



Installation Instructions

Part No.: 30RC70000401

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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 Carrier Controller software provided on all 30RC 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, 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 method:
 - 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 is 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.

The EMM board can be configured with the Carrier Controller 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 |
| OUTPUTS | Alert Relay |
| | Shutdown Status Relay |
| | Total Capacity Output, 0-10 vdc |
| | Desuperheater Pump Command |

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 — 30RC Accessory Package Contents and Usage

| DESCRIPTION | PART NO. | QTY |
|---|---------------------------|-----|
| Energy Management Board | 00PSN500038300A | 1 |
| Terminal Block (TB6) | 30XV50074301 ^a | 1 |
| Wiring Harness | 30RCHAAAE--A00 | 1 |
| Wiring Harness | 30RCHAAAMB-A20 | 1 |
| Terminal Block Mounting Screws, No. 8 | AL04AU166 | 3 |
| EMM Board Mounting Screws, 8-32 x 0.38 in. long | AL04AU166 | 6 |
| Circuit Breaker CB6 | HH83ZB010 | 1 |
| Wire Tie | HY76TB110 | 1 |

NOTE(S):

- a. Terminal Block (TB6, P/N 30XV50074301) is pre-wired with wiring harness assembly for P/N 30RCHAAAE--A00.

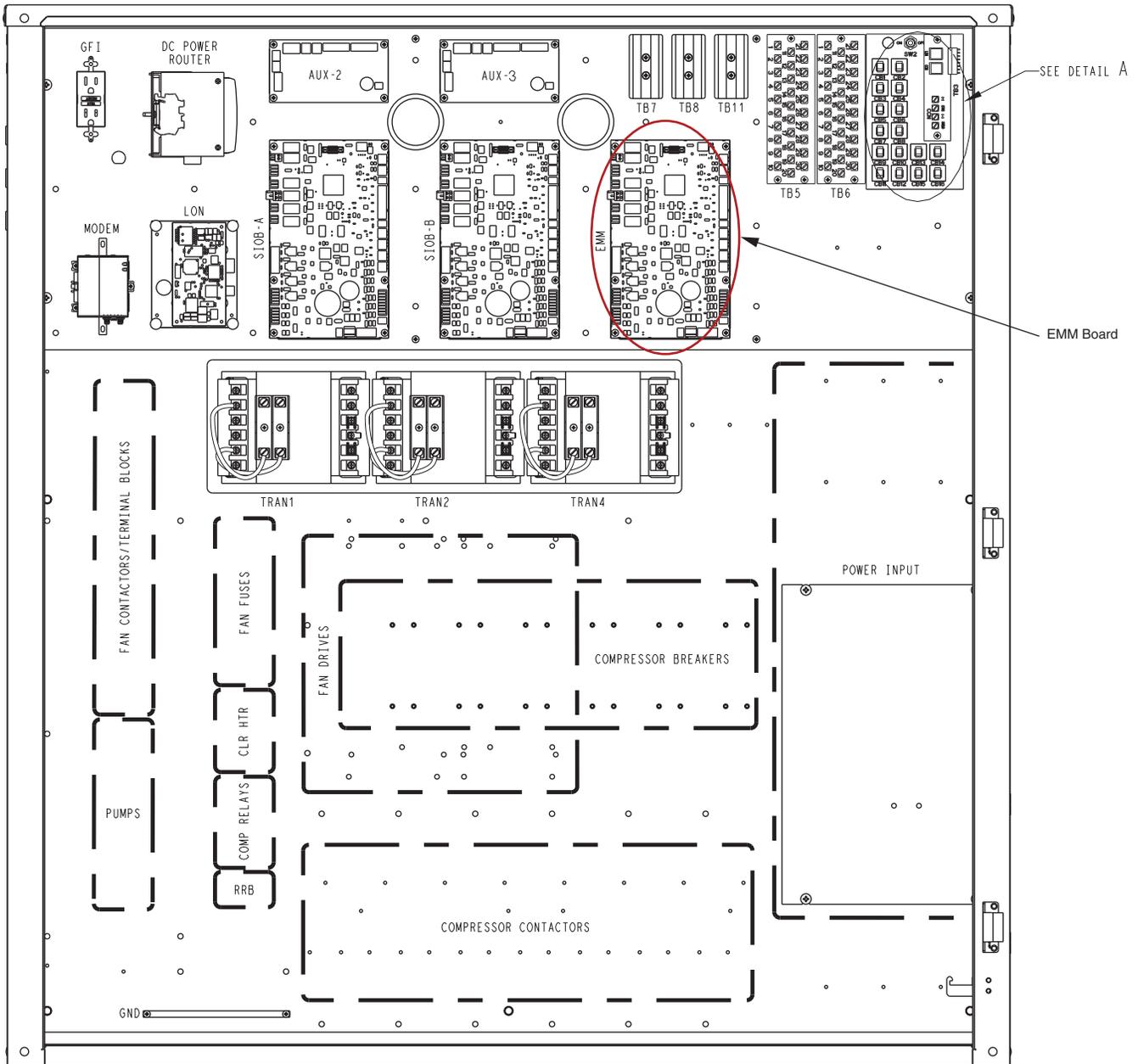
INSTALLATION

1. Disconnect unit power. Follow proper lockout/tag-out procedures.

2. Locate the control panel enclosure. See Fig. 1-2 for control panel layout and location for installation of EMM board and TB6.
3. Install EMM board in the location shown using the screws included in the accessory package.
4. Install TB6 in the location shown in Fig. 1 or Fig. 2 as applicable using the screws included in the accessory package. TB6 should have harness already attached as shown in Table 3. Correct connections should be verified.
