AquaForce®
30XV140-500
Variable Speed Air-Cooled Liquid Chillers
with Greenspeed® Intelligence
and Touch Pilot™ Controls

Controls, Start-Up, Operation, Service and Troubleshooting

CONTENTS

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CONTENTS (cont)

SAFETY CONSIDERATIONS

Installing, starting up, and servicing this equipment can be hazardous due to system pressures, electrical components, and equipment location (roof, elevated structures, etc.). Only trained, qualified installers and service technicians should install, start up, and service this equipment. When working on this equipment, observe precautions in the literature, on tags, stickers, and 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, rigging, and setting this equipment, and in handling all electrical components.

⚠ WARNING

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

⚠ WARNING

Electrical shock can cause personal injury and death. After unit power is disconnected, wait at least 20 minutes (if compressor VFDs [variable frequency drives] are mounted external to control panel) or 40 minutes (if compressor VFDs are mounted internal to control panel) for the VFD capacitors to discharge before opening drive.

⚠ WARNING

DO NOT VENT refrigerant relief valves within a building. Outlet from relief valves must be vented in accordance with the latest edition of ANSI/ASHRAE (American National Standards Institute/American Society of Heating, Refrigerating and Air-Conditioning Engineers) 15 (Safety Code for Mechanical Refrigeration). The accumulation of refrigerant in an enclosed space can displace oxygen and cause asphyxiation. Provide adequate ventilation in enclosed or low overhead areas. Inhalation of high concentrations of vapor is harmful and may cause heart irregularities, unconsciousness or death. Misuse can be fatal. Vapor is heavier than air and reduces the amount of oxygen available for breathing. Product causes eye and skin irritation. Decomposition products are hazardous.

⚠ WARNING

DO NOT USE TORCH to remove any component. System contains oil and refrigerant under pressure.

To remove a component, wear protective gloves and goggles and proceed as follows:

a. Shut off electrical power to unit.
b. Recover refrigerant to relieve all pressure from system using both high-pressure and low pressure ports.
c. Traces of vapor should be displaced with nitrogen and the work area should be well ventilated. Refrigerant in contact with an open flame produces toxic gases.
d. Cut component connection tubing with tubing cutter and remove component from unit. Use a pan to catch any oil that may come out of the lines and as a gage for how much oil to add to the system.
e. Carefully unsweat remaining tubing stubs when necessary. Oil can ignite when exposed to torch flame.

Failure to follow these procedures may result in personal injury or death.

⚠ CAUTION

Standard Tier units (units with S in the 10th position of the model number) without VFDs (units with "-", "1", "3", or "5" in the 13th position of the model number) must have the condenser fan(s) rotation verified to ensure proper phasing. Correct rotation is counter-clockwise (reference arrow on fan hub). Swap any two incoming power leads to correct condenser fan rotation before starting chiller. Operating the unit without testing the condenser fan(s) for proper phasing could result in equipment damage.

⚠ CAUTION

DO NOT re-use compressor oil or any oil that has been exposed to the atmosphere. Dispose of oil per local codes and regulations. DO NOT leave refrigerant system open to air any longer than the actual time required to service the equipment. Seal circuits being serviced and charge with dry nitrogen to prevent oil contamination when timely repairs cannot be completed. Failure to follow these procedures may result in damage to equipment.

⚠ CAUTION

This unit uses a microprocessor control system. Do not short or jumper between terminations on circuit boards or modules; control or board failure may result.

Be aware of electrostatic discharge (static electricity) when handling or making contact with circuit boards or module connections. Always touch a chassis (grounded) part to dissipate body electrostatic charge before working inside control center.

Use extreme care when handling tools near boards and when connecting or disconnecting terminal plugs. Circuit boards can easily be damaged. Always hold boards by the edges and avoid touching components and connections.

This equipment uses, and can radiate, radio frequency energy. If not installed and used in accordance with the instruction manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to International Standard in North America EN 61000-2/3 which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference.

Always store and transport replacement or defective boards in anti-static shipping bag.

⚠ CAUTION

To prevent potential damage to heat exchanger tubes, always run fluid through heat exchanger when adding or removing refrigerant charge. Use appropriate antifreeze solutions in evaporator fluid loop to prevent the freezing of heat exchanger or interconnecting piping when the equipment is exposed to temperatures below 32 F (0° C). Proof of flow switch is factory installed on all models. Do NOT remove power from this chiller during winter shut down periods without taking precaution to remove all water from heat exchanger. Failure to properly protect the system from freezing may constitute abuse and may void warranty.

⚠ CAUTION

If the compressor VFD enclosure is removed for service, it must be reinstalled to protect the drive from water intrusion. Failure to reinstall the compressor VFD enclosure may constitute abuse and may void warranty.

GENERAL

This publication contains Controls, Operation, Start-Up, Service and Troubleshooting information for the 30XV140-500 air-cooled liquid chillers with Greenspeed® intelligence and electronic controls. See Table 1. The 30XV chillers are equipped with Touch Pilot™ controls, electronic expansion valves, and variable speed fans and compressors. The AquaForce® 30XV chillers with Greenspeed intelligence come equipped with a 7-in. Touch Pilot display.

Table 1 — Unit Sizes

UNIT	NOMINAL CAPACITY (TONS)
30XV140	140
30XV160	160
30XV180	180
30XV200	200
30XV225	225
30XV250	250
30XV275	275
30XV300	300
30XV325	325
30XV350	350
30XV400	400
30XV450	450
30XV500	500

Conventions Used in This Manual — The following conventions for discussing configuration points for the Touch Pilot display will be used in this manual.

The menu items are shown in this document as they appear on the Touch Pilot display. A path name for each item will show the user how to navigate through the Touch Pilot display to reach the desired configuration. The arrow symbol (→) in the path name represents touching the menu item on the screen of the Touch Pilot display. See Appendix A for a complete list of Touch Pilot menu items and descriptions.

The CCN and BACnet* point names are shown in **bold**. See Appendix B for a list of CCN points, and Appendix D for a list of BACnet points.

Abbreviations Used in This Manual — The following abbreviations are used in this manual:

ABV — Actuated Ball Valve
AUX — Auxiliary (Board)
BACnet — Building Automation and Controls Network
CCN — Carrier Comfort Network®
CWFS — Chilled Water Flow Switch
DGT — Discharge Gas Temperature
DPT — Discharge Pressure
EMM — Energy Management Module
EWT — Entering Water Temperature
HMI — Human Machine Interface
LEN — Local Equipment Network
LPT — Liquid Pressure Transducer
LWT — Leaving Water Temperature
OAT — Outdoor Air Temperature
SCT — Saturated Condensing Temperature
SDT — Saturated Discharge Temperature
SLT — Saturated Liquid Temperature
SIOB — Standard Input/output Board
SM — System Manager
SPT — Suction Pressure Transducer
SST — Saturated Suction Temperature

*BACnet is a registered trademark of ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers).

CONTROLS

The 30XV air-cooled liquid chillers contain the Touch Pilot™ electronic control system that controls and monitors all operations of the chiller. The control system is composed of several components as listed in the following sections. All machines have a Touch Pilot module, Standard Input/Output (SIOB) boards, Emergency On/Off switch, and an Enable-Off-Remote Contact switch. Table 2 lists power schematics by unit size.

Touch Pilot Display — The Touch Pilot module is the core of the control system. It contains the major portion of operating software and controls the operation of the machine. See Web and Network Interface section on page 11.

The Touch Pilot module continuously monitors input/output channel information received from the SIOB and AUX boards. The Touch Pilot module receives inputs from status and feedback switches, pressure transducers and thermistors. The Touch Pilot module, through the communications bus, also controls outputs on the SIOB and AUX boards. All inputs and outputs that control the chiller are located on other boards. Information is transmitted between modules via a 3-wire communication bus or LEN (Local Equipment Network).

The CCN (Carrier Comfort Network®) bus is also supported.

Connections to both LEN and CCN buses are made at terminal board TB3 located within the control box enclosure to the left of the Touch Pilot display.

Touch Pilot Display User Interface — The Touch Pilot display is the standard user interface on all 30XV chillers with Greenspeed® intelligence. The display includes a large 7-in. LCD (liquid crystal display) touch screen for display and user configuration. A stylus is recommended for use on the touch screen. The stylus is included with the unit.

WELCOME SCREEN — The Welcome screen is the first screen shown after Touch Pilot starts. It displays the application name as well as the current software version number. See Fig. 1.

NOTE: If a communication failure occurs, the Touch Pilot Settings button is displayed (see the "Touch Pilot Display Port Connections" table on page 11 and the "Touch Pilot Display Interface and Connectors" figure on page 11).

Fig. 1 — Welcome Screen

To exit the Welcome screen, press the Home button .

Table 2 — Control and Power Drawings

UNIT	DESCRIPTION	LOCATION
30XV140	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 77, page 144
	Power Wiring Schematic (Mid)	Fig. 80, page 147
	Power Wiring Schematic (High)	Fig. 81, page 148 Fig. 82, page 149
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156
30XV160	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 77, page 144
	Power Wiring Schematic (Mid)	Fig. 80, page 147 Fig. 82, page 149
	Power Wiring Schematic (High)	Fig. 81, page 148 Fig. 82, page 149
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156
30XV180	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 77, page 144
	Power Wiring Schematic (Mid)	Fig. 80, page 147 Fig. 82, page 149
	Power Wiring Schematic (High)	Fig. 81, page 148 Fig. 82, page 149
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156
30XV200	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 77, page 144
	Power Wiring Schematic (Mid)	Fig. 80, page 147 Fig. 82, page 149
	Power Wiring Schematic (High)	Fig. 81, page 148 Fig. 82, page 149
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156
30XV225	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 77, page 144
	Power Wiring Schematic (Mid)	Fig. 80, page 147
	Power Wiring Schematic (High)	Fig. 83, page 150 Fig. 84, page 151
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156
30XV250	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 77, page 144
	Power Wiring Schematic (Mid)	Fig. 80, page 147
	Power Wiring Schematic (High)	Fig. 83, page 150 Fig. 84, page 151
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156
30XV275	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 77, page 144
	Power Wiring Schematic (Mid)	Fig. 80, page 147
	Power Wiring Schematic (High)	Fig. 83, page 150 Fig. 84, page 151
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156
30XV300	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 78, page 145
	Power Wiring Schematic (Mid)	Fig. 83, page 150 Fig. 84, page 151
	Power Wiring Schematic (High)	Fig. 83, page 150 Fig. 84, page 151
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156
30XV325	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 78, page 145
	Power Wiring Schematic (Mid)	Fig. 83, page 150 Fig. 84, page 151
	Power Wiring Schematic (High)	Fig. 83, page 150 Fig. 84, page 151
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156

Table 2 — Control and Power Drawings (cont)

UNIT	DESCRIPTION	LOCATION
30XV350	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 79, page 146
	Power Wiring Schematic (Mid)	Fig. 85, page 152
	Power Wiring Schematic (High)	Fig. 85, page 152
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156
30XV400	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 79, page 146
	Power Wiring Schematic (Mid)	Fig. 85, page 152
	Power Wiring Schematic (High)	Fig. 85, page 152
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156
30XV450	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 79, page 146
	Power Wiring Schematic (Mid)	Fig. 85, page 152
	Power Wiring Schematic (High)	Fig. 85, page 152
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156
30XV500	Typical Field Connections Wiring Schematic	Fig. 76, page 142
	Power Wiring Schematic (Std)	Fig. 79, page 146
	Power Wiring Schematic (Mid)	Fig. 85, page 152
	Communication Wiring	Fig. 86, page 153
	Control Wiring Schematics	Fig. 87-89, pages 154-156

HOME SCREEN — The Home screen provides an overview of system controls, allowing the user to monitor the vapor-refrigeration cycle. The screen indicates the current status of the unit, giving information on the unit capacity, refrigerant conditions, the status of the evaporator pumps, the active set point, and other information. See Fig. 2.

The following buttons appear on the top panel of the home screen. See Table 3 for more general screen buttons.

Main Menu — Press the Main Menu button to access all unit functions. See Main Menu Screen on page 8 for details.

Log In — Press to enter passwords and select language or change the system of measurement. See page 8 for login details.

Start/Stop — Press to access the machine control method menu. See page 20 for details on available operating modes.

Alarm — The alarm icon turns solid or blinks red when a fault is detected. See page 123 for details on system alarms and alerts.

To display the SDT and SST for each circuit select the i. See Fig. 3.

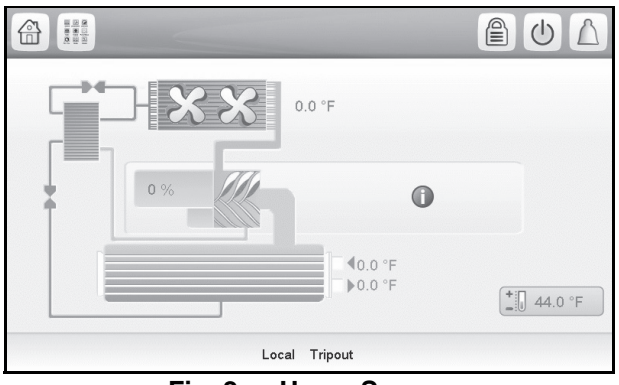
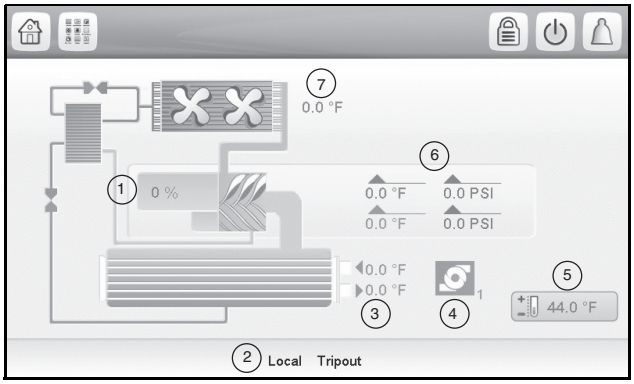


Fig. 2 — Home Screen



LEGEND

1 — Unit capacity percentage
2 — Unit status
3 — Evaporator inlet and outlet water temperature
4 — Pump status (if configured)
5 — Active setpoint
6 — SDT/SST (Ckt. A on LEFT, Ckt. B on RIGHT)
7 — Outdoor air temperature

Fig. 3 — Home Screen with SDT/SST

STATUS MESSAGE BOX — Messages may be displayed in the status bar at the bottom of the screen relevant to the current user action. See Table 4.

Table 3 — Screen Buttons

BUTTON	FUNCTION
TOP LEFT PANEL — GENERAL NAVIGATION	
	Home button: Goes back to the home screen. Button is disabled at power up, until the initialization is complete.
	Main Menu button: Goes to the Main Menu screen from the Home screen. Allows access to unit menus and parameters. See page 8.
	Back button: Goes to previous screen.
	HMI Settings: Goes to the Touch Pilot settings. Button appears in the Welcome screen only when a communication failure occurs, to provide the user a chance to fix the problem.
TOP RIGHT PANEL — SPECIAL NAVIGATION	
 and	Login button: Goes to the User Login screen, where the user can select a display language and system of measurement, and log in. See page 8. Icon shows a closed lock when the user is not logged in, and an opened lock when the user is logged in.
	Start / Stop button: Goes to the chiller start / stop screen. The icon can be gray, green, or blinking between gray and green. See the Machine Control Methods section on page 20.
	Alarm button: Goes to the alarm menu screen.The icon can be gray, red, or blinking between gray and red. See the Alarms and Alerts section on page 123.
BOTTOM LEFT PANEL — ACTIONS SPECIFIC TO CURRENT SCREEN OPERATION	
	User Login screen: Login / Logout. Login button (green check mark) validates the currently entered user level (Basic, User, Service Or Factory), and jumps back to the previous screen. Logout button (red X) resets the user level and jumps to the Welcome screen.
	Save/Cancel: Save button (disc icon) confirms changes. Cancel (red X) discards changes.
	Force Screen: Set Force/Remove Force. Set Force button sends a CCN Force command to the point. Remove Force (AUTO) button sends a CCN Auto command to the point.
BOTTOM RIGHT PANEL — SCROLLING INSIDE CURRENT SCREEN	
	Up and Down arrows: Scroll within screen content. A page indicator shows what page is being viewed, and the total number of pages.

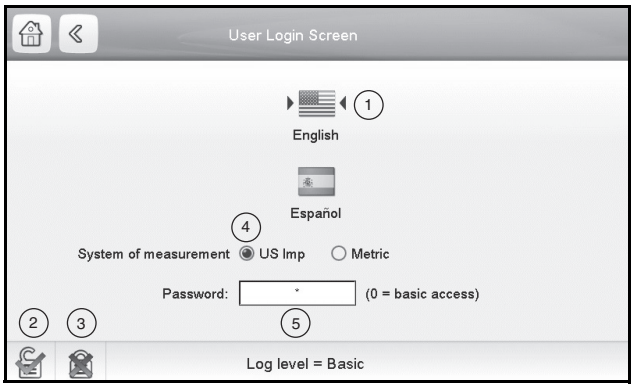
Table 4 — Status Messages

MESSAGE	STATUS
COMMUNICATION FAILURE!	Equipment controller did not respond while reading the table content.
ACCESS DENIED!	Equipment controller denies access to one of the tables. See Touch Pilot Login and Display Setup, page 8.
LIMIT EXCEEDED!	The value entered exceeds the parameter limit.
COMMAND ACCEPTED	Force or Auto command was accepted by the Equipment Controller.
HIGHER FORCE IN EFFECT!	Equipment controller rejects Force or Auto command.
Save changes?	Modifications have been made. The exit must be confirmed by pressing Save or Cancel.
Invalid password!	Entered password is not valid
Log level = basic	Entered password is 0 = basic, login is allowed
Log level = User	Entered password corresponds to the User password, login is allowed
Log level = Service	Entered password corresponds to the Service password, login is allowed
Log level = Factory	Entered password corresponds to the Factory password, login is allowed
PLEASE LOGIN	Login required before accessing start/stop function
Select Machine Mode	Default prompt when entering the Start/Stop screen.
Machine Status	Application status message (see somewhere else)
Loading Data …	Trend Manager is not ready yet.
TRENDING FIRMWARE MODULE ERROR!	Trend Manager detected a problem during its initialization sequence (file access or file content problem) and cannot display Trend/Log data.
BACNET FIRMWARE MODULE NOT FOUND!	BACnet module is not responding (its web server is not functional, or the whole module failed to start).
Too Many users connected! Please try again later …	Maximum of 2 concurrent web server connections allowed.
Application Firmware must be downloaded!	The software detected a conflict between the version of the web server web pages, and the HMI application firmware.

TOUCH PILOT™ LOGIN AND DISPLAY SETUP — Certain control functions and navigation menus are password protected. There are multiple levels of user access on the Touch Pilot display, each with independent password protection:

- Basic — At initial start-up and after a timeout period, the access type defaults to All. In this mode the user can view system operating conditions, and select the set point only.
- User — The User access level authorizes access to modify the Setpoint Table and some Configuration Menu parameters, as well as access to all menus accessible with the Basic mode. The default password for User level access is 11. To change the User access password, go to Main Menu → Configuration Menu → User Configuration, then enter the new password and press the Save button.
- Service — The Service access level authorizes access to all menus and parameters needed for operation and service of the machine, including Quick Test and Maintenance Menus as well as additional Configuration Menus. The default password for Service level access is 88. To change the Service access password, go to Main Menu → Configuration Menu → Service Parameters, then scroll to the password entry area. Enter the new password and press the Save button.
- Factory — The Factory access level authorizes access to all menus and parameters for the unit, including factory settings. The default password for Factory level access is 113. To change the Factory access password, go to Main Menu → Configuration Menu → Factory Menu, then scroll to the password entry area. Enter the new password and press the Save button.

To log in to the Touch Pilot display, press the Login button on the Main Menu or the Home screen and input the required password on the User Login screen. Then press the Login button on the User Login screen. See Fig. 4.



LEGEND

1 — Arrows indicate selected language
2 — Login button (confirm changes)
3 — Logout button (cancel changes)
4 — System of measurement selection
5 — Password dialog box

Fig. 4 — User Login Screen

Changing the Touch Pilot Display Language — The User Login Screen (Fig. 4) offers 2 language selections for the Touch Pilot Display: English or Spanish. The factory default language is English. To change the display language, simply select the desired language icon on the User Login screen. Then press the Login button on the User Login screen. See Fig. 4.

Changing the Units of Measurement — The User Login Screen (Fig. 4) offers 2 choices for units of measurement: US Imperial or Metric. The factory default is US Imperial. To change the measurement system, select the appropriate system on the User Login screen. Then press the Login button on the User Login screen. See Fig. 4.

MAIN MENU SCREEN — The Main Menu provides access to the main control parameters, including general parameters, temperatures and pressures, inputs and outputs status, and others. Press the Main Menu button on the Home screen to access the Main Menu.

Figure 5 shows the first page of the Main Menu. To navigate through the pages, press the arrows at the lower right corner of the screen.

To view or modify system parameters, press the appropriate icon on the Main Menu. For example, to access the General Parameters table, press the General Parameters button .

Figure 6 shows the first page of the General Parameters table. Use the arrows at the bottom right corner to navigate the General Parameters table.

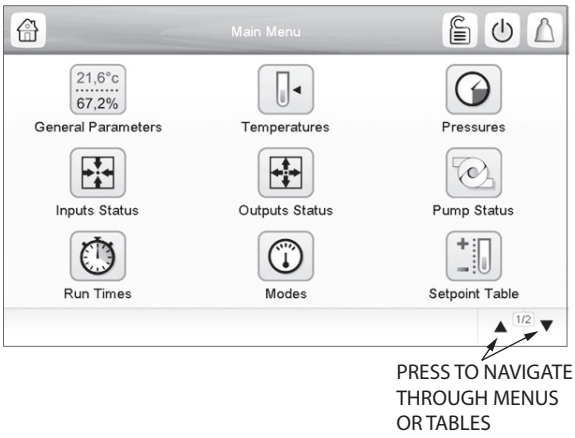


Fig. 5 — Main Menu

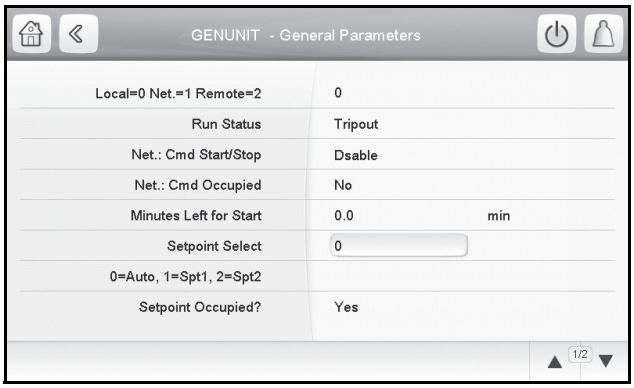


Fig. 6 — General Parameters, Page 1

Points that can be changed with the current level of user access are outlined by a box. For example, to modify the set point parameter, select the current set point as shown in Fig. 6 and enter the desired parameter.

The data entry screen will be displayed (Fig. 7). Use the graphic "keyboard" to modify the parameter, then press OK to save or EXIT to cancel the modifications.

Fig. 7 — Data Entry Screen

Since Setpoint Select (Fig. 6) is a forcible point (the operator is able to manually override the auto function), the Force Variable screen will be displayed. See Fig. 8. The Force Variable screen provides the option to override the current operation of the unit.

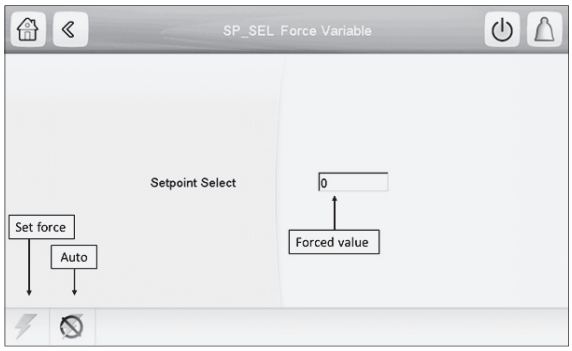
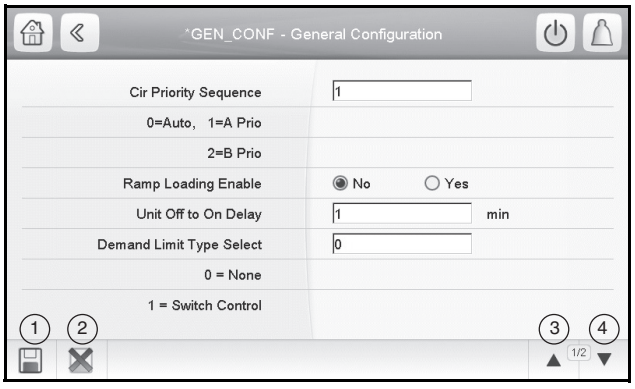


Fig. 8 — Force Variable Screen

Enter the forced value, then press to set the forced point or to remove it (return to Auto).

GENERAL CONFIGURATION TABLE — This table contains configuration settings for the unit. Select Main Menu → Configuration Menu → General Configuration to access the table (Fig. 9).



LEGEND

1 — Save
2 — Cancel
3 — Previous page
4 — Next page

Fig. 9 — General Configuration, Page 1

Press the field corresponding to the parameter to be modified and make the necessary changes. When all necessary changes have been made, press the Save button to confirm or the Cancel button to cancel changes. For a complete list of general parameters, see Appendix A.

TRENDINGS SCREEN — The Trendings screen allows for easy monitoring of parameters selected by the user. To access the Trendings screen, select Trendings on the Main Menu. See Fig. 10.

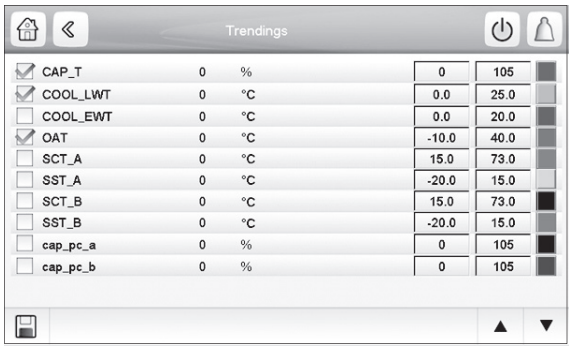


Fig. 10 — Trendings Screen, Page 1

Select the parameters to be displayed by selecting the box to the left of the parameter name, then press save. Press the up/down page buttons ▲ 1/2 ▼ to see the graph showing the performance of the unit during a selected period of time. See Fig. 11.

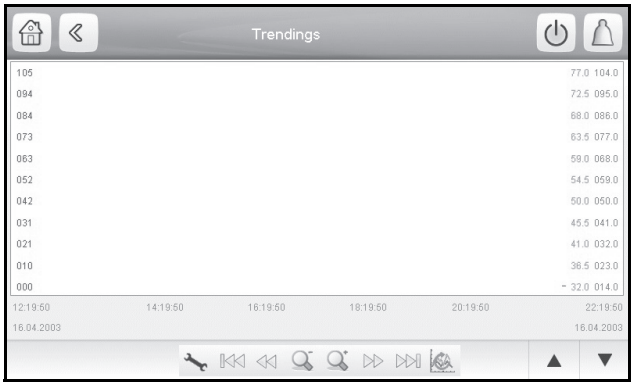


Fig. 11 — Trendings Screen, Page 2

Use the following buttons to adjust the Trendings display:

Press to adjust time and date settings for the display. See Fig. 11. Select the time/date boxes and use graphic keyboard to modify time/date; then select the to save your entries.

Navigate across the time line.

Go to beginning or end of selected period.

Zoom in to magnify the view.

Zoom out to expand the viewed area.

Refresh (reload) data.

MENU ARCHITECTURE — See Fig. 12-14 for Touch Pilot™ menu structure. The options displayed depend on the user's access level as shown in the figures. The user can navigate through the Touch Pilot display screens by selecting the buttons that appear on the screen. When a button is selected, either a submenu or a list of parameters and values will be shown.

If the list of point names and values are shown, the top line of the display is the table name. Selecting an item will cause a Point Data dialog box to appear. For a complete list of tables and points with display names and CCN point names, see Appendix A.

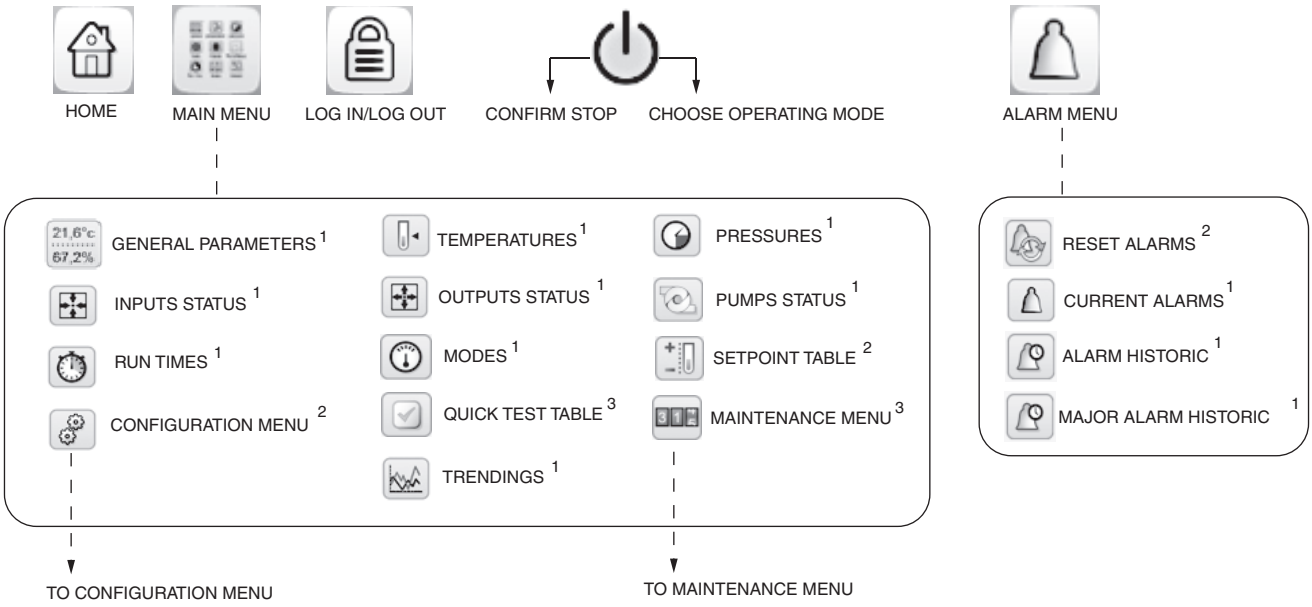


Fig. 12 — Main Menu and Alarm Menu Structure

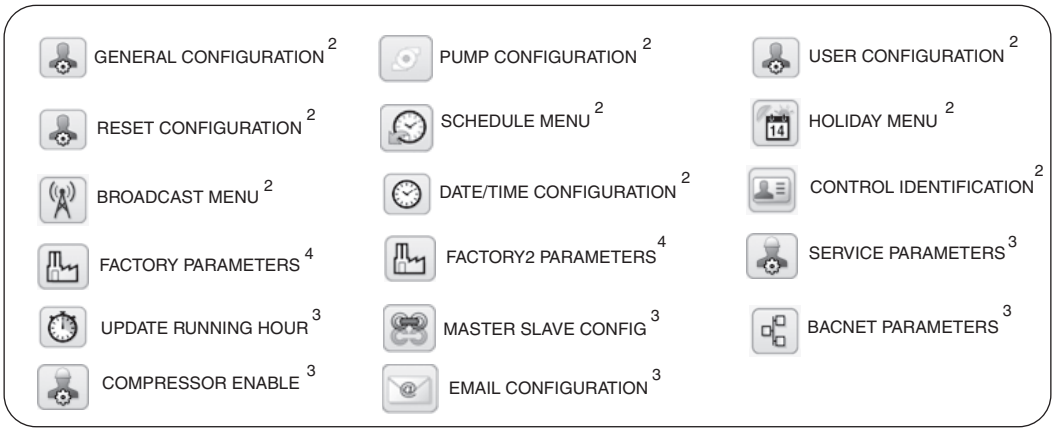


Fig. 13 — Configuration Menu Structure

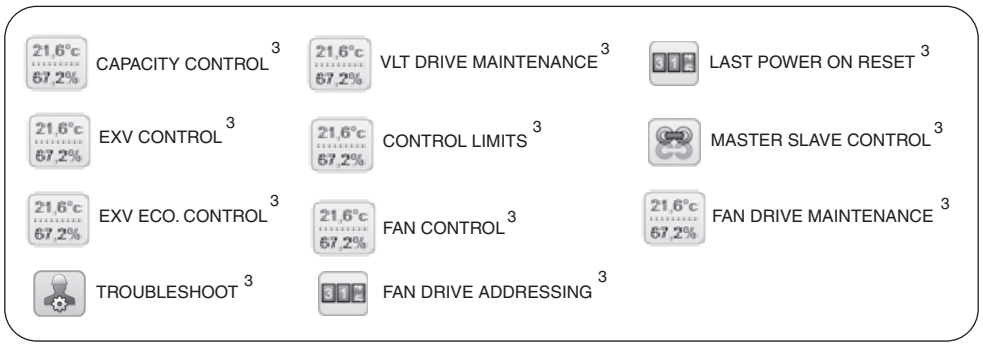


Fig. 14 — Maintenance Menu Structure

LEGEND — FIG. 12-14

1 — All (no password required)
2 — User access required (default password = 11)
3 — Service access required (default password = 88)
4 — Factory access required (default password = 113)

NOTE: For more information about password access, see the section Touch Pilot™ Login and Display Setup on page 8.

SETTING TIME AND DATE — The date and time for the controls can be set by opening the Main Menu → Configuration Menu → Date/Time Configuration. The date, time, day of the week, and daylight saving time option can be set on this screen.

WEB AND NETWORK INTERFACE — The Touch Pilot control can be configured to allow access via a standard, java-enabled web browser or over a network. See Appendix I for detailed information on setting up and accessing the Touch Pilot via the web or network interface. See Table 5 for port connections. See Fig. 15 for interface and connectors.

Table 5 — Touch Pilot Display Port Connections

CONNECTOR	FUNCTION
X5 (Power)	24 VAC +
	24 VAC –
X4 (LEN)	RS485 Port (D+)
	RS485 Port (GND)
	RS485 Port (D–)
X3 (CCN)	RS485 Port (D+)
	RS485 Port (GND)
	RS485 Port (D–)
X2 (Ethernet)	—
X1 (USB)	—

Input/Output (SIOB) Boards — There are two SIOB (Standard Input/Output Boards) boards for each unit, SIOB-A (address 49) for Circuit A and SIOB-B (address 50) for circuit B. See Fig. 16. The board receives inputs from thermistors, transducers, demand limit switch, dual set point switch, remote-on-off switch, chilled water flow switch, oil level switch, pump interlock contact, compressor VFD enable contact, and evaporator heater current sensing switch, and provides output control to expansion valves, oil and VI solenoids, evaporator heater contactor, isolation valves, oil heater relays, customer supplied pump relays, compressor VFD enable relays, and customer-supplied alarm and running relays. Information is transmitted between the SIOB boards and the Touch Pilot module via a 3-wire communication bus or LEN (Local Equipment Network). Connections for the LEN bus are J12 and J13. Each SIOB board has a 4-position DIP switch bank used for addressing of the board. SIOB-A is at address 49 and SIOB-B is at address 50. See below for SIOB board DIP switch settings. See Tables 6 and 7 for a list of inputs and outputs for the two SIOB boards.

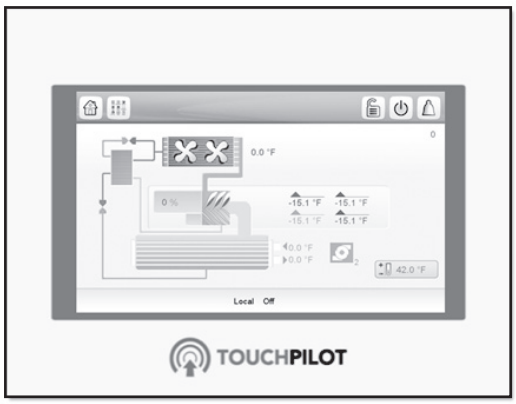
SIOB-A DIP Switch	1	2	3	4
Position:	OFF	OFF	OFF	OFF

SIOB-B DIP Switch	1	2	3	4
Position:	ON	OFF	OFF	OFF

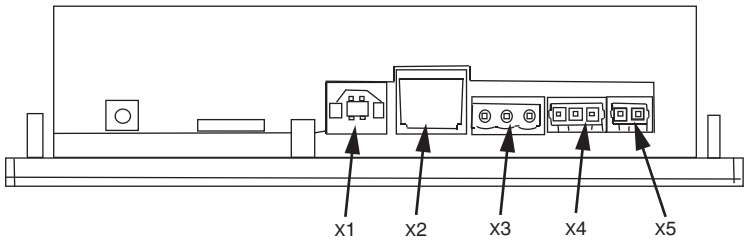
Auxiliary (AUX) Boards — Two AUX boards, AUX Board A (address 84) and AUX Board B (address 85), are installed in each unit. Each of the AUX boards has a set of jumpers, JP1 and JP2, which must be placed as shown in Fig. 17. The AUX boards respond to commands from the Touch Pilot™ module and send the Touch Pilot module the results of the channels they monitor via the Local Equipment Network (LEN). See below for AUX board A and B DIP switch settings. See Tables 8 and 9 for a list of inputs and outputs for the AUX boards.

AUX BOARD A DIP SWITCH	1	2	3	4	5	6	7	8
Address:	ON	ON	OFF	OFF	ON	OFF	ON	OFF

AUX BOARD B DIP SWITCH	1	2	3	4	5	6	7	8
Address:	OFF	OFF	ON	OFF	ON	OFF	ON	OFF



TOUCH PILOT DISPLAY INTERFACE



X1 - USB CONNECTOR
X2 - ETHERNET CONNECTOR
X3 - CCN CONNECTOR
X4 - LEN CONNECTOR
X5 - POWER SUPPLY CONNECTOR (24 VAC)

TOUCH PILOT BOTTOM VIEW

Fig. 15 — Touch Pilot Display Interface and Connectors

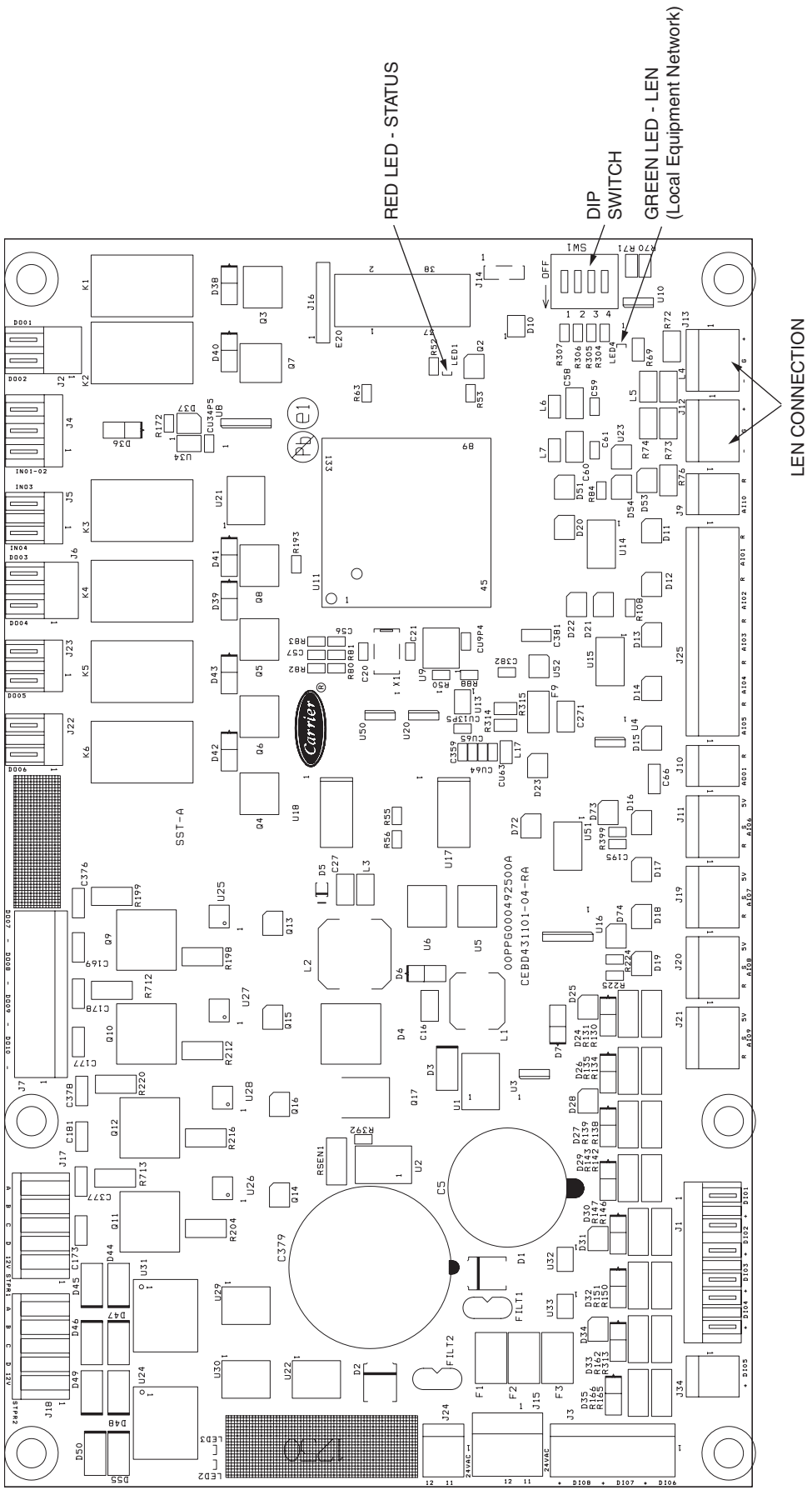


Fig. 16 — SIOB (Standard Input/Output Board)

Table 6 — SIOB-A Inputs and Outputs

ITEM	IN/OUT TYPE	BOARD CONNECTOR	CCN POINT	DESCRIPTION
DI-01	Dry contact	J1	ONOFF_ SW	Remote On-Off Switch (SW1)
DI-02	Dry contact		SETP_SW Dual	Setpoint Switch
DI-03	Dry contact		LIM_SW1	Demand Limit Switch 1 OnOff
DI-04	Dry contact		— Not Used —	
DI-05	Dry contact	J34	— Not Used —	
DI-06	Dry contact	J3	OIL_L_A	Oil Level Switch Circuit A
DI-07	Dry contact		FLOW_SW	Chilled Water Flow Switch (CWFS)
DI-08	Dry contact		HEATR_SW	Cooler Heater Current Sensing Rly Feedback
AI-01	Temp (5000 Ω)	J25	COOL_EWT	Cooler Entering Water Temperature
AI-02	Temp (5000 Ω)		COOL_LWT	Cooler Leaving Water Temperature
AI-03	Temp (5000 Ω)		OAT	Outdoor Air Temperature
AI-04	Temp (5000 Ω)		CP_TMP_A	Compressor A motor temperature
AI-05	Temp (5000 Ω)		ECO_T_A	Economizer Temperature Circuit A
AI-06	Pressure	J11	DP_A	Discharge Pressure Circuit A
AI-07	Pressure	J19	SP_A	Suction Pressure Circuit A
AI-08	Pressure	J20	ECO_P_A	Economizer Pressure Circuit A
AI-09	Pressure	J21	OP_A	Oil Pressure Circuit A
AI-10	4 to 20 mA	J9	— Not Used —	
DO-01	Relay output	J2	CPUMP_1	Customer Pump Relay #1
DO-02	Relay output		CPUMP_2	Customer Pump Relay #2
DO-03	Relay output	J6	OIL_HT_A	Oil Heater Contactor Circuit A
DO-04	Relay output		VFD_EN_A	VFD Enable Output Circuit A
DO-05	Relay contact	J23	ALARM	Alarm Relay
DO-06	Relay contact	J22	RUNNING	Running Relay
DO-07	Triac	J7	OIL_SL_A	Oil Solenoid Circuit A
DO-08	Triac		C_HEATER	Cooler Heater Contactor
DO-09	Triac		VI_A	VI Solenoid Control Compressor Circuit A
DO-10	Triac		ISO_POS_A	Isolation Valve Relay Circuit A
STPR1	Stepper motor	J17	EXV_A	EXV-A
STPR2	Stepper motor	J18	ECO_A	ECEXV-A
AO-01	0 to 10 VDC	J10	— Not Used —	

Table 7 — SIOB-B Inputs and Outputs

ITEM	IN/OUT TYPE	BOARD CONNECTOR	CCN POINT	DESCRIPTION
DI-01	Dry contact	J1	— Not Used —	
DI-02	Dry contact		— Not Used —	
DI-03	Dry contact		— Not Used —	
DI-04	Dry contact		— Not Used —	
DI-05	Dry contact	J34	— Not Used —	
DI-06	Dry contact	J3	OIL_L_B	Oil level Circuit B
DI-07	Dry contact		FLOW_SWB	Customer Supplied Pump Interlock Relay
DI-08	Dry contact		— Not Used —	
AI-01	Temp (5000 Ω)	J25	— Not Used —	
AI-02	Temp (5000 Ω)		— Not Used —	
AI-03	Temp (5000 Ω)		CHWSTEMP	Dual chiller temperature (accessory)
AI-04	Temp (5000 Ω)		CP_TMP_B	Compressor motor temperature Circuit B
AI-05	Temp (5000 Ω)		ECO_T_B	Economizer temperature Circuit B
AI-06	Pressure	J11	DP_B	Discharge pressure Circuit B
AI-07	Pressure	J19	SP_B	Suction pressure Circuit B
AI-08	Pressure	J20	ECO_P_B	Economizer pressure Circuit B
AI-09	Pressure	J21	OP_B	Oil pressure Circuit B
AI-10	4 to 20 mA	J9	— Not Used —	
DO-01	Relay output	J2	— Not Used —	
DO-02	Relay output		— Not Used —	
DO-03	Relay output	J6	OIL_HT_B	Oil heater contactor Circuit B
DO-04	Relay output		VFD_EN_B	VFD enable output Circuit B
DO-05	Relay contact	J23	— Not Used —	
DO-06	Relay contact	J22	— Not Used —	
DO-07	Triac	J7	OIL_SL_B	Oil solenoid Circuit B
DO-08	Triac		BOX_HTR	Control box heater
DO-09	Triac		VI_B	Vi solenoid control compressor Circuit B
DO-10	Triac		ISO_POS_B	Isolation valve relay Circuit B
STPR1	Stepper motor	J17	EXV_B	EXV-B
STPR2	Stepper motor	J18	ECO_B	ECEXV-B
AO-01	0 to 10 VDC	J10	— Not Used —	

LEGEND

AI — Analog Input
AO — Analog Output
DI — Discrete Input
DO — Discrete Output
STPR — Stepper Motor Output

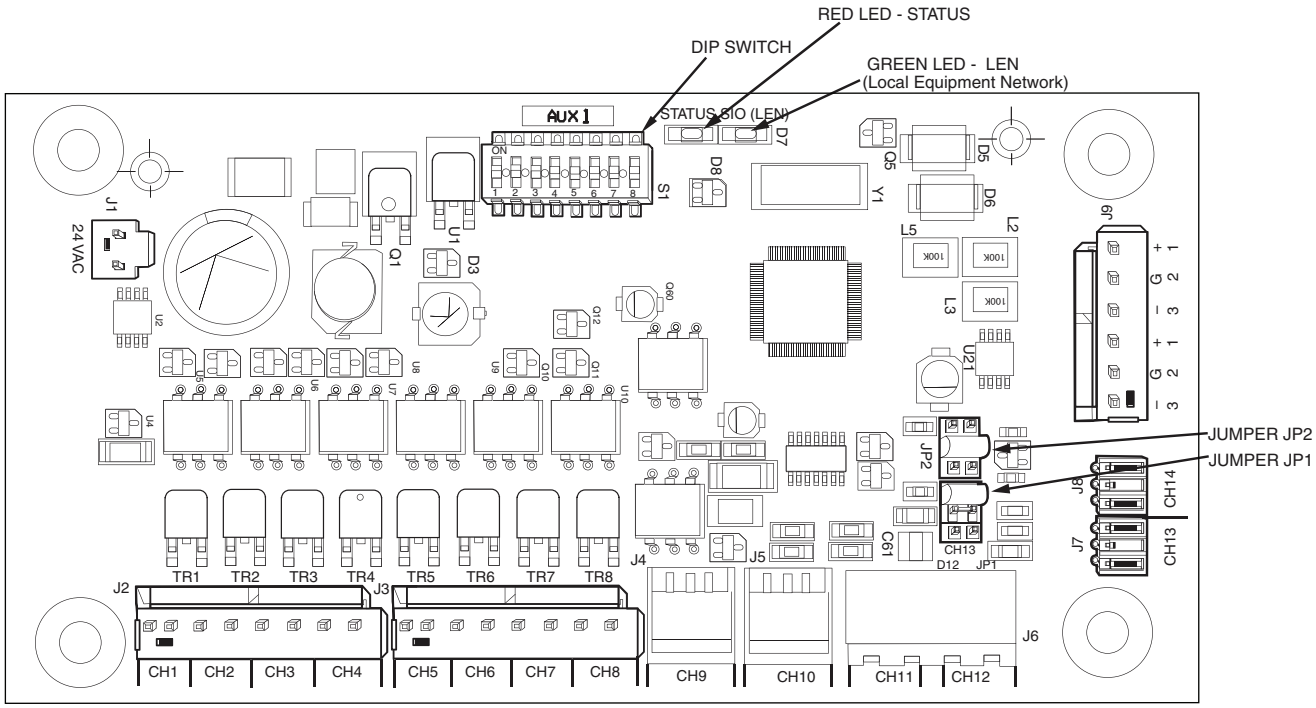


Fig. 17 — AUX Board

Table 8 — AUX Board A Inputs and Outputs

CHANNEL	IN/OUT TYPE	BOARD CONNECTOR	CCN POINT	DESCRIPTION (SEE NOTE)
CH 1	DO	J2	FC1_A	Fan A Stage 1
CH 2	DO		FC2_A	Fan A Stage 2
CH 3	DO		FC3_A	Fan A Stage 3
CH 4	DO		FC4_A	Fan A Stage 4
CH 5	DO	J3	FC5_A	Fan A Stage 5
CH 6	DO		FC6_A	Fan A Stage 6
CH 7	DO		FC7_A	Fan A Stage 7
CH 8	DO		FC8_A	Fan A Stage 8
CH 9	AO	J4	CAPT010A	% Capacity Circuit A (0-10 Vdc)
CH 10	AO	J5	—	Not Used
CH 11	AI	J6	DGT_A	Discharge Gas Temperature Circuit A
CH 12	AI		SUCT_A	Suction Gas Temperature Circuit A
CH 13	AI	J7	LIQ_T_A	Liquid Temperature Circuit A
CH 14	AI	J8	LIQ_P_A	Liquid Pressure Circuit A

Table 9 — AUX Board B Inputs and Outputs

CHANNEL	IN/OUT TYPE	BOARD CONNECTOR	CCN POINT	DESCRIPTION (SEE NOTE)
CH 1	DO	J2	FC1_B	Fan B Stage 1
CH 2	DO		FC2_B	Fan B Stage 2
CH 3	DO		FC3_B	Fan B Stage 3
CH 4	DO		FC4_B	Fan B Stage 4
CH 5	DO	J3	FC5_B	Fan B Stage 5
CH 6	DO		FC6_B	Fan B Stage 6
CH 7	DO		FC7_B	Fan B Stage 7
CH 8	DO		FC8_B	Fan B Stage 8
CH 9	AO	J4	CAPT010B	% Capacity Circuit B (0-10 Vdc)
CH 10	AO	J5	—	Not Used
CH 11	AI	J6	DGT_B	Discharge Gas Temperature Circuit B
CH 12	AI		SUCT_B	Suction Gas Temperature Circuit B
CH 13	AI	J7	LIQ_T_B	Liquid Temperature Circuit B
CH 14	AI	J8	LIQ_P_B	Liquid Pressure Circuit B

NOTE: Fan A and B stage outputs are only used on STANDARD TIER units, identified by the 10th position in the model number.

Enable-Off-Remote Contact Switch (SW1) — The position of the Enable/Off/Remote contact switch is ignored except when the "remote mode" control type is selected. Refer to the Machine Control Methods section on page 20 for more details. A selection for Machine Control Method must also be made along with the correct position of the Enable-Off-Remote Contact Switch. This switch is installed in all units. It is a 3-position switch used to control the chiller. When switched to the Enable position, the chiller will be under its own control. When switched to the Off position, the chiller will shut down. When switched to the Remote Contact position, a field-installed dry contact can be used to start the chiller. The contacts must be capable of handling a 24 VAC, 50 mA load. In the Enable and Remote Contact (dry contacts closed) positions, the chiller is allowed to operate and respond to the scheduling configuration and set point data.

Emergency On/Off Switch (SW2) — This switch is installed in all units. The Emergency On/Off switch should only be used when it is required to shut the chiller off immediately. Power to all modules is interrupted when this switch is off and all outputs from these modules will be turned off.

Energy Management Module (EMM) — The EMM is available as a factory-installed option or as a field-installed accessory. See Fig. 18. The EMM receives 4 to 20 mA inputs for the temperature reset, cooling set point and demand limit functions. The EMM also receives switch inputs for the field-installed second stage 2-step demand limit and ice done functions. The EMM communicates the status of all inputs with the Touch Pilot module, and the controls adjusts the control point, capacity limit, and other functions according to the inputs received. See Table 10 for EMM board inputs and outputs.

⚠ CAUTION

Care should be taken when interfacing with other manufacturer's control systems due to possible power supply differences, full wave bridge versus half wave rectification, which could lead to equipment damage. The two different power supplies cannot be mixed. Touch Pilot™ controls use half wave rectification. A signal isolation device should be utilized if a full wave bridge rectifier signal generating device is used.

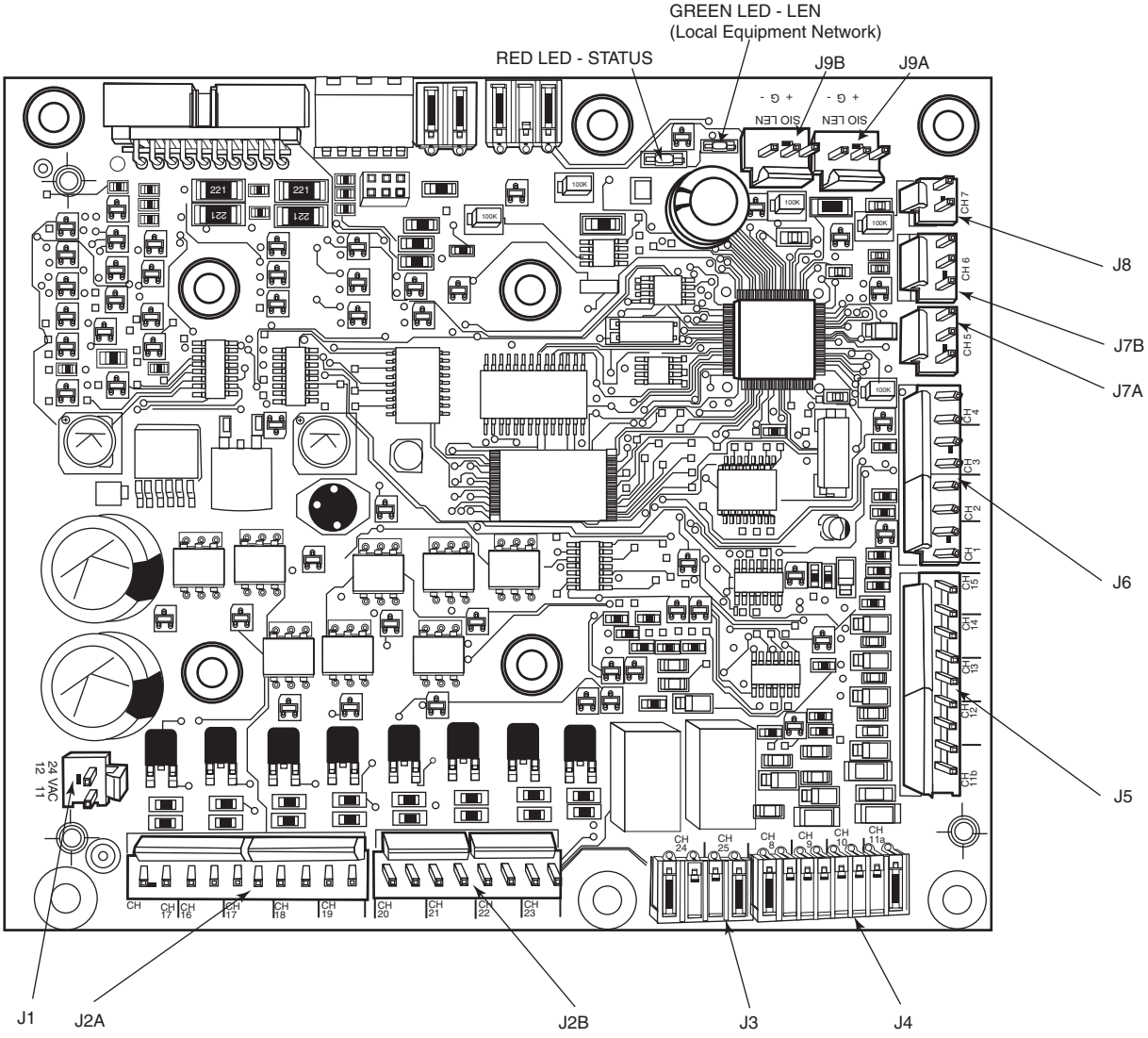


Fig. 18 — Energy Management Module

Table 10 — EMM Board Inputs and Outputs

CHANNEL	IN/OUT TYPE	BOARD CONNECTOR	CCN POINT	POINT DESCRIPTION	I/O POINT NAME	INPUT/OUTPUT TYPE
CH 01	AI	J6	—	—	AI-01	5/10K Thermistor
CH 02	AI		SPACETMP	Space temperature	AI-02	10K Thermistor
CH 03	AI		—	—	AI-03	5/10K Thermistor
CH 04	AI		—	—	AI-04	5/10K Thermistor
CH 05	AI	J7A	SP_RESET	Setpoint reset	AI-06	0-5V
CH 06	AI	J7B	LIM_ANAL	Capacity limit	AI-07	0-5V
CH 07	AO	J8	CAP_T	% Total capacity running	AO-01	0-10 Vdc
CH 08	DI	J4, CH8	OCC_OVSW	Occupancy override	DI-01	—
CH 09	DI	J4, CH9	LIM_SW2	Demand limit SW2	DI-02	—
CH 10	DI	J4, CH10	REM_LOCK	Remote lockout switch	DI-03	—
CH 11a	DI	J4, CH11A	ICE_SW	Ice done	DI-04	—
CH 11b	DI	J4, CH11B	—	—	DI-05	—
CH 12	DI	J5, CH12	—	—	DI-06	—
CH 13	DI	J5, CH13	—	—	DI-07	—
CH 14	DI	J5, CH14	—	—	DI-08	—
CH 15	DI	J5, CH15	—	—	DI-09	—
CH 16	DO	J2A	CP_A	Compressor A run status	DO-01	Triac
CH 17	DO	J2A	CP_B	Compressor B run status	DO-02	Triac
CH 18	DO	J2A	—	—	—	—
CH 19	DO	J2A	—	—	—	—
CH 20	DO	J2B	—	—	—	—
CH 21	DO	J2B	—	—	—	—
CH 22	DO	J2B	—	—	—	—
CH 23	DO	J2B	—	—	—	—
CH 24	DO	J3	SHUTDOWN	Shutdown relay	DO-09	Relay
CH 25	DO	J3	ALERT	Alert relay	DO-10	Relay

Local Equipment Network — Information is transmitted between modules via a 3-wire communication bus or LEN (Local Equipment Network).

Board Addresses — All boards (except the Touch Pilot display and the Energy Management Module board) have DIP switches to set the address.

Control Module Communication

RED LED — Proper operation of the control boards can be visually checked by looking at the red status LEDs (light-emitting diodes). When operating correctly, the red status LEDs will blink in unison at a rate of once every 2 seconds. If the red LEDs are not blinking in unison, verify that correct power is being supplied to all modules and that all communication wiring is connected securely. Be sure that the Touch Pilot™ module is supplied with the current software. If necessary, reload current software. When reloading software, HTTP server must be enabled (Main Menu → Configuration Menu→ Service Parameters). After enabling HTTP server, a power cycle of the Touch Pilot is required. If the problem still persists, replace the Touch Pilot module. A red LED that is lit continuously or blinking at a rate of once per second or faster indicates that the board should be replaced.

GREEN LED — All boards have a green LEN (Local Equipment Network) LED which should be blinking whenever power is on. If the LEDs are not blinking as described check LEN connections for potential communication errors at the board connectors. A 3-wire bus accomplishes communication between modules. These 3 wires run in parallel from module to module. They connect to J9 on EMM and AUX boards, and to J12 or J13 on SIOB boards. A valid unit configuration must be in the Touch Pilot module for proper LEN communication.

Carrier Comfort Network® (CCN) Interface — All 30XV units can be connected to the CCN, if desired. The communication bus wiring is a shielded, 3-conductor cable with drain wire and is field supplied and installed. The system elements are connected to the communication bus in a daisy chain arrangement. The positive pin of each system element communication connector must be wired to the positive pins of the system elements on either side of it. The negative and signal ground pins of each system element must also be wired in the same manner. Wiring connections for CCN should be made at TB3. Consult the CCN Contractor's Manual for further information. See Fig. 19.

NOTE: Conductors and drain wire must be 20 AWG (American Wire Gage) minimum stranded, 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. See Table 11 for recommended wire manufacturers and part numbers.

Table 11 — CCN Communication Bus Wiring

MANUFACTURER	PART NUMBER	
	Regular Wiring	Plenum Wiring
Alpha	1895	—
American	A21451	A48301
Belden	8205	884421
Columbia	D6451	—
Manhattan	M13402	M64430
Quabik	6130	—

*Teflon is a registered trademark of DuPont.

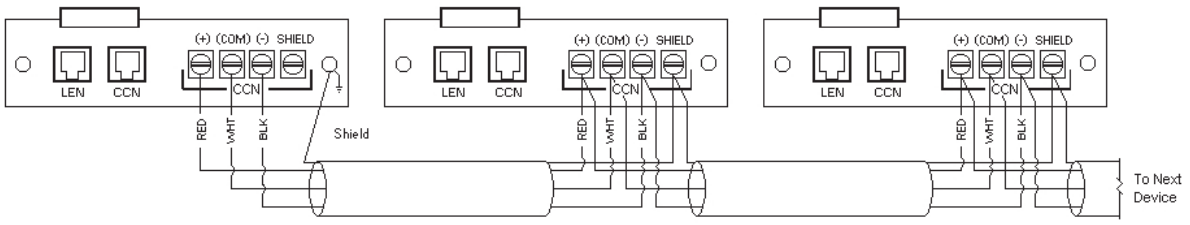


Fig. 19 — Touch Pilot CCN Communication Wiring

It is important when connecting to a CCN communication bus that a color-coding scheme be used for the entire network to simplify the installation. It is recommended that red be used for the signal positive, black for the signal negative, and white for the signal ground. Use a similar scheme for cables containing different colored wires.

At each system element, the shields of its communication bus cables must be tied together. If the communication bus is entirely within one building, the resulting continuous shield must be connected to a ground at one point only. If the communication bus cable exits from one building and enters another, the shields must be connected to grounds at the lightning suppressor in each building where the cable enters or exits the building (one point per building only). To connect the unit to the network:

1. Turn off power to the control box.
2. Cut the CCN wire and strip the ends of the red (+), white (ground), and black (–) conductors. (Substitute appropriate colors for different colored cables.)
3. Connect the red wire to (+) terminal on TB3 of the plug, the white wire to COM terminal, and the black wire to the (–) terminal.
4. The RJ14 CCN connector on TB3 can also be used, but is only intended for temporary connection (for example, a laptop computer running Service Tool).

IMPORTANT: A shorted CCN bus cable will prevent some routines from running and may prevent the unit from starting. If abnormal conditions occur, disconnect the CCN bus. If conditions return to normal, check the CCN connector and cable. Run new cable if necessary. A short in one section of the bus can cause problems with all system elements on the bus.

Remote Alarm and Alert Relays — The 30XV chiller can be equipped with remote alert and remote alarm annunciator contacts. Both relays connected to these contacts must be rated for a maximum power draw of 10 va sealed, 25 va inrush at 24 volts. The alarm relay, indicating that the complete unit has been shut down, can be connected to TB5-12 and TB5-21. Refer to unit wiring diagrams. For run relay, indicating that at least 1 circuit is off due to an alert state, a field-supplied and installed relay must be connected between TB5-13 and TB5-20.

CONFIGURATION (SOFTWARE)

Touch Pilot™ Operation Configuration Tables — The Touch Pilot control system can be configured for a range of operating conditions and equipment arrangements. The following parameters should be configured based on unique system layout and operating requirements.

The system parameters may be configured through the Touch Pilot interface or remotely through the CCN. Table 12 shows the Touch Pilot configuration required to access the unit on the CCN.

Table 12 — Touch Pilot Controller Identification Configuration Table

PATH	DISPLAY NAME	VALUE
Main Menu → Configuration Menu → Control Identification	**CCN Element Number**	Default=1
	CCN Bus Number	Default=0
	CCN Baud Rate	Default=9600
	Location Description	Default=Blank

Touch Pilot Menu Tables — Touch Pilot operation is controlled by configuration information entered in the configuration tables listed in Tables 13-16. Access to different parameters may be available to all users (BASIC) or password-protected (USER, FACTORY, or SERVICE). See Appendix A for detailed descriptions of all control tables and parameters.

Table 13 — Main Menu Table

ITEM	CCN MENU NAME	ACCESS	MENU TEXT DESCRIPTION	MENU ICON
1	GENUINT	ALL	General Parameters	
2	TEMP	ALL	Temperatures	
3	PRESSURE	ALL	Pressures	
4	INPUTS	ALL	Inputs Status	
5	OUTPUTS	ALL	Outputs Status	
6	PUMPSTAT	ALL	Pump Status	
7	RUNTIME	ALL	Run Times	
8	MODES	ALL	Modes	
9	SETPOINT	USER	Setpoint Table	
10	CONFIG	USER	Configuration Menu	
11	QCK_TEST	SERVICE	Quick Test	
12	MAINTAIN	SERVICE	Maintenance Menu	
13	TRENDING	ALL	Trendings	

Table 14 — Alarms Menu Table

ITEM	CCN MENU NAME	ACCESS	MENU TEXT DESCRIPTION	MENU ICON
1	ALARMRST	USER	Reset Alarms	
2	CUR_ALM	ALL	Current Alarms	
3	ALMHIST1	ALL	Alarm Historic	
4	ALMHIST2	ALL	Major Alarm Historic	

Table 15 — Configuration Menu Table

ITEM	CCN MENU NAME	ACCESS	MENU TEXT DESCRIPTION	MENU ICON
1	GEN_CONF	USER	General Configuration	
2	PUMPCONF	USER	Pump Configuration	
3	USERCONF	USER	User Configuration	
4	RESETCFG	USER	Reset Configuration	
5	SCHEDULE	USER	Schedule Menu	
6	HOLIDAY	USER	Holiday Menu	
7	BROCASTS	USER	Broadcast Menu	
8	DATETIME	USER	Date/Time Configuration	
9	CTRL_ID	USER	Control Identification	
10	FACTORY	FACTORY	Factory Parameters	
11	FACTORY2	FACTORY	Factory2 Parameters	
12	SERVICE	SERVICE	Service Parameters	
13	UPDTHOUR	SERVICE	Update Running Hour	
14	MST_SLV	SERVICE	Master Slave Config	
15	CMP_PI*	SERVICE	Comp PI Parameters	
17	EXV_CFG*	SERVICE	EXV Configuration	
18	DELTA*	SERVICE	Action Parameters	
19	BACNET	SERVICE	BACnet Parameters	
20	FAN_CFG*	SERVICE	Fan Configuration	
21	ECO_PI*	SERVICE	EXV ECO PI Parameters	
22	CP_UNABL	SERVICE	Compressor Enable	
23	EMAILCFG	SERVICE	Email Configuration	

* Tables available only through the CCN.

Table 16 — Maintenance Menu Table

ITEM	CCN MENU NAME	ACCESS	MENU TEXT DESCRIPTION	ICON
1	CAPACTRL	SERVICE	Capacity Control	
2	VLT_DRV	SERVICE	VLT Drive Maintenance	
3	LAST_POR	SERVICE	Last PowerOn Reset	
4	EXV_CTRL	SERVICE	EXV Control	
5	LIMITS	SERVICE	Control Limits	
6	M_MSTSLV	SERVICE	Master Slave Control	
7	ECO_CTRL	SERVICE	EXV Eco. Control	
8	FAN_CTRL	SERVICE	Fan Control	
9	FAN_DRV	SERVICE	Fan Drive Maintenance	
10	TBLSHT	SERVICE	Troubleshoot Info	
11	FAN_DRV2	SERVICE	Fan Drive Addressing	

Machine Control Methods — The unit state is determined based on a number of factors, including its operating type, active overrides, open contacts, master/slave configuration, or alarms triggered due to operating conditions. These parameters can be controlled by one of the following methods:

- Locally on unit: Local Control type
- Remotely through a user contact: Remote Control type
- Remotely through the CCN network: CCN Control type

The main interface Start/Stop button is used to select one of the above control types. In addition, when the Local control type is selected, this button can be used to select a particular functional mode: On, Off or Schedule mode. See Fig. 20. If the Start/Stop button is green the unit is running. If the Start/Stop button is gray the unit is not running. If the button is flashing green then the unit is preparing to start.

Table 17 summarizes the available operating types.

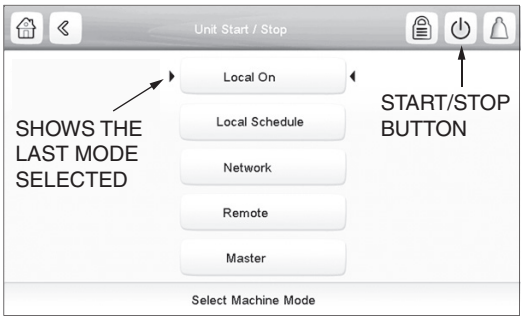


Fig. 20 — Machine Control Methods

Table 17 — Operating Types

OPERATING TYPE	CONTROL METHOD	OPERATING MODES	DESCRIPTION
LOCAL — OFF	Local	Off	The unit is under Local control method. It will remain halted and will ignore all CCN network commands and remote switch contacts.
LOCAL — ON	Local	On	The unit is under Local control method and will be allowed to start. The control will ignore all remote control contacts (except the demand limit contact) and all CCN network force commands (except the Emergency Stop Command).
LOCAL — SCHEDULE	Local	Schedule	The unit is under Local control method and will be allowed to start if the schedule no. 1 is occupied (chil_occ). Otherwise, the unit will remain off. The control will ignore all remote control contacts (except the demand limit contact) and all CCN network force commands (except the Emergency Stop Command).
NETWORK	CCN	None	The unit is under CCN control method and will be controlled by CCN force commands. The control will ignore all remote control contacts (except the demand limit contact).
REMOTE	Remote	None	The unit is under Remote control method and will be controlled by the start/stop and set point contacts. In this mode, no CCN force command can affect the unit control except the Emergency Stop Command.
MASTER	Master	Master	The unit is configured as the master unit in a two-unit master/slave plant. The master unit control method can be done locally, remotely or through CCN commands upon the master/slave configuration.

OPERATING TYPE SELECTION — The operating type is selected through the main interface by pressing the Start/Stop button .

If the unit is running, pressing the Start/Stop button displays a screen with a Confirm Stop button (see Fig. 21), which when pressed switches the chiller to Local Off mode. If the unit is Off, pressing the Start/Stop button shows a list of operating types with the currently selected type corresponding to the last running operating type (Fig. 20).

Start/Stop Selection Screen — In Local mode (LEN bus), the Touch Pilot treats the Start/Stop button as a hotkey, and goes directly to the Start/Stop selection screen. In CCN mode, the Touch Pilot ignores Start/Stop key presses.

Start a Stopped Machine — With the unit in the Local off mode, press the gray Start/Stop button to display the list of operating modes and select the required mode.

Stop a Running Machine — To stop a running unit, press the green Start/Stop button . Confirm the unit shutdown by pressing Confirm Stop or cancel by pressing the Back button (Fig. 21).

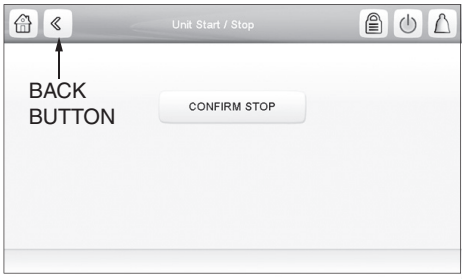


Fig. 21 — Confirm Stop

Once the unit has been stopped, the Home screen is displayed.

NOTE: Start/Stop a machine is not authorized through a web connection for security reasons.

Machine On/Off Function — The machine operating state can be viewed by going to Main Menu → General Parameters → Run Status. Table 18 summarizes possible unit states.

Table 18 — Unit States

STATE	DESCRIPTION
Off	Unit is commanded to be off
Stopping	Unit is currently stopping (after a manual, emergency, or shutdown request). Next state will be Off.
Delay	Unit is in delay at start-up (waiting for the end of the On/Off delay to be reached). Next state will be Running.
Running	Unit compressor capacity is more that 0% (unit has started running)
Ready	Unit compressor capacity is 0%. Unit is ready to start.
Override	The compressor cannot start because of an override (SST, SCT, etc.)
Tripout	Unit is Off due to an alarm
Test	Unit is in Quick Test

Table 19 summarizes the unit control method and stop or go status with regard to the following parameters set in the Touch Pilot module:

- Active operating type: Operating Type as selected on the unit Start-Stop screen.
- CHIL_S_S: Current CCN chiller start/stop force command (enable/disable). Main Menu → General Parameters → Net:Cmd Start/Stop.
- Onoff_sw: Start-stop contact status when unit is under remote operating type. Main Menu → Inputs Status → Remote On/Off Switch.
- chil_occ state: Chiller occupied state. If the occupancy override input switch is closed, the chiller remains occupied regardless of the set point scheduled selection. Main Menu → General Parameters → Net:Cmd Occupied.
- ms_ctrl: Master control type. This parameter status will determine if the master unit is going to be controlled locally, remotely, or through CCN. Main Menu → Maintenance Menu → Master Slave Control (0=disabled, 1=master, 2=slave).
- EMSTOP: CCN emergency stop command (enable/disable). Main Menu → General Parameters → Emergency Stop
- Alarm shutdown: Unit is totally stopped due to alarm.

Table 19 — Start/Stop Control

ACTIVE OPERATING TYPE	PARAMETER STATUS						CONTROL METHOD	UNIT STATUS
	CHIL_S_S	Onoff_sw	ms-ctrl	chil_occ state	EMSTOP	Alarm Shutdown		
Local Off (LOFF)	—	—	—	—	—	—	Local	Off
Local On (L-C)	—	—	—	—	Disable	No	Local	On
Local Schedule (L-SC)	—	—	—	Occupied	Disable	No	Local	On
	—	—	—	Unoccupied	—	—	Local	Off
Remote (rEM)	—	Open	—	—	—	—	Remote	Off
	—	—	—	Unoccupied	—	—	Remote	Off
		Closed		Occupied	—	—	Remote	On
CCN	Disable	—	—	—	—	—	CCN	Off
	—	—	—	Unoccupied	—	—	CCN	Off
	Enable	—	—	Occupied	Disabled	No	CCN	On
Master (MA St)	—	—	Local	Unoccupied	—	—	Local	Off
	—	Open	Remote	—	—	—	Remote	Off
	—	—	Remote	Unoccupied	—	—	Remote	Off
	Disable	—	CCN	—	—	—	CCN	Off
	—	—	CCN	Unoccupied	—	—	CCN	Off
	—	—	Local	Occupied	Disable	No	Local	On
	—	Closed	Remote	Occupied	Disable	No	Remote	On
	Enable		CCN	Occupied	Disable	No	CCN	On
—	—	—	—	—	Enable	—	—	Off
					—	Yes	—	Off

LEGEND

chil_occ — Chiller Occupied State
CHIL_S_S — CCN Chiller Start/Stop Command
EMSTOP — Emergency Stop
L-C — Local Control Operating Type
L-SC — Local Schedule Operating Type
MA St — Master/Slave Operating Type
ms-ctrl — Master/Slave Control
Onoff_sw — Remote On/Off Switch
rEM — Remote Operating Type

All of the control type and unit state combinations listed in Table 19 will determine the actual unit running state. In addition, when under remote type control, unit Start/Stop actions will be determined by both On/Off and Occupied/Unoccupied status if the changeover option is enabled. If the changeover option is not enabled, only the On/Off switch will be used to command the unit to Start or Stop.

NOTE: When changing from one control method (Local, Remote, or CCN) to another, the unit will observe a transition through the Off state before being allowed to start again. At this time the on-to-off delay is always applied.

MACHINE START DELAY — An option to delay the start of the machine is available. This parameter is useful in keeping multiple machines from starting at the same time in case of a power failure. The parameter has a factory default of 1 minute. This parameter also has a role in the timing for a chilled water flow switch alarm. To configure this option with the Touch Pilot display, select Main Menu → Configuration Menu → General Configuration and select Unit Off to On Delay.

FAST LOADING — The Fast Capacity Recovery function allows for an accelerated unit start-up. This is especially useful following brief power outages at data centers where rapid restart can keep data center operating. This should not be used on normal comfort cooling applications. To activate the Fast Capacity Recovery, go to Main Menu → Configuration Menu → Service Parameters and set Fast Capacity Recovery. The available options are as follows:

- 0 (Normal Loading Sequence): Follows the set delays for unit and circuit start up
- 1 (Quick Start Loading): Ignores Capacity Override #53 (ON/OFF Delay)
- 2 (Fast Capacity Recovery): Removes the unit start-up delay, ignores Capacity Override #53 (ON/OFF Delay), and allows both compressors to start at the same time (with a 10-second delay between starts)

Chilled Water Set Point Configuration — The chilled water set point and fluid type configuration will determine the chiller operating conditions.

FLUID SET POINT CONTROL LOCATION — The factory default for the chilled water fluid set point is to control to the leaving water temperature. An option to configure the machine for entering water control is available. To configure this option go to Main Menu → Configuration Menu → Service Parameters. The default for Entering Fluid Control is No (leaving fluid control is the default condition).

COOLING SET POINT SELECTION — The control point represents the water temperature that the unit must produce. The unit will vary the capacity depending on the unit load operating conditions in order to satisfy the set point. The control point (CTRL_PNT) is calculated based on the active set point and the reset calculation, where Control Point = Active Setpoint + Reset. (See the section Temperature Reset on page 33 for more information about Reset.) The forced value can be used instead of any other set point calculation only when Network is selected as the operating type for the unit (go to Main Menu → General Parameters to verify operating type).

DEFINING SET POINTS — The cooling set points are set via the Setpoint Table (Main Menu → Setpoint Table). Cooling Setpoint 1 and Cooling Setpoint 2 are the temperatures that are selectable as the Active Set Points for the unit operation. These temperatures will be limited by the type of fluid in the system (see Table 20).

In addition to the Cooling set points, users can also select the Cooling Ice Setpoint and Cooling Ramp Loading from this menu. See the Ice Storage Operation section on page 40 for more details about the Cooling Ice Setpoint. Ramp Loading limits the rate at which the unit will change cooling water temperature (default is 1° F/min [0.6° C/min]).

All default set points are based on Leaving Water Control (Entering Fluid Control, EWTO set to No). Values must be confirmed for the individual set points. Limits for the set points

are listed in Table 20. These values depend on the Evaporator Fluid Type and the Brine Freeze Setpoint (see Chilled Water Fluid Type Selection on page 25).

Table 20 — Evaporator Fluid Set Point Limits

Set Point Limits	EVAPORATOR FLUID TYPE (flui_typ)		
	1 = Water	2 = Medium Brine	3 = Low Brine
Minimum*	38 F (3.3 C)	30 F (–1.1 C)	N/A
Maximum	60 F (15.5 C)	60 F (15.5 C)	N/A

*The minimum set point for brine applications is related to the brine freeze set point. The set point is limited to be no less than the brine freeze set point + 4° F (2.2° C).

CURRENT OPERATING SET POINT — Depending on the current operation type, the active set point can be selected manually in the Main Menu, with the dry user contacts, with network commands (CCN or BACnet), or automatically with the set point time schedule (Occupancy Schedule 2).

Set points can be selected manually through the main interface when the unit is in Local operating type, through contacts when the unit is in Remote operating type, or through the RS485 bus when unit is in CCN mode.

Set points can also be selected automatically through a set point time schedule: when the period is occupied Cooling Setpoint 1 will be activated, and when the period is Unoccupied Cooling Setpoint 2 will be active. When in local operating type, time schedule is available if the Setpoint Select Variable is set to AUTO (see below). In remote operating type, the AUTO mode will be available unless the dual set point control through contacts has already been selected. In CCN mode, the set point selection always depends on the time schedule. The set point can be forced through the **SP_OCC** CCN point (0 = Occupied = Cooling Setpoint 1, 1 = Unoccupied = Cooling Setpoint 2).

Set point selection offers three different control options (Main Menu → General Parameters → Setpoint Select): Auto, Setpoint 1, and Setpoint 2.

- 0 = Auto: The active cooling set point will be determined by the configured Occupancy Schedules. See the Defining Occupancy Schedule section for details on setting the schedules. Depending on the Ice Storage configuration and ice contact state, the active set point may alternately be set to the Cooling Ice Setpoint.
- 1 = Setpoint 1: The active cooling set point will be Cooling Setpoint 1 defined in the set point table.
- 2 = Setpoint 2: The active cooling set point will be Cooling Setpoint 2 defined in the set point table. Depending on the Ice Storage configuration and ice contact state, the active set point may alternately be set to the Cooling Ice Setpoint.

SETPOINT OCCUPANCY — Setpoint Occupancy is the default configuration for the Setpoint Select variable. When Setpoint Select (Main Menu → General Parameters → Setpoint Select) is configured to 0 (Auto), the unit's active set point is based on the programmed occupancy schedules. Under Time Schedule 1 (OCCPC01S), the unit controls to Cooling Set Point 1 (csp1) during the occupied periods. If the Time Schedule 2 (OCCPC02S) is in use, the unit's active set point is based on Cooling Set Point 1 (csp1) (Main Menu → Setpoint Table → Cooling Setpoint 1) during the occupied period and Cooling Set Point 2 (csp2) (Main Menu → Setpoint Table → Cooling Setpoint 2) during the unoccupied period. The two schedules are used together to determine periods when the chiller will be controlling to Setpoint 1, Setpoint 2, or Off.

See Table 21 for details on how the active cooling set point is determined based on unit operating type and parameter settings.

DEFINING OCCUPANCY SCHEDULE — Two internal Time Schedules are available and must be field programmed. Occupancy Schedule 1 (OCCPC01S) is used for single set point On/Off control. Occupancy Schedule 2 (OCCPC02S) is used in combination with OCCPC01S for dual set point On/Off and Occupied/Unoccupied set point control. To access the Schedule screens, go to Main Menu → Configuration Menu → Schedule Menu.

If the chiller is to be controlled to a single set point, use Schedule 1 (OCCPC01S). This type of schedule will start and stop the machine only. During the unoccupied times, the chiller will be off. The unit start/stop schedule OCCPC01S has a default setting of always occupied. If the chiller is to be controlled to 2 set points, occupied and unoccupied, also use Schedule 2 (OCCPC02S). Cooling Setpoint 1 will be active during occupied periods, and Cooling Setpoint 2 will be active during unoccupied periods.

Table 21 — Active Cooling Set Point Parameters

OPERATING TYPE	PARAMETER STATUS					ACTIVE SETPOINT
	Setpoint Selection	Ice Storage Configuration*	Ice Done Contact*	Setpoint Switch	Schedule 2 Status	
Local	sp-1	Default	Any	Any	Default	Cooling Setpoint 1
	sp-2	No	Any	Any	Default	Cooling Setpoint 2
	sp-2	Yes	Closed	Any	N/A	Cooling Setpoint 2
	sp-2	Yes	Open	Any	N/A	Cooling Ice Setpoint
	automatic	Default	Any	Any	Occupied	Cooling Setpoint 1
	automatic	No	Any	Any	Unoccupied	Cooling Setpoint 2
	automatic	Yes	Closed	Any	Unoccupied	Cooling Setpoint 2
	automatic	Yes	Open	Any	Unoccupied	Cooling Ice Setpoint
Remote	Default	Default	Any	Open	Default	Cooling Setpoint 1
	Default	No	Any	Closed	Default	Cooling Setpoint 2
	N/A	Yes	Closed	Closed	N/A	Cooling Setpoint 2
	Default	Yes	Open	Closed	Default	Cooling Ice Setpoint
Network	Default	Default	Any	Any	Occupied	Cooling Setpoint 1
	Default	Default	Any	Any	Unoccupied	Cooling Setpoint 2

* Ice Storage Configuration and Ice Done Contact apply only to units with energy management module (EMM).

To set the occupancy schedules, select OCCPC01S or OCCPC02S and select the applicable days for the displayed time schedule period. The selected period will be displayed as a green band on the timeline. Press the Save button to confirm or the Cancel button to cancel changes. See Fig. 22.

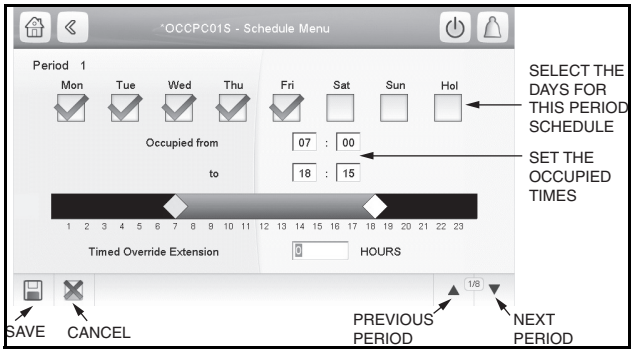


Fig. 22 — Schedule Menu

The schedules consist of 8 user-configurable occupied time periods. The control supports time schedules for local control, remote control, and ice building. These time periods can be flagged to be in effect or not in effect on each day of the week. The day begins at 00:00 and ends at 24:00. The machine is in unoccupied mode unless a scheduled time period is in effect. If an occupied period is to extend past midnight, the occupied period must end at 24:00 hours (midnight) and a new occupied period must be programmed to begin at 00:00 hours.

In the example in Table 22, an early morning pulldown time period is scheduled for Monday morning from 12:00 AM to 3:00 AM. The occupied period starts at 7:00 AM, Monday through Saturday. The occupied time ends at 6:00 PM on Monday and Tuesday, 9:30 PM on Wednesday, 5:00 PM on Thursday and Friday, and 12:00 PM on Saturday.

NOTE: This example schedule was designed to illustrate the programming of the schedule function and is not intended as a recommended schedule for chiller operation.

Holiday Schedule — The unit control allows up to 16 holiday periods. Each holiday period is defined by three parameters: the month, the start day, and the duration of the holiday period. During the holiday periods, the controller will be in occupied or unoccupied mode, depending on the periods validated as holidays. The Holiday Configuration Table is accessed by Main Menu → Configuration Menu → Holiday Menu. Select one of the 16 available Holiday periods (HOLDY_01 through HOLDY_16) to define the holiday.

CCN Global Time Schedule — In addition to the two onboard occupancy schedules (OCCPC01S and OCCPC02S), the Touch Pilot™ can also receive a time schedule broadcast from another element in the CCN network.

The 30XV with Greenspeed® intelligence chillers can be configured to follow a CCN Global Time Schedule broadcast by another system element. The Occupancy Table (OCCPC01S) number must be changed to configure the unit to broadcast a Global Time Schedule. The Schedule Number can be set from 65 to 99 (OCCPC65S to OCCPC99S). When OCC1PxxS is set to a value of 65 or greater and all attached schedules are 00:00 (that is, no occupied time periods), an occupancy flag is broadcast over the CCN every time it transitions from occupied to unoccupied or vice-versa. The ComfortVIEW™ Network Manager's Configure and Modify commands or the Service Tool's Modify/Names function must be used to change the number of the Occupancy Equipment Part Table Name (OCCPC01E) to the Global Schedule Number. The Schedule Number can be set from 65 to 99 (OCCPC65E to OCCPC99E).

Table 22 — Configuring Schedules (Example)

ITEM	PATH	VALUE
Period 1		
Occupied from	Main Menu → Configuration Menu → Schedule Menu → OCCPC01S or OCCPC02S → Page 1	00:00
Occupied to		03:00
Monday Select		Yes
Tuesday Select		No
Wednesday Select		No
Thursday Select		No
Friday Select		No
Saturday Select		No
Sunday Select		No
Holiday Select		No
Period 2		
Occupied from	Main Menu → Configuration Menu → Schedule Menu → OCCPC01S or OCCPC02S → Page 2	07:00
Occupied to		18:00
Monday Select		Yes
Tuesday Select		Yes
Wednesday Select		No
Thursday Select		No
Friday Select		No
Saturday Select		No
Sunday Select		No
Holiday Select		No
Period 3		
Occupied from	Main Menu → Configuration Menu → Schedule Menu → OCCPC01S or OCCPC02S → Page 3	07:00
Occupied to		21:30
Monday Select		No
Tuesday Select		No
Wednesday Select		Yes
Thursday Select		No
Friday Select		No
Saturday Select		No
Sunday Select		No
Holiday Select		No
Period 4		
Occupied from	Main Menu → Configuration Menu → Schedule Menu → OCCPC01S or OCCPC02S → Page 4	07:00
Occupied to		17:00
Monday Select		No
Tuesday Select		No
Wednesday Select		No
Thursday Select		Yes
Friday Select		Yes
Saturday Select		No
Sunday Select		No
Holiday Select		No
Period 5		
Occupied from	Main Menu → Configuration Menu → Schedule Menu → OCCPC01S or OCCPC02S → Page 5	07:00
Occupied to		12:00
Monday Select		No
Tuesday Select		No
Wednesday Select		No
Thursday Select		No
Friday Select		No
Saturday Select		Yes
Sunday Select		No
Holiday Select		No

When OCC1PxxS is set to a value of 65 or greater and a time schedule is configured for at least one occupancy period, the system will assume that the unit is going to be the master element for this schedule (the system element doing the broadcasting). In that case the unit Equipment and Supervisory part table names will be automatically modified to OCCPCxxE and OCCPCxxS.

By configuring their appropriate Time Schedule decisions to the same number, other devices on the network can follow this same schedule. The Enable/Off/Remote Contact must be in the Enable position or the Remote Contact position with the contacts closed for the unit to operate.

The Unit Run Status (Main Menu → General Parameters → Run Status) will indicate the current status of the machine depending on the schedule. The unit Occupied status (Main Menu → General Parameters → Setpoint Occupied) will indicate the current occupied schedule according to the schedule, either NO or YES.

The Status Unit Control Type (Main Menu → General Parameters) will be 0 when the switch is Off. The Status Unit Control Type will be 2 when the Enable/Off/Remote Contact switch input is On.

CCN Control — To operate under this control, Network must be selected under the Select Machine Mode accessed by pressing the Start/Stop button (see the Operating Type Selection section on page 21).

An external CCN device such as Chillervisor controls the On/Off state of the machine. Careful evaluation of Chilled Water Plant control is necessary. In the event Local Control is established, be sure that all pumps, valves, and other devices are capable of operating properly. In the event of a loss of communication with the network, the machine will start and be controlled locally. The CCN device forces the variable **CHIL_S_S** to control the chiller. The Unit Run Status (Main Menu → General Parameters → Run Status) will indicate the current status of the machine (OFF, RUNNING, STOPPING or DELAY), depending on the CCN command. The unit Occupied status (Main Menu → General Parameters) will indicate the current occupied state according to the CCN command and will be displayed as either NO or YES. The Status Unit Control Type (**ctrl_typ**) will be LOCAL OFF when the Start/Stop button is Off. The Status Unit Control Type will be CCN when the Enable/Off/Remote Contact switch input is Closed and the **CHIL_S_S** variable is Stop or Start. For dual chiller control applications, the slave chiller must be enabled using the CCN CONTROL option.

CHILLED WATER FLUID TYPE SELECTION — The chilled water fluid type must be configured to obtain the proper leaving water set point control range and freeze protection. The Evaporator Fluid Type (flui_typ) (Main Menu → Configuration Menu → Service Parameters → Evaporator Fluid Type) can be set to water or brine.

To configure this option:

DISPLAY NAME	PATH	VALUE	SETPOINT RANGE
Evaporator Fluid Type	Main Menu → Configuration Menu → Service Parameters	1 = Water	38 to 60 F (3.3 to 15.5 C)
		2 = Medium brine	30 to 60 F (–1.1 to 15.5 C)
		3 = Low brine	N/A

Fresh Water — Configure the unit Evaporator Fluid Type to Water for units without brine or glycol installed in the chilled water loop. The factory default fluid type is fresh water. This option will allow for a water temperature set point range of 38 to 60 F (3.3 to 15.5 C). With water as the selection, the freeze point is fixed at 34 F (1.1 C).

Brine or Glycol — Configure the unit Evaporator Fluid Type to Medium Brine or Low Brine for units with brine or glycol added to the chilled water loop. The Medium Brine option will allow for a set point temperature range of 30 to 60 F (-1.1 to 15.5 C).

Before making this selection, confirm suitable antifreeze has been added and is of sufficient concentration to protect the loop. In addition, the Brine Freeze Setpoint (Main Menu > Configuration Menu > Service Parameters > Brine Freeze Setpoint) must be set for proper freeze protection operation. Set the Brine Freeze Setpoint to the freeze protection provided by the antifreeze concentration. This value will be the freeze point of the fluid.

Evaporator Pump Control — Evaporator pump control is required on all units unless the chilled water pump runs continuously or the chilled water system contains a suitable antifreeze solution. The 30XV units with Greenspeed® intelligence can be configured for single or dual external evaporator pump control with the standard controls. In addition to the pumps, all wiring including connections to the pump contactor and a feedback circuit from the contactor must be field supplied. Table 23 summarizes evaporator pump configuration parameters. Fig. 23 shows the wiring.

