EMM-J7B-2	ORANGE	TB6-1
		EMM-J7B-3	BLACK	TB6-2
		EMM-J7A-2	ORANGE	TB6-3
		EMM-J7A-3	BLACK	TB6-4
		EMM-J9B-1	RED	TBC+
		EMM-J9B-2	WHITE	TBC G
		EMM-J9B-3	BLACK	TBC -
30XVA/ 30XVB350-500 (All Voltages)	30XV50074101	EMM-J4-1	BLUE	TB6-12
		EMM-J4-2	BLUE	TB6-13
		EMM-J4-3	RED	TB6-14
		EMM-J4-4	RED	TB6-15
		EMM-J4-5	VIOLET	TB6-5
		EMM-J4-6	VIOLET	TB6-6
		EMM-J4-7	GRAY	TB6-9
		EMM-J4-8	GRAY	TB6-10
		EMM-J1-1	RED	CB5
		EMM-J1-2	BRN	TB11-X2
		EMM-J3-4	BLACK	TB6-18
		EMM-J3-3	RED	TB6-19
		EMM-J3-2	BLACK	TB6-20
		EMM-J3-1	RED	TB6-21
		EMM-J2A-5	BLACK	TB6-22
		EMM-J2A-6	RED	TB6-23
		EMM-J2A-7	BLACK	TB6-24
		EMM-J2A-8	RED	TB6-25
		EMM-J5-9	RED	EMM-J5-10
		EMM-J6-6	ORANGE	TB6-8
		EMM-J6-5	ORANGE	TB6-7
		EMM-J7B-2	ORANGE	TB6-1
		EMM-J7B-3	BLACK	TB6-2
		EMM-J7A-2	ORANGE	TB6-3
		EMM-J7A-3	BLACK	TB6-4
		EMM-J9B-1	RED	TBC+
		EMM-J9B-2	WHITE	TBC G
		EMM-J9B-3	BLACK	TBC -

Table 4 — EMM Board Wiring (cont)

UNIT	WIRING HARNESS	EMM BOARD CONNECTION LOCATION	WIRE COLOR	CONNECTION LOCATION
30XVB140-325 (All Voltages)	30XV50120101	EMM-J4-1	BLUE	TB6-12
		EMM-J4-2	BLUE	TB6-13
		EMM-J4-3	RED	TB6-14
		EMM-J4-4	RED	TB6-15
		EMM-J4-5	VIOLET	TB6-5
		EMM-J4-6	VIOLET	TB6-6
		EMM-J4-7	GRAY	TB6-9
		EMM-J4-8	GRAY	TB6-10
		EMM-J1-1	RED	CB5
		EMM-J1-2	BRN	TB11-X2
		EMM-J3-4	BLACK	TB6-18
		EMM-J3-3	RED	TB6-19
		EMM-J3-2	BLACK	TB6-20
		EMM-J3-1	RED	TB6-21
		EMM-J2A-5	BLACK	TB6-22
		EMM-J2A-6	RED	TB6-23
		EMM-J2A-7	BLACK	TB6-24
		EMM-J2A-8	RED	TB6-25
		EMM-J2A-9	RED	EMM-J2A-10
		EMM-J5-9	RED	EMM-J5-10
		EMM-J6-6	ORANGE	TB6-8
		EMM-J6-5	ORANGE	TB6-7
		EMM-J7B-2	ORANGE	TB6-1
		EMM-J7B-3	BLACK	TB6-2
		EMM-J7A-2	ORANGE	TB6-3
		EMM-J7A-3	BLACK	TB6-4
		EMM-J8-1	BLACK	TB6-16
		EMM-J8-2	GREEN	TB6-17
		EMM-J9B-1	RED	TBC+
		EMM-J9B-2	WHITE	TBC G
		EMM-J9B-3	BLACK	TBC -