5. Install circuit breaker CB6 in the hole on the bracket. See Fig. 1-2 for location. Locate the accessory-supplied wiring harness 30RCHAAAE--A00 and install 2-pin power plug labeled EMM-J15 on the EMM board terminal J15. Connect the 2 red wires labeled CB6 to the installed CB6 circuit breaker. Run red wires labeled TB7-X1 and brown wires labeled TB7-X2 to the terminal blocks with matching labels.
6. See Fig. 3. Locate the accessory-supplied wiring harness (30RCHAAAMB-A20) and connect it to EMM board J13. Connect the other end of the harness to AUX-3 board J9 if installed, otherwise connect to AUX-2 board J9 if installed, otherwise connect to SIOB-B board J-12.
7. Each of the remaining accessory-supplied EMM board wiring harness connectors labeled J1, J2, J4, J7, J9, J10, J22, J23, and J25 should be connected to their respective connectors on the EMM board.

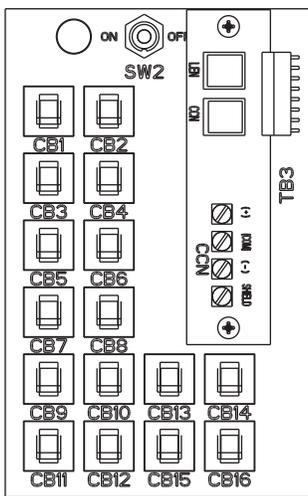
Table 3 — EMM Board Wiring

| UNIT | WIRING HARNESS | EMM BOARD CONNECTION LOCATION | WIRE COLOR | CONNECTION LOCATION |
|---------------------|----------------|-------------------------------|------------|---|
| 30RC (ALL VOLTAGES) | 30RCHAAAE--A00 | EMM-J1-1 | BLUE | TB6-12 |
| | | EMM-J1-2 | BLUE | TB6-13 |
| | | EMM-J1-3 | RED | TB6-14 |
| | | EMM-J1-4 | RED | TB6-15 |
| | | EMM-J1-5 | VIOLET | TB6-5 |
| | | EMM-J1-6 | VIOLET | TB6-6 |
| | | EMM-J1-7 | GRAY | TB6-9 |
| | | EMM-J1-8 | GRAY | TB6-10 |
| | | EMM-J2-2 | BLACK | TB6-21 |
| | | EMM-J4-3 | RED | TB6-20 |
| | | EMM-J7-1 | BLACK | TB6-28 |
| | | EMM-J7-2 | RED | TB6-29 |
| | | EMM-J7-3 | BLACK | TB6-26 |
| | | EMM-J7-4 | RED | TB6-27 |
| | | EMM-J7-5 | BLACK | TB6-24 |
| | | EMM-J7-6 | RED | TB6-25 |
| | | EMM-J7-7 | BLACK | TB6-22 |
| | | EMM-J7-8 | RED | TB6-23 |
| | | EMM-J9-1 | BLACK | TB6-2 |
| | | EMM-J9-2 | ORANGE | TB6-1 |
| | | EMM-J10-1 | BLACK | TB6-19 |
| | | EMM-J10-2 | ORANGE | TB6-18 |
| | | EMM-J22-1 | BLACK | TB6-17 |
| | | EMM-J22-2 | RED | TB8-4 |
| | | EMM-J23-1 | BLACK | TB6-16 |
| | | EMM-J23-2 | RED | TB8-4 |
| EMM-J25-1 | ORANGE | TB6-8 | | |
| EMM-J25-2 | ORANGE | TB6-7 | | |
| 30RC (ALL VOLTAGES) | 30RCHAAAMB-A20 | EMM-J13-1 | RED | Connect to AUX-3-J9 if installed, otherwise connect to AUX-2-J9 if installed, otherwise connect to SIOB-B-J12 |
| | | EMM-J13-2 | WHITE | |
| | | EMM-J13-3 | BLACK | |