Table 23 — Evaporator Pump Configuration Parameters

DISPLAY NAME	PATH	VALUE
Evaporator Pumps Sequence	Main Menu→ Configuration Menu→ Pump Configuration	0 = No Pump (Default) 1 = One Pump Only 2 = Two Pumps Auto 3 = Pump no. 1 Manual 4 = Pump no. 2 Manual
Pump Auto Rotation Delay		Default: 48 hrs. (Range 24 to 3000 hrs.)
Pump Sticking Protection		Default: No
Flow Checked If Pump Off		Default: Yes

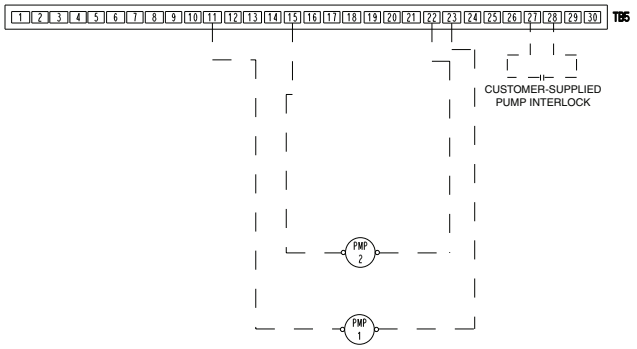


Fig. 23 — Wiring for Evaporator Pump Control

PUMP SELECTION — The Evaporator Pump Sequence mode can be reached by following Main Menu → Configuration Menu → Pump Configuration. The available settings are:

- 0 = No Pump: The evaporator pump will not be controlled by the chiller. This is the default setting.
- 1 = One Pump Only: If only one pump is selected it will be the active pump.
- 2 = Two Pump Auto: When two pumps are selected in auto mode, only one pump will be allowed to run at a time and the control will determine the On/Off state of each pump. The control will start the pumps and automatically alternate the operation of the pumps to even the wear on the pumps, based on the hours configured under Pump Auto Rotation Delay (Main Menu → Configuration Menu → Pump Configuration → Pump Auto Rotation Delay). If the difference between the operating hours of the two pumps exceeds the Pump Auto Rotation Delay the lead pump will change. If a flow failure is detected, the other pump will attempt to start.
- 3 = Pump #1 Manual: Pump #1 will be the active pump.
- 4 = Pump #2 Manual: Pump #2 will be the active pump.

When the Evaporator Pumps Sequence is configured, the evaporator pump output will be energized when the chiller enters an On state. Proof of flow from the chilled water flow switch (CWFS) is required for the unit to start mechanical

cooling. The evaporator pump output is also energized when certain alarms are generated. The evaporator pump output should be used as an override to the external pump control if evaporator pump control is not utilized. The evaporator pump output is energized if a 10001 Evaporator Freeze Protection alarm is generated, which provides additional freeze protection if the system is not protected with a suitable antifreeze solution.

If the Master/Slave function is not active for the chiller or if the Master/Slave function is active and the unit is the lead, the pump will be turned on when the unit is in On, Stopping or Delay state. In addition, when the unit is turned off the pump will continue operating for 20 seconds after the last compressor is turned off. The pump will be turned on when requested by the evaporator heater function (see the Evaporator Freeze Protection section on page 64).

PERIODIC PUMP QUICK START — The control system has the ability to start the pumps periodically to maintain bearing lubrication and seal integrity. This function will be used when the unit is stopped for a long time period (e.g., during the winter season). If Pump Sticking Protection (Main Menu → Configuration Menu → Pump Configuration → Pump Sticking Protection) is set to YES and if the unit is off at 2:00 PM, a pump will be started once each day for 45 seconds. If the unit has 2 pumps, Pump 1 will be started on even days (such as day 2, 4, or 6 of the month); Pump 2 will be started on odd days (such as day 1, 3 or 5 of the month). The default for this option is NO.

MASTER/SLAVE CHILLER PUMP OPERATION — If the Master/Slave function is active and if the chiller is the lag unit, then the pump will be turned on when the unit is in On mode and if the unit active lag demand limit is greater than 1%. Otherwise, the pump will be stopped 30 seconds after the last compressor is turned off. However, if the lag unit pump has been configured to run even if the unit is commanded to stop (Main Menu → Configuration Menu → Master Slave config → Lag Unit Pump control = 1) then the above condition will be ignored and the lag pump will run all the time.

CHILLED WATER FLOW SWITCH STATUS — If Flow Checked if Pump Off (Main Menu → Configuration Menu → Pump Configuration → Flow Checked if Pump Off) is set to YES, the control will monitor the chilled water flow switch status and will send an alarm if the pump is commanded off and the chilled water flow switch is closed. This can provide the user with information of a faulty evaporator pump contactor or a failed chilled water flow switch. This parameter should be set to NO for series flow machines. The factory default for this item is YES.

MANUAL OPERATION — The evaporator pumps can be forced ON through the CCN when the chiller is off. This allows the unit to run with no delay and for an unlimited length of time for flow rate calculations when the unit is installed on site. Manual operation of the pumps is controlled through CCN points CPUMP_1 (Main Menu → Pump Status) and CPUMP_2 (Main Menu → Pump Status (0 = OFF, 1 = ON).

Circuit/Compressor Staging and Loading —

The AquaForce® 30XV chillers with Greenspeed® intelligence employ one compressor per circuit. As a result, circuit and compressor staging are the same. The control has several control option parameters to load the compressors. The circuit/compressor start can be configured as well as the loading of each circuit/compressor.

CIRCUIT/COMPRESSOR STAGING — The control can be configured to decide which circuit/compressor starts first. Three options for this variable are allowed: Automatic Lead-Lag, Circuit A Leads, or Circuit B Leads. The factory default is Automatic Lead-Lag.

The automatic lead-lag function determines which circuit/compressor starts first to even the wear on the compressors. The control system determines the lead circuit to equalize the operating time of each circuit (value weighted by the number of start-ups of each circuit). As a result, the circuit with the lowest number of operating hours always starts first. The parameter can also be configured to always start a particular circuit/compressor first.

To configure this option:

DISPLAY NAME	PATH	LINE NO.	VALUE
Circuit Priority Sequence	Main Menu → Configuration Menu → General Configuration	1	0 = Auto 1 = Ckt A Priority 2 = Ckt B Priority

CIRCUIT/COMPRESSOR LOADING/UNLOADING — The control uses an equal compressor loading and unloading scheme as described below to optimize the efficiency of the unit.

At start-up, the control starts the lead compressor at the lowest frequency and then continues to load it up by increasing frequency output of the corresponding VFD. If the load reaches 65% of circuit load, then the control starts the lag compressor at its minimum frequency. While the lag compressor starts to load up, the lead compressor may ramp down to equalize with lag compressor, depending on conditions. When the loading of both compressors match, they continue to load up or load down in unison in response to the capacity demand.

In the process of unloading, if both the compressors reach minimum frequency/load level, any further drop in capacity will cause the lag compressor to switch off and the lead compressor to ramp up until load is met again. Eventually with decrease in load the compressor goes down to minimum frequency/load and then shuts down. See Fig. 24 for a graphical representation of initial system loading and unloading. (Figure 24 shows an example of possible compressor loading for a given scenario. Since the controls are adaptive, actual loading may vary.)

Dual Chiller Control — The dual chiller function allows for master/slave control of two units installed in parallel or series arrangement supplying chilled fluid on a common loop. The chillers must be linked by the Carrier Comfort Network® (CCN) network and operate on the same bus.

When the units are installed for parallel operation and chilled water control is done on the outlet side of the units, the dual chiller accessory kit (P/N 00EFN900044000A) is required. The kit includes additional leaving fluid temperature thermistors that must be installed on the common chilled water leaving piping as described in the Installation Instructions for the kit. The leaving fluid temperature sensors will be connected to each chiller as described in the installation instructions. When the chilled water control is done on the inlet side of the parallel units no additional temperature sensor is required. See the Field Wiring section in the 30XV Installation Instructions for dual chiller LWT sensor control wiring. When chillers are configured to operate in series mode no additional chilled water temperature sensor is required.

The master chiller will monitor all external commands such as start/stop, demand limiting or set point select, and needs to be started in Master operating type. The commands are transmitted automatically to the slave unit, which must operate in CCN (Network) mode. The slave chiller has no action in the master/slave operations; it will only verify that CCN communication with the master chiller is correct. If the master chiller is turned off while the master/slave function is active then the slave chiller will be stopped. Under

certain circumstances, the slave unit may be started first to balance the run times of the two units. In the event of a communication failure between the two units, each unit will return to an autonomous operating mode until the fault is cleared. If the master unit is stopped due to an alarm, the slave unit is authorized to start and therefore the slave unit configurations should be verified with desired set points.

The CCN communication port for the Master and Slave chillers must be joined using a shielded cable in order to avoid communication issues.

The master/slave linkage will not be allowed to operate if any one of the slave chiller **CTRL_PNT**, **DEM_LIM**, **LAG_LIM**, or **LCW_STPT** variables has a force priority higher than a control force. In that case, the master/slave operations will not be allowed or will be disabled.

The control algorithm relies on several parameters that must be field configured for operation. Both chillers must be on the same CCN bus with different addresses. On both chillers, Master/Slave Select (Main Menu → Configuration Menu → Master Slave config → Master/Slave Select) must be enabled (set to 1 or 2). The water piping arrangement must be specified with the Chiller in Series variable (Main Menu → Configuration Menu → Master Slave config → Chiller in Series). The Master chiller must be programmed with the Slave Address (Main Menu → Configuration Menu → Master Slave config → Slave Address). Additional optional programming parameters may be configured to meet application requirements.

The Lead Lag Select variable (Main Menu → Configuration Menu → Master Slave config → Lead Lag Select) determines which chiller is the lead machine. The options are: Always Lead, Lag Once Failed Only, and Lead/Lag Runtime Select. Under Runtime Select control, the lead chiller will change based on the time increment selected in the Lead/Lag Balance Delta configuration (Main Menu → Configuration Menu → Master Slave config → Lead/Lag Balance Delta). If the run hour difference between the master and the slave remains less than the Lead/ Lag Balance Delta, the chiller designated as the lead will remain the lead chiller. The Lead/Lag changeover between the master and the slave chiller due to hour balance will occur during chiller operating odd days, such as day 1, day 3, and day 5 of the month, at 12:00 a.m. If a lead chiller is not designated, the master chiller will always be designated the lead chiller.

The dual chiller control algorithm has the ability to delay the start of the lag chiller in two ways. The Lead Pulldown Time parameter (Main Menu → Configuration Menu → Master Slave config → Lead Pulldown Time) is a one-time time delay initiated after starting the lead chiller, before checking whether to start an additional chiller. This time delay gives the lead chiller a chance to remove the heat that the chilled water loop picked up while inactive during an unoccupied period. The second time delay, Lead/Lag Start Timer (Main Menu → Configuration Menu → Master Slave config → Lead/Lag Start Timer) is a time delay imposed between the last stage of the lead chiller and the start of the lag chiller. This prevents enabling the lag chiller until the lead/lag delay timer has expired.

A quicker start of the lag chiller can be accomplished by configuring the Lag Unit Pump Control parameter (Main Menu → Configuration Menu → Master Slave config → Lag Unit Pump Control). If the difference between the common leaving water temperature and the set point is greater than the configured value, then the lag chiller will start.

A minimum on time for the lag chiller can be programmed with the Lag Minimum Running Time configuration (Main Menu → Configuration Menu → Master Slave config → Lag Minimum Running Time). This parameter causes the control to run the lag chiller for the programmed minimum On time. The Lag Unit Pump Control (Main Menu → Configuration Menu → Master Slave config → Lag Unit Pump Control) can be configured such that the pump can be on or off while the chiller is off. This parameter is only active in Parallel Chiller Operation.

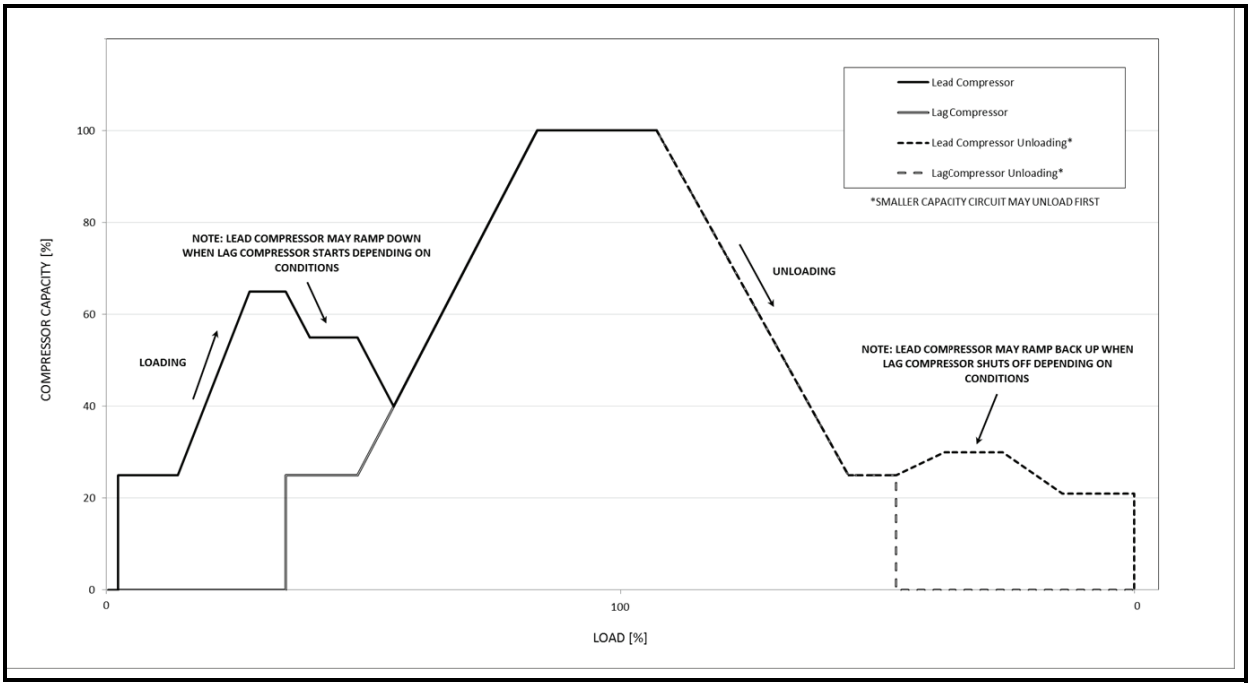


Fig. 24 — Initial Compressor Loading/Unloading Method

The lead chiller is started first and the lag chiller will be maintained at zero percent capacity through master forcing the lag demand limit value (**LAG_LIM**) to 0%. The lag water pump will be maintained off. When the lead chiller cannot be loaded anymore (because it is loaded at its full available capacity or at the master demand limit value) then the lag start timer is started. When the lag start time has elapsed, if the error on the master controlled set point is greater than the dead band (**start_di**) and if the pulldown time is elapsed then the lag chiller water pump will be turned on (if required by configuration) and the lag chiller will be allowed to start through the master chiller forcing the lag chiller demand limit value (**LAG_LIM**) to its own demand limit value. To ensure that the lag chiller will be unloaded first in case of water load decrease, the lead chiller set point error will be reset downwards by 4° F (2.2° C) provided that the lead capacity is not zero.

Each dual chiller application, Parallel and Series, is described separately below.

DUAL CHILLER CONTROL FOR PARALLEL APPLICATIONS — To configure the master chiller for parallel applications, see Table 24. To configure the slave chiller for parallel applications, see Table 25.

DUAL CHILLER PUMP CONTROL FOR PARALLEL CHILLER APPLICATIONS — Parallel chiller control with dedicated pumps is recommended. The chiller must start and stop its own water pump located in its own piping. If pumps are not dedicated for each chiller's piping, chiller isolation valves are required; each chiller must open and close its own isolation valve through the control. Figures 25-28 show typical pump arrangements for dual chiller parallel applications.

Although not recommended, it is possible to configure the system with no individual pump control. In applications where the unit is configured for fresh water (Main Menu → Configuration Menu → Service Parameters, Evaporator Fluid Type=1 [Fresh Water]), and Set Point temperature is close to the lower limit of the fresh water range, it is possible for changeable leaving water conditions as the chilled water flow rate drops to an operating unit, causing the leaving chilled water temperature to drop and initiate the evaporator freeze protection override. Constant flow applications may alleviate this issue. In constant water flow applications, the master chiller should be the primary control source for the chilled water pump. The slave chiller should have override capability. In the event of a communication failure between the master and slave chillers, the slave chiller will operate as a stand-alone machine and therefore must be able to enable the chilled water pump.

DUAL CHILLER CONTROL FOR SERIES CHILLER APPLICATIONS — When chillers are configured to work in series mode no additional chilled water supply sensor is required. The master chiller will be installed downstream of the slave chiller (the slave chiller outlet fluid is the master inlet fluid). If pump control is required, it will be controlled by the master chiller.

To configure the master chiller for series applications, see Table 26. To configure the slave chiller for series applications, see Table 27.

Table 24 — Dual Master Chiller Control Parameters for Parallel Applications

DISPLAY NAME	PATH	VALUE
Master/Slave Select	Main Menu → Configuration Menu → Master Slave config	1 (Master) Default: 0 (Disable)
Master Control Type		1=Local Control 2=Remote Control 3=CCN Control Default: 1(Local) Configure for proper control type.
Slave Address		Must be set to the Slave Chiller's address. The Master and Slave chiller must have different addresses and be on the same Bus Number Default: 2
Lead Lag Select		0 (Master Always Leads) 1 (Lag One Failed Only) 2 (Lead/Lag Runtime Select) Default: 0 (Master Always Leads)
Lead/Lag Balance Delta		Range: 40 to 400 hours Default: 168 hours
Lead/Lag Start Timer		Range: 2 to 30 minutes Default: 10 minutes
Lead Pulldown Time		Range: 0 to 60 minutes Default: 0 minutes
Start If Error Higher		Range: 3.0 to 18 ΔF (1.7 to 10.0 ΔC) Default: 4.0 ΔF (2.2 ΔC)
Lag Minimum Running Time		Range: 0 to 150 minutes Default: 0 minutes
Lag Unit Pump Control		0 (Stop If Unit Stops) 1 (Run If Unit Stops) Default: 0 (Stop If Unit Stops)
Chiller In Series		No (Not in Series) Default: No

Table 25 — Dual Slave Chiller Control Parameters for Parallel Applications

DISPLAY NAME	PATH	VALUE
Master/Slave Select	Main Menu → Configuration Menu → Master Slave config	2 (Slave) Default: 0 (Disable)
Master Control Type		1=Local Control 2=Remote Control 3=CCN Control Default: 1(Local) Configure for proper control type.
Slave Address		Must be set to the Slave Chiller's address. The master and slave chiller must have different addresses and be on the same Bus Number Default: 2
Lead Lag Select		0 (Master Always Leads) 1 (Lag Once Failed Only) 2 (Lead/Lag Runtime Select) Default: 0 (Master Always Leads)
Lead/Lag Balance Delta		Range: 40 to 400 hours Default: 168 hours
Lead/Lag Start Timer		Range: 2 to 30 minutes Default: 10 minutes
Lead Pulldown Time		Range: 0 to 60 minutes Default: 0 minutes
Start If Error Higher		Range: 3.0 to 18 ΔF (1.7 to 10.0 ΔC) Default: 4.0 ΔF (2.2 ΔC)
Lag Minimum Running Time		Range: 0 to 150 minutes Default: 0 minutes
Lag Unit Pump Control		0 (Stop If Unit Stops) 1 (Run If Unit Stops) Default: 0 (Stop If Unit Stops)
Chiller In Series		No (Not in Series) Default: No

NOTE: If pump control is configured to OFF (Master), then Lag Unit (Slave) Pump Control = 1. If pump control is set to any other value, then Lag Unit (Slave) Pump Control = 0. This configuration must be set consistently for both master and slave chillers.

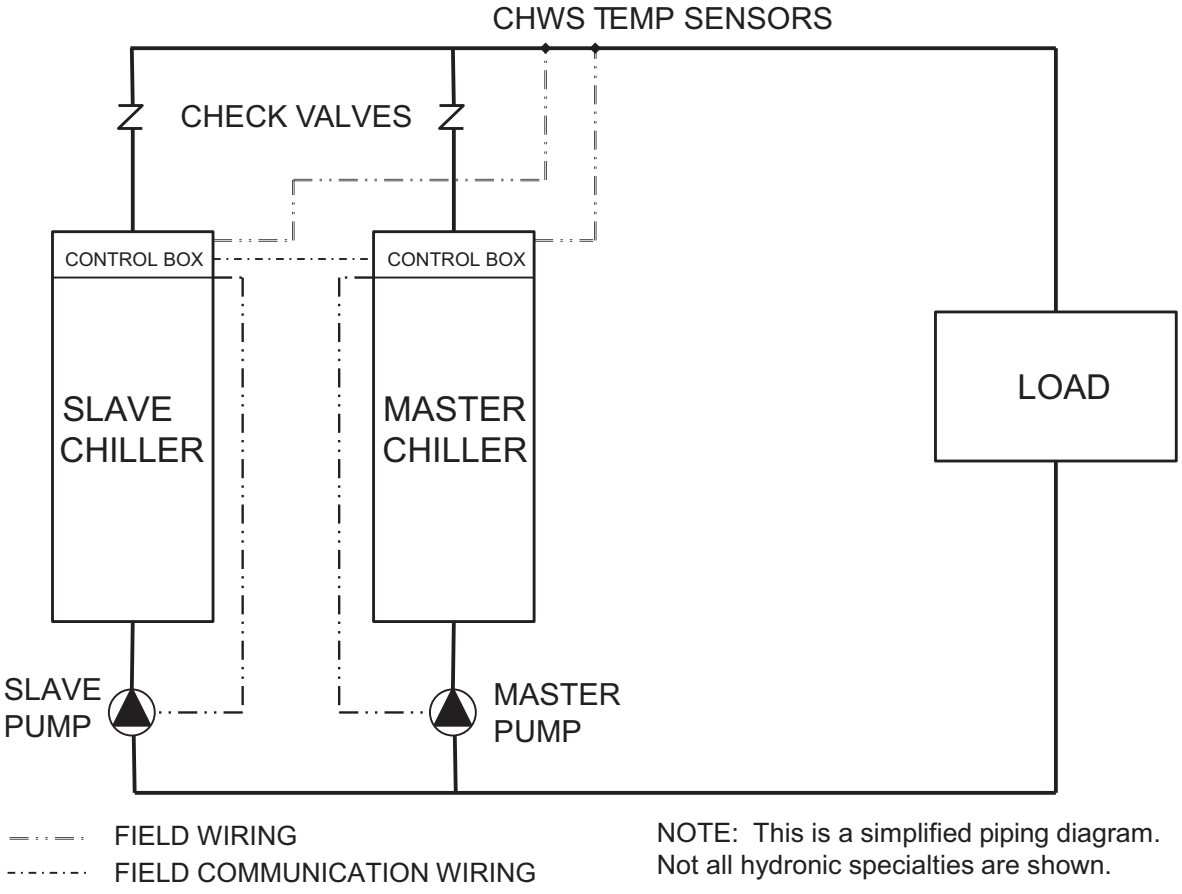


Fig. 25 — Typical Parallel Master/Slave Chillers
Dedicated Primary Pumping, Variable Flow, Leaving Water Control

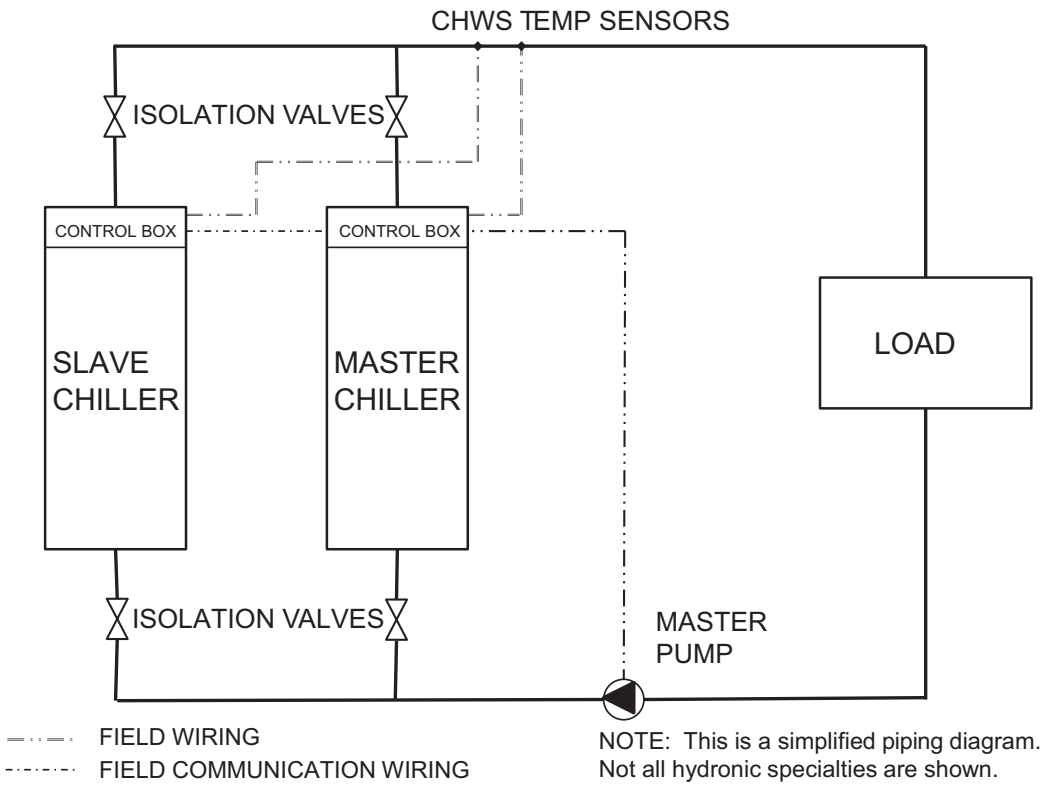


Fig. 26 — Typical Parallel Master/Slave Chillers
Common Primary Pumping, Constant Flow, Leaving Water Control

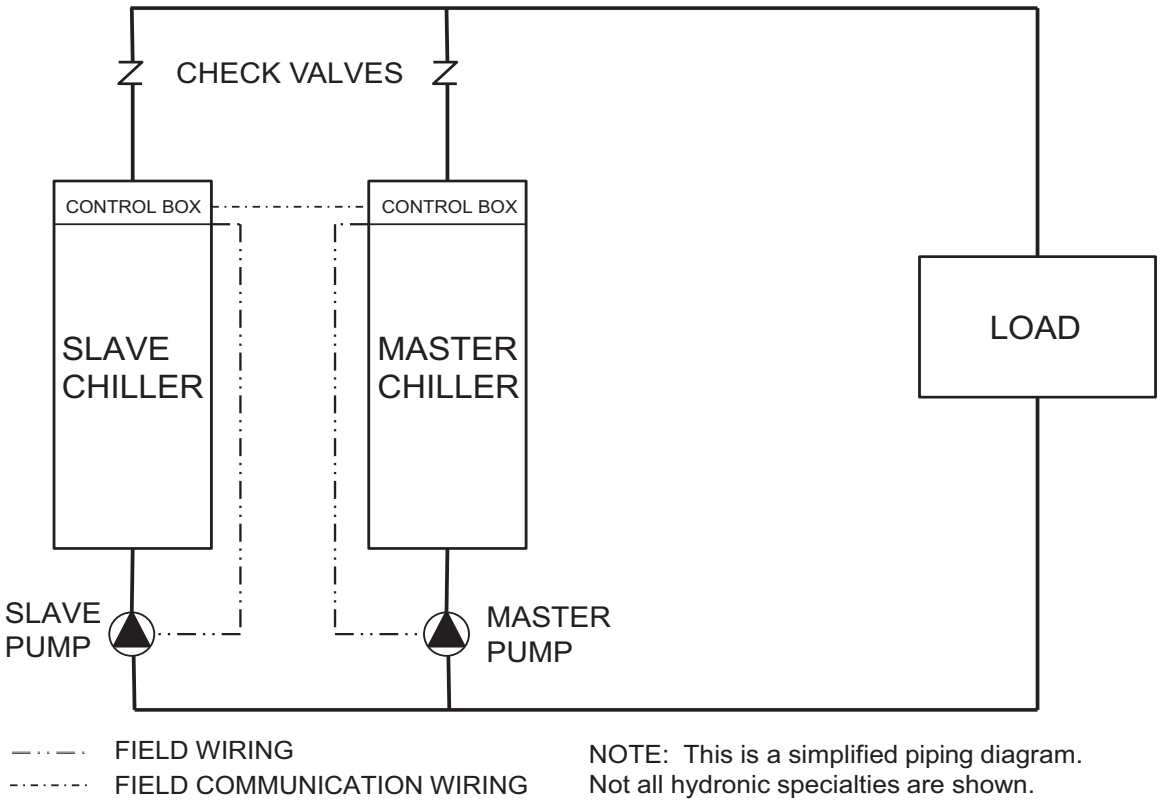


Fig. 27 — Typical Parallel Master/Slave Chillers
Dedicated Primary Pumping, Variable Flow, Entering Water Control

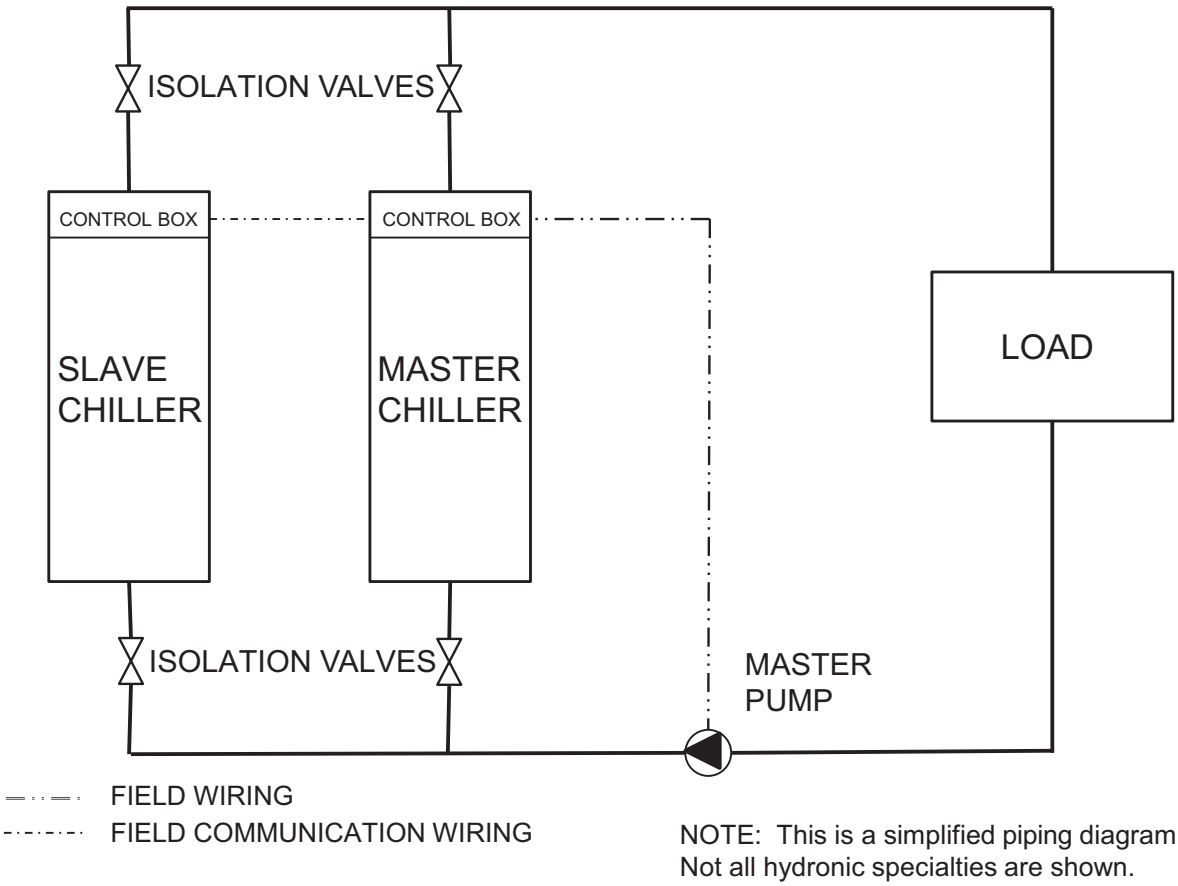


Fig. 28 — Typical Parallel Master/Slave Chillers
Common Primary Pumping, Variable Flow, Entering Water Control

Table 26 — Master Chiller Configuration in Series Applications

DISPLAY NAME	PATH	VALUE
Master/Slave Select	Main Menu → Configuration Menu → Master Slave config	1 (Master) Default: 0 (Disable)
Master Control Type		1=Local Control 2=Remote Control 3=CCN Control Default: 1(Local) Configure for proper control type.
Slave Address		Must be set to the Slave Chiller's address. The Master and Slave chiller must have different addresses and be on the same Bus Number Default: 2
Lead Lag Select		0 (Master Always Leads) 1 (Lag One Failed Only) 2 (Lead/Lag Runtime Select) Default: 0 (Master Always Leads)
Lead/Lag Balance Delta		Range: 40 to 400 hours Default: 168 hours
Lead/Lag Start Timer		Range: 2 to 30 minutes Default: 10 minutes
Lead Pulldown Time		Range: 0 to 60 minutes Default: 0 minutes
Start If Error Higher		Range: 3.0 to 18 ΔF (1.7 to 10.0 ΔC) Default: 4.0 ΔF (2.2 ΔC)
Lag Minimum Running Time		Range: 0 to 150 minutes Default: 0 minutes
Lag Unit Pump Control		0 (Stop If Unit Stops) 1 (Run If Unit Stops) Default: 0 (Stop If Unit Stops)
Chiller In Series		Yes (In Series) Default: No

Table 27 — Slave Chiller Configuration in Series Applications

DISPLAY NAME	PATH	VALUE
Master/Slave Select	Main Menu → Configuration Menu → Master Slave config	2 (Slave) Default: 0 (Disable)
Master Control Type		1=Local Control 2=Remote Control 3=CCN Control Default: 1(Local) Configure for proper control type.
Slave Address		Must be set to the Slave Chiller's address. The master and slave chiller must have different addresses and be on the same Bus Number Default: 2
Lead Lag Select		0 (Master Always Leads) 1 (Lag Once Failed Only) 2 (Lead/Lag Runtime Select) Default: 0 (Master Always Leads)
Lead/Lag Balance Delta		Range: 40 to 400 hours Default: 168 hours
Lead/Lag Start Timer		Range: 2 to 30 minutes Default: 10 minutes
Lead Pulldown Time		Range: 0 to 60 minutes Default: 0 minutes
Start If Error Higher		Range: 3.0 to 18 ΔF (1.7 to 10.0 ΔC) Default: 4.0 ΔF (2.2 ΔC)
Lag Minimum Running Time		Range: 0 to 150 minutes Default: 0 minutes
Lag Unit Pump Control		0 (Stop If Unit Stops) 1 (Run If Unit Stops) Default: 0 (Stop If Unit Stops)
Chiller In Series		Yes (In Series) Default: No

NOTES:
1. If pump control is configured to OFF (Master), then LAG UNIT (Slave) PUMP SELECT (page 3 of the Master Slave config menu) = 1. If pump control is set to any other value, then LAG UNIT (Slave) PUMP SELECT = 0. This configuration must be set consistently for both master and slave chillers.
2. For Master/Slave Series Chiller Application, Master Chiller should always be downstream of Slave.

DUAL CHILLER PUMP CONTROL FOR SERIES CHILLER APPLICATIONS — Pump control for series chiller applications is controlled by the master chiller only. The control of the slave chiller is directed through commands emitted by the master chiller. The slave chiller has no action in master/slave operations. The slave chiller only verifies that CCN communication with the master chiller is present. See the Dual Chiller Sequence of Operation section on page 49. Figure 29 shows a typical pump arrangement for dual chiller series applications.

Ramp Loading — The Ramp Loading function limits the rate of change of the leaving fluid temperature. The minimum compressor speed is calculated based on saturated condensing temperature and saturated suction temperature. To enable the Ramp Loading sequence:

DISPLAY NAME	PATH	VALUE
Ramp Loading Enable	Main Menu → Configuration Menu → General Configuration	Yes
Cooling Ramp Loading	Main Menu → Setpoint Table	Range: 0.2 to 2.0° F/min (0.1 to 1.1° C/min) Default: 1.0° F/min (0.5 °C/min)

Temperature Reset — The temperature reset function will determine the cooling control point. This control point is the active set point adjusted with the current reset value:

Control Point = Setpoint + Reset

The purpose of this reset value is to decrease the required capacity if it is allowed by unit load operating conditions. When a non-zero temperature reset is applied, the chiller controls to the new control point instead of the set point. The type of temperature reset is configured with the Cooling Reset Select variable. Four types of temperature reset are available: Outdoor Air Temperature (OAT), Return Water Reset (Delta T), 4-20mA control, and Space Temperature control:

DISPLAY NAME	PATH	VALUE
Cooling Reset Select	Main Menu → Configuration Menu → Reset Configuration	0 = None 1 = OAT 2 = Delta T 3 = 4-20 mA Control 4 = Space Temp

Under normal operation, the chiller will maintain a constant entering or leaving fluid temperature, based on the configuration, approximately equal to the chilled fluid set point. As the evaporator load varies, the evaporator fluid temperature difference will change in proportion to the load. For example, if the chiller was selected for an entering to leaving water temperature difference of 10° F (5.5° C) at full load, at 50% load the temperature difference would be 5° F (2.2° C). See Fig. 30. Because the change in temperature through the evaporator is a measure of the building load, the temperature difference reset is the average building load. Usually the chiller size and fluid temperature set point are selected based on a full load condition. At part load, the fluid temperature set point may be lower than required. When the fluid temperature is allowed to increase at part load, the efficiency of the machine will increase. The chiller can also be set for return water temperature control. See Fig. 31.

Other indirect means of estimating building load and controlling temperature reset are also available and are discussed below.

To verify that reset is functioning correctly, subtract the Current Setpoint (Main Menu → General Parameters → Current Setpoint) from the Control Point (Main Menu → General Parameters → Control Point) to determine the degrees reset.

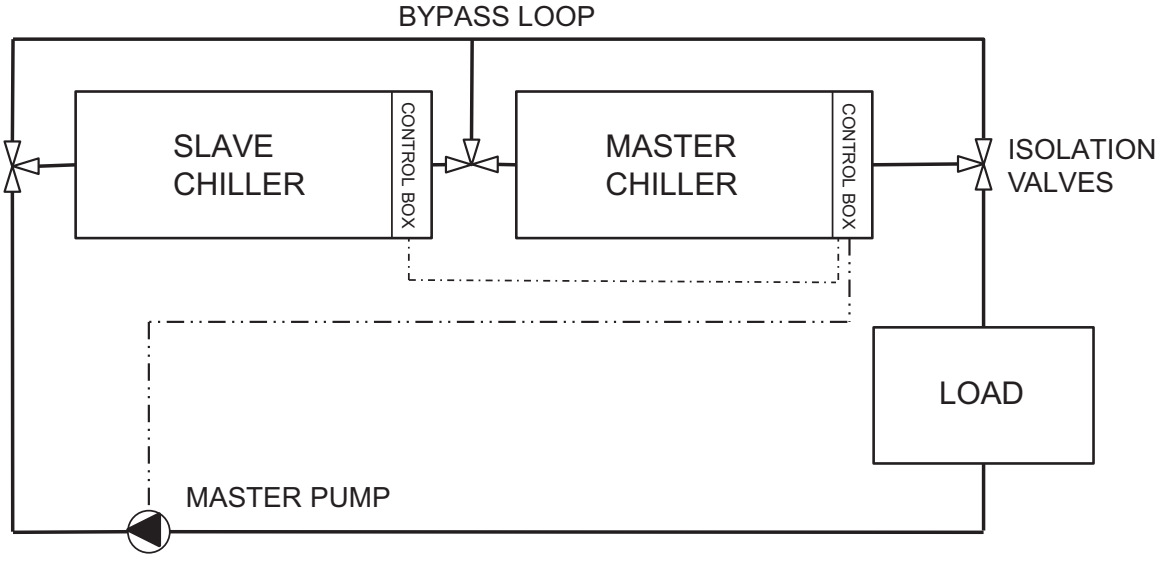
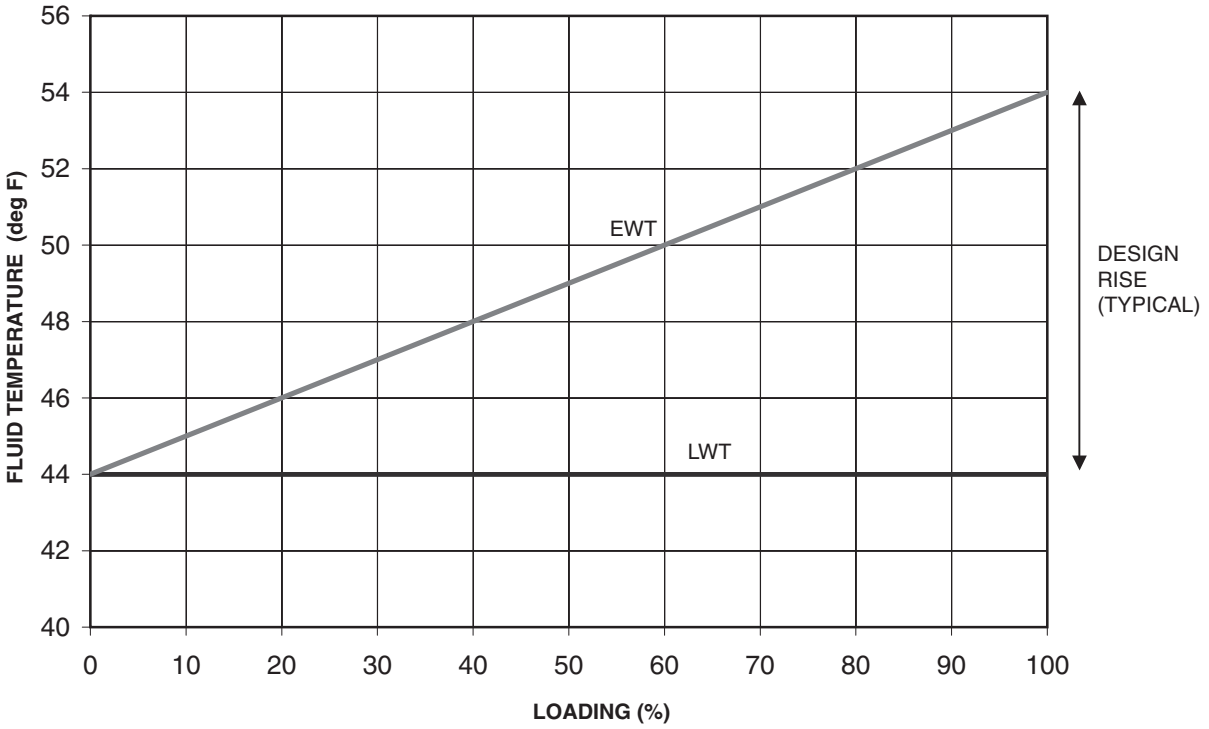
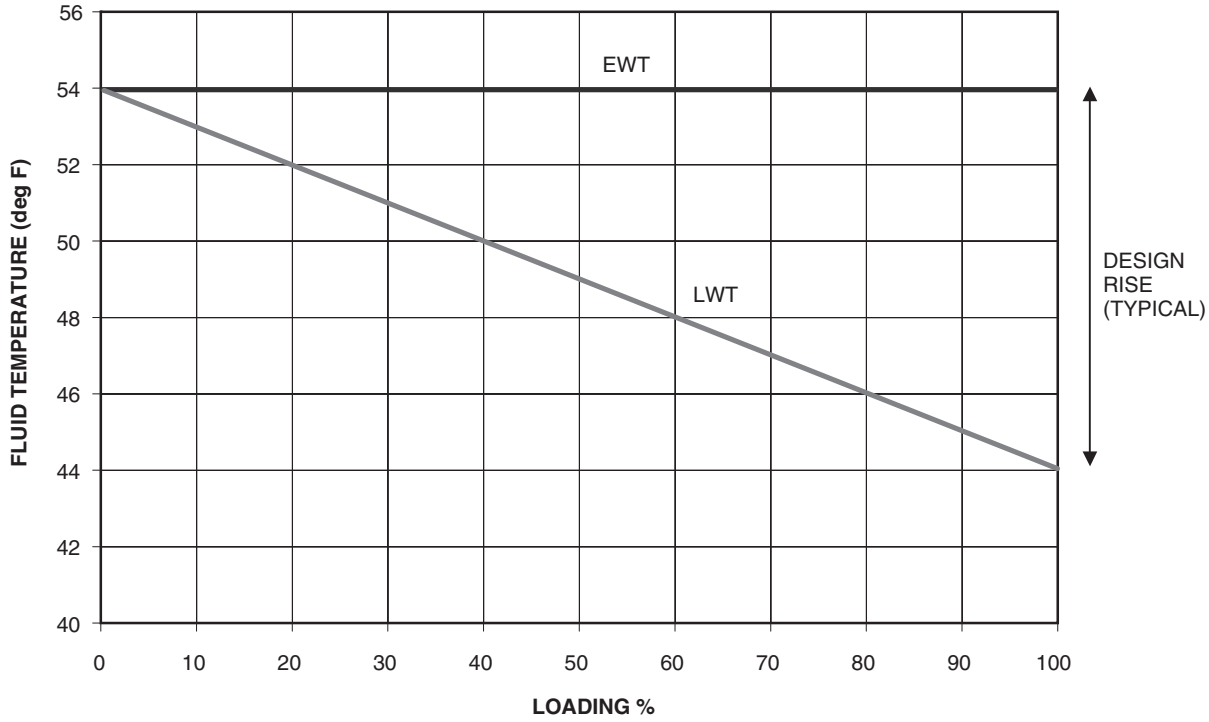


Fig. 29 — Typical Series Master/Slave Chillers Dedicated Primary Pumping, Constant Flow, Leaving Water Control



LEGEND
EWT — Entering Water Temperature
LWT — Leaving Water Temperature

Fig. 30 — Leaving Chilled Water Temperature Control



LEGEND
EWT — Entering Water Temperature
LWT — Leaving Water Temperature

Fig. 31 — Return Water Temperature Control Load Profile

OUTSIDE AIR TEMPERATURE RESET — The control system is capable of temperature reset based on outdoor-air temperature (OAT). Typically as the outdoor temperature decreases so does building cooling load. The chilled water temperature can be increased to lower energy usage while still meeting load demand.

To use Outdoor Air Temperature Reset, four variables must be configured: Cooling Reset Select, OAT No Reset Value (outdoor temperature at which no reset is required), OAT Full Reset Value (outdoor temperature at which full reset is required), and Cooling Reset Deg Value (the amount of temperature reset desired).

To configure this option with the Touch Pilot™ display:

DISPLAY NAME	PATH	VALUE
Cooling Reset Select 0=None, 1=OAT 2=Delta T, 3=4-20mA control 4=Space Temp	Main Menu → Configuration Menu → Reset Configuration	Default = 0° F (0° C) Range 0 to 4 F (0 to 2.2 C)
OAT No Reset Value		Default = 14 F (7.8 C) Range 14 to 125 F (7.8 to 69.4 C)
OAT Full Reset Value		Default = 14 F (7.8 C) Range 14 to 125 F (7.8 to 69.4 C)
Cooling Reset Deg. Value		Default = 0° F (0° C) Range –30 to 30 F (–16.7 to 16.6 C)

In the example in Fig. 32, the outdoor air temperature reset provides 0° F (0° C) chilled water set point reset at 85 F (29.4 C) outdoor-air temperature and 15° F (8.3° C) reset at 55 F (12.8 C) outdoor-air temperature.

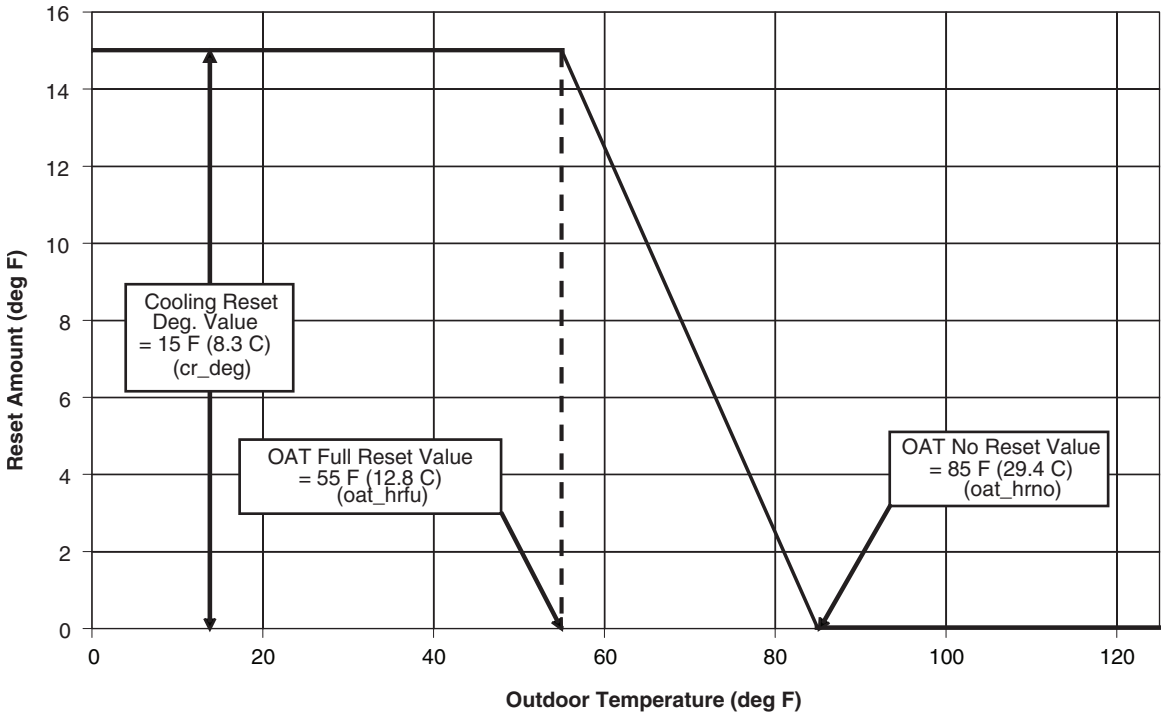


Fig. 32 — Example: OAT Temperature Reset

DELTA T RESET (RETURN WATER RESET) — The control system is also capable of performing fluid temperature reset based on evaporator fluid temperature difference (Delta T), sometimes called return water reset. Because the change in temperature through the evaporator is a measure of the building load, the temperature difference reset is, in effect, an average building load reset method.

Delta T Reset allows for the chilled water temperature set point to be reset upward as a function of the fluid temperature difference (building load).

NOTE: Delta T (Return Water) Temperature Reset should not be used with variable evaporator flow rate systems.

To use Delta T Reset, four variables must be configured: Cooling Reset Select, Delta T No Reset Value (evaporator temperature difference at which no chilled water temperature reset should occur), Delta T Full Reset Value (evaporator temperature difference at which the maximum chilled water temperature reset should occur), and Cooling Reset Deg Value (the maximum amount of temperature reset desired).

To configure this option with the Touch Pilot™ display:

DISPLAY NAME	PATH	VALUE
Cooling Reset Select 0=None, 1=OAT 2=Delta T, 3=4-20mA control 4=Space Temp	Main Menu→ Configuration Menu→ Reset Configuration	Default = 0° F (0° C) Range 0 to 4 F (0 to 2.2 C)
Delta T No Reset Temp		Default = 0° F (0° C) Range 0° F to 25 F (0° C to 13.8 C)
Delta T Full Reset Temp		Default = 0° F (0° C) Range 0° F to 25 F (0° C to 13.8 C)
Cooling Reset Deg Value		Default = 0° F (0° C) Range –30 to 30 F (–16.7 to 16.6 C)

In the example in Fig. 33 using Return Water Temperature Reset, the chilled water temperature will be reset by 5° F (2.8° C) when the Fluid Temperature Difference is 2° F (1.1° C) and 0° F (0° C) reset when the Temperature Difference is 10° F (5.6° C).

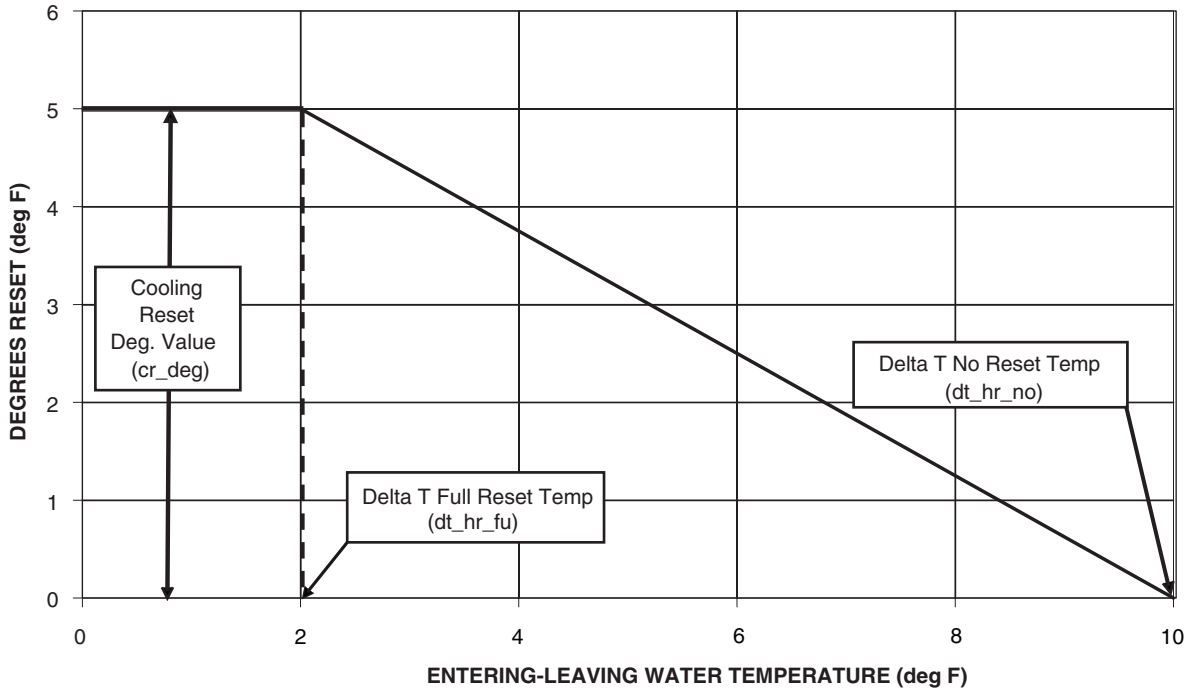


Fig. 33 — Example: Return Water Reset

4 to 20 mA TEMPERATURE RESET — The control system is also capable of temperature reset based on an externally powered 4 to 20 mA signal. The Energy Management Module (EMM) is required for temperature reset using a 4 to 20 mA signal.

To use 4 to 20 mA Temperature Reset, four variables must be configured: Cooling Reset Select, Current No Reset Value (milliamp signal at which no temperature reset is required), Current Full Reset Value (milliamp signal at which full temperature reset is required), and Cooling Reset Deg Value (the maximum amount of temperature reset desired).

⚠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. Touch Pilot 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.

To configure this option with the Touch Pilot™ display:

DISPLAY NAME	PATH	VALUE
Cooling Reset Select 0=None, 1=OAT 2=Delta T, 3=4-20mA control 4=Space Temp	Main Menu→ Configuration Menu→ Reset Configuration	Default = 0° F (0° C) Range 0 to 4 F (0 to 2.2 C)
Current No Reset Value		Default = 0° F (0° C)) Range 0 to 20 F (0 to 11.1 C)
Current Full Reset Value		Default = 0° F (0° C)) Range 0 to 20 F (0 to 11.1 C)
Cooling Reset Deg Value		Default = 0° F (0° C) Range –30 to 30 F (–16.7 to 16.6 C)

In the example in Fig. 34, at 4 mA no reset takes place and at 20 mA, 5° F (2.8° C) chilled water set point reset is required.

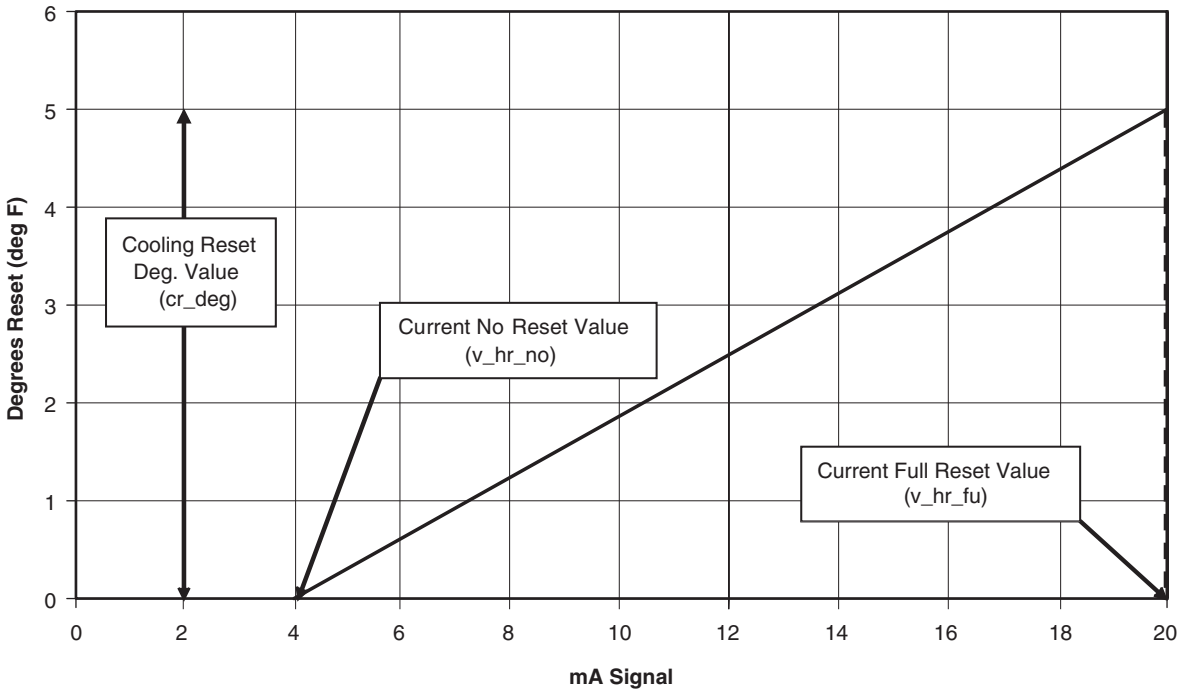


Fig. 34 — Example: 4 to 20 mA Temperature Reset

SPACE TEMPERATURE RESET — The control system is also capable of temperature reset based on space temperature. The energy management module (EMM) and accessory sensor (P/N 33ZCT55SPT) are required for temperature reset using space temperature. This sensor measures the space (room) temperature for the purpose of set point reset. Only units with the optional energy management module are fitted with this sensor.

To use Space Temperature Reset, four variables must be configured: Cooling Reset Select, Space T No Reset Value (space temperature at which no temperature reset is required), Space T Full Reset Value (space temperature at which full temperature reset is required), and Cooling Reset Deg Value (the maximum amount of temperature reset desired).

To configure this option with the Touch Pilot display:

DISPLAY NAME	PATH	VALUE
Cooling Reset Select 0=None, 1=OAT 2=Delta T, 3=4-20mA control 4=Space Temp	Main Menu→ Configuration Menu→ Reset Configuration	Default = 0° F (0° C) Range 0 to 4 F (0 to 2.2 C)
Space T No Reset Value		Default = 14 F (7.8 C) Range 14 to 125 F (7.8 to 69.4 C)
Space T Full Reset Value		Default = 14 F (7.8 C) Range 14 to 125 F (7.8 to 69.4 C)
Cooling Reset Deg Value		Default = 0° F (0° C) Range –30 to 30 F (–16.7 to 16.6 C)

In the space temperature reset example in Fig. 35, a reset of 6° F (3.3° C) is applied when the space temperature is 68 F (20.0 C) and no reset takes place when the space temperature is 72 F (22.2 C).

Demand Limit — There are three types of demand limiting that can be configured. The first type is through switch control, which will reduce the maximum capacity to up to 3 user-configurable percentages. The second type is by 4 to 20 mA signal input which will reduce the maximum capacity linearly between 100% at a 4 mA input signal (no reduction) down to the user-configurable level at a 20 mA input signal. The third type uses the CCN Loadshed module and has the ability to limit the current operating capacity to maximum and further reduce the capacity if required. Demand limit control can be based on a calculated capacity level.

SWITCH CONTROLLED DEMAND LIMIT — The control system is capable of demand limit based on a field-supplied switch for 1-step demand limit or 2 switches for 3-step demand limit. One-step demand limit is standard. The 3-step switch control of demand limiting requires the energy management module (EMM). Demand limit steps are controlled by two relay switch inputs field wired to TB5-5 and TB5-14 for Switch 1 (LIM_SW1) and TB6-14 and TB6-15 for Switch 2 (LIM_SW2).

For demand limit by switch control, closing the first demand limit contact will put the unit on the first demand limit level by capacity. The unit will not exceed the percentage of capacity entered as demand limit switch 1 set point. Closing contacts on the second demand limit switch prevents the unit from exceeding the demand limit entered as demand limit switch 2 set point. If both demand limit switch contacts are closed the unit will not exceed the limits set by the switch limit set point 3. See the table below.

CONTACT	ACTIVE DEMAND LIMIT			
	NONE	LIMIT 1	LIMIT 2	LIMIT 3
LIM_SW1	Open	Close	Open	Close
LIM_SW2	Open	Open	Close	Close

If the demand limit percentage is set below minimum unit operation, the unit will go into override mode. See Override #91: Demand Limit section on page 42.

To use demand limit, select the type of demand limiting to use by configuring the Demand Limit Select variable (Main Menu → Configuration Menu → General Configuration → Demand Limit Type Select) to Switch. Configure the demand limit set points based on the type selected.

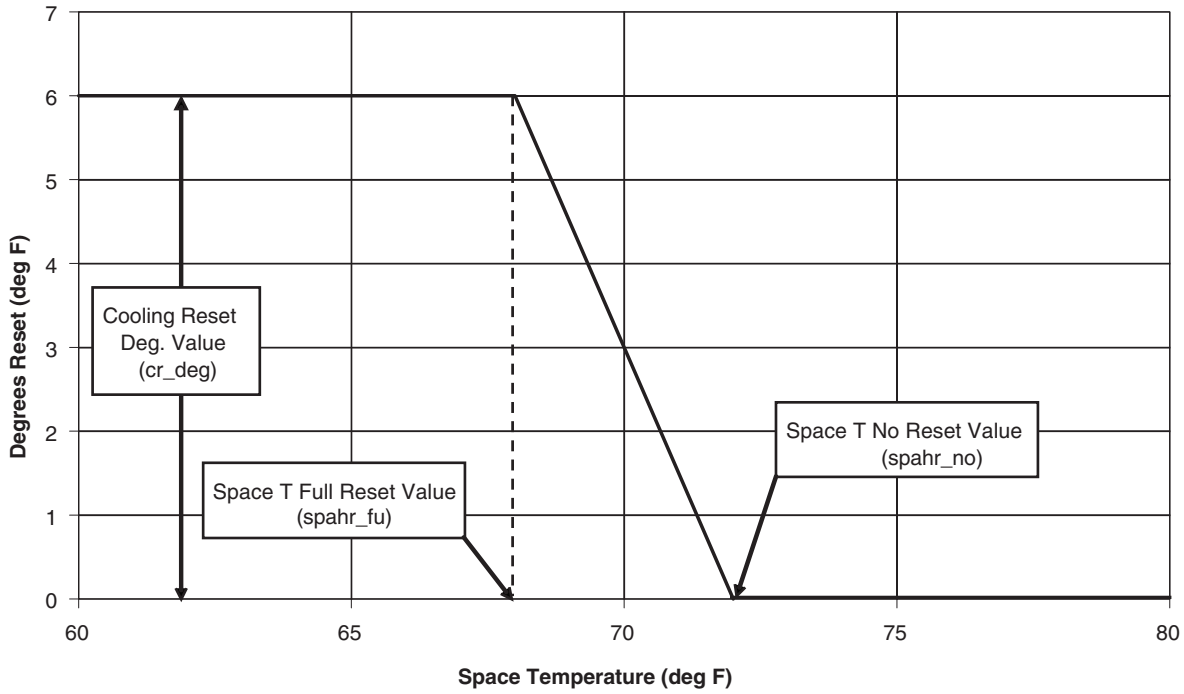


Fig. 35 — Example: Space Temperature Reset

Switch Controlled — If using 2 or 3-step demand limit control, an energy management module must be installed. One-step demand limit control does not require the energy management module. To configure demand limit for switch control, three parameters for 1-step switch control must be configured. For 2 or 3-step control, additional set point parameters must be configured. The parameters are: the type of Demand Limit Selection, the setting for Switch Limit Setpoint 1, the setting for Switch Limit Setpoint 2 (if required) and the setting for Switch Limit Setpoint 3 (if required).

To configure this option with the Touch Pilot™ display:

DISPLAY NAME	PATH	VALUE
Demand Limit Type Select	Main Menu → Configuration Menu → General Configuration	Default = 0 (None) Range 0 to 4
Switch Limit Setpoint 1	Main Menu → Setpoint Table	Default = 100% Range 0 to 100%
Switch Limit Setpoint 2	Main Menu → Setpoint Table	Default = 100% Range 0 to 100% (Not required for 1-Step Control)
Switch Limit Setpoint 3	Main Menu → Setpoint Table	Default = 100% Range 0 to 100% (Not required for 1 or 2-Step Control)

In the following example, 2-step demand limit based on capacity is desired with the first switch closure limiting the capacity to 60%. The second switch closure is to limit the capacity to 40%. Demand Limit Switch 1 is 60% and Demand Limit Switch 2 is 40%. Since no third-step demand limit is required, Switch Limit Setpoint 3 is set at 0%.

DISPLAY NAME	VALUE
Demand Limit Type Select	1
Switch Limit Setpoint 1	60%
Switch Limit Setpoint 2	40%
Switch Limit Setpoint 3	0%

EXTERNALLY POWERED (4 to 20 mA) DEMAND LIMIT — The energy management module is required for 4 to 20 mA demand limit control. An externally powered 4 to 20 mA signal must be connected to TB6-1 and TB6-2. Typically the 4 to 20mA signal is provided by an active outdoor sensor connected to this input. This signal is read by a transducer type (0 to 5 vdc) on the EMM board via a field-installed 0.5 W 250-ohm resistor.

⚠ 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. Touch Pilot 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.

To configure demand limit for 4 to 20 mA control based on unit capacity, one parameter must be configured. The parameter is Demand Limit Type Select. The value of the capacity limit will vary linearly for 0% to 100% based on the input signal where 4 mA is 100% and 20 mA is 0% of total unit capacity.

To configure this option with the Touch Pilot display:

DISPLAY NAME	PATH	VALUE
Demand Limit Type Select	Main Menu → Configuration Menu → General Configuration	2 (4-20mA Control) (Default = 0 [None])

In the example in Fig. 36, a 4 mA signal is Demand Limit 100% and a 20 mA Demand Limit signal is 0%. The 4 to 20 mA signal is connected to TB6-1 and TB6-2. The demand limit is a linear interpolation between the two values entered. If the machine receives a 12 mA signal, the machine controls will limit the capacity to 50%.

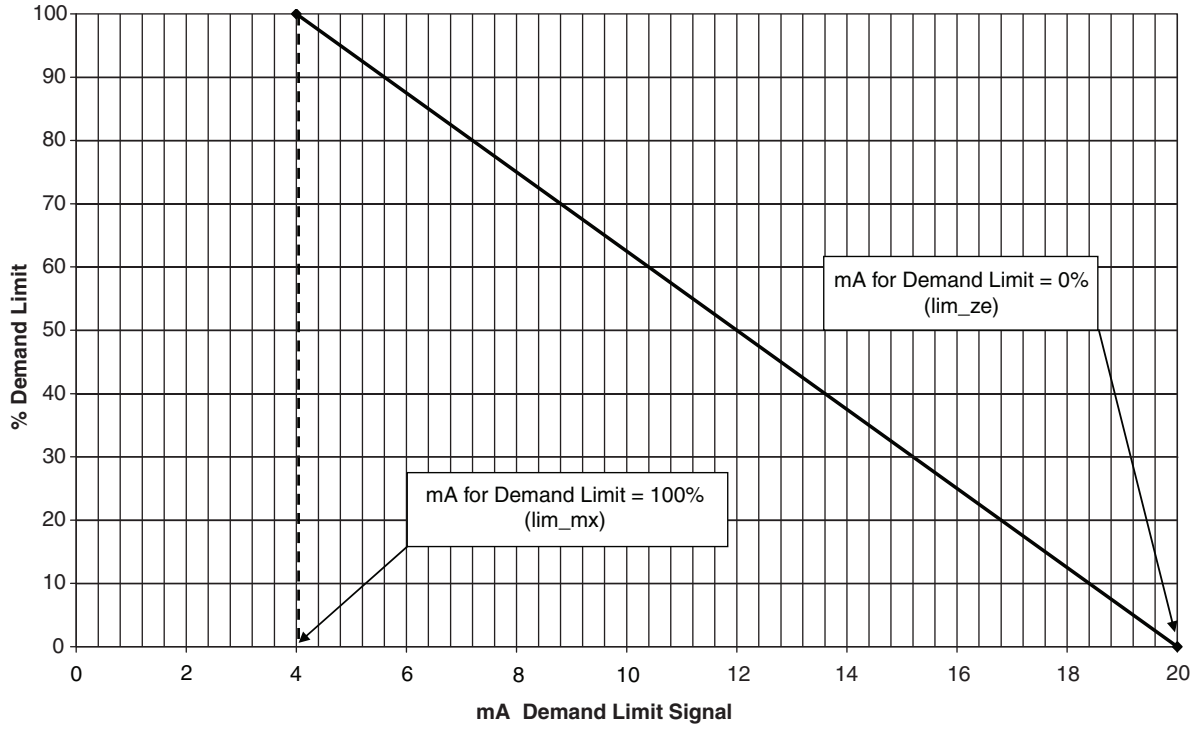


Fig. 36 — Example: 4 to 20 mA Demand Limit

CCN LOADSHED CONTROLLED DEMAND LIMIT — To configure Demand Limit for CCN Loadshed control, the unit Operating Type Control must be in CCN control. With the Touch Pilot™ display, the machine must be started in Network Mode. Network control can be executed from the GENUNIT table.

The unit must be controlled by a Chillervisor module. The Chillervisor module can force the demand limit variable and directly control the capacity of the machine. Additionally, the unit's set point will be artificially lowered to force the chiller to load to the demand limit value.

Ice Storage Operation — Chiller operation can be configured to make and store ice. The energy management module and an Ice Done Switch are required for operation in the Ice Mode. In this configuration, the machine can operate with up to three cooling set points: Cooling Setpoint 1 is used during the Occupied period, Cooling Setpoint 2 is used during the Unoccupied period when the ice build is complete (Ice Done Switch is closed), and Cooling Ice Setpoint is used during the unoccupied period while ice is building (Ice Done Switch is open). Refer to the 30XV Typical Field Wiring Schematic figure on page 142 for Ice Done Switch wiring.

To configure this option with the Touch Pilot™ display:

DISPLAY NAME	PATH	VALUE
Ice Mode Enable	Main Menu → Configuration Menu General Configuration	Radio button (YES/NO) Default = No
Cooling Ice Setpoint	Main Menu → Setpoint Table	Default = 44 F (6.7 C) Range = –20 F to 78.8 F (–29 C to 26 C)

Broadcast Configuration — The 30XV chiller with Greenspeed® intelligence is capable of broadcasting outside-air temperature (OAT), time, date, and holiday status to all elements in the CCN system. In the stand-alone mode, broadcast must be activated to utilize holiday schedules and adjust for daylight saving time. If the chiller is to be connected to a CCN system, determine which system element is to be the network broadcaster and activate broadcast in all other system elements. Broadcast is activated and deactivated in the Touch Pilot Broadcast Menu (Main Menu → Configuration Menu → Broadcast Menu → Brocasts).

Only one element should be configured as a broadcaster. If a broadcast is activated by a device that has been designated as a network broadcaster, then broadcast time, date, and holiday status will be updated over the CCN system. If broadcast is enabled, a broadcast acknowledger must also be enabled. The acknowledger cannot be the same machine as the broadcasting machine.

ACTIVATE — The Activate variable enables the broadcast function of the Touch Pilot controls. If this variable is set to 0, this function is not used and holiday schedules and daylight savings compensation are not possible. Setting this variable to 1 allows the machine to broadcast and receive broadcasts on the network. The following information is broadcast: the time with compensation for daylight savings, date, holiday flag, and the outdoor-air temperature.

Set this variable to 2 for stand-alone OAT broadcast. With this configuration, daylight saving time and holiday determination will be done without broadcasting through the bus.

To configure this option with the Touch Pilot™ display:

DISPLAY NAME	PATH	VALUE
Activate	Main Menu → Configuration Menu → Broadcast Menu → Brocasts	0 = Disabled 1 = Broadcast time, date, holiday flag, and OAT 2 = OAT broadcast only (Daylight savings time and holiday determination will be done without broadcasting through the bus)

OAT BROADCAST — To enable the outside air temperature (OAT) broadcast, the unit broadcasting the temperature must be configured with its own CCN Bus and CCN Address. Leaving the parameters at the factory default of 0 for the CCN Bus and CCN Address disables the OAT Broadcast function. Once configured, the first broadcast of OAT will be within 5 minutes.

To configure this option with the Touch Pilot display:

DISPLAY NAME	PATH	VALUE
Activate	Main Menu → Configuration Menu → Broadcast Menu → Brocasts	Range = 0 to 2 Default = 2
OAT Broadcast Bus #		Range = 0 to 239 Default = 0
Element #		Range = 0 to 239 Default = 0

BROADCAST ACKNOWLEDGER — This configuration defines if the chiller will be used to acknowledge broadcast messages on the CCN bus. One broadcast acknowledger is required per bus, including secondary buses created by the use of a bridge. The broadcast acknowledger must be configured through the Network Service Tool.

Alarm Control

ALARM ROUTING CONTROL — Alarms recorded on the chiller can be routed through the CCN. To configure this option, the Touch Pilot controls must be configured to determine which CCN elements will receive and process alarms. Input for the decision consists of eight digits, each of which can be set to either 0 or 1. Setting a digit to 1 specifies that alarms will be sent to the system element that corresponds to that digit. Setting all digits to 0 disables alarm processing. The factory default is 00000000. See Fig. 37. The default setting is based on the assumption that the unit will not be connected to a network. If the network does not contain a ComfortVIEW™, ComfortWORKS™, TeLink, DataLINK™, or BACLink module, enabling this feature will only add unnecessary activity to the CCN communication bus.

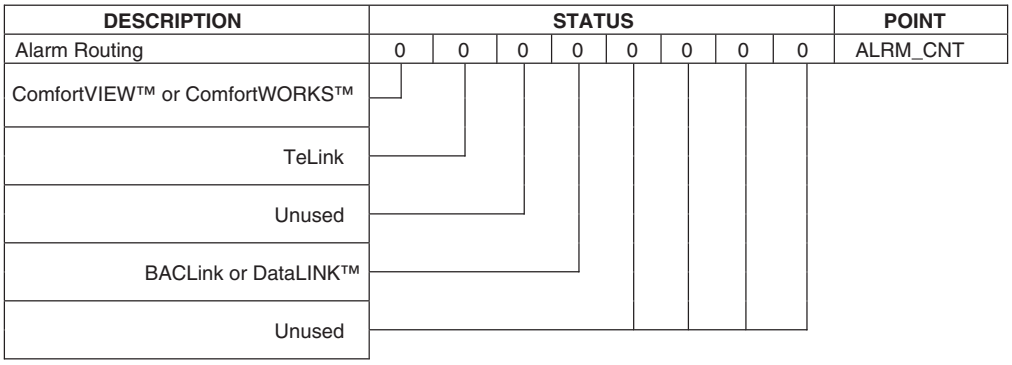


Fig. 37 — Alarm Routing Control

Typical configuration of the Alarm Routing variable is 11010000. This Alarm Routing status will transmit alarms to ComfortVIEW™ software, TeLink, BACLink, and DataLINK.

This option cannot be configured with the Touch Pilot display. To change the alarm control routing through the Network Service Tool, navigate to point **ALRM_CNT** in table **ALARMDEF**.

ALARM EQUIPMENT PRIORITY — The ComfortVIEW software uses the equipment priority value when sorting alarms by level. The purpose of the equipment priority value is to determine the order in which to sort alarms that have the same level. A priority of 0 is the highest and would appear first when sorted. A priority of 7 would appear last when sorted. For example, if two chillers send out identical alarms, the chiller with the higher priority would be listed first. The default is 4. This variable can only be changed when using the ComfortVIEW software, or Network Service Tool. This variable cannot be changed with the Touch Pilot display. To configure this option with the Network Service Tool, navigate to point **EQP_TYP** in table **ALARMDEF**.

COMMUNICATION FAILURE RETRY TIME — This variable specifies the amount of time that will be allowed to elapse between alarm retries. Retries occur when an alarm is not acknowledged by a network alarm acknowledger, which may use either ComfortVIEW software or TeLink. If acknowledgment is not received, the alarm will be re-transmitted after the number of minutes specified in this decision. This variable can only be changed when using the ComfortVIEW software, or Network Service Tool. This variable cannot be changed with the Touch Pilot display. To configure this option with the Network Service Tool, navigate to point **RETRY_TM** in table **ALARMDEF**.

RE-ALARM TIME — This variable specifies the amount of time that will be allowed to elapse between re-alarms. A re-alarm occurs when the conditions that caused the initial alarm continue to persist for the number of minutes specified in this decision. Re-alarming will continue to occur at the specified interval until the condition causing the alarm is corrected. This variable can only be changed when using the ComfortVIEW software, or Network Service Tool. This variable cannot be changed with the Touch Pilot display. To configure this option with the Network Service Tool, navigate to point **RE_ALARM** in table **ALARMDEF**.

ALARM SYSTEM NAME — This variable specifies the system element name that will appear in the alarms generated by the unit control. The name can be up to 8 alphanumeric characters in length. This variable can only be changed when using the ComfortVIEW™ software or Network Service Tool. This variable cannot be changed with the Touch Pilot display. To configure this option with the Network Service Tool, navigate to point **ALRM_NAM** in table **ALARMDEF**.

Daylight Savings Time Configuration —

The 30XV chiller with Greenspeed® intelligence control contains software which can automatically correct for daylight saving time. This software is accessible from the Touch Pilot™ display, ComfortVIEW software, or Network Service Tool.

To enable this feature, Daylight Saving Select must be set to 1. The start of daylight saving must be configured by setting the Month, Day of Week, and Week of Month. The end for Daylight Saving must also be configured. To configure this option with the Touch Pilot display, see Table 28.

Table 28 — Daylight Saving Time Configuration

DISPLAY NAME	PATH	VALUE
Activate	Main Menu → Configuration Menu → Broadcast Menu → Brocasts	1 or 2 Default = 2
Daylight Savings Select		Enable Default = Dsble
Entering		
Month		Enter Starting Month for Daylight Saving
Day of Week (1=Monday)		Enter the Day of the Week Daylight Saving Starts
Week of Month		Enter Week of the Month Daylight Saving Starts
Leaving		
Month		Enter Ending Month for Daylight Saving
Day of Week (1=Monday)		Enter the Day of the Week Daylight Saving ends
Week of Month		Enter Week of the Month Daylight Saving ends

Capacity Control Overrides —

The following capacity control overrides (Main Menu → Maintenance Menu → Capacity Control → Override Capacity A, B) will modify the normal operation routine. If any of the override conditions listed below is satisfied, the override will determine the capacity change instead of the normal control. Overrides are listed by priority order and are often linked to unit operating modes. See Table 29 for a list of capacity control overrides. See the Operating Modes section on page 50 for more information regarding operating modes.

Override #2: Low Suction Pressure — This override is activated when the EXV is not in DSH mode and the suction saturation temperature (SST) goes below 13.25 F (–10.4 C) for water or below (13.25 F – (34 F – Brine Freeze Setpoint)) for units configured with brine. The controller at this point starts to unload the unit until the SST exceeds 34 F (1.1 C).

Override #6: EWT < Control Point —This override stops the compressors without alarms.

Override #7: Ramp Loading — No capacity increase will be made if the unit is configured for ramp loading and the rate of change of the leaving water is greater than Ramp Loading Rate.

Override #9: Demand Limit — This override mode is active when a command to limit the capacity is received and the capacity meets or exceeds the demand limit value. If the current unit capacity is greater than the active capacity limit value, the unit unloads per unloading scheme. The current capacity will stop increasing when it reaches the capacity limit value minus 3%.

Override #10: Flow Switch is Open — This override prohibits compressor operation until the Evaporator flow switch is closed.

Override #11: Customer Interlock is Closed — This override prohibits compressor operation until the customer interlock is opened.

Override #12: Flow Available Delay — This override prohibits chiller operation until flow has started.

Override #14: Low LWT (Leaving Water Temperature) — This override stops the compressors if LWT < freeze + freeze_ov (freeze = Main Menu → Configuration Menu → Service Parameters → Brine Freeze Setpoint; freeze_ov = Main Menu → Configuration Menu → Service Parameters → Freeze Override Offset). The goal is to stop the unit without having an alarm if the LWT goes too low so that the unit can start automatically without the need to reset alarm. For example, freeze is 34 F (1.1 C); the user can decide to add a threshold to force the compressors to stop immediately without alarm at 35 F (1.7 C).

Override #15: Compressor Disabled — This override is shown when either of the compressors are disabled through Main Menu → Configuration Menu → Compressor Enable menu.

Override #16: High Discharge Pressure — This override attempts to avoid a high pressure failure. If the saturated condensing temperature for the circuit is above the high pressure threshold the compressor is unloaded while the fan is run at maximum frequency.

Override #23: Low SP (Suction Pressure) — When the unit is configured with evaporator fluid as water (Main Menu → Configuration Menu → Service Parameters → Evaporator Fluid Type), this override gets activated at suction pressure (SP) < 27.7 psig (191 kPa) minus 5 psig (34.5 kPa). In this mode the circuit will not be allowed to load further until the SST goes above 30 F (–1.1 C). When the unit is configured with evaporator fluid as brine (Main Menu → Configuration Menu → Service Parameters → Evaporator Fluid Type), this override gets activated at suction pressure (SP) < Brine Freeze Setpoint (converted to psig) (Main Menu → Configuration Menu → Service Parameters → Brine Freeze Setpoint) minus 5 psig (34.5 kPa).

Override #34: Low SST (Saturated Suction Temperature) — The compressor is not allowed to start if the SST is lower than –13 F (–25 C).

Override #53: ON OFF Delay — This override is activated when the unit is in off state (manually stopped or because of alarm shutdown) and is requested to start through Local On, Remote On, CCN On or after alarm shutdown reset. The control will remain in this state for the next 90 seconds.

Override #56: Isolation Valve Opening Delay — This override mode is activated when the actuated ball valves (if equipped) on the discharge lines are opening (approximately 2-minute delay).

Override #59: Low Oil Level — This override is only effective when the circuit is not running. The override will prevent the circuit from starting up with a low oil level.

Override #62: High Compressor Motor Temperature — This override prevents the compressor motor temperature from rising above the high temperature limit, but still allows the chiller to run close to the high temperature limit by unloading the compressor. If the motor temperature is greater than 195.8 F (91 C), the compressor will not load. This override will control the loading to the compressor to maintain a maximum motor temperature of 194 F (90 C). The circuit will come out of this mode if the motor temperature falls below 190.4 F (88 C) or if motor temperature is below 195.8 F (91 C) and water temperature is established.

Override #66: High Discharge Gas Temperature (DGT) — This override avoids high DGT tripout by either increasing compressor capacity or decreasing the capacity and stopping the compressor depending on the conditions. The increase in capacity happens when the DGT > 201 F (93.9 C) to lower DGT. The control seeks to control the DGT at 190 F (87.8 C) and if the DGT goes below 186.4 F (85.8 C) the unit goes to normal control. The decrease in capacity followed by unit stop happens if Override 66 is activated and evaporator leaving water temperature is close to the freeze point or lower than the control point. The compressor restarts if the DGT goes below 186.4 F (85.8 C) and more than 5 minutes have passed. This override has priority over almost every other one (including the Demand Limit override).

Override #67: DGT off Protection (Discharge Gas Temperature) — This override is activated before the unit starts and prevents the unit from starting if the DGT is still greater than DGT activation point or if 5 minutes has not passed since the last high DGT shutdown.

Override #77: Oil Pressure at Start — This override is activated when the unit has just started passed the start timer and OP<(SP+19.5) AND OP<(0.7*(DP-SP)+SP).

In this override the unit freezes the compressor loading and waits until the oil pressure exceeds the above conditions and then exits to normal mode of operation.

Override #91: Demand Limit — This override is activated when the demand limit is set lower than the minimum possible unit capacity. The unit shuts down and/or is on hold until the demand limit is changed to higher than the minimum unit capacity.

Table 29 — Capacity Control Overrides

NO.	DESCRIPTION
0	Normal Operation
2	Low Suction Pressure
6	EWT < control point
7	Ramp Loading
9	Demand Limit Reached
10	Flow switch is open
11	Customer Interlock is closed
12	Flow Available Delay
14	Low LWT
15	Compressor Disabled
16	High Discharge Pressure
23	Low SP
34	Low SST
53	ON OFF Delay
56	Evaporator Heater Isolation Valve Opening Delay
59	Low Oil Level
62	High Compressor Motor Temperature
66	High Discharge Gas Temperature
67	DGT Off Protection
77	Oil Pressure at Start
91	Demand Limit

Head Pressure Control (Variable Speed Fans) — The head pressure is controlled through the Touch Pilot display by adjusting fan speed through variable speed drive(s). The command sent to the drive is at a frequency to maintain the lowest condensing temperature possible, and thus, the highest unit efficiency. The frequency command sent is based on a function of compressor capacity, OAT, and leaving fluid temperature. If the capacity is stable and no overrides have occurred recently, an algorithm attempts to optimize fan frequency based on total power feedback. The optimization control can be turned on and off through the Network Service Tool (Service → Fan_CFG → Optimization Enable On, Off [xt_enable]).

Fan control continuously monitors all inputs and outputs and the transitions between the modes are defined based on continuous measurements of 2 inputs (Discharge Pressure and Discharge Gas Temperature). Fan modes of operation include the following:

- STANDARD: Normal mode of operation before using the optimum-seeking algorithm.

- WAITOPT, OPTIMZE: Trying to optimize the fan frequency during the optimum-seeking algorithm.
- FREEZE: Fan frequencies are frozen after completion of the optimum-seeking algorithm cycle. The fan control remains in this mode until the LWT, the compressor load, or the outdoor temperature changes by a defined amount. If the change conditions are met the fan control goes back to the WAITOPT mode followed by the OPTIMZE modes.
- DGT: High Discharge Gas Temperature mode. The VFD increases the speed of the fan to reduce DGT.
- DP_HIGH, DP_LOW: High Discharge Pressure Mode, Low Discharge Pressure Mode: The VFD controls the speed of the fan to bring SCT into normal operating range.
- OFF: Fans are not running.
- START: Start mode. The frequency of the fans is defined based on the OAT.

Head Pressure Control (Fixed Speed Fans) — The head pressure is controlled through the Touch Pilot display by adjusting the number of fans running. The controller determines the minimum number of fans required to support unit operation so the unit can run at the most efficient point. At start up the number of fans on is calculated using OAT. After 60 seconds, an equation is used to determine the number of fan required based on OAT, EWT, and circuit capacity.

There are additional modes used for fixed speed fans:

DP High — Mode decreases the discharge pressure as fast as possible to prevent high pressure trips. This mode turns on all fans.

DP High Discharge Pressure — Mode avoids high discharge pressure that would cause the compressor to run outside of the compressor envelope. In this mode, the pressure is controlled to a Discharge Pressure set point.

DGT High — Mode decreases the discharge temperature as fast a possible to prevent high DGT alarms. This mode turns on all fans.

Sound Optimization — This option runs the chiller at a lower sound level by limiting the compressor and fan speed. The factors in Table 30 control this option. The factors are set from the factory and should not be lowered, as this may cause operational issues. The set points for this option are on a label inside the door of the control panel.

The compressor speed, fMaxOvrA or B, can be set to a lower max frequency. The max frequency is limited by the max frequency of the base unit. This option is enabled by changing fMaxEnA or B to "yes".

The fan speed limitation is enabled by setting fan_fact to any value other than 1.00. The factor will be applied to the fan curve calculation for the fan speed in Hz. If the factor is 0.7, the fan speed will be 70% of the calculated fan speed. If high saturated condensing temperature occurs, the controls will override this feature and increase fan speed to keep the chiller running.

Table 30 — Sound Optimization Factor Settings

FACTOR	COMPRESSOR SPEED	RANGE	DEFAULT
Enable Max Frequency A	fMaxEnA	no/yes	0 (no)
Enable Max Frequency B	fMaxEnB	no/yes	0 (no)
Max Frequency Override A	fMaxOvrA	30 to 105	75
Max Frequency Override B	fMaxOvrB	30 to 105	75
Fan Freq Fctor (0.7-1.1)	fan_fact	0.7 to 1.1	1.00

PRE-START-UP

IMPORTANT: Complete the Start-Up Checklist for 30XV Liquid Chillers at the end of this publication.

The checklist assures proper start-up of a unit, and provides a record of unit condition, application requirements, system information, and operation at initial start-up.

Do not attempt to start the chiller until the following checks have been completed.

System Check

1. Check that auxiliary components, such as the chilled fluid circulating pump, air-handling equipment, or other equipment to which the chiller supplies liquid are operational. Consult manufacturer's instructions. If the unit has field-installed accessories, be sure all are properly installed and wired correctly. Refer to unit wiring diagrams.
2. Open compressor suction service valves (if equipped).
3. Open discharge line, liquid line, oil line, and economizer (if equipped) service valves.
4. Fill the chiller fluid circuit with clean water (with recommended inhibitor added) or other non-corrosive fluid to be cooled. Bleed all air out of high points of system. If outdoor temperatures are expected to be below 32 F (0° C), sufficient inhibited propylene glycol or other suitable corrosion inhibited antifreeze should be added to the chiller water circuit to prevent possible freeze-up.

   The chilled water loop must be cleaned before the unit is connected. It is recommended that the chiller pumps be equipped with a start-up filter screen to remove particulates from the loop. The start-up filter should be replaced after 24 hours of operation
5. Check tightness of all electrical connections.
6. Electrical power source must agree with unit nameplate.
7. Oil separator heaters must be energized for 24 hours prior to start-up.

START-UP

Actual Start-Up — *Actual start-up should be done only under supervision of a qualified refrigeration technician.*

1. Be sure all oil, suction valves, discharge valves (if equipped) and liquid line service valves are open.
2. Using the Touch Pilot control, set leaving-fluid set point (Main Menu → Setpoint Table → Cooling Setpoint 1). No cooling range adjustment is necessary.
3. If optional control functions or accessories are being used, the unit must be properly configured. Refer to Configuration Options section for details.
4. Start the chilled fluid pump, if unit is not configured for pump control (Main Menu → Configuration Menu → Pump Configuration →Evaporator Pumps Sequence = 0).
5. Complete the Start-Up Checklist to verify all components are operating properly.
6. Press the Start/Stop button ⏻ located in the upper right corner of the Touch Pilot display and then select Local On.
7. Allow unit to operate and confirm that everything is functioning properly. After unit operation stabilizes, check to see that leaving set-point Control Point (Main Menu → Setpoint Table → Cooling Setpoint 1) agrees with leaving fluid temperature (Main Menu → Temperatures → Evap Leaving Fluid).

Operating Limitations

TEMPERATURES — Unit operating temperature limits are listed in the table below.

TEMPERATURE	F	C
Maximum Ambient Temperature	125	52
Minimum Ambient Temperature*	32	0
Maximum Evaporator EWT†	95	35
Maximum Evaporator LWT	60	15
Minimum Evaporator LWT	38**	3.3
Maximum Evaporator Glycol EWT†	95	35
Minimum Evaporator Glycol LWT	30	16.7

LEGEND

EWT — Entering Fluid (Water) Temperature
LWT — Leaving Fluid (Water) Temperature

* Lowest allowable ambient temperature for the standard unit to start and operate is 32 F (0° C). With the inclusion of wind baffles and variable speed fans (field fabricated and installed), the unit is capable to start as low as 0 F (–17.8 C) and to operate as low as –20 F (–29 C) ambient temperature.
†For sustained operation, EWT should not exceed 70 F (21.1 C).
**Unit requires brine fluid for operation below this temperature.

Low Ambient Temperature Operation — If unit operating temperatures below 32 F (0° C) are expected, the following measures are recommended:

- Consider higher loop volumes, 6 to 10 gallons per nominal ton.
- Loop freeze protection with glycol is strongly recommended to a minimum of 15° F (8.3° C) below lowest anticipated ambient temperature.
- Chilled water pump control is required.
- If wind velocity is expected to be greater than 5 mph (8 km/h) wind baffles and brackets must be field-fabricated and installed. See the 30XV Installation Instructions for more information.

VOLTAGE

Main Power Supply — Minimum and maximum acceptable supply voltages are listed in the Installation Instructions.

Unbalanced 3-Phase Supply Voltage — Never operate a motor where a phase imbalance between phases is greater than 2%.

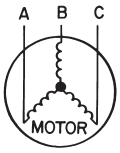
To determine percent voltage imbalance:

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

The maximum voltage deviation is the largest difference between a voltage measurement across 2 legs and the average across all 3 legs.

Example: Supply voltage is 240-3-60.

AB = 243v
BC = 236v
AC = 238v



1. Determine average voltage:

$$\text{Average voltage} = \frac{243+236+238}{3} = \frac{717}{3} = 239$$

2. Determine maximum deviation from average voltage:
   (AB) 243 – 239 = 4 v
   (BC) 239 – 236 = 3 v
   (AC) 239 – 238 = 1 v
   Maximum deviation is 4 v.
3. Determine percent voltage imbalance:

$$\% \text{ Voltage Imbalance} = 100 \times \frac{4}{239} = 1.7\%$$

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

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact the local electric utility company immediately. Do not operate unit until imbalance condition is corrected.