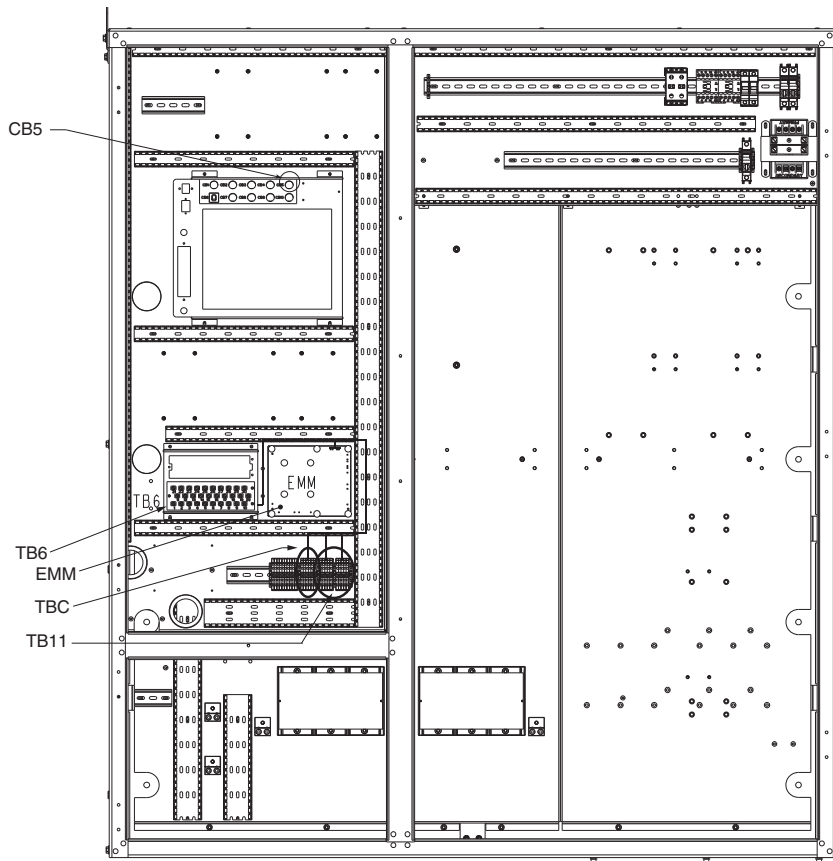


Fig. 1 — Component Layout — 30XVA140-325 Units

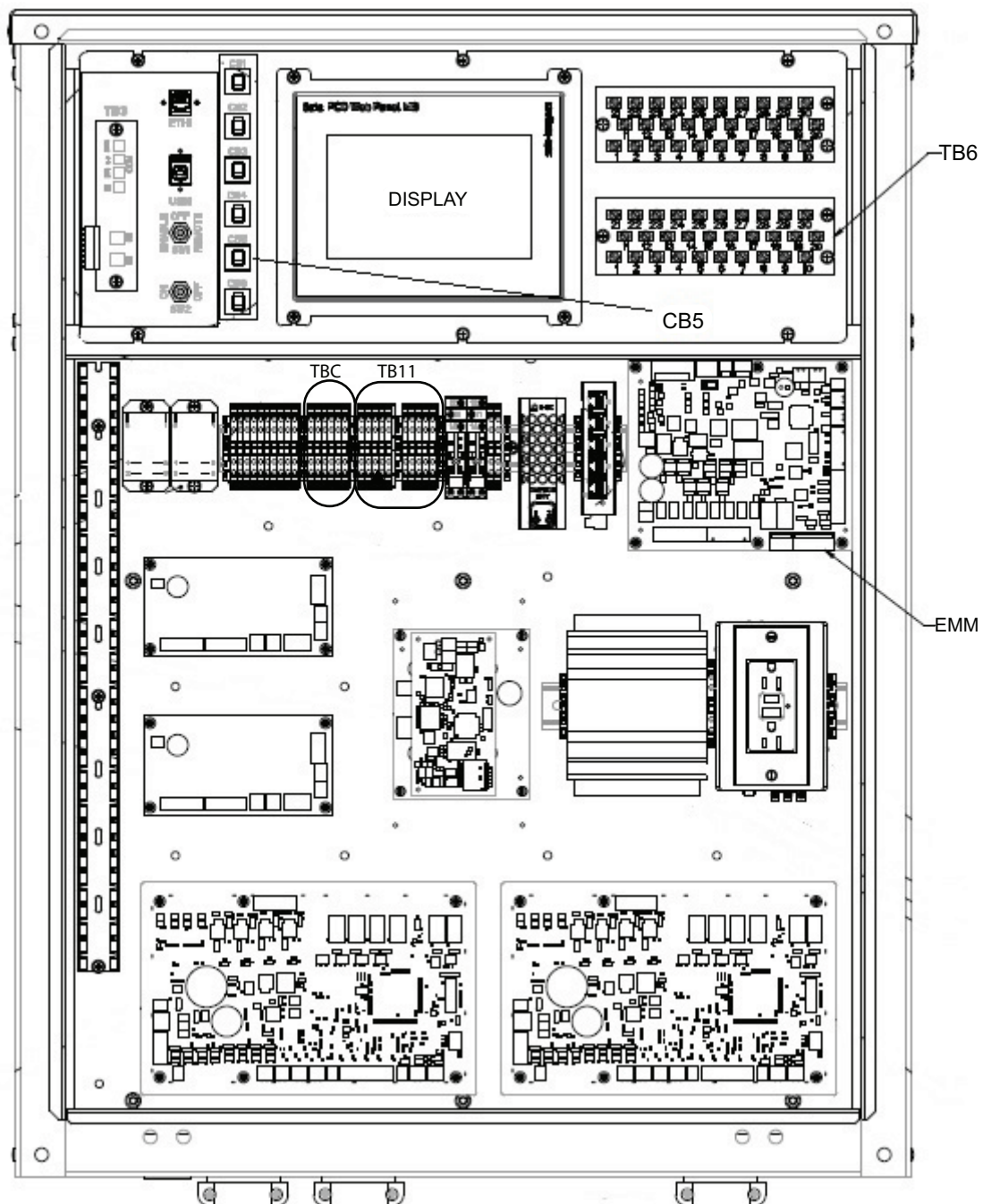


Fig. 2 — Component Layout-30XVB140-325 Units

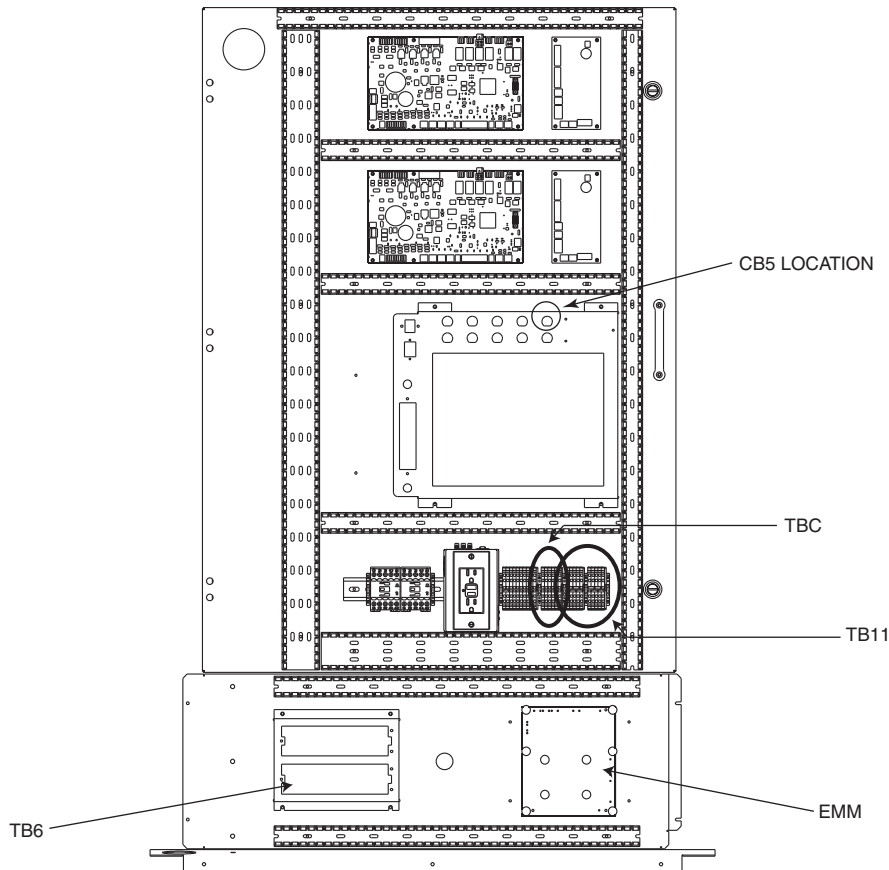


Fig. 3 — Component Layout — 30XVA/XVB350-500 Units

Configuration (All Sizes)

The controls must be configured to recognize the EMM board. The 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. 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. See the *Controls, Start-Up, Operation, Service and Troubleshooting* guide for configuration information.