SEE DETAIL A

EMM Board



DETAIL A

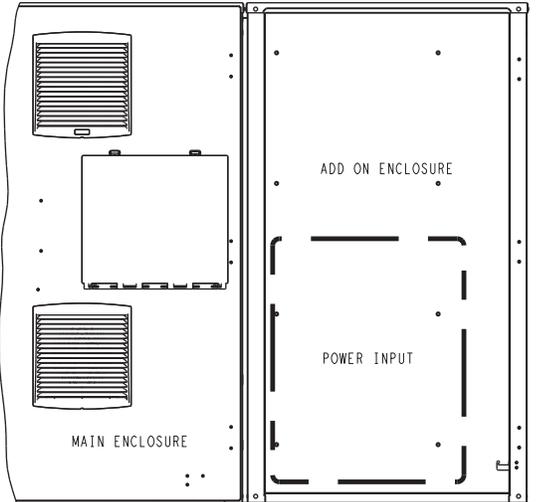
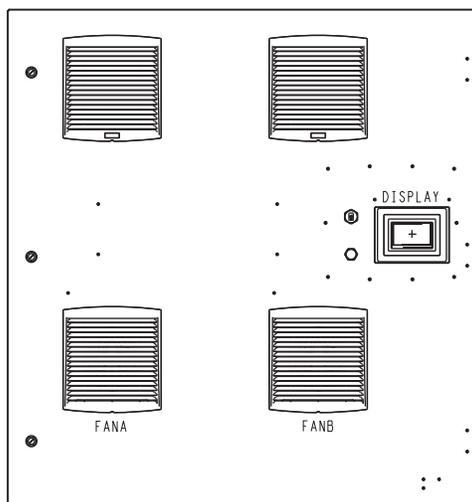