MINIMUM FLUID LOOP VOLUME — To obtain proper temperature control, loop fluid volume must be at least 3 gallons per ton (3.25 L per kW) of chiller nominal capacity for air conditioning and at least 6 gallons per ton (6.5 L per kW) for process applications or systems that must operate at low ambient temperatures (below 32 F [0° C]). Refer to application information in Product Data literature for details.

FLOW RATE REQUIREMENTS — Standard chillers should be applied with nominal flow rates within those listed in the Minimum and Maximum Evaporator Flow Rates table. Higher or lower flow rates are permissible to obtain lower or higher temperature rises. Minimum flow rates must be exceeded to assure turbulent flow and proper heat transfer in the evaporator. See Tables 31 and 32. See Fig. 38-43 for evaporator pressure drop curves.

⚠ CAUTION

Operation below minimum flow rate could generate alarms, which could result in damage to the evaporator.

Consult application data section in the Product Data literature and job design requirements to determine flow rate requirements for a particular installation.

Table 31 — Min/Max Water Flow — Standard Evaporator

30XV	TIERS	MINIMUM FLOW RATE		MAXIMUM FLOW RATE	
		(gpm)	(L/s)	(gpm)	(L/s)
140	All	170.4	10.8	681.6	43.0
160	All	193.2	12.2	772.8	48.8
180	All	204.0	12.9	816.0	51.5
200	All	236.4	14.9	945.6	59.7
225	All	266.4	16.8	1065.6	67.2
250	All	308.4	19.5	1233.6	77.8
275	All	327.6	20.7	1310.4	82.7
300	All	349.2	22.0	1396.8	88.1
325	All	379.2	23.9	1516.8	95.7
350	All	419.0	26.4	1676.0	105.7
400	All	483.0	30.5	1932.0	121.9
450	All	543.5	34.3	2174.0	137.2
500	All	600.0	37.9	2400.0	151.4

Table 32 — Min/Max Water Flow — Minus-1-Pass Evaporator

30XV	TIERS	MINIMUM FLOW RATE		MAXIMUM FLOW RATE	
		(gpm)	(L/s)	(gpm)	(L/s)
140	All	340.8	21.6	1363.2	86.0
160	All	386.4	24.4	1545.6	97.6
180	All	408.0	25.8	1632.0	103.0
200	All	472.8	29.8	1891.2	119.4
225	All	532.8	33.6	2131.2	134.4
250	All	616.8	39.0	2467.2	155.6
275	All	655.2	41.4	2620.8	165.4
300	All	698.4	44.0	2793.6	176.2
325	All	758.4	47.8	3033.6	191.4
350	All	838.0	52.8	3352.0	211.4
400	All	966.0	61.0	3864.0	243.8
450	All	1087.0	68.6	4348.0	274.4
500	All	1200.0	75.8	4800.0	302.8

Unit Sizes 30XV140, 160, 180, 200, 225

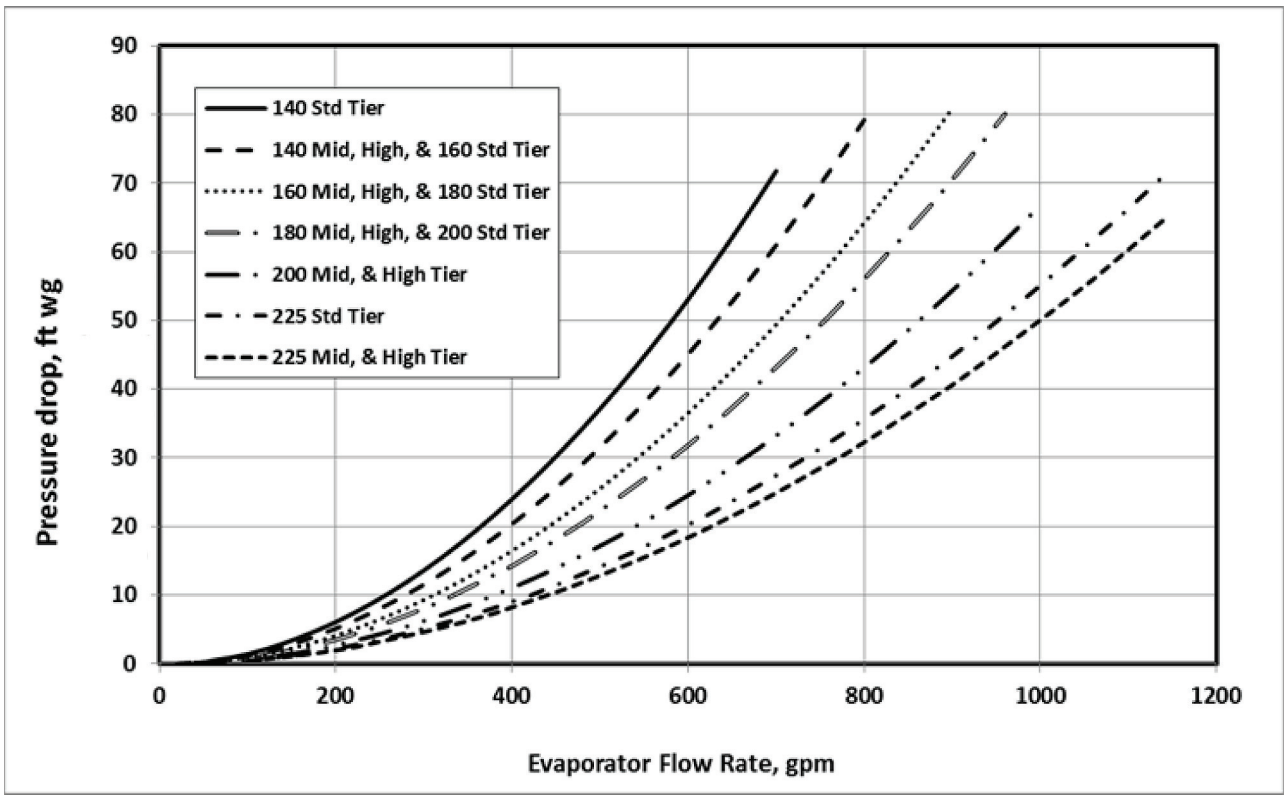


Fig. 38 — Evaporator Pressure Drop Curves (English), Standard Pass Flooded Evaporator (30XV140-225)

Unit Sizes 30XV250, 275, 300, 325

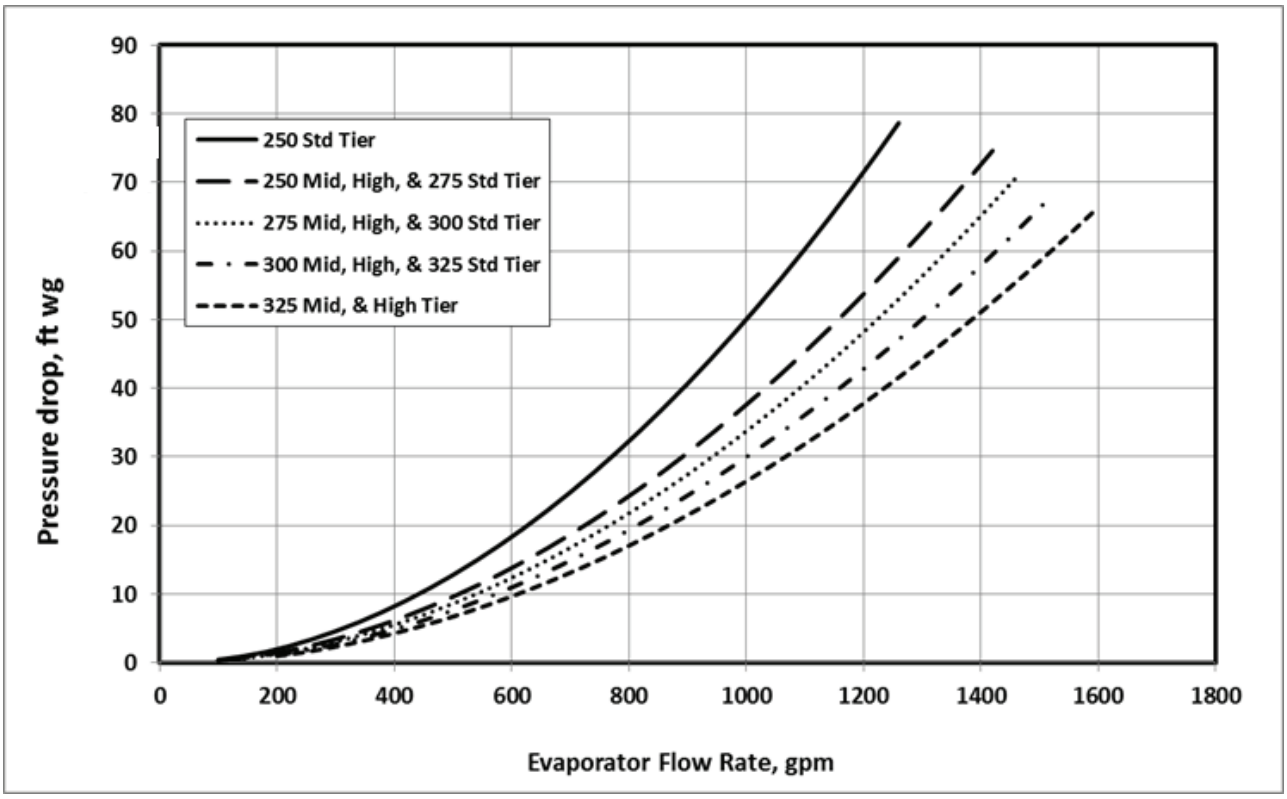


Fig. 39 — Evaporator Pressure Drop Curves (English), Standard Pass Flooded Evaporator (30XV250-325)

Unit Sizes 30XV350, 400, 450, 500

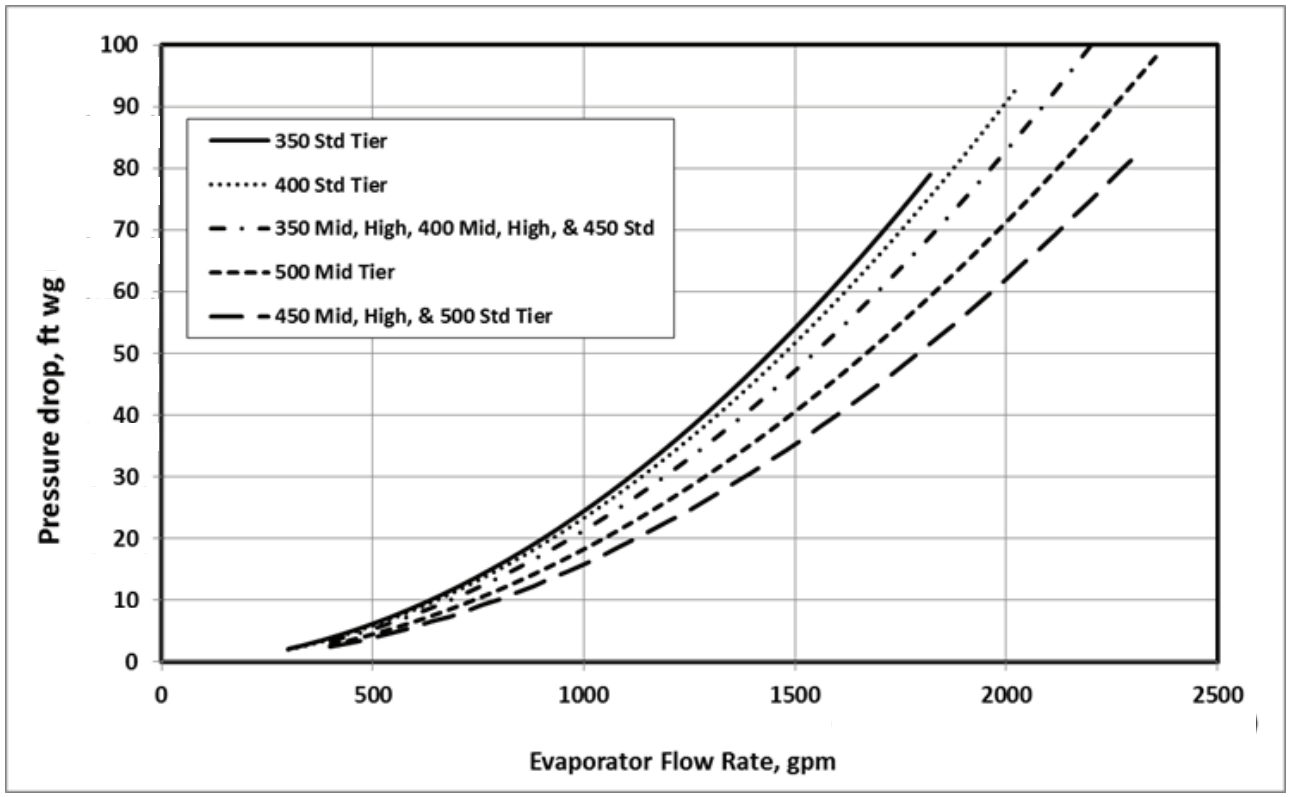


Fig. 40 — Evaporator Pressure Drop Curves (English), Standard Pass Flooded Evaporator (30XV350-500)

Unit Sizes 30XV140, 160, 180, 200, 225

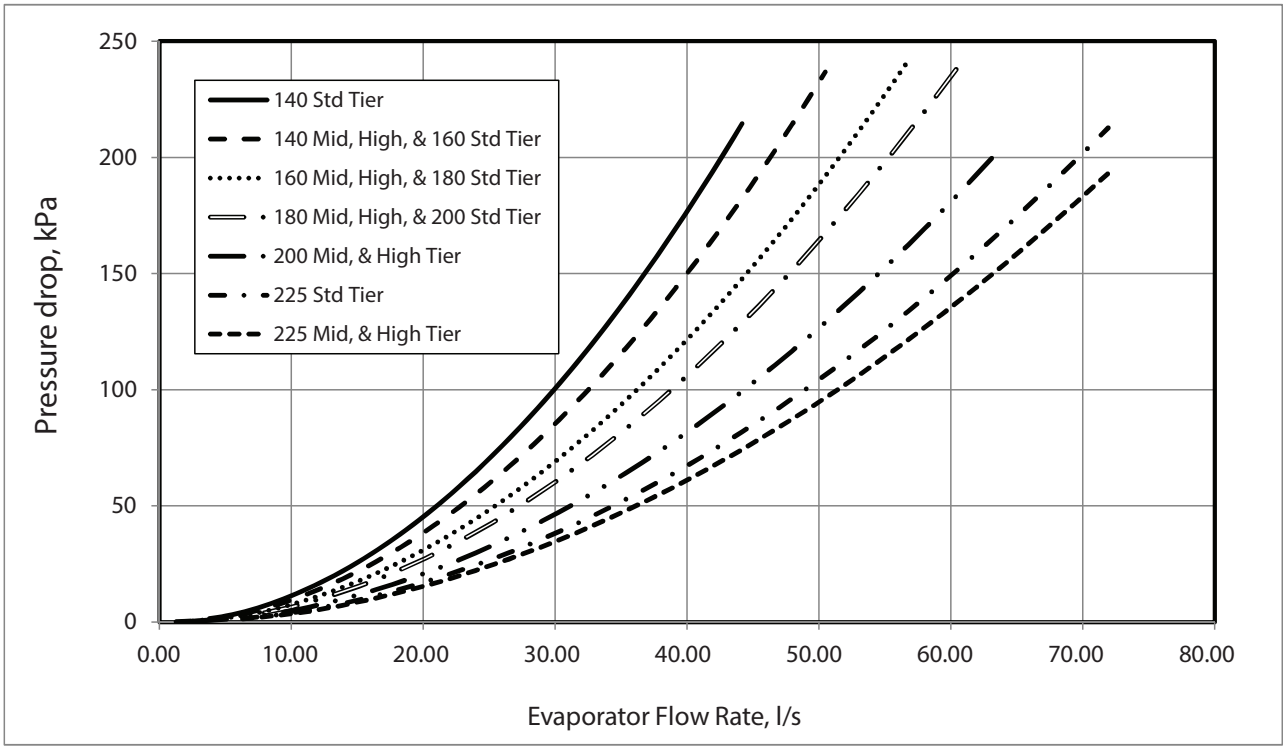


Fig. 41 — Evaporator Pressure Drop Curves (SI), Standard Pass Flooded Evaporator (30XV140-225)

Unit Sizes 30XV250, 275, 300, 325

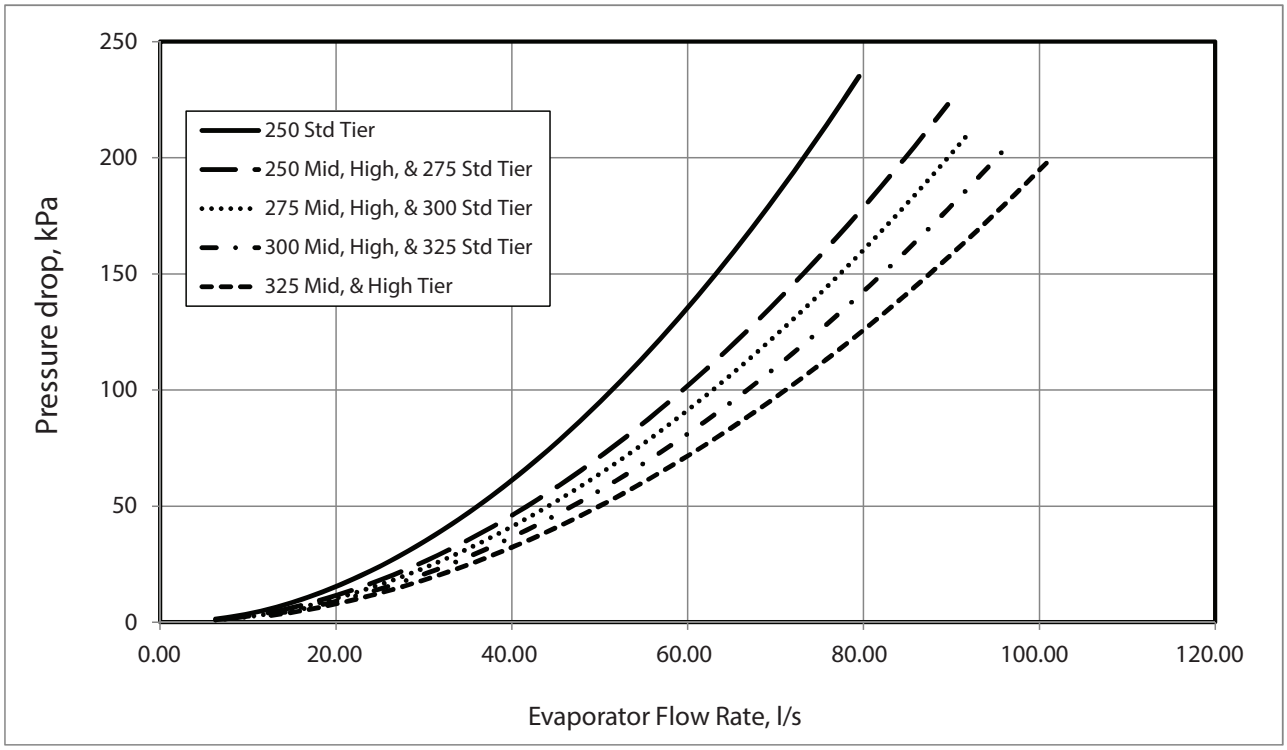


Fig. 42 — Evaporator Pressure Drop Curves (SI), Standard Pass Flooded Evaporator (30XV250-325)

Unit Sizes 30XV350, 400, 450, 500

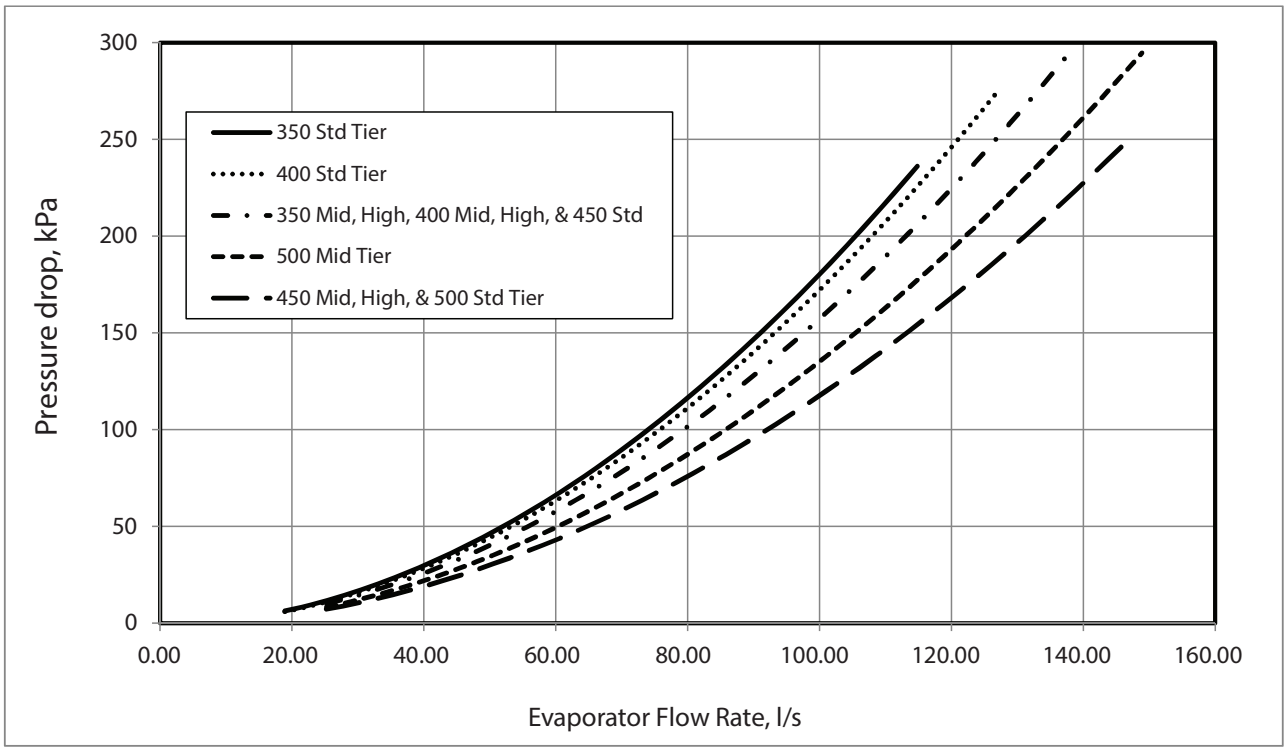


Fig. 43 — Evaporator Pressure Drop Curves (SI), Standard Pass Flooded Evaporator (30XV350-500)

OPERATION

Sequence of Operation — With a command to start the chiller, the evaporator pump will start. After verifying water flow, the control will monitor the entering and leaving water temperature. If the need for mechanical cooling is determined, the control decides which circuit and compressor to start. The control will start the required compressor completely unloaded and de-energize the oil separator heater (if already energized). The control will continue to load this circuit by increasing the VFD frequency to satisfy cooling requirements. Once fully loaded, the control will start the second circuit to satisfy load as required. Shutdown of each circuit under normal conditions occurs in the opposite sequence to loading. Once a circuit is fully unloaded the compressor is shut off and the EXV will close completely.

ACTUATED BALL VALVE (ABV) — For chillers equipped with this option (standard in most regions), either one or two discharge ABVs are located in the discharge line of each circuit of the unit. See Fig. 44 for a typical ABV assembly with enclosure. The ABV is a motorized ball valve, which is used to close the discharge line to prevent refrigerant migrating from condenser to the evaporator when the circuit is off. The valve will be opened before the compressor is started and will normally close when pressure equalizes between suction and discharge lines.

The actuated ball valves are linked to the evaporator heater operation in the controls. Evaporator Heater option (Main Menu → Configuration Menu → Factory Parameters → Evaporator Heater Installed = yes) must be enabled for the actuated ball valve to operate.

See Fig. 45 for a view of a fully open ball valve with the actuator removed. The flat surface at the top of the valve shaft is parallel to the discharge line. The ball valve motor mounting plate should be perpendicular to the discharge line at all times. If not, adjust it by loosening the set screw on the side of the valve, reposition assembly and tighten set screw.

See Fig. 46 for a view of the ball valve motor mounting with a fully open valve. The motor actuator arm should be at a counterclockwise position, with the valve shaft in a parallel position. If not in a parallel position, loosen the clamping screw and push the disengagement button to rotate the actuator arm until it stops. Retighten the clamping screw.

ABV Manual Operation — The ABV can be operated manually as a discharge service valve by completing the following steps:

1. Remove the actuator cover.
2. With the compressor off hold down the Disengagement (Push) button. See Fig. 46.
3. Close the ABV by turning the shaft adapter by hand or with a wrench so that the flats on the end of the shaft are perpendicular to the discharge line.
4. Release the Push button.
5. Disconnect the control power cable to the ABV.

Dual Chiller Sequence of Operation — With a command to start the chiller, the master chiller determines which chiller will become the lead chiller based on the configuration of Lead Lag Select (**lead_sel**) and Lead/Lag Balance Delta (**ll_bal_d**). The lead chiller is always started first and the lag chiller is held at zero percent capacity by the master chiller forcing the lag demand limit value to 0%. If Lead Pulldown Time (**lead_pul**) has been configured, the lead chiller will continue to operate alone for that specified time. After the Lead Pulldown Time timer has elapsed and when the lead chiller is fully loaded, either all available compression is on or at the master demand limit value, then the lag start timer (**lstr_tim**) is initiated.

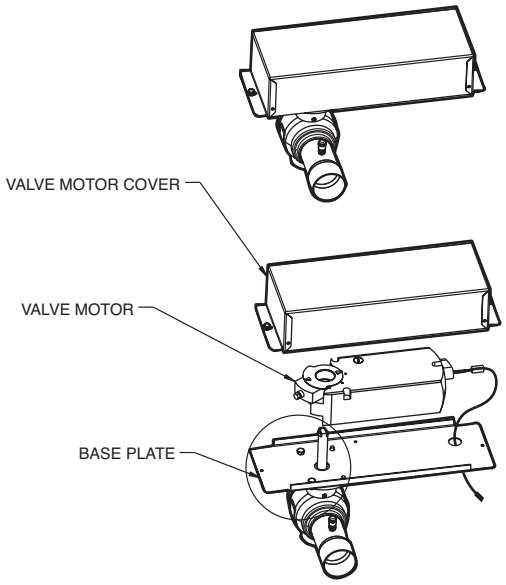


Fig. 44 — Typical ABV Assembly with Enclosure

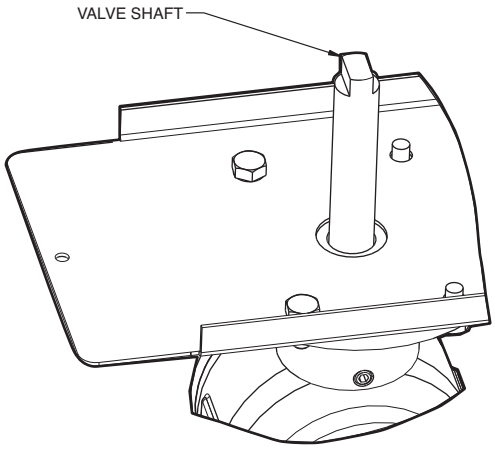


Fig. 45 — Fully Open Ball Valve with Actuator Removed

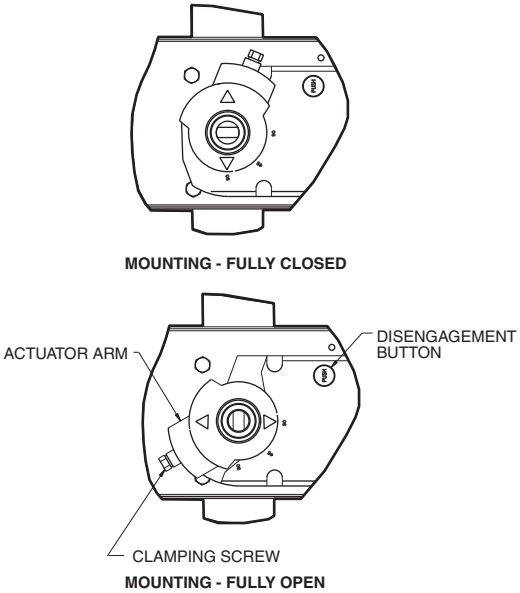


Fig. 46 — Ball Valve Motor

When the pulldown time and lag start time have elapsed and the Combined Leaving Chilled Water Temperature is more than 3° F (1.7° C) above the set point, then the lag chiller is started. If the lag chiller's water pump was not started when the machines went into occupied mode, the lag chiller water pump will be started. The lag chiller will start with the master chiller forcing the lag chiller demand limit value (**LAG_*LIM***) to the master's demand limit value. If lead/lag capacity balance is selected, once the lag chiller has started, the master will try to keep the difference in capacity between lead and lag less than 20%. The master will then be responsible for water loop capacity calculation, and will determine which chiller, the lead or lag, will increase or decrease capacity. When the load reduces, the lag chiller will be the first chiller to unload. To accomplish this, the lead chiller set point is decreased by 4° F (–2.2° C) until the lag chiller unloads.

PUMP OPERATION — For parallel chiller pump operation, the lead chiller's water pump will be started. The lag chiller's water pump will be maintained off if Lag Unit Pump Control = 0 (Main Menu → Configuration Menu → Master Slave config → Lag Unit Pump Control). The internal algorithm of the lead chiller will control capacity of the lead chiller.

Operating Modes — Operating modes are override modes that affect normal operation of the equipment. More than one operating mode can be in effect at the same time. Some operating modes have corresponding capacity control overrides (see the Capacity Control Overrides section on page 41).

For the Touch Pilot™ display, the status of the operating modes can be found by accessing the Modes Menu (Main Menu → Modes). Each operating mode and its status (Yes = active, No = inactive) is listed.

See Table 33 for a list of operating modes.

Table 33 — 30XV with Greenspeed® Intelligence Operating Modes

OPERATING MODE NUMBER	DESCRIPTION	STATUS
1	Startup Delay in Effect	Yes/No
2	Second Setpoint in Use	Yes/No
3	Reset in Effect	Yes/No
4	Demand Limit Active	Yes/No
5	Evaporator Pump Rotation	Yes/No
6	Pump Periodic Start	Yes/No
8	Master Slave Active	Yes/No
12	Ice Mode in Effect	Yes/No

STARTUP DELAY IN EFFECT — This mode is checked for when the unit is started. This mode is active when the Minutes Off Time (Main Menu → Configuration Menu → General Configuration → Unit Off to On Delay) timer is active. The unit will not start until the timer has expired. The mode will terminate when the timer expires.

SECOND SETPOINT IN USE — This mode is checked for when the unit is ON. The mode is active when Cooling Setpoint 2 (Main Menu → Setpoint Table → Cooling Setpoint 2) or Cooling Ice Setpoint (Main Menu → Setpoint Table → Cooling Ice Setpoint) is in use. While in this mode, the Current Setpoint (Main Menu → General Parameters → Current Setpoint) will show the Cooling Setpoint 2 or Cooling Ice Setpoint value.

While in this mode the unit will operate to the Cooling Setpoint 2 or Cooling Ice Setpoint. The mode will terminate when the second setpoint is no longer in use.

RESET IN EFFECT — This mode is checked for when the unit is ON. The mode will be active when Cooling Reset Select (Main Menu → Configuration Menu → Reset Configuration → Cooling Reset Select) is enabled by setting the value to 1 = Outside Air Temperature, 2 = Fluid Delta T, 3 = 4-20 mA Input, 4 = Space Temperature) and reset is active.

While in this mode, the Current Setpoint (Main Menu → General Parameters → Current Setpoint) will be modified according to the programmed information and will be displayed as the Control Point (Main Menu → General Parameters → Control Point). The mode will terminate when the Temperature Reset is not modifying the active leaving water set point, causing the Current Setpoint to equal the Control Point.

DEMAND LIMIT ACTIVE — This mode is checked for when the unit is ON. The mode is active when Demand Limit Type Select (Main Menu → Configuration Menu → General Configuration → Demand Limit Type Select) is enabled either by setting the value to 1 = Switch Control or 2 = 4-20mA Control, or setting the Night Capacity Limit (Main Menu → Configuration Menu → General Configuration → Night Capacity Limit). The Active Demand Limit Value (Main Menu → General Parameters → Active Demand Limit Value) will display the current demand limit according to the programmed information and the unit's capacity will be reduced to the amount shown or lower. The mode will terminate when the Demand Limit command has been removed.

EVAPORATOR PUMP ROTATION — This mode is always checked. The mode is active when the Evaporator Pump Sequence (Main Menu → Configuration Menu → Pump Configuration → Evaporator Pumps Sequence) value is set to 2 = Two Pumps Automatic Changeover, and the Pump Auto Rotation Delay (Main Menu → Configuration Menu → Pump Configuration → Pump Auto Rotation Delay) has expired. The control will switch the operation of the pumps. The lead pump will operate normally. The lag pump will be started, becoming the lead, and then the original lead pump will be shut down. This mode will terminate when the pump operation has been completed.

PUMP PERIODIC START — This mode is active when the evaporator pump is started due to the periodic pump start configuration (Main Menu → Configuration Menu → Pump Configuration → Pump Sticking Protection = YES). If the pump has not run that day, a pump will be started and will run for 2 seconds at 2:00 PM. If the machine is configured for dual pumps, Pump 1 will run on even days (such as the day 2, 4, 6 of the month). Pump 2 will run on odd days (such as day 1,3, 5 of the month). The mode will terminate when the pump shuts down.

MASTER SLAVE ACTIVE — This mode is checked for if the machine is ON. This mode is active if Master Slave Control has been enabled. This occurs when two machines are programmed, one as the master (Main Menu → Configuration Menu → Master Slave config → Master/Slave select = 1) and the other as a slave (Main Menu → Configuration Menu → Master Slave config → Master/Slave select = 2). Both the master and slave machines will respond to the capacity control commands issued by the master controller. This may include control point changes and demand limit commands. This mode will terminate when Master Slave Control has been disabled (Main Menu → Configuration Menu → Master Slave Config → Master/Slave Select=0).

ICE MODE IN EFFECT — This mode is checked for when the unit is ON. This mode is active when the Cooling Ice Setpoint (Main Menu → Setpoint Table → Cooling Ice Setpoint) is in use. While in this mode, the Current Setpoint (Main Menu → General Parameters → Current Setpoint) will show the Cooling Ice Setpoint value and the unit will operate to that value. This mode will terminate when the Ice Cooling Ice Setpoint is no longer in use (ICE DONE switch is closed).

OIL RECOVERY — The oil recovery mode is enabled when the compressor speed falls below the threshold (Trigger Speed) for a continuous period of time (Trigger Time). The mode will ramp the compressor speed to an objective speed (Recover Speed) for a period of time (Recover Time)

and then return the compressor speed to automatic control. This mode takes precedence over other WATER_T overrides: ramp loading (Override 7), Low SST (Override 23), and Demand Limit (Override 9). See Fig. 47.

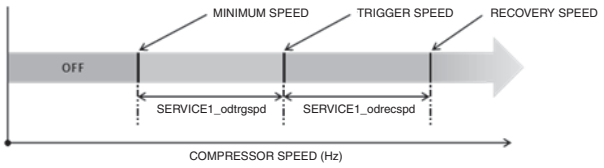


Fig. 47 — Oil Recovery Diagram

Sensors — The electronic control uses up to 15 thermistors to sense temperatures and up to 10 transducers to sense pressure for controlling chiller operation. These sensors are outlined below.

THERMISTORS (Tables 34-38) — Thermistors that monitor the chiller's operation include: evaporator entering water, evaporator leaving water, dual chiller leaving water, compressor suction gas temperature, compressor discharge gas temperature, economizer temperature, liquid line temperature, compressor motor temperature, and outdoor air temperature thermistors. These thermistors are 5,000 ohms at 77 F (25 C) and are identical in temperature versus resistance. The space temperature thermistor is 10,000 ohms at 77 F (25 C) and has a different temperature vs. resistance. See Fig. 48 for thermistor locations.

Evaporator Leaving Water Sensor — On all sizes, this thermistor is installed in a friction fit well in the leaving water nozzle of the evaporator. See Fig. 49.

Evaporator Entering Water Sensor — On all sizes, this thermistor is factory-installed in a friction fit well in the entering water nozzle of the evaporator.

Suction Gas Temperature — On all sizes, this thermistor is factory-installed in a friction fit well located on the compressor of each circuit. There is one thermistor for each circuit.

Compressor Discharge Gas Temperature — On all sizes, this thermistor is factory-installed in a friction fit well located in the discharge end of the compressor for the circuit. There is one thermistor for each circuit.

Liquid Line Temperature — This thermistor is factory-installed in a friction fit well located in the liquid line of the circuit. There is one thermistor for each circuit.

Economizer Temperature — On all sizes, this thermistor is factory-installed in a friction fit well located in the economizer line for the circuit. There is one thermistor for each circuit.

Compressor Motor Temperature — On all sizes, this thermistor is embedded in the motor windings. There are two thermistors in each compressor. One spare is provided.

Outdoor Air Temperature — This sensor is factory-installed to the back of the control box.

Remote Space Temperature — This sensor (part no. 33ZCT55SPT) is a field-installed accessory mounted in the indoor space and is used for water temperature reset. The sensor should be installed as a wall-mounted thermostat would be (in the conditioned space where it will not be subjected to either a cooling or heating source or direct exposure to sunlight, and 4 to 5 ft above the floor).

Space temperature sensor wires are to be connected to terminals in the unit main control box. See Fig. 50. The space temperature sensor includes a terminal block (SEN) and a RJ11 female connector. The RJ11 connector is used as access into the Carrier Comfort Network® (CCN) at the sensor.

To connect the space temperature sensor (see Fig. 50):

1. Using a 20 AWG (American Wire Gage) twisted pair conductor cable rated for the application, connect one wire of the twisted pair to one SEN terminal and connect the other wire to the other SEN terminal located under the cover of the space temperature sensor.
2. Connect the other ends of the wires to terminals 7 and 8 on TB6 located in the unit control box.

Units on the CCN can be monitored from the space at the sensor through the RJ11 connector, if desired. To wire the RJ11 connector into the CCN:

1. Cut the CCN wire and strip ends of the red (+), white (ground), and black (–) conductors. (If another wire color scheme is used, strip ends of appropriate wires.)
2. Insert and secure the red (+) wire to terminal 5 of the space temperature sensor terminal block.
3. Insert and secure the white (ground) wire to terminal 4 of the space temperature sensor.
4. Insert and secure the black (–) wire to terminal 2 of the space temperature sensor.
5. Connect the other end of the communication bus cable to the remainder of the CCN communication bus.

NOTE: The energy management module (EMM) is required for this accessory.

TRANSDUCERS — There are 5 pressure transducers per circuit, and two different types of transducers: low pressure (green connector) and high pressure (black connector).

Low Pressure Type: suction pressure transducer (SPT), economizer pressure transducer (EPT).

High Pressure Type: discharge pressure transducer (DPT), oil pressure transducer (OPT), liquid line pressure transducer (LPT). See Fig. 51 for transducer locations.

Table 34 — Thermistor Identification

THERMISTOR ID	DESCRIPTION	RESISTANCE AT 77 F (25 C)	CONNECTION POINT
EWT	Entering Water Thermistor	5k Ω	SIOBA-J25-AI01
LWT	Leaving Water Thermistor	5k Ω	SIOBA-J25-AI02
OAT	Outdoor Air Thermistor	5k Ω	SIOBA-J25-AI03
SGTA	Circuit A Suction Gas Thermistor	5k Ω	AUXA-J6-CH12
SGTB	Circuit B Suction Gas Thermistor	5k Ω	AUXB-J6-CH12
DGTA	Circuit A Discharge Gas Thermistor	5k Ω	AUXA-J6-CH11
DGTB	Circuit B Discharge Gas Thermistor	5k Ω	AUXB-J6-CH11
LIQT_A	Circuit A Liquid Line Thermistor	5k Ω	AUXA-J7-CH13
LIQT_B	Circuit B Liquid Line Thermistor	5k Ω	AUXB-J7-CH13
ECTA	Circuit A Economizer Thermistor	5k Ω	SIOBA-J25-AI05
ECTB	Circuit B Economizer Thermistor	5k Ω	SIOBB-J25-AI05
DUAL	Dual Chiller LWT Thermistor	5k Ω	SIOBB-J25-AI03
CAMT	Circuit A Motor Temperature	5k Ω	SIOBA-J25-AI04
CBMT	Circuit B Motor Temperature	5k Ω	SIOBB-J25-AI04
SPT	Space Temperature Thermistor	10k Ω	EMM-J6-CH2

Table 35 — 5K Thermistor Temperature (°F) vs Resistance

TEMP (F)	RESISTANCE (Ohms)
–25	98,010
–24	94,707
–23	91,522
–22	88,449
–21	85,486
–20	82,627
–19	79,871
–18	77,212
–17	74,648
–16	72,175
–15	69,790
–14	67,490
–13	65,272
–12	63,133
–11	61,070
–10	59,081
–9	57,162
–8	55,311
–7	53,526
–6	51,804
–5	50,143
–4	48,541
–3	46,996
–2	45,505
–1	44,066
0	42,679
1	41,339
2	40,047
3	38,800
4	37,596
5	36,435
6	35,313
7	34,231
8	33,185
9	32,176
10	31,202
11	30,260
12	29,351
13	28,473
14	27,624
15	26,804
16	26,011
17	25,245
18	24,505
19	23,789
20	23,096
21	22,427
22	21,779
23	21,153
24	20,547
25	19,960
26	19,393
27	18,843
28	18,311
29	17,796
30	17,297
31	16,814
32	16,346
33	15,892
34	15,453
35	15,027
36	14,614
37	14,214
38	13,826
39	13,449
40	13,084
41	12,730
42	12,387
43	12,053
44	11,730
45	11,416
46	11,112
47	10,816
48	10,529
49	10,250
50	9,979
51	9,717
52	9,461
53	9,213
54	8,973
55	8,739
56	8,511
57	8,291
58	8,076
59	7,686
60	7,665
61	7,468
62	7,277
63	7,091
64	6,911
65	6,735
66	6,564
67	6,399
68	6,238
69	6,081
70	5,929
71	5,781
72	5,637
73	5,497
74	5,361
75	5,229
76	5,101
77	4,976
78	4,855
79	4,737
80	4,622
81	4,511
82	4,403
83	4,298
84	4,196
85	4,096
86	4,000
87	3,906
88	3,814
89	3,726
90	3,640
91	3,556
92	3,474
93	3,395
94	3,318
95	3,243
96	3,170
97	3,099
98	3,031
99	2,964
100	2,898
101	2,835
102	2,773
103	2,713
104	2,655
105	2,597
106	2,542
107	2,488
108	2,436
109	2,385
110	2,335
111	2,286
112	2,239
113	2,192
114	2,147
115	2,103
116	2,060
117	2,018
118	1,977
119	1,937
120	1,898
121	1,860
122	1,822
123	1,786
124	1,750
125	1,715
126	1,680
127	1,647
128	1,614
129	1,582
130	1,550
131	1,519
132	1,489
133	1,459
134	1,430
135	1,401
136	1,373
137	1,345
138	1,318
139	1,291
140	1,265
141	1,240
142	1,214
143	1,190
144	1,165
145	1,141
146	1,118
147	1,095
148	1,072
149	1,050
150	1,029
151	1,007
152	986
153	965
154	945
155	925
156	906
157	887
158	868
159	850
160	832
161	815
162	798
163	782
164	765
165	750
166	734
167	719
168	705
169	690
170	677
171	663
172	650
173	638
174	626
175	614
176	602
177	591
178	581
179	570
180	561
181	551
182	542
183	533
184	524
185	516
186	508
187	501
188	494
189	487
190	480
191	473
192	467
193	461
194	456
195	450
196	445
197	439
198	434
199	429
200	424
201	419
202	415
203	410
204	405
205	401
206	396
207	391
208	386
209	382
210	377
211	372
212	367
213	361
214	356
215	350
216	344
217	338
218	332
219	325
220	318
221	311
222	304
223	297
224	289
225	282

Table 36 — 5K Thermistor Temperature (°C) vs Resistance/Voltage

TEMP (C)	RESISTANCE (Ohms)
–32	100,260
–31	94,165
–30	88,480
–29	83,170
–28	78,125
–27	73,580
–26	69,250
–25	65,205
–24	61,420
–23	57,875
–22	54,555
–21	51,450
–20	48,536
–19	45,807
–18	43,247
–17	40,845
–16	38,592
–15	38,476
–14	34,489
–13	32,621
–12	30,866
–11	29,216
–10	27,633
–9	26,202
–8	24,827
–7	23,532
–6	22,313
–5	21,163
–4	20,079
–3	19,058
–2	18,094
–1	17,184
0	16,325
1	15,515
2	14,749
3	14,026
4	13,342
5	12,696
6	12,085
7	11,506
8	10,959
9	10,441
10	9,949
11	9,485
12	9,044
13	8,627
14	8,231
15	7,855
16	7,499
17	7,161
18	6,840
19	6,536
20	6,246
21	5,971
22	5,710
23	5,461
24	5,225
25	5,000
26	4,786
27	4,583
28	4,389
29	4,204
30	4,028
31	3,861
32	3,701
33	3,549
34	3,404
35	3,266
36	3,134
37	3,008
38	2,888
39	2,773
40	2,663
41	2,559
42	2,459
43	2,363
44	2,272
45	2,184
46	2,101
47	2,021
48	1,944
49	1,871
50	1,801
51	1,734
52	1,670
53	1,609
54	1,550
55	1,493
56	1,439
57	1,387
58	1,337
59	1,290
60	1,244
61	1,200
62	1,158
63	1,118
64	1,079
65	1,041
66	1,006
67	971
68	938
69	906
70	876
71	836
72	805
73	775
74	747
75	719
76	693
77	669
78	645
79	623
80	602
81	583
82	564
83	547
84	531
85	516
86	502
87	489
88	477
89	466
90	456
91	446
92	436
93	427
94	419
95	410
96	402
97	393
98	385
99	376
100	367
101	357
102	346
103	335
104	324
105	312
106	299
107	285

Table 37 — 10K Thermistor Temperature (°F) vs Resistance

TEMP (F)	VOLTAGE DROP (V)	RESISTANCE (OHMS)
–25	4.758	196,453
–24	4.750	189,692
–23	4.741	183,300
–22	4.733	177,000
–21	4.724	171,079
–20	4.715	165,238
–19	4.705	159,717
–18	4.696	154,344
–17	4.686	149,194
–16	4.676	144,250
–15	4.665	139,443
–14	4.655	134,891
–13	4.644	130,402
–12	4.633	126,183
–11	4.621	122,018
–10	4.609	118,076
–9	4.597	114,236
–8	4.585	110,549
–7	4.572	107,006
–6	4.560	103,558
–5	4.546	100,287
–4	4.533	97,060
–3	4.519	94,020
–2	4.505	91,019
–1	4.490	88,171
0	4.476	85,396
1	4.461	82,729
2	4.445	80,162
3	4.429	77,662
4	4.413	75,286
5	4.397	72,940
6	4.380	70,727
7	4.363	68,542
8	4.346	66,465
9	4.328	64,439
10	4.310	62,491
11	4.292	60,612
12	4.273	58,781
13	4.254	57,039
14	4.235	55,319
15	4.215	53,693
16	4.195	52,086
17	4.174	50,557
18	4.153	49,065
19	4.132	47,627
20	4.111	46,240
21	4.089	44,888
22	4.067	43,598
23	4.044	42,324
24	4.021	41,118
25	3.998	39,926
26	3.975	38,790
27	3.951	37,681
28	3.927	36,610
29	3.903	35,577
30	3.878	34,569
31	3.853	33,606
32	3.828	32,654
33	3.802	31,752
34	3.776	30,860
35	3.750	30,009
36	3.723	29,177
37	3.697	28,373
38	3.670	27,597
39	3.654	26,838
40	3.615	26,113
41	3.587	25,396
42	3.559	24,715
43	3.531	24,042
44	3.503	23,399
45	3.474	22,770
46	3.445	22,161
47	3.416	21,573
48	3.387	20,998
49	3.357	20,447
50	3.328	19,903
51	3.298	19,386
52	3.268	18,874
53	3.238	18,384
54	3.208	17,904
55	3.178	17,441
56	3.147	16,991
57	3.117	16,552
58	3.086	16,131
59	3.056	15,714
60	3.025	15,317
61	2.994	14,925
62	2.963	14,549
63	2.932	14,180
64	2.901	13,824
65	2.870	13,478
66	2.839	13,139
67	2.808	12,814
68	2.777	12,493
69	2.746	12,187
70	2.715	11,884
71	2.684	11,593
72	2.653	11,308
73	2.622	11,031
74	2.592	10,764
75	2.561	10,501
76	2.530	10,249
77	2.500	10,000
78	2.470	9,762
79	2.439	9,526
80	2.409	9,300
81	2.379	9,078
82	2.349	8,862
83	2.319	8,653
84	2.290	8,448
85	2.260	8,251
86	2.231	8,056
87	2.202	7,869
88	2.173	7,685
89	2.144	7,507
90	2.115	7,333
91	2.087	7,165
92	2.059	6,999
93	2.030	6,838
94	2.003	6,683
95	1.975	6,530
96	1.948	6,383
97	1.921	6,238
98	1.894	6,098
99	1.867	5,961
100	1.841	5,827
101	1.815	5,698
102	1.789	5,571
103	1.763	5,449
104	1.738	5,327
105	1.713	5,210
106	1.688	5,095
107	1.663	4,984
108	1.639	4,876
109	1.615	4,769
110	1.591	4,666
111	1.567	4,564
112	1.544	4,467
113	1.521	4,370
114	1.498	4,277
115	1.475	4,185
116	1.453	4,096
117	1.431	4,008
118	1.409	3,923
119	1.387	3,840
120	1.366	3,759
121	1.345	3,681
122	1.324	3,603
123	1.304	3,529
124	1.284	3,455
125	1.264	3,383
126	1.244	3,313
127	1.225	3,244
128	1.206	3,178
129	1.187	3,112
130	1.168	3,049
131	1.150	2,986
132	1.132	2,926
133	1.114	2,866
134	1.096	2,809
135	1.079	2,752
136	1.062	2,697
137	1.045	2,643
138	1.028	2,590
139	1.012	2,539
140	0.996	2,488
141	0.980	2,439
142	0.965	2,391
143	0.949	2,343
144	0.934	2,297
145	0.919	2,253
146	0.905	2,209
147	0.890	2,166
148	0.876	2,124
149	0.862	2,083
150	0.848	2,043
151	0.835	2,003
152	0.821	1,966
153	0.808	1,928
154	0.795	1,891
155	0.782	1,855
156	0.770	1,820
157	0.758	1,786
158	0.745	1,752
159	0.733	1,719
160	0.722	1,687
161	0.710	1,656
162	0.699	1,625
163	0.687	1,594
164	0.676	1,565
165	0.666	1,536
166	0.655	1,508
167	0.645	1,480
168	0.634	1,453
169	0.624	1,426
170	0.614	1,400
171	0.604	1,375
172	0.595	1,350
173	0.585	1,326
174	0.576	1,302
175	0.567	1,278
176	0.558	1,255
177	0.549	1,233
178	0.540	1,211
179	0.532	1,190
180	0.523	1,169
181	0.515	1,148
182	0.507	1,128
183	0.499	1,108
184	0.491	1,089
185	0.483	1,070
186	0.476	1,052
187	0.468	1,033
188	0.461	1,016
189	0.454	998
190	0.447	981
191	0.440	964
192	0.433	947
193	0.426	931
194	0.419	915
195	0.413	900
196	0.407	885
197	0.400	870
198	0.394	855
199	0.388	841
200	0.382	827
201	0.376	814
202	0.370	800
203	0.365	787
204	0.359	774
205	0.354	762
206	0.349	749
207	0.343	737
208	0.338	725
209	0.333	714
210	0.328	702
211	0.323	691
212	0.318	680
213	0.314	670
214	0.309	659
215	0.305	649
216	0.300	639
217	0.296	629
218	0.292	620
219	0.288	610
220	0.284	601
221	0.279	592
222	0.275	583
223	0.272	574
224	0.268	566
225	0.264	557

Table 38 — 10K Thermistor Temperature (°C) vs Resistance

TEMP (C)	VOLTAGE DROP (V)	RESISTANCE (OHMS)
–32	4.762	200,510
–31	4.748	188,340
–30	4.733	177,000
–29	4.716	166,342
–28	4.700	156,404
–27	4.682	147,134
–26	4.663	138,482
–25	4.644	130,402
–24	4.624	122,807
–23	4.602	115,710
–22	4.580	109,075
–21	4.557	102,868
–20	4.533	97,060
–19	4.508	91,588
–18	4.482	86,463
–17	4.455	81,662
–16	4.426	77,162
–15	4.397	72,940
–14	4.367	68,957
–13	4.335	65,219
–12	4.303	61,711
–11	4.269	58,415
–10	4.235	55,319
–9	4.199	52,392
–8	4.162	49,640
–7	4.124	47,052
–6	4.085	44,617
–5	4.044	42,324
–4	4.003	40,153
–3	3.961	38,109
–2	3.917	36,182
–1	3.873	34,367
0	3.828	32,654
1	3.781	31,030
2	3.734	29,498
3	3.686	28,052
4	3.637	26,686
5	3.587	25,396
6	3.537	24,171
7	3.485	23,013
8	3.433	21,918
9	3.381	20,883
10	3.328	19,903
11	3.274	18,972
12	3.220	18,090
13	3.165	17,255
14	3.111	16,464
15	3.056	15,714
16	3.000	15,000
17	2.944	14,323
18	2.889	13,681
19	2.833	13,071
20	2.777	12,493
21	2.721	11,942
22	2.666	11,418
23	2.610	10,921
24	2.555	10,449
25	2.500	10,000
26	2.445	9,571
27	2.391	9,164
28	2.337	8,776
29	2.284	8,407
30	2.231	8,056
31	2.178	7,720
32	2.127	7,401
33	2.075	7,096
34	2.025	6,806
35	1.975	6,530
36	1.926	6,266
37	1.878	6,014
38	1.830	5,774
39	1.784	5,546
40	1.738	5,327
41	1.692	5,117
42	1.648	4,918
43	1.605	4,727
44	1.562	4,544
45	1.521	4,370
46	1.480	4,203
47	1.439	4,042
48	1.400	3,889
49	1.362	3,743
50	1.324	3,603
51	1.288	3,469
52	1.252	3,340
53	1.217	3,217
54	1.183	3,099
55	1.150	2,986
56	1.117	2,878
57	1.086	2,774
58	1.055	2,675
59	1.025	2,579
60	0.996	2,488
61	0.968	2,400
62	0.940	2,315
63	0.913	2,235
64	0.887	2,157
65	0.862	2,083
66	0.837	2,011
67	0.813	1,943
68	0.790	1,876
69	0.767	1,813
70	0.745	1,752
71	0.724	1,693
72	0.703	1,637
73	0.683	1,582
74	0.663	1,530
75	0.645	1,480
76	0.626	1,431
77	0.608	1,385
78	0.591	1,340
79	0.574	1,297
80	0.558	1,255
81	0.542	1,215
82	0.527	1,177
83	0.512	1,140
84	0.497	1,104
85	0.483	1,070
86	0.470	1,037
87	0.457	1,005
88	0.444	974
89	0.431	944
90	0.419	915
91	0.408	889
92	0.396	861
93	0.386	836
94	0.375	811
95	0.365	787
96	0.355	764
97	0.345	742
98	0.336	721
99	0.327	700
100	0.318	680
101	0.310	661
102	0.302	643
103	0.294	626
104	0.287	609
105	0.279	592
106	0.272	576
107	0.265	561

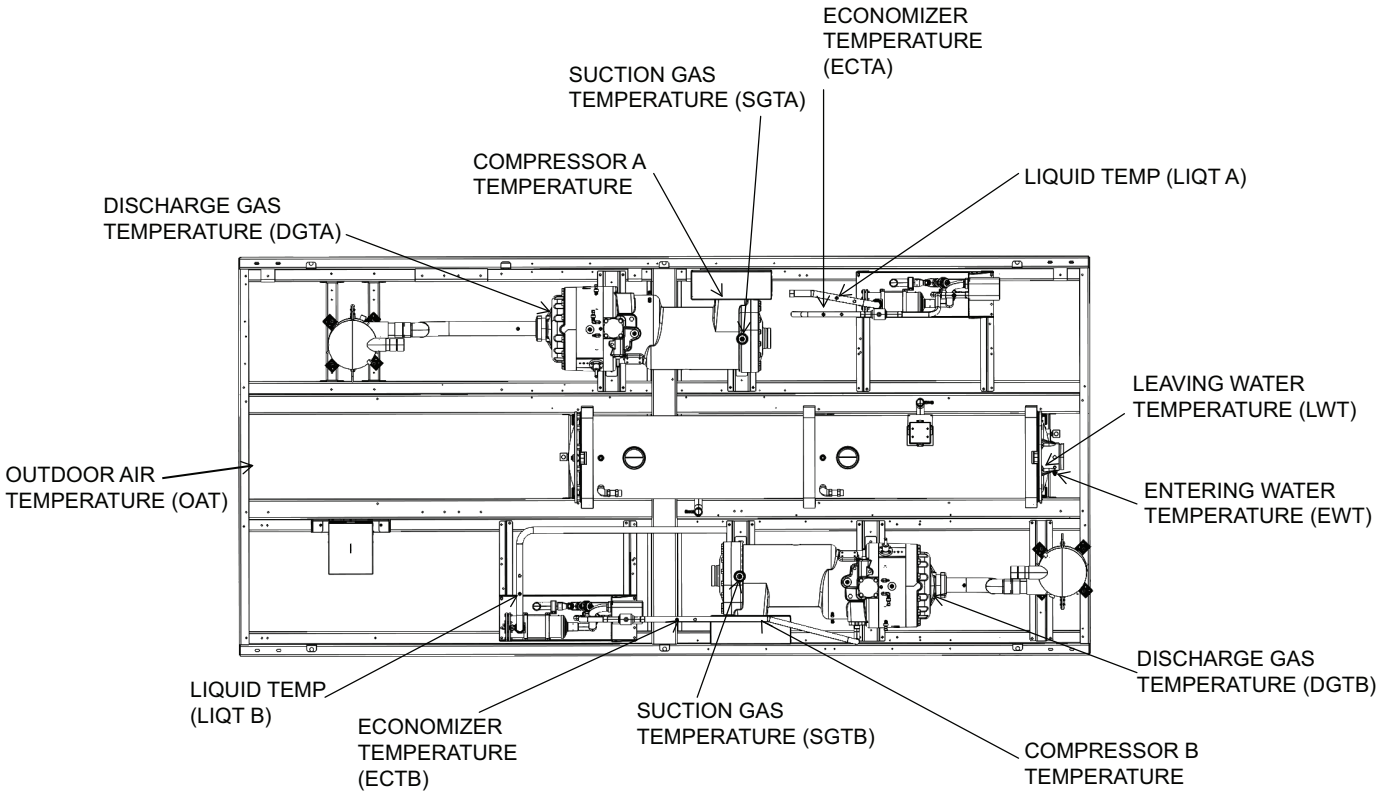


Fig. 48 — Thermistor Locations

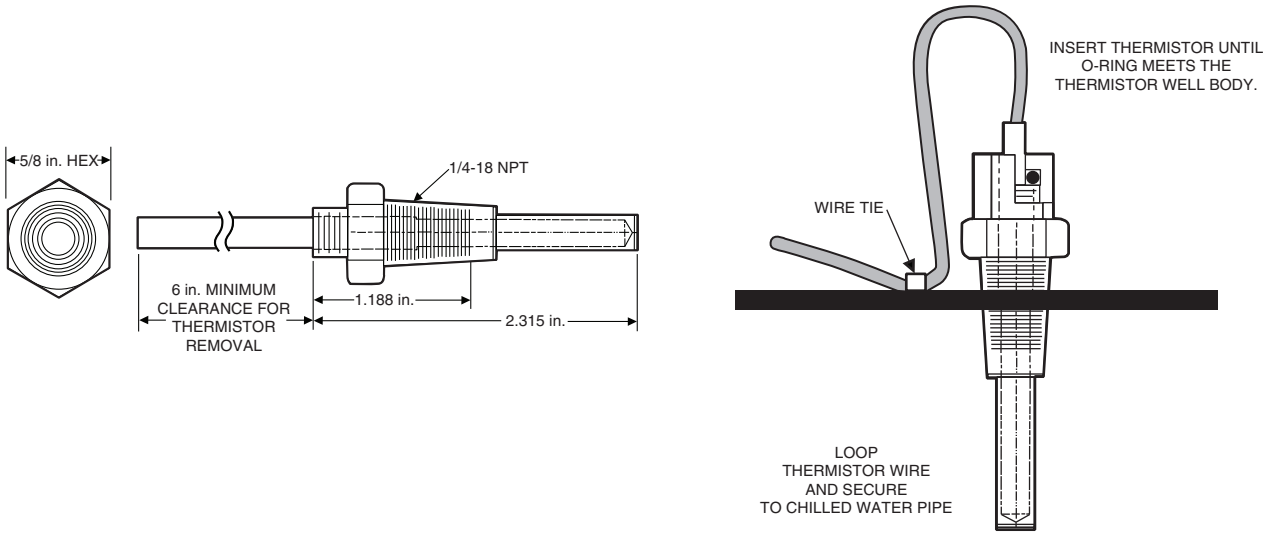


Fig. 49 — Dual Chiller Accessory Kit Leaving Water Thermistor and Well (Part No. 00EFN900044000A)

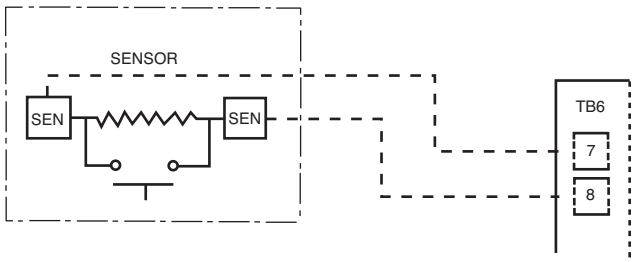


Fig. 50 — Typical Remote Space Temperature Sensor (33ZCT55SPT) Wiring

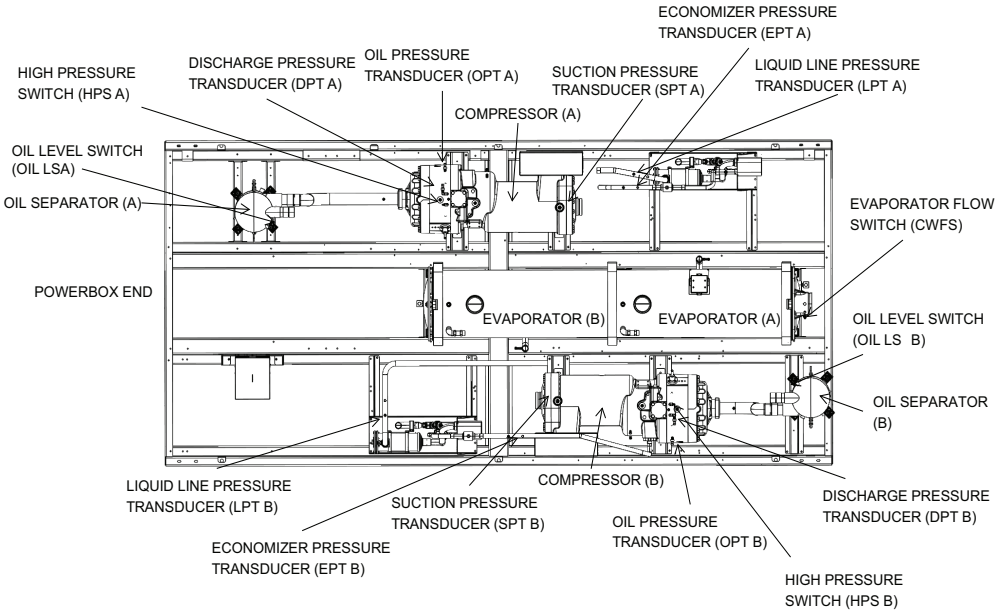


Fig. 51 — Transducer and Switch Locations

SERVICE

Economizer Assembly — Each circuit on the unit has an economizer assembly, which includes a brazed plate heat exchanger, electronic expansion valves (EXVs), and other components. See Fig. 52.

Electronic Expansion Valve (EXV) — See Fig. 53 for a cutaway view of the EXV. High-pressure liquid refrigerant enters the valve through the top. As refrigerant passes through the orifice, pressure drops and refrigerant changes to a 2-phase condition (liquid and vapor). The electronic expansion valve operates through electronically controlled activation of a stepper motor. The stepper motor stays in position unless power pulses initiate the two discrete sets of motor stator windings for rotation in either direction. The direction depends on the phase relationship of the power pulses. The motor directly operates the spindle, which has rotating movements that are transformed into linear motion by the transmission in the cage assembly. The valve cone is a V-port type which includes a positive shut-off when closed. The large number of steps and long stroke results in very accurate control of the refrigerant flow. The stepper motor has either 3810 (main) or 2625 (economizer) steps.

MAIN EXV CONTROL — The main EXV is controlled by the SIOB (J17-STPR1). Each circuit has thermistors located in the compressor discharge (DGT), compressor motor cavity (SGT) and liquid line leaving the condenser (LIQT). Each circuit also has a discharge (DPT), suction (SPT), and liquid line pressure transducer (LPT). All the pressure readings as measured by the transducers are converted to saturated temperatures. The main control logic for the EXV uses liquid line subcooling, which is the difference between the liquid line saturation temperature and the liquid line temperature, to control the position of the EXV. The SIOB module controls the position of the electronic expansion valve stepper motor to maintain the subcooling set point. The EXV control logic has several overrides, which are also used to control the position of the EXV.

- Normal Mode (SUBCOOL)
- Low Discharge Superheat (DSH)
- Low Suction Pressure (SPMIN)
- Maximum Suction Pressure (SPMAX)
- EXV Start (START)

To view EXV overrides: Main Menu → Maintenance Menu → EXV Control or EXVECO Control.

Normal Mode (SUBCOOL) — This is the normal mode of operation of the EXV. Based on the operating condition and loading of the compressor, the control calculates an optimal subcooling setting to maximize the system efficiency. The controls accordingly adjust the EXV opening to meet this calculated subcooling setting. The range of the subcooling setting can be altered by using the Network Service Tool in the Configuration → EXV_CFG table.

Low Discharge Superheat (DSH) — This mode is disabled for 100 sec after the start of the circuit. Control enters this mode when DSH is below 12 F. The control attempts to drive DSH above 15 F by closing the EXV. In this mode the setpoint is modified and driven to a value that supports a higher DSH value upon exit of the mode. This prevents mode cycling. Mode is exited when the DSH is greater than 18 F or the average DSH is within 1.25° of 15 F and the subcooling is above the subcooling setpoint.

Low Suction Pressure (SPMIN) — The EXV control tries to open up the EXV to increase the suction pressure and come out of this mode. The SST setting to enter this mode is dependent on the fluid type. With water the EXV enters this mode if SST is less than SST_Freeze – 6.5 F in normal discharge superheat or less than SST_Freeze – 18.75 F in low DSH condition. It remains in this mode until SST is greater than SST_Freeze + 2 F. SST_Freeze is 32 F for water and freeze set point for brine.

Maximum Suction Pressure (SPMAX) — This mode is disabled for 300 sec after start. The EXV enters this mode if the suction saturation temperature (SST) is greater than 55 F (13 C) and the circuit is not in DP mode. The EXV closes down to regulate the SST at about 53.2 F (11.8 C). If the SST is less than 52.3 F (11.3 C) or the circuit is in DP mode, then the EXV returns to the normal mode of operation.

ECONOMIZER EXV CONTROL — The economizer EXV is controlled by the SIOB (J18-STPR2). An economizer gas temperature thermistor (ECT) and an economizer pressure transducer (EPT) are located in the line running from the economizer assembly to the compressor. The economizer pressure is converted to saturated temperature and is used to calculate economizer superheat. Economizer superheat equals economizer temperature minus saturated economizer temperature. The control system controls the economizer EXV to maintain the economizer superheat setpoint, which is approximately 18 F (–7.8 C). The economizer will start operation when circuit capacity is at 55% or above. It will turn off at 45%.

EXV TROUBLESHOOTING PROCEDURE — There are two different economizer EXVs. Both of the economizer EXVs have a total of 2625 steps. There are three different main EXVs, which all have a total of 3810 steps. The EXV motor moves at 150 steps per second. Commanding the valve to either 0% or 100% will add an additional 160 steps to the move, to ensure the valve is open or closed completely.

⚠ CAUTION

Do not remove EXV cables from the SIOB board with the power applied to the board. Damage to the board may occur.

Follow the steps below to diagnose and correct EXV problems. Check EXV motor operation first. Switch the Enable/Off/Remote (EOR) Contact switch to the Off position.

Check the appropriate circuit EXV, EXV Position Circuit A % Open (Main Menu → Quick Test → Circuit A EXV Position) or EXV Position Circuit B % Open (Main Menu → Maintenance Menu → EXV Control). Use Quick Test procedure on page 141. The current value of 0 will be displayed. Increase the EXV position to select 100% valve position. The actuator should be felt moving through the EXV. To close the valve, select 0%. The actuator should knock when it reaches the bottom of its stroke.

If the valve is not working properly, continue with the following test procedure:

1. Check the EXV output signals at appropriate terminals on SIOB-A (J17-STPR1) and SIOB-B (J17-STPR1). Refer to Tables 6 and 7 for additional information.
2. Connect positive test lead to SIOB(X)-J17 terminal 12V for EXV(X) and SIOB(X)-J18 terminal 12V for economizer EXV(X). Using the Quick Test procedure on page 141, move the valve output under test to 100%. DO NOT short meter leads together or pin 12V to any other pin, as board damage will occur. During the next several seconds, carefully connect the negative test lead to pins A,B,C and D in succession. Digital voltmeters will average this signal and display approximately 6 vdc. If the output remains at a constant voltage other than 6 vdc or shows 0 volts, remove the connector to the valve and recheck.
3. Select 0% to close the valve.

NOTE: The output is 12 vdc from the SIOB board when the valve is stationary.

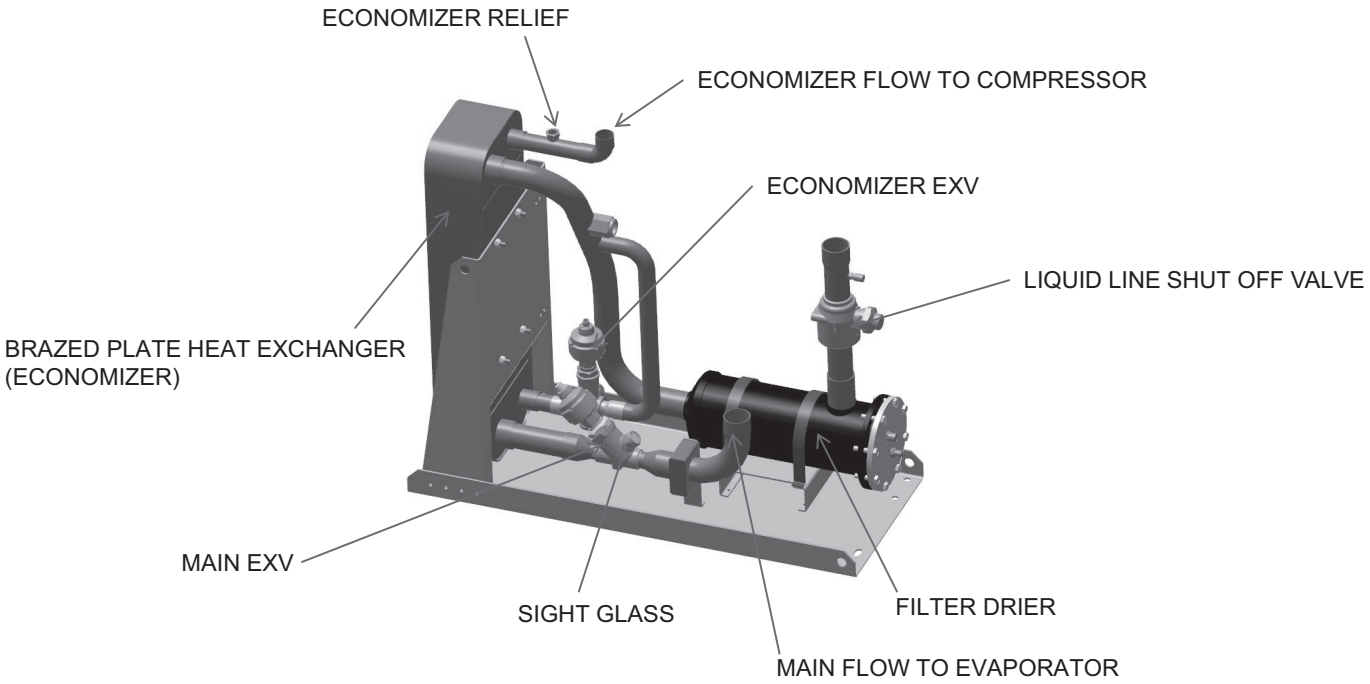


Fig. 52 — Economizer Assembly

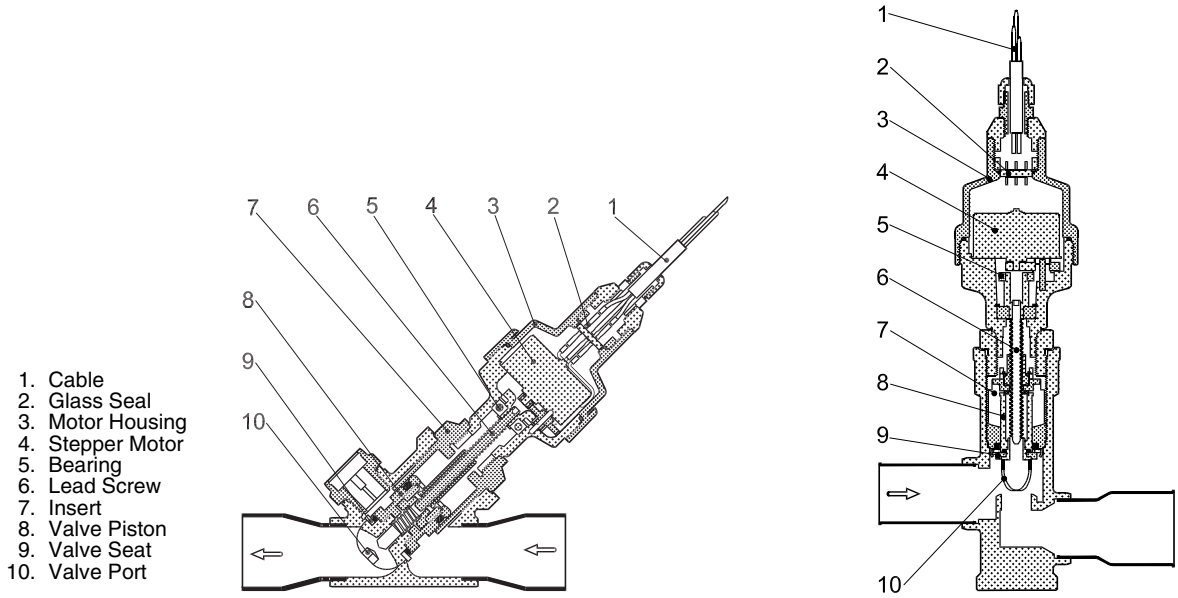


Fig. 53 — Cutaway Views of the Electronic Expansion Valve

If a problem still exists, replace the SIOB board. If the reading is correct, the expansion valve and EXV wiring should be checked. Check the EXV connector and interconnecting wiring.

1. Check color-coding and wire connections. Make sure they are connected to the correct terminals at the EXV board and EXV plug and that the cables are not crossed.
2. Check for continuity and tight connection at all pin terminals.

Check the resistance of the EXV motor windings. Remove the EXV module plug SIOB(X)-J17 for main EXV and SIOB(X)-J18 for economizer EXV. Check the resistance of the two windings between pins A and C for one winding and pins B and D for the other winding. The resistance should be 52 ohms (± 5.2 ohms). Also check pins A-D for any shorts to ground.

Inspecting/Opening Electronic Expansion Valves

IMPORTANT: Obtain replacement gaskets before opening EXV. Do not re-use gaskets.

To check the physical operation of an EXV, the following steps should be performed. Charge not isolated within the unit must be recovered using proper refrigerant recovery techniques.

1. Isolate refrigerant within the chiller and recover remaining charge. This will allow access to internal EXV components. Closing the valves will minimize the amount of refrigerant that will need to be removed.

   For units without isolation valve option: Close the liquid line ball valve directly above the filter drier as well as the discharge line ball valves (see the Actuated Ball Valve

section on page 49 for instructions). Remove any remaining refrigerant from the system low side using proper recovery techniques. The evaporator liquid line inlet has an access port that can be used to remove charge from the evaporator. The economizer assembly has a 1/4-in. access connection which can be used to remove charge from the inlet of the EXVs. Turn off the line voltage power supply to the compressors.

For units with isolation valve option: Close the ball valves on the liquid line directly above the filter drier, after the main EXV before the evaporator, and on the economizer line to the compressor. Remove any remaining refrigerant from the economizer assembly using proper recovery techniques. The economizer assembly has a 1/4-in. access connection which can be used to remove charge from the inlet of the EXVs. Turn off the line voltage power supply to the compressors.

⚠ CAUTION

Ensure refrigerant is removed from both the inlet and outlet of EXV assemblies. Equipment damage could result.

2. The expansion valve motor is hermetically sealed inside the top portion of the valve. See Fig. 53. Disconnect the EXV plug. Carefully unscrew the motor portion from the body of the valve. The EXV operator will come out with the motor portion of the device. Reconnect the EXV plug.
3. Enter the appropriate EXV test step under the Test mode (Main Menu → Quick Test Table). Locate the desired parameter for the Main EXVs: Circuit A EXV Position, Circuit B EXV Position or Economizer EXVs: EXV Eco Position Cir A, EXV Eco Position Cir B. Change the position to 100%. Observe the operation of the lead screw. See Fig. 53. Motor actuator movement should be smooth and uniform from fully closed to fully open position. Select 0% and check open to closed operation. If the valve is properly connected to the processor and receiving correct signals, yet does not operate as described above, the sealed motor portion of the valve should be replaced.

Installing EXV Motor

IMPORTANT: Obtain replacement gasket before opening EXV. Do not re-use gaskets.

If re-installing the motor, be sure to use a new gasket in the assembly. See Fig. 54. It is easier to install the motor assembly with the piston in the fully closed position. Insert the motor into the body of the EXV. Tighten the motor to the body to 36 ft-lb (50 N-m) and then tighten the valve another 30 degrees.

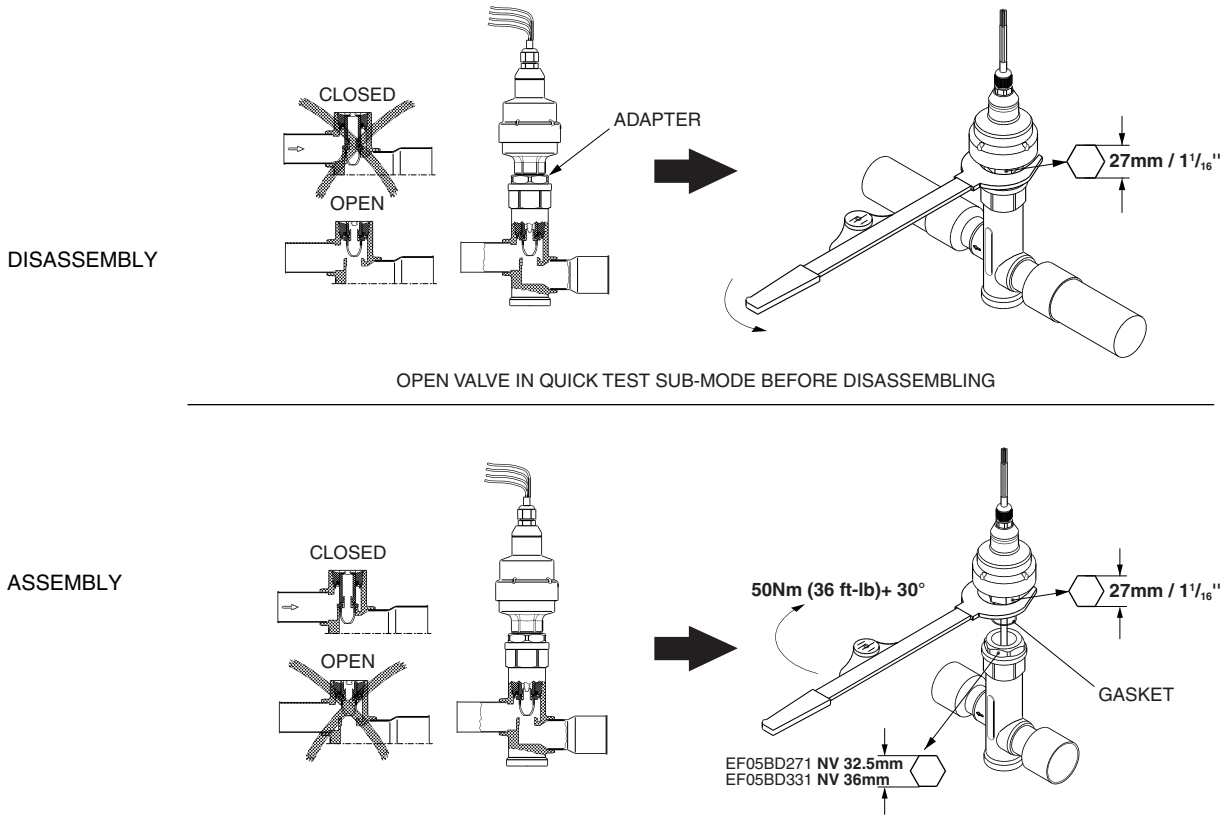
Moisture Liquid Indicator — Clear flow of liquid refrigerant indicates sufficient charge in system. Bubbles in the sight glass indicate undercharged system or presence of noncondensables. Moisture in system, measured in parts per million (ppm), changes color of indicator. See Table 39. Change filter drier at first sign of moisture in system.

IMPORTANT: Unit must be in operation at least 12 hours before moisture indicator can give an accurate reading.

With unit running, indicating element must be in contact with liquid refrigerant to give true reading.

Table 39 — Color Indicators When Moisture Is Present in Refrigerant

COLOR INDICATOR	R-134a, 75 F (24 C) (ppm)	R-134a, 125 F (52 C) (ppm)
Green — Dry	< 30	< 45
Yellow-green — Caution	30-100	45-170
Yellow — Wet	>100	>170



NOTES:
1. Push down on valve piston to close valve before assembling.
2. After valve is assembled close valve in Quick Test sub-mode or cycle power before opening service valve.

Fig. 54 — Disassembly and Assembly of EXV Motor

Filter Drier — Whenever moisture-liquid indicator shows presence of moisture, replace filter drier(s). There is one filter drier assembly on each circuit with two cores. Refer to the Carrier Standard Service Techniques Manual, Chapter 1, Refrigerants, for details on servicing filter driers.

Liquid Line Service Valve — This valve is located immediately ahead of filter drier, and has a $^1/_4$-in. access connection for field charging. In combination with compressor discharge service valve, each circuit can be pumped down into the high side for servicing with plate fin coils. Microchannel coils (MCHX) have much smaller volume and cannot accommodate the entire circuit charge.

Compressor Assembly — The 30XV units utilize Greenspeed intelligence for efficient operation. The compressor is controlled by a VFD. See Fig. 55 for a view of a typical 06Z compressor. For optimal efficiency the compressor uses a variable inlet (VI) valve to change the inlet area of the lobes at different loading points. The valve is opened or closed by a solenoid on the compressor. The control logic looks at calculated parameters to determine the switch point of the valve.

VI VALVE TROUBLESHOOTING — Use the quick test table (Main Menu → Quick Test Table → Circuit X VI) to enable the VI valve output. Enable the valve output and verify the coil solenoid is energized.

SUCTION VICTAULIC COUPLING INSTALLATION

1. The outside surface of the pipe, between the groove and the pipe end, must be smooth and free from indentations, projections (including weld seams), and roll marks to ensure a leak-tight seal. All oil, grease, loose paint, and dirt must be removed. The Victaulic gasket used for refrigerant system piping will have a yellow mark on one side of the gasket lips.
2. Apply a thin coat of Victaulic lubricant or silicone lubricant to the gasket sealing lips and exterior.

⚠ CAUTION

Always use a compatible lubricant to prevent the gasket from pinching or tearing during installation. Failure to follow this instruction could result in joint leakage.

3. Position the gasket over the pipe end. Make sure the gasket does not overhang the pipe end.
4. Align and bring the two pipe ends together. Slide the gasket into position and center it between the grooves in each pipe end. Make sure no portion of the gasket extends into the groove in either pipe end.
5. Install the housings over the gasket. Make sure the housings' keys engage the grooves completely on both pipe ends.

⚠ CAUTION

Make sure the gasket does not become rolled or pinched while installing the housings. Failure to follow this instruction could cause damage to the gasket, resulting in joint leakage.

6. Install the bolts, and thread a nut finger-tight onto each bolt. For couplings supplied with stainless steel hardware,

apply an anti-seize compound to the bolt threads. Make sure the oval neck of each bolt seats properly in the bolt hole.

7. Tighten the nuts evenly by alternating sides until metal-to-metal contact occurs at the bolt pads. Make sure the housings' keys engage the grooves completely. It is important to tighten the nuts evenly to prevent gasket pinching.
8. Visually inspect the bolt pads at each joint to ensure metal-to-metal contact is achieved.

COMPRESSOR OIL SYSTEM — Each compressor/circuit has its own oil system which includes an oil filter, oil solenoid, check valve, oil level switch, oil separator heater, oil pressure transducer, and an oil shut-off valve. A typical oil system is shown in Fig. 56 and 57. See Table 40 for required oil quantity per circuit, initially included from the factory.

Table 40 — Unit Oil Quantities

30XV UNIT SIZE	OIL CHARGE (gal, [liters])	
	Circuit A	Circuit B
140 - 200	3.75 [14.2]	3.75 [14.2]
225	6.0 [22.7]	3.75 [14.2]
250 - 325	6.0 [22.7]	6.0 [22.7]
350	7.5 [28.4]	6.0 [22.7]
400-500	7.5 [28.4]	7.5 [28.4]

Oil Charge — When additional oil or a complete charge is required it must meet the following specifications:

- Manufacturer . . . . . .Emkarate RL220XL
- Oil Type . . . . . Inhibited polyolester-based synthetic compressor lubricant for use with screw compressors.
- ISO Viscosity Grade 220

Do not reuse drained oil or any oil that has been exposed to the atmosphere.

Oil is available in the following quantities from your local Carrier representative:

QUANTITY	TOTALINE PART NO.
1 Quart	P903-2325
1 Gallon	P903-2301
5 Gallon	P903-2305

If unsure if there is low oil charge in the system, follow the steps below:

1. If the unit shuts off repeatedly from a low oil level alert, it may be an indication of inadequate oil charge: however, it could also indicate the oil is not being reclaimed from the low-side of the system.
2. Begin running the circuit at full load for $1^1/_2$ hours.

   NOTE: An adequate load must be available.
3. After running the unit for $1^1/_2$ hours at full load, stop the unit. Check the oil level in the oil separator sight glass. An oil level should be visible in the upper sight glass. If level is not visible, the unit is low on oil charge.
4. Add oil until the oil is at the center of the upper sight glass. Make sure not to add oil beyond this level as excess oil will be carried out of the oil separator into the system and might lead to system instabilities at certain conditions.
5. The factory oil charging stations are programed to add precise amount of oil to the oil separator and if the oil level while inspection shows higher than middle of the top sight glass then it could be due to refrigerant mixed in it. Do not remove any oil.

   Add oil to the oil separator using the $^1/_4$-in. access fitting on the side of the separator.

   NOTE: To facilitate the oil charging process, ensure that the unit is not running when adding oil. The system is under pressure even when the unit is not running, so it is necessary to use a suitable pump to add oil to the system. Using a suitable pump, add $^1/_2$ gal (1.9 L) of oil to the system. Continue adding oil in $^1/_2$ gal (1.9 L) increments until the problem is resolved, up to a maximum of 1.5 gal (5.7 L).

Oil Filter Maintenance — Each circuit has one oil filter bolted externally to the compressor. Oil line pressure drop is monitored by the control. Oil line pressure drop is calculated by subtracting oil pressure (OPT) from discharge pressure (DPT). If the oil line pressure drop exceeds 30 psig (206.8 kPa) for 5 minutes the control will generate a High Oil Filter Pressure Drop alert. The High Oil Filter Pressure Drop alert will not shut down the compressor, but instead indicates that the oil filter is dirty. If oil pressure line losses exceed 50 psig (344.7 kPa) for more than 30 seconds then the control will shut down the circuit on Maximum Oil Filter Differential Pressure Failure.

⚠ CAUTION

Compressor oil is pressurized. Use proper safety precautions when relieving pressure.

Replacing the Oil Filter — Close the oil service valves on either side of filter by removing the cap and closing the valve. One is connected to the oil filter and the other is mounted on the compressor. Connect a charging hose to the ¼-in. access fitting port located between the filter and compressor. Bleed off the oil located in this section. A quart of oil is typically removed during this process. Unscrew the nuts on either side of the filter. Remove the filter and install the new one. Make sure to remove the plastic caps from the new filter before installation. Take care not to lose or damage the new O-rings on the new filter. Draw a vacuum at the service port. Remove the charging hose and open the oil service valves. Replace caps on access port and service valves. Check both fittings for leaks.

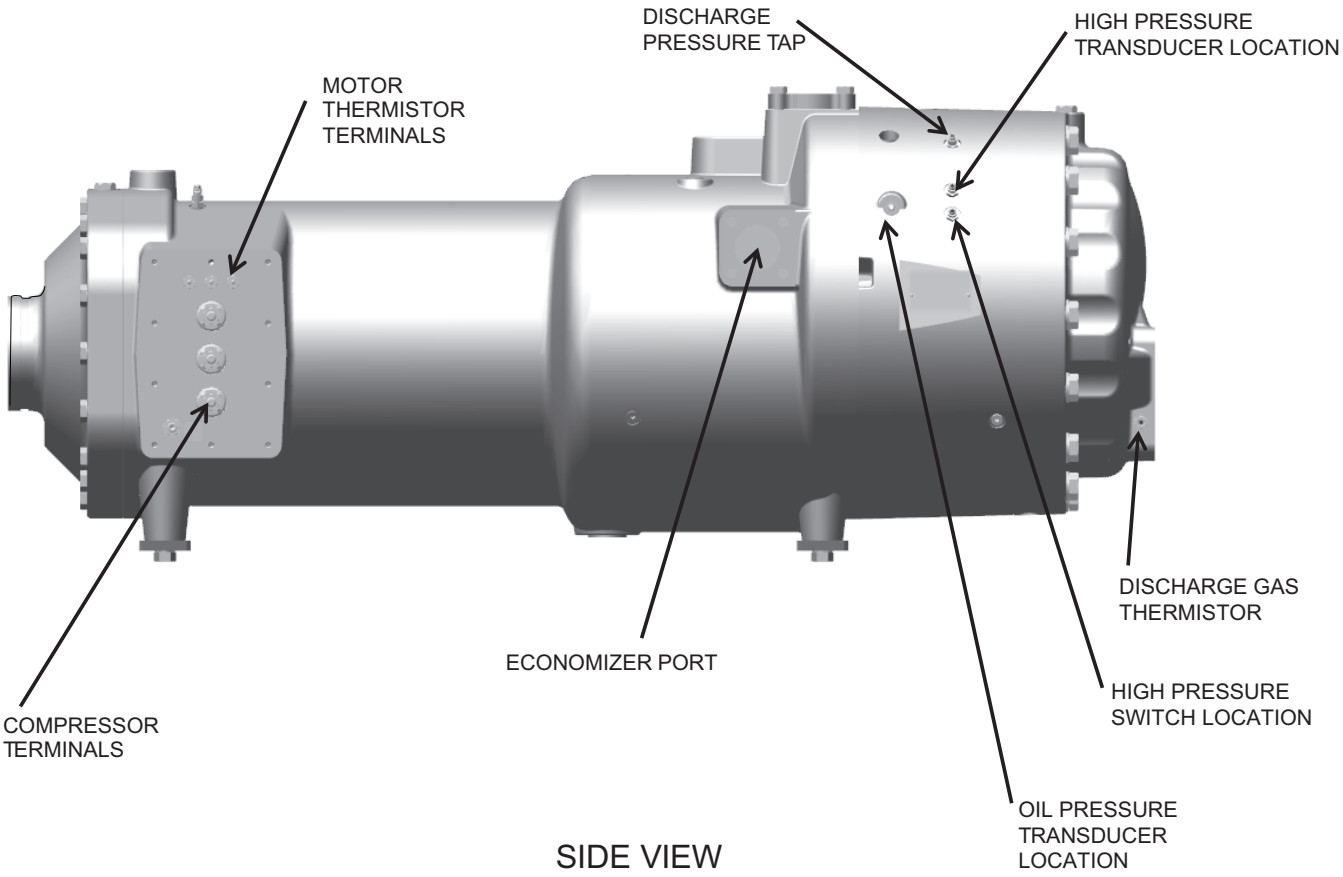
Evaporator Service — The 30XV units use flooded style evaporators.

ISOLATION VALVE — The isolation valve is a factory-installed option for 30XV units. The option includes a butterfly-style suction service valve on the suction lines, and manual ball valves on discharge, evaporator inlet and economizer lines. The butterfly valve is connected to the suction line by Victaulic connections. See Fig. 58 and 59 for details on the butterfly suction service valve operation. The valve locks into place when fully opened or fully closed.

See Table 41 for compressor usage.