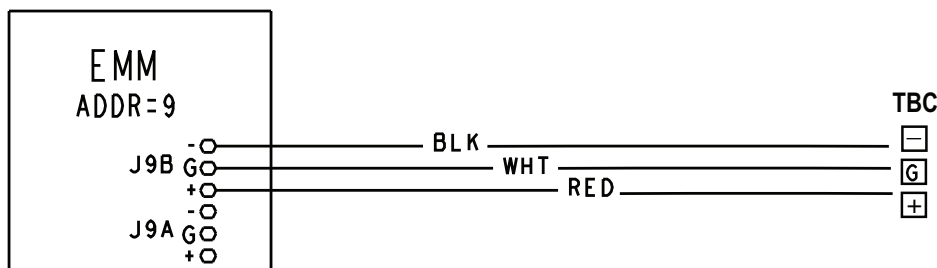


Fig. 4 — 30XV Communication Wiring

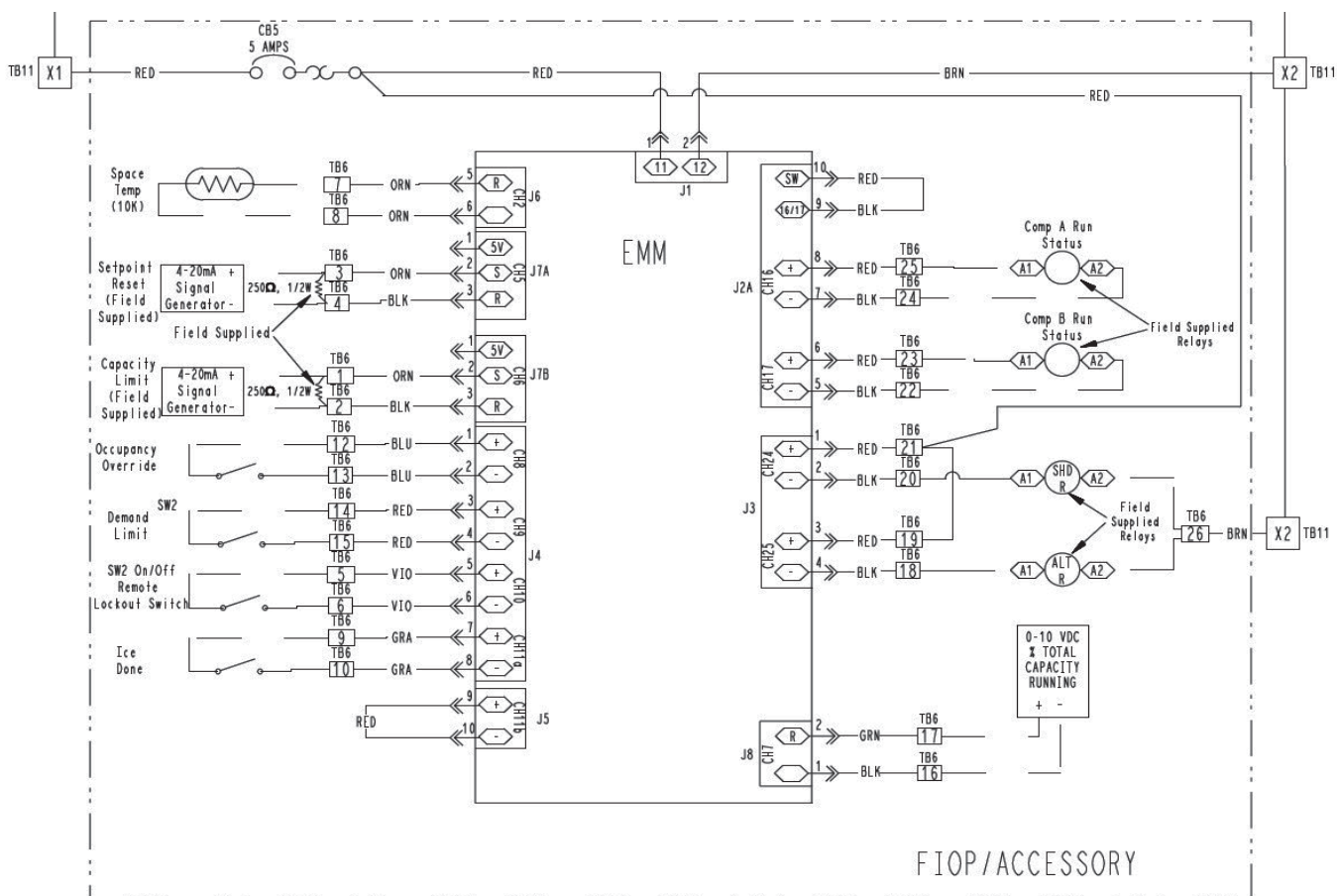


Fig. 5 — 30XV EMM Board Wiring

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 $\frac{1}{2}$ -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 switch (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 ice mode configuration enabled and ice done switch 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 four discrete outputs are available from the Energy Management Module. The analog output indicates percentage of total capacity with a 0 to 10 vdc signal. Four discrete outputs, Compressor A Run Status, Compressor B Run Status, alert relay, and shutdown relay indicate unit operation.

All four outputs are to assist with remote monitoring of chiller operation.

EMM-J3 Connection