Fig. 1 — 30RC065-152 Small Main Control Box

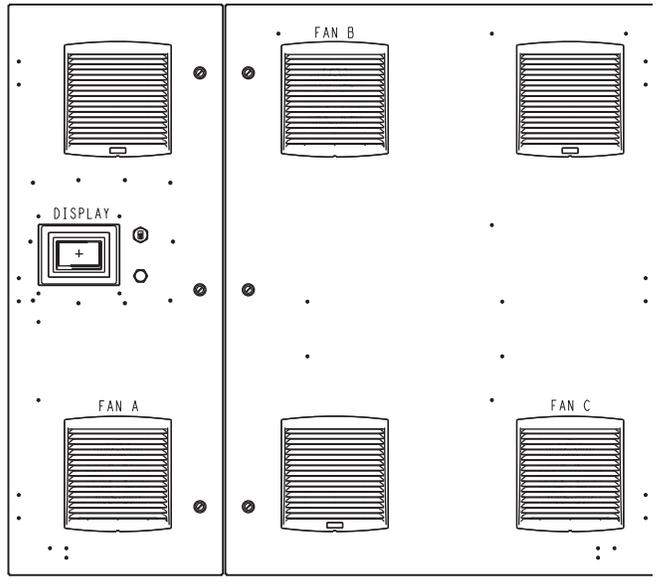
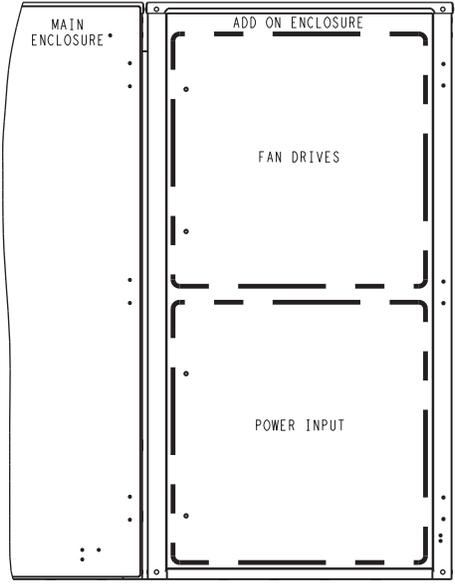
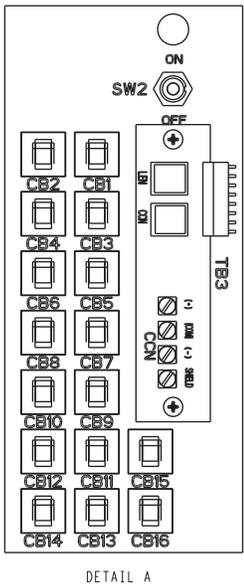
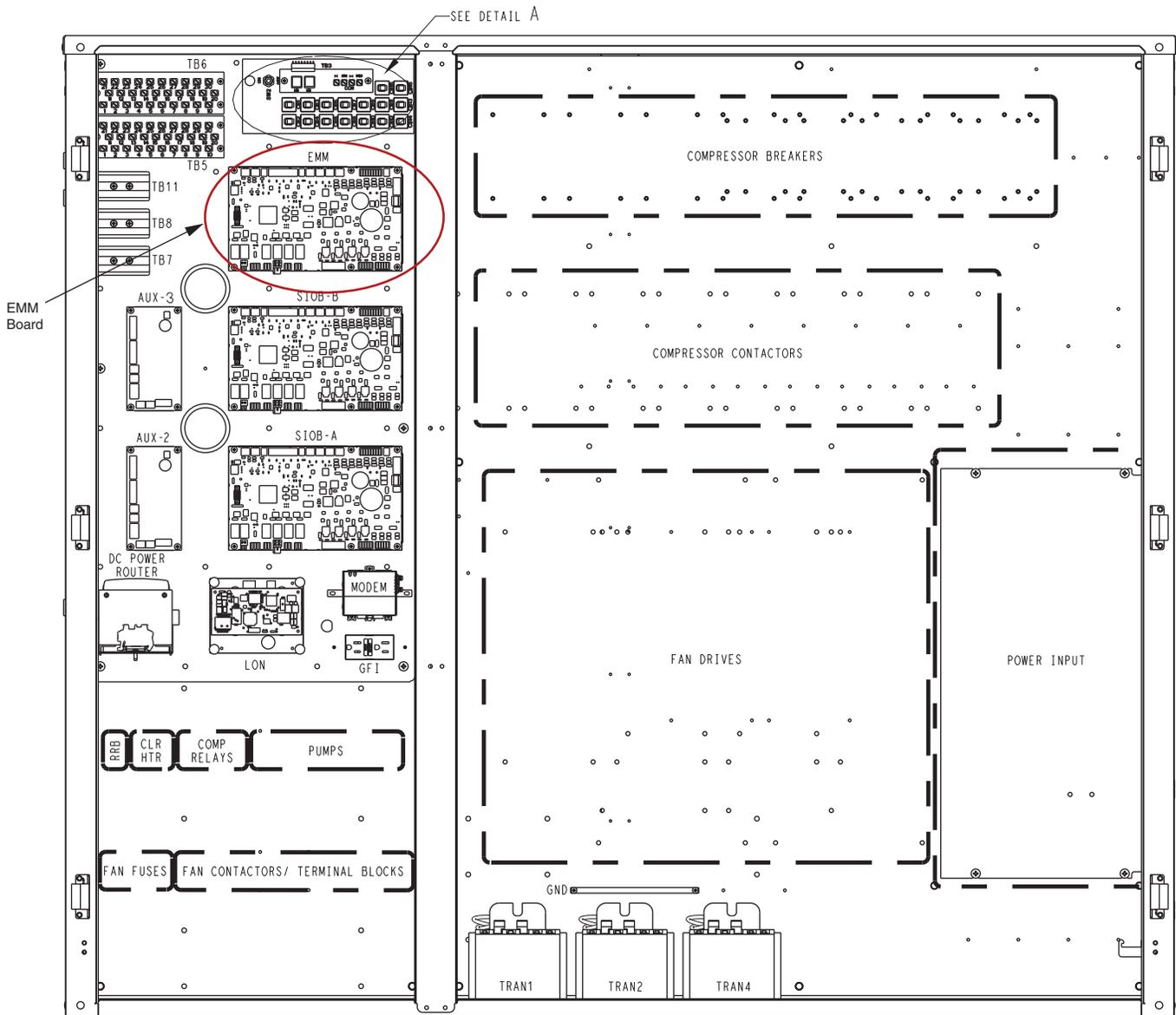