Table 41 — Compressor Usage

30XV UNIT SIZE	COMPRESSOR MODELS	
	CKT A	CKT B
140 - 200	06ZCE1	06ZCE1
225	06ZFC2	06ZCE1
250 - 325	06ZFC2	06ZFC2
350	06ZJG3	06ZFC2
400-500	06ZJG3	06ZJG3



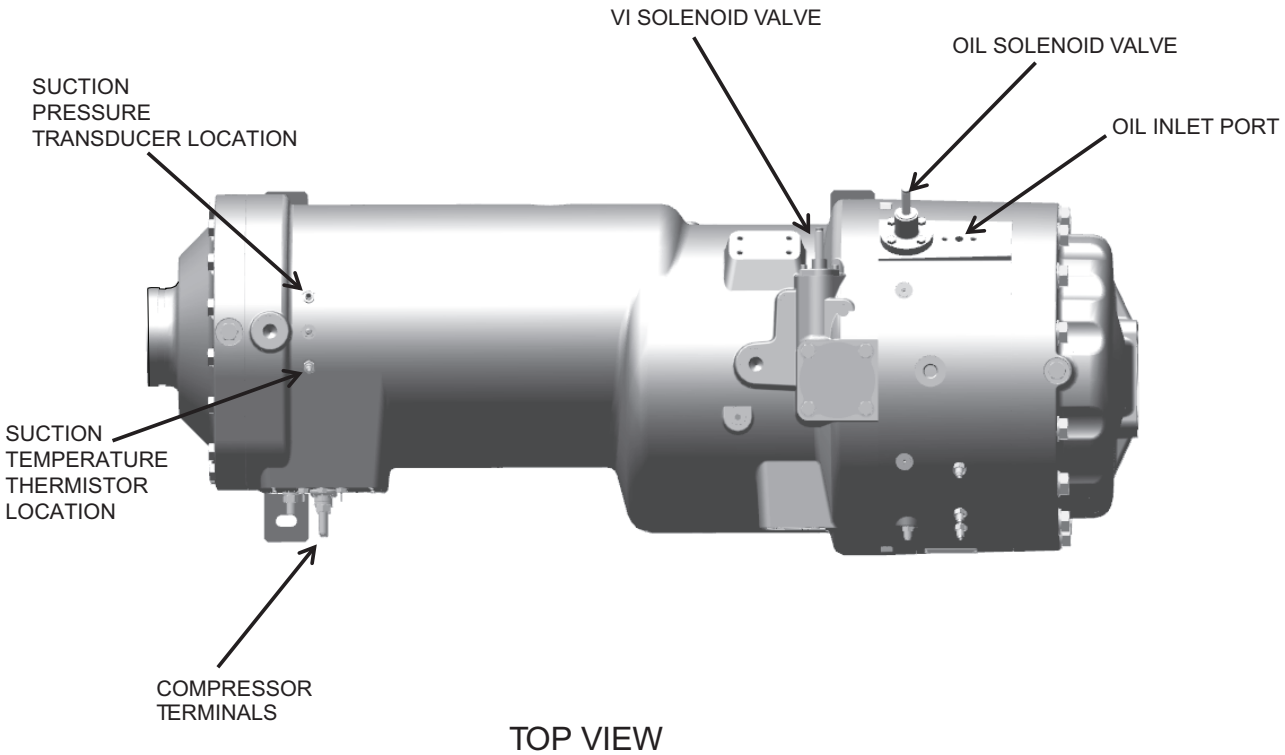


Fig. 55 — Typical 06Z Compressor (All Units)

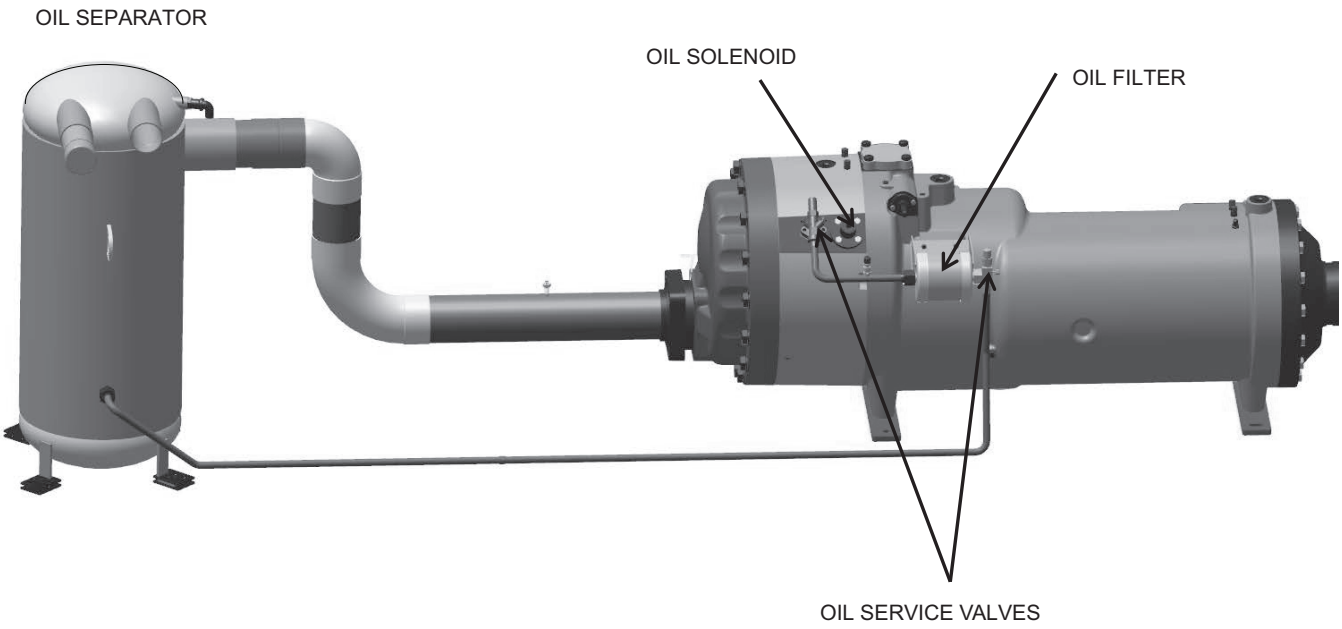


Fig. 56 — Typical Oil System (140-325, 350 Circuit B)

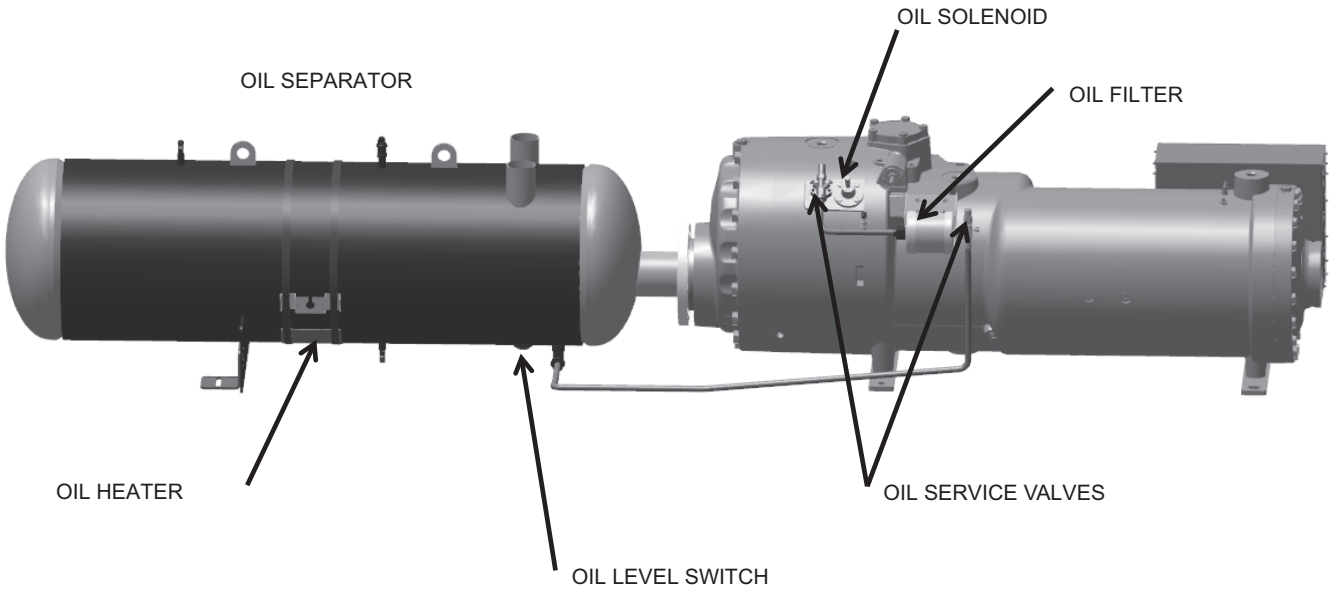


Fig. 57 — Typical Oil System (350 Circuit A, 400-500)

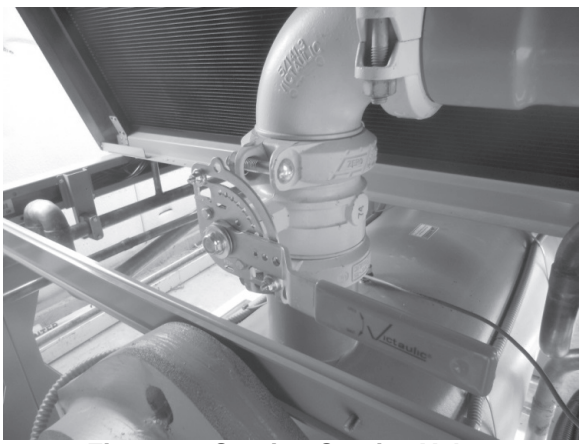


Fig. 58 — Suction Service Valve Butterfly Valve Closed

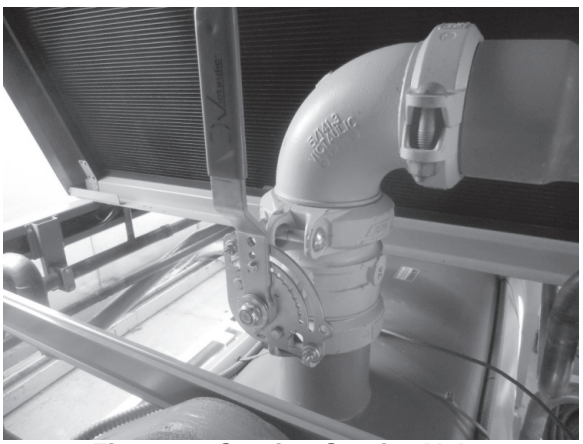


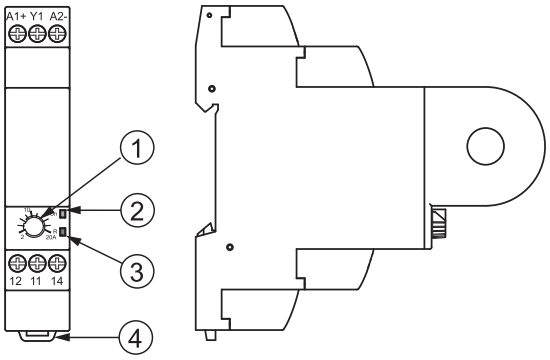
Fig. 59 — Suction Service Valve Butterfly Valve Open

EVAPORATOR FREEZE PROTECTION — All evaporators are equipped with evaporator heaters (unless removed as an option for Middle Eastern regions). The control logic uses the unit status, outdoor air temperature, and the saturated suction temperatures for all circuits to decide if the evaporator heater should be energized. The evaporator heaters can only be energized when the state of the unit is OFF. The evaporator heaters will be energized according to the following logic:

1. The Evaporator Heater Setpoint is the Brine Freeze Setpoint + Evaporator Heater Delta Setpoint.
2. If the outside air temperature (OAT) is below the Evaporator Heater Setpoint *or* if the saturated suction temperature (SST) of any one circuit is lower than the Evaporator Heater Setpoint + 6° F (3.3° C), the evaporator heater is activated, or if already activated, will remain on.
3. If the SST of all circuits is higher than the Evaporator Heater Setpoint + 10° F (5.5° C), *and* if OAT is higher than the Evaporator Heater Setpoint +2° F, the evaporator heater will be turned off, or if already off, will remain off.
4. If either condition 2 or condition 3 above is not met, the heater mode remains unchanged.

If the entering or leaving water temperature is less than the Brine Freeze Setpoint (Main Menu → Configuration Menu → Service Parameters → Brine Freeze Setpoint) +1.0° F (0.5° C), then the heater will be turned on along with the pump.

A current sensing relay monitors the current to the evaporator heaters. If a heater fails, the reduction in current will switch the relay and produce a Evaporator Freezer Alarm (EVAPORATOR_FREEZE, 10001). In addition, the pump signal will energize. See Appendix H for relay set points. See Fig. 60 for evaporator heater current sensing relay set point adjustment location.



LEGEND

1 — Overcurrent Adjusting Potentiometer
2 — Power Supply Status LED (green)
3 — Relay Output Supply Status LED (yellow)
4 — 35 mm Rail Clip-in Spring

Fig. 60 — Evaporator Heater Set Point Adjustment

To configure this option with the Touch Pilot controls:

DISPLAY NAME	PATH	VALUE
Evaporator Heater Installed	Main Menu → Configuration Menu → Factory Parameters	Evap Heater Installed YES/NO

NOTE: Evaporator Heater must be configured to YES for the actuated ball valves (ABV) to operate.

IMPORTANT: If unit is installed in an area where ambient temperatures fall below 32 F (0° C), a suitable corrosion-inhibited antifreeze solution or evaporator heater must be used in the chilled water circuit.

LOW FLUID TEMPERATURE — The Touch Pilot control is programmed to shut chiller down if leaving fluid temperature drops below 34 F (1.1 C) for evaporator fluid type water or below the Brine Freeze Setpoint (Main Menu → Configuration Menu → Service Parameters → Line 5) for the evaporator fluid type brine. When fluid temperature rises to 6° F (3.3° C) above the leaving fluid set point, the alarm will reset and the chiller restarts. Reset is automatic as long as this is the first occurrence. For repeat occurrences within 24 hours the alarm must be manually reset.

LOSS OF FLUID FLOW PROTECTION — All 30XV machines include an integral flow switch that protects the evaporator against loss of evaporator flow.

TUBE PLUGGING — A leaky tube can be plugged until retubing can be done. The number of tubes plugged determines how soon the evaporator must be retubed. All tubes in the evaporator may be removed. Loss of unit capacity and efficiency as well as increased pump power will result from plugging tubes. Failed tubes should be replaced as soon as possible. Up to 10% of the total number of tubes can be plugged before retubing is necessary. Figure 61 shows an Elliott tube plug and a cross-sectional view of a plug in place. See Tables 42 and 43 for plug components. If the tube failure occurs in both circuits using tube plugs will not correct the problem. Contact your local Carrier representative for assistance.

⚠ CAUTION

Use extreme care when installing plugs to prevent damage to the tube sheet section between the holes.

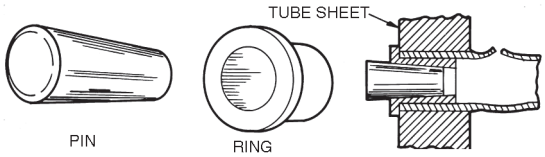


Fig. 61 — Elliott Tube Plug

Table 42 — Plug Component Parts (Evaporator Units Only)

COMPONENT	PART NUMBER
For Tubes	
Brass Pin	853103-1*
Brass Ring	853002-640 or 657* (measure tube ID before ordering)
For Holes without tubes	
Brass Pin	853103-1A
Brass Ring	85102-738
Loctite	No. 675 †
Locquic	"N"†
Roller Extension	S82-112/11

*Order directly from Elliot Tool Technologies, Dayton, OH or RCD.
†Can be obtained locally.

Table 43 — Evaporator Tube Components

COMPONENT	SIZE	
	in.	mm
Tube sheet hole diameter	0.756	19.20
Tube OD	0.750	19.05
Tube ID after rolling (includes expansion due to clearance.)	0.650 to 0.667	16.51 to 16.94

NOTE: Tubes replaced along heat exchanger head partitions must be flush with tube sheet (both ends).

EVAPORATOR RETUBING — When retubing is required, obtain the service of qualified personnel experienced in boiler maintenance and repair. Most standard procedures can be followed when retubing the evaporators. An 8% crush is recommended when rolling replacement tubes into the tube sheet. Place one drop of Loctite No. 675 or equivalent on top of tube prior to rolling. This material is intended to "wick" into the area of the tube that is not rolled into the tube sheet, and prevent fluid from accumulating between the tube and the tube sheet. New tubes must also be rolled into the center tube sheet to prevent circuit to circuit leaks.

TIGHTENING EVAPORATOR HEAD BOLTS

Preparation — When reassembling evaporator heads, always check the condition of the O-rings first. The O-ring should be replaced if there are visible signs of deterioration, cuts or damage. Apply a thin film of grease to the O-ring before installation. This will aid in holding the O-ring in the groove while the head is installed. Torque all bolts to the following specification and in sequence:

$^{5}/_{8}$-in. Diameter Perimeter Bolts (Grade 5) . . . 150 to 170 ft-lb (203 to 230 N-m)

$^{3}/_{4}$-in. Diameter Perimeter Bolts (Grade 5) . . . 200 to 225 ft-lb (271 to 305 N-m)

1. Install all bolts finger tight.
2. Bolt tightening sequence is outlined in Fig. 62. Follow the numbering or lettering sequence so that pressure is evenly applied to O-ring.
3. Apply torque in one-third steps until required torque is reached. Load *all* bolts to each one-third step before proceeding to next one-third step.
4. No less than one hour later, retighten all bolts to required torque values.
5. After refrigerant is restored to system, check for refrigerant leaks using recommended industry practices.
6. Replace evaporator insulation.

INSPECTING/CLEANING HEAT EXCHANGERS — Inspect and clean evaporator tubes at the end of the first operating season. Because these tubes have internal ridges, a rotary-type tube cleaning system is necessary to fully clean the tubes. Tube condition in the evaporator will determine the scheduled frequency for cleaning, and will indicate whether water treatment is adequate in the chilled water/brine circuit. Inspect the entering and leaving water thermistor wells for signs of corrosion or scale. Replace the well if corroded or remove any scale if found.

⚠ CAUTION

Hard scale may require chemical treatment for its prevention or removal. Consult a water treatment specialist for proper treatment procedures.

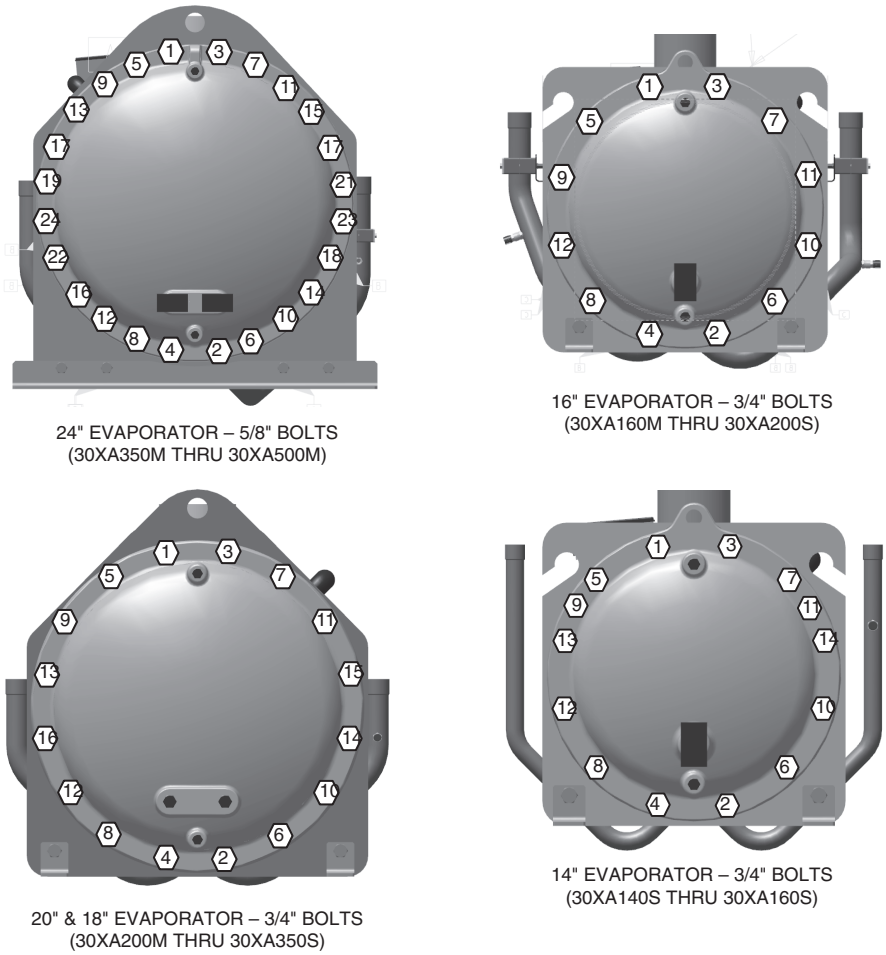


Fig. 62 — Flooded Evaporator Unit Head Recommended Bolt Torque Sequence

EVAPORATOR CHILLED WATER FLOW SWITCH — A thermal-dispersion flow switch is factory-installed in the entering water nozzle for all machines. See Fig. 63 and 64. Figure 64 shows typical installation. If nuisance trips of the sensor are occurring, follow the steps below to correct:

1. Check to confirm that all strainers are clean, valves are open and pumps are running. For the case of variable frequency drive (VFD) controlled pumps, ensure the minimum speed setting has not been changed.
2. Measure the pressure drop across the evaporator. Use the evaporator pressure drop curves on page 46 to calculate the flow and compare this to system requirements. The pressure drop curves are for water only.

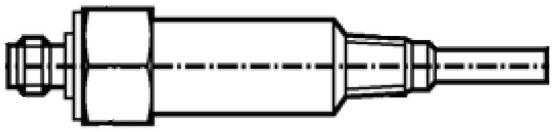


Fig. 63 — Chilled Water Flow Switch

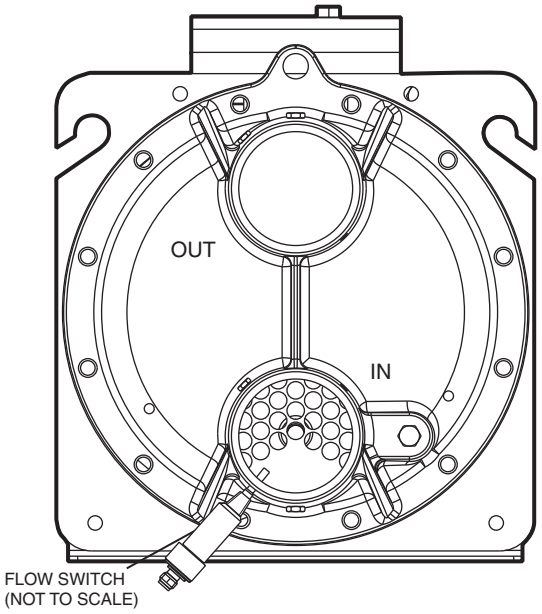


Fig. 64 — Flow Switch Location

All Units

EVAPORATOR WATER TREATMENT — Untreated or improperly treated water may result in corrosion, scaling, erosion or algae. The services of a qualified water treatment specialist should be obtained to develop and monitor a treatment program.

⚠ CAUTION

Water must be within design flow limits, clean and treated to ensure proper machine performance and reduce the potential of tubing damage due to corrosion, scaling, and algae. Carrier assumes no responsibility for evaporator damage resulting from untreated or improperly treated water.

PREPARATION FOR WINTER SHUTDOWN — If the unit is not operational during the winter months, at the end of the cooling season complete the following steps.

⚠ CAUTION

Failure to remove power before draining heater equipped evaporators can result in heater damage.

Evaporator to be drained for winter shutdown

1. To prepare the system for winter shutdown, draining the fluid from the system is highly recommended. Isolate the evaporator from the rest of the system with water shutoff valves. Be sure to deenergize heaters (if installed) by opening circuit breaker (CB-7) or shut off power to the chiller to prevent damage if the evaporator is drained.
2. Remove the evaporator drain plug. Follow all local codes and regulations regarding the fluid disposal.
3. Once fully drained, replace the drain plug(s) and completely fill the evaporator, and hydronic package if equipped, with suitable corrosion-inhibited antifreeze solution such as propylene glycol. The concentration should be adequate to provide freeze protection to 15° F (8.3° C) below the expected low ambient temperature conditions. Antifreeze can be added through the vent on top of the evaporator head. Evaporator fluid volumes can be found in the Installation Instructions for the unit.
4. Leave the evaporator filled with the antifreeze solution for the winter to provide corrosion protection during the off season. The evaporator may be drained if desired. Follow all local codes and regulations regarding the fluid disposal.
5. At the beginning of the next cooling season, be sure that there is refrigerant pressure in each circuit before refilling evaporator, add recommended inhibitor, and reset the circuit breaker for the heater (CB-7) if opened or restore power.

Evaporator to remain filled for winter shutdown

1. If the evaporator will not be drained, do not shut off power disconnect during off-season shutdown.
2. If the chilled water loop is not protected with a suitable corrosion-inhibited antifreeze solution such as propylene glycol, the unit must have evaporator pump control. In the event of a power failure with sub-freezing temperatures, the unit will not have any evaporator freeze protection and may be subject to damage.

⚠ CAUTION

Operation or winter shutdown with fresh water is not fail-safe should there be a loss of power to the chiller or to the circulating pump. Freeze damage due to power loss or disabling chiller pump control in fresh water systems will impair or otherwise negatively affect the warranty.

3. It is recommended that the loop be protected with a suitable corrosion-inhibited antifreeze solution such as propylene glycol. The concentration should be adequate to provide freeze protection to 15° F (8.3° C) below the expected low ambient temperature conditions. Evaporator heaters will not protect the evaporator from freeze-up in the event of power loss.

Microchannel Heat Exchanger (MCHX) Condenser Coil Maintenance and Cleaning Recommendations — Routine cleaning of coil surfaces is essential to maintain proper operation of the unit. Elimination of contamination and removal of harmful residues will greatly increase the life of the coil and extend the life of the unit. The following steps should be taken to clean MCHX condenser coils:

⚠ CAUTION

Do not apply any chemical cleaners to MCHX condenser coils. These cleaners can accelerate corrosion and damage the coil.

1. Remove any foreign objects or debris attached to the coil face or trapped within the mounting frame and brackets.
2. Put on personal protective equipment including safety glasses and/or face shield, waterproof clothing and gloves. Full coverage clothing is recommended.
3. Start high pressure water sprayer and purge any soap or industrial cleaners from sprayer before cleaning condenser coils. Only clean potable water is authorized for cleaning condenser coils.
4. Clean condenser face by spraying the coil steady and uniformly from top to bottom while directing the spray straight toward the coil. Do not exceed 900 psig (6205 kPa), 104 F (40 C) water temperature, or 45 degree angle. The nozzle must be at least 12 in. (304.8 mm) from the coil face. Reduce pressure and use caution to prevent damage to air centers.

⚠ CAUTION

Excessive water pressure will fracture the braze between air centers and refrigerant tubes.

RTPF (Round Tube Plate Fin) Condenser Coil Maintenance and Cleaning Recommendations — Routine cleaning of coil surfaces is essential to maintain proper operation of the unit. Elimination of contamination and removal of harmful residues will greatly increase the life of the coil and extend the life of the unit. The following maintenance and cleaning procedures are recommended as part of the routine maintenance activities to extend the life of the coil.

REMOVE SURFACE LOADED FIBERS — Surface loaded fibers or dirt should be removed with a vacuum cleaner. If a vacuum cleaner is not available, a soft non-metallic bristle brush may be used. In either case, the tool should be applied in the direction of the fins. Coil surfaces can be easily damaged (fin edges can be easily bent over and damage to the coating of a protected coil) if the tool is applied across the fins.

NOTE: Use of a water stream, such as a garden hose, against a surface loaded coil will drive the fibers and dirt into the coil. This will make cleaning efforts more difficult. Surface loaded fibers must be completely removed prior to using low velocity clean water rinse.

PERIODIC CLEAN WATER RINSE — A periodic clean water rinse is very beneficial for coils that are applied in coastal or industrial environments. However, it is very important that the water rinse is made with very low velocity water stream to avoid damaging the fin edges. Monthly cleaning as described below is recommended.

ROUTINE CLEANING OF RTPF COIL SURFACE — Routine cleaning with Totaline® environmentally balanced coil cleaner is essential to extend the life of coils. This cleaner is available from Carrier Replacement Parts division as part number P902-0301 for a one gallon container, and part number P902-0305 for a five gallon container. It is recommended that all coils, including the standard copper tube aluminum fin, precoated fin, copper fin, or e-coated coils be cleaned with the Totaline environmentally balanced coil cleaner as described below. Coil cleaning should be part of the unit's regularly scheduled maintenance procedures to ensure long life of the coil. Failure to clean the coils may result in reduced durability in the environment. Avoid the use of:

- coil brighteners
- acid cleaning prior to painting
- high pressure washers
- poor quality water for cleaning

Totaline environmentally balanced coil cleaner is non-flammable, hypoallergenic, nonbacterial, and a USDA accepted biodegradable agent that will not harm the coil or surrounding components such as electrical wiring, painted metal surfaces, or insulation. Use of non-recommended coil cleaners is strongly discouraged since coil and unit durability could be affected.

Totaline Environmentally Balanced Coil Cleaner Application Equipment

- $2^1/_2$ gallon garden sprayer
- Water rinse with low velocity spray nozzle

⚠ CAUTION

Harsh chemicals, household bleach or acid or basic cleaners should not be used to clean outdoor or indoor coils of any kind. These cleaners can be very difficult to rinse out of the coil and can accelerate corrosion at the fin/tube interface where dissimilar materials are in contact. If there is dirt below the surface of the coil, use the Totaline environmentally balanced coil cleaner as described above.

⚠ CAUTION

High velocity water from a pressure washer, garden hose, or compressed air should never be used to clean a coil. The force of the water or air jet will bend the fin edges and increase airside pressure drop. Reduced unit performance or nuisance unit shutdown may occur.

Totaline Environmentally Balanced Coil Cleaner Application Instructions

1. Proper eye protection such as safety glasses is recommended during mixing and application.
2. Remove all surface loaded fibers and dirt with a vacuum cleaner as described above.
3. Thoroughly wet finned surfaces with clean water and a low velocity garden hose, being careful not to bend fins.
4. Mix Totaline environmentally balanced coil cleaner in a $2^1/_2$ gallon garden sprayer according to the instructions included with the cleaner. The optimum solution temperature is 100 F (37.8 C).

NOTE: Do NOT USE water in excess of 130 F (54.4 C), as the enzymatic activity will be destroyed.

5. Thoroughly apply Totaline environmentally balanced coil cleaner solution to all coil surfaces including finned area, tube sheets and coil headers.
6. Hold garden sprayer nozzle close to finned areas and apply cleaner with a vertical, up-and-down motion. Avoid spraying in horizontal pattern to minimize potential for fin damage.
7. Ensure cleaner thoroughly penetrates deep into finned areas.
8. Interior and exterior finned areas must be thoroughly cleaned.
9. Finned surfaces should remain wet with cleaning solution for 10 minutes.

10. Ensure surfaces are not allowed to dry before rinsing. Reapply cleaner as needed to ensure 10-minute saturation is achieved.
11. Thoroughly rinse all surfaces with low velocity clean water using downward rinsing motion of water spray nozzle. Protect fins from damage from the spray nozzle.

Condenser Fans — A formed metal mount bolted to the coil caps supports each fan and motor assembly. A shroud and a wire grille provide protection from the rotating fan. See Fig. 65. To remove the fan a special puller (RCD part no. 30RB680082) can be used. The fan utilizes a set screw and does not require the use of retaining compound in the keyway. The fan can be removed without the puller, but its use eases disassembly. The exposed end of the fan motor shaft is protected from weather by grease. If fan motor must be removed for service or replacement, re-grease the fan shaft. The fan needs to be positioned fully down against the step on the motor shaft. Apply blue thread locker (Loctite 243) to the threads of both the axial bolt and the set screw. Install the thick washer and M8 axial bolt; do not fully tighten. Install set screw and tighten to 16 ± 2 ft-lbs (21.7 ± 2.7 Nm). Torque the axial bolt to 24 ± 2 ft-lbs (32.5 ± 2.7 Nm). Reinstall shroud and wire grille.

Refrigerant Circuit

LEAK TESTING — Units are shipped with complete operating charge of refrigerant R-134a (see Physical Data tables supplied in the 30XV installation instructions) and should be under sufficient pressure to conduct a leak test. If there is no pressure in the system, introduce enough nitrogen to search for the leak. Repair the leak using good refrigeration practices. After leaks are repaired, system must be evacuated and dehydrated.

REFRIGERANT CHARGE — Refer to Physical Data tables supplied in the 30XV installation instructions. Immediately ahead of filter drier in each circuit is a factory-installed liquid line service valve. Each valve has a $^1/_4$-in. access connection for charging liquid refrigerant.

Charging with Unit Off and Evacuated — Close liquid line service valve before charging. Weigh in charge shown on unit nameplate. Open liquid line service valve; start unit and allow it to run several minutes fully loaded. Check for a clear sight glass. Be sure clear condition is liquid and not vapor.

Charging with Unit Running — If charge is to be added while unit is operating, all condenser fans and compressors must be operating. It may be necessary to block condenser coils at low ambient temperatures to raise condensing pressure to approximately 198 psig (1365 kPa) to turn all condenser fans on. Do not totally block a coil to do this. Partially block all coils in uniform pattern. Charge each circuit until sight glass shows clear liquid, and has a liquid line temperature of 103 F (39 C).

Add 3 to 5 lb (1.36 to 2.27 kg), depending on unit size and coil type, of liquid charge into the fitting located on the tube entering the evaporator. This fitting is located between the electronic expansion valve (EXV) and the evaporator.

Allow the system to stabilize and then recheck the liquid temperature. If needed, add additional liquid charge, 3 to 5 lb at a time, allowing the system to stabilize between each charge addition. Slowly add charge as the sight glass begins to clear to avoid overcharging.

IMPORTANT: When adjusting refrigerant charge, circulate fluid through evaporator continuously to prevent freezing and possible damage to the evaporator. Do not overcharge, and never charge liquid into the low-pressure side of system.

Safety Devices — The 30XV chillers contain many safety devices and protection logic built into the electronic control. Following is a description of the major safeties.

COMPRESSOR PROTECTION

Motor Overload — The compressor VFD fuses and drive logic protect each compressor against overcurrent.

All compressors have factory-installed high-pressure switches. See Table 44. Each high-pressure switch is connected directly to its associated VFD (terminals 12 and 37). If the switch opens during operation, the compressor will be shut down. Manual reset of the high pressure switch, VFD, and the control is required to restart the compressor.

Table 44 — High-Pressure Switch Settings

UNIT	SWITCH SETTING	
	psig	kPa
30XV	323.5 + 0.0 –14.0	2230 + 0.0 –14.0

OIL SEPARATOR HEATERS — Each oil separator circuit has a heater mounted on the side of the vessel. The heater is de-energized any time the compressor is on. If the compressor is off and outdoor-air temperature (OAT) is greater than 100 F (37.8 C) the heater is de-energized. The heater will also be de-energized if OAT – SST > 30 F (16.7 C) and the OAT –LWT > 30 F (16.7 C).

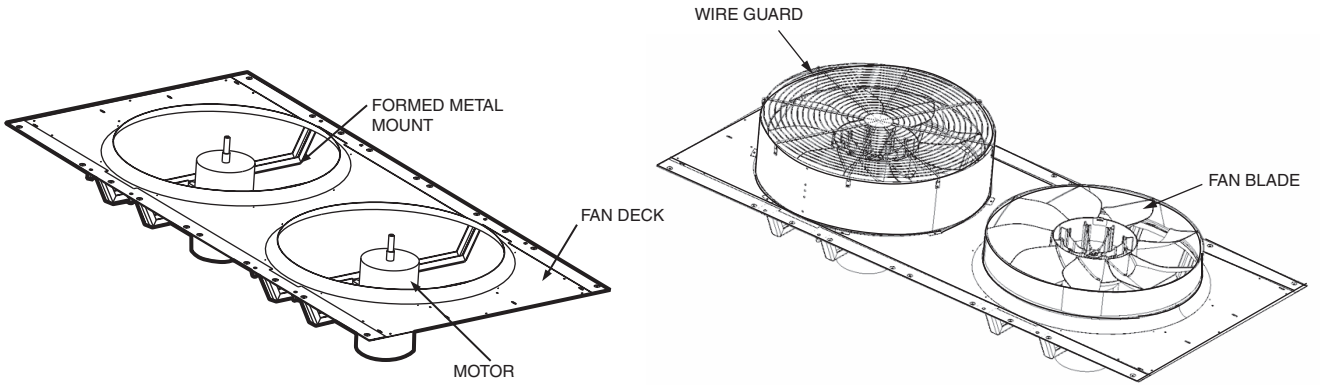


Fig. 65 — Fan Mounting

Relief Devices — Fusible plugs are located in each circuit between the condenser and the liquid line shutoff valve.

PRESSURE RELIEF VALVES — Valves are installed in each circuit and are located on the evaporators and oil separators. These valves are designed to relieve if an abnormal pressure condition arises. Relief valves on all evaporators relieve at 220 psig (1517 kPa). Relief valves on oil separators relieve at 350 psig (2413 kPa). These valves should not be capped. If a valve relieves, it should be replaced. If the valve is not replaced, it may relieve at a lower pressure, or leak due to trapped dirt from the system which may prevent resealing. See Table 45. Some local building codes require that relieved gases be exhausted to a specific location. This connection allows conformance to this requirement.

Table 45 — Relief Valve Connection Specifications

LOCATION	CONNECTION SIZES
Oil Separator	3/8 SAE Flare
Evaporator	3/4 in. NPT Female

Inspection and Maintenance — The relief valves on this chiller protect the system against the potentially dangerous effects of overpressure. To ensure against damage to the equipment and possible injury to personnel, these devices must be kept in peak operating condition. As a minimum, the following maintenance is required:

1. At least once a year, disconnect the vent piping at the valve outlet if equipped. Inspect the vent piping for corrosion, a restriction or blockage. If any is found, clean or replace the affected vent piping.
2. Carefully inspect the valve body and mechanism for any evidence of internal corrosion or rust, dirt, scale, leakage, etc. If corrosion or foreign material is found, do not attempt to repair or recondition; replace the valve.
3. If the chiller is installed in a corrosive atmosphere or the relief valves are vented into a corrosive atmosphere, inspect relief valves and piping at more frequent intervals.

Variable Frequency Drives (VFDs) — The 30XV units with Greenspeed® intelligence are equipped with variable frequency drives (VFDs) to control the compressors and condenser fans. The Danfoss VLT* HVAC drives each include an LCD user interface display. However, all necessary functions and statuses can be accessed from within the Touch Pilot™ menus. The VFDs are configured through the Touch Pilot controls, and parameters should not be changed manually.

COMPRESSOR DRIVES — Each unit is equipped with two VFDs to control the compressor operation, one for each circuit. The VFDs vary the operating speed of the compressors by changing the input power frequency over a programmed range. The compressor VFDs should not be operated below minimum programmed frequency, to ensure adequate oil return on the unit. See Fig. 66 for compressor VFD locations.

For chillers 140-325 tons, the VFDs are equipped with an aluminum enclosure to protect the drive from outdoor conditions. The cover must be removed to access the LCD user interface display or to service the drive. The cover is secured with 6 screws. See Fig. 67 for details on how to remove or reinstall the drive cover.

For chillers 350-500 tons, the VFDs are inside the control panel. The right and left doors allow access to the drives and displays.

⚠ CAUTION

If the compressor VFD enclosure is removed for service it MUST be reinstalled to protect the drive from water intrusion. If the cover is not properly installed the VFD will not be covered under warranty.

CONDENSER FAN DRIVES — Chillers with M or H in the 10th position of the model number or with the Low Ambient option will have condenser fans on each circuit which are controlled by one or two VFDs. The fans on each circuit all operate together at the same preprogrammed frequency. Tables 47-49 show which condenser fans are controlled by each drive. See Tables 47-49 for typical fan VFD arrangement. See Fig. 68 for fan VFD location.

*VLT is a registered trademark of Danfoss Group Global.

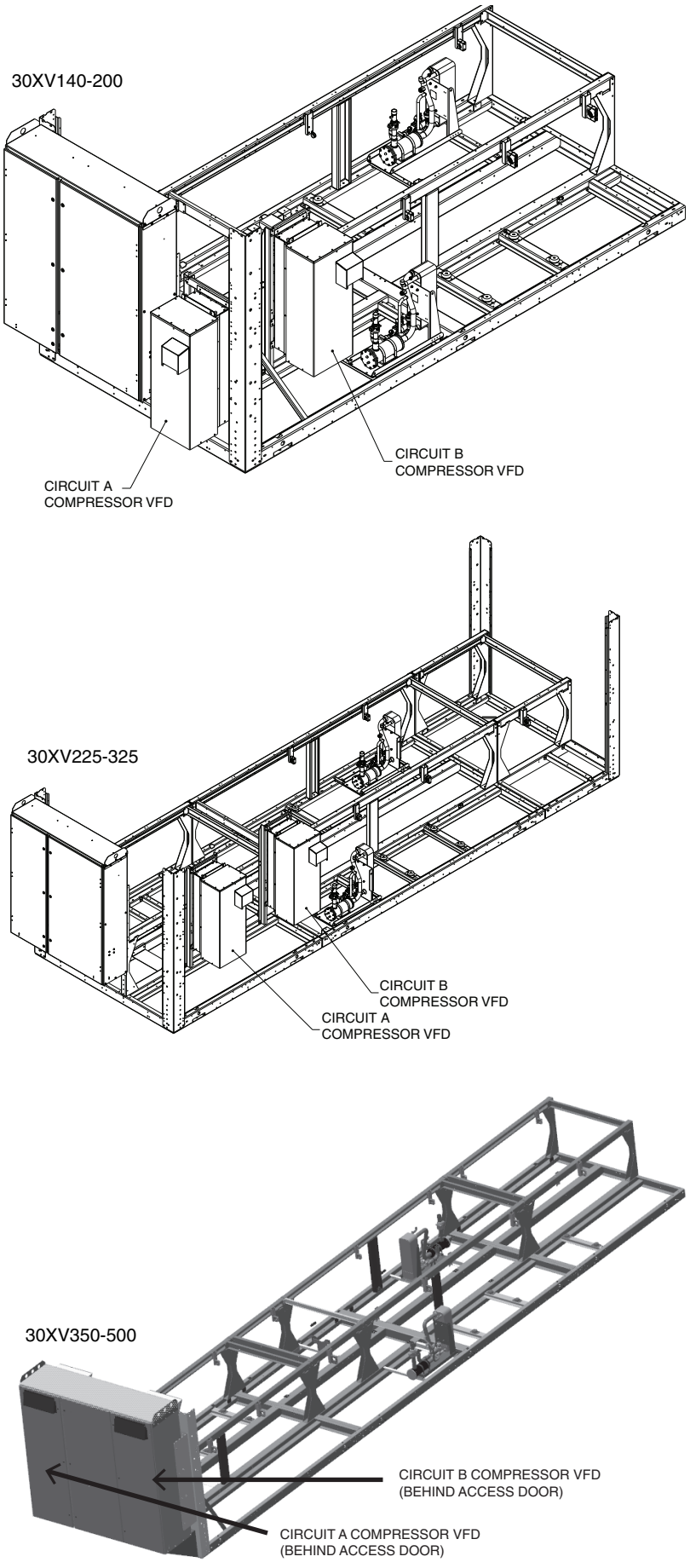


Fig. 66 — VFD Compressor Locations

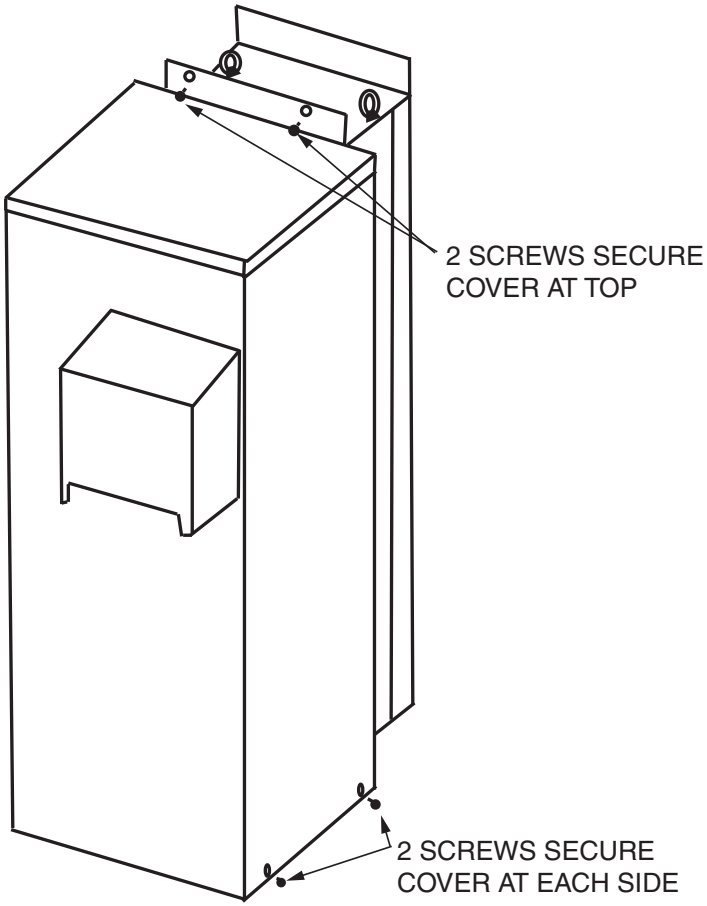
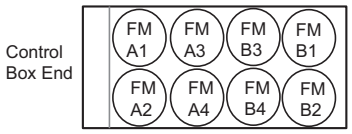


Fig. 67 — Compressor VFD Cover Attachment (30XV140-325 Only)

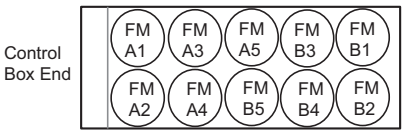
Table 46 — Standard Tier Fan Sequence

FANS



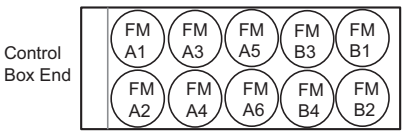
CKT	140-180							
A	FAN STAGE A	1	2	3	4			
	CONTACTOR #	FC A1	FC A2	FC A3	FC A4			
	FAN POSITION	FMA1	FMA2	FMA3	FMA4			
B	FAN STAGE B	1	2	3	4			
	CONTACTOR #	FC B1	FC B2	FC B3	FC B4			
	FAN POSITION	FMB1	FMB2	FMB3	FMB4			

FANS



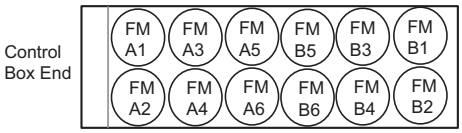
CKT	200						
A	FAN STAGE A	1	2	3	4	5	
	CONTACTOR #	FC A1	FC A2	FC A3	FC A4	FC A5	
	FAN POSITION	FMA1	FMA2	FMA3	FMA4	FMA5	
B	FAN STAGE B	1	2	3	4	5	
	CONTACTOR #	FC B1	FC B2	FC B3	FC B4	FC B5	
	FAN POSITION	FMB1	FMB2	FMB3	FMB4	FMB5	

FANS



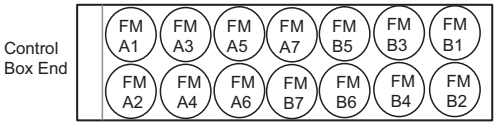
CKT	225						
A	FAN STAGE A	1	2	3	4	5	6
	CONTACTOR #	FC A1	FC A2	FC A3	FC A4	FC A5	FC A6
	FAN POSITION	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6
B	FAN STAGE B	1	2	3	4		
	CONTACTOR #	FC B1	FC B2	FC B3	FC B4		
	FAN POSITION	FMB1	FMB2	FMB3	FMB4		

FANS



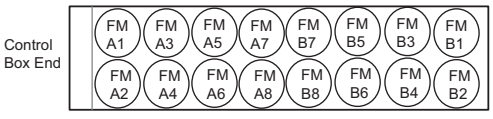
CKT	250-275						
A	FAN STAGE A	1	2	3	4	5	6
	CONTACTOR #	FC A1	FC A2	FC A3	FC A4	FC A5	FC A6
	FAN POSITION	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6
B	FAN STAGE B	1	2	3	4	5	6
	CONTACTOR #	FC B1	FC B2	FC B3	FC B4	FC B5	FC B6
	FAN POSITION	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6

FANS



CKT	300							
A	FAN STAGE A	1	2	3	4	5	6	7
	CONTACTOR #	FC A1	FC A2	FC A3	FC A4	FC A5	FC A6	FC A7
	FAN POSITION	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7
B	FAN STAGE B	1	2	3	4	5	6	7
	CONTACTOR #	FC B1	FC B2	FC B3	FC B4	FC B5	FC B6	FC B7
	FAN POSITION	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7

FANS



CKT	325								
A	FAN STAGE A	1	2	3	4	5	6	7	8
	CONTACTOR #	FC A1	FC A2	FC A3	FC A4	FC A5	FC A6	FC A7	FC A8
	FAN POSITION	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8
B	FAN STAGE B	1	2	3	4	5	6	7	8
	CONTACTOR #	FC B1	FC B2	FC B3	FC B4	FC B5	FC B6	FC B7	FC B8
	FAN POSITION	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMB8

Table 46 — Standard Tier Fan Sequence (cont)

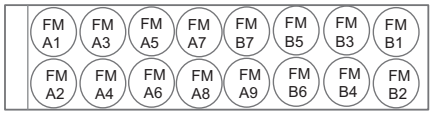
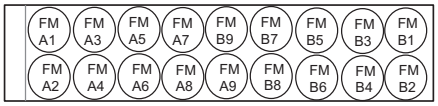
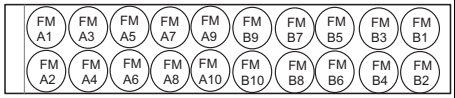
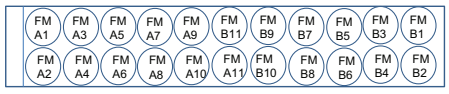
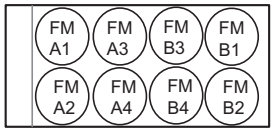
FANS	CKT											
		350										
Control Box End 	A	FAN STAGE A	1	2	3	4	5	6	7		8	
		CONTACTOR #	FC A1	FC A2	FC A3	FC A4	FC A5	FC A6	FC A7		FC A8	FC A9
		FAN POSITION	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7		FMA8	FMA9
	B	FAN STAGE B	1	2	3	4	5	6	7			
		CONTACTOR #	FC B1	FC B2	FC B3	FC B4	FC B5	FC B6	FC B7			
		FAN POSITION	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7			
		400										
Control Box End 	A	FAN STAGE A	1	2	3	4	5	6	7		8	
		CONTACTOR #	FC A1	FC A2	FC A3	FC A4	FC A5	FC A6	FC A7		FC A8	FC A9
		FAN POSITION	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7		FMA8	FMA9
	B	FAN STAGE B	1	2	3	4	5	6	7		8	
		CONTACTOR #	FC B1	FC B2	FC B3	FC B4	FC B5	FC B6	FC B7		FC B8	FC B9
		FAN POSITION	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7		FMB8	FMB9
		450										
Control Box End 	A	FAN STAGE A	1	2	3	4	5	6	7		8	
		CONTACTOR #	FC A1	FC A2	FC A3	FC A4	FC A5	FC A6	FC A7	FC A8	FC A9	FC A10
		FAN POSITION	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9	FMA10
	B	FAN STAGE B	1	2	3	4	5	6	7		8	
		CONTACTOR #	FC B1	FC B2	FC B3	FC B4	FC B5	FC B6	FC B7	FC B8	FC B9	FC B10
		FAN POSITION	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMB8	FMB9	FMB10
		500										
Control Box End 	A	FAN STAGE A	1	2	3	4	5	6		7		8	
		CONTACTOR #	FC A1	FC A2	FC A3	FC A4	FC A5	FC A6	FC A7	FC A8	FC A9	FC A10	FC A11
		FAN POSITION	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9	FMA10	FMA11
	B	FAN STAGE B	1	2	3	4	5	6		7		8	
		CONTACTOR #	FC B1	FC B2	FC B3	FC B4	FC B5	FC B6	FC B7	FC B8	FC B9	FC B10	FC B11
		FAN POSITION	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMB8	FMB9	FMB10	FMB11

Table 47 — Condenser Fan Drive Arrangement, Standard Tier with Low Ambient Option

FANS

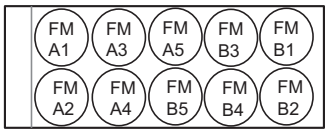
Control Box End



CKT		30XV140, 160, 180 (ALL VOLTAGES)							
A	VFD Designation	A1							
	Fan Position	FMA1	FMA2	FMA3	FMA4				
B	VFD Designation	B1							
	Fan Position	FMB1	FMB2	FMB3	FMB4				

30XV200 (208/230V)

Control Box End



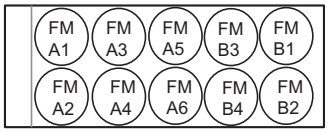
CKT									
A	VFD Designation	A2		A1					
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5			
B	VFD Designation	B2		B1					
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5			

30XV200 (380-575V)

CKT									
A	VFD Designation	A1							
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5			
B	VFD Designation	B1							
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5			

30XV 225 (380-575V)

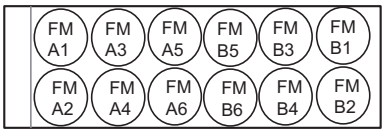
Control Box End



CKT									
A	VFD Designation	A1							
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6		
B	VFD Designation	B1							
	Fan Position	FMB1	FMB2	FMB3	FMB4				

30XV 250,275 (380-575V)

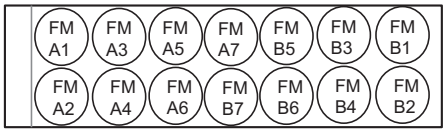
Control Box End



CKT									
A	VFD Designation	A1							
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6		
B	VFD Designation	B1							
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6		

30XV300 (380-575V)

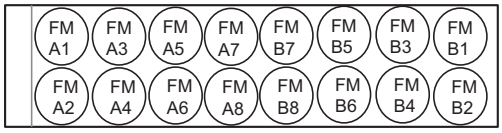
Control Box End



CKT									
A	VFD Designation	A1							
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	
B	VFD Designation	B1							
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	

30XV325 (380V-575V)

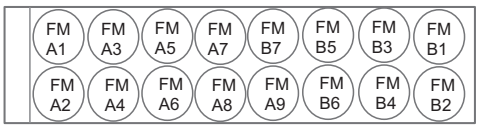
Control Box End



CKT									
A	VFD Designation	A2				A1			
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8
B	VFD Designation	B2				B1			
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMB8

30XV350 (380-575V)

Control Box End

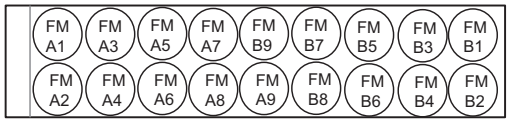


CKT										
A	VFD Designation	A2				A1				
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9
B	VFD Designation	B1								
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7		

Table 47 — Condenser Fan Drive Arrangement, Standard Tier with Low Ambient Option (cont)

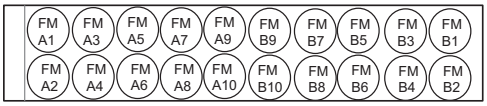
FANS

Control Box End



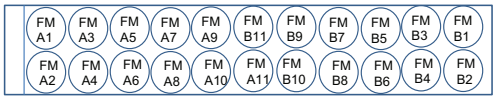
CKT		30XV400 (380-575V)									
A	VFD Designation	A2				A1					
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9	
B	VFD Designation	B2				B1					
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMAB	FMB9	

Control Box End



CKT		30XV450 (380-575V)									
A	VFD Designation	A2				A1					
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9	FMA10
B	VFD Designation	B2				B1					
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMAB	FMB9	FMB10

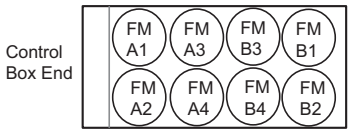
Control Box End



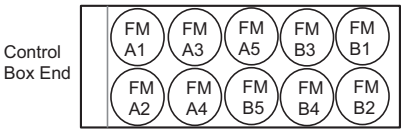
CKT		30XV500 (380-575V)										
A	VFD Designation	A2					A1					
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9	FMA10	FMA11
B	VFD Designation	B2					B1					
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMAB	FMB9	FMA10	FMB11

Table 48 — Condenser Fan Drive Arrangement, Mid Tier

30XV 140 (ALL VOLTAGES)

FANS	CKT							
	A	VFD Designation	A1					
		Fan Position	FMA1	FMA2	FMA3	FMA4		
	B	VFD Designation	B1					
		Fan Position	FMB1	FMB2	FMB3	FMB4		

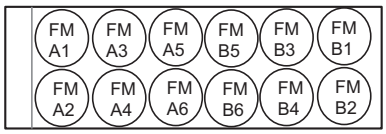
30XV 160,180 (208/230V)

FANS	CKT							
	A	VFD Designation	A2		A1			
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	
	B	VFD Designation	B2		B1			
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	

30XV 160,180 (380-575V)

FANS	CKT							
	A	VFD Designation	A1					
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	
	B	VFD Designation	B1					
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	

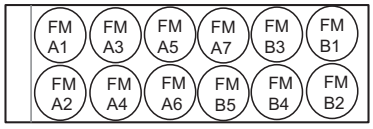
30XV200 (208/230V)

FANS	CKT							
	A	VFD Designation	A2			A1		
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6
	B	VFD Designation	B2			B1		
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6

30XV200 (380-575V)

FANS	CKT							
	A	VFD Designation	A1					
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6
	B	VFD Designation	B1					
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6

30XV225 (380V-575V)

FANS	CKT							
	A	VFD Designation	A1					
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7
	B	VFD Designation	B1					
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	

30XV250,275 (380-575V)

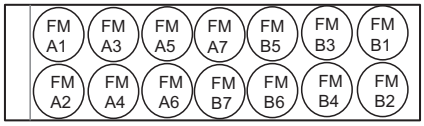
FANS	CKT							
	A	VFD Designation	A1					
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7
	B	VFD Designation	B1					
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7

Table 48 — Condenser Fan Drive Arrangement, Mid Tier (cont)

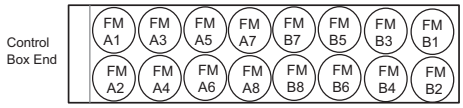
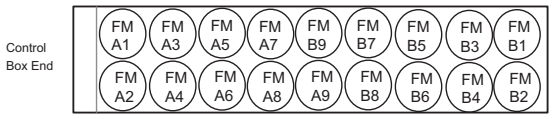
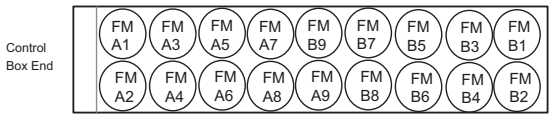
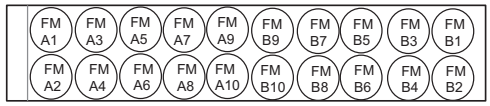
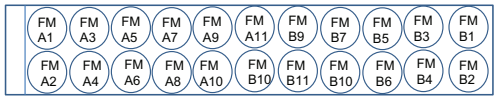
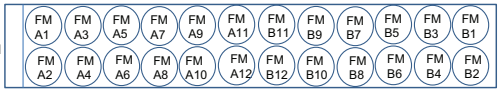
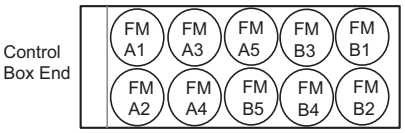
FANS	CKT															
		**30XV300 (380V-575V)**														
	A	VFD Designation	A2				A1									
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8						
	B	VFD Designation	B2				B1									
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8						
		30XV325 (380-575V)														
	A	VFD Designation	A2				A1									
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9					
	B	VFD Designation	B2				B1									
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMB8	FMB9					
		30XV350 (380V-575V)														
	A	VFD Designation	A2				A1									
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9					
	B	VFD Designation	B2				B1									
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMB9					
		30XV400 (380-575V)														
	A	VFD Designation	A2				A1									
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9	FMA10				
	B	VFD Designation	B2				B1									
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMB8	FMB9	FMB10				
		30XV450 (380V-575V)														
	A	VFD Designation	A2					A1								
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8		FMA10	FMA11			
	B	VFD Designation	B2					B1								
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8		FMB10	FMB11			
		30XV500 (380-575V)														
	A	VFD Designation	A2						A1							
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9	FMA10	FMA11	FMA12		
	B	VFD Designation	B2						B1							
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMB8	FMB9	FMB10	FMB11	FMB12		

Table 49 — Condenser Fan Drive Arrangement, High Tier

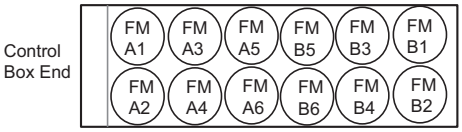
30XV140 (208/230V)

FANS	CKT						
	A	VFD Designation	A2		A1		
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5
	B	VFD Designation	B2		B1		
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5

30XV140 (380-575V)

	A	VFD Designation	A1				
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5
	B	VFD Designation	B1				
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5

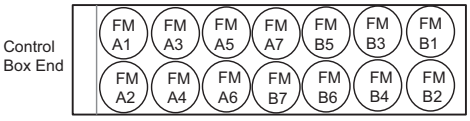
30XV160,180 (208/230V)

	A	VFD Designation	A2			A1		
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6
	B	VFD Designation	B2			B1		
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6

30XV160,180 (380-575V)

	A	VFD Designation	A1					
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6
	B	VFD Designation	B1					
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6

30XV200 (208/230V)

	A	VFD Designation	A2			A1			
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7
	B	VFD Designation	B2			B1			
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7

30XV200 (380-575V)

	A	VFD Designation	A1						
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7
	B	VFD Designation	B1						
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7

30XV225 (380-575V)

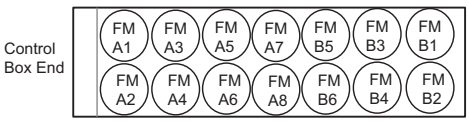
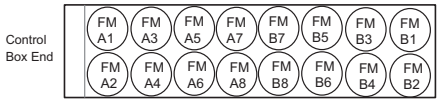
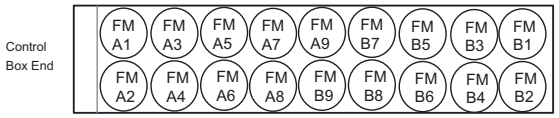
	A	VFD Designation	A2				A1		
		Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8
	B	VFD Designation	B1						
		Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6		

Table 49 — Condenser Fan Drive Arrangement, High Tier (cont)

FANS

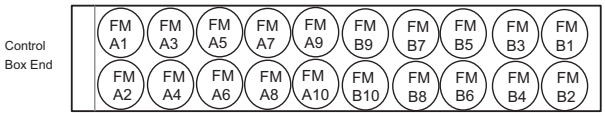


CKT		30XV250, 275 (380V-575V)							
A	VFD Designation	A2				A1			
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8
B	VFD Designation	B2				B1			
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8



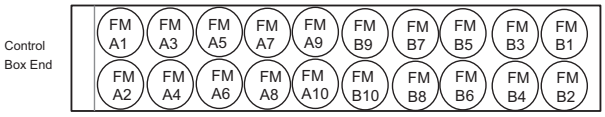
30XV300 (380-575V)

CKT										
A	VFD Designation	A2				A1				
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9
B	VFD Designation	B2				B1				
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMB8	FMB9



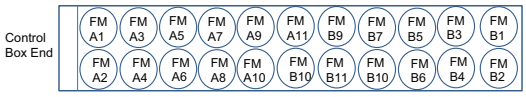
30XV325 (380-575V)

CKT											
A	VFD Designation	A2				A1					
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9	FMA10
B	VFD Designation	B2				B1					
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMB8	FMB9	FMB10



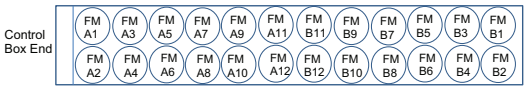
30XV350 (380V-575V)

CKT											
A	VFD Designation	A2				A1					
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9	FMA10
B	VFD Designation	B2				B1					
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMB9	FMB10



30XV400 (380-575V)

CKT												
A	VFD Designation	A2				A1						
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9	FMA10	FMA11
B	VFD Designation	B2				B1						
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMB8	FMB9	FMB10	FMB11



30XV450 (380-575V)

CKT													
A	VFD Designation	A2				A1							
	Fan Position	FMA1	FMA2	FMA3	FMA4	FMA5	FMA6	FMA7	FMA8	FMA9	FMA10	FMA11	FMA12
B	VFD Designation	B2				B1							
	Fan Position	FMB1	FMB2	FMB3	FMB4	FMB5	FMB6	FMB7	FMB8	FMB9	FMB10	FMB11	FMB12

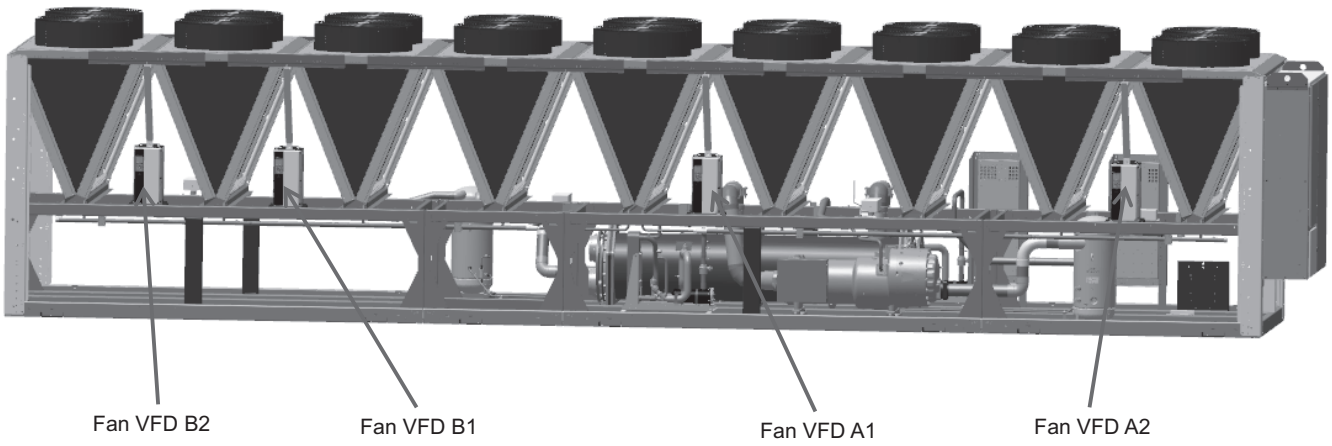


Fig. 68 — Fan VFD Location

VARIABLE FREQUENCY DISPLAY (VFD) DISPLAY NAVIGATION

IMPORTANT: The VFDs are configured through the Touch Pilot controls, and parameters should not be changed manually. This section is included for information and troubleshooting purposes only.

NOTE: The following instructions apply to the Danfoss VLT VFD.

The VFD can be operated in 2 ways:
- Graphical Local Control Panel (GLCP)
- RS-485 serial communication for PC connection

Graphical Local Control Panel (GLCP) — The LCD display is divided into 4 functional groups:

1. Graphical display with Status lines
2. Menu keys and indicator lights (LEDs) — selecting mode, changing parameters and switching between display functions
3. Navigation keys and indicator lights (LEDs)
4. Operation keys and indicator lights (LEDs)

See Fig. 69. The display is backlit with a total of 6 alphanumeric lines. All data is displayed on the GLCP, which can show up to 5 operating variables while in Status mode.

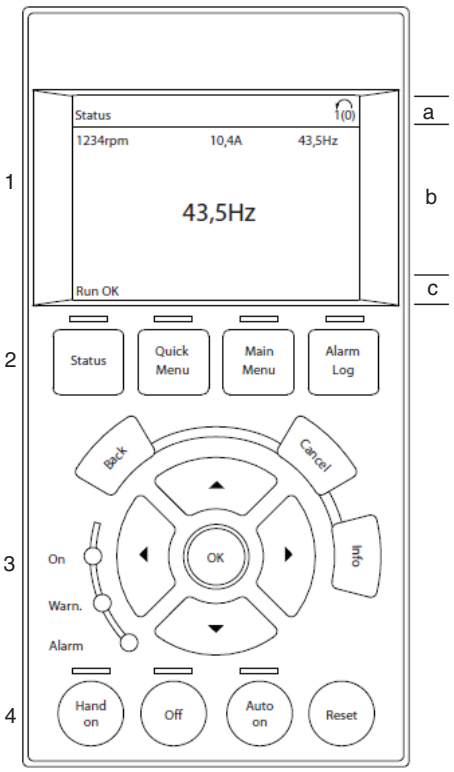
The display lines (see items a-c in Fig. 69) function as follows:

a. The status line at the top of the display shows VFD status when in [Status] mode or up to 2 variables when not in [Status] mode, or in case of an alarm or warning (alert).

b. The operator data line in the middle section shows up to 5 variables with their related units, regardless of status. In the case of an alarm or warning, the warning is shown instead of the variables.

c. The status line in the bottom section always shows the state of the VFD in Status mode.

The operator can toggle among 3 status read-out screens by pressing the Status key. Several values or measurements can be linked to each of the displayed operating variables. The values/measurements to be displayed can be defined via parameter 0-20 Display Line 1.1 Small, 0-21 Display Line 1.2 Small, 0-22 Display Line 1.3 Small, 0-23 Display Line 2 Large and 0-24 Display Line 3 Large. The settings are accessed by selecting QUICK MENU → Q3 Function Setups → Q3-1 General Settings → Q3-13 Display Settings. Each value/measurement readout parameter selected in 0-20 Display Line 1.1 Small to 0-24 Display Line 3 Large has its own scale and number of digits after a possible decimal point. Larger numeric values are displayed with fewer digits after the decimal point. For example, a current readout might be 5.25 A,15.2 A, or 105 A.



LEGEND
1 — Graphical display with status lines
2 — Menu keys and indicator lights
3 — Navigation keys and indicator lights
4 — Operation keys and indicator lights
a — Status line
b — Operator data lines
c — Status messages

Fig. 69 — VFD Graphical Local Control Panel

Status Display I is standard after start-up or initialization. Press [INFO] to obtain information about the value/measurement linked to the displayed operating variables 1.1, 1.2, 1.3, 2, and 3). See the operating variables shown in the display in

Fig. 70. Variables 1.1, 1.2, and 1.3 are shown in small size. Variables 2 and 3 are shown in medium size.

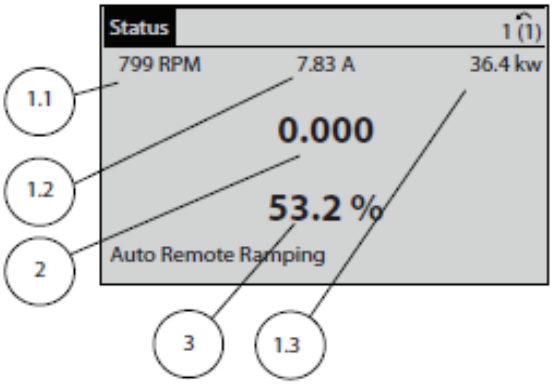


Fig. 70 — Status Display I

Status Display II shows the operating variables 1.1, 1.2, 1.3 and 2. In the example shown in Fig. 71, Speed, Motor Current, Motor Power, and Frequency are selected as variables in the first and second lines. Variables 1.1, 1.2, and 1.3 are shown in small size. Variable 2 is shown in large size.

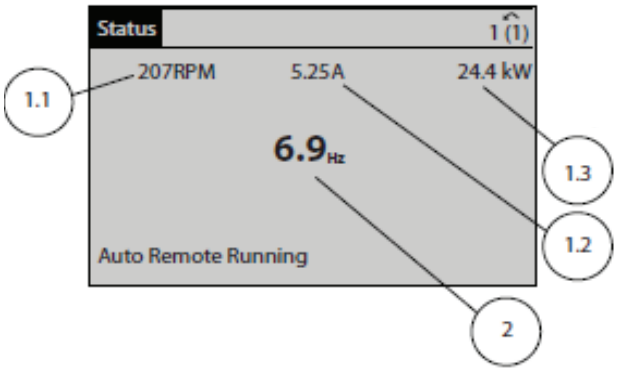


Fig. 71 — Status Display II

Status Display III shows events and actions of the Smart Logic Control. Figure 72 shows an example.

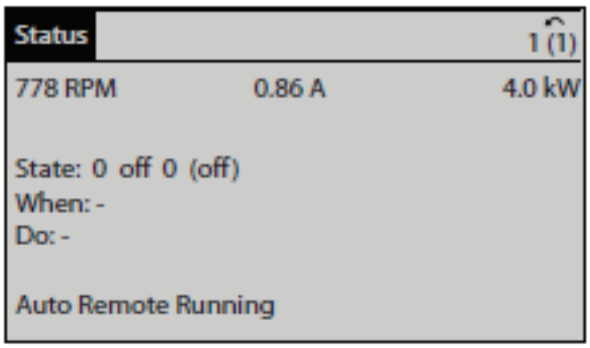


Fig. 72 — Status Display III

The operator can adjust the display brightness by pressing Status and ▲ to darken the display or ▼ to lighten it.

Indicator lights (LEDs) indicate whether the unit is on and if there are any warning or alarm conditions:

- Green LED (On): Control section is working. The On LED is activated when the VFD receives power from mains voltage, a DC bus terminal, or an external 24 V supply. At the same time, the back light is on.
- Yellow LED (Warn.): Indicates a warning.
- Flashing Red LED (Alarm): Indicates an alarm.

The warning and/or alarm LEDs light up if certain threshold values are exceeded. A status message and alarm text also appear on the control panel. See Fig. 73.

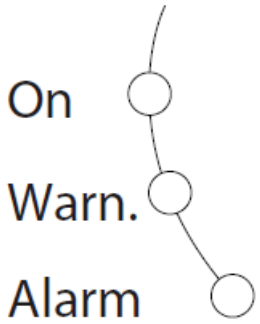


Fig. 73 — Indicator Lights

The menu keys below the display and indicator lights include Status, Quick Menu, Main Menu, and Alarm Log. The Status menu indicates the status of the frequency converter and/or the motor. Three display modes are available (see Fig. 70-72). Use the Status key for selecting mode of display or for changing back to display mode from the Quick Menu Mode, the Main Menu Mode, or the Alarm Log mode. The operator can also use the Status key to toggle between single or double read-out mode.

The Quick Menu key allows quick set-up of the frequency converter. The most common HVAC functions can be programmed here. Menu options include:

- My Personal Menu
- Quick Set-up
- Function Set-up
- Changes Made
- Loggings

The Function Set-up option provides quick and easy access to all parameters required for most HVAC applications. Among other features it also includes parameters for selecting which variables to display on the local control panel, digital preset speeds, scaling of analog references, closed loop single-zone and multi-zone applications, and specific functions related to fans, pumps and compressors.

The Quick Menu parameters can be accessed immediately unless a password has been created via 0-60 Main Menu Password, 0-61 Access to Main Menu without Password, 0-65 Personal Menu Password, or 0-66 Access to Personal Menu without Password. It is possible to switch directly between Quick Menu mode and Main Menu mode.

The Main Menu key is used for programming all parameters. These can be accessed immediately unless a password has been created via 0-60 Main Menu Password, 0-61 Access to Main Menu without Password, 0-65 Personal Menu Password, or 0-66 Access to Personal Menu without Password. For most HVAC applications it is not necessary to access the Main Menu parameters but instead use the Quick Menu. Quick Set-up and Function Set-up provides the simplest and quickest access to the typical required parameters.

It is possible to switch directly between Main Menu mode and Quick Menu mode. The parameter shortcut can be carried out by pressing the Main Menu key for 3 seconds. The parameter shortcut allows direct access to any parameter.

Press Alarm Log to display a list of the 10 latest alarms (numbered A1-A10). To obtain additional details about an alarm, press the navigation keys to reach the alarm number and

press OK. Information is displayed about the condition of the frequency converter before it enters the alarm mode. The Alarm Log key also provides access to a Maintenance log.

At the middle part of the local control panel, the Back key reverts to the previous step or layer in the navigation structure. The Cancel key cancels the last change or command as long as the display has not changed. The Info Key displays information about a command, parameter, or function in any display window, providing detailed information when needed. The four arrow keys are used among menu options by moving the cursor in the direction indicated. Press OK to select a parameter marked by the cursor or to enable a parameter change.

Operation keys for local control are found at the bottom of the control panel (see Fig. 69). Hand On enables control of the frequency converter via the local control panel. Hand On also starts the motor, and it is possible to enter the motor speed data by means of the navigation keys. The key can be selected as [1] Enable or [0] Disable via 0-40 Hand On Key on the local control panel.

NOTE: External stop signals activated by means of control signals or a serial bus override a start command via the local control panel.

The Off key stops the connected motor. If no external stop function is selected and Off key is inactive, the motor can only be stopped by disconnecting the mains supply.

Auto On enables the frequency converter to be controlled via the control terminals and/or serial communication. When a start signal is applied on the control terminals and/or the bus, the frequency converter starts.

NOTE: An active HAND-OFF-AUTO signal via digital inputs has higher priority than the local control keys Hand On –Auto On.

The Reset key resets the frequency converter after an alarm (trip).

VFD STATUS — The current operating status and conditions of the VFDs can be viewed with the Touch Pilot™ controls.

Compressor VFD Status — To view the operating status of the compressor VFDs, follow the Touch Pilot path: Main Menu → Maintenance Menu → VLT Drive Maintenance. This menu shows current operating conditions for both drives: Drive Power, Amps, Voltage, Speed, Frequency, Torque, DC Link Voltage, Heat Sink Temperature, Control Card Temperature, Heater Status, and Communication Status.

Fan VFD Status — To view the operating status of the fan VFDs, follow the Touch Pilot path: Main Menu → Maintenance Menu → Fan Drive Maintenance. This menu shows current operating conditions for both drives: Drive Power, Amps, Voltage, Speed, Frequency, Torque, DC Link Voltage, Heat Sink Temperature and Control Card Temperature. To view the communication status of the fan VFDs, use the Touch Pilot (Main Menu → Maintenance Menu → Fan Drive Addressing).

VFD CONFIGURATION TABLES — The configuration parameters for the VFDs are stored in the control system and are automatically sent to the drives when addressed. The parameters should not need to be changed, but are included as a reference for verification and troubleshooting. See Tables 50-87 for compressor and fan VFD parameters.

Table 50 — Compressor VFD Parameters for 200 V/60 Hz Units, 30XV140-200

PARAMETER NUMBER	PARAMETER DESCRIPTION	SETTING DESCRIPTION	30XV140		30XV160		30XV180		30XV200	
			CKT A	CKT B	CKT A	CKT B	CKT A	CKT B	CKT A	CKT B
0-40	hand on button	disabled	0	0	0	0	0	0	0	0
1-03	torque profile	compressor torque	0	0	0	0	0	0	0	0
1-20	motor kW	size dependent	97	97	97	97	97	97	97	97
1-22	motor volts	motor dependent	200	200	200	200	200	200	200	200
1-23	motor frequency	motor dependent	105	105	105	105	105	105	105	105
1-24	motor amperage	size dependent	380	380	380	380	380	380	380	380
1-25	motor rpm	size dependent	6240	6240	6240	6240	6240	6240	6240	6240
1-71	compressor start delay	0s	0	0	0	0	0	0	0	0
1-78	starting frequency	26Hz	26	26	26	26	26	26	26	26
1-79	comp start max time to trip	5s	5	5	5	5	5	5	5	5
1-80	function at stop	coast	0	0	0	0	0	0	0	0
1-90	motor thermal protection	0	0	0	0	0	0	0	0	0
3-02	min ref	0	0	0	0	0	0	0	0	0
3-03	max reference	size dependent	75	75	85	85	95	95	105	105
3-13	type reference	remote	1	1	1	1	1	1	1	1
3-15	src ref#1	no function	0	0	0	0	0	0	0	0
3-16	src ref#2	no function	0	0	0	0	0	0	0	0
3-41	ramp up	100s	100	100	100	100	100	100	100	100
3-42	ramp down	100s	100	100	100	100	100	100	100	100
3-82	starting ramp time	3s	3	3	3	3	3	3	3	3
4-10	motor speed direct	clockwise	0	0	0	0	0	0	0	0
4-12	motor speed low limit	26Hz	26	26	26	26	26	26	26	26
4-14	motor speed high limit	95Hz	75	75	85	85	95	95	105	105
4-16	torque limit	size dependent	150	150	150	150	150	150	150	150
4-18	current limit	size dependent	127	127	127	127	127	127	127	127
4-19	max output frequency	size dependent	76	76	86	86	96	96	106	106
5-12	DI #27	coast inverse	2	2	2	2	2	2	2	2
5-19	DI#37 safe stop	safe stop alarm	1	1	1	1	1	1	1	1
5-40[36]	relay 1	control word bit 11	36	36	36	36	36	36	36	36
5-40[5]	relay 2	running	5	5	5	5	5	5	5	5
8-01	control site	digital and control word	0	0	0	0	0	0	0	0
8-02	control source	FC port=RS485	1	1	1	1	1	1	1	1
8-03	time out time	10s	10	10	10	10	10	10	10	10
8-04	time out function	stop and trip	5	5	5	5	5	5	5	5
14-01	switching frequency	3kHz	4	4	4	4	4	4	4	4
14-03	overmodulation	yes	1	1	1	1	1	1	1	1
14-10	main failure	alarm	6	6	6	6	6	6	6	6
14-11	Mains voltage at Mains fault	160V	160	160	160	160	160	160	160	180
14-50	RFI filter	on	1	1	1	1	1	1	1	1
14-60	function at overtemp	derate	1	1	1	1	1	1	1	1
14-61	inverter overload	derate	1	1	1	1	1	1	1	1

Table 51 — Compressor VFD Parameters for 380 V/60 Hz Units, 30XV140-225

PARAMETER NUMBER	PARAMETER DESCRIPTION	SETTING DESCRIPTION	30XV140		30XV160		30XV180		30XV200		30XV225	
			CKT A	CKT B	CKT A	CKT B	CKT A	CKT B	CKT A	CKT B	CKT A	CKT B
0-40	hand on button	disabled	0	0	0	0	0	0	0	0	0	0
1-03	torque profile	compressor torque	0	0	0	0	0	0	0	0	0	0
1-20	motor kW	size dependent	97	97	97	97	97	97	97	97	160	97
1-22	motor volts	motor dependent	380	380	380	380	380	380	380	380	380	380
1-23	motor frequency	motor dependent	105	105	105	105	105	105	105	105	98	105
1-24	motor amperage	size dependent	200	200	200	200	200	200	200	200	321	200
1-25	motor rpm	size dependent	6240	6240	6240	6240	6240	6240	6240	6240	5830	6240
1-71	compressor start delay	0s	0	0	0	0	0	0	0	0	0	0
1-78	starting frequency	26Hz	26	26	26	26	26	26	26	26	26	26
1-79	comp start max time to trip	5s	5	5	5	5	5	5	5	5	5	5
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0
1-90	motor thermal protection	0	0	0	0	0	0	0	0	0	0	0
3-02	min ref	0	0	0	0	0	0	0	0	0	0	0
3-03	max reference	size dependent	75	75	85	85	95	95	105	105	83	93
3-13	type reference	remote	1	1	1	1	1	1	1	1	1	1
3-15	src ref#1	no function	0	0	0	0	0	0	0	0	0	0
3-16	src ref#2	no function	0	0	0	0	0	0	0	0	0	0
3-41	ramp up	100s	100	100	100	100	100	100	100	100	100	100
3-42	ramp down	100s	100	100	100	100	100	100	100	100	100	100
3-82	starting ramp time	3s	3	3	3	3	3	3	3	3	3	3
4-10	motor speed direct	clockwise	0	0	0	0	0	0	0	0	0	0
4-12	motor speed low limit	26Hz	26	26	26	26	26	26	26	26	26	26
4-14	motor speed high limit	95Hz	75	75	85	85	95	95	105	105	83	93
4-16	torque limit	size dependent	150	150	150	150	150	150	150	150	150	150
4-18	current limit	size dependent	127	127	127	127	127	127	127	127	127	127
4-19	max output frequency	size dependent	76	76	86	86	96	96	106	106	84	94
5-12	DI #27	coast inverse	2	2	2	2	2	2	2	2	2	2
5-19	DI#37 safe stop	safe stop alarm	1	1	1	1	1	1	1	1	1	1
5-40[36]	relay 1	control word bit 11	36	36	36	36	36	36	36	36	36	36
5-40[5]	relay 2	running	5	5	5	5	5	5	5	5	5	5
8-01	control site	digital and control word	0	0	0	0	0	0	0	0	0	0
8-02	control source	FC port=RS485	1	1	1	1	1	1	1	1	1	1
8-03	time out time	10s	10	10	10	10	10	10	10	10	10	10
8-04	time out function	stop and trip	5	5	5	5	5	5	5	5	5	5
14-01	switching frequency	3kHz	4	4	4	4	4	4	4	4	4	4
14-03	overmodulation	yes	1	1	1	1	1	1	1	1	1	1
14-10	main failure	alarm	6	6	6	6	6	6	6	6	6	6
14-11	Mains voltage at Mains fault	300V	300	300	300	300	300	300	300	300	300	300
14-50	RFI filter	on	1	1	1	1	1	1	1	1	1	1
14-60	function at overtemp	derate	1	1	1	1	1	1	1	1	1	1
14-61	inverter overload	derate	1	1	1	1	1	1	1	1	1	1

Table 52 — Compressor VFD Parameters for 380 V/60 Hz Units, 30XV250-325

PARAMETER NUMBER	PARAMETER DESCRIPTION	SETTING DESCRIPTION	30XV250		30XV275		30XV300		30XV325	
			CKT A	CKT B	CKT A	CKT B	CKT A	CKT B	CKT A	CKT B
0-40	hand on button	disabled	0	0	0	0	0	0	0	0
1-03	torque profile	compressor torque	0	0	0	0	0	0	0	0
1-20	motor kW	size dependent	160	160	160	160	160	160	160	160
1-22	motor volts	motor dependent	380	380	380	380	380	380	380	380
1-23	motor frequency	motor dependent	98	98	98	98	98	98	98	98
1-24	motor amperage	size dependent	321	321	321	321	321	321	321	321
1-25	motor rpm	size dependent	5830	5830	5830	5830	5830	5830	5830	5830
1-71	compressor start delay	0s	0	0	0	0	0	0	0	0
1-78	starting frequency	26Hz	26	26	26	26	26	26	26	26
1-79	comp start max time to trip	5s	5	5	5	5	5	5	5	5
1-80	function at stop	coast	0	0	0	0	0	0	0	0
1-90	motor thermal protection	0	0	0	0	0	0	0	0	0
3-02	min ref	0	0	0	0	0	0	0	0	0
3-03	max reference	size dependent	80	80	85	85	90	90	98	98
3-13	type reference	remote	1	1	1	1	1	1	1	1
3-15	src ref#1	no function	0	0	0	0	0	0	0	0
3-16	src ref#2	no function	0	0	0	0	0	0	0	0
3-41	ramp up	100s	100	100	100	100	100	100	100	100
3-42	ramp down	100s	100	100	100	100	100	100	100	100
3-82	starting ramp time	3s	3	3	3	3	3	3	3	3
4-10	motor speed direct	clockwise	0	0	0	0	0	0	0	0
4-12	motor speed low limit	26Hz	26	26	26	26	26	26	26	26
4-14	motor speed high limit	95Hz	80	80	85	85	90	90	98	98
4-16	torque limit	size dependent	150	150	150	150	150	150	150	150
4-18	current limit	size dependent	127	127	127	127	127	127	127	127
4-19	max output frequency	size dependent	81	81	86	86	91	91	99	99
5-12	DI #27	coast inverse	2	2	2	2	2	2	2	2
5-19	DI#37 safe stop	safe stop alarm	1	1	1	1	1	1	1	1
5-40[36]	relay 1	control word bit 11	36	36	36	36	36	36	36	36
5-40[5]	relay 2	running	5	5	5	5	5	5	5	5
8-01	control site	digital and control word	0	0	0	0	0	0	0	0
8-02	control source	FC port=RS485	1	1	1	1	1	1	1	1
8-03	time out time	10s	10	10	10	10	10	10	10	10
8-04	time out function	stop and trip	5	5	5	5	5	5	5	5
14-01	switching frequency	3kHz	4	4	4	4	4	4	4	4
14-03	overmodulation	yes	1	1	1	1	1	1	1	1
14-10	main failure	alarm	6	6	6	6	6	6	6	6
14-11	Mains voltage at Mains fault	300V	300	300	300	300	300	300	300	300
14-50	RFI filter	on	1	1	1	1	1	1	1	1
14-60	function at overtemp	derate	1	1	1	1	1	1	1	1
14-61	inverter overload	derate	1	1	1	1	1	1	1	1

Table 53 — Compressor VFD Parameters for 380 V/60 Hz Units, 30XV350-500

PARAMETER NUMBER	PARAMETER DESCRIPTION	SETTING DESCRIPTION	30XV350		30XV400		30XV450		30XV500	
			CKT A	CKT B	CKT A	CKT B	CKT A	CKT B	CKT A	CKT B
0-40	hand on button	disabled	0	0	0	0	0	0	0	0
1-03	torque profile	compressor torque	0	0	0	0	0	0	0	0
1-20	motor kW	size dependent	242	160	242	242	242	242	242	242
1-22	motor volts	motor dependent	380	380	380	380	380	380	380	380
1-23	motor frequency	motor dependent	95	98	95	95	95	95	95	95
1-24	motor amperage	size dependent	512	321	512	512	512	512	512	512
1-25	motor rpm	size dependent	5650	5830	5650	5650	5650	5650	5650	5650
1-71	compressor start delay	0s	0	0	0	0	0	0	0	0
1-78	starting frequency	26Hz	26	26	26	26	26	26	26	26
1-79	comp start max time to trip	5s	5	5	5	5	5	5	5	5
1-80	function at stop	coast	0	0	0	0	0	0	0	0
1-90	motor thermal protection	0	0	0	0	0	0	0	0	0
3-02	min ref	0	0	0	0	0	0	0	0	0
3-03	max reference	size dependent	75	90	75	75	84	84	94	94
3-13	type reference	remote	1	1	1	1	1	1	1	1
3-15	src ref#1	no function	0	0	0	0	0	0	0	0
3-16	src ref#2	no function	0	0	0	0	0	0	0	0
3-41	ramp up	100s	100	100	100	100	100	100	100	100
3-42	ramp down	100s	100	100	100	100	100	100	100	100
3-82	starting ramp time	3s	3	3	3	3	3	3	3	3
4-10	motor speed direct	clockwise	0	0	0	0	0	0	0	0
4-12	motor speed low limit	26Hz	26	26	26	26	26	26	26	26
4-14	motor speed high limit	95Hz	75	90	75	75	84	84	94	94
4-16	torque limit	size dependent	150	150	150	150	150	150	150	150
4-18	current limit	size dependent	127	127	127	127	127	127	127	127
4-19	max output frequency	size dependent	76	91	76	76	85	85	95	95
5-12	DI #27	coast inverse	2	2	2	2	2	2	2	2
5-19	DI#37 safe stop	safe stop alarm	1	1	1	1	1	1	1	1
5-40[36]	relay 1	control word bit 11	36	36	36	36	36	36	36	36
5-40[5]	relay 2	running	5	5	5	5	5	5	5	5
8-01	control site	digital and control word	0	0	0	0	0	0	0	0
8-02	control source	FC port=RS485	1	1	1	1	1	1	1	1
8-03	time out time	10s	10	10	10	10	10	10	10	10
8-04	time out function	stop and trip	5	5	5	5	5	5	5	5
14-01	switching frequency	3kHz	4	4	4	4	4	4	4	4
14-03	overmodulation	yes	1	1	1	1	1	1	1	1
14-10	main failure	alarm	6	6	6	6	6	6	6	6
14-11	Mains voltage at Mains fault	300V	300	300	300	300	300	300	300	300
14-50	RFI filter	on	1	1	1	1	1	1	1	1
14-60	function at overtemp	derate	1	1	1	1	1	1	1	1
14-61	inverter overload	derate	1	1	1	1	1	1	1	1

Table 54 — Compressor VFD Parameters for 460-575 V/60 Hz Units, 30XV140-225

PARAMETER NUMBER	PARAMETER DESCRIPTION	SETTING DESCRIPTION	30XV140		30XV160		30XV180		30XV200		30XV225	
			CKT A	CKT B	CKT A	CKT B	CKT A	CKT B	CKT A	CKT B	CKT A	CKT B
0-40	hand on button	disabled	0	0	0	0	0	0	0	0	0	0
1-03	torque profile	compressor torque	0	0	0	0	0	0	0	0	0	0
1-20	motor kW	size dependent	97	97	97	97	97	97	97	97	160	97
1-22	motor volts	motor dependent	460	460	460	460	460	460	460	460	460	460
1-23	motor frequency	motor dependent	105	105	105	105	105	105	105	105	98	105
1-24	motor amperage	size dependent	165	165	165	165	165	165	165	165	265	165
1-25	motor rpm	size dependent	6240	6240	6240	6240	6240	6240	6240	6240	5830	6240
1-71	compressor start delay	0s	0	0	0	0	0	0	0	0	0	0
1-78	starting frequency	26Hz	26	26	26	26	26	26	26	26	26	26
1-79	comp start max time to trip	5s	5	5	5	5	5	5		5	5	5
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0
1-90	motor thermal protection	0	0	0	0	0	0	0	0	0	0	0
3-02	min ref	0	0	0	0	0	0	0	0	0	0	0
3-03	max reference	size dependent	75	75	85	85	95	95	105	105	83	93
3-13	type reference	remote	1	1	1	1	1	1	1	1	1	1
3-15	src ref#1	no function	0	0	0	0	0	0	0	0	0	0
3-16	src ref#2	no function	0	0	0	0	0	0	0	0	0	0
3-41	ramp up	100s	100	100	100	100	100	100	100	100	100	100
3-42	ramp down	100s	100	100	100	100	100	100	100	100	100	100
3-82	starting ramp time	3s	3	3	3	3	3	3	3	3	3	3
4-10	motor speed direct	clockwise	0	0	0	0	0	0	0	0	0	0
4-12	motor speed low limit	26Hz	26	26	26	26	26	26	26	26	26	26
4-14	motor speed high limit	95Hz	75	75	85	85	95	95	105	105	83	93
4-16	torque limit	size dependent	150	150	150	150	150	150	150	150	150	150
4-18	current limit	size dependent	127	127	127	127	127	127	127	127	127	127
4-19	max output frequency	size dependent	76	76	86	86	96	96	106	106	84	94
5-12	DI #27	coast inverse	2	2	2	2	2	2	2	2	2	2
5-19	DI#37 safe stop	safe stop alarm	1	1	1	1	1	1	1	1	1	1
5-40[36]	relay 1	control word bit 11	36	36	36	36	36	36	36	36	36	36
5-40[5]	relay 2	running	5	5	5	5	5	5	5	5	5	5
8-01	control site	digital and control word	0	0	0	0	0	0	0	0	0	0
8-02	control source	FC port=RS485	1	1	1	1	1	1	1	1	1	1
8-03	time out time	10s	10	10	10	10	10	10	10	10	10	10
8-04	time out function	stop and trip	5	5	5	5	5	5	5	5	5	5
14-01	switching frequency	3kHz	4	4	4	4	4	4	4	4	4	4
14-03	overmodulation	yes	1	1	1	1	1	1	1	1	1	1
14-10	main failure	alarm	6	6	6	6	6	6	6	6	6	6
14-11	Mains voltage at Mains fault	345V	345	345	345	345	345	345	345	345	345	345
14-50	RFI filter	on	1	1	1	1	1	1	1	1	1	1
14-60	function at overtemp	derate	1	1	1	1	1	1	1	1	1	1
14-61	inverter overload	derate	1	1	1	1	1	1	1	1	1	1