To utilize this connection, field-supplied wiring should be connected to TB6-20, 26 for shutdown relay (SHDR) and TB6-18, 26 for alert relay (ALT R). See Fig. 6.

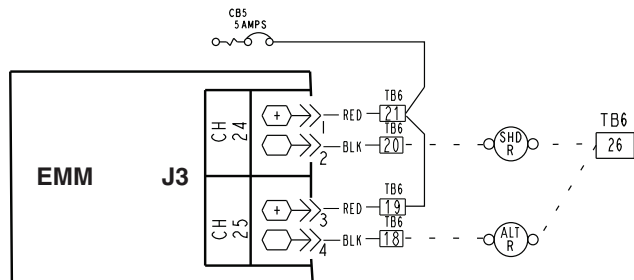


Fig. 6 — 30XV Shutdown and Alert Relay Wiring

Shutdown Relay

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.

Alert Relay

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.

Compressor Run Status

This feature provides outputs to indicate run status of each compressor. The maximum load for this relay is 10 VA sealed, 25 VA inrush at 24 vac. Connections are made to TB6-24 and 25 for compressor A and TB6-22 and 23 for compressor B. See Fig. 7.

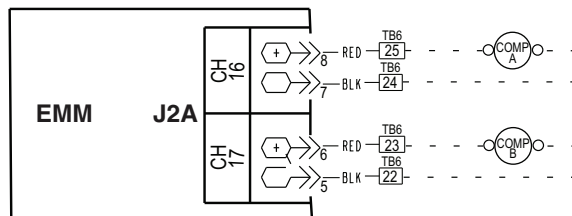


Fig. 7 — 30XV Compressor Run Status

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. See Fig. 8 for wiring. Field wiring connections are made to terminal TB6-16, 17.

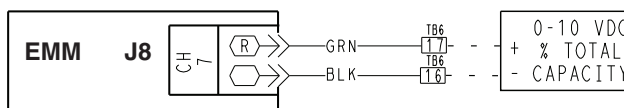


Fig. 8 — 0 to 10 vdc % Total Capacity Wiring