Fig. 2 — 30RC065-252 Large Main Control Box

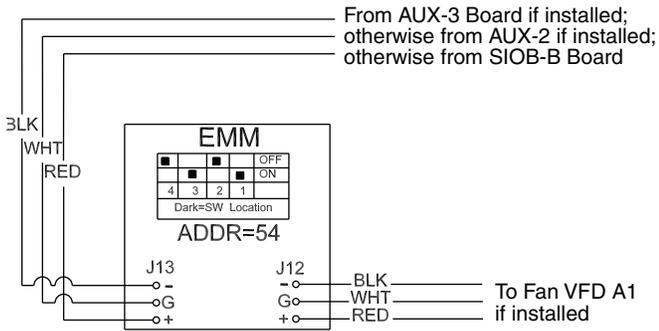


Fig. 3 — 30RC Communication Wiring

Configuration (All Sizes)

The controls must be configured to recognize the EMM board. The Carrier Controller display may be used to do this. See the Energy Management Module (EMM) section in the *Controls, Start-Up, Operation, Service and Troubleshooting* guide for configuration information. The Carrier Controller must be set up to communicate with the EMM module (**Main Menu** → **Configuration Menu** → **Factory Configuration** → **Energy Management Module = Yes**).

Temperature Reset

⚠ 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. Carrier Controller 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. 4. See the *Controls, Start-Up, Operation, Service and Troubleshooting* guide for configuration information.