Table 55 — Compressor VFD Parameters for 460-575 V/60 Hz Units, 30XV250-325

PARAMETER NUMBER	PARAMETER DESCRIPTION	SETTING DESCRIPTION	30XV250		30XV275		30XV300		30XV325	
			CKT A	CKT B	CKT A	CKT B	CKT A	CKT B	CKT A	CKT B
0-40	hand on button	disabled	0	0	0	0	0	0	0	0
1-03	torque profile	compressor torque	0	0	0	0	0	0	0	0
1-20	motor kW	size dependent	160	160	160	160	160	160	160	160
1-22	motor volts	motor dependent	460	460	460	460	460	460	460	460
1-23	motor frequency	motor dependent	98	98	98	98	98	98	98	98
1-24	motor amperage	size dependent	265	265	265	265	265	265	265	265
1-25	motor rpm	size dependent	5830	5830	5830	5830	5830	5830	5830	5830
1-71	compressor start delay	0s	0	0	0	0	0	0	0	0
1-78	starting frequency	26Hz	26	26	26	26	26	26	26	26
1-79	comp start max time to trip	5s	5	5	5	5	5	5	5	5
1-80	function at stop	coast	0	0	0	0	0	0	0	0
1-90	motor thermal protection	0	0	0	0	0	0	0	0	0
3-02	min ref	0	0	0	0	0	0	0	0	0
3-03	max reference	size dependent	80	80	85	85	90	90	98	98
3-13	type reference	remote	1	1	1	1	1	1	1	1
3-15	src ref#1	no function	0	0	0	0	0	0	0	0
3-16	src ref#2	no function	0	0	0	0	0	0	0	0
3-41	ramp up	100s	100	100	100	100	100	100	100	100
3-42	ramp down	100s	100	100	100	100	100	100	100	100
3-82	starting ramp time	3s	3	3	3	3	3	3	3	3
4-10	motor speed direct	clockwise	0	0	0	0	0	0	0	0
4-12	motor speed low limit	26Hz	26	26	26	26	26	26	26	26
4-14	motor speed high limit	95Hz	80	80	85	85	90	90	98	98
4-16	torque limit	size dependent	150	150	150	150	150	150	150	150
4-18	current limit	size dependent	127	127	127	127	127	127	127	127
4-19	max output frequency	size dependent	81	81	86	86	91	91	99	99
5-12	DI #27	coast inverse	2	2	2	2	2	2	2	2
5-19	DI#37 safe stop	safe stop alarm	1	1	1	1	1	1	1	1
5-40[36]	relay 1	control word bit 11	36	36	36	36	36	36	36	36
5-40[5]	relay 2	running	5	5	5	5	5	5	5	5
8-01	control site	digital and control word	0	0	0	0	0	0	0	0
8-02	control source	FC port=RS485	1	1	1	1	1	1	1	1
8-03	time out time	10s	10	10	10	10	10	10	10	10
8-04	time out function	stop and trip	5	5	5	5	5	5	5	5
14-01	switching frequency	3kHz	4	4	4	4	4	4	4	4
14-03	overmodulation	yes	1	1	1	1	1	1	1	1
14-10	main failure	alarm	6	6	6	6	6	6	6	6
14-11	Mains voltage at Mains fault	345V	345	345	345	345	345	345	345	345
14-50	RFI filter	on	1	1	1	1	1	1	1	1
14-60	function at overtemp	derate	1	1	1	1	1	1	1	1
14-61	inverter overload	derate	1	1	1	1	1	1	1	1

Table 56 — Compressor VFD Parameters for 460-575 V/60 Hz Units, 30XV350-500

PARAMETER NUMBER	PARAMETER DESCRIPTION	SETTING DESCRIPTION	30XV350		30XV400		30XV450		30XV500	
			CKT A	CKT B	CKT A	CKT B	CKT A	CKT B	CKT A	CKT B
0-40	hand on button	disabled	0	0	0	0	0	0	0	0
1-03	torque profile	compressor torque	0	0	0	0	0	0	0	0
1-20	motor kW	size dependent	242	160	242	242	242	242	242	242
1-22	motor volts	motor dependent	460	460	460	460	460	460	460	460
1-23	motor frequency	motor dependent	95	98	95	95	95	95	95	95
1-24	motor amperage	size dependent	423	265	423	423	423	423	423	423
1-25	motor rpm	size dependent	5650	5830	5650	5650	5650	5650	5650	5650
1-71	compressor start delay	0s	0	0	0	0	0	0	0	0
1-78	starting frequency	26Hz	26	26	26	26	26	26	26	26
1-79	comp start max time to trip	5s	5	5	5	5	5	5	5	5
1-80	function at stop	coast	0	0	0	0	0	0	0	0
1-90	motor thermal protection	0	0	0	0	0	0	0	0	0
3-02	min ref	0	0	0	0	0	0	0	0	0
3-03	max reference	size dependent	75	90	75	75	84	84	94	94
3-13	type reference	remote	1	1	1	1	1	1	1	1
3-15	src ref#1	no function	0	0	0	0	0	0	0	0
3-16	src ref#2	no function	0	0	0	0	0	0	0	0
3-41	ramp up	100s	100	100	100	100	100	100	100	100
3-42	ramp down	100s	100	100	100	100	100	100	100	100
3-82	starting ramp time	3s	3	3	3	3	3	3	3	3
4-10	motor speed direct	clockwise	0	0	0	0	0	0	0	0
4-12	motor speed low limit	26Hz	26	26	26	26	26	26	26	26
4-14	motor speed high limit	95Hz	75	90	75	75	84	84	94	94
4-16	torque limit	size dependent	150	150	150	150	150	150	150	150
4-18	current limit	size dependent	127	127	127	127	127	127	127	127
4-19	max output frequency	size dependent	76	91	76	76	85	85	95	95
5-12	DI #27	coast inverse	2	2	2	2	2	2	2	2
5-19	DI#37 safe stop	safe stop alarm	1	1	1	1	1	1	1	1
5-40[36]	relay 1	control word bit 11	36	36	36	36	36	36	36	36
5-40[5]	relay 2	running	5	5	5	5	5	5	5	5
8-01	control site	digital and control word	0	0	0	0	0	0	0	0
8-02	control source	FC port=RS485	1	1	1	1	1	1	1	1
8-03	time out time	10s	10	10	10	10	10	10	10	10
8-04	time out function	stop and trip	5	5	5	5	5	5	5	5
14-01	switching frequency	3kHz	4	4	4	4	4	4	4	4
14-03	overmodulation	yes	1	1	1	1	1	1	1	1
14-10	main failure	alarm	6	6	6	6	6	6	6	6
14-11	Mains voltage at Mains fault	345V	345	345	345	345	345	345	345	345
14-50	RFI filter	on	1	1	1	1	1	1	1	1
14-60	function at overtemp	derate	1	1	1	1	1	1	1	1
14-61	inverter overload	derate	1	1	1	1	1	1	1	1

Table 57 — Fan VFD Parameters, Standard Tier, 30XV140-180

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV140, 30XV160, 30XV180															
			208/230V				380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	9.2	—	9.2	—	9.2	—	9.2	—	9.2	—	9.2	—	9.2	—	9.2	—
1-22	motor volts	V	208	—	208	—	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	—	60	—	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	44.8	—	44.8	—	28.4	—	28.4	—	17.6	—	17.6	—	19.2	—	19.2	—
1-25	motor rpm	RPM	1130	—	1130	—	1130	—	1130	—	1130	—	1130	—	1130	—	1130	—
1-73	flying restart	no	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	—	60	—	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	—	20	—	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	—	20	—	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	—	5	—	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	—	60	—	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	—	150	—	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	—	110	—	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	—	1	—	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	—	10	—	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	—	2	—	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	—	6	—	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	—	1	—	1	—	1	—	1	—	1	—	1	—	1	—
24-91			-0.1136	—	-0.1136	—	-0.0720	—	-0.0720	—	-0.0446	—	-0.0446	—	-0.0487	—	-0.0487	—
24-92			19.8369	—	19.8369	—	12.5752	—	12.5752	—	7.7931	—	7.7931	—	8.5015	—	8.5015	—
24-93			-0.4617	—	-0.4617	—	-0.2927	—	-0.2927	—	-0.1814	—	-0.1814	—	-0.1979	—	-0.1979	—
24-94			13.1397	—	13.1397	—	8.3297	—	8.3297	—	5.1620	—	5.1620	—	5.6313	—	5.6313	—
24-95	locked rotor		1	—	1	—	1	—	1	—	1	—	1	—	1	—	1	—
24-96			-0.0683	—	-0.0683	—	-0.0433	—	-0.0433	—	-0.0268	—	-0.0268	—	-0.0293	—	-0.0293	—
24-97			14.0488	—	14.0488	—	8.9059	—	8.9059	—	5.5192	—	5.5192	—	6.0209	—	6.0209	—
24-98			-0.2156	—	-0.2156	—	-0.1367	—	-0.1367	—	-0.0847	—	-0.0847	—	-0.0924	—	-0.0924	—
24-99			76.7083	—	76.7083	—	48.7883	—	48.7883	—	30.2068	—	30.2068	—	33.0893	—	33.0893	—

Table 58 — Fan VFD Parameters, Standard Tier, 30XV200

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV200															
			208/230V				380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	6.9	4.6	6.9	4.6	11.5	—	11.5	—	11.5	—	11.5	—	11.5	—	11.5	—
1-22	motor volts	V	208	208	208	208	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	33.6	22.4	33.6	22.4	35.5	—	35.5	—	22	—	22	—	24	—	24	—
1-25	motor rpm	RPM	1130	1130	1130	1130	1130	—	1130	—	1130	—	1130	—	1130	—	1130	—
1-73	flying restart	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	20	20	20	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	20	20	20	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	5	5	5	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	150	150	150	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	110	110	110	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	10	10	10	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	2	2	2	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	6	6	6	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
24-91			-0.0781	-0.0430	-0.0781	-0.0430	-0.1638	—	-0.1638	—	-0.1015	—	-0.1015	—	-0.1107	—	-0.1107	—
24-92			13.6379	7.4390	13.6379	7.4390	23.0092	—	23.0092	—	14.2592	—	14.2592	—	15.5555	—	15.5555	—
24-93			-0.3174	-0.1731	-0.3174	-0.1731	-0.4954	—	-0.4954	—	-0.3070	—	-0.3070	—	-0.3349	—	-0.3349	—
24-94			9.0336	4.9274	9.0336	4.9274	9.0955	—	9.0955	—	5.6366	—	5.6366	—	6.1490	—	6.1490	—
24-95	locked rotor		1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
24-96			-0.0512	-0.0342	-0.0512	-0.0342	-0.0541	—	-0.0541	—	-0.0335	—	-0.0335	—	-0.0366	—	-0.0366	—
24-97			10.5366	7.0244	10.5366	7.0244	11.1324	—	11.1324	—	6.8990	—	6.8990	—	7.5261	—	7.5261	—
24-98			-0.1617	-0.1078	-0.1617	-0.1078	-0.1709	—	-0.1709	—	-0.1059	—	-0.1059	—	-0.1155	—	-0.1155	—
24-99			71.2312	65.7541	71.2312	65.7541	52.2604	—	52.2604	—	32.3585	—	32.3585	—	35.4366	—	35.4366	—

Table 59 — Fan VFD Parameters, Standard Tier, 30XV225

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV225											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	13.8	—	9.2	—	13.8	—	9.2	—	13.8	—	9.2	—
1-22	motor volts	V	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	42.6	—	28.4	—	26.4	—	17.6	—	28.8	—	19.2	—
1-25	motor rpm	RPM	1130	—	1130	—	1130	—	1130	—	1130	—	1130	—
1-73	flying restart	no	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	—	1	—	1	—	1	—	1	—	1	—
24-91			-0.2028	—	-0.0720	—	-0.1257	—	-0.0446	—	-0.1371	—	-0.0487	—
24-92			28.4876	—	12.5752	—	17.6543	—	7.7931	—	19.2592	—	8.5015	—
24-93			-0.6133	—	-0.2927	—	-0.3801	—	-0.1814	—	-0.4146	—	-0.1979	—
24-94			11.2611	—	8.3297	—	6.9787	—	5.1620	—	7.6131	—	5.6313	—
24-95	locked rotor		1	—	1	—	1	—	1	—	1	—	1	—
24-96			-0.0649	—	-0.0433	—	-0.0402	—	-0.0268	—	-0.0439	—	-0.0293	—
24-97			13.3589	—	8.9059	—	8.2788	—	5.5192	—	9.0314	—	6.0209	—
24-98			-0.2050	—	-0.1367	—	-0.1271	—	-0.0847	—	-0.1386	—	-0.0924	—
24-99			55.7324	—	48.7883	—	34.5102	—	30.2068	—	37.7839	—	33.0893	—

Table 60 — Fan VFD Parameters, Standard Tier, 30XV250-275

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV250, 30XV275											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	13.8	—	13.8	—	13.8	—	13.8	—	13.8	—	13.8	—
1-22	motor volts	V	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	42.6	—	42.6	—	26.4	—	26.4	—	28.8	—	28.8	—
1-25	motor rpm	RPM	1130	—	1130	—	1130	—	1130	—	1130	—	1130	—
1-73	flying restart	no	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	—	1	—	1	—	1	—	1	—	1	—
24-91			-0.2028	—	-0.2028	—	-0.1257	—	-0.1257	—	-0.1371	—	-0.1371	—
24-92			28.4876	—	28.4876	—	17.6543	—	17.6543	—	19.2592	—	19.2592	—
24-93			-0.6133	—	-0.6133	—	-0.3801	—	-0.3801	—	-0.4146	—	-0.4146	—
24-94			11.2611	—	11.2611	—	6.9787	—	6.9787	—	7.6131	—	7.6131	—
24-95	locked rotor		1	—	1	—	1	—	1	—	1	—	1	—
24-96			-0.0649	—	-0.0649	—	-0.0402	—	-0.0402	—	-0.0439	—	-0.0439	—
24-97			13.3589	—	13.3589	—	8.2788	—	8.2788	—	9.0314	—	9.0314	—
24-98			-0.2050	—	-0.2050	—	-0.1271	—	-0.1271	—	-0.1386	—	-0.1386	—
24-99			55.7324	—	55.7324	—	34.5102	—	34.5102	—	37.7839	—	37.7839	—

Table 61 — Fan VFD Parameters, Standard Tier, 30XV300

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV300											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	16.1	—	16.1	—	16.1	—	16.1	—	16.1	—	16.1	—
1-22	motor volts	V	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	49.7	—	49.7	—	30.8	—	30.8	—	33.6	—	33.6	—
1-25	motor rpm	RPM	1130	—	1130	—	1130	—	1130	—	1130	—	1130	—
1-73	flying restart	no	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	—	1	—	1	—	1	—	1	—	1	—
24-91			-0.2418	—	-0.2418	—	-0.1499	—	-0.1499	—	-0.1635	—	-0.1635	—
24-92			33.9660	—	33.9660	—	21.0493	—	21.0493	—	22.9629	—	22.9629	—
24-93			-0.7313	—	-0.7313	—	-0.4532	—	-0.4532	—	-0.4944	—	-0.4944	—
24-94			13.4266	—	13.4266	—	8.3207	—	8.3207	—	9.0772	—	9.0772	—
24-95	locked rotor		1	—	1	—	1	—	1	—	1	—	1	—
24-96			-0.0758	—	-0.0758	—	-0.0470	—	-0.0470	—	-0.0512	—	-0.0512	—
24-97			15.5854	—	15.5854	—	9.6585	—	9.6585	—	10.5366	—	10.5366	—
24-98			-0.2392	—	-0.2392	—	-0.1482	—	-0.1482	—	-0.1617	—	-0.1617	—
24-99			59.2045	—	59.2045	—	36.6620	—	36.6620	—	40.1312	—	40.1312	—

Table 62 — Fan VFD Parameters, Standard Tier, 30XV325

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV325											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	28.4	28.4	28.4	28.4	17.6	17.6	17.6	17.6	19.2	19.2	19.2	19.2
1-25	motor rpm	RPM	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			-0.0720	-0.0720	-0.0720	-0.0720	-0.0446	-0.0446	-0.0446	-0.0446	-0.0487	-0.0487	-0.0487	-0.0487
24-92			12.5752	12.5752	12.5752	12.5752	7.7931	7.7931	7.7931	7.7931	8.5015	8.5015	8.5015	8.5015
24-93			-0.2927	-0.2927	-0.2927	-0.2927	-0.1814	-0.1814	-0.1814	-0.1814	-0.1979	-0.1979	-0.1979	-0.1979
24-94			8.3297	8.3297	8.3297	8.3297	5.1620	5.1620	5.1620	5.1620	5.6313	5.6313	5.6313	5.6313
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			-0.0433	-0.0433	-0.0433	-0.0433	-0.0268	-0.0268	-0.0268	-0.0268	-0.0293	-0.0293	-0.0293	-0.0293
24-97			8.9059	8.9059	8.9059	8.9059	5.5192	5.5192	5.5192	5.5192	6.0209	6.0209	6.0209	6.0209
24-98			-0.1367	-0.1367	-0.1367	-0.1367	-0.0847	-0.0847	-0.0847	-0.0847	-0.0924	-0.0924	-0.0924	-0.0924
24-99			48.7883	48.7883	48.7883	48.7883	30.2068	30.2068	30.2068	30.2068	33.0893	33.0893	33.0893	33.0893

Table 63 — Fan VFD Parameters, Standard Tier, 30XV350

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV350											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	11.5	9.2	16.1	—	11.5	9.2	16.1	—	11.5	9.2	16.1	—
1-22	motor volts	V	380	380	380	—	460	460	460	—	575	575	575	—
1-23	motor frequency	Hz	60	60	60	—	60	60	60	—	60	60	60	—
1-24	motor amperage	A	35.5	28.4	49.7	—	22	17.6	30.8	—	24	19.2	33.6	—
1-25	motor rpm	RPM	1130	1130	1130	—	1130	1130	1130	—	1130	1130	1130	—
1-73	flying restart	no	0	0	0	—	0	0	0	—	0	0	0	—
1-80	function at stop	coast	0	0	0	—	0	0	0	—	0	0	0	—
1-90	function at stop	no operation	0	0	0	—	0	0	0	—	0	0	0	—
3-03	motor thermal protection	Hz	60	60	60	—	60	60	60	—	60	60	60	—
3-13	max reference	hand/auto	0	0	0	—	0	0	0	—	0	0	0	—
3-15	type reference	no	0	0	0	—	0	0	0	—	0	0	0	—
3-16	src ref#1	no	0	0	0	—	0	0	0	—	0	0	0	—
3-41	src ref#2	20s	20	20	20	—	20	20	20	—	20	20	20	—
3-42	ramp up	20s	20	20	20	—	20	20	20	—	20	20	20	—
4-10	ramp down	clockwise	0	0	0	—	0	0	0	—	0	0	0	—
4-12	motor speed direct	5Hz	5	5	5	—	5	5	5	—	5	5	5	—
4-14	motor speed low limit	60Hz	60	60	60	—	60	60	60	—	60	60	60	—
4-16	motor speed high limit	150%	150	150	150	—	150	150	150	—	150	150	150	—
4-18	torque limit	110%	110	110	110	—	110	110	110	—	110	110	110	—
5-12	current limit	no operation	0	0	0	—	0	0	0	—	0	0	0	—
8-01	DI #27	digital and control word	0	0	0	—	0	0	0	—	0	0	0	—
8-02	control site	FC port= RS485	1	1	1	—	1	1	1	—	1	1	1	—
8-03	control source	10s	10	10	10	—	10	10	10	—	10	10	10	—
8-04	time out time	stop	2	2	2	—	2	2	2	—	2	2	2	—
14-00	pattern [AVM]	60AVM	0	0	0	—	0	0	0	—	0	0	0	—
14-01	switching frequency	kHz	6	6	6	—	6	6	6	—	6	6	6	—
24-90	missing motor		1	1	1	—	1	1	1	—	1	1	1	—
24-91			-0.1638	-0.0720	-0.2418	—	-0.1015	-0.0446	-0.1499	—	-0.1107	-0.0487	-0.1635	—
24-92			23.0092	12.5752	33.9660	—	14.2592	7.7931	21.0493	—	15.5555	8.5015	22.9629	—
24-93			-0.4954	-0.2927	-0.7313	—	-0.3070	-0.1814	-0.4532	—	-0.3349	-0.1979	-0.4944	—
24-94			9.0955	8.3297	13.4266	—	5.6366	5.1620	8.3207	—	6.1490	5.6313	9.0772	—
24-95	locked rotor		1	1	1	—	1	1	1	—	1	1	1	—
24-96			-0.0541	-0.0433	-0.0758	—	-0.0335	-0.0268	-0.0470	—	-0.0366	-0.0293	-0.0512	—
24-97			11.1324	8.9059	15.5854	—	6.8990	5.5192	9.6585	—	7.5261	6.0209	10.5366	—
24-98			-0.1709	-0.1367	-0.2392	—	-0.1059	-0.0847	-0.1482	—	-0.1155	-0.0924	-0.1617	—
24-99			52.2604	48.7883	59.2045	—	32.3585	30.2068	36.6620	—	35.4366	33.0893	40.1312	—

Table 64 — Fan VFD Parameters, Standard Tier, 30XV400

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV350											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	11.5	9.2	11.5	9.2	11.5	9.2	11.5	9.2	11.5	9.2	11.5	9.2
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	35.5	28.4	35.5	28.4	22	17.6	22	17.6	24	19.2	24	19.2
1-25	motor rpm	RPM	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			-0.1638	-0.0720	-0.1638	-0.0720	-0.1015	-0.0446	-0.1015	-0.0446	-0.1107	-0.0487	-0.1107	-0.0487
24-92			23.0092	12.5752	23.0092	12.5752	14.2592	7.7931	14.2592	7.7931	15.5555	8.5015	15.5555	8.5015
24-93			-0.4954	-0.2927	-0.4954	-0.2927	-0.3070	-0.1814	-0.3070	-0.1814	-0.3349	-0.1979	-0.3349	-0.1979
24-94			9.0955	8.3297	9.0955	8.3297	5.6366	5.1620	5.6366	5.1620	6.1490	5.6313	6.1490	5.6313
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			-0.0541	-0.0433	-0.0541	-0.0433	-0.0335	-0.0268	-0.0335	-0.0268	-0.0366	-0.0293	-0.0366	-0.0293
24-97			11.1324	8.9059	11.1324	8.9059	6.8990	5.5192	6.8990	5.5192	7.5261	6.0209	7.5261	6.0209
24-98			-0.1709	-0.1367	-0.1709	-0.1367	-0.1059	-0.0847	-0.1059	-0.0847	-0.1155	-0.0924	-0.1155	-0.0924
24-99			52.2604	48.7883	52.2604	48.7883	32.3585	30.2068	32.3585	30.2068	35.4366	33.0893	35.4366	33.0893

Table 65 — Fan VFD Parameters, Standard Tier, 30XV450

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV400											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	13.8	9.2	13.8	9.2	13.8	9.2	13.8	9.2	13.8	9.2	13.8	9.2
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	42.6	28.4	42.6	28.4	26.4	17.6	26.4	17.6	28.8	19.2	28.8	19.2
1-25	motor rpm	RPM	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			-0.2028	-0.0720	-0.2028	-0.0720	-0.1257	-0.0446	-0.1257	-0.0446	-0.1371	-0.0487	-0.1371	-0.0487
24-92			28.4876	12.5752	28.4876	12.5752	17.6543	7.7931	17.6543	7.7931	19.2592	8.5015	19.2592	8.5015
24-93			-0.6133	-0.2927	-0.6133	-0.2927	-0.3801	-0.1814	-0.3801	-0.1814	-0.4146	-0.1979	-0.4146	-0.1979
24-94			11.2611	8.3297	11.2611	8.3297	6.9787	5.1620	6.9787	5.1620	7.6131	5.6313	7.6131	5.6313
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			-0.0649	-0.0433	-0.0649	-0.0433	-0.0402	-0.0268	-0.0402	-0.0268	-0.0439	-0.0293	-0.0439	-0.0293
24-97			13.3589	8.9059	13.3589	8.9059	8.2788	5.5192	8.2788	5.5192	9.0314	6.0209	9.0314	6.0209
24-98			-0.2050	-0.1367	-0.2050	-0.1367	-0.1271	-0.0847	-0.1271	-0.0847	-0.1386	-0.0924	-0.1386	-0.0924
24-99			55.7324	48.7883	55.7324	48.7883	34.5102	30.2068	34.5102	30.2068	37.7839	33.0893	37.7839	33.0893

Table 66 — VFD Parameters, Standard Tier, 30XV500

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV400											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	13.8	11.5	13.8	11.5	13.8	11.5	13.8	11.5	13.8	11.5	13.8	11.5
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	42.6	35.5	42.6	35.5	26.4	22	26.4	22	28.8	24	28.8	24
1-25	motor rpm	RPM	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130	1130
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			-0.2028	-0.1638	-0.2028	-0.1638	-0.1257	-0.1015	-0.1257	-0.1015	-0.1371	-0.1107	-0.1371	-0.1107
24-92			28.4876	23.0092	28.4876	23.0092	17.6543	14.2592	17.6543	14.2592	19.2592	15.5555	19.2592	15.5555
24-93			-0.6133	-0.4954	-0.6133	-0.4954	-0.3801	-0.3070	-0.3801	-0.3070	-0.4146	-0.3349	-0.4146	-0.3349
24-94			11.2611	9.0955	11.2611	9.0955	6.9787	5.6366	6.9787	5.6366	7.6131	6.1490	7.6131	6.1490
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			-0.0649	-0.0541	-0.0649	-0.0541	-0.0402	-0.0335	-0.0402	-0.0335	-0.0439	-0.0366	-0.0439	-0.0366
24-97			13.3589	11.1324	13.3589	11.1324	8.2788	6.8990	8.2788	6.8990	9.0314	7.5261	9.0314	7.5261
24-98			-0.2050	-0.1709	-0.2050	-0.1709	-0.1271	-0.1059	-0.1271	-0.1059	-0.1386	-0.1155	-0.1386	-0.1155
24-99			55.7324	52.2604	55.7324	52.2604	34.5102	32.3585	34.5102	32.3585	37.7839	35.4366	37.7839	35.4366

Table 67 — Fan VFD Parameters, Mid Tier, 30XV140

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV140															
			208/230V				380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	10.4	—	10.4	—	10.4	—	10.4	—	10.4	—	10.4	—	10.4	—	10.4	—
1-22	motor volts	V	200	—	200	—	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	—	60	—	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	51.6	—	51.6	—	26.0	—	26.0	—	21.6	—	21.6	—	17.2	—	17.2	—
1-25	motor rpm	RPM	1140	—	1140	—	1140	—	1140	—	1140	—	1140	—	1140	—	1140	—
1-73	flying restart	no	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	—	60	—	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	—	20	—	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	—	20	—	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	—	5	—	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	—	60	—	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	—	150	—	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	—	110	—	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	—	1	—	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	—	10	—	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	—	2	—	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	—	6	—	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	—	1	—	1	—	1	—	1	—	1	—	1	—	1	—
24-91			0	—	0	—	0	—	0	—	0	—	0	—	0	—	0	—
24-92			6.73	—	6.73	—	3.326	—	3.326	—	3.030	—	3.030	—	2.474	—	2.474	—
24-93			-0.0614	—	-0.0614	—	-0.0058	—	-0.0058	—	-0.0270	—	-0.0270	—	-0.0175	—	-0.0175	—
24-94			11.961	—	11.961	—	7.722	—	7.722	—	5.004	—	5.004	—	5.178	—	5.178	—
24-95	locked rotor		1	—	1	—	1	—	1	—	1	—	1	—	1	—	1	—
24-96			0.0659	—	0.0659	—	0.0431	—	0.0431	—	0.0287	—	0.0287	—	0.0287	—	0.0287	—
24-97			0.2053	—	0.2053	—	1.237	—	1.237	—	0.8926	—	0.8926	—	0.8926	—	0.8926	—
24-98			0.1073	—	0.1073	—	0.0701	—	0.0701	—	0.0467	—	0.0467	—	0.0467	—	0.0467	—
24-99			34.65	—	34.65	—	28.635	—	28.635	—	25.24	—	25.24	—	22.24	—	22.24	—

Table 68 — Fan VFD Parameters, Mid Tier, 30XV160-180

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV160, 30XV180															
			208/230V				380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	7.8	5.2	7.8	5.2	13.0	—	13.0	—	13.0	—	13.0	—	13.0	—	13.0	—
1-22	motor volts	V	200	200	200	200	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	38.7	25.8	38.7	25.8	32.5	—	32.5	—	27.0	—	27.0	—	21.5	—	21.5	—
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	—	1140	—	1140	—	1140	—	1140	—	1140	—
1-73	flying restart	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	20	20	20	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	20	20	20	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	5	5	5	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	150	150	150	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	110	110	110	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	10	10	10	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	2	2	2	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	6	6	6	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
24-91			0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
24-92			4.00	2.00	4.00	2.00	4.00	—	4.00	—	3.6	—	3.6	—	3.00	—	3.00	—
24-93			-0.0368	-0.0184	-0.0368	-0.0184	-0.0069	—	-0.0069	—	-0.0323	—	-0.0323	—	-0.021	—	-0.021	—
24-94			7.177	3.588	7.177	3.588	0.9266	—	0.9266	—	6.005	—	6.005	—	6.21	—	6.21	—
24-95	locked rotor		1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
24-96			0.0495	0.0330	0.0495	0.0330	0.0539	—	0.0539	—	0.036	—	0.036	—	0.036	—	0.036	—
24-97			1.5398	1.0265	1.5398	1.0265	1.546	—	1.546	—	1.1158	—	1.1158	—	1.1158	—	1.1158	—
24-98			0.0805	0.0540	0.0805	0.0540	0.0877	—	0.0877	—	0.058	—	0.058	—	0.058	—	0.058	—
24-99			30.49	26.33	30.49	26.33	31.29	—	31.29	—	27.05	—	27.05	—	27.05	—	27.05	—

Table 69 — Fan VFD Parameters, Mid Tier, 30XV200

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV200															
			208/230V				380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	7.8	7.8	7.8	7.8	15.6	—	15.6	—	15.6	—	15.6	—	15.6	—	15.6	—
1-22	motor volts	V	200	200	200	200	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	38.7	38.7	38.7	38.7	39.0	—	39.0	—	32.4	—	32.4	—	25.8	—	25.8	—
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	—	1140	—	1140	—	1140	—	1140	—	1140	—
1-73	flying restart	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	20	20	20	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	20	20	20	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	5	5	5	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	150	150	150	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	110	110	110	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	10	10	10	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	2	2	2	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	6	6	6	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
24-91			0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
24-92			4.00	4.00	4.00	4.00	4.989	—	4.989	—	4.504	—	4.504	—	3.711	—	3.711	—
24-93			-0.0368	-0.0368	-0.0368	-0.0368	-0.0087	—	-0.0087	—	-0.0404	—	-0.0404	—	-0.0262	—	-0.0262	—
24-94			7.177	7.177	7.177	7.177	11.582	—	11.582	—	7.506	—	7.506	—	7.767	—	7.767	—
24-95	locked rotor		1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
24-96			0.0495	0.0495	0.0495	0.0495	0.0647	—	0.0647	—	0.043	—	0.043	—	0.043	—	0.043	—
24-97			1.5398	1.5398	1.5398	1.5398	1.856	—	1.856	—	1.3389	—	1.3389	—	1.3389	—	1.3389	—
24-98			0.0805	0.0805	0.0805	0.0805	0.1052	—	0.1052	—	0.07	—	0.07	—	0.07	—	0.07	—
24-99			30.49	30.49	30.49	30.49	33.95	—	33.95	—	28.86	—	28.86	—	28.86	—	28.86	—

Table 70 — Fan VFD Parameters, Mid Tier, 30XV225

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV225											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	18.2	—	13.0	—	18.2	—	13.0	—	18.2	—	13.0	—
1-22	motor volts	V	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	45.5	—	32.5	—	37.8	—	27.0	—	30.1	—	21.5	—
1-25	motor rpm	RPM	1140	—	1140	—	1140	—	1140	—	1140	—	1140	—
1-73	flying restart	no	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	—	1	—	1	—	1	—	1	—	1	—
24-91			0	—	0	—	0	—	0	—	0	—	0	—
24-92			6.00	—	4.00	—	5.4	—	3.6	—	4.5	—	3.00	—
24-93			-0.0104	—	-0.0069	—	-0.0485	—	-0.0323	—	-0.0315	—	-0.021	—
24-94			13.899	—	0.9266	—	9.007	—	6.005	—	9.32	—	6.21	—
24-95	locked rotor		1	—	1	—	1	—	1	—	1	—	1	—
24-96			0.0755	—	0.0539	—	0.05	—	0.036	—	0.05	—	0.036	—
24-97			2.165	—	1.546	—	1.5621	—	1.1158	—	1.5621	—	1.1158	—
24-98			0.1227	—	0.0877	—	0.08	—	0.058	—	0.082	—	0.058	—
24-99			36.61	—	31.29	—	30.67	—	27.05	—	30.67	—	27.05	—

Table 71 — Fan VFD Parameters, Mid Tier, 30XV250-275

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV250, 30XV275											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	18.2	—	18.2	—	18.2	—	18.2	—	18.2	—	18.2	—
1-22	motor volts	V	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	45.5	—	45.5	—	37.8	—	37.8	—	30.1	—	30.1	—
1-25	motor rpm	RPM	1140	—	1140	—	1140	—	1140	—	1140	—	1140	—
1-73	flying restart	no	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	—	1	—	1	—	1	—	1	—	1	—
24-91			0	—	0	—	0	—	0	—	0	—	0	—
24-92			6.00	—	6.00	—	5.4	—	5.4	—	4.5	—	4.5	—
24-93			-0.0104	—	-0.0104	—	-0.0485	—	-0.0485	—	-0.0315	—	-0.0315	—
24-94			13.899	—	13.899	—	9.007	—	9.007	—	9.32	—	9.32	—
24-95	locked rotor		1	—	1	—	1	—	1	—	1	—	1	—
24-96			0.0755	—	0.0755	—	0.05	—	0.05	—	0.05	—	0.05	—
24-97			2.165	—	2.165	—	1.5621	—	1.5621	—	1.5621	—	1.5621	—
24-98			0.1227	—	0.1227	—	0.08	—	0.08	—	0.082	—	0.082	—
24-99			36.61	—	36.61	—	30.67	—	30.67	—	30.67	—	30.67	—

Table 72 — Fan VFD Parameters, Mid Tier, 30XV300

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV300											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	26.0	26.0	26.0	26.0	21.6	21.6	21.6	21.6	17.2	17.2	17.2	17.2
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			0	0	0	0	0	0	0	0	0	0	0	0
24-92			3.326	3.326	3.326	3.326	3.030	3.030	3.030	3.030	2.474	2.474	2.474	2.474
24-93			-0.0058	-0.0058	-0.0058	-0.0058	-0.0270	-0.0270	-0.0270	-0.0270	-0.0175	-0.0175	-0.0175	-0.0175
24-94			7.722	7.722	7.722	7.722	5.004	5.004	5.004	5.004	5.178	5.178	5.178	5.178
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			0.0431	0.0431	0.0431	0.0431	0.0287	0.0287	0.0287	0.0287	0.0287	0.0287	0.0287	0.0287
24-97			1.237	1.237	1.237	1.237	0.8926	0.8926	0.8926	0.8926	0.8926	0.8926	0.8926	0.8926
24-98			0.0701	0.0701	0.0701	0.0701	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467
24-99			28.635	28.635	28.635	28.635	25.24	25.24	25.24	25.24	22.24	22.24	22.24	22.24

Table 73 — Fan VFD Parameters, Mid Tier, 30XV325

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV325											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	13.0	10.4	13.0	10.4	13.0	10.4	13.0	10.4	13.0	10.4	13.0	10.4
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	32.5	26.0	32.5	26.0	27.0	21.6	27.0	21.6	21.5	17.2	21.5	17.2
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			0	0	0	0	0	0	0	0	0	0	0	0
24-92			4.00	3.326	4.00	3.326	3.6	3.030	3.6	3.030	3.00	2.474	3.00	2.474
24-93			-0.0069	-0.0058	-0.0069	-0.0058	-0.0323	-0.0270	-0.0323	-0.0270	-0.021	-0.0175	-0.021	-0.0175
24-94			0.9266	7.722	0.9266	7.722	6.005	5.004	6.005	5.004	6.21	5.178	6.21	5.178
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			0.0539	0.0431	0.0539	0.0431	0.036	0.0287	0.036	0.0287	0.036	0.0287	0.036	0.0287
24-97			1.546	1.237	1.546	1.237	1.1158	0.8926	1.1158	0.8926	1.1158	0.8926	1.1158	0.8926
24-98			0.0877	0.0701	0.0877	0.0701	0.058	0.0467	0.058	0.0467	0.058	0.0467	0.058	0.0467
24-99			31.29	28.635	31.29	28.635	27.05	25.24	27.05	25.24	27.05	22.24	27.05	22.24

Table 74 — Fan VFD Parameters, Mid Tier, 30XV350

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV325											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	15.6	10.4	10.4	10.4	15.6	10.4	10.4	10.4	15.6	10.4	10.4	10.4
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	39.0	26.0	26.0	26.0	32.4	21.6	21.6	21.6	25.8	17.2	17.2	17.2
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			0	0	0	0	0	0	0	0	0	0	0	0
24-92			4.989	3.326	3.326	3.326	4.504	3.030	3.030	3.030	3.711	2.474	2.474	2.474
24-93			-0.0087	-0.0058	-0.0058	-0.0058	-0.0404	-0.0270	-0.0270	-0.0270	-0.0262	-0.0175	-0.0175	-0.0175
24-94			11.582	7.722	7.722	7.722	7.506	5.004	5.004	5.004	7.767	5.178	5.178	5.178
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			0.0647	0.0431	0.0431	0.0431	0.043	0.0287	0.0287	0.0287	0.043	0.0287	0.0287	0.0287
24-97			1.856	1.237	1.237	1.237	1.3389	0.8926	0.8926	0.8926	1.3389	0.8926	0.8926	0.8926
24-98			0.1052	0.0701	0.0701	0.0701	0.07	0.0467	0.0467	0.0467	0.07	0.0467	0.0467	0.0467
24-99			33.95	28.635	28.635	28.635	28.86	25.24	25.24	25.24	28.86	22.24	22.24	22.24

Table 75 — Fan VFD Parameters, Mid Tier, 30XV400

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV325											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	15.6	10.4	15.6	10.4	15.6	10.4	15.6	10.4	15.6	10.4	15.6	10.4
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	39.0	26.0	39.0	26.0	32.4	21.6	32.4	21.6	25.8	17.2	25.8	17.2
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			0	0	0	0	0	0	0	0	0	0	0	0
24-92			4.989	3.326	4.989	3.326	4.504	3.030	4.504	3.030	3.711	2.474	3.711	2.474
24-93			-0.0087	-0.0058	-0.0087	-0.0058	-0.0404	-0.0270	-0.0404	-0.0270	-0.0262	-0.0175	-0.0262	-0.0175
24-94			11.582	7.722	11.582	7.722	7.506	5.004	7.506	5.004	7.767	5.178	7.767	5.178
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			0.0647	0.0431	0.0647	0.0431	0.043	0.0287	0.043	0.0287	0.043	0.0287	0.043	0.0287
24-97			1.856	1.237	1.856	1.237	1.3389	0.8926	1.3389	0.8926	1.3389	0.8926	1.3389	0.8926
24-98			0.1052	0.0701	0.1052	0.0701	0.07	0.0467	0.07	0.0467	0.07	0.0467	0.07	0.0467
24-99			33.95	28.635	33.95	28.635	28.86	25.24	28.86	25.24	28.86	22.24	28.86	22.24

Table 76 — Fan VFD Parameters, Mid Tier, 30XV450

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV325											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	15.6	13.0	15.6	13.0	15.6	13.0	15.6	13.0	15.6	13.0	15.6	13.0
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	39.0	32.5	39.0	32.5	32.4	27.0	32.4	27.0	25.8	21.5	25.8	21.5
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			0	0	0	0	0	0	0	0	0	0	0	0
24-92			4.989	4.00	4.989	4.00	4.504	3.6	4.504	3.6	3.711	3.00	3.711	3.00
24-93			-0.0087	-0.0069	-0.0087	-0.0069	-0.0404	-0.0323	-0.0404	-0.0323	-0.0262	-0.021	-0.0262	-0.021
24-94			11.582	0.9266	11.582	0.9266	7.506	6.005	7.506	6.005	7.767	6.21	7.767	6.21
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			0.0647	0.0539	0.0647	0.0539	0.043	0.036	0.043	0.036	0.043	0.036	0.043	0.036
24-97			1.856	1.546	1.856	1.546	1.3389	1.1158	1.3389	1.1158	1.3389	1.1158	1.3389	1.1158
24-98			0.1052	0.0877	0.1052	0.0877	0.07	0.058	0.07	0.058	0.07	0.058	0.07	0.058
24-99			33.95	31.29	33.95	31.29	28.86	27.05	28.86	27.05	28.86	27.05	28.86	27.05

Table 77 — Fan VFD Parameters, Mid Tier, 30XV500

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV325											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	39.0	39.0	39.0	39.0	32.4	32.4	32.4	32.4	25.8	25.8	25.8	25.8
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			0	0	0	0	0	0	0	0	0	0	0	0
24-92			4.989	4.989	4.989	4.989	4.504	4.504	4.504	4.504	3.711	3.711	3.711	3.711
24-93			-0.0087	-0.0087	-0.0087	-0.0087	-0.0404	-0.0404	-0.0404	-0.0404	-0.0262	-0.0262	-0.0262	-0.0262
24-94			11.582	11.582	11.582	11.582	7.506	7.506	7.506	7.506	7.767	7.767	7.767	7.767
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			0.0647	0.0647	0.0647	0.0647	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043
24-97			1.856	1.856	1.856	1.856	1.3389	1.3389	1.3389	1.3389	1.3389	1.3389	1.3389	1.3389
24-98			0.1052	0.1052	0.1052	0.1052	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
24-99			33.95	33.95	33.95	33.95	28.86	28.86	28.86	28.86	28.86	28.86	28.86	28.86

Table 78 — Fan VFD Parameters, High Tier, 30XV140

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV140															
			208/230V				380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	7.8	5.2	7.8	5.2	13.0	—	13.0	—	13.0	—	13.0	—	13.0	—	13.0	—
1-22	motor volts	V	200	200	200	200	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	38.7	25.8	38.7	25.8	32.5	—	32.5	—	27.0	—	27.0	—	21.5	—	21.5	—
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	—	1140	—	1140	—	1140	—	1140	—	1140	—
1-73	flying restart	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	20	20	20	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	20	20	20	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	5	5	5	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	150	150	150	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	110	110	110	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	10	10	10	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	2	2	2	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	6	6	6	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
24-91			0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
24-92			4.00	2.00	4.00	2.00	4.00	—	4.00	—	3.6	—	3.6	—	3.00	—	3.00	—
24-93			-0.0368	-0.0184	-0.0368	-0.0184	-0.0069	—	-0.0069	—	-0.0323	—	-0.0323	—	-0.021	—	-0.021	—
24-94			7.177	3.588	7.177	3.588	0.9266	—	0.9266	—	6.005	—	6.005	—	6.21	—	6.21	—
24-95	locked rotor		1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
24-96			0.0495	0.0330	0.0495	0.0330	0.0539	—	0.0539	—	0.036	—	0.036	—	0.036	—	0.036	—
24-97			1.5398	1.0265	1.5398	1.0265	1.546	—	1.546	—	1.1158	—	1.1158	—	1.1158	—	1.1158	—
24-98			0.0805	0.0540	0.0805	0.0540	0.0877	—	0.0877	—	0.058	—	0.058	—	0.058	—	0.058	—
24-99			30.49	26.33	30.49	26.33	31.29	—	31.29	—	27.05	—	27.05	—	27.05	—	27.05	—

Table 79 — Fan VFD Parameters, High Tier, 30XV160-180

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV160, 30XV180															
			208/230V				380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	7.8	7.8	7.8	7.8	15.6	—	15.6	—	15.6	—	15.6	—	15.6	—	15.6	—
1-22	motor volts	V	200	200	200	200	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	38.7	38.7	38.7	38.7	39.0	—	39.0	—	32.4	—	32.4	—	25.8	—	25.8	—
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	—	1140	—	1140	—	1140	—	1140	—	1140	—
1-73	flying restart	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	20	20	20	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	20	20	20	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	5	5	5	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	150	150	150	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	110	110	110	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	10	10	10	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	2	2	2	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	6	6	6	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
24-91			0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
24-92			4.00	4.00	4.00	4.00	4.989	—	4.989	—	4.504	—	4.504	—	3.711	—	3.711	—
24-93			-0.0368	-0.0368	-0.0368	-0.0368	-0.0087	—	-0.0087	—	-0.0404	—	-0.0404	—	-0.0262	—	-0.0262	—
24-94			7.177	7.177	7.177	7.177	11.582	—	11.582	—	7.506	—	7.506	—	7.767	—	7.767	—
24-95	locked rotor		1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
24-96			0.0495	0.0495	0.0495	0.0495	0.0647	—	0.0647	—	0.043	—	0.043	—	0.043	—	0.043	—
24-97			1.5398	1.5398	1.5398	1.5398	1.856	—	1.856	—	1.3389	—	1.3389	—	1.3389	—	1.3389	—
24-98			0.0805	0.0805	0.0805	0.0805	0.1052	—	0.1052	—	0.07	—	0.07	—	0.07	—	0.07	—
24-99			30.49	30.49	30.49	30.49	33.95	—	33.95	—	28.86	—	28.86	—	28.86	—	28.86	—

Table 80 — Fan VFD Parameters, High Tier, 30XV200

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV200															
			208/230V				380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	10.4	7.8	10.4	7.8	18.2	—	18.2	—	18.2	—	18.2	—	18.2	—	18.2	—
1-22	motor volts	V	200	200	200	200	380	—	380	—	460	—	460	—	575	—	575	—
1-23	motor frequency	Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
1-24	motor amperage	A	51.6	38.7	51.6	38.7	45.5	—	45.5	—	37.8	—	37.8	—	30.1	—	30.1	—
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	—	1140	—	1140	—	1140	—	1140	—	1140	—
1-73	flying restart	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
1-80	function at stop	coast	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
1-90	function at stop	no operation	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-03	motor thermal protection	Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
3-13	max reference	hand/auto	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-15	type reference	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-16	src ref#1	no	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
3-41	src ref#2	20s	20	20	20	20	20	—	20	—	20	—	20	—	20	—	20	—
3-42	ramp up	20s	20	20	20	20	20	—	20	—	20	—	20	—	20	—	20	—
4-10	ramp down	clockwise	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
4-12	motor speed direct	5Hz	5	5	5	5	5	—	5	—	5	—	5	—	5	—	5	—
4-14	motor speed low limit	60Hz	60	60	60	60	60	—	60	—	60	—	60	—	60	—	60	—
4-16	motor speed high limit	150%	150	150	150	150	150	—	150	—	150	—	150	—	150	—	150	—
4-18	torque limit	110%	110	110	110	110	110	—	110	—	110	—	110	—	110	—	110	—
5-12	current limit	no operation	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
8-01	DI #27	digital and control word	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
8-02	control site	FC port= RS485	1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
8-03	control source	10s	10	10	10	10	10	—	10	—	10	—	10	—	10	—	10	—
8-04	time out time	stop	2	2	2	2	2	—	2	—	2	—	2	—	2	—	2	—
14-00	pattern [AVM]	60AVM	0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
14-01	switching frequency	kHz	6	6	6	6	6	—	6	—	6	—	6	—	6	—	6	—
24-90	missing motor		1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
24-91			0	0	0	0	0	—	0	—	0	—	0	—	0	—	0	—
24-92			6.73	4.00	6.73	4.00	6.00	—	6.00	—	5.4	—	5.4	—	4.5	—	4.5	—
24-93			-0.0614	-0.0368	-0.0614	-0.0368	-0.0104	—	-0.0104	—	-0.0485	—	-0.0485	—	-0.0315	—	-0.0315	—
24-94			11.961	7.177	11.961	7.177	13.899	—	13.899	—	9.007	—	9.007	—	9.32	—	9.32	—
24-95	locked rotor		1	1	1	1	1	—	1	—	1	—	1	—	1	—	1	—
24-96			0.0659	0.0495	0.0659	0.0495	0.0755	—	0.0755	—	0.05	—	0.05	—	0.05	—	0.05	—
24-97			0.2053	1.5398	0.2053	1.5398	2.165	—	2.165	—	1.5621	—	1.5621	—	1.5621	—	1.5621	—
24-98			0.1073	0.0805	0.1073	0.0805	0.1227	—	0.1227	—	0.08	—	0.08	—	0.082	—	0.082	—
24-99			34.65	30.49	34.65	30.49	36.61	—	36.61	—	30.67	—	30.67	—	30.67	—	30.67	—

Table 81 — Fan VFD Parameters, High Tier, 30XV225

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV225											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	10.4	10.4	15.6	—	10.4	10.4	15.6	—	10.4	10.4	15.6	—
1-22	motor volts	V	380	380	380	—	460	460	460	—	575	575	575	—
1-23	motor frequency	Hz	60	60	60	—	60	60	60	—	60	60	60	—
1-24	motor amperage	A	26.0	26.0	39.0	—	21.6	21.6	32.4	—	17.2	17.2	25.8	—
1-25	motor rpm	RPM	1140	1140	1140	—	1140	1140	1140	—	1140	1140	1140	—
1-73	flying restart	no	0	0	0	—	0	0	0	—	0	0	0	—
1-80	function at stop	coast	0	0	0	—	0	0	0	—	0	0	0	—
1-90	function at stop	no operation	0	0	0	—	0	0	0	—	0	0	0	—
3-03	motor thermal protection	Hz	60	60	60	—	60	60	60	—	60	60	60	—
3-13	max reference	hand/auto	0	0	0	—	0	0	0	—	0	0	0	—
3-15	type reference	no	0	0	0	—	0	0	0	—	0	0	0	—
3-16	src ref#1	no	0	0	0	—	0	0	0	—	0	0	0	—
3-41	src ref#2	20s	20	20	20	—	20	20	20	—	20	20	20	—
3-42	ramp up	20s	20	20	20	—	20	20	20	—	20	20	20	—
4-10	ramp down	clockwise	0	0	0	—	0	0	0	—	0	0	0	—
4-12	motor speed direct	5Hz	5	5	5	—	5	5	5	—	5	5	5	—
4-14	motor speed low limit	60Hz	60	60	60	—	60	60	60	—	60	60	60	—
4-16	motor speed high limit	150%	150	150	150	—	150	150	150	—	150	150	150	—
4-18	torque limit	110%	110	110	110	—	110	110	110	—	110	110	110	—
5-12	current limit	no operation	0	0	0	—	0	0	0	—	0	0	0	—
8-01	DI #27	digital and control word	0	0	0	—	0	0	0	—	0	0	0	—
8-02	control site	FC port= RS485	1	1	1	—	1	1	1	—	1	1	1	—
8-03	control source	10s	10	10	10	—	10	10	10	—	10	10	10	—
8-04	time out time	stop	2	2	2	—	2	2	2	—	2	2	2	—
14-00	pattern [AVM]	60AVM	0	0	0	—	0	0	0	—	0	0	0	—
14-01	switching frequency	kHz	6	6	6	—	6	6	6	—	6	6	6	—
24-90	missing motor		1	1	1	—	1	1	1	—	1	1	1	—
24-91			0	0	0	—	0	0	0	—	0	0	0	—
24-92			3.326	3.326	4.989	—	3.030	3.030	4.504	—	2.474	2.474	3.711	—
24-93			-0.0058	-0.0058	-0.0087	—	-0.0270	-0.0270	-0.0404	—	-0.0175	-0.0175	-0.0262	—
24-94			7.722	7.722	11.582	—	5.004	5.004	7.506	—	5.178	5.178	7.767	—
24-95	locked rotor		1	1	1	—	1	1	1	—	1	1	1	—
24-96			0.0431	0.0431	0.0647	—	0.0287	0.0287	0.043	—	0.0287	0.0287	0.043	—
24-97			1.237	1.237	1.856	—	0.8926	0.8926	1.3389	—	0.8926	0.8926	1.3389	—
24-98			0.0701	0.0701	0.1052	—	0.0467	0.0467	0.07	—	0.0467	0.0467	0.07	—
24-99			28.635	28.635	33.95	—	25.24	25.24	28.86	—	22.24	22.24	28.86	—

Table 82 — Fan VFD Parameters, High Tier, 30XV250-275

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV250, 30XV275											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.4
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	26.0	26.0	26.0	26.0	21.6	21.6	21.6	21.6	17.2	17.2	17.2	17.2
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			0	0	0	0	0	0	0	0	0	0	0	0
24-92			3.326	3.326	3.326	3.326	3.030	3.030	3.030	3.030	2.474	2.474	2.474	2.474
24-93			-0.0058	-0.0058	-0.0058	-0.0058	-0.0270	-0.0270	-0.0270	-0.0270	-0.0175	-0.0175	-0.0175	-0.0175
24-94			7.722	7.722	7.722	7.722	5.004	5.004	5.004	5.004	5.178	5.178	5.178	5.178
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			0.0431	0.0431	0.0431	0.0431	0.0287	0.0287	0.0287	0.0287	0.0287	0.0287	0.0287	0.0287
24-97			1.237	1.237	1.237	1.237	0.8926	0.8926	0.8926	0.8926	0.8926	0.8926	0.8926	0.8926
24-98			0.0701	0.0701	0.0701	0.0701	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467	0.0467
24-99			28.635	28.635	28.635	28.635	25.24	25.24	25.24	25.24	22.24	22.24	22.24	22.24

Table 83 — Fan VFD Parameters, High Tier, 30XV300

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV300											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	13.0	10.4	13.0	10.4	13.0	10.4	13.0	10.4	13.0	10.4	13.0	10.4
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	32.5	26.0	32.5	26.0	27.0	21.6	27.0	21.6	21.5	17.2	21.5	17.2
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			0	0	0	0	0	0	0	0	0	0	0	0
24-92			4.00	3.326	4.00	3.326	3.6	3.030	3.6	3.030	3.00	2.474	3.00	2.474
24-93			-0.0069	-0.0058	-0.0069	-0.0058	-0.0323	-0.0270	-0.0323	-0.0270	-0.021	-0.0175	-0.021	-0.0175
24-94			0.9266	7.722	0.9266	7.722	6.005	5.004	6.005	5.004	6.21	5.178	6.21	5.178
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			0.0539	0.0431	0.0539	0.0431	0.036	0.0287	0.036	0.0287	0.036	0.0287	0.036	0.0287
24-97			1.546	1.237	1.546	1.237	1.1158	0.8926	1.1158	0.8926	1.1158	0.8926	1.1158	0.8926
24-98			0.0877	0.0701	0.0877	0.0701	0.058	0.0467	0.058	0.0467	0.058	0.0467	0.058	0.0467
24-99			31.29	28.635	31.29	28.635	27.05	25.24	27.05	25.24	27.05	22.24	27.05	22.24

Table 84 — Fan VFD Parameters, High Tier, 30XV325

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV325											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	15.6	10.4	15.6	10.4	15.6	10.4	15.6	10.4	15.6	10.4	15.6	10.4
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	39.0	26.0	39.0	26.0	32.4	21.6	32.4	21.6	25.8	17.2	25.8	17.2
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			0	0	0	0	0	0	0	0	0	0	0	0
24-92			4.989	3.326	4.989	3.326	4.504	3.030	4.504	3.030	3.711	2.474	3.711	2.474
24-93			-0.0087	-0.0058	-0.0087	-0.0058	-0.0404	-0.0270	-0.0404	-0.0270	-0.0262	-0.0175	-0.0262	-0.0175
24-94			11.582	7.722	11.582	7.722	7.506	5.004	7.506	5.004	7.767	5.178	7.767	5.178
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			0.0647	0.0431	0.0647	0.0431	0.043	0.0287	0.043	0.0287	0.043	0.0287	0.043	0.0287
24-97			1.856	1.237	1.856	1.237	1.3389	0.8926	1.3389	0.8926	1.3389	0.8926	1.3389	0.8926
24-98			0.1052	0.0701	0.1052	0.0701	0.07	0.0467	0.07	0.0467	0.07	0.0467	0.07	0.0467
24-99			33.95	28.635	33.95	28.635	28.86	25.24	28.86	25.24	28.86	22.24	28.86	22.24

Table 85 — Fan VFD Parameters, High Tier, 30XV350

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV325											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	15.6	13.0	13.0	10.4	15.6	13.0	13.0	10.4	15.6	13.0	13.0	10.4
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	39.0	32.5	32.5	26.0	32.4	27.0	27.0	21.6	25.8	21.5	21.5	17.2
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			0	0	0	0	0	0	0	0	0	0	0	0
24-92			4.989	4.00	4.00	3.326	4.504	3.6	3.6	3.030	3.711	3.00	3.00	2.474
24-93			-0.0087	-0.0069	-0.0069	-0.0058	-0.0404	-0.0323	-0.0323	-0.0270	-0.0262	-0.021	-0.021	-0.0175
24-94			11.582	0.9266	0.9266	7.722	7.506	6.005	6.005	5.004	7.767	6.21	6.21	5.178
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			0.0647	0.0539	0.0539	0.0431	0.043	0.036	0.036	0.0287	0.043	0.036	0.036	0.0287
24-97			1.856	1.546	1.546	1.237	1.3389	1.1158	1.1158	0.8926	1.3389	1.1158	1.1158	0.8926
24-98			0.1052	0.0877	0.0877	0.0701	0.07	0.058	0.058	0.0467	0.07	0.058	0.058	0.0467
24-99			33.95	31.29	31.29	28.635	28.86	27.05	27.05	25.24	28.86	27.05	27.05	22.24

Table 86 — Fan VFD Parameters, High Tier, 30XV400

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV325											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	15.6	13.0	15.6	13.0	15.6	13.0	15.6	13.0	15.6	13.0	15.6	13.0
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	39.0	32.5	39.0	32.5	32.4	27.0	32.4	27.0	25.8	21.5	25.8	21.5
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			0	0	0	0	0	0	0	0	0	0	0	0
24-92			4.989	4.00	4.989	4.00	4.504	3.6	4.504	3.6	3.711	3.00	3.711	3.00
24-93			-0.0087	-0.0069	-0.0087	-0.0069	-0.0404	-0.0323	-0.0404	-0.0323	-0.0262	-0.021	-0.0262	-0.021
24-94			11.582	0.9266	11.582	0.9266	7.506	6.005	7.506	6.005	7.767	6.21	7.767	6.21
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			0.0647	0.0539	0.0647	0.0539	0.043	0.036	0.043	0.036	0.043	0.036	0.043	0.036
24-97			1.856	1.546	1.856	1.546	1.3389	1.1158	1.3389	1.1158	1.3389	1.1158	1.3389	1.1158
24-98			0.1052	0.0877	0.1052	0.0877	0.07	0.058	0.07	0.058	0.07	0.058	0.07	0.058
24-99			33.95	31.29	33.95	31.29	28.86	27.05	28.86	27.05	28.86	27.05	28.86	27.05

Table 87 — Fan VFD Parameters, High Tier, 30XV450

PARAMETER NUMBER	DESCRIPTION	ITEM	30XV325											
			380V				460V				575V			
			A1	A2	B1	B2	A1	A2	B1	B2	A1	A2	B1	B2
1-20	motor kW	kW	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6	15.6
1-22	motor volts	V	380	380	380	380	460	460	460	460	575	575	575	575
1-23	motor frequency	Hz	60	60	60	60	60	60	60	60	60	60	60	60
1-24	motor amperage	A	39.0	39.0	39.0	39.0	32.4	32.4	32.4	32.4	25.8	25.8	25.8	25.8
1-25	motor rpm	RPM	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
1-73	flying restart	no	0	0	0	0	0	0	0	0	0	0	0	0
1-80	function at stop	coast	0	0	0	0	0	0	0	0	0	0	0	0
1-90	function at stop	no operation	0	0	0	0	0	0	0	0	0	0	0	0
3-03	motor thermal protection	Hz	60	60	60	60	60	60	60	60	60	60	60	60
3-13	max reference	hand/auto	0	0	0	0	0	0	0	0	0	0	0	0
3-15	type reference	no	0	0	0	0	0	0	0	0	0	0	0	0
3-16	src ref#1	no	0	0	0	0	0	0	0	0	0	0	0	0
3-41	src ref#2	20s	20	20	20	20	20	20	20	20	20	20	20	20
3-42	ramp up	20s	20	20	20	20	20	20	20	20	20	20	20	20
4-10	ramp down	clockwise	0	0	0	0	0	0	0	0	0	0	0	0
4-12	motor speed direct	5Hz	5	5	5	5	5	5	5	5	5	5	5	5
4-14	motor speed low limit	60Hz	60	60	60	60	60	60	60	60	60	60	60	60
4-16	motor speed high limit	150%	150	150	150	150	150	150	150	150	150	150	150	150
4-18	torque limit	110%	110	110	110	110	110	110	110	110	110	110	110	110
5-12	current limit	no operation	0	0	0	0	0	0	0	0	0	0	0	0
8-01	DI #27	digital and control word	0	0	0	0	0	0	0	0	0	0	0	0
8-02	control site	FC port= RS485	1	1	1	1	1	1	1	1	1	1	1	1
8-03	control source	10s	10	10	10	10	10	10	10	10	10	10	10	10
8-04	time out time	stop	2	2	2	2	2	2	2	2	2	2	2	2
14-00	pattern [AVM]	60AVM	0	0	0	0	0	0	0	0	0	0	0	0
14-01	switching frequency	kHz	6	6	6	6	6	6	6	6	6	6	6	6
24-90	missing motor		1	1	1	1	1	1	1	1	1	1	1	1
24-91			0	0	0	0	0	0	0	0	0	0	0	0
24-92			4.989	4.989	4.989	4.989	4.504	4.504	4.504	4.504	3.711	3.711	3.711	3.711
24-93			-0.0087	-0.0087	-0.0087	-0.0087	-0.0404	-0.0404	-0.0404	-0.0404	-0.0262	-0.0262	-0.0262	-0.0262
24-94			11.582	11.582	11.582	11.582	7.506	7.506	7.506	7.506	7.767	7.767	7.767	7.767
24-95	locked rotor		1	1	1	1	1	1	1	1	1	1	1	1
24-96			0.0647	0.0647	0.0647	0.0647	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043
24-97			1.856	1.856	1.856	1.856	1.3389	1.3389	1.3389	1.3389	1.3389	1.3389	1.3389	1.3389
24-98			0.1052	0.1052	0.1052	0.1052	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07
24-99			33.95	33.95	33.95	33.95	28.86	28.86	28.86	28.86	28.86	28.86	28.86	28.86

VFD ALARM RESET — As long as communication is established between the Touch Pilot™ controls and the VFD, most alarms can be reset directly through the chiller control system.

VFD REPLACEMENT PROCEDURE — If required, VFDs can be replaced and programmed with the following procedures:

1. Disconnect power from unit. Wait a minimum of 20 minutes before continuing (if compressor VFDs are mounted external to control panel) or 40 minutes (if compressor VFDs are mounted internal to control panel).

⚠ WARNING

After unit power is disconnected, wait at least 20 minutes (if compressor VFDs are mounted external to control panel) or 40 minutes (if compressor VFDs are mounted internal to control panel) for the VFD capacitors to discharge before opening drive. Failure to do so presents an electrical shock hazard and may result in personal injury.

2. Remove VFD weatherproof cover. Disconnect electrical power and communication connections from drive.
3. Unbolt and remove drive from support brackets, taking care to support drive at all times during the procedure. Larger drives are equipped with lifting lugs which must be used to support the load.

⚠ CAUTION

Use all proper rigging procedures and precautions when moving VFDs to avoid damage to the equipment.

4. Lift, position, and fasten replacement drive to support structure. Tighten all bolts securely.
5. Connect power, control, VFD enable, and high pressure switch wiring to drive. For wiring details for fan drives, see Fig 74. Use the same knockout openings on new drive as on drive being replaced. For compressor drives, the high-pressure switch, VFD enable, and heater wiring also need to be connected. See Fig. 75 for wiring details for compressor drives. For compressor drives, remove the blank gland plate from the new drive and install the pre-punched gland plate from the drive being replaced. Torque connections are shown in Table 88.

IMPORTANT: Ensure high pressure switch (HPS) and VFD enable wiring are connected to compressor VFD. Compressor will not run without HPS and VFD enable wiring connection.

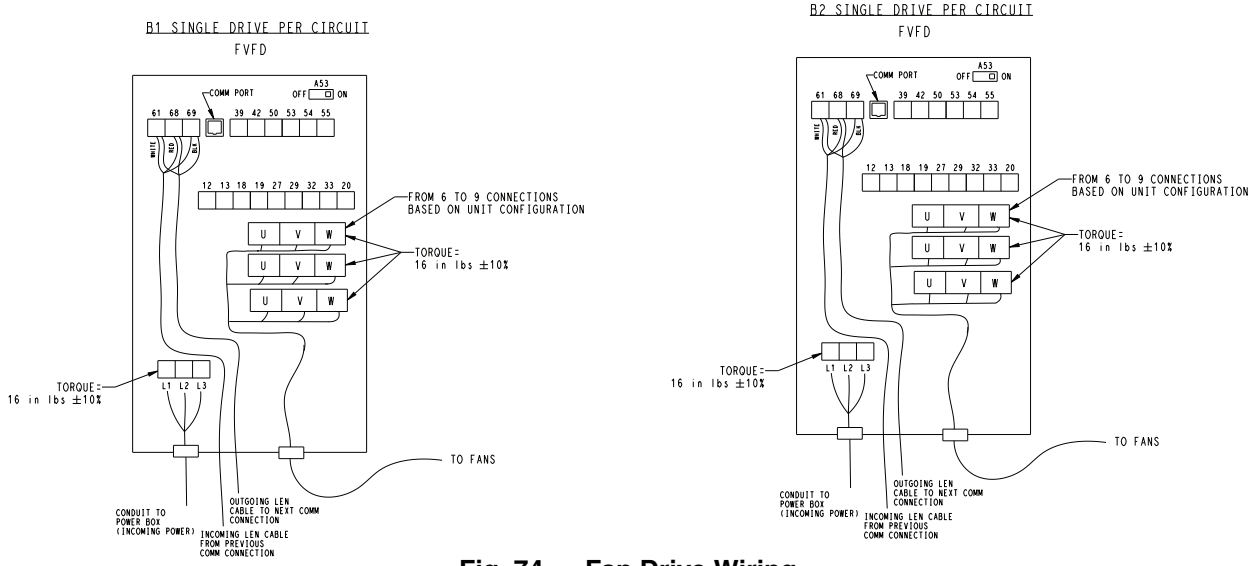
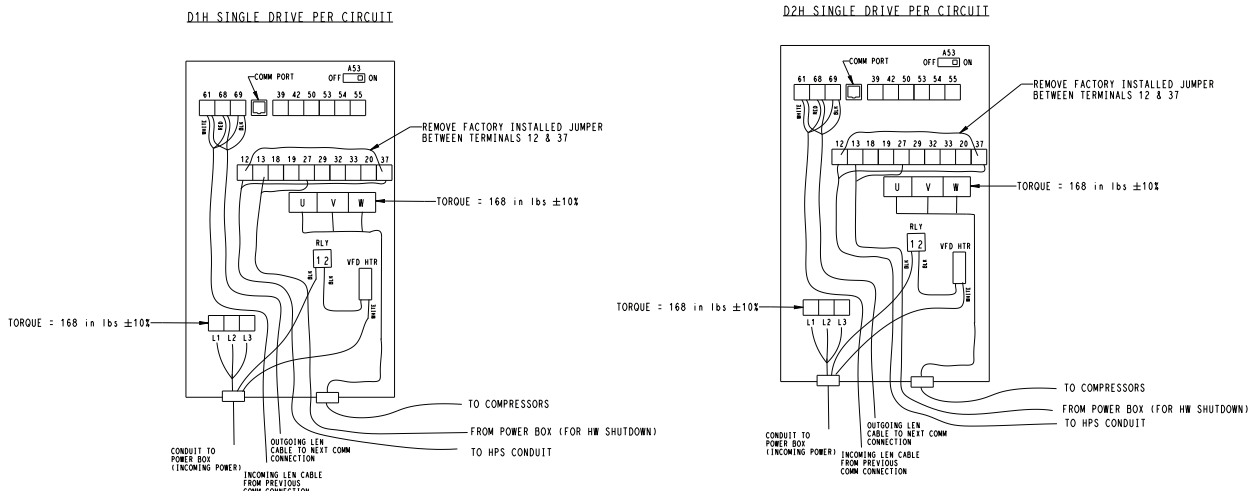


Fig. 74 — Fan Drive Wiring



NOTE: For 30XV350-500 ton units, the VFD heater shown is physically located on bottom of enclosure but is wired as shown.

Fig. 75 — Compressor Drive Wiring

Table 88 — Power Connection Torque Values

COMPRESSOR DRIVES		
CARRIER PART NO.	LINE/MOTOR POWER (in.-lb)	GROUND (in.-lb)
HR46ZY001	89	27
HR46ZY002	89	27
HR46ZY003	124	27
HR46ZY004	124	27
HR46ZY005	168	75
HR46ZY006	168	75
HR46ZY007	168	75
HR46ZY008	168	75
HR46ZY009	168	75
HR46ZY010	168	75
HR46ZY011	168	75
HR46ZY012	168	75
HR46ZY013	168	75
HR46ZY014	168	75
HR46ZY015	168	75
HR46ZY016	168	75
HR46ZY017	168	75
HR46ZY018	168	75
HR46ZY019	168	75
HR46ZY020	168	75
HR46ZY021	168	75
HR46ZY022	168	75
FAN DRIVES		
HR46ZQ003	16	27
HR46ZS003	16	27
HR46ZS004	16	27
HR46ZT002	16	27
HR46ZT003	16	27
HR46ZT004	22	27
HR46ZT005	16	27
HR46ZT006	16	27
HR46ZU002	16	27
HR46ZU003	16	27
HR46ZU004	16	27
HR46ZU005	16	27
HR46ZU006	16	27
HR46ZV001	22	27
HR46ZV002	22	27
HR46ZV003	22	27
HR46ZV004	22	27
HR46ZW001	22	27
HR46ZW002	22	27
HR46ZW003	22	27
HR46ZW004	22	27

6. Turn on power to the unit and allow the drive screen to become active. The drive will need to be manually addressed for the control system to export the correct parameters. Use this procedure to address the VFDs:
   a. Using the display interface on the VFD drive, press the Main Menu button twice. Navigate to menu item 8-30 and confirm that the LEN option is selected: Using the UP/DOWN arrows and OK button, follow the path: 8-** (Command Options) → 8-3* (FC Port Settings) → 8-30 (Protocol). If LEN is not selected, press the OK button and use the arrow keys to scroll through the options and select it. If no LEN option appears, LEN communication is not enabled on the drive. Follow the process described in the next section, Enable LEN Communication, and then complete the following addressing procedure.
   b. Navigate to menu item 8-31 on the VFD display and enter the address for the drive being configured: Follow the path: 8-** (Command Options) → 8-3* (FC Port Settings) → 8-31 (Address). Press the OK button and use the UP/DOWN arrow keys to select the drive address. See Table 89 to determine the correct address. For fan drives, see Fig. 74 for typical arrangement. For compressor drives, see Fig. 75 for typical location.

Table 89 — VFD Drive Addresses

DRIVE	ADDRESS
Ckt A Compressor	181
Ckt B Compressor	182
Ckt A Fan Drive 1	184
Ckt A Fan Drive 2	185
Ckt B Fan Drive 1	187
Ckt B Fan Drive 2	188

LEGEND

VFD — Variable Frequency Drive

   c. Turn the chiller power off and then on again. Cycling the power will cause the control system to send the correct configuration data files to the new drive.
   d. Verify that communication with the new drive has been established. For fan drives follow the Touch Pilot™ path: Main Menu → Maintenance Menu → Fan Drive Addressing and confirm that the relevant Comm Fan Drive Xn status is Yes. For compressor drives follow the path: Main Menu → Maintenance Menu → VLT Drive Maintenance and confirm that the relevant Comm with Drive X status is Yes.

Enable LEN Communication — If the replacement drive received does not have LEN as an option under menu item 8-30 on the VFD display, LEN will need to be manually enabled before the drive can be addressed. To enable the LEN communication option:

1. Enable access to the hidden Typecode Parameter by navigating to menu item 14-29 on the VFD display: press the Main Menu button and then follow the path 14-** (Special Functions) → 14-2* (Reset Functions) → 14-29 (Service Code). Set the 14-29 parameter to 00006100. Setting this parameter will enable access to hidden parameter 14-23 (Typecode Setting). Press OK.
2. Navigate to menu item 14-23: Press the BACK button and use the UP arrow to reach 14-23 (Typecode Setting). Press the OK button once. A cursor will appear on the value [00] just below the parameter number and name. Increase this value by pressing the UP key until the parameter has a value of [12] and the display shows "[nnn] SXXX {std. sw)." Press OK and use the UP/DOWN buttons to change the value to "[231] S009 {Special sw)." Press OK again. Press the UP button until the value is [20]. Press the OK button once, and change the displayed value to [1] (Save to EEPROM) using the arrow key. Press OK again.
3. The drive should display an alarm A251 New Type Code. Power down the drive by pressing the OFF button. Restart the drive with the AUTO ON button.
4. Proceed with the Addressing VFD instruction above to complete the configuration process.

LONG TERM STORAGE — If the unit is stored for long periods of time without use, special procedures must be performed to ensure the safe and efficient operation of the VFD capacitor banks. If the unit has been stored for more than 3 years without power applied to the drives, contact Carrier Service to obtain information and instructions for reforming the capacitor banks.

MAINTENANCE

Recommended Maintenance Schedule — The following are only recommended guidelines. Jobsite conditions may dictate that maintenance tasks be performed more often than recommended.

Routine for machines with e-coat condenser coils:
- Check condenser coils for debris; clean as necessary with Carrier approved coil cleaner.
- Periodic clean water rinse, especially in coastal and industrial applications.

Every month:
- Check condenser coils for debris; clean as necessary with Carrier approved coil cleaner.
- Check moisture indicating sight glass for possible refrigerant loss and presence of moisture.
- Record water pressure differential.
- Record system superheat.

Every 3 months:
- Check all refrigerant joints and valves for refrigerant leaks; repair as necessary.
- Check chilled water flow switch operation.
- Check all condenser fans for proper operation.
- Check oil filter pressure drop.
- Check oil separator heater operation.
- Check air filters located on the front panel of the compressor VFD drives by opening the plastic grilles; replace clogged filters. Filters may be cleaned with mild detergent soap and water.
- Check the back of all the compressor and fan drives for any debris. If present clean it off by blowing air from top to bottom.

Every 12 months:
- Check refrigerant charge.
- Check all electrical connections; tighten as necessary.
- Inspect all contactors and relays; replace as necessary.
- Change oil filters year 1, then as needed.
- Check accuracy of thermistors; replace if greater than ±2° F (1.2° C) variance from calibrated thermometer.
- Check accuracy of transducers; replace if greater than ±5 psig (34.47 kPa) variance.
- Check to be sure that the proper concentration of antifreeze is present in the chilled water loop, if applicable.
- Verify that the chilled water loop is properly treated.
- Check refrigerant filter driers for excessive pressure drop; replace as necessary.
- Check chilled water strainers, clean as necessary.
- Check evaporator heater operation.
- Check oil heater operation.
- Check condition of condenser fan blades and that they are securely fastened to the motor shaft.
- Perform Service Test to confirm operation of all components.
- Check for excessive evaporator approach (Leaving Chilled Water Temperature – Saturated Suction Temperature) which may indicate fouling. Clean evaporator vessel if necessary.
- Obtain oil analysis; change as necessary.

Every 3-5 years:
- Inspect and clean evaporator tubes.
- Inspect relief valves.

TROUBLESHOOTING

Alarms and Alerts — The integral control system constantly monitors the unit and generates warnings when abnormal or fault conditions occur. Alarms may cause either a circuit (Alert) or the whole machine (Alarm) to shut down. Alarms and Alerts are assigned codes as described in Table 90.

To view information about current and past alarms or to reset alarms, press the Alarm bell button in the top right corner of the Touch Pilot™ display. A solid gray icon is present during normal operation. The bell icon is red if there is an alarm or alert. A blinking red bell icon indicates that there is an alarm, but the unit is still running. A solid red highlighted bell icon indicates that the unit is shut down due to a detected fault.

CURRENT ALARMS — To access the current alarms view, press the Alarm bell button in the top right corner of the Touch Pilot display, and then select Current Alarms. This screen displays up to 10 current alarms with the time and date as well as a one line description of each alarm. See Table 90 for a list of possible alarms sorted alphabetically by description.

RESETTING ALARMS — The alarms can be reset without stopping the machine. The controller generates two types of alarms. Automatic reset alarms will reset without any intervention if the condition that caused the alarm corrects itself. Manual reset alarms require the service technician to check for the alarm cause and reset the alarm.

To reset any active alarms, press the Alarm button and then press the Reset Alarms icon. For Alarm Reset on line 1 select Yes and select the Force lightning bolt button. When resetting the alarm manually, the reset can be performed through the Touch Pilot display or remotely through the web interface (Reset Alarms menu).

Only logged-in users can access the Reset Alarms menu. The menu displays up to five alarm codes which are currently active on the unit, corresponding to the first five items displayed in the Current Alarms menu. Each alarm is also described by a numeric code. See Tables 90 and 91 for lists of alarms by code.

In the event of a power supply interrupt, the unit restarts automatically without the need for an external command. However, any faults active when the supply is interrupted are saved and may in certain cases prevent a circuit or a unit from restarting.

Before resetting any alarm, first determine the cause of the alarm and correct it. Do not reset the chiller at random without first investigating and correcting the cause(s) of the failure.

ALARM HISTORY — Once the cause of the alarm has been identified and corrected, it will be displayed in the alarm history. Information regarding resolved alarms is stored in the Alarm history menu, which is divided into 50 recent alarms and 50 recent major alarms. General alarms indicate pumps failure, transducers faults, network connection problems, etc. Major alarms indicate process failure.

To access the Alarm history menu, press the Alarm button and select Alarm Historic or Major Alarm Historic. The 50 most recent alarms of each type are stored in memory, and are replaced on a first-in first-out basis.

Table 90 — Alarm Reference Lists

BY NAME

ALARM NAME	CODE
Circ A - High Condensing temperature out of map compressor	Alarm 10037
Circ A - High saturated temperature out of map compressor	Alarm 10101
Circ B - High Condensing temperature out of map compressor	Alarm 10038
Circ B - High saturated temperature out of map compressor	Alarm 10102
Circuit A Compressor Motor Thermistor	Alarm 15033
Circuit A Condenser Subcooling Liquid Pressure Transducer	Alarm 12031
Circuit A Condenser Subcooling Liquid Thermistor	Alarm 15018
Circuit A Discharge Gas Thermistor	Alarm 15015
Circuit A Discharge Transducer	Alarm 12001
Circuit A Economizer Gas Thermistor	Alarm 15024
Circuit A Economizer Pressure Transducer	Alarm 12013
Circuit A High Discharge Gas Temperature	Alarm 10078
Circuit A High Oil Filter Drop Pressure	Alarm 10084
Circuit A Low Oil Level	Alarm 10075
Circuit A Low Oil Pressure	Alarm 10067
Circuit A Low Suction Temperature	Alarm 10005
Circuit A Max Oil Filter Differential Pressure	Alarm 10070
Circuit A Oil Pressure Transducer	Alarm 12010
Circuit A Suction Gas Thermistor	Alarm 15012
Circuit A Suction Transducer	Alarm 12004
Circuit A Suction Valve closed	Alarm 10081
Circuit B Compressor Motor Thermistor	Alarm 15034
Circuit B Condenser Subcooling Liquid Pressure Transducer	Alarm 12032
Circuit B Condenser Subcooling Liquid Thermistor	Alarm 15019
Circuit B Discharge Gas Thermistor	Alarm 15016
Circuit B Discharge Transducer	Alarm 12002
Circuit B Economizer Gas Thermistor	Alarm 15025
Circuit B Economizer Pressure Transducer	Alarm 12014
Circuit B High Discharge Gas Temperature	Alarm 10079
Circuit B High Oil Filter Drop Pressure	Alarm 10085
Circuit B Low Oil Level	Alarm 10076
Circuit B Low Oil Pressure	Alarm 10068
Circuit B Low Suction Temperature	Alarm 10006
Circuit B Max Oil Filter Differential Pressure	Alarm 10071
Circuit B Oil Pressure Transducer	Alarm 12011
Circuit B Suction Gas Thermistor	Alarm 15013
Circuit B Suction Transducer	Alarm 12005
Circuit B Suction Valve closed	Alarm 10082
Compressor A High Pressure Switch protection	Alarm 1103
Compressor A Motor temperature too high	Alarm 1101
Compressor B High Pressure Switch protection	Alarm 2103
Compressor B Motor temperature too high	Alarm 2101
Compressor VFD Error, Circuit A	Alarm 17nnn
Compressor VFD Error, Circuit A	Alarm 35nnn
Compressor VFD Error, Circuit B	Alarm 18nnn
Compressor VFD Error, Circuit B	Alarm 36nnn
Customer Interlock Failure	Alarm 10014
Database Module Failure	Alarm 55001
Dual Chiller Thermistor Failure	Alarm 15011
Evaporator Entering Fluid Thermistor	Alarm 15001
Evaporator Flow Switch Failure	Alarm 10091
Evaporator Freeze Protection	Alarm 10001
Evaporator Leaving Fluid Thermistor	Alarm 15002
Evaporator Pump #1 Fault	Alarm 10032
Evaporator Pump #2 Fault	Alarm 10033

Table 90 — Alarm Reference Lists (cont)

BY NAME (cont)

ALARM NAME	CODE
Fan A1 VFD Error, Circuit A	Alarm 20nnn
Fan A1 VFD Error, Circuit A	Alarm 38nnn
Fan A2 VFD Error, Circuit A	Alarm 21nnn
Fan A2 VFD Error, Circuit A	Alarm 39nnn
Fan B1 VFD Error, Circuit B	Alarm 23nnn
Fan B1 VFD Error, Circuit B	Alarm 41nnn
Fan B2 VFD Error, Circuit B	Alarm 24nnn
Fan B2 VFD Error, Circuit B	Alarm 42nnn
Illegal configuration	Alarm 7001
Lenscan module failure	Alarm 56001
Loss of Communication with Auxiliary # 1	Alarm 4501
Loss of Communication with Auxiliary # 2	Alarm 4502
Loss of Communication with Auxiliary # 3	Alarm 4503
Loss of communication with Energy Management NRCP2 Board	Alarm 4603
Loss of Communication with Fan Drive Board #4	Alarm 4704
Loss of Communication with Fan Drive Board #5	Alarm 4705
Loss of Communication with Fan Drive Board #7	Alarm 4707
Loss of Communication with Fan Drive Board #8	Alarm 4708
Loss of Communication with SIOB Board Number 1	Alarm 4901
Loss of Communication with SIOB Board Number 2	Alarm 4902
Loss of Communication with Compressor VFD Drive Board #1	Alarm 4701
Loss of Communication with Compressor VFD Drive Board #2	Alarm 4702
Main EXV stepper motor failure - Circuit A	Alarm 57020
Main EXV stepper motor failure - Circuit B	Alarm 57021
Main ECO stepper motor failure - Circuit A	Alarm 57023
Main ECO stepper motor failure - Circuit B	Alarm 57024
Master/Slave Alarms	Alarm 90nn
No Factory Configuration	Alarm 8000
OAT Thermistor Failure	Alarm 15010
Space Temperature Thermistor	Alarm 15021
Unit is in Emergency Stop	Alarm 10031
VI Solenoid Diagnostic Test Failure - Circuit A	Alarm 60001
VI Solenoid Diagnostic Test Failure - Circuit B	Alarm 61001
Water Exchanger Temperature Sensors Swap	Alarm 10097

Table 90 — Alarm Reference Lists (cont)

BY CODE

CODE	ALARM NAME
Alarm 10001	Evaporator Freeze Protection
Alarm 10005	Circuit A Low Suction Temperature
Alarm 10006	Circuit B Low Suction Temperature
Alarm 10014	Customer Interlock failure
Alarm 10031	Unit is in Emergency Stop
Alarm 10032	Evaporator Pump #1 fault
Alarm 10033	Evaporator Pump #2 fault
Alarm 10037	Circ A - High Condensing temperature out of map compressor
Alarm 10038	Circ B - High Condensing temperature out of map compressor
Alarm 10067	Circuit A Low Oil Pressure
Alarm 10068	Circuit B Low Oil Pressure
Alarm 10070	Circuit A Max Oil Filter Differential Pressure
Alarm 10071	Circuit B Max Oil Filter Differential Pressure
Alarm 10075	Circuit A Low Oil Level
Alarm 10076	Circuit B Low Oil Level
Alarm 10078	Circuit A High Discharge Gas Temperature
Alarm 10079	Circuit B High Discharge Gas Temperature
Alarm 10081	Circuit A Suction Valve closed
Alarm 10082	Circuit B Suction Valve closed
Alarm 10084	Circuit A High Oil Filter Drop Pressure
Alarm 10085	Circuit B High Oil Filter Drop Pressure
Alarm 10091	Evaporator Flow Switch Failure
Alarm 10097	Water Exchanger Temperature Sensors Swap
Alarm 10101	Circ A - High saturated temperature out of map compressor
Alarm 10102	Circ B - High saturated temperature out of map compressor
Alarm 1101	Compressor A Motor temperature too high
Alarm 1103	Compressor A High Pressure Switch protection
Alarm 12001	Circuit A Discharge Transducer
Alarm 12002	Circuit B Discharge Transducer
Alarm 12004	Circuit A Suction Transducer
Alarm 12005	Circuit B Suction Transducer
Alarm 12010	Circuit A Oil Pressure Transducer
Alarm 12011	Circuit B Oil Pressure Transducer
Alarm 12013	Circuit A Economizer Pressure Transducer
Alarm 12014	Circuit B Economizer Pressure Transducer
Alarm 12031	Circuit A Condenser Subcooling Liquid Pressure Transducer
Alarm 12032	Circuit B Condenser Subcooling Liquid Pressure Transducer
Alarm 15001	Evaporator Entering Fluid Thermistor
Alarm 15002	Evaporator Leaving Fluid Thermistor
Alarm 15010	OAT Thermistor Failure
Alarm 15011	Dual Chiller Thermistor Failure
Alarm 15012	Circuit A Suction Gas Thermistor
Alarm 15013	Circuit B Suction Gas Thermistor
Alarm 15015	Circuit A Discharge Gas Thermistor
Alarm 15016	Circuit B Discharge Gas Thermistor
Alarm 15018	Circuit A Condenser Subcooling Liquid Thermistor
Alarm 15019	Circuit B Condenser Subcooling Liquid Thermistor
Alarm 15021	Space Temperature Thermistor
Alarm 15024	Circuit A Economizer Gas Thermistor
Alarm 15025	Circuit B Economizer Gas Thermistor
Alarm 15033	Circuit A Compressor Motor Thermistor
Alarm 15034	Circuit B Compressor Motor Thermistor
Alarm 17nnn	Compressor VFD Error, Circuit A
Alarm 18nnn	Compressor VFD Error, Circuit B
Alarm 20nnn	Fan A1 VFD Error, Circuit A
Alarm 2101	Compressor B Motor temperature too high
Alarm 2103	Compressor B High Pressure Switch protection

Table 90 — Alarm Reference Lists (cont)

BY CODE (cont)

CODE	ALARM NAME
Alarm 21nnn	Fan A2 VFD Error, Circuit A
Alarm 23nnn	Fan B1 VFD Error, Circuit B
Alarm 24nnn	Fan B2 VFD Error, Circuit B
Alarm 35nnn	Compressor VFD Error, Circuit A
Alarm 36nnn	Compressor VFD Error, Circuit B
Alarm 38nnn	Fan A1 VFD Error, Circuit A
Alarm 39nnn	Fan A2 VFD Error, Circuit A
Alarm 41nnn	Fan B1 VFD Error, Circuit B
Alarm 42nnn	Fan B2 VFD Error, Circuit B
Alarm 4502	Loss of Communication with Auxiliary Board AUXA
Alarm 4503	Loss of Communication with Auxiliary Board AUXB
Alarm 4603	Loss of communication with Energy Management NRCP2 Board
Alarm 4701	Loss of Communication with VLT Drive Board #1
Alarm 4702	Loss of Communication with VLT Drive Board #2
Alarm 4704	Loss of Communication with Fan Drive Board #4
Alarm 4705	Loss of Communication with Fan Drive Board #5
Alarm 4707	Loss of Communication with Fan Drive Board #7
Alarm 4708	Loss of Communication with Fan Drive Board #8
Alarm 4901	Loss of Communication with SIOB Board Number 1
Alarm 4902	Loss of Communication with SIOB Board Number 2
Alarm 55001	Database module failure
Alarm 56001	Lenscan module failure
Alarm 57020	Main EXV stepper motor failure - Circuit A
Alarm 57021	Main EXV stepper motor failure - Circuit B
Alarm 57023	Main ECO stepper motor failure - Circuit A
Alarm 57024	Main ECO stepper motor failure - Circuit B
Alarm 60001	VI Solenoid Diagnostic Test Failure - Circuit A
Alarm 61001	VI Solenoid Diagnostic Test Failure - Circuit B
Alarm 7001	Illegal configuration
Alarm 8001	No Factory Configuration
Alarm 90nn	Master/Slave Alarms

LEGEND

ECO — Economizer
EXV — Electronic Expansion Valve
OAT — Outdoor Air Temperature
SIOB — Standard Input Output Board
VFD — Variable Frequency Drive

NOTE: For VFD alarms, “nnn” corresponds to the alarm code listed in Table 94.

Table 91 — Alarm Details by Code

ALARM CODE	ALARM NAME	CRITERIA FOR TRIP	ACTION TAKEN BY CONTROL	RESET METHOD	POSSIBLE CAUSES/CORRECTIVE ACTIONS
10001	Evaporator Freeze Protection	There are several criteria for this alarm. 1. Tested whether the unit is ON or OFF and all of the following conditions have been met: a. One of these conditions is true: i. Entering Water Temperature is less than the fluid freeze point ii. Leaving Water Temperature is less than the fluid freeze point b. All of these conditions are true: i. No communication alarms with the SIOB ii. The one (1) minute timer following power up has elapsed. 2. The unit state is Delay, Off, or Stopping and all of the following conditions have been met: a. Circuit A or Circuit B Saturated Suction Temperature is less than fluid freeze point b. One of these conditions is true: i. The evaporator heater has been on for 10 minutes or more ii. All of the following conditions must be true: 1. Evaporator heater is not installed or not configured 2. The evaporator flow switch is open 3. Entering Water Temperature is less than 46.4 °F (8 °C) or Leaving Water Temperature is less than 46.4 °F (8 °C). 3. If the evaporator heaters are commanded ON and the Cooler Heater Current Sensing Relay does not detect the appropriate current draw indicating an Evaporator Heater has failed. Brine Freeze is 34 °F (1.1 °C) if Evaporator Fluid Type [Main Menu→Configuration Menu→Service Parameters] is 1 (Water). If Evaporator Fluid Type is 2 (Medium Brine), Brine Freeze is a field configured under Brine Freeze Setpoint [Main Menu→Configuration Menu→Service Parameters]	The unit is shut down if it is running or is not allowed to start. The command for the cooler pump will remain ON.	Automatic for the first time within a 24 hours or manual if the alarm has occurred more than once in the previous 24 hours, if the following conditions are met: 1. Entering Water Temperature is greater than the fluid freeze point 2. Leaving Water Temperature is 6°F (-14°C) above the fluid set point 3. Circuit A Saturated Suction Temperature is greater than fluid freeze point 4. Circuit B Saturated Suction Temperature is greater than fluid freeze point Manual reset is required if: Leaving fluid temperature is less than fluid set point + 6°F	If this condition is encountered, check the following items: • Confirm solution and concentration and compare the value with Brine Freeze Setpoint [Main Menu→Configuration Menu→ Service Parameters] • Check for a water flow issue, short circuit or low water flow • Check to be sure there is refrigerant in each circuit • Check the accuracy of the entering and leaving water sensors • Check the accuracy of the Suction Pressure Transducer • Check Evaporator heater operation • Check Evaporator Heater Current Sensing Relay. Confirm proper settings (see Appendix H) and operation. • Check for a wiring issue for the Cooler Heater, Cooler Heater Relay (CLR HTR), and Cooler Heater Current Sensing Relay (CLR HTR CSR)
10005	Circuit A Low Suction Temperature	Tested only when the circuit is ON. The alarm will trip if one of these conditions is met: 1. If the circuit is running and SST < –22 F (–30 C) for more than 10 seconds 2. If sst < –13 F (–25 C) for 30 seconds 3. If SST < Brine Freeze Setpoint – 6 F for more than 10 minutes 4. If SST < Brine Freeze Setpoint – 6 F, if capacity is =20%(minimum load), set a timer to 3 minutes, else set it to 90 seconds. At the end of timer, if capacity is at 20% (min_load), set the alarm.	Circuit A shuts down	Automatic, first occurrence in 24 hours OR Manual, if the alarm has occurred in the previous 24 hours	If this condition is encountered, check the following items for faults: • sensor wiring to SIOB board • board for faulty channel • faulty suction transducer • evaporator water flow switch • loop volume • EXV operation / blocked • liquid line refrigerant restriction, filter drier, service valve, etc. • refrigerant charge • if the Leaving Water Set Point is above 40 F (4.4 C) and there is glycol in the loop, consider using the Medium Temperature Brine option to utilize the brine freeze setpoint instead of 34 F (1.1 C) for fresh water (Main Menu → Configuration Menu → Service Parameters → Line 1 Evaporator Fluid Type and Line 5 Brine Freeze Setpoint)
10006	Circuit B Low Suction Temperature		Circuit B shuts down		
10014	Customer Interlock Failure	Tested only if EMM option is configured. The alarm will trip if CCN variable REM_LOCK is closed, and the unit is running	Unit shuts down	Automatic, first occurrence in 24 hours OR Manual, if the alarm has occurred in the previous 24 hours	If this condition is encountered, check the following items for faults: • remote lockout switch is closed (Connection EMM-J4-CH10)
10031	Unit is in emergency stop	Tested when the unit is On and Off The alarm will trip when the CCN command for an Emergency Stop is sent across the network	Unit shuts down	Automatic after the CCN variable EMSTOP returns to normal. The unit will be normally restarted.	If this condition is encountered, check the following items for faults: • CCN Emergency Stop command
10032	Evaporator pump #1 fault	Tested only when the unit is On If the evaporator flow switch is failed after the Off to On Delay period (m_delay = Yes) while the pump is commanded to be on then, the alarm will be tripped.	The pump and the unit will be stopped.	Manual	If this condition is encountered, check the following items for faults: • interlock wiring circuit (SIOB-B J3) • control signal to pump controller (SIOB-A J2) • evaporator pump contactor for proper operation • control voltage for proper voltage • open chilled water flow switch (SIOB-A J3)
10033	Evaporator pump #2 fault				

LEGEND

CCN — Carrier Comfort Network®
ECO — Economizer
EMM — Energy Management Module
EWT — Entering Water Temperature
EXV — Electronic Expansion Valve
LEN — Local Equipment Network
LWT — Leaving Water Temperature
MOP — Maximum Operating Pressure
OAT — Outdoor Air Temperature
SIOB — Standard Input Output Board
SST — Saturated Suction Temperature
VFD — Variable Frequency Drive

Table 91 — Alarm Details by Code (cont)

ALARM CODE	ALARM NAME	CRITERIA FOR TRIP	ACTION TAKEN BY CONTROL	RESET METHOD	POSSIBLE CAUSES/CORRECTIVE ACTIONS
10037	Circ A - High Condensing temperature out of map compressor	The alarm will trip if discharge pressure (DP_A) > 304.2 psi (2097 kPa). If discharge pressure exceeds compressor envelope for more than 60 seconds, trip alarm. If SCT > 161 F (71.7 C), trip alarm.	Circuit A will be shut down immediately.	Manual	If this condition is encountered, check the following items for faults: • noncondensables in the refrigerant circuit • condenser air recirculation • proper refrigerant charge (undercharged) • EXV operation • operation beyond the limits of the machine • condenser coils for debris or restriction • condenser fans and motors for proper rotation and operation • the discharge service valves to be sure that they are open • check the discharge pressure transducer for accuracy • confirm unit configuration
10038	Circ B - High Condensing temperature out of map compressor	The alarm will trip if discharge pressure (DP_B) > 304.2 psi (2097 kPa). If discharge pressure exceeds compressor envelope for more than 60 seconds, trip alarm. If SCT > 161 F (71.7 C), trip alarm.	Circuit B will be shut down immediately.	Manual	
10067	Circuit A Low Oil Pressure	Tested only when the compressor is ON The alarm will trip if the compressor has been running for more than 60s and oil pressure is lower than the required level for more than 15s OR The alarm will trip if the oil transducer out of range for 5s (see oil transducer alarms 12010 and 12011)	Circuit A will be shut down.	Manual	If this condition is encountered, check the following items for faults: • sensor wiring to SIOB board • board for faulty channel • faulty transducer • plugged oil filter • faulty oil solenoid valve coil • stuck oil solenoid valve • confirm manual service valves are fully open • confirm unit configuration
10068	Circuit B Low Oil Pressure		Circuit B will be shut down.	Manual	
10070	Circuit A Max Oil Filter Differential Pressure	Tested when compressor is running: The alarm will trip if the differential oil pressure is greater than 50 psig for more than 30s	Circuit A will be shut down.	Manual	If this condition is encountered, check the following items for faults: • discharge and oil sensor wiring to SIOB board • boards for a faulty channel • faulty transducer • plugged oil filter • faulty oil solenoid valve • stuck oil solenoid valve • confirm manual service valve is fully open
10071	Circuit B Max Oil Filter Differential Pressure		Circuit B will be shut down.	Manual	
10075	Circuit A Low Oil Level	When the compressor is running or off. The alarm will trip if the compressor is running and the oil level switch is opened for more than 10 seconds NOTE: When the units starts the oil level switch is verified after 2 minutes.	Circuit A will be shut down.	Automatic, first or second occurrence in 24 hours OR Manual, if the alarm has occurred more than 3 times in the previous 24 hours	If this condition is encountered, check the following items for faults: • oil level in the oil separator • oil level switch wiring to the SIOB board • board for a faulty channel • faulty oil level switch • oil solenoid valve stuck open
10076	Circuit B Low Oil Level		Circuit B will be shut down.		
10078	Circuit A High Discharge Gas Temperature	Tested when compressor is running: The alarm will trip if the discharge gas temperature is higher than 210 F (98.89 C) for more than 90s OR higher than 215 F (101.6 C) for any period of time	Circuit A will be shut down	Manual	If this condition is encountered, check the following items for faults: • noncondensables in the refrigerant circuit • condenser air recirculation • proper refrigerant charge (undercharged) • EXV operation • operation beyond the limits of the machine • condenser coils for debris or restriction • condenser fans and motors for proper rotation and operation • the discharge service valves to be sure that they are open • check the discharge pressure transducer for accuracy • confirm unit configuration
10079	Circuit B High Discharge Gas Temperature		Circuit B will be shut down	Manual	
10081	Circuit A Suction Valve closed	Tested when compressor is running. The alarm will trip if economizer pressure < suction pressure -14 psi (96.52 KPa) during startup	Circuit A will be shut down	Manual	If this condition is encountered, check the following items for faults: • confirm suction service valve is fully open (if equipped) • compressor strainer for debris • sensor wiring (economizer pressure transducer and suction pressure transducer)
10082	Circuit B Suction Valve closed		Circuit B will be shut down	Manual	
10084	Circuit A High Oil Filter Drop Pressure	Tested when compressor is running. The alarm will trip if the difference between the Circuit Discharge Pressure and the Compressor Oil Pressure is greater than 30 psi (206.8 kPa) for more than 5 minutes	No action on the unit	Manual	If this condition is encountered, check the following items for faults: • sensor wiring to SIOB board (discharge pressure transducer and oil pressure transducer) • board for faulty channel • faulty transducer • plugged oil filter • faulty oil solenoid valve coil • stuck oil solenoid valve • confirm manual service valves are fully open
10085	Circuit B High Oil Filter Drop Pressure				

LEGEND

CCN — Carrier Comfort Network®
ECO — Economizer
EMM — Energy Management Module
EWT — Entering Water Temperature
EXV — Electronic Expansion Valve
LEN — Local Equipment Network
LWT — Leaving Water Temperature
MOP — Maximum Operating Pressure
OAT — Outdoor Air Temperature
SIOB — Standard Input Output Board
SST — Saturated Suction Temperature
VFD — Variable Frequency Drive

Table 91 — Alarm Details by Code (cont)

ALARM CODE	ALARM NAME	CRITERIA FOR TRIP	ACTION TAKEN BY CONTROL	RESET METHOD	POSSIBLE CAUSES/CORRECTIVE ACTIONS
10091	Evaporator Flow Switch Failure	Tested when the unit is ON: The alarm will trip if the evaporator flow switch fails to close within the Off to On Delay (m_state = On) OR if the evaporator flow switch is opened during normal operation Tested when the unit is OFF: The alarm will trip if the evaporator pump control (cpump_seq > 0) and evaporator_ pump_loc (PUMP-CONF tables) are enabled and the evaporator flow switch is closed after the evaporator pump command is OFF for more than 2 minutes OR if the evaporator flow switch fails to close within the Off to On Delay	The unit and evaporator pump will be stopped immediately.	Automatic, first occurrence in 24 hours OR Manual, if the alarm has occurred in the previous 24 hours	If this condition is encountered, check the following items for faults: • low evaporator flow • fouled flow switch sensor tip • a faulty flow switch • flow switch wiring (SIOB-A-J3) • SIOB board for a faulty channel
10097	Water Exchanger Temperature Sensors Swap	Tested only when the unit is running. The alarm will trip if the leaving water temperature is higher than the entering water temperature for more than 1 minute.	The unit will be stopped	Manual	If this condition is encountered, check the following items for faults: • check LWT (SIOB-A-J25) and EWT (SIOB-A-J25) wiring at SIOB board • check for faulty entering or leaving water temperature sensors • check evaporator nozzles for proper water temperature sensor locations
10101	Circ A - High saturated temperature out of map compressor	The alarm is tripped when saturated suction temperature exceeds a certain value for an extended period of time per the following logic: A timer tallies the elapsed minutes that saturated suction temperature is higher than MOP (62.6 F=17 C). If SST is higher than MOP + 9°F, then the timer is increased by 2 x the elapsed minutes. When saturated suction temperature is lower than MOP or the circuit is OFF, the timer is decreased by the elapsed minutes. The alarm is tripped when the timer reached a value higher than 90 minutes.	Circuit A will be shut down	Manual	If this condition is encountered, check the following items for faults: • wiring of suction temperature thermistor • accuracy of thermistor
10102	Circ B - High saturated temperature out of map compressor		Circuit B will be shut down	Manual	
1101	Compressor A Motor temperature too high	Tested when the compressor is ON or OFF. The alarm is set if compressor motor temperature CP_TMP_A > 275 F (135 C).	Circuit A will be shut down	Manual	If this condition is encountered, check the following items for faults: • faulty wiring and loose plugs • faulty SIOB board • faulty compressor temperature thermistor
1103	Compressor A High Pressure Switch protection	Tested when the compressor is ON or OFF. The alarm is set when the Safe Stop DI-37 of the compressor drive is opened (terminal 37 on the compressor VFD).	Circuit A will be shut down	Manual	If this condition is encountered, check the following items for faults: • condenser fans and motors for proper rotation and operation • compressor operating beyond the limits of the operating envelope • faulty high pressure switch or wiring (terminals 12 and 37 in VFD) • plugged/fouled condenser coil • excessive charge
12001	Circuit A Discharge Transducer	Tested when the unit is On or Off Alarm will trip if the pressure transducer reads below –7 psi (–48 kPa)	Circuit will be shut down immediately	Automatic, if transducer reading returns to normal. Affected circuit will be restarted normally.	If this condition is encountered, check the following items for faults: • sensor wiring to the SIOB board • faulty channel on the board • Sensor accuracy See the Transducer section on page 51 for sensor description and connections
12002	Circuit B Discharge Transducer				
12004	Circuit A Suction Transducer	Tested when compressor is Off Alarm will trip if the pressure transducer reading is below –7 psi (–48 kPa) or SST-EWT > 0 and unit is in cooling mode and EXV opening <40% for 60 seconds and drive speed >5 (compressor On)	Circuit will be shut down immediately	Automatic, if transducer reading returns to normal OR Manual, if the alarm has occurred 3 times within the last 24 hours.	
12005	Circuit B Suction Transducer				
12010	Circuit A Oil Pressure Transducer	Tested when the unit is On or Off Alarm will trip if pressure transducer reading is below –7 psi (–48 kPa)	Circuit will be shut down immediately	Automatic, if transducer reading returns to normal. Affected circuit will be restarted normally.	
12011	Circuit B Oil Pressure Transducer				
12013	Circuit A Economizer Pressure Transducer	Tested when the unit is On or Off Alarm will trip if pressure transducer reading is below –7 psi (–48 kPa)	Circuit will be shut down immediately	Automatic, if transducer reading returns to normal. Affected circuit will be restarted normally.	
12014	Circuit B Economizer Pressure Transducer				
12031	Circuit A Condenser Subcooling Liquid Pressure Transducer	Tested when the unit is On or Off Alarm will trip if pressure transducer reading is below –7 psi (-48 kPa)	Circuit will be shut down immediately	Automatic, if transducer reading returns to normal. Affected circuit will be restarted normally.	
12032	Circuit B Condenser Subcooling Liquid Pressure Transducer				

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MOP — Maximum Operating Pressure
OAT — Outdoor Air Temperature
SIOB — Standard Input Output Board
SST — Saturated Suction Temperature
VFD — Variable Frequency Drive

Table 91 — Alarm Details by Code (cont)

ALARM CODE	ALARM NAME	CRITERIA FOR TRIP	ACTION TAKEN BY CONTROL	RESET METHOD	POSSIBLE CAUSES/CORRECTIVE ACTIONS
15001	Evaporator Entering Fluid Thermistor	Tested when the unit is On or Off Alarm will trip if the temperature measured by the evaporator entering fluid sensor is outside the range of –40 to 302 F (–40 to 150 C)	Unit is shut down normally or not allowed to start	Automatic, if thermistor reading is inside the range of –40 to 302 F (–40 to 150 C)	If this condition is encountered, check the following items for faults: • sensor wiring to the SIOB board • faulty channel on the board • sensor accuracy See the Thermistors section on page 51 for thermistor description and connections
15002	Evaporator Leaving Fluid Thermistor	Tested when the unit is On or Off Alarm will trip if the temperature measured by the evaporator entering fluid sensor is outside the range of –40 to 302 F (–40 to 150 C)	Unit is shut down normally or not allowed to start	Automatic, if thermistor reading is inside the range of –40 to 302 F (–40 to 150 C)	
15010	OAT Thermistor Failure	Tested when the unit is On or Off Alarm will trip if the temperature measured by the OAT sensor is outside the range of -40 to 302 F (–40 to 150 C)	Unit is shut down normally or not allowed to start	Automatic, if thermistor reading is inside the range of –40 to 302 F (–40 to 150 C)	
15011	Dual Chiller Thermistor Failure	Tested when the unit is On or Off Alarm will trip if the temperature measured by the evaporator entering fluid sensor is outside the range of -40 to 302 F (–40 to 150 C)	Unit is shut down normally or not allowed to start	Automatic, if thermistor reading returns to normal	
15012	Circuit A Suction Gas Thermistor	Tested when the circuit is On or Off Alarm will trip if the circuit suction gas sensor reading is outside the range of –40 to 245 F (–40 to 118 C)	Circuit will be shut down immediately	Automatic, if thermistor reading returns to normal. Affected circuit will be restarted normally.	
15013	Circuit B Suction Gas Thermistor				
15015	Circuit A Discharge Gas Thermistor	Tested when the circuit is On or Off Alarm will trip if the discharge gas sensor reading is outside the range of –40 to 245 F (–40 to 118 C)	Circuit will be shut down immediately	Automatic, if thermistor reading returns to normal. Affected circuit will be restarted normally.	If this condition is encountered, check the following items for faults: • sensor wiring to the SIOB board • faulty channel on the board • sensor accuracy See the Thermistors section on page 51 for thermistor description and connections
15016	Circuit B Discharge Gas Thermistor				
15018	Circuit A Condenser Subcooling Liquid Thermistor	Tested when the circuit is On or Off Alarm will trip if the condenser subcooling liquid sensor reading is outside 118 range of –40 to 245 F (–40 to 116 C)	Circuit will be shut down immediately	Automatic, if thermistor reading returns to normal. Affected circuit will be restarted normally.	
15019	Circuit B Condenser Subcooling Liquid Thermistor				
15021	Space Temperature Thermistor	Tested when the circuit is On or Off Alarm will trip if the space temperature sensor reading is outside the range of –40 to 245 F (–40 to 118 C)	No action on the unit	Automatic, if thermistor reading returns to normal	
15024	Circuit A Economizer Gas Thermistor	Tested when the circuit is On or Off Alarm will trip if the sensor reading is outside the range of –40 to 302 F (–40 to 150 C)	Circuit will be shut down immediately	Automatic, if thermistor reading returns to normal	
15025	Circuit B Economizer Gas Thermistor				
15033	Circuit A Compressor Motor Thermistor	Tested when the circuit is On or Off Alarm will trip if the motor temperature sensor reading is outside the range of –40 to 302 F (–40 to 150 C)	Circuit will be shut down immediately	Automatic, if thermistor reading returns to normal. Affected circuit will be restarted normally.	
15034	Circuit B Compressor Motor Thermistor				
17nnn	Compressor VFD Error, Circuit A	Compressor VFD Circuit A fault (see VFD Alarms and Alerts section)	Circuit A will be shut down	Manual	See Table 94 for VFD Alarm/Alert Codes
18nnn	Compressor VFD Error, Circuit B	Compressor VFD Circuit B fault (see VFD Alarms and Alerts section)	Circuit B will be shut down	Manual	See Table 94 for VFD Alarm/Alert Codes
20nnn	Fan A1 VFD Error, Circuit A	Fan A1 VFD Circuit A fault (see VFD Alarms and Alerts section)	Circuit A will be shut down	Manual	See Table 94 for VFD Alarm/Alert Codes
21nnn	Fan A2 VFD Error, Circuit A	Fan A2 VFD Circuit A fault (see VFD Alarms and Alerts section)	Circuit A will be shut down	Manual	See Table 94 for VFD Alarm/Alert Codes
2101	Compressor B Motor temperature too high	Tested when the compressor is ON or OFF. The alarm is set if compressor motor temperature CP_TMP_B > 275 F (135 C).	Circuit B will be shut down	Manual	If this condition is encountered, check the following items for faults: • faulty wiring and loose plugs • faulty SIOB board • faulty compressor temperature thermistor
2103	Compressor B High Pressure Switch protection	Tested when the compressor is ON or OFF. The alarm is set when the Safe Stop DI-37 of the compressor drive is opened (terminal 37 on the compressor VFD).	Circuit B will be shut down	Manual	If this condition is encountered, check the following items for faults: • condenser fans and motors for proper rotation and operation • compressor operating beyond the limits of the operating envelope • faulty high pressure switch or wiring (terminals 12 and 37 in VFD) • plugged/fouled condenser coil • excessive charge
23nnn	Fan B1 VFD Error, Circuit B	Fan B1 VFD Circuit B fault (see VFD Alarms and Alerts section on page 135)	Circuit B will be shut down	Manual	See Table 94 for VFD Alarm/Alert Codes
24nnn	Fan B2 VFD Error, Circuit B	Fan B2 VFD Circuit B fault (see VFD Alarms and Alerts section on page 135)	Circuit B will be shut down	Manual	See Table 94 for VFD Alarm/Alert Codes
35nnn	Compressor VFD Error, Circuit A	Compressor VFD Circuit A fault (see VFD Alarms and Alerts section on page 135)	No action unless subcode = 013: over current 204: locked rotor in which case circuit will shut down	Automatic; reset is manual for subcode 013 and 204	See Table 94 for VFD Alarm/Alert Codes

LEGEND

CCN — Carrier Comfort Network®
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LWT — Leaving Water Temperature
MOP — Maximum Operating Pressure
OAT — Outdoor Air Temperature
SIOB — Standard Input Output Board
SST — Saturated Suction Temperature
VFD — Variable Frequency Drive

Table 91 — Alarm Details by Code (cont)

ALARM CODE	ALARM NAME	CRITERIA FOR TRIP	ACTION TAKEN BY CONTROL	RESET METHOD	POSSIBLE CAUSES/CORRECTIVE ACTIONS
36nnn	Compressor VFD Error, Circuit B	Compressor VFD Circuit B fault (see VFD Alarms and Alerts section on page 135)	No action unless subcode = 013: over current 204: locked rotor in which case circuit will shut down	Automatic; reset is manual for subcode 013 and 204	See Table 94 for VFD Alarm/Alert Codes
38nnn	Fan A1 VFD Error, Circuit A	Fan A1 VFD Circuit A fault (see VFD Alarms and Alerts section on page 135)	No action unless subcode = 013: over current 204: locked rotor in which case circuit will shut down	Automatic; reset is manual for subcode 013 and 204	See Table 94 for VFD Alarm/Alert Codes
38203	Fan A1 VFD Error, Circuit A	The Variable Frequency Drive (VFD) has detected a missing motor and generated a W203 Missing Motor Warning. Motor curve parameters are loaded to the fan VFD from the unit controls so that a motor current can be determined. If the current measured does not correspond to the motor curve amp draw for the given speed. The unit controls will not generate the alert until one of the following conditions is met: 1. The Outdoor Ambient Temperature is equal to or greater than 50 F (10 C) and the VFD reports the W203 Missing Motor Warning for at least 30 seconds 2. The Outdoor Ambient Temperature is less than 50 F (10 C) and the VFD reports the W203 Missing Motor Warning for at least 5 minutes	None; warning only	Automatic	Check motor connections to the VFD; check harness connections to the mother; confirm unit configuration
39nnn	Fan A2 VFD Error, Circuit A	Fan A2 VFD Circuit A fault (see VFD Alarms and Alerts section on page 135)	No action unless subcode = 013: over current 204: locked rotor in which case circuit will shut down	Automatic; reset is manual for subcode 013 and 204	See Table 94 for VFD Alarm/Alert Codes
39203	Fan A2 VFD Error, Circuit A	The Variable Frequency Drive (VFD) has detected a missing motor and generated a W203 Missing Motor Warning. Motor curve parameters are loaded to the fan VFD from the unit controls so that a motor current can be determined. If the current measured does not correspond to the motor curve amp draw for the given speed. The unit controls will not generate the alert until one of the following conditions is met: 1. The Outdoor Ambient Temperature is equal to or greater than 50 F (10 C) and the VFD reports the W203 Missing Motor Warning for at least 30 seconds 2. The Outdoor Ambient Temperature is less than 50 F (10 C) and the VFD reports the W203 Missing Motor Warning for at least 5 minutes	None; warning only	Automatic	Check motor connections to the VFD; check harness connections to the mother; confirm unit configuration
41nnn	Fan B1 VFD Error, Circuit B	Fan B1 VFD Circuit B fault (see VFD Alarms and Alerts section on page 135)	No action unless subcode = 013: over current 204: locked rotor in which case circuit will shut down	Automatic; reset is manual for subcode 013 and 204	See Table 94 for VFD Alarm/Alert Codes

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Table 91 — Alarm Details by Code (cont)

ALARM CODE	ALARM NAME	CRITERIA FOR TRIP	ACTION TAKEN BY CONTROL	RESET METHOD	POSSIBLE CAUSES/CORRECTIVE ACTIONS
41203	Fan B1 VFD Error, Circuit B	The Variable Frequency Drive (VFD) has detected a missing motor and generated a W203 Missing Motor Warning. Motor curve parameters are loaded to the fan VFD from the unit controls so that a motor current can be determined. If the current measured does not correspond to the motor curve amp draw for the given speed. The unit controls will not generate the alert until one of the following conditions is met: 1. The Outdoor Ambient Temperature is equal to or greater than 50 F (10 C) and the VFD reports the W203 Missing Motor Warning for at least 30 seconds 2. The Outdoor Ambient Temperature is less than 50 F (10 C) and the VFD reports the W203 Missing Motor Warning for at least 5 minutes	None; warning only	Automatic	Check motor connections to the VFD; check harness connections to the mother; confirm unit configuration
42nnn	Fan B2 VFD Error, Circuit B	Fan B2 VFD Circuit B fault (see VFD Alarms and Alerts section on page 135)	No action unless subcode = 013: over current 204: locked rotor in which case circuit will shut down	Automatic; reset is manual for subcode 013 and 204	See Table 94 for VFD Alarm/Alert Codes
42203	Fan B2 VFD Error, Circuit B	The Variable Frequency Drive (VFD) has detected a missing motor and generated a W203 Missing Motor Warning. Motor curve parameters are loaded to the fan VFD from the unit controls so that a motor current can be determined. If the current measured does not correspond to the motor curve amp draw for the given speed. The unit controls will not generate the alert until one of the following conditions is met: 1. The Outdoor Ambient Temperature is equal to or greater than 50 F (10 C) and the VFD reports the W203 Missing Motor Warning for at least 30 seconds 2. The Outdoor Ambient Temperature is less than 50 F (10 C) and the VFD reports the W203 Missing Motor Warning for at least 5 minutes	None; warning only	Automatic	Check motor connections to the VFD; check harness connections to the mother; confirm unit configuration
4502	Loss of Communication with Auxiliary Board A	Alarm will trip if communication with AUX Board A is lost	Circuit A will be shut down immediately	Automatic when the communication is reestablished	If this condition is encountered, check the following items for faults: • power supply to the Aux board • local equipment network (LEN) wiring
4503	Loss of Communication with Auxiliary Board B	Alarm will trip if communication with AUX Board B is lost	Circuit B will be shut down immediately	Automatic when the communication is reestablished	
4603	Loss of communication with Energy Management NRCP2 Board	Alarm will trip if communication with Energy Management Module (EMM) Board is lost	No action on the unit, EMM functions will not operate	Automatic when the communication is reestablished	If this condition is encountered, check the following items for faults: • the EMM is installed (Main Menu → Configuration Menu → Factory Parameters → Line 6 Energy Management Module = Yes) • power supply to EMM • address of the EMM • local equipment network (LEN) wiring If no EMM board is installed: • confirm unit configuration to be sure that no options requiring EMM are selected
4701	Loss of Communication with VLT Drive Board #1	Alarm will trip if communication with Circuit A Compressor VFD is lost	Circuit A will be shut down immediately	Automatic when the communication is reestablished	If this condition is encountered, check the following items for faults: • power supply to the compressor or fan drive board • local equipment network (LEN) wiring • check VFD parameters against list • check VFD address
4702	Loss of Communication with VLT Drive Board #2	Alarm will trip if communication with Circuit B Compressor VFD is lost	Circuit B will be shut down immediately	Automatic when the communication is reestablished	
4704	Loss of Communication with Fan Drive Board #4	Alarm will trip if communication with Circuit A Fan A1 VFD is lost	Circuit A will be shut down immediately	Automatic when the communication is reestablished	
4705	Loss of Communication with Fan Drive Board #5	Alarm will trip if communication with Circuit A Fan A2 VFD is lost	Circuit A will be shut down immediately	Automatic when the communication is reestablished	
4707	Loss of Communication with Fan Drive Board #7	Alarm will trip if communication with Circuit B Fan B1 VFD is lost	Circuit B will be shut down immediately	Automatic when the communication is reestablished	
4708	Loss of Communication with Fan Drive Board #8	Alarm will trip if communication with Circuit B Fan B2 VFD is lost	Circuit B will be shut down immediately	Automatic when the communication is reestablished	

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Table 91 — Alarm Details by Code (cont)

ALARM CODE	ALARM NAME	CRITERIA FOR TRIP	ACTION TAKEN BY CONTROL	RESET METHOD	POSSIBLE CAUSES/CORRECTIVE ACTIONS
4901	Loss of Communication with SIOB Board A	Alarm will trip if communication with SIOB-A Board is lost	Unit will be stopped immediately	Automatic when the communication is reestablished	If this condition is encountered, check the following items for faults: • power supply to the SIOB board • local equipment network (LEN) wiring • confirm unit configuration • check board addressing DIP switches
4902	Loss of Communication with SIOB Board B	Alarm will trip if communication with SIOB-B Board is lost	Circuit B will be shut down immediately	Automatic when the communication is reestablished	
55001	Database module failure	Tested when the unit is ON or OFF. If database module returns an error alarm will be tripped	Unit will be stopped	Automatic	Software malfunction. Power cycle the display.
56001	Lenscan module failure	Tested when the unit is ON or OFF. If lenscan module returns an error alarm will be tripped	Unit will be stopped	Automatic	Software malfunction. Power cycle the display.
57020	Main EXV stepper motor failure - Circuit A	Criteria For Trip Tested when unit is ON or OFF. If the SIOB board detects an EXV motor is not in the commanded position, the alarm is set	Circuit A shall be stopped	Manual	• Check EXV connections on SIOB • Check connection on EXV
57021	Main EXV stepper motor failure - Circuit B	Criteria For Trip Tested when unit is ON or OFF. If the SIOB board detects an EXV motor is not in the commanded position, the alarm is set	Circuit B shall be stopped	Manual	• Check EXV connections on SIOB • Check connection on EXV
57023	Main ECO stepper motor failure - Circuit A	Criteria For Trip Tested when unit is ON or OFF. If the SIOB board detects an ECO EXV motor is not in the commanded position, the alarm is set	Circuit A shall be stopped	Manual	• Check ECO EXV connections on SIOB • Check connection on ECO EXV
57024	Main ECO stepper motor failure - Circuit B	Criteria For Trip Tested when unit is ON or OFF. If the SIOB board detects an ECO EXV motor is not in the commanded position, the alarm is set	Circuit B shall be stopped	Manual	• Check ECO EXV connections on SIOB • Check connection on ECO EXV
60001	VI Solenoid Diagnostic Test Failure - Circuit A	Tested when unit is ON.VI is cycled from ON to OFF and VFD power is measured. If power delta between ON/OFF of the VI solenoid does not exceed the value in SERVICE1_VIPwrChk then this alarm is set.	Alert Only	Manual	• Check VI solenoid for proper operation
61001	VI Solenoid Diagnostic Test Failure - Circuit B	Tested when unit is ON.VI is cycled from ON to OFF and VFD power is measured. If power delta between ON/OFF of the VI solenoid does not exceed the value in SERVICE1_VIPwrChk then this alarm is set.	Alert Only	Manual	• Check VI solenoid for proper operation
7001	Illegal configuration	The alarm will be generated if one of these conditions is met: 1. Unit Capacity (Main Menu → Configuration Menu → Factory Parameters) is set to 0 or something other than 140, 160, 180, 200, 225, 250, 275, 300, 325, 350, 400, 450, or 500. 2. Power Supply Voltage (Main Menu → Configuration Menu → Factory Parameters) is set to something other than 200, 380, 460, or 575. 3. Low Ambient Option (STD) (Main Menu → Configuration Menu → Factory Parameters) is 1 (YES) on a mid or high tier unit (10th position of model number is “M” or “H”). 4. Low Ambient Option (STD) (Main Menu → Configuration Menu → Factory Parameters) is 1 (YES) on a 30XV140 standard tier unit (10th position of model number is “S”). 5. DX Evaporator Installed (Main Menu → Configuration Menu → Factory Parameters) is 1 (YES) for 30XV350, 30XV400, 30XV450, or 30XV500.	Unit is not allowed to start	Automatic when configured correctly	If this condition is encountered, confirm unit configuration
8001	No Factory Configuration	The alarm will be generated if the Unit Capacity (Main Menu → Configuration Menu → Factory Parameters) is missing.	Unit is not allowed to start	Automatic when configured correctly	If this condition is encountered, confirm unit configuration
90nn	Master/Slave Alarms	Tested when the unit is On and Off. The alarm from 9001 to 9016 will be tripped if the unit is in Master or Slave operating type and a master/slave configuration error (ms_error) is detected. See Table 92 for alarm descriptions.	Master/Slave functions are deactivated. Both chillers will operate as standalone units.	Automatic when the master/slave configuration returns to normal or if the unit is no longer in Master operating type	If this condition is encountered, check the following items for faults: • CCN wiring • control power to each SIOB board, master and slave • confirm correct configuration

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SIOB — Standard Input Output Board
SST — Saturated Suction Temperature
VFD — Variable Frequency Drive

Table 92 — Master/Slave Alarm Codes

ALARM CODE	ALARM DESCRIPTION
9001	Lag_pump control is selected while pump configuration is disabled
9002	Master and Slave have the same address
9003	No Slave configured
9004	Slave Lag_pump is selected while slave pump configuration is disabled
9005	Master and Slave will have the same water control type
9006	Master and Slave will have the same water control type
9007	Master lag pump control is configured
9008	Master lag pump control is not configured
9009	The slave demand_limit or chil_s_s or control point or setpoint is forced with force < 4 (chilstat == 3 updated by fsm_sub(), set M_MSTSLV maintenance table master slave error = 4 and slave_enable to FALSE and UNIT NOT FAILED)
9010	The slave demand_limit or chil_s_s or control point or setpoint is forced with force < 4 (chilstat == 3 updated by fsm_sub(), set M_MSTSLV maintenance table master slave error = 4 and slave_enable to FALSE and UNIT FAILED)
9011	Unit is not in CCN mode
9012	Communication between Master and Slave has been lost for more than 2 minutes
9013	Master and Slave Heat/Cool selection conflict
9014	Master and Slave parallel and series selection conflict
9015	Master and Slave EWT option in conflict with chiller in series
9016	Slave EWT option in conflict with chiller in series

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CCN — Carrier Comfort Network®
EWT — Entering Water Temperature

VFD ALARMS AND ALERTS — Alarms and alerts associated with the VFD function follow a different naming convention than general unit faults. These alarms and alerts can be viewed and reset following the procedures outlined in the sections Current Alarms and Resetting Alarms on page 123. Table 93 lists the VFD alarm and alert naming conventions, while Table 94 lists the Danfoss codes associated with the alarms and alerts. These represent the most common alarms and alerts associated with VFD malfunction. Refer to the appropriate Danfoss documentation for more information on other alarms.

Table 93 — VFD Alarm/Alert Naming Conventions

VFD ALARMS AND ALERTS	ALARM FORMAT*	ALERT FORMAT*
Compressor A	17nnn	35nnn
Compressor B	18nnn	36nnn
Fan A1	20nnn	38nnn
Fan A2	21nnn	39nnn
Fan B1	23nnn	41nnn
Fan B2	24nnn	42nnn

* The Danfoss Alarm/Alert code is represented by nnn. See Table 94.

Table 94 — VFD Alarm/Alert Codes

ALARM/ALERT CODE	DESCRIPTION	ACTION TO BE TAKEN
001	10 V low	Contact Carrier Service
002	Live zero error	Contact Carrier Service
003	No motor	Check the motor connections
004	Mains phase loss	Check the VFD supply voltage and phase balance (±3%)
005	DC link voltage high	Check the VFD supply voltage and phase balance (±3%)
006	DC link voltage low	Check the VFD supply voltage and phase balance (±3%)
007	DC overvoltage	Contact Carrier Service
008	DC Undervoltage	Confirm supply voltage matches VFD nameplate voltage; Contact Carrier Service
009	Inverter overload	Check the VFD output current/compressor current
010	Motor overtemperature	Check parameter 1-90 and confirm setting is [0]; check motor temperature; Contact Carrier Service
011	Motor thermistor	Check parameter 1-90 and confirm setting is [0]; check motor temperature; Contact Carrier Service
012	Torque limit exceeded	Check the VFD output current/compressor current; Contact Carrier Service
013	Overcurrent	Check VFD output current/compressor current; Confirm the motor size matches the VFD nameplate; check parameters 1-20 and 1-25 for correct motor data; Contact Carrier Service
014	Earth fault	Check if an earth fault exists
016	Motor short-circuit	Check motor and motor wiring for short-circuit
017	Serial communication timeout	Check the connections; shielding and termination resistors on the communication wiring
023	Internal fan fault	Check for proper fan operation; cycle power to the VFD and confirm that fan operates at start-up
025	Brake resistor short-circuited	Contact Carrier Service
026	Brake resistor power limit	Contact Carrier Service
028	Brake verification	Contact Carrier Service
029	VFD temperature too high	Ambient temperature too high; VFD ventilation fans not working or obstructed
030	Motor phase U missing	Check wiring of phase U
031	Motor phase V missing	Check wiring of phase V
032	Motor phase W missing	Check wiring of phase W
033	Inrush fault	Current demand too high; too many startup attempts in short period of time; allow VFD to cool for 20 minutes before attempting another start-up
034	Fieldbus communication fault	Check the connections; shielding and termination resistors on the communication wiring
036	Mains failure	Check the VFD supply voltage; fuses and the phase balance (±3%)
038	Internal fault	Contact Carrier Service
047	24 V supply low	Contact Carrier Service
048	1.8 V supply low	Contact Carrier Service
049	Motor speed limit exceeded	Contact Carrier Service
057	AMA timeout	Contact Carrier Service
059	Current limit exceeded	Check the VFD output current/compressor current
062	Output frequency at maximum limit	VFD is running at maximum frequency limit set in parameter 4-19
064	Voltage limit	Supply voltage too low
065	Control card overtemperature	Check the ambient temperature; check the VFD fan for proper operation; check for clogged filters (where applicable)
066	Heat sink temperature low	Ambient temperature too low for VFD to operate
067	Option configuration has changed	Contact Carrier Service
068	Emergency stop	Contact Carrier Service
071	PTC1 emergency stop	Contact Carrier Service
072	Emergency stop	Contact Carrier Service
080	Drive initialized to default value	Contact Carrier Service
090	Encoder loss	Contact Carrier Service
094	End of curve	Contact Carrier Service
095	Torque loss	Contact Carrier Service
096	Start delayed	Contact Carrier Service
097	Stop delayed	Contact Carrier Service
098	Clock fault	Contact Carrier Service
203	VFD error	Check motor connections to the VFD; check harness connections to the mother; confirm unit configuration
204	Locked rotor	Contact Carrier Service
243	IGBT defective	Contact Carrier Service
247	Capacity board temperature	Contact Carrier Service
251	New parts detached	Contact Carrier Service

LEGEND

AMA — Automatic Motor Adaptation
IGBT — Insulated Gate Bipolar Transistor
PTC — Positive Temperature Coefficient
VFD — Variable Frequency Drive

Table 95 — VFD Alerts

ALERT CODE	DESCRIPTION	ACTION TO BE TAKEN
001	10 V low	Contact Carrier Service
002	Live zero error	Contact Carrier Service
003	No motor	Check the motor connections
004	Mains phase loss	Check the VFD supply voltage and phase balance (±3%)
005	DC link voltage high	Check the VFD supply voltage and phase balance (±3%)
006	DC link voltage low	Check the VFD supply voltage and phase balance (±3%)
007	DC overvoltage	Contact Carrier Service
008	DC undervoltage	Contact Carrier Service
009	Inverter overload	Check the VFD output current/compressor current
010	Motor overtemperature	Check parameter 1-90 and confirm setting is [0], check motor temperature, Contact Carrier Service
011	Motor thermistor	Check parameter 1-90 and confirm setting is [0], check motor temperature, Contact Carrier Service
012	Torque limit exceeded	Check the VFD output current/compressor current, Contact Carrier Service
013	Overcurrent	Check VFD output current/compressor current, Confirm the motor size matches the VFD nameplate, check parameters 1-20 and 1-25 for correct motor data, Contact Carrier Service
014	Earth fault	Check if an earth fault exists
017	Serial communication timeout	Check the connections, shielding and termination resistors on the communication wiring
023	Internal fan fault	Check for proper fan operation, cycle power to the VFD and confirm that fan operates at startup
025	Brake resistor short-circuited	Contact Carrier Service
026	Brake resistor power limit	Contact Carrier Service
028	Brake verification	Contact Carrier Service
034	Fieldbus communication fault	Check the connections, shielding and termination resistors on the communication wiring
036	Mains failure	Check the VFD supply voltage, fuses and the phase balance (±3%)
047	24 V supply low	Contact Carrier Service
049	Motor speed limit exceeded	Contact Carrier Service
059	Current limit exceeded	Check the VFD output current/compressor current
062	Output frequency at maximum limit	VFD is running at maximum frequency limit set in parameter 4-19
064	Voltage limit	Supply voltage too low
065	Control card overtemperature	Check the ambient temperature, check the VFD fan for proper operation, check for clogged filters (where applicable)
066	Heat sink temperature low	Ambient temperature too low for VFD to operate
071	PTC1 emergency stop	Contact Carrier Service
072	Emergency stop	Contact Carrier Service
090	Encoder loss	Contact Carrier Service
094	End of curve	Contact Carrier Service
095	Torque loss	Contact Carrier Service
096	Start delayed	Contact Carrier Service
097	Stop delayed	Contact Carrier Service
098	Clock fault	Contact Carrier Service
243	IGBT defective	Contact Carrier Service
247	Capacity board temperature	Contact Carrier Service

Troubleshooting — The Touch Pilot™ software offers several tools to assist with troubleshooting unit issues.

BLACK BOX FUNCTION — The control system is equipped with a "black box" function that continuously stores operating parameters in the onboard memory every 5 seconds. For each alarm event that is triggered, the system collects up to 180 records (15 minutes) of data, with approximately 14 minutes of data recorded before the alarm is triggered and 1 minute of data after. The black box function is capable of storing 20 events of data on a rotating basis (first in first out). After all records for an event are stored, a .csv file is generated. This file can be accessed by using Carrier's S-Service or HVAC Service software and opened in a spreadsheet program such as Microsoft Excel for analysis. Table 96 shows the operating parameters that are recorded by the black box function. Table 97 shows a list of alarms that can be collected by the black box function. In order to retrieve the black box data, the HTTP server must be enabled (Main Menu → Configuration Menu→ Service Parameters). After enabling HTTP server, a power cycle of the Touch Pilot display is required.

Table 96 — Black Box Function Recorded Parameters

DESCRIPTION	POINT NAME
Capacity Running Circuit A	cap_pc_a
Capacity Running Circuit B	cap_pc_b
Capacity Control State A	capmoda
Capacity Control State B	capmodb
Compressor Temperature A	CP_TMP_A
Compressor Temperature B	CP_TMP_B
Control Point	CTRL_PNT
Evaporator Entering Temperature	COOL_EWT
Evaporator Leaving Temperature	COOL_LWT
Evaporator Flow switch #1	FLOW_SW
Evaporator Flow switch #2	FLOW_SWB
Demand limit	dem_lim
Discharge Gas Temperature A	DGT_A
Discharge Gas Temperature B	DGT_B
Discharge Superheat Temperature A	DSH_A
Discharge Superheat Temperature B	DSH_B
Drive Frequency A	drv_F_a
Drive Frequency B	drv_F_b
Drive Frequency A	drv_I_a
Drive Frequency B	drv_I_b
EXV Override A	ov_exv_a
EXV Override B	ov_exv_b
EXV Position A	EXV_A
EXV Position B	EXV_B
EXV State A	exv_sta
EXV State B	exv_stb
Fan Contactor 1, Circuit A	FCA1
Fan Contactor 2, Circuit A	FCA2
Fan Contactor 3, Circuit A	FCA3
Fan Contactor 4, Circuit A	FCA4
Fan Contactor 5, Circuit A	FCA5
Fan Contactor 6, Circuit A	FCA6
Fan Contactor 7, Circuit A	FCA7
Fan Contactor 8, Circuit A	FCA8
Fan Contactor 1, Circuit B	FCB1
Fan Contactor 2, Circuit B	FCB2
Fan Contactor 3, Circuit B	FCB3
Fan Contactor 4, Circuit B	FCB4
Fan Contactor 5, Circuit B	FCB5
Fan Contactor 6, Circuit B	FCB6
Fan Contactor 7, Circuit B	FCB7
Fan Contactor 8, Circuit B	FCB8
Fan Drive Frequency A1	fd_Fa1
Fan Drive Frequency A2	fd_Fa2
Fan Drive Frequency B1	fd_Fb1
Fan Drive Frequency B2	fd_Fb2
Fan Freq Cir A	wfan_f_a
Fan Freq Cir B	wfan_f_b
Fan State A	fan_sta
Fan State B	fan_stb
Liquid Gas Temperature A	LIQ_T_A
Liquid Gas Temperature B	LIQ_T_B
Oil Pressure Circuit A	OP_A
Oil Pressure Circuit B	OP_B
Outdoor Air Temperature	OAT
Override Capacity A	overrida
Override Capacity B	overridb
Saturated Condensing Temperature A	SCT_A
Saturated Condensing Temperature B	SCT_B
Saturated Suction Temperature A	SST_A
Saturated Suction Temperature B	SST_B
Saturated Liquid Temperature A	SLT_A
Saturated Liquid Temperature B	SLT_B
Suction Temperature A	SUCT_A
Suction Temperature B	SUCT_B

LEGEND

A — Circuit A
B — Circuit B
EXV — Electronic Expansion Valve

Table 97 — Black Box Function Alarms Collected

ALARM CODE	ALARM TEXT DESCRIPTION AND CCN MESSAGE
10001	Evaporator Freeze Protection
10005	Circuit A Low Suction Temperature
10006	Circuit B Low Suction Temperature
10014	Customer Interlock Failure
10030	Master
10032	Evaporator Pump #1 Fault
10033	Evaporator Pump #2 Fault
10037	Circ A - High condensing temperature out of map compressor
10038	Circ B - High condensing temperature out of map compressor
10050	Refrigerant Leakage Detection
10067	Circuit A Low Oil Pressure
10068	Circuit B Low Oil Pressure
10070	Circuit A Max Oil Filter Differential Pressure
10071	Circuit B Max Oil Filter Differential Pressure
10075	Circuit A Low Oil level
10076	Circuit B Low Oil level
10078	Circuit A High Discharge Gas Temperature
10079	Circuit B High Discharge Gas Temperature
10081	Circuit A Low economizer pressure or suction valve closed
10082	Circuit B Low economizer pressure or suction valve closed
10084	Circuit A High Oil Filter Pressure Drop
10085	Circuit B High Oil Filter Pressure Drop
10091	Evaporator Flow Switch Failure
10097	Water Exchanger Temperature Sensors Swapped
10101	Circuit A - saturated suction Temperature out of compressor map
10102	Circuit B - saturated suction Temperature out of compressor map
1101	Compressor A Motor temperature too high
1103	Compressor A High Pressure Switch protection
12004	Circuit A Suction Transducer
12005	Circuit B Suction Transducer
17001	Circuit A Compressor VFD Failure
18001	Circuit B Compressor VFD Failure
2101	Compressor B Motor temperature too high
2103	Compressor B High Pressure Switch protection
20001	Circuit A Fan VFD 1 Failure
21001	Circuit A Fan VFD 2 Failure
22001	Circuit A Fan VFD 3 Failure
23001	Circuit B Fan VFD 1 Failure
24001	Circuit B Fan VFD 2 Failure
25001	Circuit B Fan VFD 3 Failure
35001	Circuit A Compressor VFD Warning
36001	Circuit B Compressor VFD Warning
38001	Circuit A Fan VFD 1 Warning
39001	Circuit A Fan VFD 2 Warning
40001	Circuit A Fan VFD 3 Warning
41001	Circuit B Fan VFD 1 Warning
42001	Circuit B Fan VFD 2 Warning
43001	Circuit B Fan VFD 3 Warning
55001	Database module Failure
56001	Lenscan module Failure
57020	Main EXV stepper motor Failure - cir A
57021	Main EXV stepper motor Failure - cir B
57023	EXV eco stepper motor Failure - cir A
57024	EXV eco stepper motor Failure - cir B
60001	VI Solenoid Diagnostic Test Failure - cir A
61001	VI Solenoid Diagnostic Test Failure - cir B

LEGEND

EXV — Electronic Expansion Valve
VFD — Variable Frequency Drive

TROUBLESHOOTING GUIDE — Table 98 shows potential unit issues and possible solutions. This table is meant only as a guide, and is not exhaustive in issues or solutions.

Table 98 — Troubleshooting

SYMPTOM	POSSIBLE CAUSE	POSSIBLE REMEDY
Unit Does Not Run	Check for power to unit	• Check overcurrent protection device. • Check non-fused disconnect (if equipped). • Restore power to unit. • Check Active Capacity Override, CAPA_override.
	Wrong or incorrect unit configuration	Check unit configuration.
	Active alarm	Check Alarm status. See the Alarms and Alerts section and follow troubleshooting instructions.
	Active operating mode	Check for Operating Modes. See the Operating Modes section and follow troubleshooting instructions.
	High pressure switch (HPS) open	• Recheck high pressure switch. • Check HPS wiring in compressor VFD.
	VFD Enable	• Check VFD enable output from SIOB board J6-DO04 for 24VAC. • Check wiring in compressor VFD at terminals 13 and 27.
Unit Operates Too Long or Continuously	Low refrigerant charge	Check for leak and add refrigerant.
	Air in chilled water loop	Purge water loop.
	Non-condensables in refrigerant circuit	Remove refrigerant and recharge.
	Inoperative EXV	• Check EXV, clean or replace. • Check EXV cable, replace if necessary. • Check EXV board for output signal.
	Load too high	Unit may be undersized for application.
Circuit Does Not Run	Active alarm	Check Alarm status. See the Alarms and Alerts section and follow troubleshooting instructions. Check Active Capacity Override, CAPA_override.
	Active operating mode	Check for Operating Modes. See the Operating Modes section and follow troubleshooting instructions.Check Active Capacity Override, CAPA_override.
Circuit Does Not Load	Active alarm	Check Alarm status. See the Alarms and Alerts section and follow troubleshooting instructions.
	Active operating mode	Check for Operating Modes. See the Operating Modes section and follow troubleshooting instructions.
	Low saturated suction temperature	See Capacity Control Overrides #23 and #24.
	High circuit suction superheat	The circuit capacity is not allowed to increase if circuit superheat is greater than 36° F (20° C). • Check for faulty suction transducer or wiring. • Check for restriction in liquid line (filter drier, service valve, etc.). • Check EXV operation. • Check for proper refrigerant charge.
	Low suction superheat	The circuit capacity is not allowed to increase if circuit superheat is less than 18° F (10° C). • Check for faulty suction transducer or wiring. • Check for restriction in liquid line (filter drier, service valve, etc.). • Check EXV operation. • Check for proper refrigerant charge.
	Low discharge superheat	The circuit is not allowed to increase if discharge superheat is below 16.2 F (–8.8 C). • Check for faulty suction transducer or wiring. • Check for restriction in liquid line (filter drier, service valve, etc.). • Check EXV operation. • Check for proper refrigerant charge.
Compressor or Fans Do Not Run	Active alarm	Check Alarm status. See the Alarms and Alerts section and follow troubleshooting instructions.
	Active operating mode	Check for Operating Modes. See the Operating Modes section and follow troubleshooting instructions.
	VFD fuses blown	Check compressor and fan VFD fuses and replace if necessary
Chilled Water Pump is ON, but the Machine is OFF	Evaporator freeze protection	Chilled water loop temperature too low. Check evaporator heater.

LEGEND

EXV — Electronic Expansion Valve
HPS — High Pressure Switch
VFD — Variable Frequency Drive

Electrical Schematics — Control and power schematics for 30XV units with Greenspeed® intelligence are shown in Figs. 76-89.

Quick Test (Service Test) — Main power and control circuit power must be on for Quick Test. The Touch Pilot™ Quick Test function is used to verify proper operation of various devices within the chiller, such as condenser fans, automated isolation valves, EXVs, and remote alarm relays. This is helpful during the start-up procedure to determine if devices are installed correctly.

To use the Quick Test mode, the unit must be in the local OFF mode. To reach the Quick Test menu, follow the path: Main Menu → Quick Test Table. The unit must be in Local Off mode to adjust parameters in the table. The Quick Test function is not available remotely, and can only be used from the Touch Pilot display. See the Start-Up Checklist at the end of this document, page CL-6, for a list of the parameters in the Quick Test Table.

Example: Test the function of the Ckt A condenser fans

- Power must be applied to the unit. The Enable/Off/Remote Contact switch must be in the OFF position.
- Press the Start/Stop button and ensure the unit is in Local Off.
- Navigate to the Quick Test table and set line 2 Quick Test Enable to Enable.
- Set line 12, VariFan Speed A, to 100%, then select the Force icon to accept the entry. Confirm all fans are running.

Test component function by turning the item values from OFF to ON or adjusting the actuated percentage. These discrete outputs are then turned off if there is no keypad activity for 10 minutes. See Fig. 91 and 90 for component arrangement diagrams.

NOTE: There may be up to a one-minute delay before the selected item is energized.

LEGEND FOR FIG. 76-89

ALM	—	Alarm
AUX	—	Auxiliary
ALT	—	Alert
CB	—	Circuit Breaker
CLR	—	Evaporator
COMPR	—	Compressor
CSR	—	Current Sensing Relay
CWFS	—	Chilled Water Flow Switch
DGT	—	Discharge Gas Temperature
DPT	—	Discharge Pressure and Temperature
ECTA	—	Economizer A Temp
ECTB	—	Economizer B Temp
EMM	—	Energy Management Module
EPT	—	Economizer Pressure Transducer
EXV	—	Electronic Expansion Valve
FIOP	—	Factory-Installed Option
FM	—	Fan Motor
FU	—	Fuse
GFI-CO	—	Ground Fault Interrupter - Convenience Outlet
GND	—	Ground
HPS	—	High-Pressure Switch
HTR	—	Heater
LIQ	—	Liquid
NEC	—	National Electrical Code
OPT	—	Oil Pressure Transducer
PMP	—	Pump
SGT	—	Suction Gas Temperature
SHD	—	Loadshed
SIOB	—	Standard Input/Output Board
SPT	—	Space Temperature
TB	—	Terminal Block
TRAN	—	Transformer
VFD	—	Variable Frequency Drive
UPC	—	Universal Protocol Converter
XL	—	Across the Line

NOTES:

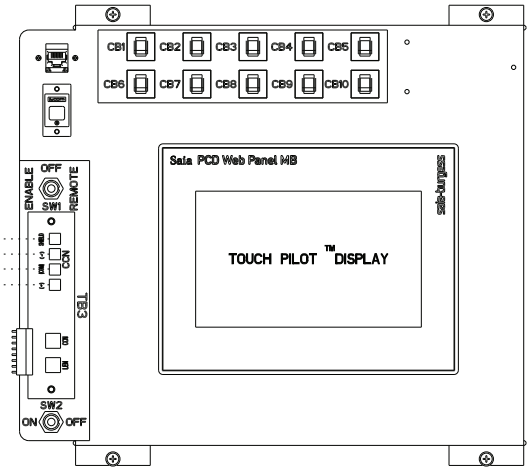
1. FACTORY WIRING IS IN ACCORDANCE WITH UL 1995 STANDARDS. FIELD MODIFICATIONS OR ADDITIONS MUST BE IN COMPLIANCE WITH ALL APPLICABLE CODES.
2. WIRING FOR MAIN FIELD SUPPLY MUST BE RATED 75C MINIMUM. USE COPPER FOR ALL UNITS.

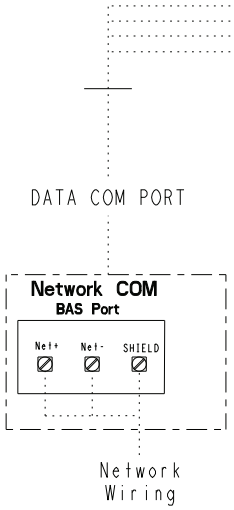
POWER ENTRY OPTION	UNIT SIZE	DISCONNECT OPTION	# OF CONDUCTORS PER PHASE	LUG RANGE
SINGLE POINT POWER (230V)	140-200	NO	4	#2AWG-750 KCMIL
SINGLE POINT POWER (380-575V)	ALL	NO	2	#2AWG-600 KCMIL
DUAL POINT POWER (200V)	140-200	NO	3	3/0-400 KCMIL
DUAL POINT POWER (380-575V)	140-200	NO	1 OR (2)	2/0-500 KCMIL OR (2/0-250 KCMIL)
DUAL POINT POWER (380-575V)	225-325	NO	2	2/0-500 KCMIL
SINGLE POINT POWER (380-575V)	140-200	NFD	2	2/0-500 KCMIL
SINGLE POINT POWER (380V)	225-325	NFD	4	4/0-500 KCMIL
SINGLE POINT POWER (460-575V)	225-325	NFD	3	3/0-400 KCMIL
DUAL POINT POWER (380-575V)	140-200	NFD	1 OR (2)	2/0-500 KCMIL OR (2/0-250 KCMIL)
DUAL POINT POWER (380-575V)	225-325	NFD	2	2/0-500 KCMIL
SINGLE POINT POWER (380V)	350-500	NO	6	#2AWG-750 KCMIL
SINGLE POINT POWER (460-575V)	350-500	NO	4	#2AWG-750 KCMIL
DUAL POINT POWER (380V)	350-500	NO	4	#2AWG-750 KCMIL
DUAL POINT POWER (460-575V)	350-500	NO	2	#2AWG-600 KCMIL
DUAL POINT POWER (460-575V) (HSCCR)	350-500	NO	3	3/0-400 KCMIL
SINGLE POINT POWER (380V)	350-500	NFD	6	#2AWG-600 KCMIL
SINGLE POINT POWER (460-575V)	350-500	NFD	4	4/0-500 KCMIL

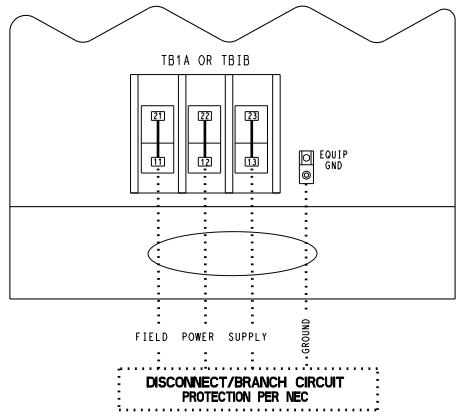
3. TERMINALS 9 AND 10 OF TB5 ARE FOR FIELD EXTERNAL CONNECTIONS FOR REMOTE ON-OFF. THE CONTACTS MUST BE RATED FOR DRY CIRCUIT APPLICATION CAPABLE OF HANDLING A 24VAC LOAD UP TO 50 MA.
4. TERMINALS 11 AND 23 OF TB5 ARE FOR CONTROL OF CHILLED WATER PUMP 1 (PMP 1) STARTER. TERMINALS 15 AND 22 OF TB5 ARE FOR CONTROL OF CHILLED WATER PUMP 2 (PMP 2) STARTER. THE MAXIMUM LOAD ALLOWED FOR THE CHILLED WATER PUMP RELAY IS 5 VA SEALED, 10 VA INRUSH AT 24 V. FIELD POWER SUPPLY IS NOT REQUIRED.
5. TERMINALS 12 AND 21 OF TB5 ARE FOR A ALARM RELAY. THE MAXIMUM LOAD ALLOWED FOR THE ALARM RELAY IS 10 VA SEALED, 25 VA INRUSH AT 24V. FIELD POWER SUPPLY IS NOT REQUIRED.
6. MAKE APPROPRIATE CONNECTIONS TO TB6 AS SHOWN FOR ENERGY MANAGEMENT BOARD OPTIONS. THE CONTACTS FOR OCCUPANCY OVERRIDE, DEMAND LIMIT AND ICE DONE OPTIONS MUST BE RATED FOR DRY CIRCUIT APPLICATION CAPABLE OF HANDLING A 24VAC LOAD UP TO 50 MA.
7. TERMINAL BLOCKS, TB5 & TB6 ARE LOCATED IN THE LOW VOLTAGE SECTION OF POWERBOX FOR ALL UNITS. REFER TO CERTIFIED DIMENSIONAL DRAWING FOR EACH UNIT TO GET THE EXACT LOCATIONS.
8. REFER TO CERTIFIED DIMENSIONAL DRAWINGS FOR EXACT LOCATIONS OF THE MAIN POWER AND CONTROL POWER ENTRANCE LOCATIONS.
9. TERMINALS 18 & 26 OF TB6 ARE FOR ALERT RELAY AND TERMINALS 20 & 26 OF TB6 ARE FOR SHUTDOWN RELAY. THE MAXIMUM LOAD ALLOWED FOR THE ALERT AND SHUTDOWN RELAY IS 10 VA SEALED, 25 VA INRUSH AT 24V. FIELD POWER SUPPLY IS NOT REQUIRED.

LEGEND:

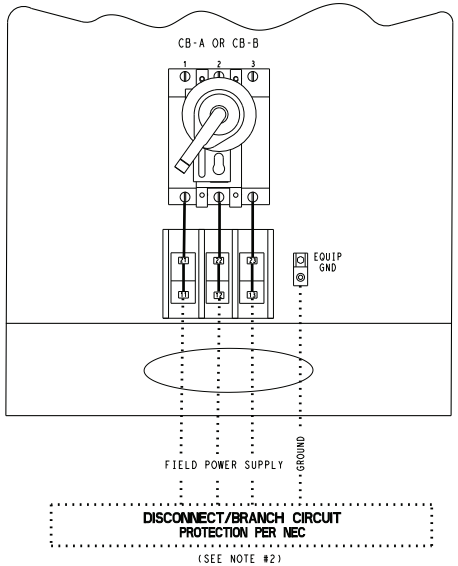
A	-	ALARM
PMP	-	CHILLED WATER PUMP
EMM	-	ENERGY MANAGEMENT
TB	-	TERMINAL BLOCK
MLV	-	MINIMUM LOAD VALVE
NEC	-	NATIONAL ELECTRIC CODE
HSCCR	-	HIGH SHORT CIRCUIT CURRENT RATING
SCCR	-	SHORT CIRCUIT CURRENT RATING







TERMINAL BLOCK



NON-FUSED DISCONNECT

Fig. 76 — 30XV Typical Field Wiring Schematic

30XV60002800	REV C

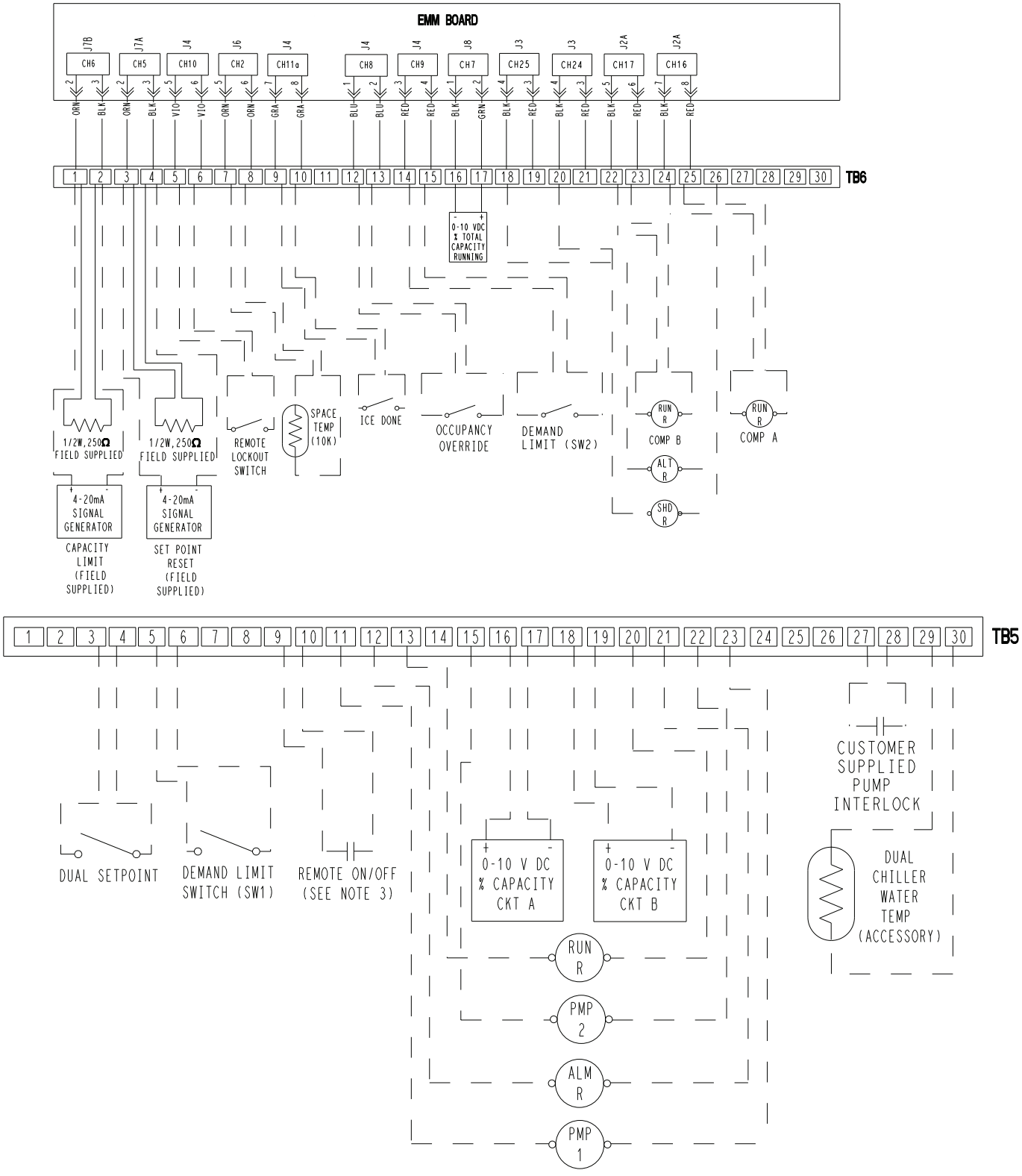
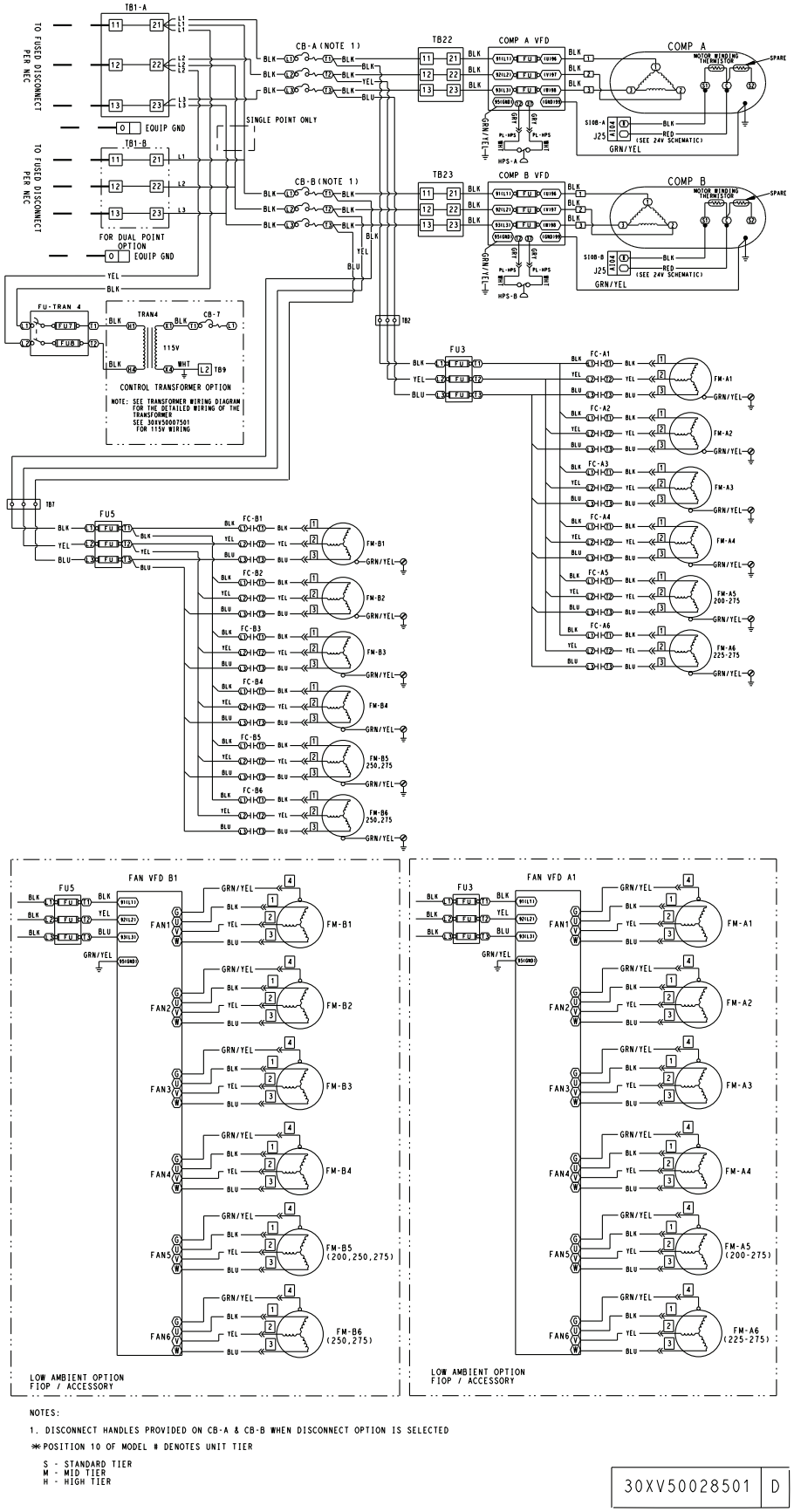
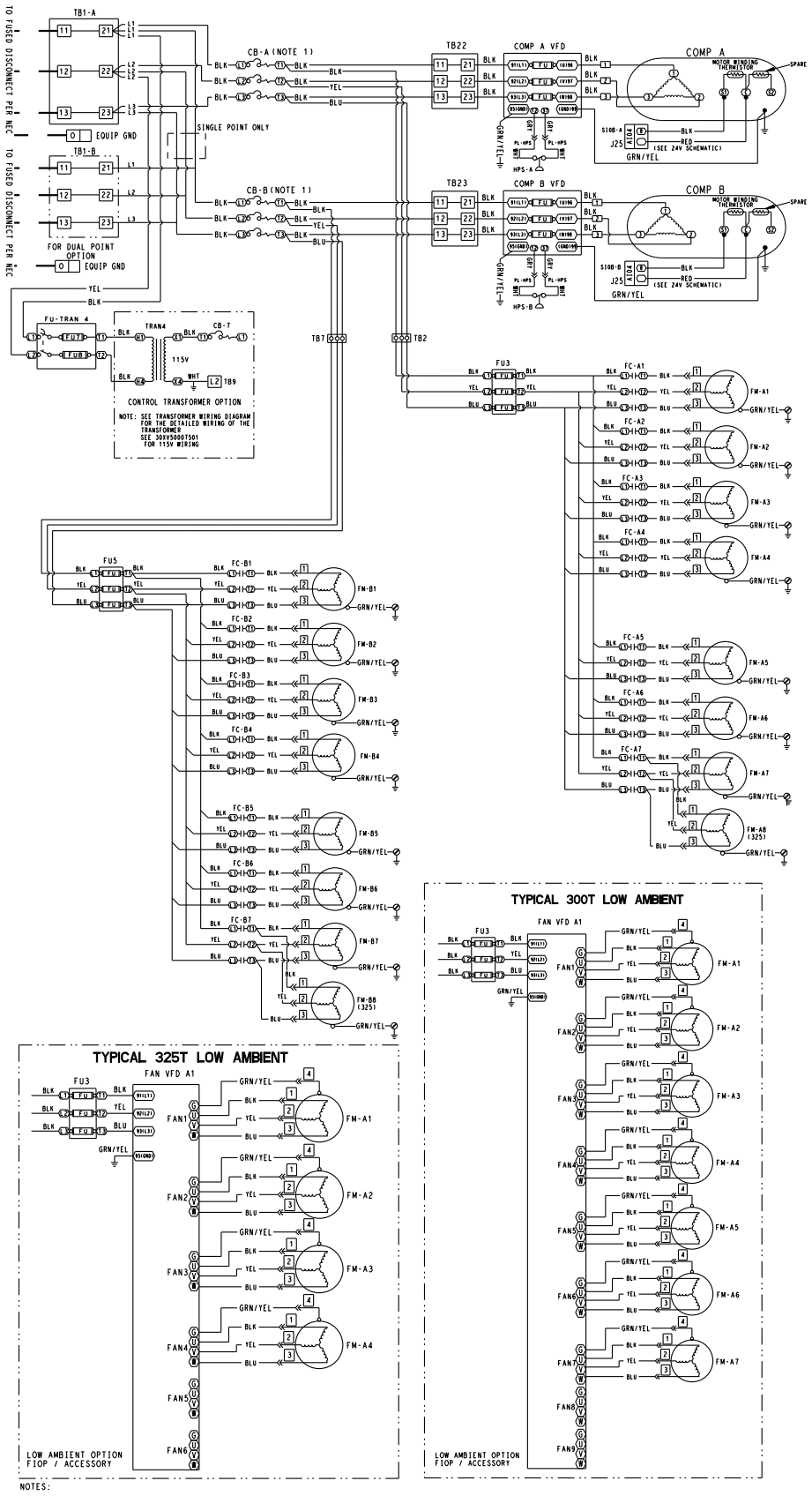


Fig. 76 —30XV Typical Field Wiring Schematic (cont)



NOTE: See Legend on page 141.

Fig. 77 — 30XV Standard Tier 140-275 (All Voltages) Power Schematic



NOTES:

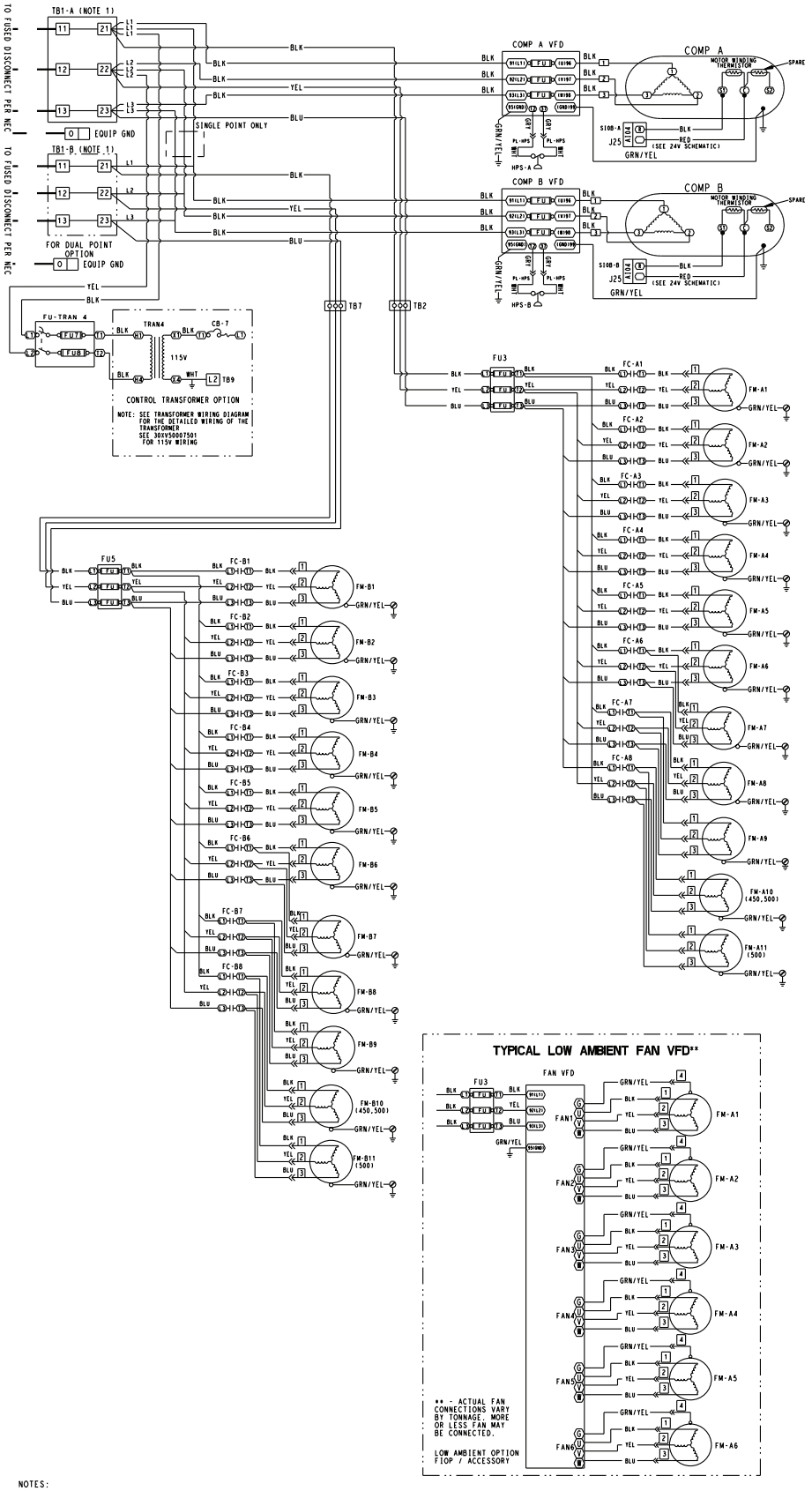
1. DISCONNECT HANDLES PROVIDED ON CB-A & CB-B WHEN DISCONNECT OPTION IS SELECTED
* POSITION 10 OF MODEL # DENOTES UNIT TIER

S - STANDARD TIER
M - MID TIER
H - HIGH TIER

30XV50028601 | D

NOTE: See Legend on page 141.

Fig. 78 — 30XV Standard Tier 300, 325 (All Voltages) Power Schematic



NOTES:

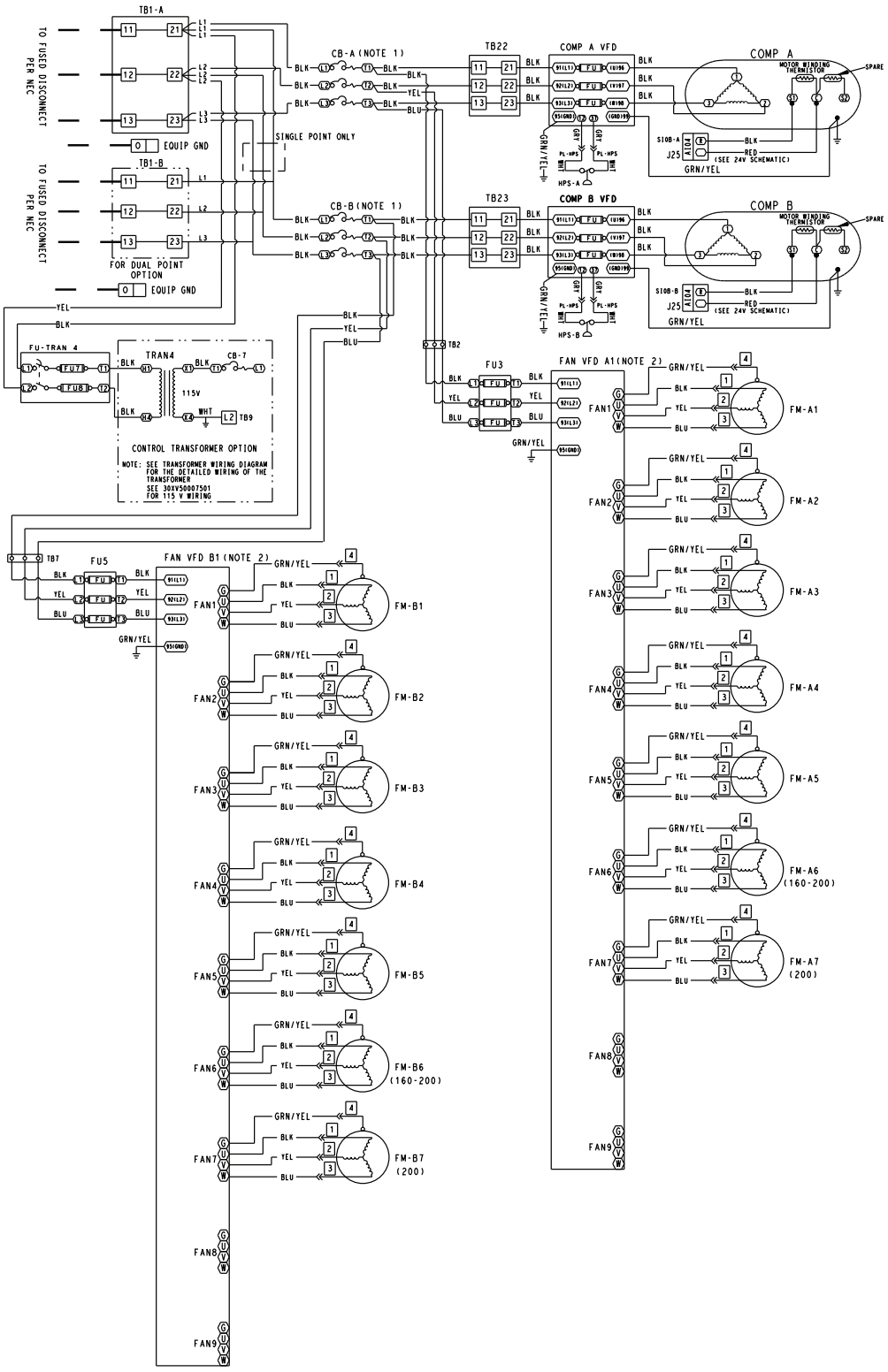
1. WHEN DISCONNECT OPTION IS SELECTED TB1A & TB1B (DUAL POINT POWER) ARE REPLACED WITH DISCONNECT SWITCHES.
* POSITION 10 OF MODEL # DENOTES UNIT TIER

S - STANDARD TIER
M - MID TIER
H - HIGH TIER

30XV50052101 | C

NOTE: See Legend on page 141.

Fig. 79 — 30XV Standard Tier 350-500 (380, 460, and 575 Voltages) Power Schematic



NOTES:

1. DISCONNECT HANDLES PROVIDED ON CB-A & CB-B WHEN DISCONNECT OPTION IS SELECTED
2. VFD MAY HAVE 6 OR 9 CONNECTION TERMINALS

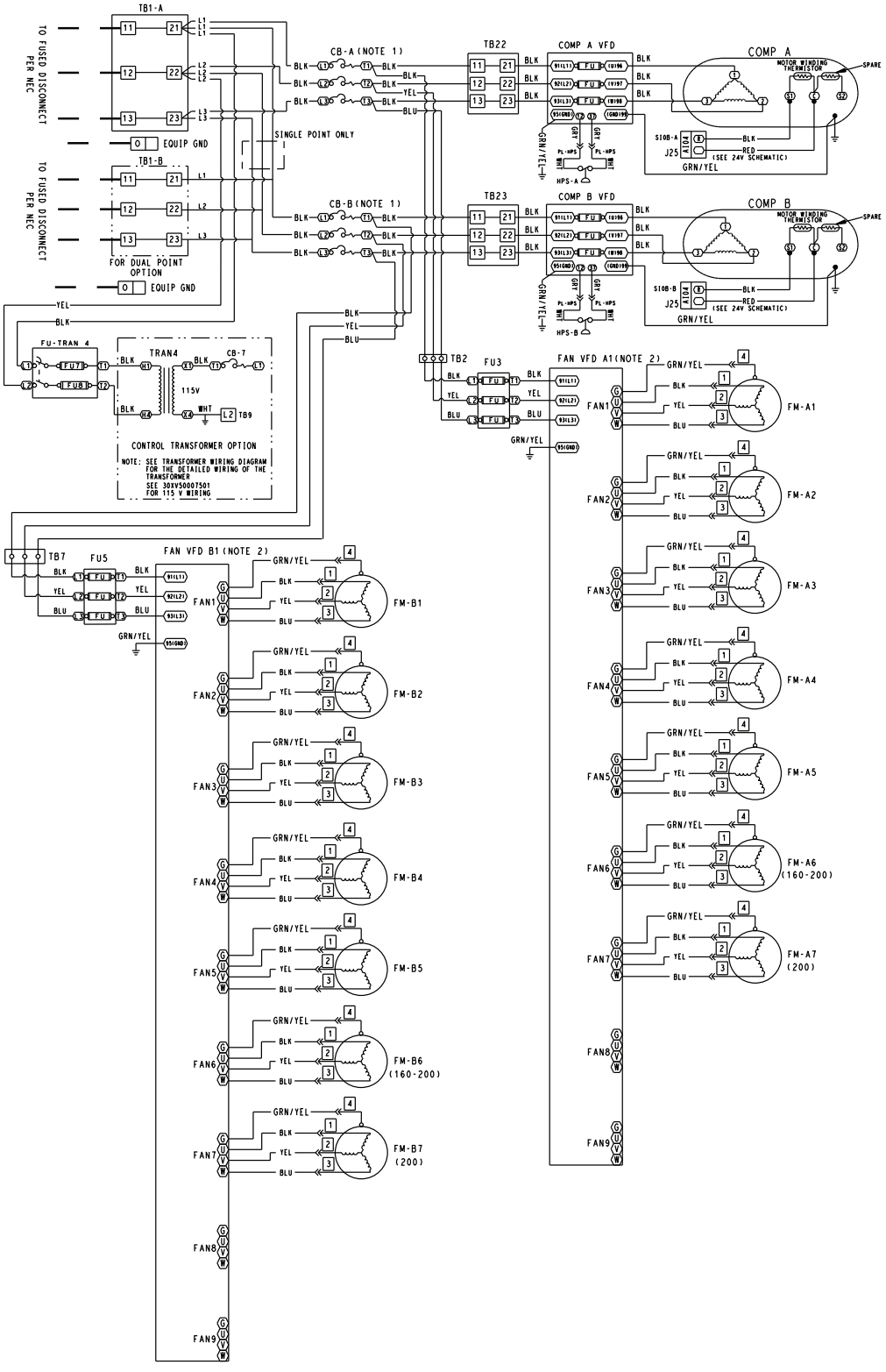
* POSITION 10 OF MODEL # DENOTES UNIT TIER

S - STANDARD TIER
M - MID TIER
H - HIGH TIER

30XV50028201	C

NOTE: See Legend on page 141.

Fig. 80 — 30XV Mid Tier 140 (All Voltages),160-275 (380/460/575v) Power Schematic



NOTES:

1. DISCONNECT HANDLES PROVIDED ON CB-A & CB-B WHEN DISCONNECT OPTION IS SELECTED
2. VFD MAY HAVE 6 OR 9 CONNECTION TERMINALS

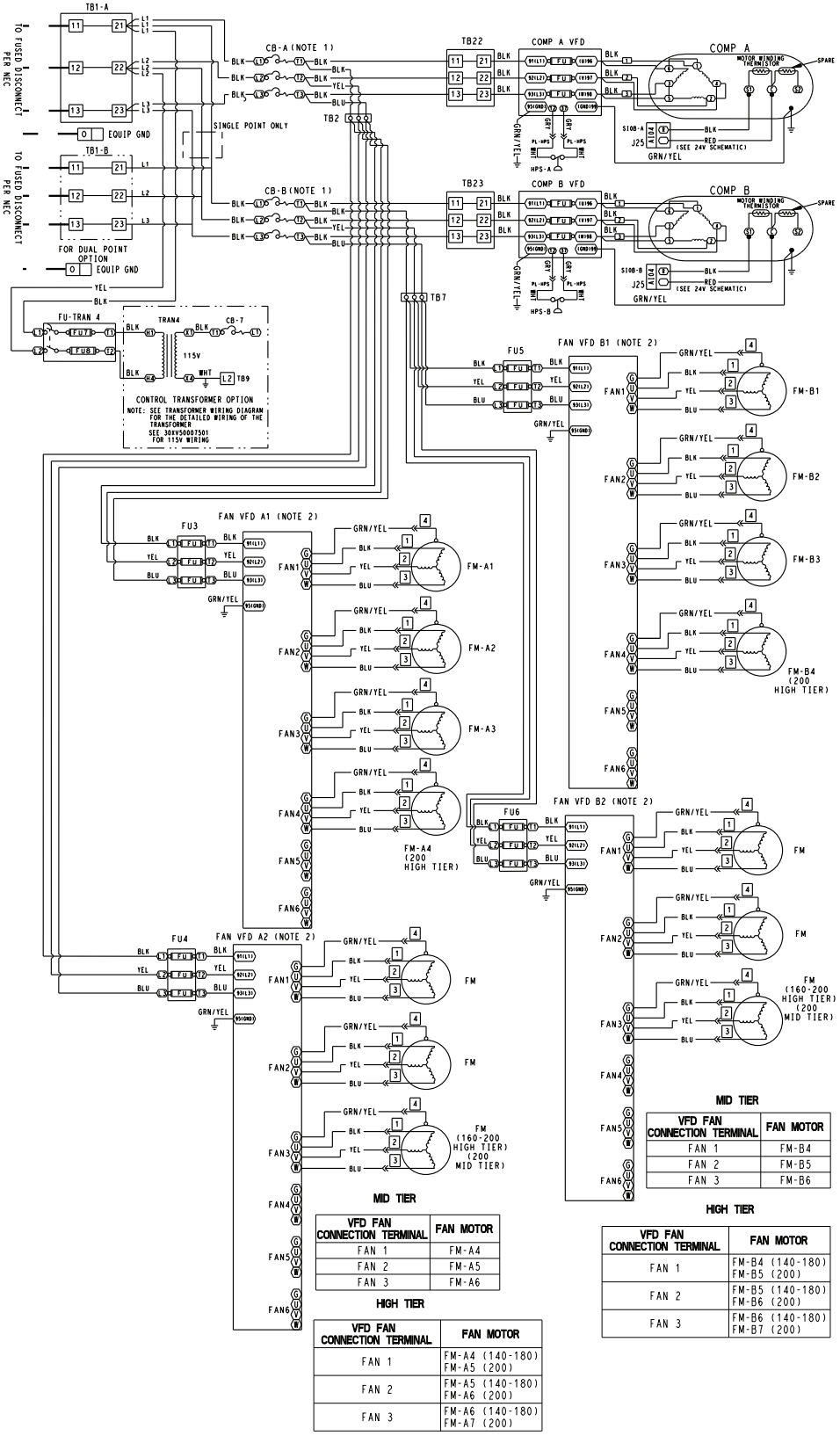
* POSITION 10 OF MODEL # DENOTES UNIT TIER

S - STANDARD TIER
M - MID TIER
H - HIGH TIER

30XV50007401	C

NOTE: See Legend on page 141.

Fig. 81 — 30XV High Tier 140-200 (380/460/575v) Power Schematic



NOTES:

1. DISCONNECT HANDLES PROVIDED ON CB-A & CB-B WHEN DISCONNECT OPTION IS SELECTED
2. VFD MAY HAVE 6 OR 9 CONNECTION TERMINALS

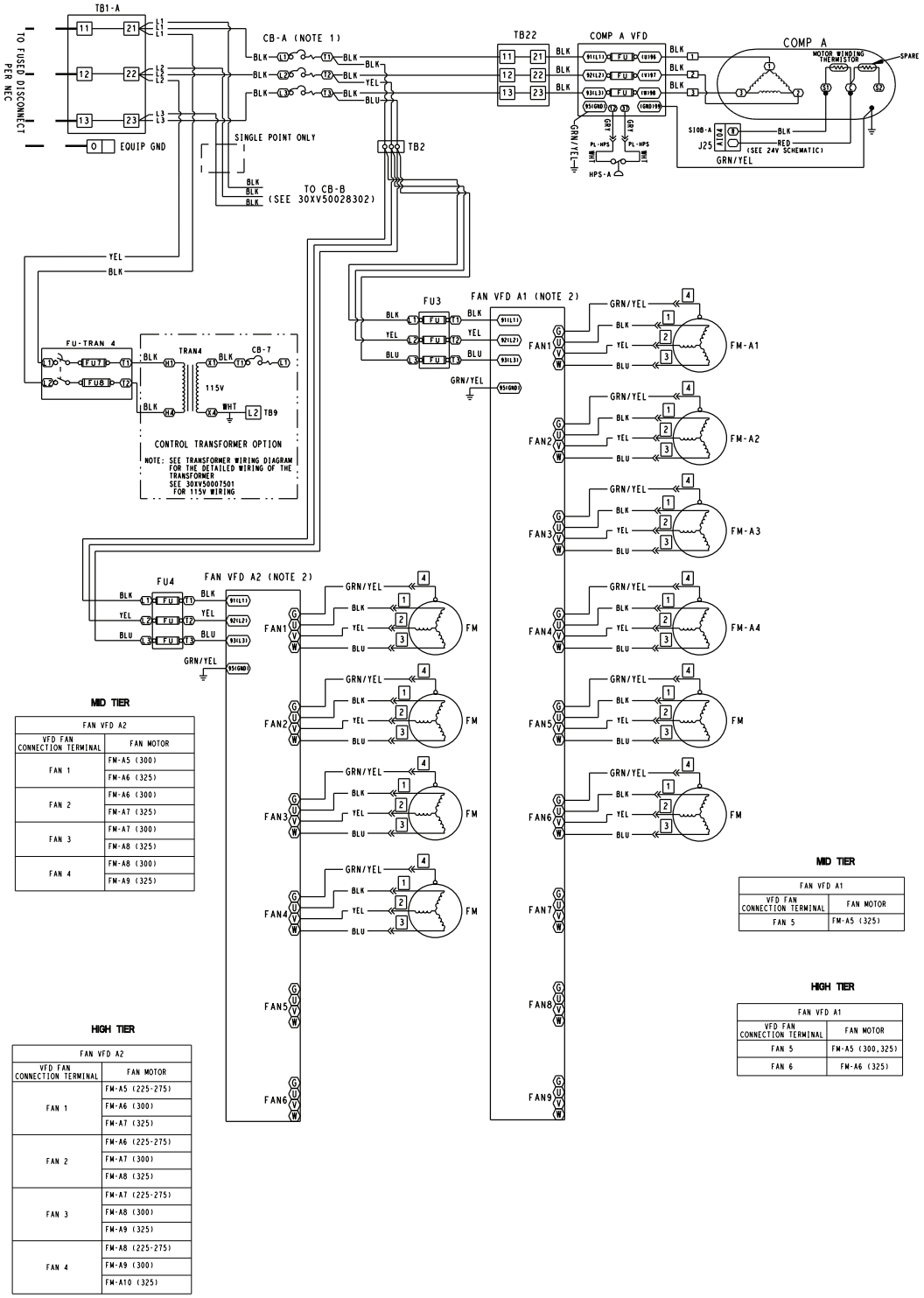
✻ POSITION 10 OF MODEL # DENOTES UNIT TIER

S - STANDARD TIER
M - MID TIER
H - HIGH TIER

30XV50028401	C

NOTE: See Legend on page 141.