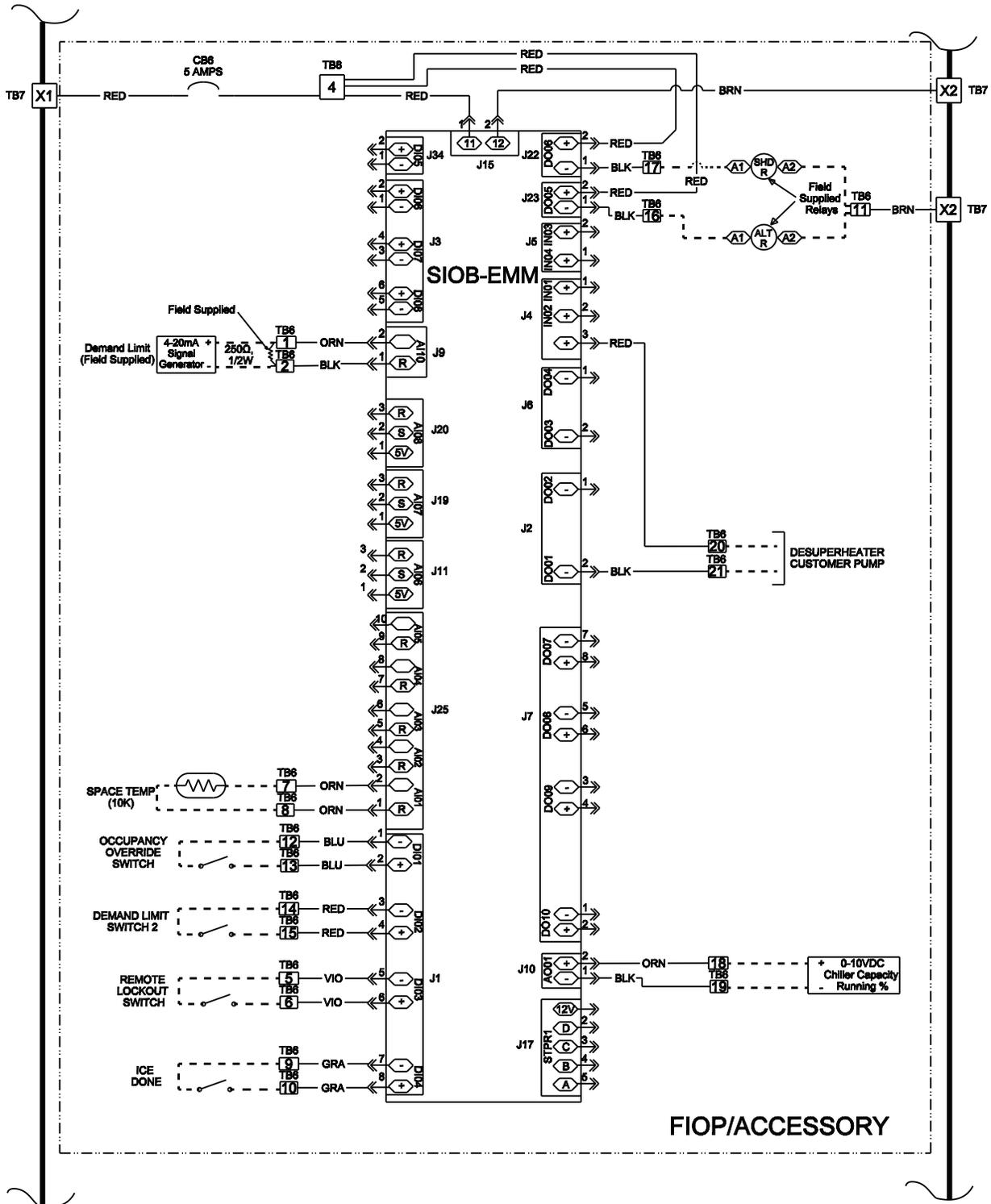


Fig. 4 — 30RC EMM Board Wiring

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). See Fig. 4. 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. The Carrier Controller 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. 4. 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. 4. 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 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. Three discrete outputs, Desuperheater Pump Command, alert relay, and shutdown relay, indicate unit operation.

EMM-J22 and J23 Connection

To utilize this connection, field-supplied wiring should be connected to TB6-11, 17 for shutdown relay (SHDR) and TB6-11, 16 for alert relay (ALTR). See Fig. 5.

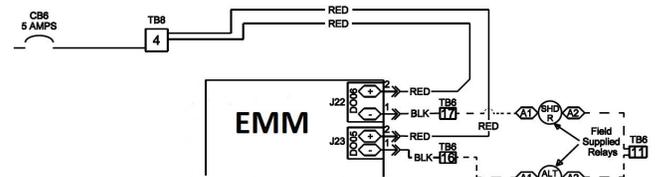


Fig. 5 — 30RC Shutdown and Alert Relay Wiring

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-J22 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-J22 and J23 Connection section.

Desuperheater Pump Command

This feature provides outputs to command a customer-supplied desuperheater pump ON or OFF. The maximum load for this relay is 5 VA sealed, 10 VA inrush at 24 vac. Connections are made to TB6-20 and 21. See Fig. 6.

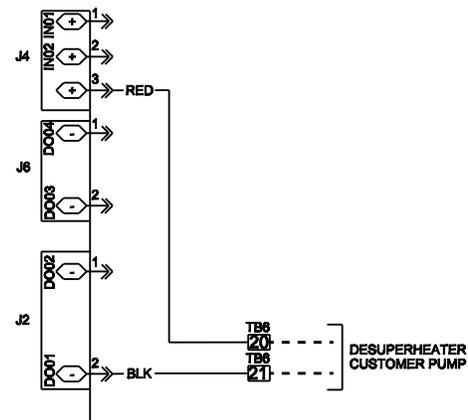


Fig. 6 — 30RC Desuperheater Pump Command

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. 7 for wiring. Field wiring connections are made to terminal TB6-18, 19.

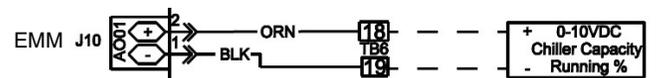


Fig. 7 — 0 to 10 vdc % Total Capacity Wiring