Fig. 82 — 30XV High Tier 140-200 (208/230v), Mid Tier 160-200 (208/230v) Power Schematic



MID TIER

FAN VFD A2	
VFD FAN CONNECTION TERMINAL	FAN MOTOR
FAN 1	FM-A5 (300)
	FM-A6 (325)
FAN 2	FM-A6 (300)
	FM-A7 (325)
FAN 3	FM-A7 (300)
	FM-A8 (325)
FAN 4	FM-A8 (300)
	FM-A9 (325)

HIGH TIER

FAN VFD A2	
VFD FAN CONNECTION TERMINAL	FAN MOTOR
FAN 1	FM-A5 (225-275)
	FM-A6 (300)
	FM-A7 (325)
FAN 2	FM-A6 (225-275)
	FM-A7 (300)
	FM-A8 (325)
FAN 3	FM-A7 (225-275)
	FM-A8 (300)
	FM-A9 (325)
FAN 4	FM-A8 (225-275)
	FM-A9 (300)
	FM-A10 (325)

MID TIER

FAN VFD A1	
VFD FAN CONNECTION TERMINAL	FAN MOTOR
FAN 5	FM-A5 (325)

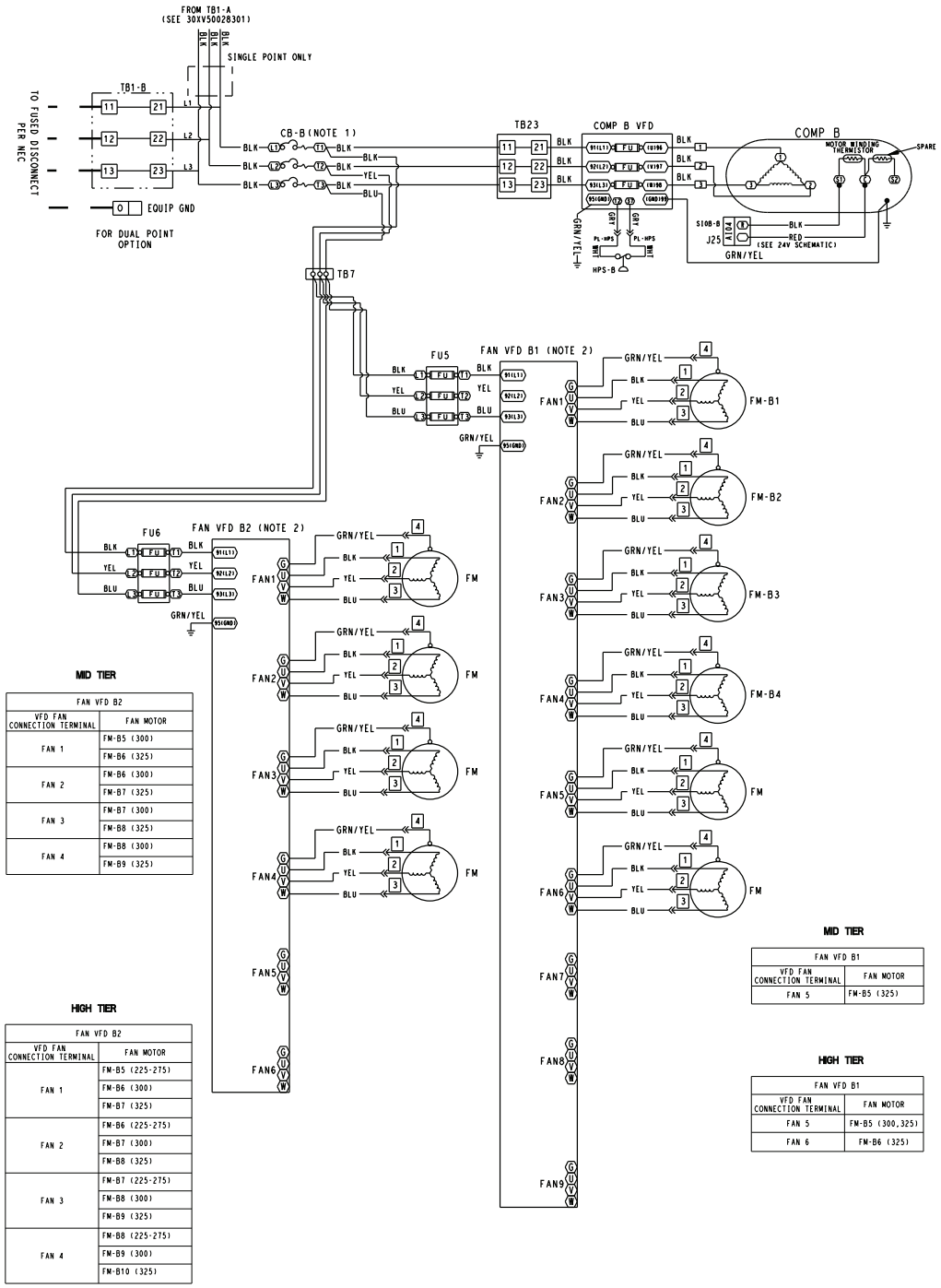
HIGH TIER

FAN VFD A1	
VFD FAN CONNECTION TERMINAL	FAN MOTOR
FAN 5	FM-A5 (300,325)
FAN 6	FM-A6 (325)

30XV50028301 | D

NOTE: See Legend on page 141.

Fig. 83 — 30XV High Tier 225-325 (All Voltages), Mid Tier 300, 325 (All Voltages) Power Schematic



MID TIER

FAN VFD B2	
VFD FAN CONNECTION TERMINAL	FAN MOTOR
FAN 1	FM-B5 (300)
	FM-B6 (325)
FAN 2	FM-B6 (300)
	FM-B7 (325)
FAN 3	FM-B7 (300)
	FM-B8 (325)
FAN 4	FM-B8 (300)
	FM-B9 (325)

HIGH TIER

FAN VFD B2	
VFD FAN CONNECTION TERMINAL	FAN MOTOR
FAN 1	FM-B5 (225-275)
	FM-B6 (300)
	FM-B7 (325)
FAN 2	FM-B6 (225-275)
	FM-B7 (300)
	FM-B8 (325)
FAN 3	FM-B7 (225-275)
	FM-B8 (300)
	FM-B9 (325)
FAN 4	FM-B8 (225-275)
	FM-B9 (300)
	FM-B10 (325)

MID TIER

FAN VFD B1	
VFD FAN CONNECTION TERMINAL	FAN MOTOR
FAN 5	FM-B5 (325)

HIGH TIER

FAN VFD B1	
VFD FAN CONNECTION TERMINAL	FAN MOTOR
FAN 5	FM-B5 (300,325)
FAN 6	FM-B6 (325)

NOTES:

1. DISCONNECT HANDLES PROVIDED ON CB-A & CB-B WHEN DISCONNECT OPTION IS SELECTED
2. VFD MAY HAVE 6 OR 9 CONNECTION TERMINALS

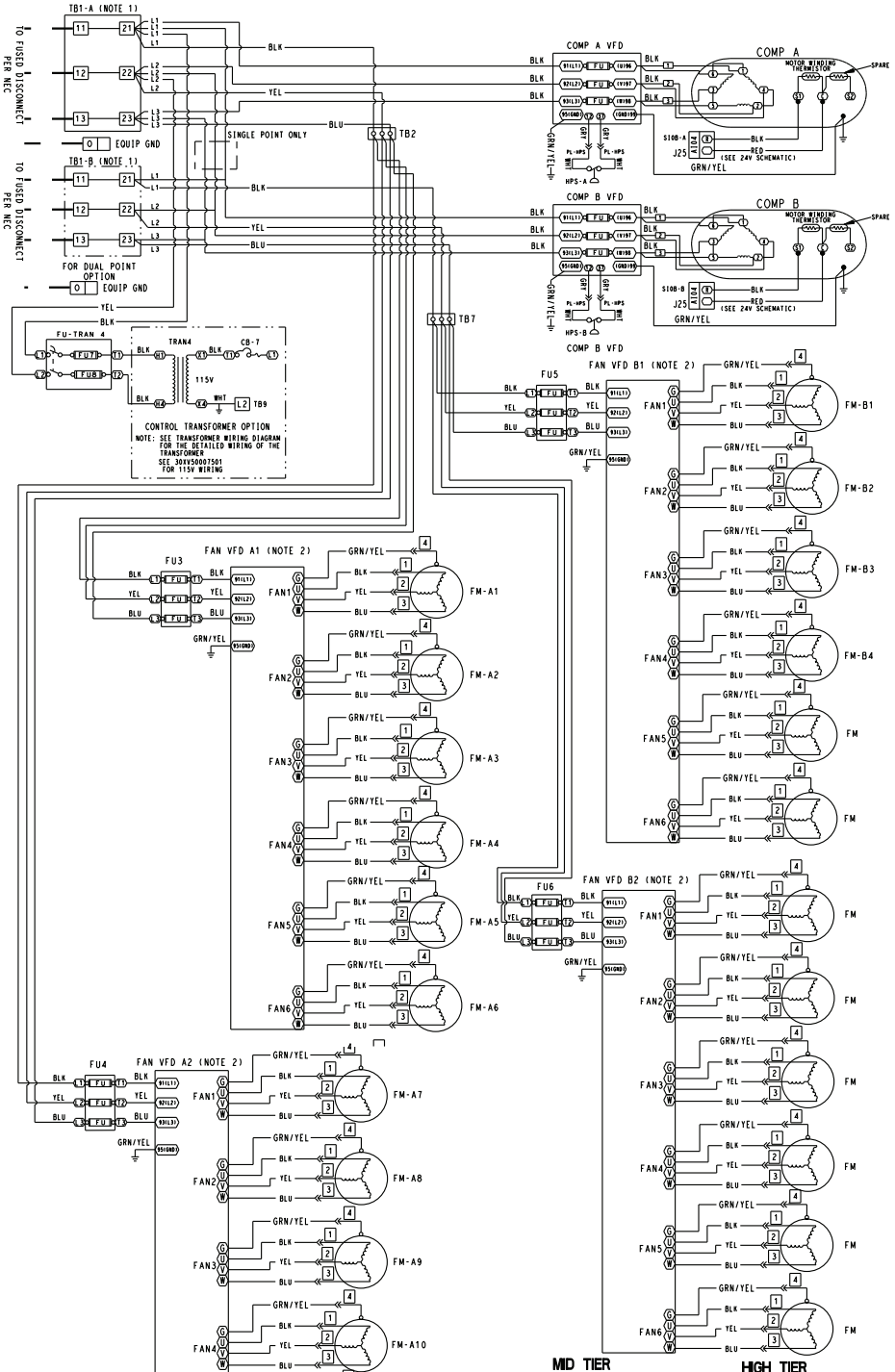
✳ POSITION 10 OF MODEL # DENOTES UNIT TIER

S - STANDARD TIER
M - MID TIER
H - HIGH TIER

30XV50028302	D

NOTE: See Legend on page 141.

Fig. 84 — 30XV High Tier 225-325 (All Voltages), Mid Tier 300, 325 (All Voltages) Power Schematic



NOTES:

1. WHEN DISCONNECT OPTION IS SELECTED TB1A & TB1B (DUAL POINT POWER) ARE REPLACED WITH DISCONNECT SWITCHES.
2. VFD MAY HAVE 6 OR 9 CONNECTION TERMINALS.

✻POSITION 10 OF MODEL # DENOTES UNIT TIER

S - STANDARD TIER
M - MID TIER
H - HIGH TIER

FAN VFD B1	
VFD FAN CONNECTION TERMINAL	FAN MOTOR
FAN 5	FM-B5 (400-500)
FAN 6	FM-B6 (400-500)

FAN VFD B2	
VFD FAN CONNECTION TERMINAL	FAN MOTOR
FAN 1	FM-B5 (350)
	FM-B7 (400-500)
FAN 2	FM-B6 (350)
	FM-B8 (400-500)
FAN 3	FM-B7 (350)
	FM-B9 (400-500)
FAN 4	FM-B8 (350)
	FM-B10 (400-500)
FAN 5	FM-B11 (450,500)
FAN 6	FM-B12 (500)

FAN VFD B1	
VFD FAN CONNECTION TERMINAL	FAN MOTOR
FAN 5	FM-B5 (350-450)
FAN 6	FM-B6 (400-450)

FAN VFD B2	
VFD FAN CONNECTION TERMINAL	FAN MOTOR
FAN 1	FM-B6 (350)
	FM-B7 (400-450)
FAN 2	FM-B7 (350)
	FM-B8 (400-450)
FAN 3	FM-B8 (350)
	FM-B9 (400-450)
FAN 4	FM-B9 (350)
	FM-B10 (400-450)
FAN 5	FM-B11 (400)
FAN 6	FM-B12 (450)

30XV50049801 | B

NOTE: See Legend on page 141.

Fig. 85 — 30XV High Tier 350-450 (All Voltages), Mid Tier 350-500 (All Voltages) Power Schematic

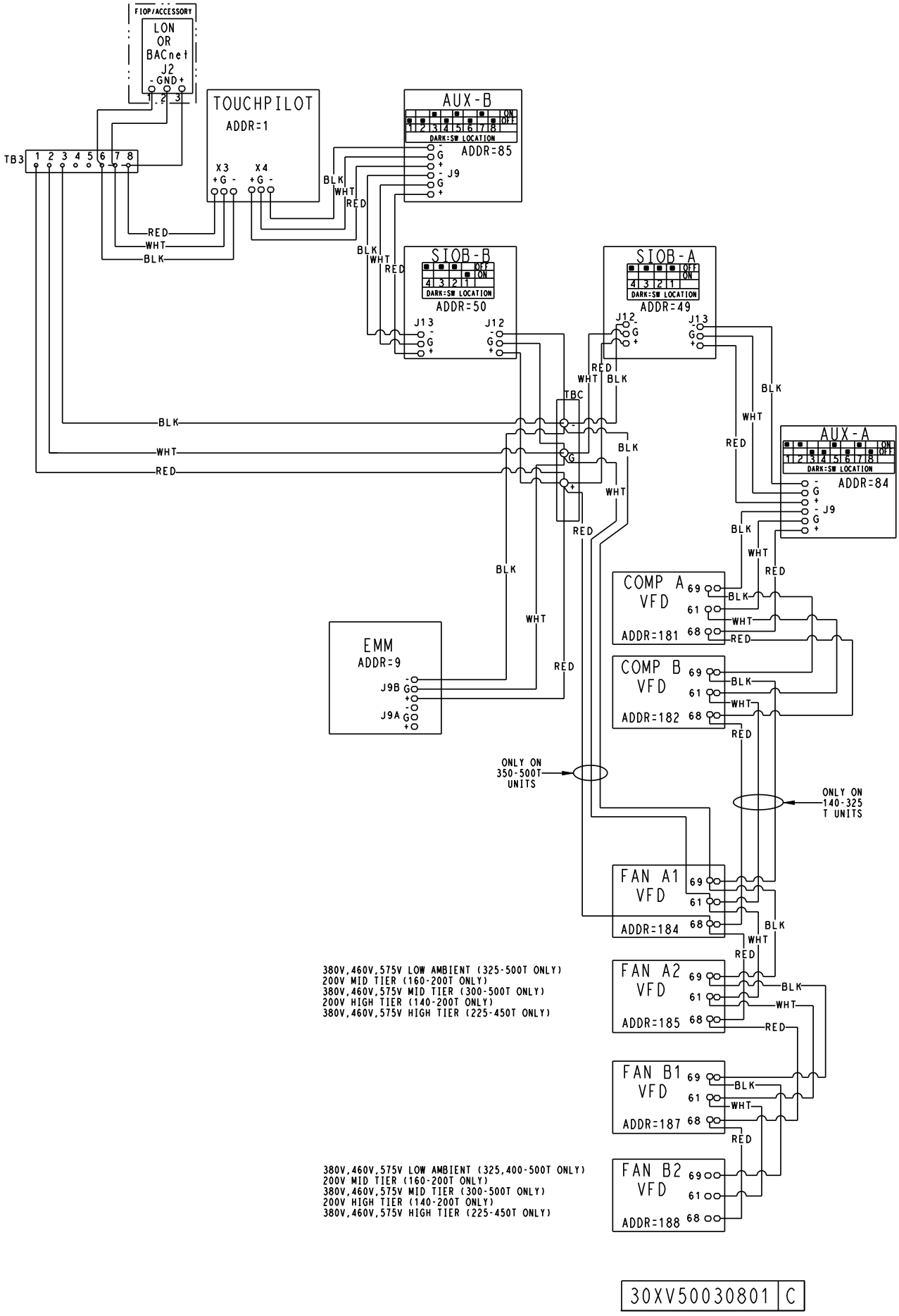
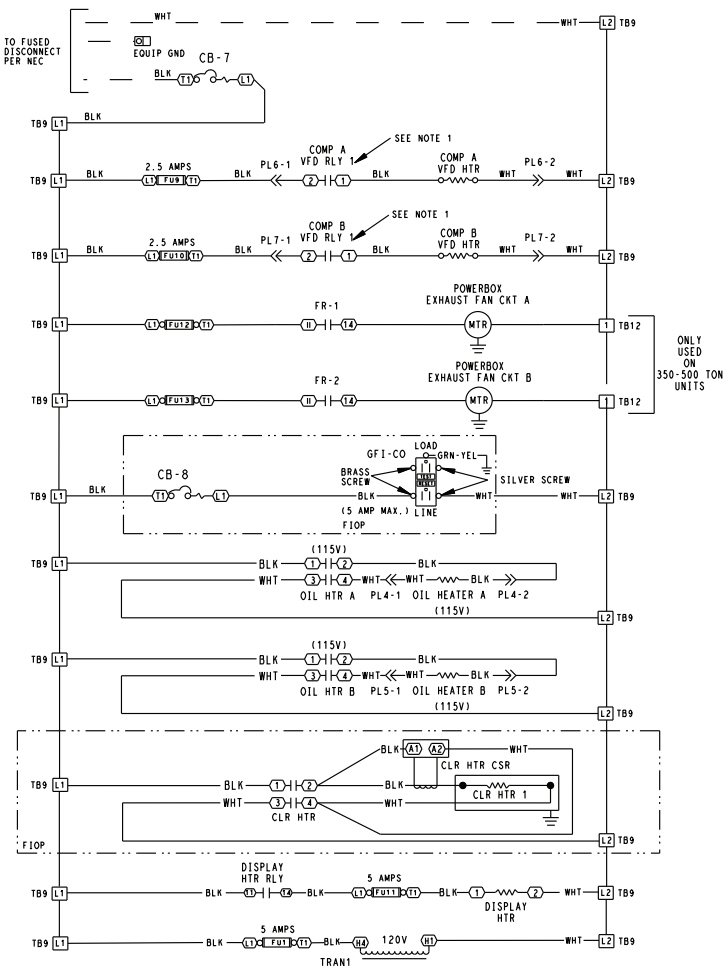
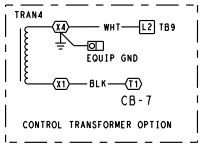


Fig. 86 — 30XV Communication Wiring



NOTE 1:

COMP A VFD RLY 1 & COMP B VFD RLY 1 ARE RELAYS LOCATED IN THE COMPRESSOR VFD'S AND ARE CONTROLLED BY THE VFD.



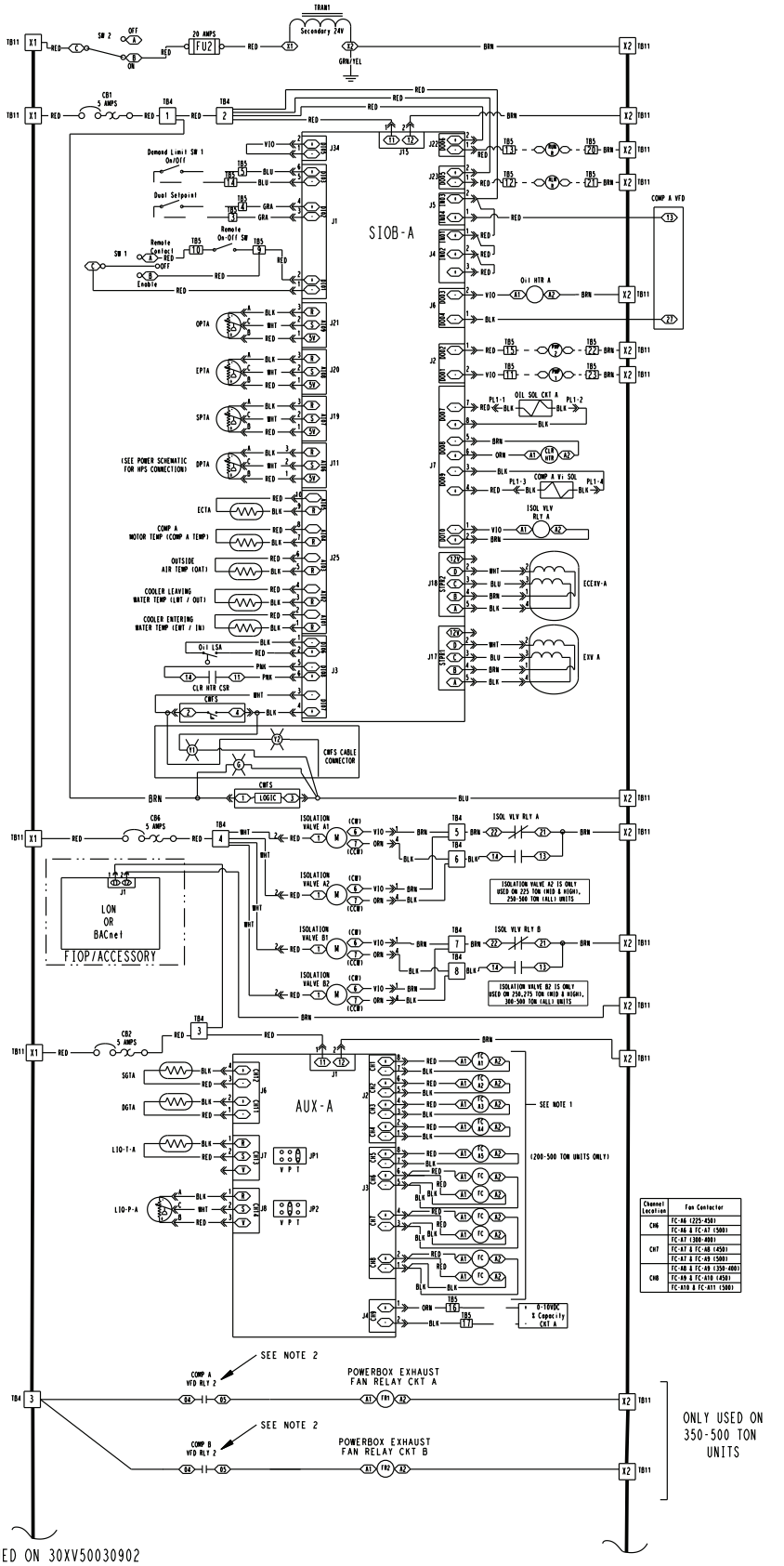
LEGEND

A	- Alarm	FIOP	- Factory Installed Option
ALM R	- Alarm Relay	FM	- Fan Motor
ALT R	- Alert Relay	FN	- Fan
AUX A	- Auxiliary Input-Output Board Circuit A	FU	- Fuse
AUX B	- Auxiliary Input-Output Board Circuit B	GFI-CO	- Ground Fault Interruptor- Convenience Outlet
CB1	- SIOB-A Board, CWFS, PMP1 RLY, PMP2 RLY Power Mini Circuit Breaker	GND	- Ground
CB2	- AUX A Board, UPC Board, LON Board Power Mini Circuit Breaker	HPS	- High Pressure Switch
CB3	- AUX B Board Power Mini Circuit Breaker	HTR	- Heater
CB5	- SIOB-B Power Mini Circuit Breaker	ISO	- Isolation
CB8	- EMM Board Power Mini Circuit Breaker	ISOL VLV	- Relay Isolation Valve
CB12	- Isolation Valve Relays Mini Circuit Breaker	LEN	- Local Equipment Network
CB13	- 115V Power Feed Circuit Breaker	LIQ-P	- Liquid Pressure
CB-A	- Circuit Breaker A Circuit	LIQ-T	- Liquid Temperature
CB-B	- Circuit Breaker B Circuit	LON	- LONWORKS board
CB-FNA1	- Fan Circuit Breaker A Circuit	LS	- Level Switch
CB-FNB1	- Fan Circuit Breaker B Circuit	LWT	- Leaving Water Temperature
CCN	- Carrier Comfort Network®	NEC	- National Electrical Code (U.S.A.)
CH	- Channel	OAT	- Outdoor Air Temperature
CLR HR	- Cooler Heater Relay	OPT	- Oil Pressure Transducer
CLR HTR	- Cooler Heater	PL	- Plug
COMM	- Communication	PMP	- Chilled Water Pump
COMP	- Compressor	RLY	- Relay
CSR	- Current Sensing Relay	RUN R	- Run Relay
CWFS	- Chilled Water Flow Switch	SGT	- Suction Gas Temperature
DGT	- Discharge Gas Thermistor	SHD R	- Shutdown Relay
DPT	- Discharge Pressure Transducer	SIOB	- Starfire Input-Output Board
ECEXV	- Economizer Electronic Expansion Valve	SOL	- Solenoid
ECT	- Economizer Temperature	SW	- Switch
EMM	- Energy Management Module	T	- Thermistor
EPT	- Economizer Pressure Transducer	TB	- Terminal Block
EQUIP	- Equipment	TEMP	- Temperature
EWT	- Entering Water Temperature	TRAN	- Transformer
EXV	- Electronic Expansion Valve	UPC	- Universal Protocol Converter Board
FC	- Fan Contactor	VFD	- Variable Frequency Drive

Terminal Block Connection
Marked Terminal
Unmarked Terminal
Unmarked Splice
Factory Wiring
Optional Wiring
Indicates Common Potential, Does not represent Wiring
FIOP or Assembly
Wire Tag

30XV50007501	D

Fig. 87 — 30XV 115V Control Wiring (All Tonnages, All Voltages)



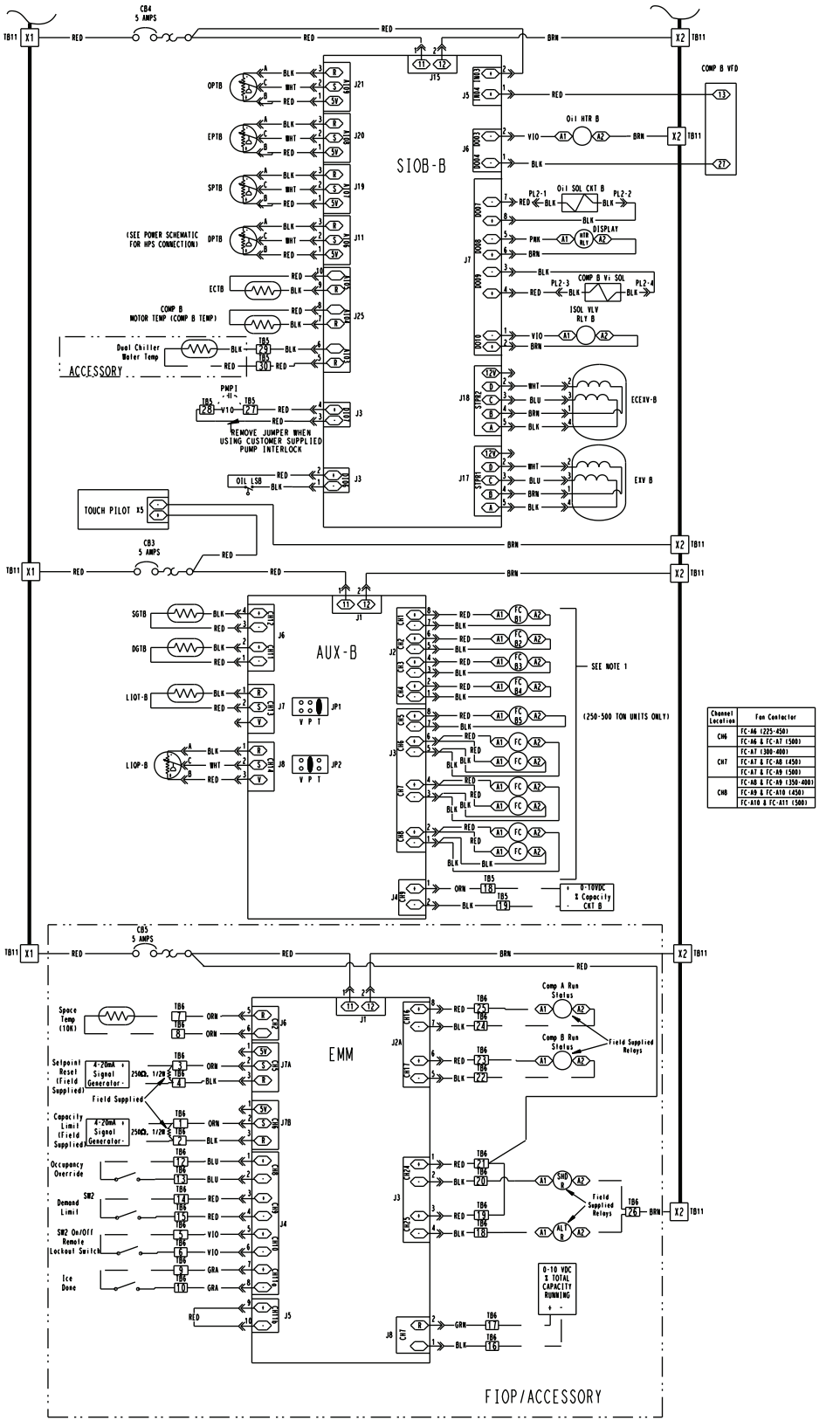
NOTES:

1. FAN CONTACTORS ONLY PRESENT ON STANDARD TIER, NO LOW AMBIENT UNITS.
2. COMP A VFD RLY 2 & COMP B RLY 2 ARE RELAYS LOCATED IN THE COMPRESSOR VFD'S & ARE CONTROLLED BY THE VFD.

30XV50030901 | G

Fig. 88 — 30XV 24V Control Wiring (All Tonnages, All Voltages)

CONTINUED FROM 30XV50030901

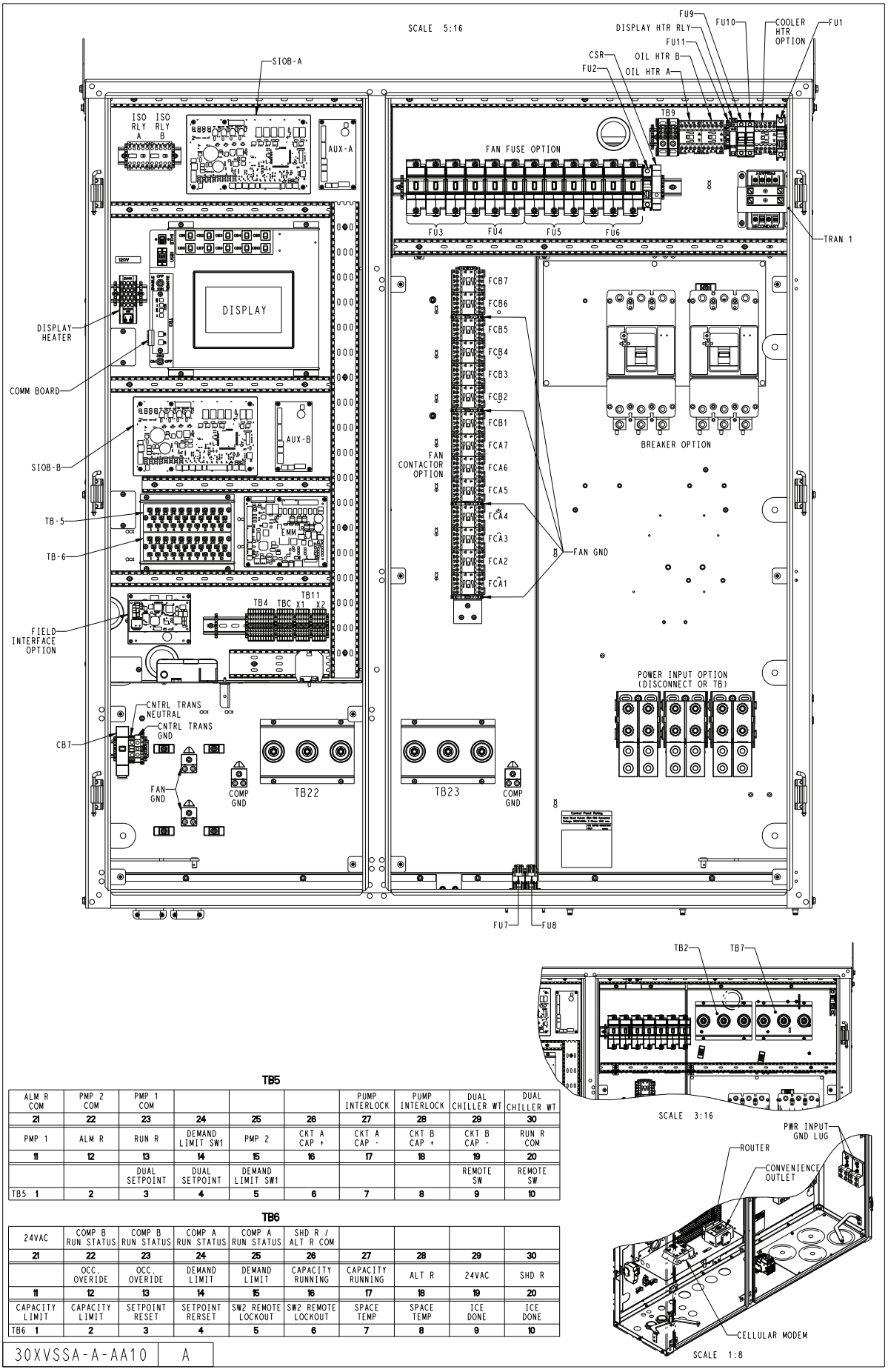


NOTE:

1. FAN CONTACTORS ONLY PRESENT ON STANDARD TIER, NO LOW AMBIENT UNITS.

30XV50030902 | G

Fig. 89 — 30XV 24V Control Wiring Schematic (All Tonnages, All Voltages)



TB5

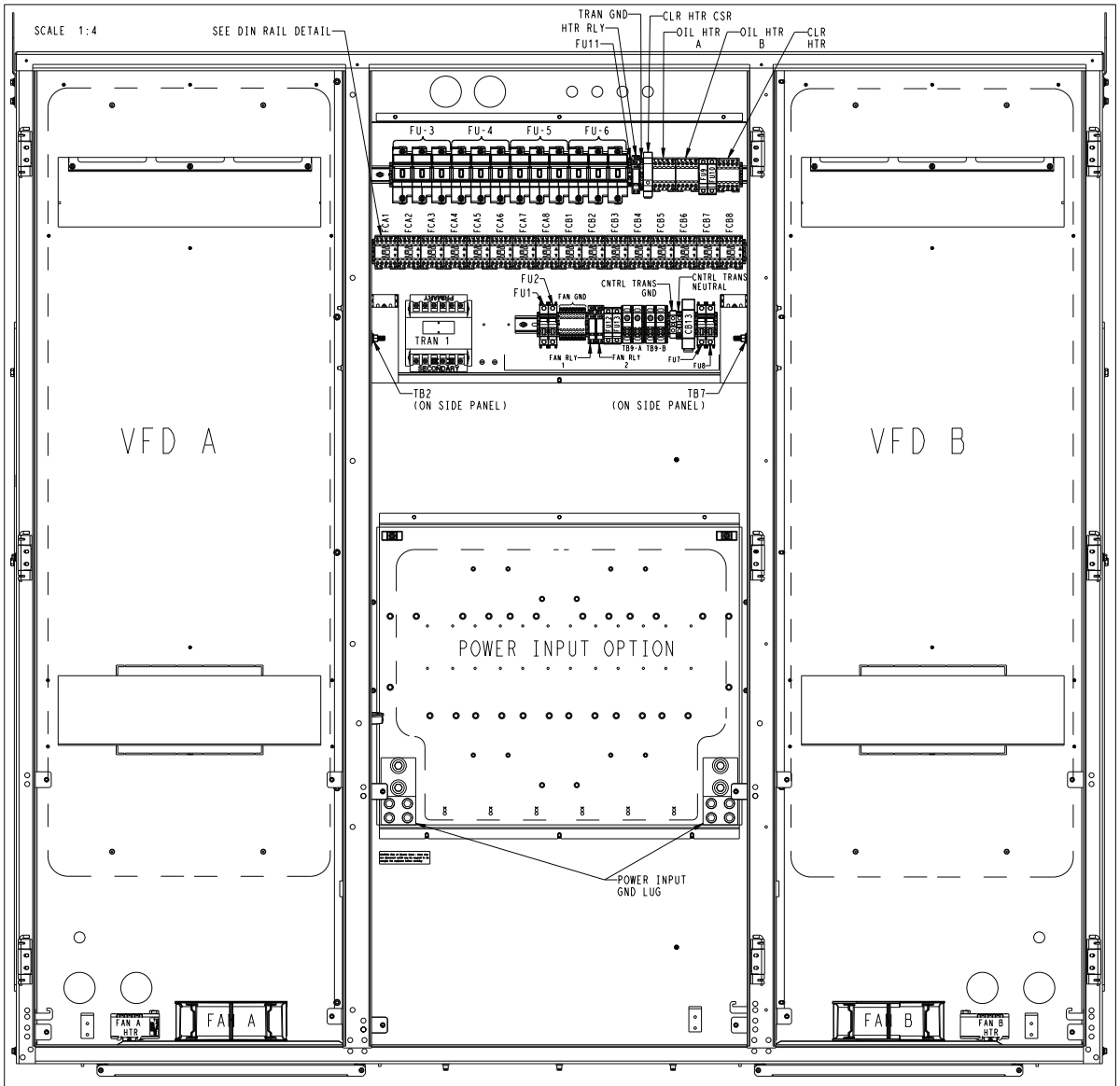
ALM R COM	PMP 2 COM	PMP 1 COM				PUMP INTERLOCK	PUMP INTERLOCK	DUAL CHILLER WT	DUAL CHILLER WT
21	22	23	24	25	26	27	28	29	30
PMP 1	ALM R	RUN R	DEMAND LIMIT SW1	PMP 2	CKT A CAP +	CKT A CAP -	CKT B CAP +	CKT B CAP -	RUN R COM
11	12	13	14	15	16	17	18	19	20
		DUAL SETPOINT	DUAL SETPOINT	DEMAND LIMIT SW1				REMOTE SW	REMOTE SW
TB5 1	2	3	4	5	6	7	8	9	10

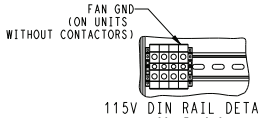
TB6

24VAC	COMP B RUN STATUS	COMP B RUN STATUS	COMP A RUN STATUS	COMP A RUN STATUS	SHD R / ALT R COM				
21	22	23	24	25	26	27	28	29	30
	OCC. OVERIDE	OCC. OVERIDE	DEMAND LIMIT	DEMAND LIMIT	CAPACITY RUNNING	CAPACITY RUNNING	ALT R	24VAC	SHD R
11	12	13	14	15	16	17	18	19	20
CAPACITY LIMIT	CAPACITY LIMIT	SETPOINT RESET	SETPOINT RERSET	SW2 REMOTE LOCKOUT	SW2 REMOTE LOCKOUT	SPACE TEMP	SPACE TEMP	ICE DONE	ICE DONE
TB6 1	2	3	4	5	6	7	8	9	10

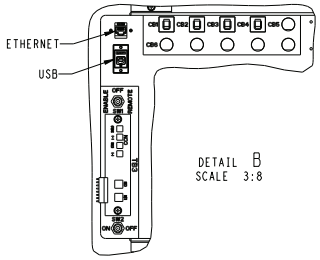
30XVSSA-A-AA10	A

Fig. 90 — Component Arrangement Diagram, P/N 30XVSSA-A-AA10, for 30XV140-325

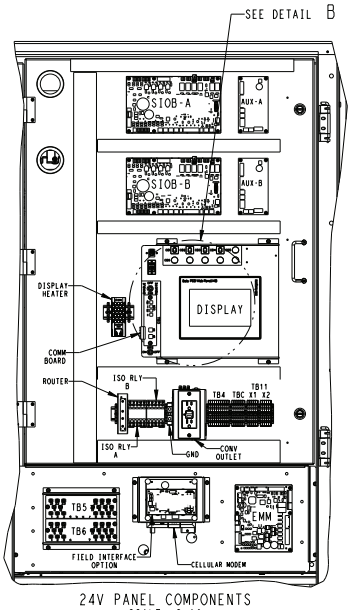




115V DIN RAIL DETAIL
SCALE 3:8



DETAIL B
SCALE 3:8



24V PANEL COMPONENTS
SCALE 3:16

TB5

ALM R COM	PMP 2 COM	PMP 1 COM				PUMP INTERLOCK	PUMP INTERLOCK	DUAL CHILLER WT	DUAL CHILLER WT
21	22	23	24	25	26	27	28	29	30
PMP 1	ALM R	RUN R	DEMAND LIMIT SW1	PMP 2	CKT A CAP +	CKT A CAP -	CKT B CAP +	CKT B CAP -	RUN R COM
11	12	13	14	15	16	17	18	19	20
		DUAL SETPOINT	DUAL SETPOINT	DEMAND LIMIT SW1				REMOTE SW	REMOTE SW
TB5 1	2	3	4	5	6	7	8	9	10

TB6

24VAC	COMP B RUN STATUS	COMP B RUN STATUS	COMP A RUN STATUS	COMP A RUN STATUS	SHD R / ALT R COM				
21	22	23	24	25	26	27	28	29	30
	OCC. OVERIDE	OCC. OVERIDE	DEMAND LIMIT	DEMAND LIMIT	CAPACITY RUNNING	CAPACITY RUNNING	ALT R	24VAC	SHD R
11	12	13	14	15	16	17	18	19	20
CAPACITY LIMIT	CAPACITY LIMIT	SETPOINT RESET	SETPOINT RERSET	SW2 REMOTE LOCKOUT	SW2 REMOTE LOCKOUT	SPACE TEMP	SPACE TEMP	ICE DONE	ICE DONE
TB6 1	2	3	4	5	6	7	8	9	10

30XVLSA-A-AA10 | REV. -

Fig. 91 — Component Arrangement Diagram, P/N 30XVLSA-A-AA10, for 30XV350-500

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES

GENERAL PARAMETERS

CCN TABLE NAME: GENUNIT
TABLE TYPE: 11H
TOUCH PILOT PATH: Main Menu → General Parameters

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Local = 0 Net. = 1 Remote = 2	CTRL_TYP	0 to 2	0	-	RO
2	Run Status	STATUS	OFF RUNNING STOPPING DELAY TRIPOUT READY OVERRIDE TEST		-	RO
3	Net.: Cmd Start/Stop	CHIL_S_S	disable/enable	0 (disable)	-	RW
4	Net.: Cmd Occupied	CHIL_OCC	no/yes	0 (no)	-	RW
5	Minutes Left for Start	min_left		0	min	RO
6	Setpoint Select	SP_SEL	0 to 2	0	-	RW
7	0=Auto, 1=Spt1, 2=Spt2		text 8 char		-	
8	Setpoint Occupied?	SP_OCC	no/yes	1 (yes)	-	RW
9	Percent Total Capacity	CAP_T	0 - 100	0	%	RO
10	Current Setpoint	SP		0	°F	RO
11	Control Point	CTRL_PNT	-4.0 to 153.0	0	°F	RW
12	Emergency Stop	EMSTOP	disable/enable	0 (disable)	-	RW
13	Active Demand Limit Val	DEM_LIM	0 to 100	0	%	RW
14	Demand Limit Minimum	min_lim	0 to 100	100	%	RO
15	SW Version	VERS_ID			-	RO

GENERAL CONFIGURATION

CCN TABLE NAME: GEN_CONF
TABLE TYPE: 12H
TOUCH PILOT PATH: Main Menu → Configuration Menu → General Configuration

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Cir Priority Sequence	prio_cir	0 to 2	0	-	RO
2	0 = Auto, 1 = A Priority				-	
3	2 = B Priority				-	
4	Ramp Loading Enable	ramp_sel	no/yes	0 (no)	-	RO
5	Unit Off to On Delay	off_on_d	1 to 15	1	min	RO
6	Demand Limit Type Select	lim_sel	0 to 2	0	-	RO
7	0 = None				-	
8	1 = Switch Control				-	
9	2 = 4-20mA Control				-	
10	Night Mode Start Hour	nh_start		0	-	RO
11	Night Mode End Hour	nh_end		0	-	RO
12	Night Capacity Limit	nh_limit	0 to 100	100	%	RO
13	Ice Mode Enable	ice_cnfg	no/yes	0 (no)	-	RO
14	Short Cycle Management	shortcyc	no/yes	0 (no)	-	RO

LEGEND

RO — Read Only
RW — Read/Write

PUMP CONFIGURATION

CCN TABLE NAME: PUMPCONF
TABLE TYPE: 11H
TOUCH PILOT PATH: Main Menu → Configuration Menu → Pump Configuration

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Evap Pumps Sequence	cpumpseq	0 to 4	0	-	RO
2	0 = No Pump				-	
3	1 = One Pump Only				-	
4	2 = Two Pumps Auto				-	
5	3 = Pump#1 Manual				-	
6	4 = Pump#2 Manual				-	
7	Pump Auto Rotation Delay	pump_del	24 to 3000	48	hours	RO
8	Pump Sticking Protection	pump_per	no/yes	0 (no)	-	RO
9	Flow Checked If Pump Off	pump_loc	no/yes	1 (yes)	-	RO

USER CONFIGURATION

CCN TABLE NAME: USERCONF
TABLE TYPE: 11H
TOUCH PILOT PATH: Main Menu → Configuration Menu → User Configuration

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	User Password	use_pass	1 to 9999	11		RO

RESET CONFIGURATION

CCN TABLE NAME: RESETCFG
TABLE TYPE: 11H
TOUCH PILOT PATH: Main Menu → Configuration Menu → Reset Configuration

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Cooling Reset Select	cr_sel	0 to 4	0	-	RO
2	0=None, 1=OAT				-	
3	2=Delta T, 4=Space Temp				-	
4	3=4-20mA control				-	
5					-	
6	Cooling				-	
7	OAT No Reset Value	oat_crno	14 to125	14 (-10)	°F (°C)	RO
8	OAT Full Reset Value	oat_crfu	14 to125	14 (-10)	°F (°C)	RO
9	Delta T No Reset Value	dt_cr_no	0 to 25	0	°F (°C)	RO
10	Delta T Full Reset Value	dt_cr_fu	0 to 25	0	°F (°C)	RO
11	Current No Reset Value	v_cr_no	0 to 20	0	mA	RO
12	Current Full Reset Value	v_cr_fu	0 to 20	0	mA	RO
13	Space T No Reset Value	spacr_no	14 to125	14 (-10)	°F (°C)	RO
14	Space T Full Reset Value	spacr_fu	14 to125	14 (-10)	°F (°C)	RO
15	Cooling Reset Deg. Value	cr_deg	-30 to 30	0	°F (°C)	RO

LEGEND

RO — Read Only

TEMPERATURES

CCN TABLE NAME: TEMP
TABLE TYPE: 11H
TOUCH PILOT PATH: Main Menu → Temperatures

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Evap Entering Fluid	COOL_EWT			°F (°C)	RO
2	Evap Leaving Fluid	COOL_LWT			°F (°C)	RO
3	Outdoor Air Temperature	OAT			°F (°C)	RO
4	Saturated Cond Tmp Cir A	SCT_A			°F (°C)	RO
5	Saturated Suction Temp A	SST_A			°F (°C)	RO
6	Saturated Liquid Temp A	SLT_A			°F (°C)	RO
7	Compressor Suction Tmp A	SUCT_A			°F (°C)	RO
8	Discharge Gas Temp Cir A	DGT_A			°F (°C)	RO
9	Motor Temperature Cir A	CP_TMP_A			°F (°C)	RO
10	EXV Eco. Tmp Cir A	ECO_T_A			°F (°C)	RO
11	Liquid Temperature A	LIQ_T_A			°F (°C)	RO
12	Saturated Cond Tmp Cir B	SCT_B			°F (°C)	RO
13	Saturated Suction Temp B	SST_B			°F (°C)	RO
14	Saturated Liquid Temp B	SLT_B			°F (°C)	RO
15	Compressor Suction Tmp B	SUCT_B			°F (°C)	RO
16	Discharge Gas Temp Cir B	DGT_B			°F (°C)	RO
17	Motor Temperature Cir B	CP_TMP_B			°F (°C)	RO
18	EXV Eco. Tmp Cir B	ECO_T_B			°F (°C)	RO
19	Liquid Temperature B	LIQ_T_B			°F (°C)	RO
20	Space Temp (Opt.)	SPACETMP			°F (°C)	RO
21	Chill Water Temp (Opt.)	CHWSTEMP			°F (°C)	RO

PRESSURES

CCN TABLE NAME: PRESSURE
TABLE TYPE: 11H
TOUCH PILOT PATH: Main Menu → Pressures

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Discharge Pressure A	DP_A			PSI (kPa)	RO
2	Main Suction Pressure A	SP_A			PSI (kPa)	RO
3	Oil Pressure A	OP_A			PSI (kPa)	RO
4	Delta Oil Pressure A	DOP_A			PSI (kPa)	RO
5	Economizer Pressure A	ECO_P_A			PSI (kPa)	RO
6	Liquid Pressure A	LIQ_P_A			PSI (kPa)	RO
7	Discharge Pressure B	DP_B			PSI (kPa)	RO
8	Main Suction Pressure B	SP_B			PSI (kPa)	RO
9	Oil Pressure B	OP_B			PSI (kPa)	RO
10	Delta Oil Pressure B	DOP_B			PSI (kPa)	RO
11	Economizer Pressure B	ECO_P_B			PSI (kPa)	RO
12	Liquid Pressure B	LIQ_P_B			PSI (kPa)	RO

LEGEND
RO — Read Only

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

INPUTS STATUS

CCN TABLE NAME: INPUTS

TABLE TYPE: 11H

TOUCH PILOT PATH: Main Menu → Inputs Status

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Remote On/Off Switch	ONOFF_SW	open/close		-	RO
2	Remote Setpoint Switch	SETP_SW	open/close		-	RO
3	Limit Switch 1	LIM_SW1	open/close		-	RO
4	Limit Switch 2	LIM_SW2	open/close		-	RO
5	Oil Level Input A	OIL_L_A	open/close		-	RO
6	Oil Level Input B	OIL_L_B	open/close		-	RO
7	Remote Reset Setpoint	SP_RESET			mA	RO
8	Remote Dem. Limit	LIM_ANAL			mA	RO
9	Leakage Detector 1	leak_v			Volts	RO
10	Leakage Detector 2	leak_2_v			Volts	RO
11	Customer Interlock	REM_LOCK	open/close		-	RO
12	Ice Done Storage Switch	ICE_SW	open/close		-	RO
13	Occupied Override Switch	OCC_OVSW	open/close		-	RO
14	Evap Heater Detector	HEATR_SW	open/close		-	RO
15	BACnet Dongle	bacdongl	no/yes		-	RO

LEGEND

RO — Read Only

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

OUTPUTS STATUS

CCN TABLE NAME: OUTPUTS

TABLE TYPE: 11H

TOUCH PILOT PATH: Main Menu → Outputs Status

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	CIRCUIT A	LABEL_A	normal/alarm	0 (normal)	-	RO
2	Compressor A	CP_A	off/on	0 (off)	-	RO
3	Oil Solenoid Output A	OIL_SL_A	off/on	0 (off)	-	RO
4	VI Solenoid Output A	VI_A	off/on	0 (off)	-	RO
5	Capacity Signal Cir A	CAPT010A			Volts	RO
6	VariFan Speed A	VFAN_A			%	RO
7	Ref Iso Relay Energize A	ISO_OP_A	off/on	0 (off)	-	RO
8	Ref Iso Valve State A	ISO_POSA	close/open	0(close)	-	RO
9	Oil Heater Output A	OIL_HT_A	off/on	0 (off)	-	RO
10	CIRCUIT B	LABEL_B	normal/alarm	0 (normal)	-	RO
11	Capacity Signal Cir B	CAPT010B			Volts	RO
12	VariFan Speed B	VFAN_B			%	RO
13	Compressor B	CP_B	off/on	0 (off)	-	RO
14	Oil Solenoid Output B	OIL_SL_B	off/on	0 (off)	-	RO
15	VI Solenoid Output B	VI_B	off/on	0 (off)	-	RO
16	Ref Iso Relay Energize B	ISO_OP_B	off/on	0 (off)	-	RO
17	Ref Iso Valve State B	ISO_POSB	close/open		-	RO
18	Oil Heater Output B	OIL_HT_B	off/on	0 (off)	-	RO
19	Alarm Relay Status	ALARM	off/on	0 (off)	-	RO
20	Running Relay Status	RUNNING	off/on	0 (off)	-	RO
21	Chiller Capacity Signal	CAPT_010			Volts	RO
22	Alert Relay State	ALERT	off/on	0 (off)	-	RO
23	Shutdown Indicator State	SHUTDOWN	off/on	0 (off)	-	RO
24	Evap Heater Output	C_HEATER	off/on	0 (off)	-	RO
25	Fan Contactor 1A	FCA1	off/on	0 (off)	-	RO
26	Fan Contactor 2A	FCA2	off/on	0 (off)	-	RO
27	Fan Contactor 3A	FCA3	off/on	0 (off)	-	RO
28	Fan Contactor 4A	FCA4	off/on	0 (off)	-	RO
29	Fan Contactor 5A	FCA5	off/on	0 (off)	-	RO
30	Fan Contactor 6A	FCA6	off/on	0 (off)	-	RO
31	Fan Contactor 7A	FCA7	off/on	0 (off)	-	RO
32	Fan Contactor 8A	FCA8	off/on	0 (off)	-	RO
33	Fan Contactor 1B	FCB1	off/on	0 (off)	-	RO
34	Fan Contactor 2B	FCB2	off/on	0 (off)	-	RO
35	Fan Contactor 3B	FCB3	off/on	0 (off)	-	RO
36	Fan Contactor 4B	FCB4	off/on	0 (off)	-	RO
37	Fan Contactor 5B	FCB5	off/on	0 (off)	-	RO
38	Fan Contactor 6B	FCB6	off/on	0 (off)	-	RO
39	Fan Contactor 7B	FCB7	off/on	0 (off)	-	RO
40	Fan Contactor 8B	FCB8	off/on	0 (off)	-	RO
41	Comp. HW Enable A	VFD_EN_A	off/on	0 (off)	-	RO
42	Comp. HW Enable B	VFD_EN_B	off/on	0 (off)	-	RO
43	Control Box Heater	BOX_HTR	off/on	0 (off)	-	RO

LEGEND

RO — Read Only

PUMP STATUS

CCN TABLE NAME: PUMPSTAT
TABLE TYPE: 11H
TOUCH PILOT PATH: Main Menu → Pump Status

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Evap Pump #1 Command	CPUMP_1	off/on	0 (off)		RO
2	Evap Pump #2 Command	CPUMP_2	off/on	0 (off)		RO
3	Rotate Evap Pumps	ROTCPUMP	no/yes	0 (no)		RO
4	Evaporator Flow Switch #1	FLOW_SW	open/close			RO
5	Evaporator Flow Switch #2	FLOW_SWB	open/close			RO

RUN TIMES

CCN TABLE NAME: RUNTIME
TABLE TYPE: 11H
TOUCH PILOT PATH: Main Menu → Run Times

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Machine Operating Hours	HR_MACH			hours	RO
2	Machine Starts	st_mach			-	RO
3	Compressor A Hours	HR_CP_A			hours	RO
4	Compressor A Starts	st_cp_a			-	RO
5	Compressor B Hours	HR_CP_B			hours	RO
6	Compressor B Starts	st_cp_b			-	RO
7	Evap Pump #1 Hours	hr_cpum1			hours	RO
8	Evap Pump #2 Hours	hr_cpum2			hours	RO
9	VI Cycle Count A	VIctA			cycles	RO
10	VI Cycle Count B	VIctB			cycles	RO
11	Circuit A Fan #1 Hours	hrfana01			hours	RO
12	Circuit A Fan #2 Hours	hrfana02			hours	RO
13	Circuit A Fan #3 Hours	hrfana03			hours	RO
14	Circuit A Fan #4 Hours	hrfana04			hours	RO
15	Circuit A Fan #5 Hours	hrfana05			hours	RO
16	Circuit A Fan #6 Hours	hrfana06			hours	RO
17	Circuit A Fan #7 Hours	hrfana07			hours	RO
18	Circuit A Fan #8 Hours	hrfana08			hours	RO
19	Circuit A Fan #9 Hours	hrfana09			hours	RO
20	Circuit A Fan #10 Hours	hrfana10			hours	RO
21	Circuit A Fan #11 Hours	hrfana11			hours	RO
22	Circuit A Fan #12 Hours	hrfana12			hours	RO
23	Circuit A Fan #13 Hours	hrfana13			hours	RO
24	Circuit A Fan #14 Hours	hrfana14			hours	RO
25	Circuit B Fan #1 Hours	hrfanb01			hours	RO
26	Circuit B Fan #2 Hours	hrfanb02			hours	RO
27	Circuit B Fan #3 Hours	hrfanb03			hours	RO
28	Circuit B Fan #4 Hours	hrfanb04			hours	RO
29	Circuit B Fan #5 Hours	hrfanb05			hours	RO
30	Circuit B Fan #6 Hours	hrfanb06			hours	RO
31	Circuit B Fan #7 Hours	hrfanb07			hours	RO
32	Circuit B Fan #8 Hours	hrfanb08			hours	RO
33	Circuit B Fan #9 Hours	hrfanb09			hours	RO
34	Circuit B Fan #10 Hours	hrfanb10			hours	RO
35	Circuit B Fan #11 Hours	hrfanb11			hours	RO
36	Circuit B Fan #12 Hours	hrfanb12			hours	RO
37	Circuit B Fan #13 Hours	hrfanb13			hours	RO
38	Circuit B Fan #14 Hours	hrfanb14			hours	RO

LEGEND
RO — Read Only

MODES

CCN TABLE NAME: MODES
TABLE TYPE: 11H
TOUCH PILOT PATH: Main Menu → Modes

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Start Up Delay In Effect	m_delay	no/yes			RO
2	Second Setpoint In Use	m_2stpt	no/yes			RO
3	Reset In Effect	m_reset	no/yes			RO
4	Demand Limit Active	m_demlim	no/yes			RO
5	Evaporator Pump Rotation	m_pmprot	no/yes			RO
6	Pump Periodic Start	m_pmpper	no/yes			RO
7	Night Low Noise Active	m_night	no/yes			RO
8	Master Slave Active	m_slave	no/yes			RO
9	Ice Mode In Effect	m_ice	no/yes			RO

ALARMS

CCN TABLE NAME: ALARMRST
TABLE TYPE: 12H
TOUCH PILOT PATH: Alarm Button → Reset Alarms

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Alarm Reset	RST_ALM	no/yes	0 (no)		RW
2	Alarm State	ALM				RO
3	Current Alarm 1	alarm_1c				RO
4	Current Alarm 2	alarm_2c				RO
5	Current Alarm 3	alarm_3c				RO
6	Current Alarm 4	alarm_4c				RO
7	Current Alarm 5	alarm_5c				RO
8	Jbus Current Alarm 1	alarm_1				RO
9	Jbus Current Alarm 2	alarm_2				RO
10	Jbus Current Alarm 3	alarm_3				RO
11	Jbus Current Alarm 4	alarm_4				RO
12	Jbus Current Alarm 5	alarm_5				RO

LEGEND

RO — Read Only
RW — Read/Write

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

VLT [VFD] DRIVE MAINTENANCE

CCN TABLE NAME: VLT_DRV

TABLE TYPE: 12H

TOUCH PILOT PATH: Main Menu → Maintenance → VLT Drive Maintenance

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Cir A Drive Power	drv_pwra			kW	RO
2	Cir A Drive Amps	drv_Ia			AMPS	RO
3	Cir A Drive Voltage	drv_Va			Volts	RO
4	Cir A Drive Speed	drv_Sa			rpm	RO
5	Cir A Drive Frequency	drv_Fa			Hz	RO
6	Cir A Drive Torque	drv_Ta			-	RO
7	Cir A Drive DC Link Volt	drv_DCVa			Volts	RO
8	Cir A Drive Heat Sink T	drv_HSTa			°F (°C)	RO
9	Cir A Drive Ctrl Card T	drv_CCTa			°F (°C)	RO
10	Cir A Drive Heater	drv_HTRa	0 (off) to 1 (on)	0 (off)	-	RO
11	Cir B Drive Power	drv_pwrb			kW	RO
12	Cir B Drive Amps	drv_Ib			AMPS	RO
13	Cir B Drive Voltage	drv_Vb			Volts	RO
14	Cir B Drive Speed	drv_Sb			rpm	RO
15	Cir B Drive Frequency	drv_Fb			Hz	RO
16	Cir B Drive Torque	drv_Tb			-	RO
17	Cir B Drive DC Link Volt	drv_DCVb			Volts	RO
18	Cir B Drive Heat Sink T	drv_HSTb			°F (°C)	RO
19	Cir B Drive Ctrl Card T	drv_CCTb			°F (°C)	RO
20	Cir B Drive Heater	drv_HTRb	0 (off) to 1 (on)	0 (off)	-	RO
21	Drive A Attach	SET_DRVA	no/yes	0 (no)	-	RO
22	Drive B Attach	SET_DRVB	no/yes	0 (no)	-	RO
23	Comm with Drive A Ok	VLT_COMA	no/yes	0 (no)	-	RO
24	Comm with Drive B Ok	VLT_COMB	no/yes	0 (no)	-	RO
25	Force Comp Drv A Config	CnfgDrva	no/yes	0 (no)	-	RO
26	Force Comp Drv B Config	CnfgDrvb	no/yes	0 (no)	-	RO

LAST POWER ON RESET

CCN TABLE NAME: LAST_POR

TABLE TYPE: 12H

TOUCH PILOT PATH: Main Menu → Maintenance → Last Power On Reset

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Power On 1 :day-mon-year	date_on1				RO
2	Power On 1 :hour-minute	time_on1				RO
3	PowerDown 1:day-mon-year	date_of1				RO
4	PowerDown 1:hour-minute	time_of1				RO
5	Power On 2 :day-mon-year	date_on2				RO
6	Power On 2 :hour-minute	time_on2				RO
7	PowerDown 2:day-mon-year	date_of2				RO
8	PowerDown 2:hour-minute	time_of2				RO
9	Power On 3 :day-mon-year	date_on3				RO
10	Power On 3 :hour-minute	time_on3				RO
11	PowerDown 3:day-mon-year	date_of3				RO
12	PowerDown 3:hour-minute	time_of3				RO
13	Power On 4 :day-mon-year	date_on4				RO
14	Power On 4 :hour-minute	time_on4				RO
15	PowerDown 4:day-mon-year	date_of4				RO
16	PowerDown 4:hour-minute	time_of4				RO
17	Power On 5 :day-mon-year	date_on5				RO
18	Power On 5 :hour-minute	time_on5				RO
19	PowerDown 5:day-mon-year	date_of5				RO
20	PowerDown 5:hour-minute	time_of5				RO

LEGEND

RO — Read Only

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

EXV CONTROL

CCN TABLE NAME: EXV_CTRL

TABLE TYPE: 12H

TOUCH PILOT PATH: Main Menu → Maintenance → EXV Control

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Circuit A				-	
2	EXV Override Circuit A	ov_exv_a			-	RO
3	EXV Position Circuit A	EXV_A			%	RO
4	Discharge Superheat A	DSH_A			°F (°C)	RO
5	Suction Superheat A	SH_A			°F (°C)	RO
6	Suct. Superheat Setpnt A	sh_sp_a			°F (°C)	RO
7	Evap ExchangeDT Cir A	pinch_a			°F (°C)	RO
8	Subcooling Circuit A	subcoola			°F (°C)	RO
9	Subcooling Setpoint A	subc_spa			°F (°C)	RO
10	EXV State A	exv_sta			-	RO
11	EXV Previous State A	exv_lsta			-	RO
12	EXV Wished Position A	exvwposa			-	RO
13	EXV Mode A	exv_moda	closed/open		-	RO
14	EXV Mode Text A	exv_txta	closed/open		-	RO
15	Circuit B				-	
16	EXV Override Circuit B	ov_exv_b			-	RO
17	EXV Position Circuit B	EXV_B			%	RO
18	Discharge Superheat B	DSH_B			°F (°C)	RO
19	Suction Superheat B	SH_B			°F (°C)	RO
20	Suct. Superheat Setpnt B	sh_sp_b			°F (°C)	RO
21	Evap ExchangeDT Cir B	pinch_b			°F (°C)	RO
22	Subcooling Circuit B	subcoolb			°F (°C)	RO
23	Subcooling Setpoint B	subc_spb			°F (°C)	RO
24	EXV State B	exv_stb			-	RO
25	EXV Previous State B	exv_lstb			-	RO
26	EXV Wished Position B	exvwposb			-	RO
27	EXV Mode B	exv_modb	closed/open		-	RO
28	EXV Mode Text B	exv_txtb	closed/open		-	RO

LEGEND

RO — Read Only

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

QUICK TEST TABLE

CCN TABLE NAME: QCK_TEST

TABLE TYPE: 12H

TOUCH PILOT PATH: Main Menu → Quick Test Table

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Unit must be in L-off				-	
2	Quick Test Enable	QCK_TEST	disable/enable	0 (disable)	-	RO
3	Circuit A EXV Position	Q_EXVA	0 to 100	0	%	RO
4	Circuit A Oil Solenoid	Q_OILS_A	off/on	0 (off)	-	RO
5	EXV Eco Position Cir A	Q_ECO_A	0 to100	0	%	RO
6	Oil Heater Circuit A	Q_OILHTA	off/on	0 (off)	-	RO
7	Capacity Cir A Output	Q_010_A	0 to100	0	%	RO
8	Comp A Running Output	Q_COMPA	off/on	0 (off)	-	RO
9	Isolation Valve State A	Q_ISOP_A	close/open	0 (close)	-	RO
10	Circuit A VI	Q_VI_A	off/on	0 (off)	-	RO
11	VariFan Speed A	Q_VFAN_A	0 to100	0	%	RO
12	Circuit B EXV Position	Q_EXVB	0 to100	0	%	RO
13	Circuit B Oil Solenoid	Q_OILS_B	off/on	0 (off)	-	RO
14	EXV Eco Position Cir B	Q_ECO_B	0 to100	0	%	RO
15	Oil Heater Circuit B	Q_OILHTB	off/on	0 (off)	-	RO
16	Capacity Cir B Output	Q_010_B	0 to100	0	%	RO
17	Comp B Running Output	Q_COMPB	off/on	0 (off)	-	RO
18	Isolation Valve State B	Q_ISOP_B	close/open	0 (close)	-	RO
19	Circuit B VI	Q_VI_B	off/on	0 (off)	-	RO
20	VariFan Speed B	Q_VFAN_B	0 to100	0	%	RO
21	Evaporator Heater	Q_CL_HTR	off/on	0 (off)	-	RO
22	Evaporator Pump 1	Q_CPMP1	0 to 2	0	-	RO
23	Evaporator Pump 2	Q_CPMP2	0 to 2	0	-	RO
24	Alarm Relay Status	Q_ALARM	off/on	0 (off)	-	RO
25	Shutdown Relay Status	Q_SHUTD	off/on	0 (off)	-	RO
26	Running Relay Status	Q_RUN	off/on	0 (off)	-	RO
27	Alert Relay Switch	Q_ALERT	off/on	0 (off)	-	RO
28	Capacity Total Output	Q_CAP010	0 to100	0	%	RO
29	Comp drive heater A	Q_DRVHTA	off/on	0 (off)	-	RO
30	Comp drive heater B	Q_DRVHTB	off/on	0 (off)	-	RO
31	Fan Contactor 1A	Q_FCA1	off/on	0 (off)	-	RO
32	Fan Contactor 2A	Q_FCA2	off/on	0 (off)	-	RO
33	Fan Contactor 3A	Q_FCA3	off/on	0 (off)	-	RO
34	Fan Contactor 4A	Q_FCA4	off/on	0 (off)	-	RO
35	Fan Contactor 5A	Q_FCA5	off/on	0 (off)	-	RO
36	Fan Contactor 6A	Q_FCA6	off/on	0 (off)	-	RO
37	Fan Contactor 7A	Q_FCA7	off/on	0 (off)	-	RO
38	Fan Contactor 8A	Q_FCA8	off/on	0 (off)	-	RO
39	Fan Contactor 1B	Q_FCB1	off/on	0 (off)	-	RO
40	Fan Contactor 2B	Q_FCB2	off/on	0 (off)	-	RO
41	Fan Contactor 3B	Q_FCB3	off/on	0 (off)	-	RO
42	Fan Contactor 4B	Q_FCB4	off/on	0 (off)	-	RO
43	Fan Contactor 5B	Q_FCB5	off/on	0 (off)	-	RO
44	Fan Contactor 6B	Q_FCB6	off/on	0 (off)	-	RO
45	Fan Contactor 7B	Q_FCB7	off/on	0 (off)	-	RO
46	Fan Contactor 8B	Q_FCB8	off/on	0 (off)	-	RO
47	Comp. HW Enable A	Q_VF_ENA	off/on	0 (off)	-	RO
48	Comp. HW Enable B	Q_VF_ENB	off/on	0 (off)	-	RO
49	Control Box Heater	Q_BOX_HT	off/on	0 (off)	-	RO

LEGEND

RO — Read Only

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

MASTER SLAVE CONTROL

CCN TABLE NAME: M_MSTSLV
TABLE TYPE: 12H
TOUCH PILOT PATH: Main Menu → Maintenance Menu → Master Slave Control

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	MASTER/SLAVE CONTROL				-	RO
2	Unit is Master or Slave	mstslv			-	RO
3	Master Control Type	ms_ctrl			-	RO
4	Master/Slave Ctrl Active	ms_activ	false/true		-	RO
5	Lead Unit is the:	lead_sel	master/slave		-	RO
6	Slave Chiller State	slv_stat			-	RO
7	Slave Chiller Total Cap	slv_capt			%	RO
8	Lag Start Delay	l_strt_d			min	RO
9	Lead/lag Hours Delta	ll_hr_d			hours	RO
10	Lead/lag Changeover?	ll_chang	no/yes		-	RO
11	Lead Pulldown ?	ll_pull	no/yes		-	RO
12	Master/Slave Error	ms_error			-	RO
13	Max Available Capacity ?	cap_max	no/yes		-	RO
14	Slave lagstat	lagstat			-	RO
15	Slave Operating Hours	slav_hr			hours	RO
16	Slave Evap Ent. Fluid	slav_ewt			°F (°C)	RO
17	Slave Evap Leav. Fluid	slav_lwt			°F (°C)	RO

CAPACITY CONTROL

CCN TABLE NAME: CAPACTRL
TABLE TYPE: 12H
TOUCH PILOT PATH: Main Menu → Maintenance Menu → Capacity Control

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Controlled Water Temp	ctrl_wt			°F	RO
2	Ctrl Water Temp, Deg/Min	cwt_rate			°F	RO
3	Current Capacity Limit	cap_lim			%	RO
4	Wished Comp. Frequency A	drvcmda			Hz	RO
5	Capa Ctrl State A	capstata			-	RO
6	Capa Ctrl State Text A	captxta			-	RO
7	Override State A	ovrstata			-	RO
8	Override State Text A	ovrtxta			-	RO
9	Capa Ctrl Stat Nb A	capmoda			-	RO
10	Last Capa Ctrl Stat Nb A	lcapmoda			-	RO
11	Override Capacity Nb A	overrida			-	RO
12	Estimated Capacity A	cap_pc_a			%	RO
13	Wished Comp. Frequency B	drvcmdb			Hz	RO
14	Capa Ctrl State B	capstatb			-	RO
15	Capa Ctrl State Text B	captxtb			-	RO
16	Override State B	ovrstatb			-	RO
17	Override State Text B	ovrtxtb			-	RO
18	Capacity Ctrl Stat Nb B	capmodb			-	RO
19	Last Capa Ctrl Stat Nb B	lcapmodb			-	RO
20	Override Capacity Nb B	overridb			-	RO
21	Estimated Capacity B	cap_pc_b			%	RO
22	Max Comp. Frequency A	cMaxFrqA			Hz	RO
23	Max Comp. Frequency B	cMaxFrqB			Hz	RO
24	Comp. VI Cmd A	viCmdA			-	RO
25	Comp. VI Cmd B	viCmdB			-	RO
26	Reset Amount	reset			°F	RO
27	Circuit Running Number	CirRunNb			-	RO
28	State of Circuit A	StatCirA			-	RO
29	State of Circuit B	StatCirB			-	RO
30	Dual Circuit Master	DualMast			-	RO
31	Transfer Spd, add cir	xSpdHigh			Hz	RO
32	Transfer Spd, remove cir	xSpdLow			Hz	RW
33	Compressor Start Freq	cStrtFrq			Hz	RO
34	Compressor Min Frequency	cMinFrq			Hz	RO

LEGEND

RO — Read Only
RW — Read/Write

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

CONTROL LIMITS

CCN TABLE NAME: LIMITS

TABLE TYPE: 12H

TOUCH PILOT PATH: Main Menu → Maintenance Menu → Control Limits

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	EXV_dsh_act A	dshacta			°F (°C)	RO
2	EXV_dsh_stp A	dshstpa			°F (°C)	RO
3	EXV_lsp_act A	elspacta			psi (kPa)	RO
4	EXV_lsp_stp A	elspstpa			psi (kPa)	RO
5	ENV comp high dp act A	chdpacta			psi (kPa)	RO
6	ENV comp high dp stp A	chdpstpa			psi (kPa)	RO
7	ENV fan high dp act A	fhdpacta			psi (kPa)	RO
8	ENV fan high dp stp A	fhdpstpa			psi (kPa)	RO
9	ENV low dp act A	ldpacta			psi (kPa)	RO
10	ENV low dp stp A	ldpstpa			psi (kPa)	RO
11	ENV high sp act A	hspacta			psi (kPa)	RO
12	ENV high sp stp A	hspstpa			psi (kPa)	RO
13	ENV low sp act A	lspacta			psi (kPa)	RO
14	ENV low sp stp A	lspstpa			psi (kPa)	RO
15	dgt act A	dgtacta			°F (°C)	RO
16	dgt stp A	dgtstpa			°F (°C)	RO
17	EXV_dsh_act B	dshactb			°F (°C)	RO
18	EXV_dsh_stp B	dshstpb			°F (°C)	RO
19	EXV_lsp_act B	elspactb			psi (kPa)	RO
20	EXV_lsp_stp B	elspstpb			psi (kPa)	RO
21	ENV comp high dp act B	chdpactb			psi (kPa)	RO
22	ENV comp high dp stp B	chdpstpb			psi (kPa)	RO
23	ENV fan high dp act B	fhdpactb			psi (kPa)	RO
24	ENV fan high dp stp B	fhdpstpb			psi (kPa)	RO
25	ENV low dp act B	ldpactb			psi (kPa)	RO
26	ENV low dp stp B	ldpstpb			psi (kPa)	RO
27	ENV high sp act B	hspactb			psi (kPa)	RO
28	ENV high sp stp B	hspstpb			psi (kPa)	RO
29	ENV low sp act B	lspactb			psi (kPa)	RO
30	ENV low sp stp B	lspstpb			psi (kPa)	RO
31	dgt_act B	dgtactb			°F (°C)	RO
32	dgt_stp B	dgtstpb			°F (°C)	RO
33	Cmp Env Min SST A	sstMinA			°F (°C)	RO
34	Cmp Env Max SST A	sstMaxA			°F (°C)	RO
35	Cmp Env Min SDT A	sdtMinA			°F (°C)	RO
36	Cmp Env Max SDT A	sdtMaxA			°F (°C)	RO
37	Cmp Env Min SST B	sstMinB			°F (°C)	RO
38	Cmp Env Max SST B	sstMaxB			°F (°C)	RO
39	Cmp Env Min SDT B	sdtMinB			°F (°C)	RO
40	Cmp Env Max SDT B	sdtMaxB			°F (°C)	RO
41	Max Compressor Rate	maxinc			NONE	RO

LEGEND

RO — Read Only

EXV ECO. CONTROL

CCN TABLE NAME: ECO_CTRL
TABLE TYPE: 12H
TOUCH PILOT PATH: Main Menu → Maintenance Menu → EXV Eco. Control

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	EXV Eco Position Cir A	eco_a			%	RO
2	Eco Suction Superheat A	eco_sh_a			°F (°C)	RO
3	Eco Suction SH Setpt A	esh_sp_a			°F (°C)	RO
4	EXV Eco State A	eco_sta			-	RO
5	EXV Eco Previous State A	eco_lsta			-	RO
6	EXV Eco Wished Pos A	ecowposa			-	RO
7	EXV Eco Mode A	eco_moda			-	RO
8	EXV Eco Mode Txt A	eco_txta			-	RO
9	EXV Eco Position Cir B	eco_b			%	RO
10	Eco Suction Superheat B	eco_sh_b			°F (°C)	RO
11	Eco Suction SH Setpt B	esh_sp_b			°F (°C)	RO
12	EXV Eco State B	eco_stb			-	RO
13	EXV Eco Previous State B	eco_lstb			-	RO
14	EXV Eco Wished Pos B	ecowposb			-	RO
15	EXV Eco Mode B	eco_modb			-	RO
16	EXV Eco Mode Txt B	eco_txtb			-	RO

FAN CONTROL

CCN TABLE NAME: FAN_CTRL
TABLE TYPE: 12H
TOUCH PILOT PATH: Main Menu → Maintenance Menu → Fan Control

LINE	MENU TEXT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Fan Freq Cir A	fan_f_a			Hz	RO
2	Fan State A	fan_sta			-	RO
3	Fan Previous State A	fan_lsta			-	RO
4	Fan Wished Freq A	wfan_f_a			Hz	RO
5	Fan Mode A	fan_moda			-	RO
6	Fan Mode Text A	fan_txta			-	RO
7	Fan Tot Pwr Filtered A	ftotpowa			kW	RO
8	Fan Contactors On A	fcont_a			-	RO
9	Fan Freq Cir B	fan_f_b			Hz	RO
10	Fan State B	fan_stb			-	RO
11	Fan Previous State B	fan_lstb			-	RO
12	Fan Wished Freq B	wfan_f_b			Hz	RO
13	Fan Mode B	fan_modb			-	RO
14	Fan Mode Text B	fan_txtb			-	RO
15	Fan Tot Pwr Filtered B	ftotpowb			kW	RO
16	Fan Contactors On B	fcont_b			-	RO

LEGEND

RO — Read Only

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

FAN DRIVE MAINTENANCE

CCN TABLE NAME: FAN_DRV

TABLE TYPE: 12H

TOUCH PILOT PATH: Main Menu → Maintenance Menu → Fan Drive Maintenance

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Fan Drive Power A1	fd_pwra1			kW	RO
2	Fan Drive Amps A1	fd_Ia1			AMPS	RO
3	Fan Drive Voltage A1	fd_Va1			Volts	RO
4	Fan Drive Speed A1	fd_Sa1			rpm	RO
5	Fan Drive Frequency A1	fd_Fa1			Hz	RO
6	Fan Drive Torque A1	fd_Ta1			-	RO
7	Fan Drv DC Link Volt A1	fd_DCVa1			Volts	RO
8	Fan Drive Heat Sink T A1	fd_HSTa1			°F (°C)	RO
9	Fan Drive Ctrl Card T A1	fd_CCTa1			°F (°C)	RO
10	Fan Drive Power A2	fd_pwra2			kW	RO
11	Fan Drive Amps A2	fd_Ia2			AMPS	RO
12	Fan Drive Voltage A2	fd_Va2			Volts	RO
13	Fan Drive Speed A2	fd_Sa2			rpm	RO
14	Fan Drive Frequency A2	fd_Fa2			Hz	RO
15	Fan Drive Torque A2	fd_Ta2			-	RO
16	Fan Drv DC Link Volt A2	fd_DCVa2			Volts	RO
17	Fan Drive Heat Sink T A2	fd_HSTa2			°F (°C)	RO
18	Fan Drive Ctrl Card T A2	fd_CCTa2			°F (°C)	RO
28	Fan Drive Power B1	fd_pwrb1			kW	RO
29	Fan Drive Amps B1	fd_Ib1			AMPS	RO
30	Fan Drive Voltage B1	fd_Vb1			Volts	RO
31	Fan Drive Speed B1	fd_Sb1			rpm	RO
32	Fan Drive Frequency B1	fd_Fb1			Hz	RO
33	Fan Drive Torque B1	fd_Tb1			-	RO
34	Fan Drv DC Link Volt B1	fd_DCVb1			Volts	RO
35	Fan Drive Heat Sink T B1	fd_HSTb1			°F (°C)	RO
36	Fan Drive Ctrl Card T B1	fd_CCTb1			°F (°C)	RO
37	Fan Drive Power B2	fd_pwrb2			kW	RO
38	Fan Drive Amps B2	fd_Ib2			AMPS	RO
39	Fan Drive Voltage B2	fd_Vb2			Volts	RO
40	Fan Drive Speed B2	fd_Sb2			rpm	RO
41	Fan Drive Frequency B2	fd_Fb2			Hz	RO
42	Fan Drive Torque B2	fd_Tb2			-	RO
43	Fan Drv DC Link Volt B2	fd_DCVb2			Volts	RO
44	Fan Drive Heat Sink T B2	fd_HSTb2			°F	RO

LEGEND

RO — Read Only

FAN DRIVE ADDRESSING

CCN TABLE NAME: FAN_DRV2
TABLE TYPE: 12H
TOUCH PILOT PATH: Main Menu → Maintenance Menu → Fan Drive Addressing

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Fan Drive A1 Attach	SET_FDA1	no/yes	0 (no)		RO
2	Fan Drive A2 Attach	SET_FDA2	no/yes	0 (no)		RO
4	Fan Drive B1 Attach	SET_FDB1	no/yes	0 (no)		RO
5	Fan Drive B2 Attach	SET_FDB2	no/yes	0 (no)		RO
7	Comm Fan Drive A1 Ok	FD_COMA1	no/yes			RO
8	Comm Fan Drive A2 Ok	FD_COMA2	no/yes			RO
10	Comm Fan Drive B1 Ok	FD_COMB1	no/yes			RO
11	Comm Fan Drive B2 Ok	FD_COMB2	no/yes			RO
13	Stop Cir A Fan Drive	stopfana	no/yes	0 (no)		RO
14	Stop Cir B Fan Drive	stopfanb	no/yes	0 (no)		RO
15	Force Fan Drv A1 Config	CnfgFDA1	no/yes	0 (no)		RO
16	Force Fan Drv A2 Config	CnfgFDA2	no/yes	0 (no)		RO
18	Force Fan Drv B1 Config	CnfgFDB1	no/yes	0 (no)		RO
19	Force Fan Drv B2 Config	CnfgFDB2	no/yes	0 (no)		RO

FACTORY PARAMETERS

CCN TABLE NAME: FACTORY
TABLE TYPE: 13H
TOUCH PILOT PATH: Main Menu → Configuration Menu → Factory Parameters

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Unit Capacity	unitsize	0 to 2000	0		RO
2	Power Supply Voltage	voltage	0 to 700	460		RO
3	Tier 0=STD, 1=MID, 2=HI	mfg_tier	0 to 2	0		RO
4	DX Evaporator Installed	dxcooler	no/yes	0 (no)		RO
5	Evap Pass Number	cpass_nb	1 to 3	2		RO
6	Evap Heater Installed	heat_sel	no/yes	0 (no)		RO
7	Master Slave Setup	mst_slv	no/yes	0 (no)		RO
8	Energy Management Module	emm_nrcp	no/yes	0 (no)		RO
9	Low Ambient Option (STD)	loambopt	no/yes	0 (no)		RO
10	Leakage Charge Detection	leak_chk	no/yes	0 (no)		RO
11	Factory Password	fac_pass	0 to 9999	113		RO
12	Enable Max Frequency A	fMaxEnA	no/yes	0 (no)		RO
13	Enable Max Frequency B	fMaxEnB	no/yes	0 (no)		RO
14	Max Frequency Override A	fMaxOvrA	50 to105	75	Hz	RO
15	Max Frequency Override B	fMaxOvrB	50 to105	75	Hz	RO
16	Fan Freq Fctor (0.7-1.1)	fan_fact	0.7 to1.1	1.00		RO
17	Min Frequency Override	fMinOvr	26 to 40	26	Hz	RO

FACTORY2 PARAMETERS

CCN TABLE NAME: FACTORY2
TABLE TYPE: 13H
TOUCH PILOT PATH: Main Menu → Configuration Menu → Factory2 Parameters

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	EXV A Maximum Steps Numb	exvmax_a	0 to 10000	0		RO
2	EXV B Maximum Steps Numb	exvmax_b	0 to 10000	0		RO
3	Economizer A Steps Numb	eco_cnfa	0 to 15000	0		RO
4	Economizer B Steps Numb	eco_cnfb	0 to 15000	0		RO
5	Nb VFD Compressor	vfd_cmp	0 to 2	0		RO
6	Nb Fan Drive Cir A	vfd_fana	0 to 3	0		RO
7	Nb Fan Drive Cir B	vfd_fanb	0 to 3	0		RO

LEGEND

RO — Read Only

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

SERVICE PARAMETERS

CCN TABLE NAME: SERVICE

TABLE TYPE: 13H

TOUCH PILOT PATH: Main Menu → Configuration Menu → Service Parameters

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Evaporator Fluid Type	flui_typ	1 to 3	1	-	RO
2	1 = Water, 2 = Med Brine				-	
3	3 = Low Brine				-	
4	Entering Fluid Control	ewt_opt	no/yes	0 (no)	-	RO
5	Brine Freeze Setpoint	freezesp	-20 to34.0	34	°F (°C)	RO
6	Brine Minimum Fluid Temp	mini_lwt	-20 to 38.0	38	°F (°C)	RO
7	Fast Capacity Recovery*	fastcapr	0 to 2	0	-	RO
8	EWT Probe on Cir A Side	ewt_cirA	no/yes	1 (yes)	-	RO
9	Service Password	ser_pass	0 to 9999	88	-	RO
10	Leakage Charge Threshold	leak_thr	0 to 10	2.5	Volts	
11	Leakage Charge Timer	leak_tmr	0 to 600	60	min	RO
12	Compressor RFI Filter En	RFI_conf	off/on	1 (on)	-	RO
13	Metric Units? (Blackbox) + Trends	metric	no/yes	0 (no)	-	RO
14	Send fan drive config?	fdrv_cfg	no/yes	1 (yes)	-	RO
15	Send comp. drive config?	cdrv_cfg	no/yes	1 (yes)	-	RO
16	Evap Heater Delta Spt	heatersp	0 to 6.0	2.0	-	RO
17	Freeze Override Offset	freez_ov	0 to 5.8	0.0	°F (°C)	RO
18	Auto Start When SM Lost	auto_sm	disable/enable	0 (disable)	-	RO
19	VI Self-Test Threshold	ViPwrChk	0.5 to 15	1.15	kW	RO
20	VI Self-Test Enable	ViChkEn	off/on	1 (on)		
21	Pump Rot. AntiFrz Protec	AntiFrz	off/on	1 (on)	-	RO
22	HTTP Server	http_en	disable/enable	0 (disable)		RO
23	FTP Server	ftp_en	disable/enable	0 (disable)		RO
24	Oil Delta Trigger Speed	odtrgspd	0 to 15	5	Hz	
25	Oil Trigger Time	otrigtim	1800 to 7200	3600	seconds	
26	Oil Delta Recover Speed	odrecspd	0 to 15	5	Hz	
27	Oil Recover Time	orectim	30 to 120	60	seconds	

LEGEND

RO — Read Only

* 0 = disabled, 1 = quickstart load, 2 = fast capacity recovery. See Fast Loading section on page 22 for detailed description.

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

UPDATE RUNNING HOUR

CCN TABLE NAME: UPDTHOUR

TABLE TYPE: 13H

TOUCH PILOT PATH: Main Menu → Configuration Menu → Update Running Hour

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Machine Operating Hours	hr_mach	0 to 99999999	0	hours	RO
2	Machine Starts Number	st_mach	0 to 99999999	0	-	RO
3	Compressor A Hours	hr_cp_a	0 to 99999999	0	hours	RO
4	Compressor A Starts	st_cp_a	0 to 99999999	0	-	RO
5	Compressor B Hours	hr_cp_b	0 to 99999999	0	hours	RO
6	Compressor B Starts	st_cp_b	0 to 99999999	0	-	RO
7	Evap Pump #1 Hours	hr_cpum1	0 to 99999999	0	hours	RO
8	Evap Pump #2 Hours	hr_cpum2	0 to 99999999	0	hours	RO
9	VI Cycle Count A	VIctA	0 to 99999999	0	cycles	RO
10	VI Cycle Count B	VIctB	0 to 99999999	0	cycles	RO
11	Circuit A Fan #1 Hours	hrfana01	0 to 99999999	0	hours	RO
12	Circuit A Fan #2 Hours	hrfana02	0 to 99999999	0	hours	RO
13	Circuit A Fan #3 Hours	hrfana03	0 to 99999999	0	hours	RO
14	Circuit A Fan #4 Hours	hrfana04	0 to 99999999	0	hours	RO
15	Circuit A Fan #5 Hours	hrfana05	0 to 99999999	0	hours	RO
16	Circuit A Fan #6 Hours	hrfana06	0 to 99999999	0	hours	RO
17	Circuit A Fan #7 Hours	hrfana07	0 to 99999999	0	hours	RO
18	Circuit A Fan #8 Hours	hrfana08	0 to 99999999	0	hours	RO
19	Circuit A Fan #9 Hours	hrfana09	0 to 99999999	0	hours	RO
20	Circuit A Fan #10 Hours	hrfana10	0 to 99999999	0	hours	RO
21	Circuit A Fan #11 Hours	hrfana11	0 to 99999999	0	hours	RO
22	Circuit A Fan #12 Hours	hrfana12	0 to 99999999	0	hours	RO
25	Circuit B Fan #1 Hours	hrfanb01	0 to 99999999	0	hours	RO
26	Circuit B Fan #2 Hours	hrfanb02	0 to 99999999	0	hours	RO
27	Circuit B Fan #3 Hours	hrfanb03	0 to 99999999	0	hours	RO
28	Circuit B Fan #4 Hours	hrfanb04	0 to 99999999	0	hours	RO
29	Circuit B Fan #5 Hours	hrfanb05	0 to 99999999	0	hours	RO
30	Circuit B Fan #6 Hours	hrfanb06	0 to 99999999	0	hours	RO
31	Circuit B Fan #7 Hours	hrfanb07	0 to 99999999	0	hours	RO
32	Circuit B Fan #8 Hours	hrfanb08	0 to 99999999	0	hours	RO
33	Circuit B Fan #9 Hours	hrfanb09	0 to 99999999	0	hours	RO
34	Circuit B Fan #10 Hours	hrfanb10	0 to 99999999	0	hours	RO
35	Circuit B Fan #11 Hours	hrfanb11	0 to 99999999	0	hours	RO
36	Circuit B Fan #12 Hours	hrfanb12	0 to 99999999	0	hours	RO

LEGEND

RO — Read Only

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

MASTER/SLAVE CONTROL TABLE

CCN TABLE NAME: MST_SLV
TABLE TYPE: 13H
TOUCH PILOT PATH: Main Menu → Configuration Menu → Master Slave config

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	MASTER/SLAVE CONTROL				-	
2	Master/Slave Select	ms_sel	0 to 2	0	-	RW
3	0=Disable				-	
4	1=Master				-	
5	2=Slave				-	
6	Master Control Type	ms_ctrl	1 to 3	1	-	RW
7	1=Local Control				-	
8	2=Remote Control				-	
9	3=CCN Control				-	
10	Slave Address	slv_addr	1 to 236	2	-	RW
11	Lead Lag Select	lead_sel	0 to 2	0	-	RW
12	0=Always Lead				-	
13	1=Lag Once Failed Only				-	
14	2=Lead/Lag Runtime Sel				-	
15	Lead/Lag Balance Delta	ll_bal_d	40 to 400	168	hours	RW
16	Lead/Lag Start Timer	lstr_tim	2 to 30	10	min	RW
17	Lead Pulldown Time	lead_pul	0 to 60	0	min	RW
18	Start If Error Higher	start_dt	3 to 18	4	°F	RW
19	Lag Minimum Running Time	lag_mini	0 to 150	0	min	RW
20	Lag Unit Pump Control	lag_pump	0 to 1	0	-	RW
21	0=Stop if Unit Stops				-	
22	1=Run if Unit Stops				-	
23	Chiller In Series	ll_serie	no/yes	0 (no)	-	RW

BACNET TABLE (Not Supported)

CCN TABLE NAME: BACNET
TABLE TYPE: 13H
TOUCH PILOT PATH: Main Menu → Configuration Menu → BACnet Parameters → BACnet Standard Conf.

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	BACnet Enable	bacena	dsable/enable	1 (enable)		
2	Metric Unit	bacunit	no/yes	1 (yes)		RW
3	Network	network	1 to 9999	1601		RW
4	Identifier	ident	0 to 9999999	1600001		RW
5	BACnet Management Device*	bbmd	0 to 2	0		RW

COMPRESSOR ENABLE

CCN TABLE NAME: CP_UNABL
TABLE TYPE: 13H
TOUCH PILOT PATH: Main Menu → Configuration Menu → Compressor Enable

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	DISABLE COMPRESSORS					
2	Compressor A Disable	en_cp_a	no/yes	0 (no)		RW
3	Compressor B Disable	en_cp_b	no/yes	0 (no)		RW

LEGEND

RW — Read/Write

*0 = no device, 1 = FD (foreign device, 2 = BBMD (BACnet management device). 1 (FD) and 2 (BBMD) are not currently available.

EMAIL CONFIGURATION

CCN TABLE NAME: EMAILCFG
TABLE TYPE: 13H
TOUCH PILOT PATH: Main Menu → Configuration Menu → Email Configuration

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Sender Email Part1	senderP1			-	RW
2	@				-	
3	Sender Email Part2	senderP2			-	RW
4	Recip1 Email Part1	recip1P1			-	RW
5	@				-	
6	Recip1 Email Part2	recip1P2			-	RW
7	Recip2 Email Part1	recip2P1			-	RW
8	@				-	
9	Recip2 Email Part2	recip2P2			-	RW
10	SMTP IP Addr Part 1	smtpP1	0 to 255	0	-	RW
11	SMTP IP Addr Part 2	smtpP2	0 to 255	0	-	RW
12	SMTP IP Addr Part 3	smtpP3	0 to 255	0	-	RW
13	SMTP IP Addr Part 4	smtpP4	0 to 255	0	-	RW
14	Account Email Part1	accP1			-	RW
15	@				-	
16	Account Email Part2	accP2			-	RW
17	Account Password	accPass			-	RW
18	Port Number	portNbr	0 to 255	25	-	RW
19	Server Timeout	srvTim	0 to 255	30	sec	RW
20	Server Authentification	srvAut	0 to 1	0	-	RW

SETPOINT TABLE

CCN TABLE NAME: SETPOINT
TABLE TYPE: 17H
TOUCH PILOT PATH: Main Menu → Setpoint Table

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Cooling Setpoint 1	csp1	–20 to 78.8 (–28.9 to 26)	44 (6.7)	°F (°C)	RW
2	Cooling Setpoint 2	csp2	–20 to 78.8 (–28.9 to 26)	44 (6.7)	°F (°C)	RW
3	Cooling Ice Setpoint	ice_sp	–20 to 78.8 (–28.9 to 26)	44 (6.7)	°F (°C)	RW
4	Cooling Ramp Loading	cramp_sp	0.2 to 20.0 (0.1 to 11.1)	1 (0.6)	°F (°C)	RW
11	Switch Limit Setpoint 1	lim_sp1	0 to 100	100	%	RW
12	Switch Limit Setpoint 2	lim_sp2	0 to 100	100	%	RW
13	Switch Limit Setpoint 3	lim_sp3	0 to 100	100	%	RW

LEGEND
RW — Read/Write

APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

BROADCAST MENU

CCN TABLE NAME: BRODEFS
TABLE TYPE: 14H
TOUCH PILOT PATH: Main Menu → Configuration Menu → Broadcast Menu →BROCASTS

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Activate*	ccnbroad	0 to 2	2		RW
2						
3	OAT Broadcast					
4	Bus #	oatbusn	0 to 239	0		RW
5	Element #	oatlocad	0 to 239	0		RW
6						
7	DAYLIGHT SAVING SELECT	dayl_sel	Disable/Enable	Disable		RW
8	ENTERING					
9	Month	startmon	1 to 12	3		RW
10	Day of week (1 = Monday)	startdow	1 to 7	7		RW
11	Week Number of Month	startwom	1 to 5	5		RW
12	LEAVING					
13	Month	stopmon	1 to 12	10		RW
14	Day of week (1 = Monday)	stoptdow	1 to 7	7		RW
15	Week Number of Month	stopwom	1 to 5	5		RW

HOLIDAY MENU

CCN TABLE NAME: HOLIDAY
TABLE TYPE: 14H
TOUCH PILOT PATH: Main Menu → Configuration Menu → Holiday Menu

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Holiday Start Month	HOL_MON	0 to 12	0		RW
2	Holiday Start Day	HOL_DAY	0 to 31	0		RW
3	Holiday Duration (Days)	HOL_LEN	0 to 99	0		RW

LEGEND

RW — Read/Write

*0 = disabled, 1 = broadcast time date, holiday flag, and OAT.

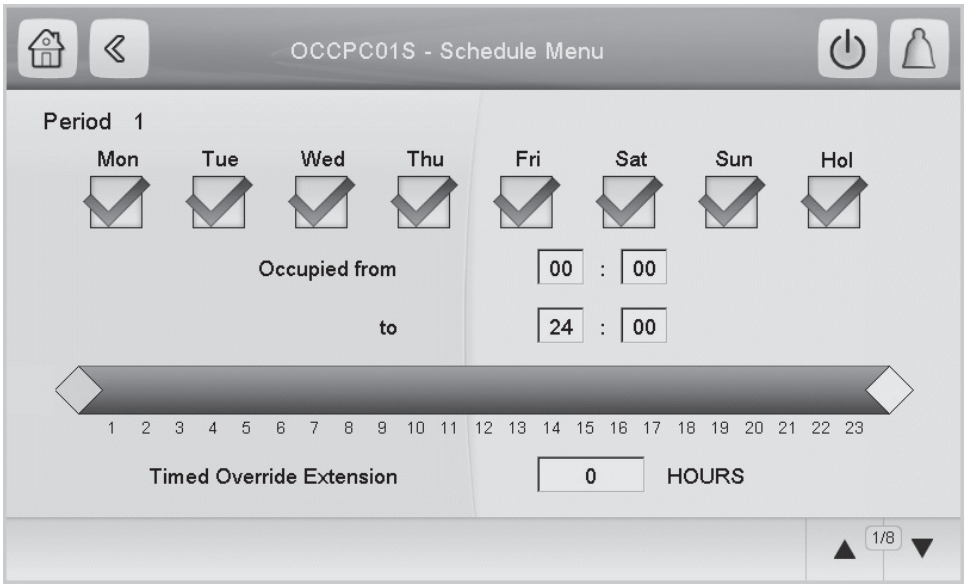
APPENDIX A — TOUCH PILOT™ DISPLAY TABLES (cont)

SCHEDULE MENU

CCN TABLE NAMES: OCCPC01S and OCCPC02S

TABLE TYPE: 15H

TOUCH PILOT PATH: Main Menu → Configuration Menu → Schedule Menu



CONTROL IDENTIFICATION

CCN TABLE NAME: CTRL_ID

TABLE TYPE: 20H

TOUCH PILOT PATH: Main Menu → Configuration Menu → Control Identification

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	CCN Element Number		0-239	0		
2	CCN Bus Number		0 to 239	1		
3	CCN Baud Rate		9600 / 19200/38400	9600		
4						
5	Device Description		24 chars	30XV		
6	Location Description		24 chars			
7	Software Part Number		16 chars	ACG-SR-10A2AAXXX		
8	Serial Number		12 chars			

DATE/TIME CONFIGURATION

CCN TABLE NAME: DATETIME

TABLE TYPE: 20H

TOUCH PILOT PATH: Main Menu → Configuration Menu → Date/Time Configuration

LINE	TOUCH PILOT DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/ WRITE
1	Date (YYYY/MM/DD)		Date			RW
2	Day of week		Mon to Sun			RW
3	Time		00:00 to 23:59			RW
4	Daylight Savings Time On		No/Yes			RO
5	Today is a Holiday		No/Yes			RO
6	Tomorrow is a Holiday		No/Yes			RO

LEGEND

RO — Read Only
RW — Read/Write

APPENDIX B — CCN POINT TABLE

Status/GENUNIT - General Parameters

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Machine Control Methods	0=Local 1=Net 2=Remote		CTRL_TYP	Y	RO RW RW
Run Status	Off/Running/Stopping/Delay/Tripout/ Ready/Override/Test		STATUS	Y	RW
CCN Chiller	STOP/START		CHIL_S_S	Y	RO
Occupied	NO/YES		CHIL_OCC	Y	RW
Minutes Left for Start	N.N	min	min_left	Y	RW
Setpoint Select	0=Auto 1=Setpoint 1 2=Setpoint2		SP_SEL	Y	RO RO RW
Setpoint Occupied	NO/YES		SP_OCC	Y	RW
Percent Total Capacity	0 to 100	%	CAP_T	Y	RW
Current Setpoint		°F (°C)	SP	Y	RO
Control Point	Range: -4 to 153 (-20 to 67.2) Default: 0	°F (°C)	CTRL_PNT	Y	RO RO
Emergency Stop	Disable/Enable		EMSTOP	Y	RW
Active Demand Limit Val	0 to 100	%	DEM_LIM	Y	RW
Demand Limit Minimum	0 to 100	%	min_lim	Y	RW
SW Version			VERS_ID	N	RO

Status/INPUTS - Inputs Status

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Remote On/Off Switch	Close/Open		ONOFF_SW	Y	RO
Remote Setpoint Switch	Close/Open		SETP_SW	Y	RO
Limit Switch 1	Close/Open		LIM_SW1	Y	RO
Limit Switch 2	Close/Open		LIM_SW2	Y	RO
Oil Level Input A	Close/Open		OIL_L_A	Y	RO
Oil Level Input B	Close/Open		OIL_L_B	Y	RO
Remote Reset Setpoint		mA	SP_RESET	Y	RO
Remote Dem. Limit		mA	LIM_ANAL	Y	RO
Leakage Detector 1		Volts	leak_v	Y	RO
Leakage Detector 2		Volts	leak_2_v	Y	RO
Customer Interlock	Close/Open		REM_LOCK	Y	RO
Ice Done Storage Switch	Close/Open		ICE_SW	Y	RO
Occupied Override Switch	Close/Open		OCC_OVSW	Y	RO
Evap Heater Detector	Close/Open		HEATR_SW	Y	RO
BACnet Dongle	No/Yes		bacdongl	N	N/A

See Legend on page 205.

Status/MODES - Modes

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Start Up Delay In Effect	No/Yes		m_delay	N	N/A
Second Setpoint In Use	No/Yes		m_2stpt	N	N/A
Reset In Effect	No/Yes		m_reset	N	N/A
Demand Limit Active	No/Yes		m_demlim	N	N/A
Evaporator Pump Rotation	No/Yes		m_pmprot	N	N/A
Pump Periodic Start	No/Yes		m_pmpper	N	N/A
Night Low Noise Active	No/Yes		m_night	N	N/A
Master Slave Active	No/Yes		m_slave	N	N/A
Ice Mode In Effect	No/Yes		m_ice	N	N/A

Status/OUTPUTS - Outputs Status

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
CIRCUIT A	Normal/Alarm		LABEL_A	Y	N/A
Compressor A	Off/On		CP_A	Y	RO
Oil Solenoid Output A	Off/On		OIL_SL_A	Y	RO
VI Solenoid Output A	Off/On		VI_A	Y	RO
Capacity Signal Cir A	0 to 10	Volts	CAPT010A	Y	RO
VariFan Speed A	0 to 100	%	VFAN_A	Y	RO
Ref Iso Relay Energize A	Off/On		ISO_OP_A	Y	RO
Ref Iso Valve State A	Close/Open		ISO_POSA	Y	RO
Oil Heater Output A	Off/On		OIL_HT_A	Y	RO
CIRCUIT B	Normal/Alarm		LABEL_B	Y	N/A
Capacity Signal Cir B	0 to 10	Volts	CAPT010B	Y	RO
VariFan Speed B	0 to 100	%	VFAN_B	Y	RO
Compressor B	Off/On		CP_B	Y	RO
Oil Solenoid Output B	Off/On		OIL_SL_B	Y	RO
VI Solenoid Output B	Off/On		VI_B	Y	RO
Ref Iso Relay Energize B	Off/On		ISO_OP_B	Y	RO
Ref Iso Valve State B	Close/Open		ISO_POSB	Y	RO
Oil Heater Output B	Off/On		OIL_HT_B	Y	RO
Alarm Relay Status	Off/On		ALARM	Y	RO
Running Relay Status	Off/On		RUNNING	Y	RO
Chiller Capacity Signal	0 to 10	Volts	CAPT_010	Y	RO
Alert Relay State	Off/On		ALERT	Y	RO

See Legend on page 205.

APPENDIX B — CCN POINT TABLE (cont)

Status/OUTPUTS - Outputs Status (cont)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Shutdown Indicator State	Off/On		SHUTDOWN	Y	RO
Evap Heater Output	Off/On		C_HEATER	Y	RO
Fan Contactor 1A	Off/On		FCA1	Y	RO
Fan Contactor 2A	Off/On		FCA2	Y	RO
Fan Contactor 3A	Off/On		FCA3	Y	RO
Fan Contactor 4A	Off/On		FCA4	Y	RO
Fan Contactor 5A	Off/On		FCA5	Y	RO
Fan Contactor 6A	Off/On		FCA6	Y	RO
Fan Contactor 7A	Off/On		FCA7	Y	RO
Fan Contactor 8A	Off/On		FCA8	Y	RO
Fan Contactor 1B	Off/On		FCB1	Y	RO
Fan Contactor 2B	Off/On		FCB2	Y	RO
Fan Contactor 3B	Off/On		FCB3	Y	RO
Fan Contactor 4B	Off/On		FCB4	Y	RO
Fan Contactor 5B	Off/On		FCB5	Y	RO
Fan Contactor 6B	Off/On		FCB6	Y	RO
Fan Contactor 7B	Off/On		FCB7	Y	RO
Fan Contactor 8B	Off/On		FCB8	Y	RO
Comp. HW Enable A	Off/On		VFD_EN_A	Y	RO
Comp. HW Enable B	Off/On		VFD_EN_B	Y	RO
Control Box Heater	Off/On		BOX_HTR	Y	RO

Status/PRESSURE - Pressures

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Discharge Pressure A	N.N	PSI (Kpa)	DP_A	Y	RO
Main Suction Pressure A	N.N	PSI (Kpa)	SP_A	Y	RO
Oil Pressure A	N.N	PSI (Kpa)	OP_A	Y	RO
Delta Oil Pressure A	N.N	PSI (Kpa)	DOP_A	Y	RO
Economizer Pressure A	N.N	PSI (Kpa)	ECO_P_A	Y	RO
Liquid Pressure A	N.N	PSI (Kpa)	LIQ_P_A	Y	RO
Discharge Pressure B	N.N	PSI (Kpa)	DP_B	Y	RO
Main Suction Pressure B	N.N	PSI (Kpa)	SP_B	Y	RO
Oil Pressure B	N.N	PSI (Kpa)	OP_B	Y	RO
Delta Oil Pressure B	N.N	PSI (Kpa)	DOP_B	Y	RO
Economizer Pressure B	N.N	PSI (Kpa)	ECO_P_B	Y	RO
Liquid Pressure B	N.N	PSI (Kpa)	LIQ_P_B	Y	RO

See Legend on page 205.

Status/PUMPSTAT - Pump Status

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Evap Pump #1 Command	Off		CPUMP_1	Y	RW
Evap Pump #2 Command	Off		CPUMP_2	Y	RW
Rotate Evap Pumps ?	No		ROTCPUMP	Y	RW
Evap Flow Switch #1	Open		FLOW_SW	Y	RO
Evap Flow Switch #2	Open		FLOW_SWB	Y	RO

Status/RUNTIME - Run Times

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Machine Operating Hours		hours	HR_MACH	Y	RO
Machine Starts			st_mach	N	N/A
Compressor A Hours		hours	HR_CP_A	Y	RO
Compressor A Starts			st_cp_a	N	N/A
Compressor B Hours		hours	HR_CP_B	Y	RO
Compressor B Starts			st_cp_b	N	N/A
Evap Pump #1 Hours		hours	hr_cpum1	N	N/A
Evap Pump #2 Hours		hours	hr_cpum2	N	N/A
VI Cycle Count A		Cycles	VIctA	N	N/A
VI Cycle Count B		Cycles	VIctB	N	N/A
Circuit A Fan #1 Hours		hours	hrfana01	N	N/A
Circuit A Fan #2 Hours		hours	hrfana02	N	N/A
Circuit A Fan #3 Hours		hours	hrfana03	N	N/A
Circuit A Fan #4 Hours		hours	hrfana04	N	N/A
Circuit A Fan #5 Hours		hours	hrfana05	N	N/A
Circuit A Fan #6 Hours		hours	hrfana06	N	N/A
Circuit A Fan #7 Hours		hours	hrfana07	N	N/A
Circuit A Fan #8 Hours		hours	hrfana08	N	N/A
Circuit A Fan #9 Hours		hours	hrfana09	N	N/A
Circuit A Fan #10 Hours		hours	hrfana10	N	N/A
Circuit A Fan #11 Hours		hours	hrfana11	N	N/A
Circuit A Fan #12 Hours		hours	hrfana12	N	N/A
Circuit B Fan #1 Hours		hours	hrfanb01	N	N/A
Circuit B Fan #2 Hours		hours	hrfanb02	N	N/A
Circuit B Fan #3 Hours		hours	hrfanb03	N	N/A
Circuit B Fan #4 Hours		hours	hrfanb04	N	N/A

See Legend on page 205.

APPENDIX B — CCN POINT TABLE (cont)

Status/RUNTIME - Run Times (cont)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Circuit B Fan #5 Hours		hours	hrfanb05	N	N/A
Circuit B Fan #6 Hours		hours	hrfanb06	N	N/A
Circuit B Fan #7 Hours		hours	hrfanb07	N	N/A
Circuit B Fan #8 Hours		hours	hrfanb08	N	N/A
Circuit B Fan #9 Hours		hours	hrfanb09	N	N/A
Circuit B Fan #10 Hours		hours	hrfanb10	N	N/A
Circuit B Fan #11 Hours		hours	hrfanb11	N	N/A
Circuit B Fan #12 Hours		hours	hrfanb12	N	N/A

Status/TEMP - Temperatures

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Evap Entering Fluid		°F (°C)	COOL_EWT	Y	RO
Evap Leaving Fluid		°F (°C)	COOL_LWT	Y	RO
Outdoor Air Temperature		°F (°C)	OAT	Y	RO
Saturated Cond Tmp Cir A		°F (°C)	SCT_A	Y	RO
Saturated Suction Temp A		°F (°C)	SST_A	Y	RO
Saturated Liquid Temp A		°F (°C)	SLT_A	Y	RO
Compressor Suction Tmp A		°F (°C)	SUCT_A	Y	RO
Discharge Gas Temp Cir A		°F (°C)	DGT_A	Y	RO
Motor Temperature Cir A		°F (°C)	CP_TMP_A	Y	RO
EXV Eco. Tmp Cir A		°F (°C)	ECO_T_A	Y	RO
Liquid Temperature A		°F (°C)	LIQ_T_A	Y	RO
Saturated Cond Tmp Cir B		°F (°C)	SCT_B	Y	RO
Saturated Suction Temp B		°F (°C)	SST_B	Y	RO
Saturated Liquid Temp B		°F (°C)	SLT_B	Y	RO
Compressor Suction Tmp B		°F (°C)	SUCT_B	Y	RO
Discharge Gas Temp Cir B		°F (°C)	DGT_B	Y	RO
Motor Temperature Cir B		°F (°C)	CP_TMP_B	Y	RO
EXV Eco. Tmp Cir B		°F (°C)	ECO_T_B	Y	RO
Liquid Temperature B		°F (°C)	LIQ_T_B	Y	RO
Space Temp (Opt.)		°F (°C)	SPACETMP	Y	RO
Chill Water Temp (Opt.)		°F (°C)	CHWSTEMP	Y	RO

See Legend on page 205.

APPENDIX B — CCN POINT TABLE (cont)

Maintenance\OCCDEFCM\OCCPC01S

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Current Mode	0=Unoccupied 1=Occupied		MODE	N	N/A
				N	N/A
Current Occup Period #	1 to 8		PER-NO	N	N/A
Timed-Override in Effect	No/Yes		OVERLAST	N	N/A
Timed-Override Duration	0 to 4	hours	OVR_HRS	N	N/A
Current Occupied Time	00:00 to 23:59		STRTTIME	N	N/A
Current Unoccupied Time	00:00 to 23:59		ENDTIME	N	N/A
Next Occupied Day	Mon to Sun		NXTOCDAY	N	N/A
Next Occupied Time	00:00 to 23:59		NXTOCTIM	N	N/A
Next Unoccupied Day	Mon to Sun		NXTUNDAY	N	N/A
Next Unoccupied Time	00:00 to 23:59		NXTUNTIM	N	N/A
Prev unoccupied day	Mon to Sun		PRVUNDAY	N	N/A
Prev unoccupied time	00:00 to 23:59		PRVUNTIM	N	N/A

Maintenance\OCCDEFCM\OCCPC02S

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Current Mode	0=Unoccupied 1=Occupied		MODE	N	N/A
				N	N/A
Current Occup Period #	1 to 8		PER-NO	N	N/A
Timed-Override in Effect	No/Yes		OVERLAST	N	N/A
Timed-Override Duration	0 to 4	hours	OVR_HRS	N	N/A
Current Occupied Time	00:00 to 23:59		STRTTIME	N	N/A
Current Unoccupied Time	00:00 to 23:59		ENDTIME	N	N/A
Next Occupied Day	Mon to Sun		NXTOCDAY	N	N/A
Next Occupied Time	00:00 to 23:59		NXTOCTIM	N	N/A
Next Unoccupied Day	Mon to Sun		NXTUNDAY	N	N/A
Next Unoccupied Time	00:00 to 23:59		NXTUNTIM	N	N/A
Prev unoccupied day	Mon to Sun		PRVUNDAY	N	N/A
Prev unoccupied time	00:00 to 23:59		PRVUNTIM	N	N/A

See Legend on page 205.

Maintenance\ALARMRST - Reset Alarms

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Alarm Reset	No/Yes		RST_ALM	Y	RO
Alarm State	Normal/Alarm		ALM	Y	RW
Current Alarm 1			alarm_1c	N	N/A
Current Alarm 2			alarm_2c	N	N/A
Current Alarm 3			alarm_3c	N	N/A
Current Alarm 4			alarm_4c	N	N/A
Current Alarm 5			alarm_5c	N	N/A
Jbus Current Alarm 1			alarm_1	N	N/A
Jbus Current Alarm 2			alarm_2	N	N/A
Jbus Current Alarm 3			alarm_3	N	N/A
Jbus Current Alarm 4			alarm_4	N	N/A
Jbus Current Alarm 5			alarm_5	N	N/A

Maintenance\CAPACTRL - Capacity control

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Controlled Water Temp		°F (°C)	ctrl_wt	N	N/A
Ctrl Water Temp, Deg/Min		°F (°C)	cwt_rate	N	N/A
Current Capacity Limit	0 to 100	%	cap_lim	N	N/A
Wished Comp. Frequency A		Hz	drvcmda	N	N/A
Capa Ctrl State A			capstata	N	N/A
Capa Ctrl State Text A			captxta	N	N/A
Override State A			ovrstata	N	N/A
Override State Text A			ovrtxta	N	N/A
Capa Ctrl Stat Nb A			capmoda	N	N/A
Last Capa Ctrl Stat Nb A			lcapmoda	N	N/A
Override Capacity Nb A			overrida	N	N/A
Estimated Capacity A	0 to 100	%	cap_pc_a	N	N/A
Wished Comp. Frequency B		Hz	drvcmdb	N	N/A
Capa Ctrl State B			capstatb	N	N/A
Capa Ctrl State Text B			captxtb	N	N/A
Override State B			ovrstatb	N	N/A
Override State Text B			ovrtxtb	N	N/A
Capacity Ctrl Stat Nb B			capmodb	N	N/A
Last Capa Ctrl Stat Nb B			lcapmodb	N	N/A

See Legend on page 205.

Maintenance\CAPACTRL - Capacity control (cont)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Override Capacity Nb B			overridb	N	N/A
Estimated Capacity B	0 to 100	%	cap_pc_b	N	N/A
Max Comp. Frequency A		Hz	cMaxFrqA	N	N/A
Max Comp. Frequency B		Hz	cMaxFrqB	N	N/A
Comp. VI Cmd A			viCmdA	N	N/A
Comp. VI Cmd B			viCmdB	N	N/A
Reset Amount		°F (°C)	reset	N	N/A
Circuit Running Number			CirRunNb	N	N/A
State of Circuit A			StatCirA	N	N/A
State of Circuit B			StatCirB	N	N/A
Dual Circuit Master			DualMast	Y	RO
Transfer Spd, add cir		Hz	xSpdHigh	N	N/A
Transfer Spd, remove cir		Hz	xSpdLow	N	N/A
Compressor Start Freq		Hz	cStrtFrq	N	N/A
Compressor Min Frequency		Hz	cMinFrq	N	N/A

Maintenance\ECO_CTRL - EXV Eco. Control

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
EXV Eco Position Cir A	0 to 100	%	eco_a	N	N/A
Eco Suction Superheat A		°F (°C)	eco_sh_a	N	N/A
Eco Suction SH Setpt A		°F (°C)	esh_sp_a	N	N/A
EXV Eco State A			eco_sta	N	N/A
EXV Eco Previous State A			eco_lsta	N	N/A
EXV Eco Wished Pos A			ecowposa	N	N/A
EXV Eco Mode A			eco_moda	N	N/A
EXV Eco Mode Txt A			eco_txta	N	N/A
EXV Eco Position Cir B	0 to 100	%	eco_b	N	N/A
Eco Suction Superheat B		°F (°C)	eco_sh_b	N	N/A
Eco Suction SH Setpt B		°F (°C)	esh_sp_b	N	N/A
EXV Eco State B			eco_stb	N	N/A
EXV Eco Previous State B			eco_lstb	N	N/A
EXV Eco Wished Pos B			ecowposb	N	N/A
EXV Eco Mode B			eco_modb	N	N/A
EXV Eco Mode Txt B			eco_txtb	N	N/A

See Legend on page 205.

APPENDIX B — CCN POINT TABLE (cont)

Maintenance\EXV_CTRL - EXV Control

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Circuit A					
EXV Override Circuit A			ov_exv_a	N	N/A
EXV Position Circuit A	0 to 100	%	EXV_A	Y	RO
Discharge Superheat A		°F (°C)	DSH_A	Y	RO
Suction Superheat A		°F (°C)	SH_A	Y	RO
Suct. Superheat Setpnt A		°F (°C)	sh_sp_a	N	N/A
Evap ExchangeDT Cir A		°F (°C)	pinch_a	N	N/A
Subcooling Circuit A		°F (°C)	subcoola	N	N/A
Subcooling Setpoint A		°F (°C)	subc_spa	N	N/A
EXV State A			exv_sta	N	N/A
EXV Previous State A			exv_lsta	N	N/A
EXV Wished Position A			exvwposa	N	N/A
EXV Mode A			exv_moda	N	N/A
EXV Mode Text A			exv_txta	N	N/A
Circuit B					
EXV Override Circuit B			ov_exv_b	N	N/A
EXV Position Circuit B	0 to 100	%	EXV_B	Y	RO
Discharge Superheat B		°F (°C)	DSH_B	Y	RO
Suction Superheat B		°F (°C)	SH_B	Y	RO
Suct. Superheat Setpnt B		°F (°C)	sh_sp_b	N	N/A
Evap ExchangeDT Cir B		°F (°C)	pinch_b	N	N/A
Subcooling Circuit B		°F (°C)	subcoolb	N	N/A
Subcooling Setpoint B		°F (°C)	subc_spb	N	N/A
EXV State B			exv_stb	N	N/A
EXV Previous State B			exv_lstb	N	N/A
EXV Wished Position B			exvwposb	N	N/A
EXV Mode B			exv_modb	N	N/A
EXV Mode Text B			exv_txtb	N	N/A

See Legend on page 205.

Maintenance\FAN_CTRL - Fan control

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Fan Freq Cir A		Hz	fan_f_a	N	N/A
Fan State A			fan_sta	N	N/A
Fan Previous State A			fan_lsta	N	N/A
Fan Wished Freq A		Hz	wfan_f_a	N	N/A
Fan Mode A			fan_moda	N	N/A
Fan Mode Text A			fan_txta	N	N/A
Fan Tot Pwr Filtered A		kW	ftotpowa	N	N/A
Fan Contactors On A			fcont_a	N	N/A
Fan Freq Cir B		Hz	fan_f_b	N	N/A
Fan State B			fan_stb	N	N/A
Fan Previous State B			fan_lstb	N	N/A
Fan Wished Freq B		Hz	wfan_f_b	N	N/A
Fan Mode B			fan_modb	N	N/A
Fan Mode Text B			fan_txtb	N	N/A
Fan Tot Pwr Filtered B		kW	ftotpowb	N	N/A
Fan Contactors On B			fcont_b	N	N/A

Maintenance\FAN_DRV - Fan Drive Maintenance

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Fan Drive Power A1		kW	fd_pwra1	N	N/A
Fan Drive Amps A1		AMPS	fd_Ia1	N	N/A
Fan Drive Voltage A1		Volts	fd_Va1	N	N/A
Fan Drive Speed A1		rpm	fd_Sa1	N	N/A
Fan Drive Frequency A1		Hz	fd_Fa1	N	N/A
Fan Drive Torque A1			fd_Ta1	N	N/A
Fan Drv DC Link Volt A1		Volts	fd_DCVa1	N	N/A
Fan Drive Heat Sink T A1		°F (°C)	fd_HSTa1	N	N/A
Fan Drive Ctrl Card T A1		°F (°C)	fd_CCTa1	N	N/A
Fan Drive Power A2		kW	fd_pwra2	N	N/A
Fan Drive Amps A2		AMPS	fd_Ia2	N	N/A
Fan Drive Voltage A2		Volts	fd_Va2	N	N/A
Fan Drive Speed A2		rpm	fd_Sa2	N	N/A
Fan Drive Frequency A2		Hz	fd_Fa2	N	N/A
Fan Drive Torque A2			fd_Ta2	N	N/A
Fan Drv DC Link Volt A2		Volts	fd_DCVa2	N	N/A
Fan Drive Heat Sink T A2		°F (°C)	fd_HSTa2	N	N/A

See Legend on page 205.

APPENDIX B — CCN POINT TABLE (cont)

Maintenance\FAN_DRV - Fan Drive Maintenance (cont)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Fan Drive Ctrl Card T A2		°F (°C)	fd_CCTa2	N	N/A
Fan Drive Power A3		kW	fd_pwra3	N	N/A
Fan Drive Amps A3		AMPS	fd_Ia3	N	N/A
Fan Drive Voltage A3		Volts	fd_Va3	N	N/A
Fan Drive Speed A3		rpm	fd_Sa3	N	N/A
Fan Drive Frequency A3		Hz	fd_Fa3	N	N/A
Fan Drive Torque A3			fd_Ta3	N	N/A
Fan Drv DC Link Volt A3		Volts	fd_DCVa3	N	N/A
Fan Drive Heat Sink T A3		°F (°C)	fd_HSTa3	N	N/A
Fan Drive Ctrl Card T A3		°F (°C)	fd_CCTa3	N	N/A
Fan Drive Power B1		kW	fd_pwrb1	N	N/A
Fan Drive Amps B1		AMPS	fd_Ib1	N	N/A
Fan Drive Voltage B1		Volts	fd_Vb1	N	N/A
Fan Drive Speed B1		rpm	fd_Sb1	N	N/A
Fan Drive Frequency B1		Hz	fd_Fb1	N	N/A
Fan Drive Torque B1			fd_Tb1	N	N/A
Fan Drv DC Link Volt B1		Volts	fd_DCVb1	N	N/A
Fan Drive Heat Sink T B1		°F (°C)	fd_HSTb1	N	N/A
Fan Drive Ctrl Card T B1		°F (°C)	fd_CCTb1	N	N/A
Fan Drive Power B2		kW	fd_pwrb2	N	N/A
Fan Drive Amps B2		AMPS	fd_Ib2	N	N/A
Fan Drive Voltage B2		Volts	fd_Vb2	N	N/A
Fan Drive Speed B2		rpm	fd_Sb2	N	N/A
Fan Drive Frequency B2		Hz	fd_Fb2	N	N/A
Fan Drive Torque B2			fd_Tb2	N	N/A
Fan Drv DC Link Volt B2		Volts	fd_DCVb2	N	N/A
Fan Drive Heat Sink T B2		°F (°C)	fd_HSTb2	N	N/A
Fan Drive Ctrl Card T B2		°F (°C)	fd_CCTb2	N	N/A
Fan Drive Power B3		kW	fd_pwrb3	N	N/A
Fan Drive Amps B3		AMPS	fd_Ib3	N	N/A
Fan Drive Voltage B3		Volts	fd_Vb3	N	N/A
Fan Drive Speed B3		rpm	fd_Sb3	N	N/A
Fan Drive Frequency B3		Hz	fd_Fb3	N	N/A
Fan Drive Heat Sink T B3		°F (°C)	fd_HSTb3	N	N/A
Fan Drive Ctrl Card T B3		°F (°C)	fd_CCTb3	N	N/A
Fan Drive Torque B3			fd_Tb3	N	N/A
Fan Drv DC Link Volt B3		Volts	fd_DCVb3	N	N/A

See Legend on page 205.

Maintenance\FAN_DRV2 - Fan Drive addressing

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Fan Drive A1 Attach	No/Yes		SET_FDA1	Y	RW
Fan Drive A2 Attach	No/Yes		SET_FDA2	Y	RW
Fan Drive A3 Attach	No/Yes		SET_FDA3	Y	RW
Fan Drive B1 Attach	No/Yes		SET_FDB1	Y	RW
Fan Drive B2 Attach	No/Yes		SET_FDB2	Y	RW
Fan Drive B3 Attach	No/Yes		SET_FDB3	Y	RW
Comm Fan Drive A1 Ok	No/Yes		FD_COMA1	N	N/A
Comm Fan Drive A2 Ok	No/Yes		FD_COMA2	N	N/A
Comm Fan Drive A3 Ok	No/Yes		FD_COMA3	N	N/A
Comm Fan Drive B1 Ok	No/Yes		FD_COMB1	N	N/A
Comm Fan Drive B2 Ok	No/Yes		FD_COMB2	N	N/A
Comm Fan Drive B3 Ok	No/Yes		FD_COMB3	N	N/A
Stop Cir A Fan Drive	No/Yes		stopfana	N	N/A
Stop Cir B Fan Drive	No/Yes		stopfanb	N	N/A
Force Fan Drv A1 Config	No/Yes		CnfgFDA1	N	N/A
Force Fan Drv A2 Config	No/Yes		CnfgFDA2	N	N/A
Force Fan Drv A3 Config	No/Yes		CnfgFDA3	N	N/A
Force Fan Drv B1 Config	No/Yes		CnfgFDB1	N	N/A
Force Fan Drv B2 Config	No/Yes		CnfgFDB2	N	N/A
Force Fan Drv B3 Config	No/Yes		CnfgFDB3	N	N/A

Maintenance\LAST_POR - Last PowerOn reset

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Power On 1 :day-mon-year			date_on1	N	N/A
Power On 1 :hour-minute			time_on1	N	N/A
PowerDown 1:day-mon-year			date_of1	N	N/A
PowerDown 1:hour-minute			time_of1	N	N/A
Power On 2 :day-mon-year			date_on2	N	N/A
Power On 2 :hour-minute			time_on2	N	N/A
PowerDown 2:day-mon-year			date_of2	N	N/A
PowerDown 2:hour-minute			time_of2	N	N/A
Power On 3 :day-mon-year			date_on3	N	N/A
Power On 3 :hour-minute			time_on3	N	N/A
PowerDown 3:day-mon-year			date_of3	N	N/A

See Legend on page 205.

Maintenance\LAST_POR - Last PowerOn reset (cont)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
PowerDown 3:hour-minute			time_of3	N	N/A
Power On 4 :day-mon-year			date_on4	N	N/A
Power On 4 :hour-minute			time_on4	N	N/A
PowerDown 4:day-mon-year			date_of4	N	N/A
PowerDown 4:hour-minute			time_of4	N	N/A
Power On 5 :day-mon-year			date_on5	N	N/A
Power On 5 :hour-minute			time_on5	N	N/A
PowerDown 5:day-mon-year			date_of5	N	N/A
PowerDown 5:hour-minute			time_of5	N	N/A

Maintenance\LIMITS - Control Limits

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
EXV_dsh_act A		°F (°C)	dshacta	N	N/A
EXV_dsh_stp A		°F (°C)	dshstpa	N	N/A
EXV_lsp_act A		PSI (Kpa)	elspacta	N	N/A
EXV_lsp_stp A		PSI (Kpa)	elspstpa	N	N/A
ENV comp high dp act A		PSI (Kpa)	chdpacta	N	N/A
ENV comp high dp stp A		PSI (Kpa)	chdpstpa	N	N/A
ENV fan high dp act A		PSI (Kpa)	fhdpacta	N	N/A
ENV fan high dp stp A		PSI (Kpa)	fhdpstpa	N	N/A
ENV low dp act A		PSI (Kpa)	ldpacta	N	N/A
ENV low dp stp A		PSI (Kpa)	ldpstpa	N	N/A
ENV high sp act A		PSI (Kpa)	hspacta	N	N/A
ENV high sp stp A		PSI (Kpa)	hspstpa	N	N/A
ENV low sp act A		PSI (Kpa)	lspacta	N	N/A
ENV low sp stp A		PSI (Kpa)	lspstpa	N	N/A
dgt act A		°F (°C)	dgtacta	N	N/A
dgt stp A		°F (°C)	dgtstpa	N	N/A
EXV_dsh_act B		°F (°C)	dshactb	N	N/A
EXV_dsh_stp B		°F (°C)	dshstpb	N	N/A
EXV_lsp_act B		PSI (Kpa)	elspactb	N	N/A
EXV_lsp_stp B		PSI (Kpa)	elspstpb	N	N/A
ENV comp high dp act B		PSI (Kpa)	chdpactb	N	N/A
ENV comp high dp stp B		PSI (Kpa)	chdpstpb	N	N/A
ENV fan high dp act B		PSI (Kpa)	fhdpactb	N	N/A

See Legend on page 205.

APPENDIX B — CCN POINT TABLE (cont)

Maintenance\LIMITS - Control Limits (cont)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
ENV fan high dp stp B		PSI (Kpa)	fhdpstpb	N	N/A
ENV low dp act B		PSI (Kpa)	ldpactb	N	N/A
ENV low dp stp B		PSI (Kpa)	ldpstpb	N	N/A
ENV high sp act B		PSI (Kpa)	hspactb	N	N/A
ENV high sp stp B		PSI (Kpa)	hspstpb	N	N/A
ENV low sp act B		PSI (Kpa)	lspactb	N	N/A
ENV low sp stp B		PSI (Kpa)	lspstpb	N	N/A
dgt_act B		°F (°C)	dgtactb	N	N/A
dgt_stp B		°F (°C)	dgtstpb	N	N/A
Cmp Env Min SST A		°F (°C)	sstMinA	N	N/A
Cmp Env Max SST A		°F (°C)	sstMaxA	N	N/A
Cmp Env Min SDT A		°F (°C)	sdtMinA	N	N/A
Cmp Env Max SDT A		°F (°C)	sdtMaxA	N	N/A
Cmp Env Min SST B		°F (°C)	sstMinB	N	N/A
Cmp Env Max SST B		°F (°C)	sstMaxB	N	N/A
Cmp Env Min SDT B		°F (°C)	sdtMinB	N	N/A
Cmp Env Max SDT B		°F (°C)	sdtMaxB	N	N/A
Max Compressor Rate			maxinc	N	N/A

Maintenance\M_MSTSLV - Master Slave Control

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
MASTER/SLAVE CONTROL					
Unit is Master or Slave	0=Master 1=Slave		mstslv	N	N/A
				N	N/A
Master Control Type	1=Local 2=Remote 3=CCN		ms_ctrl	N	N/A
				N	N/A
				N	N/A
Master/Slave Ctrl Active	FALSE/TRUE		ms_activ	N	N/A
Lead Unit is the:	Master/Slave		lead_sel	N	N/A
Slave Chiller State			slv_stat	N	N/A
Slave Chiller Total Cap	0 to 100	%	slv_capt	N	N/A
Lag Start Delay		min	l_strt_d	N	N/A
Lead/lag Hours Delta		hours	ll_hr_d	N	N/A
Lead/lag Changeover	No/Yes		ll_chang	N	N/A
Lead Pulldown	No/Yes		ll_pull	N	N/A
Master/Slave Error			ms_error	N	N/A

See Legend on page 205.

Maintenance\M_MSTSLV - Master Slave Control

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Max Available Capacity	No/Yes		cap_max	N	N/A
Slave lagstat			lagstat	N	N/A
Slave Operating Hours		hours	slav_hr	N	N/A
Slave Evap Ent. Fluid		°F (°C)	slav_ewt	N	N/A
Slave Evap Leav. Fluid		°F (°C)	slav_lwt	N	N/A

Maintenance\QCK_TEST - Quick Test

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Unit must be in L-off				Y	RW
Quick Test Enable	Disable/Enable		QCK_TEST	Y	RW
Circuit A EXV Position	0 to 100	%	Q_EXVA	Y	RW
Circuit A Oil Solenoid	Off/On		Q_OILS_A	Y	RW
EXV Eco Position Cir A	0-100	%	Q_ECO_A	Y	RW
Oil Heater Circuit A	Off/On		Q_OILHTA	Y	RW
Capacity Cir A Output	0 to 100	%	Q_010_A	Y	RW
Comp A Running Output	Off/On		Q_COMPA	Y	RW
Isolation Valve State A	Close/Open		Q_ISOP_A	Y	RW
Circuit A VI	Off/On		Q_VI_A	Y	RW
VariFan Speed A	0 to 100	%	Q_VFAN_A	Y	RW
Circuit B EXV Position	0 to 100	%	Q_EXVB	Y	RW
Circuit B Oil Solenoid	Off/On		Q_OILS_B	Y	RW
EXV Eco Position Cir B	0 to 100	%	Q_ECO_B	Y	RW
Oil Heater Circuit B	Off/On		Q_OILHTB	Y	RW
Capacity Cir B Output	0 to 100	%	Q_010_B	Y	RW
Comp B Running Output	Off/On		Q_COMPB	Y	RW
Isolation Valve State B	Close/Open		Q_ISOP_B	Y	RW
Circuit B VI	Off/On		Q_VI_B	Y	RW
VariFan Speed B	0 to 100	%	Q_VFAN_B	Y	RW
Evaporator Heater	Off/On		Q_CL_HTR	Y	RW
Evaporator Pump 1			Q_CPMP1	Y	RW
Evaporator Pump 2			Q_CPMP2	Y	RW
Alarm Relay Status	Off/On		Q_ALARM	Y	RW
Shutdown Relay Status	Off/On		Q_SHUTD	Y	RW
Running Relay Status	Off/On		Q_RUN	Y	RW
Alert Relay Switch	Off/On		Q_ALERT	Y	RW

See Legend on page 205.

Maintenance\QCK_TEST - Quick Test (cont)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Capacity Total Output	0 to 100	%	Q_CAP010	Y	RW
Comp drive heater A	Off/On		Q_DRVHTA	Y	RW
Comp drive heater B	Off/On		Q_DRVHTB	Y	RW
Fan Contactor 1A	Off/On		Q_FCA1	Y	RW
Fan Contactor 2A	Off/On		Q_FCA2	Y	RW
Fan Contactor 3A	Off/On		Q_FCA3	Y	RW
Fan Contactor 4A	Off/On		Q_FCA4	Y	RW
Fan Contactor 5A	Off/On		Q_FCA5	Y	RW
Fan Contactor 6A	Off/On		Q_FCA6	Y	RW
Fan Contactor 7A	Off/On		Q_FCA7	Y	RW
Fan Contactor 8A	Off/On		Q_FCA8	Y	RW
Fan Contactor 1B	Off/On		Q_FCB1	Y	RW
Fan Contactor 2B	Off/On		Q_FCB2	Y	RW
Fan Contactor 3B	Off/On		Q_FCB3	Y	RW
Fan Contactor 4B	Off/On		Q_FCB4	Y	RW
Fan Contactor 5B	Off/On		Q_FCB5	Y	RW
Fan Contactor 6B	Off/On		Q_FCB6	Y	RW
Fan Contactor 7B	Off/On		Q_FCB7	Y	RW
Fan Contactor 8B	Off/On		Q_FCB8	Y	RW
Comp. HW Enable A	Off/On		Q_VF_ENA	Y	RW
Comp. HW Enable B	Off/On		Q_VF_ENB	Y	RW
Control Box Heater	Off/On		Q_BOX_HT	Y	RW

Maintenance\TBLSHT - Troubleshoot

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Evap Entering Fluid		°F (°C)	COOL_EWT	Y	RO
Evap Leaving Fluid		°F (°C)	COOL_LWT	Y	RO
Capacity Signal Cir A		Volts	CAPT010A	Y	RO
Cir A Drive Amps		AMPS	drv_Ia	N	N/A
Cir A Drive Speed		rpm	drv_Sa	N	N/A
Saturated Cond Tmp Cir A		°F (°C)	SCT_A	Y	RO
Saturated Suction Temp A		°F (°C)	SST_A	Y	RO
Saturated Liquid Temp A		°F (°C)	SLT_A	Y	RO
Compressor Suction Tmp A		°F (°C)	SUCT_A	Y	RO
Discharge Gas Temp Cir A		°F (°C)	DGT_A	Y	RO

See Legend on page 205.

APPENDIX B — CCN POINT TABLE (cont)

Maintenance\TBLSHT - Troubleshoot (cont)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Motor Temperature Cir A		°F (°C)	CP_TMP_A	Y	RO
EXV Eco. Tmp Cir A		°F (°C)	ECO_T_A	Y	RO
Discharge Superheat A		°F (°C)	DSH_A	Y	RO
Suction Superheat A		°F (°C)	SH_A	Y	RO
Liquid Temperature A		°F (°C)	LIQ_T_A	Y	RO
Discharge Pressure A		PSI (Kpa)	DP_A	Y	RO
Main Suction Pressure A		PSI (Kpa)	SP_A	Y	RO
Oil Pressure A		PSI (Kpa)	OP_A	Y	RO
Oil Pressure DifferenceA		PSI (Kpa)	DOP_A	Y	RO
Oil Level Input A	Off/On		OIL_L_A	Y	RO
Oil Solenoid Output A	Off/On		OIL_SL_A	Y	RO
Economizer Pressure A		PSI (Kpa)	ECO_P_A	Y	RO
Liquid Pressure A		PSI (Kpa)	LIQ_P_A	Y	RO
Capacity Signal Cir B		Volts	CAPT010B	Y	RO
Cir B Drive Amps		AMPS	drv_Ib	N	N/A
Cir B Drive Speed		rpm	drv_Sb	N	N/A
Saturated Cond Tmp Cir B		°F (°C)	SCT_B	Y	RO
Saturated Suction Temp B		°F (°C)	SST_B	Y	RO
Saturated Liquid Temp B		°F (°C)	SLT_B	Y	RO
Compressor Suction Tmp B		°F (°C)	SUCT_B	Y	RO
Discharge Gas Temp Cir B		°F (°C)	DGT_B	Y	RO
Motor Temperature Cir B		°F (°C)	CP_TMP_B	Y	RO
EXV Eco. Tmp Cir B		°F (°C)	ECO_T_B	Y	RO
Discharge Superheat B		°F (°C)	DSH_B	Y	RO
Suction Superheat B		°F (°C)	SH_B	Y	RO
Liquid Temperature B		°F (°C)	LIQ_T_B	Y	RO
Discharge Pressure B		PSI (Kpa)	DP_B	Y	RO
Main Suction Pressure B		PSI (Kpa)	SP_B	Y	RO
Oil Pressure B		PSI (Kpa)	OP_B	Y	RO
Oil Pressure DifferenceB		PSI (Kpa)	DOP_B	Y	RO
Oil Level Input B	Off/On		OIL_L_B	Y	RO
Oil Solenoid Output B	Off/On		OIL_SL_B	Y	RO
Economizer Pressure B		PSI (Kpa)	ECO_P_B	Y	RO
Liquid Pressure B		PSI (Kpa)	LIQ_P_B	Y	RO

See Legend on page 205.

Maintenance\VLT_DRV - VLT Drive Maintenance

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Cir A Drive Power		kW	drv_pwra	N	N/A
Cir A Drive Amps		AMPS	drv_Ia	N	N/A
Cir A Drive Voltage		Volts	drv_Va	N	N/A
Cir A Drive Speed		rpm	drv_Sa	N	N/A
Cir A Drive Frequency		Hz	drv_Fa	N	N/A
Cir A Drive Torque			drv_Ta	N	N/A
Cir A Drive DC Link Volt		Volts	drv_DCVa	N	N/A
Cir A Drive Heat Sink T		°F (°C)	drv_HSTa	N	N/A
Cir A Drive Ctrl Card T		°F (°C)	drv_CCTa	N	N/A
Cir A Drive Heater			drv_HTRa	N	N/A
Cir B Drive Power		kW	drv_pwrb	N	N/A
Cir B Drive Amps		AMPS	drv_Ib	N	N/A
Cir B Drive Voltage		Volts	drv_Vb	N	N/A
Cir B Drive Speed		rpm	drv_Sb	N	N/A
Cir B Drive Frequency		Hz	drv_Fb	N	N/A
Cir B Drive Torque			drv_Tb	N	N/A
Cir B Drive DC Link Volt		Volts	drv_DCVb	N	N/A
Cir B Drive Heat Sink T		°F (°C)	drv_HSTb	N	N/A
Cir B Drive Ctrl Card T		°F (°C)	drv_CCTb	N	N/A
Cir B Drive Heater			drv_HTRb	N	N/A
Drive A Attach	No/Yes		SET_DRVA	Y	RW
Drive B Attach	No/Yes		SET_DRVB	Y	RW
Comm with Drive A Ok	No/Yes		VLT_COMA	N	N/A
Comm with Drive B Ok	No/Yes		VLT_COMB	N	N/A
Force Comp Drv A Config	No/Yes		CnfgDrva	N	N/A
Force Comp Drv B Config	No/Yes		CnfgDrvb	N	N/A

Configuration/ALARMDEF/ALARMS01

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Alarm Routing Control			ALRM_CNT	N	N/A
Alarm Equipment Priority			EQP_TYP	N	N/A
Comm Failure Retry Time		min	RETRY_TM	N	N/A
Realarm Time		min	RE_ALARM	N	N/A
Alarm System Name	ALM_30XV		ALRM_NAM	N	N/A

See Legend on page 205.

APPENDIX B — CCN POINT TABLE (cont)

Configuration/BRODEFS/BROCASTS

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Activate	0=Disabled 1=Broadcast time date, Daylight Savings Time and Holiday 2=Stand alone OAT Broadcast		ccnbroad	N	N/A
OAT Broadcast				N	N/A
Bus #	Range: 0-239 Default: 0		oatbusnm	N	N/A
Element #	Range: 0-239 Default: 0		oatlocad	N	N/A
				N	N/A
DAYLIGHT SAVINGS SELECT	Disable/Enable		dayl_sel	N	N/A
ENTERING				N	N/A
Month	Range: 1-12 Default: 3		startmon	N	N/A
				N	N/A
Day of Week (1=Monday)	Range: 1-7 Default: 7		startdow	N	N/A
				N	N/A
Week Number of Month	Range: 1-5 Default: 5		startwom	N	N/A
				N	N/A
LEAVING				N	N/A
Month	Range: 1-12 Default: 10		stopmon	N	N/A
				N	N/A
Day of Week (1=Monday)	Range: 1-7 Default: 7		stopdow	N	N/A
				N	N/A
Week Number of Month	Range: 1-5 Default: 5		stopwom	N	N/A
				N	N/A

Configuration/HOLIDAY/HOLDY_nn
(nn = 01 thru 16)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Holiday Start Month	Range: 1-12 Default: 0		HOL-MON	N	N/A
Start Day	Range: 0-31 Default: 0		HOL-DAY	N	N/A
Duration (days)	Range: 0-99 Default: 0		HOL-LEN	N	N/A

Configuration/OCCDEFCS/OCCPC0nS
(n = 1,2)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Timed Override Hours	0-4	hours	OVR-EXT	N	N/A
Period 1 DOW (MTWTFSSH)			DOW1	N	N/A
Occupied from	NN:NN		OCCTOD1	N	N/A
Occupied to	NN:NN		UNOCTOD1	N	N/A
Period 2 DOW (MTWTFSSH)			DOW2	N	N/A

See Legend on page 205.

Configuration/OCCDEFCS/OCCPC0nS (cont)
(n = 1,2)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Occupied from	NN:NN		OCCTOD2	N	N/A
Occupied to	NN:NN		UNOCTOD2	N	N/A
Period 3 DOW (MTWTFSSH)			DOW3	N	N/A
Occupied from	NN:NN		OCCTOD3	N	N/A
Occupied to	NN:NN		UNOCTOD3	N	N/A
Period 4 DOW (MTWTFSSH)			DOW4	N	N/A
Occupied from	NN:NN		OCCTOD4	N	N/A
Occupied to	NN:NN		UNOCTOD4	N	N/A
Period 5 DOW (MTWTFSSH)			DOW5	N	N/A
Occupied from	NN:NN		OCCTOD5	N	N/A
Occupied to	NN:NN		UNOCTOD5	N	N/A
Period 6 DOW (MTWTFSSH)			DOW6	N	N/A
Occupied from	NN:NN		OCCTOD6	N	N/A
Occupied to	NN:NN		UNOCTOD6	N	N/A
Period 7 DOW (MTWTFSSH)			DOW7	N	N/A
Occupied from	NN:NN		OCCTOD7	N	N/A
Occupied to	NN:NN		UNOCTOD7	N	N/A
Period 8 DOW (MTWTFSSH)			DOW8	N	N/A
Occupied from	NN:NN		OCCTOD8	N	N/A
Occupied to	NN:NN		UNOCTOD8	N	N/A

Configuration/GENCONF

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Cir Priority Sequence	0=Auto 1=A Priority 2=B Priority		prio_cir	N	N/A
				N	N/A
				N	N/A
Ramp Loading Enable	No/Yes		ramp_sel	N	N/A
Unit Off to On Delay		min	off_on_d	N	N/A
Demand Limit Type Select	0=None 1=Switch Control 2=4-20mA Control		lim_sel	N	N/A
				N	N/A
				N	N/A
Night Mode Start Hour	NN:NN		nh_start	N	N/A
Night Mode End Hour	NN:NN		nh_end	N	N/A
Night Capacity Limit	0-100	%	nh_limit	N	N/A
Ice Mode Enable	No/Yes		ice_cnfg	N	N/A
Short Cycle Management	No/Yes		shortcyc	N	N/A

See Legend on page 205.

APPENDIX B — CCN POINT TABLE (cont)

Configuration/PUMPCONF

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Evap Pumps Sequence	0 = No Pump 1 = One Pump Only 2 = Two Pumps Auto 3 = Pump#1 Manual 4 = Pump#2 Manual		cpumpseq	N	N/A
Pump Auto Rotation Delay	Range: 24-3000 Default: 48	hours	pump_del	N	N/A
				N	N/A
Pump Sticking Protection	No/Yes		pump_per	N	N/A
Flow Checked If Pump Off	No/Yes		pump_loc	N	N/A

Configuration/RESETCFG

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Cooling Reset Select	0=None 1=OAT 2=Delta T 3=4-20mA control 4=Space Temp		cr_sel	N	N/A
Cooling				N	N/A
OAT No Reset Value		°F (°C)	oat_crno	N	N/A
OAT Full Reset Value		°F (°C)	oat_crfu	N	N/A
Delta T No Reset Value		°F (°C)	dt_cr_no	N	N/A
Delta T Full Reset Value		°F (°C)	dt_cr_fu	N	N/A
Current No Reset Value		mA	v_cr_no	N	N/A
Current Full Reset Value		mA	v_cr_fu	N	N/A
Space T No Reset Value		°F (°C)	spacr_no	N	N/A
Space T Full Reset Value		°F (°C)	spacr_fu	N	N/A
Cooling Reset Deg. Value		°F (°C)	cr_deg	N	N/A

Configuration/USER

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
User Password	11=User		use_pass	N	N/A

Service\BACNET

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
BACnet Enable	Disabel/Enable		bacena	N	N/A
Metric Unit	No/Yes		bacunit	N	N/A
Network	Range: 1 to 9999 Default: 1601		network	N	N/A
Identifier	Range: 0 to 9999999 Default: 1600001		ident	N	N/A
BACnet Management Device	0=None 1=FD(Foreign Device) 2=BBMD(BACnet Broadcast Management Device)		bbmd	N	N/A

See Legend on page 205.

Service\CP_ENABL

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
DISABLE COMPRESSORS					
Compressor A Disable	No/Yes		en_cp_a	N	N/A
Compressor B Disable	No/Yes		en_cp_b	N	N/A

Service\EMAILCFG

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Sender Email Part1			senderP1	N	N/A
@					
Sender Email Part2			senderP2	N	N/A
Recip1 Email Part1			recip1P1	N	N/A
@					
Recip1 Email Part2			recip1P2	N	N/A
Recip2 Email Part1			recip2P1	N	N/A
@					
Recip2 Email Part2			recip2P2	N	N/A
SMTP IP Addr Part 1			smtpP1	N	N/A
SMTP IP Addr Part 2			smtpP2	N	N/A
SMTP IP Addr Part 3			smtpP3	N	N/A
SMTP IP Addr Part 4			smtpP4	N	N/A
Account Email Part1			accP1	N	N/A
@					
Account Email Part2			accP2	N	N/A
Account Password			accPass	N	N/A
Port Number			portNbr	N	N/A
Server Timeout		sec	srvTim	N	N/A
Server Authentication			srvAut	N	N/A

See Legend on page 205.

APPENDIX B — CCN POINT TABLE (cont)

Service\FACTORY

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Unit Capacity			unitsize	N	N/A
Power Supply Voltage			voltage	N	N/A
Tier	0=STD 1=MID 2-HI		mfg_tier	N	N/A
DX Evaporator Installed	No/Yes		dxcooler	N	N/A
Evap Pass Number	1 to 3		cpass_nb	N	N/A
Evap Heater Installed	No/Yes		heat_sel	N	N/A
Master Slave Setup	No/Yes		mst_slv	N	N/A
Energy Management Module	No/Yes		emm_nrcp	N	N/A
Low Ambient Option (STD)	No/Yes		loambopt	N	N/A
Leakage Charge Detection	No/Yes		leak_chk	N	N/A
Factory Password	113		fac_pass	N	N/A
Enable Max Frequency A	No/Yes		fMaxEnA	N	N/A
Enable Max Frequency B	No/Yes		fMaxEnB	N	N/A
Max Frequency Override A		Hz	fMaxOvrA	N	N/A
Max Frequency Override B		Hz	fMaxOvrB	N	N/A
Fan Freq Factor(0.7-1.1)	Range: 0.7-1.1 Default: 1.0		fan_fact	N	N/A
Min Frequency Override		Hz	fMinOvr	N	N/A

Service\FACTORY2

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
EXV A Maximum Steps Numb	Range: 0 to 10000 Default: 0		exvmax_a	N	N/A
EXV B Maximum Steps Numb	Range: 0 to 10000 Default: 0		exvmax_b	N	N/A
Economizer A Steps Numb	Range: 0 to 15000 Default: 0		eco_cnfa	N	N/A
Economizer B Steps Numb	Range: 0 to 15000 Default: 0		eco_cnfb	N	N/A
Nb VFD compressor	Range: 0 to 2 Default: 0		vfd_cmp	N	N/A
Nb Fan Drive cir A	Range: 0 to 3 Default: 0		vfd_fana	N	N/A
Nb Fan Drive cir B	Range: 0 to 3 Default: 0		vfd_fanb	N	N/A

See Legend on page 205.

Service\MST_SLV

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
MASTER/SLAVE CONTROL					
Master/Slave Select	0=disable 1=Master 2=Slave		ms_sel	N	N/A
Master Control Type	1=Local Control 2=Remote Control 3=CCN Control		ms_ctrl	N	N/A
Slave Address			slv_addr	N	N/A
Lead Lag Select	0=Always Lead 1=Lag Once Failed Only 2=Lead/Lag Runtime Sel		lead_sel	N	N/A
Lead/Lag Balance Delta		hours	ll_bal_d	N	N/A
Lead/Lag Start Timer		min	lstr_tim	N	N/A
Lead Pulldown Time		min	lead_pul	N	N/A
Start If Error Higher		°F (°C)	start_dt	N	N/A
Lag Minimum Running Time		min	lag_mini	N	N/A
Lag Unit Pump Control	0=Stop if Unit Stops 1=Run if unit Stops		lag_pump	N	N/A
Chiller In Series	No/Yes		ll_serie	N	N/A

Service\SERVICE1

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Evaporator Fluid Type	1 = Water 2 = Med Brine 3=Low Brine		flui_typ	N	N/A
Entering Fluid Control	No/Yes		ewt_opt	N	N/A
Brine Freeze Setpoint	Range: -20 to 34 Default: 34	°F (°C)	freezesp	N	N/A
Brine Minimum Fluid Temp	Range: -20 to 38 Default: 38	°F (°C)	mini_lwt	N	N/A
Fast Capacity Recovery	0=Disabled 1=Quickstart Load 2=Fast Capacity Recovery		fastcapr	N	N/A
EWT Probe on Cir A Side	No/Yes		ewt_cirA	N	N/A
Service Password	Range: 0 to 9999 Default: 88		ser_pass	N	N/A
Leakage Charge Threshold	Range: 0 to 10 Default: 2.5	Volts	leak_thr	N	N/A
Leakage Charge Timer	Range: 0 to 600 Default: 60	min	leak_tmr	N	N/A
Compressor RFI Filter En	Off/On		RFI_conf	N	N/A
Metric Units? (Blackbox)	No/Yes		metric	N	N/A
Send fan drive config?	No/Yes		fdrv_cfg	N	N/A

See Legend on page 205.

Service\SERVICE1 (cont)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Send comp. drive config?	No/Yes		cdrv_cfg	N	N/A
Evap Heater Delta Spt	Range: 0 to 6 Default: 2		heatersp	N	N/A
Freeze Override Offset	Range: 0 to 5.8 Default: 0	°F (°C)	freez_ov	N	N/A
Auto Start When SM Lost	Disable/Enable		auto_sm	N	N/A
VI Self-Test Threshold	Range: 0.5 to 15 Default: 1.15	kW	ViPwrChk	N	N/A
VI Self-Test Enable	Off/On		ViChkEn	N	N/A
Pump Rot. AntiFrz Protec	Off/On		AntiFrz	N	N/A
HTTP Server	Disable/Enable		http_en	N	N/A
FTP Server	Disable/Enable		ftp_en	N	N/A
Oil Delta Trigger Speed	Range: 0 to 15 Default: 5	Hz	odtrspd	N	N/A
Oil Trigger Time	Range: 1800 to 7200 Default: 3600	sec	otrigtim	N	N/A
Oil Delta Recover Speed	Range: 0 to 15 Default: 5	Hz	odrecspd	N	N/A
Oil Recover Time	Range: 30 to 120 Default: 60	sec	orectim	N	N/A

Service\UPDTHOUR

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Machine Operating Hours		hours	hr_mach	N	N/A
Machine Starts Number			st_mach	N	N/A
Compressor A Hours		hours	hr_cp_a	N	N/A
Compressor A Starts			st_cp_a	N	N/A
Compressor B Hours		hours	hr_cp_b	N	N/A
Compressor B Starts			st_cp_b	N	N/A
Evap Pump #1 Hours		hours	hr_cpum1	N	N/A
Evap Pump #2 Hours		hours	hr_cpum2	N	N/A
VI Cycle Count A		Cycles	VIctA	N	N/A
VI Cycle Count B		Cycles	VIctB	N	N/A
Circuit A Fan #1 Hours		hours	hrfana01	N	N/A
Circuit A Fan #2 Hours		hours	hrfana02	N	N/A
Circuit A Fan #3 Hours		hours	hrfana03	N	N/A
Circuit A Fan #4 Hours		hours	hrfana04	N	N/A
Circuit A Fan #5 Hours		hours	hrfana05	N	N/A
Circuit A Fan #6 Hours		hours	hrfana06	N	N/A

See Legend on page 205.

Service\UPDTHOUR (cont)

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Circuit A Fan #7 Hours		hours	hrfana07	N	N/A
Circuit A Fan #8 Hours		hours	hrfana08	N	N/A
Circuit A Fan #9 Hours		hours	hrfana09	N	N/A
Circuit A Fan #10 Hours		hours	hrfana10	N	N/A
Circuit A Fan #11 Hours		hours	hrfana11	N	N/A
Circuit A Fan #12 Hours		hours	hrfana12	N	N/A
Circuit B Fan #1 Hours		hours	hrfanb01	N	N/A
Circuit B Fan #2 Hours		hours	hrfanb02	N	N/A
Circuit B Fan #3 Hours		hours	hrfanb03	N	N/A
Circuit B Fan #4 Hours		hours	hrfanb04	N	N/A
Circuit B Fan #5 Hours		hours	hrfanb05	N	N/A
Circuit B Fan #6 Hours		hours	hrfanb06	N	N/A
Circuit B Fan #7 Hours		hours	hrfanb07	N	N/A
Circuit B Fan #8 Hours		hours	hrfanb08	N	N/A
Circuit B Fan #9 Hours		hours	hrfanb09	N	N/A
Circuit B Fan #10 Hours		hours	hrfanb10	N	N/A
Circuit B Fan #11 Hours		hours	hrfanb11	N	N/A
Circuit B Fan #12 Hours		hours	hrfanb12	N	N/A

Setpoint\SETPOINT

DESCRIPTION	VALUE	UNITS	POINT NAME	TRANSLATOR ACCESSIBLE	NETWORK ACCESS
Cooling Setpoint 1	Range: –20 to 78.8 (–28.9 to 26) Default: 44	°F (°C)	csp1	N	N/A
Cooling Setpoint 2	Range: –20 to 78.8 (–28.9 to 26) Default: 44	°F (°C)	csp2	N	N/A
Cooling Ice Setpoint	Range: –20 to 78.8 (–28.9 to 26) Default: 44	°F (°C)	ice_sp	N	N/A
Cooling Ramp Loading	Range: 0.2 to 20 Default: 1	°F (°C)	cramp_sp	N	N/A
Switch Limit Setpoint 1	Range: 0 to 100 Default: 100	%	lim_sp1	N	N/A
Switch Limit Setpoint 2	Range: 0 to 100 Default: 100	%	lim_sp2	N	N/A
Switch Limit Setpoint 3	Range: 0 to 100 Default: 100	%	lim_sp3	N	N/A

LEGEND

RO — Read Only
RW — Read/Write

APPENDIX C — LON POINT TABLE, EXAMPLE CONFIGURATION

LON POINT	SNVT TYPE	POINT	READ/WRITE	CCN POINT DESCRIPTION	CCN POINT NAME
CHLRMAP1					
nviChillerEnable	SNVT_switch	POINT01	W	CCN Chiller Start/Stop	CHIL_S_S
nviCoolSetpt	SNVT_temp_p	POINT02	W	Control Point	CTRL_PNT
nvoOnOff	SNVT_switch	POINT03	R		
nvoActiveSetpt	SNVT_temp_p	POINT04	R	Control Point	CTRL_PNT
nviCapacityLim	SNVT_lev_percent	POINT05	W	Active Demand Limit	DEM_LIM
nviHeatSetpt	SNVT_temp_p	POINT06	W		
nvoActualCapacity	SNVT_lev_percent	POINT07	R	Percent Total Capacity	CAP_T
nvoCapacityLim	SNVT_lev_percent	POINT08	R	Active Demand Limit	DEM_LIM
nvoLvgCHWTemp	SNVT_temp_p	POINT09	R	Cooler Leaving Fluid	COOL_LWT
nvoEntCHWTemp	SNVT_temp_p	POINT10	R	Cooler Entering Fluid	COOL_EWT
nvoEntCNDWTemp	SNVT_temp_p	POINT11	R		
nvoLvgCNDWTemp	SNVT_temp_p	POINT12	R		
nvoChillerStat.run_mode	SNVT_chlr_status	POINT13	R		
nvoChillerStat.op_mode	SNVT_chlr_status	POINT14	R		
nvoChillerStat.in_alarm	SNVT_chlr_status	POINT15	R		
nvoChillerStat.run_enabl	SNVT_chlr_status	POINT16	R		
nvoChillerStat.Local	SNVT_chlr_status	POINT17	R		
nvoChillerStat.Limited	SNVT_chlr_status	POINT18	R		
nvoChillerStat.chw_flow	SNVT_chlr_status	POINT19	R		
nvoChillerStat.cndw_flow	SNVT_chlr_status	POINT20	R		
nviOccSchedule	SNVT_occupancy	POINT21	W		
CHLRMAP2					
nviTEMP1	SNVT_temp_p	POINT22	W	Outdoor Air Temperature	OAT
nvoTEMP1	SNVT_temp_p	POINT23	R	Saturated Suction Temp A	SST_A
nvoTEMP2	SNVT_temp_p	POINT24	R	Saturated Suction Temp B	SST_B
nvoTEMP3	SNVT_temp_p	POINT25	R		
nvoTEMP4	SNVT_temp_p	POINT26	R	Saturated Cond Temp A	SCT_A
nvoTEMP5	SNVT_temp_p	POINT27	R	Saturated Cond Temp B	SCT_B
nvoTEMP6	SNVT_temp_p	POINT28	R		
nviPRESS1	SNVT_press_p	POINT29	W		
nvoPRESS1	SNVT_press_p	POINT30	R	Discharge Pressure A	DP_A
nvoPRESS2	SNVT_press_p	POINT31	R	Discharge Pressure B	DP_B
nvoPRESS3	SNVT_press_p	POINT32	R		
nvoPRESS4	SNVT_press_p	POINT33	R		
nvIPCT1	SNVT_lev_percent	POINT34	W		
nvIPCT2	SNVT_lev_percent	POINT35	W		
nvoTEMPDIFF1	SNVT_temp_diff_p	POINT36	R		
nvoTEMPDIFF2	SNVT_temp_diff_p	POINT37	R		
nviDISCRETE1	SNVT_switch	POINT38	W		
nviDISCRETE2	SNVT_switch	POINT39	W		
nvoDISCRETE1	SNVT_switch	POINT40	R	CCN Chiller Start/Stop	CHIL_S_S
nvoDISCRETE2	SNVT_switch	POINT41	R		
nvoDISCRETE3	SNVT_switch	POINT42	R		
nvoDISCRETE4	SNVT_switch	POINT43	R		
nvoDISCRETE5	SNVT_switch	POINT44	R		
nvoDISCRETE6	SNVT_switch	POINT45	R		
nviCOUNT1	SNVT_count	POINT46	W		
nvoCOUNT1	SNVT_count	POINT47	R	Run Status	STATUS
nvoCOUNT2	SNVT_count	POINT48	R	Alarm State	ALM
nvoCOUNTinc1	SNVT_count_inc	POINT49	R	Fan Staging Number A	FAN_ST_A
nvoCOUNTinc2	SNVT_count_inc	POINT50	R		

LEGEND

R — Read Only
W — Read Write
SNVT — Standard Network Variable Type

APPENDIX D — BACnet/MODBUS TRANSLATOR POINTS

ITEM NUMBER	CCN POINT NAME	CCN POINT DESCRIPTION	READ/WRITE	BACnet MS/TP OBJECT AND INSTANCE	MODBUS REGISTER
POINT01	CTRL_TYP	Local=0 Net.=1 Remote=2	RO	AV_000	0x4000
POINT02	CHIL_S_S	Net.: Cmd Start/Stop	RW	BV_000	0x4001
POINT03	CHIL_OCC	Net.: Cmd Occupied	RW	BV_001	0x4002
POINT04	min_left	Minutes Left for Start	RO	AV_001	0x4003
POINT05	SP_SEL	Setpoint Select	RW	AV_002	0x4004
POINT06	SP_OCC	Setpoint Occupied?	RW	BV_002	0x4006
POINT07	CAP_T	Percent Total Capacity	RO	AV_003	0x4007
POINT08	SP	Current Setpoint	RO	AV_004	0x4008
POINT09	CTRL_PNT	Control Point	RW	AV_005	0x4009
POINT10	EMSTOP	Emergency Stop	RW	BV_003	0x400A
POINT11	DEM_LIM	Active Demand Limit Val	RW	AV_006	0x400E
POINT12	min_lim	Demand Limit Minimum	RO	AV_007	0x400F
POINT13	COOL_EWT	Cooler Entering Fluid	RO	AV_008	0x4010
POINT14	COOL_LWT	Cooler Leaving Fluid	RO	AV_009	0x4011
POINT15	OAT	Outdoor Air Temperature	RO	AV_010	0x4012
POINT16	SCT_A	Saturated Cond Tmp cir A	RO	AV_011	0x4013
POINT17	SST_A	Saturated Suction Temp A	RO	AV_012	0x4014
POINT18	SLT_A	Saturated Liquid Temp A	RO	AV_013	0x4015
POINT19	SUCT_A	Compressor Suction Tmp A	RO	AV_014	0x4016
POINT20	DGT_A	Discharge Gas Temp cir A	RO	AV_015	0x4017
POINT21	CP_TMP_A	Motor Temperature cir A	RO	AV_016	0x4018
POINT22	ECO_T_A	EXV Eco. Tmp cir A	RO	AV_017	0x4019
POINT23	LIQ_T_A	Liquid Temperature A	RO	AV_018	0x401A
POINT24	SCT_B	Saturated Cond Tmp cir B	RO	AV_019	0x401B
POINT25	SST_B	Saturated Suction Temp B	RO	AV_020	0x401C
POINT26	SLT_B	Saturated Liquid Temp B	RO	AV_021	0x401D
POINT27	SUCT_B	Compressor Suction Tmp B	RO	AV_022	0x401E
POINT28	DGT_B	Discharge Gas Temp cir B	RO	AV_023	0x401F
POINT29	CP_TMP_B	Motor Temperature cir B	RO	AV_024	0x4020
POINT30	ECO_T_B	EXV Eco. Tmp cir B	RO	AV_025	0x4021
POINT31	LIQ_T_B	Liquid Temperature B	RO	AV_026	0x4022
POINT32	SPACETMP	Optional Space Temp	RO	AV_027	0x4023
POINT33	CHWSTEMP	CHWS Temperature	RO	AV_028	0x4024
POINT34	DP_A	Discharge Pressure A	RO	AV_029	0x4026
POINT35	SP_A	Main Suction Pressure A	RO	AV_030	0x4027
POINT36	OP_A	Oil Pressure A	RO	AV_031	0x4028
POINT37	DOP_A	Oil Pressure DifferenceA	RO	AV_032	0x4029
POINT38	ECO_P_A	Economizer Pressure A	RO	AV_033	0x402A
POINT39	LIQ_P_A	Liquid Pressure A	RO	AV_034	0x402B
POINT40	DP_B	Discharge Pressure B	RO	AV_035	0x402C
POINT41	SP_B	Main Suction Pressure B	RO	AV_036	0x402D
POINT42	OP_B	Oil Pressure B	RO	AV_037	0x402E
POINT43	DOP_B	Oil Pressure DifferenceB	RO	AV_038	0x402F
POINT44	ECO_P_B	Economizer Pressure B	RO	AV_039	0x4030
POINT45	LIQ_P_B	Liquid Pressure B	RO	AV_040	0x4031
POINT46	ONOFF_SW	Remote On/Off Switch	RO	BV_004	0x4032
POINT47	SETP_SW	Remote Setpoint Switch	RO	BV_005	0x4033
POINT48	LIM_SW1	Limit Switch 1	RO	BV_006	0x4034
POINT49	LIM_SW2	Limit Switch 2	RO	BV_007	0x4035
POINT50	OIL_L_A	Oil Level Input A	RO	BV_008	0x4036
POINT51	OIL_L_B	Oil Level Input B	RO	BV_009	0x4037
POINT52	SP_RESET	Setpoint Reset Control	RO	AV_041	0x4038
POINT53	LIM_ANAL	4-20mA Limit signal	RO	AV_042	0x4039
POINT54	leak_v	Leakage Detector 1 val	RO	AV_043	0x403A
POINT55	leak_2_v	Leakage Detector 2 val	RO	AV_044	0x403B
POINT56	REM_LOCK	Customer Interlock	RO	BV_010	0x403C
POINT57	ICE_SW	Ice Done Storage Switch	RO	BV_011	0x403E
POINT58	OCC_OVSW	Occupied Override Switch	RO	BV_012	0x403E
POINT59	HEATR_SW	Cooler Heater Detector	RO	BV_013	0x403F
POINT60	bacdongl	BACnet dongle	RO	BV_014	0x4040
Default Setpoint Table					
Setpoint 1	csp1	Cooling Setpoint 1	RW	AV_045	0x8000
Setpoint 2	csp2	Cooling Setpoint 2	RW	AV_046	0x8001
Setpoint 3	ice_sp	Cooling Ice Setpoint	RW	AV_047	0x8002
Setpoint 4	cramp_sp	Cooling Ramp Loading	RW	AV_048	0x8003
Setpoint 5	lim_sp1	Switch Limit Setpoint 1	RW	AV_049	0x8004
Setpoint 6	lim_sp2	Switch Limit Setpoint 2	RW	AV_050	0x8005
Setpoint 7	lim_sp3	Switch Limit Setpoint 3	RW	AV_051	0x8006
Setpoint 8					
Setpoint 9					
Setpoint 10					
Default Time Schedule Table					
Time Schedule 1	OCC1P01S		RW	TS_000	0x9000-0x9018
Time Schedule 2	OCC2P02S		RW	TS_001	0x9019-0x9031
Time Schedule 3					

LEGEND

AV — Analog Value
BV — Binary Value
RO — Read Only
RW — Read Write
TS — Time Schedule

APPENDIX E — BACnet IP POINTS

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
ALARMRST_alarm_1	Jbus Current Alarm 1	RO	AV	110	IR
ALARMRST_alarm_2	Jbus Current Alarm 2	RO	AV	111	IR
ALARMRST_alarm_3	Jbus Current Alarm 3	RO	AV	112	IR
ALARMRST_alarm_4	Jbus Current Alarm 4	RO	AV	113	IR
ALARMRST_alarm_5	Jbus Current Alarm 5	RO	AV	114	IR
ALARMRST_ALM	Alarm State	RO	AV	109	
ALARMRST_RST_ALM	Alarm Reset	RO	BV	72	
ALM_AUX1_1_COM_F	AUX1_1_COM_F	RO	BV	154	IR
ALM_AUX1_2_COM_F	AUX1_2_COM_F	RO	BV	155	IR
ALM_AUX1_3_COM_F	AUX1_3_COM_F	RO	BV	156	IR
ALM_AUX1_4_COM_F	AUX1_4_COM_F	RO	BV	157	IR
ALM_CCN_EMSTOP_F	CCN_EMSTOP_F	RO	BV	183	IR
ALM_CHWSTEMP_F	CHWSTEMP_F	RO	BV	130	IR
ALM_COOL_EWT_F	COOL_EWT_F	RO	BV	127	IR
ALM_COOL_LWT_F	COOL_LWT_F	RO	BV	128	IR
ALM_COOL_PUMP1_F	COOL_PUMP1_F	RO	BV	184	IR
ALM_COOL_PUMP2_F	COOL_PUMP2_F	RO	BV	185	IR
ALM_COOLER_FLOW_F	COOLER_FLOW_F	RO	BV	193	IR
ALM_COOLER_FREEZE_F	COOLER_FREEZE_F	RO	BV	167	IR
ALM_CP_TMP_A_F	CP_TMP_A_F	RO	BV	137	IR
ALM_CP_TMP_B_F	CP_TMP_B_F	RO	BV	138	IR
ALM_DATABASE_F	DATABASE_F	RO	BV	217	IR
ALM_DGT_A_T_F	DGT_A_T_F	RO	BV	133	IR
ALM_DGT_B_T_F	DGT_B_T_F	RO	BV	134	IR
ALM_DP_A_F	DP_A_F	RO	BV	142	IR
ALM_DP_B_F	DP_B_F	RO	BV	143	IR
ALM_ECO_P_A_F	ECO_P_A_F	RO	BV	148	IR
ALM_ECO_P_B_F	ECO_P_B_F	RO	BV	149	IR
ALM_ECO_T_A_F	ECO_T_A_F	RO	BV	139	IR
ALM_ECO_T_B_F	ECO_T_B_F	RO	BV	140	IR
ALM_EMM_BRD_COM_F	EMM_BOARD_COM_F	RO	BV	158	IR
ALM_FAN_DRIVE_A1_ALERT	FAN_DRIVE_A1_ALERT	RO	BV	207	IR
ALM_FAN_DRIVE_A1_F	FAN_DRIVE_A1_F	RO	BV	199	IR
ALM_FAN_DRIVE_A2_ALERT	FAN_DRIVE_A2_ALERT	RO	BV	208	IR

LEGEND

AV — Analog Value
BV — Binary Value
COV — Change of Value
IR — Intrinsic Reporting
RO — Read Only
RW — Read Write
TL — Trend Log

APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
ALM_FAN_DRIVE_A3_ALERT	FAN_DRIVE_A3_ALERT	RO	BV	209	IR
ALM_FAN_DRIVE_A3_F	FAN_DRIVE_A3_F	RO	BV	201	IR
ALM_FAN_DRIVE_B1_ALERT	FAN_DRIVE_B1_ALERT	RO	BV	210	IR
ALM_FAN_DRIVE_B1_F	FAN_DRIVE_B1_F	RO	BV	202	IR
ALM_FAN_DRIVE_B2_ALERT	FAN_DRIVE_B2_ALERT	RO	BV	211	IR
ALM_FAN_DRIVE_B2_F	FAN_DRIVE_B2_F	RO	BV	203	IR
ALM_FAN_DRIVE_B3_ALERT	FAN_DRIVE_B3_ALERT	RO	BV	212	IR
ALM_FAN_DRIVE_B3_F	FAN_DRIVE_B3_F	RO	BV	204	IR
ALM_FAN_DRIVEA1_COM_F	FAN_DRIVEA1_COM_F	RO	BV	161	IR
ALM_FAN_DRIVEA2_COM_F	FAN_DRIVEA2_COM_F	RO	BV	162	IR
ALM_FAN_DRIVEA3_COM_F	FAN_DRIVEA3_COM_F	RO	BV	163	IR
ALM_FAN_DRIVEB1_COM_F	FAN_DRIVEB1_COM_F	RO	BV	164	IR
ALM_FAN_DRIVEB2_COM_F	FAN_DRIVEB2_COM_F	RO	BV	165	IR
ALM_FAN_DRIVEB3_COM_F	FAN_DRIVEB3_COM_F	RO	BV	166	IR
ALM_HIGH_CP_TMP_A_F	HIGH_CP_TMP_A_F	RO	BV	213	IR
ALM_HIGH_CP_TMP_B_F	HIGH_CP_TMP_B_F	RO	BV	214	IR
ALM_HIGH_DGT_A_F	HIGH_DGT_A_F	RO	BV	189	IR
ALM_HIGH_DGT_B_F	HIGH_DGT_B_F	RO	BV	190	IR
ALM_HP_SWITCH_A_F	HP_SWITCH_A_F	RO	BV	215	IR
ALM_HP_SWITCH_B_F	HP_SWITCH_B_F	RO	BV	216	IR
ALM_ILL_FACT_CONF_F	ILL_FACT_CONF_F	RO	BV	182	IR
ALM_INI_FACT_CONF_F	INI_FACT_CONF_F	RO	BV	181	IR
ALM_LENSCAN_F	LENSCAN_F	RO	BV	218	IR
ALM_LIQUID_P_A_F	LIQUID_P_A_F	RO	BV	150	IR
ALM_LIQUID_P_B_F	LIQUID_P_B_F	RO	BV	151	IR
ALM_LIQUID_T_A_F	LIQUID_T_A_F	RO	BV	135	IR
ALM_LIQUID_T_B_F	LIQUID_T_B_F	RO	BV	136	IR
ALM_LOCK_F	LOCK_F	RO	BV	170	IR
ALM_LOSS_COM_MS_F	LOSS_COM_MS_F	RO	BV	171	IR
ALM_LOW_OIL_A_P_F	LOW_OIL_A_P_F	RO	BV	172	IR
ALM_LOW_OIL_B_P_F	LOW_OIL_B_P_F	RO	BV	173	IR
ALM_LOW_OIL_LEVEL_A_F	LOW_OIL_LEVEL_A_F	RO	BV	178	IR
ALM_LOW_OIL_LEVEL_B_F	LOW_OIL_LEVEL_B_F	RO	BV	179	IR
ALM_LOW_SUCTION_A_F	LOW_SUCTION_A_F	RO	BV	168	IR

LEGEND

AV — Analog Value
BV — Binary Value
COV — Change of Value
IR — Intrinsic Reporting
RO — Read Only
RW — Read Write
TL — Trend Log

APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
ALM_LOW_SUCTION_B_F	LOW_SUCTION_B_F	RO	BV	169	IR
ALM_M_S_CONFIG_F	M_S_CONFIG_F	RO	BV	180	IR
ALM_OAT_F	OAT_F	RO	BV	129	IR
ALM_OIL_DROP_A_P_F	OIL_DROP_A_P_F	RO	BV	176	IR
ALM_OIL_DROP_B_P_F	OIL_DROP_B_P_F	RO	BV	177	IR
ALM_OIL_FILT_A_P_F	OIL_FILT_A_P_F	RO	BV	174	IR
ALM_OIL_FILT_B_P_F	OIL_FILT_B_P_F	RO	BV	175	IR
ALM_OIL_P_A_F	OIL_P_A_F	RO	BV	146	IR
ALM_OIL_P_B_F	OIL_P_B_F	RO	BV	147	IR
ALM_REFRIG_ESCAPE_F	REFRIGERANT_ESCAPE_F	RO	BV	188	IR
ALM_SCT_OUT_OF_CP_M_A_F	SCT_OUT_OF_CP_MAP_A_F	RO	BV	186	IR
ALM_SCT_OUT_OF_CP_M_B_F	SCT_OUT_OF_CP_MAP_B_F	RO	BV	187	IR
ALM_SENSORS_SWAP_F	SENSORS_SWAP_F	RO	BV	194	IR
ALM_SIOB1_COM_F	SIOB1_COM_F	RO	BV	152	IR
ALM_SIOB2_COM_F	SIOB2_COM_F	RO	BV	153	IR
ALM_SP_A_F	SP_A_F	RO	BV	144	IR
ALM_SP_B_F	SP_B_F	RO	BV	145	IR
ALM_SPACE_TEMP_F	SPACE_TEMP_F	RO	BV	141	IR
ALM_SST_OUT_OF_CP_M_A_F	SST_OUT_OF_CP_MAP_A_F	RO	BV	195	IR
ALM_SST_OUT_OF_CP_M_B_F	SST_OUT_OF_CP_MAP_B_F	RO	BV	196	IR
ALM_STEPPER_ECO_A_F	STEPPER_ECO_A_F	RO	BV	221	IR
ALM_STEPPER_ECO_B_F	STEPPER_ECO_B_F	RO	BV	222	IR
ALM_STEPPER_EXV_A_F	STEPPER_EXV_A_F	RO	BV	219	IR
ALM_STEPPER_EXV_B_F	STEPPER_EXV_B_F	RO	BV	220	IR
ALM_SUCT_VALV_CLOSD_A_F	SUCT_VALV_CLOSED_A_F	RO	BV	191	IR
ALM_SUCT_VALV_CLOSD_B_F	SUCT_VALV_CLOSED_B_F	RO	BV	192	IR
ALM_SUCTION_T_A_F	SUCTION_T_A_F	RO	BV	131	IR
ALM_SUCTION_T_B_F	SUCTION_T_B_F	RO	BV	132	IR
ALM_VI_DIAG_A_ALERT	VI_DIAG_A_ALERT	RO	BV	223	IR
ALM_VI_DIAG_B_ALERT	VI_DIAG_B_ALERT	RO	BV	224	IR
ALM_VLT_DRIVE_A_ALERT	VLT_DRIVE_A_ALERT	RO	BV	205	IR
ALM_VLT_DRIVE_A_F	VLT_DRIVE_A_F	RO	BV	197	IR
ALM_VLT_DRIVE_B_ALERT	VLT_DRIVE_B_ALERT	RO	BV	206	IR
ALM_VLT_DRIVE_B_F	VLT_DRIVE_B_F	RO	BV	198	IR

LEGEND

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
ALM_VLT_DRIVE1_COM_F	VLT_DRIVE1_COM_F	RO	BV	159	IR
ALM_VLT_DRIVE2_COM_F	VLT_DRIVE2_COM_F	RO	BV	160	IR
BACNET_bacena	BACnet Enable	RO	BV	114	
BACNET_bacunit	Metric Units? (Blackbox)	RO	BV	115	
BACNET_bbmd	BACnet Management Device	RO	AV	486	
BACNET_ident	Identifier	RO	AV	485	
BACNET_network	Network	RO	AV	484	
CAPACTRL_cap_lim	Current Capacity Limit	RO	AV	188	IR
CAPACTRL_cap_pc_a	Estimated Capacity A	RO	AV	193	IR
CAPACTRL_cap_pc_b	Estimated Capacity B	RO	AV	198	IR
CAPACTRL_capmoda	Capa Ctrl Stat Nb A	RO	AV	190	IR
CAPACTRL_capmodb	Capacity Ctrl Stat Nb B	RO	AV	195	IR
CAPACTRL_CirRunNb	Circuit Running Number	RO	AV	204	IR
CAPACTRL_cMaxFrqA	Max Comp. Frequency A	RO	AV	199	IR
CAPACTRL_cMaxFrqB	Max Comp. Frequency B	RO	AV	200	IR
CAPACTRL_ctrl_wt	Controled Water Temp	RO	AV	186	IR
CAPACTRL_cwt_rate	Ctrl Water Temp, Deg/Min	RO	AV	187	IR
CAPACTRL_drvcmda	Wished Comp. Frequency A	RO	AV	189	IR
CAPACTRL_drvcmdb	Wished Comp. Frequency B	RO	AV	194	IR
CAPACTRL_DualMast	Dual Circuit Master	RO	AV	207	IR
CAPACTRL_lcapmoda	Last Capa Ctrl Stat Nb A	RO	AV	191	IR
CAPACTRL_lcapmodb	Last Capa Ctrl Stat Nb B	RO	AV	196	IR
CAPACTRL_overrida	Override Capacity Nb A	RO	AV	192	IR
CAPACTRL_overridb	Override Capacity Nb B	RO	AV	197	IR
CAPACTRL_reset	Reset Amount	RO	AV	203	IR
CAPACTRL_StatCirA	State of Circuit A	RO	AV	205	IR
CAPACTRL_StatCirB	State of Circuit B	RO	AV	206	IR
CAPACTRL_viCmdA	Comp. VI Cmd A	RO	AV	201	IR
CAPACTRL_viCmdB	Comp. VI Cmd B	RO	AV	202	IR
CAPACTRL_xSpdHigh	Transfer Spd, add cir	RO	AV	208	IR
CAPACTRL_xSpdLow_rd	Transfer Spd, remove cir	RO	AV	209	IR
CMP_PI_cpt_kp_a	Comp Temp PI, Kp Cir A	RO	AV	391	
CMP_PI_cpt_kp_b	Comp Temp PI, Kp Cir B	RO	AV	406	
CMP_PI_cpt_ni_a	Comp Temp PI, NI Cir A	RO	AV	393	

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
CMP_PI_cpt_ni_b	Comp Temp PI, NI Cir B	RO	AV	408	
CMP_PI_cpt_ti_a	Comp Temp PI, Ti Cir A	RO	AV	392	
CMP_PI_cpt_ti_b	Comp Temp PI, Ti Cir B	RO	AV	407	
CMP_PI_dgt_kp_a	DGT PI Kp, Cir A	RO	AV	388	
CMP_PI_dgt_kp_b	DGT PI Kp, Cir B	RO	AV	403	
CMP_PI_dgt_ni_a	DGT PI, NI Cir A	RO	AV	390	
CMP_PI_dgt_ni_b	DGT PI, NI Cir B	RO	AV	405	
CMP_PI_dgt_ti_a	DGT PI, Ti Cir A	RO	AV	389	
CMP_PI_dgt_ti_b	DGT PI, Ti Cir B	RO	AV	404	
CMP_PI_dp_kp_a	Disch Press PI, Kp Cir A	RO	AV	394	
CMP_PI_dp_kp_b	Disch Press PI, Kp Cir B	RO	AV	409	
CMP_PI_dp_ni_a	Disch Press PI, NI Cir A	RO	AV	396	
CMP_PI_dp_ni_b	Disch Press PI, NI Cir B	RO	AV	411	
CMP_PI_dp_ti_a	Disch Press PI, Ti Cir A	RO	AV	395	
CMP_PI_dp_ti_b	Disch Press PI, Ti Cir B	RO	AV	410	
CMP_PI_lsp_kp_a	Low SP PI, Kp Cir A	RO	AV	397	
CMP_PI_lsp_kp_b	Low SP PI, Kp Cir B	RO	AV	412	
CMP_PI_lsp_ni_a	Low SP PI, NI Cir A	RO	AV	399	
CMP_PI_lsp_ni_b	Low SP PI, NI Cir B	RO	AV	414	
CMP_PI_lsp_ti_a	Low SP PI, Ti Cir A	RO	AV	398	
CMP_PI_lsp_ti_b	Low SP PI, Ti Cir B	RO	AV	413	
CMP_PI_wt_kp_a	Water Temp PI, Kp, Cir A	RO	AV	385	
CMP_PI_wt_kp_b	Water Temp PI, Kp, Cir B	RO	AV	400	
CMP_PI_wt_ni_a	Water Temp PI, NI Cir A	RO	AV	387	
CMP_PI_wt_ni_b	Water Temp PI, NI Cir B	RO	AV	402	
CMP_PI_wt_ti_a	Water Temp PI, Ti Cir A	RO	AV	386	
CMP_PI_wt_ti_b	Water Temp PI, Ti Cir B	RO	AV	401	
CP_ENABL_en_cp_a	Compressor A Disable	RO	BV	118	
CP_ENABL_en_cp_b	Compressor B Disable	RO	BV	119	
DELTA_chdp_hys	cmp high dp hysteresys	RO	AV	457	
DELTA_chdtdact	cmp high dt act offset	RO	AV	458	
DELTA_chdtdspt	cmp high dt stp offset	RO	AV	459	
DELTA_dgt_act	dgt limit act offset	RO	AV	475	
DELTA_dgt_hyst	dgt hysteresys	RO	AV	474	

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
DELTA_dgt_spt	dgt limit spt offset DIS. SUPERHEAT	RO	AV	476	
DELTA_dsh_act	dsh act offset	RO	AV	478	
DELTA_dsh_hyst	dsh hysteresys	RO	AV	477	
DELTA_dshdelay	exv_no_dsh_delay	RO	AV	479	
DELTA_fhdp_hys	fan high dp hysteresys	RO	AV	460	
DELTA_fhdtdact	fan high dt act offset	RO	AV	461	
DELTA_fhdtdstp	fan high dt stp offset ENVELOPE LOW DISCHARGE	RO	AV	462	
DELTA_hsp_hyst	high sp hysteresys	RO	AV	466	
DELTA_hstdact	high st act offset	RO	AV	467	
DELTA_hstdspt	high st stp offset ENVELOPE LOW SUCTION	RO	AV	468	
DELTA_ldp_hys	low dp hysteresys	RO	AV	463	
DELTA_ldtdact	low dt act offset	RO	AV	464	
DELTA_ldtdspt	low dt stp offset ENVELOPE HIGH SUCTION	RO	AV	465	
DELTA_lsp_hyst	low sp hysteresys	RO	AV	469	
DELTA_lstdact	low st act offset	RO	AV	470	
DELTA_lstdcpa	deltat lstEXV vs lstCAPA MOTOR TEMPERATURE	RO	AV	472	
DELTA_lstdspt	low st stp offset	RO	AV	471	
DELTA_mopdelay	exv_no_mop_delay EXV SUBCOOLING (DX)	RO	AV	480	
DELTA_mt_hyst	motor temp hysteresis DIS. GAS TEMPERATURE	RO	AV	473	
DELTA_sbc_act	subcool act offset	RO	AV	482	
DELTA_sbc_hys	subcool hysteresys	RO	AV	481	
DELTA_sbc_spt	Subcooling Setpoint A	RO	AV	483	
DELTA_wateesys	water_t_hysteresys ENVELOPE HIGH DISCHARGE	RO	AV	456	
ECO_PI_capa_lim	Capacity Lim Disable Eco	RO	AV	515	
ECO_PI_eco_max	EXV Eco. Max Position	RO	AV	514	
ECO_PI_eco_min	EXV Eco. Min Position	RO	AV	513	
ECO_PI_ecoshspa	Eco Superheat Setpoint A	RO	AV	516	
ECO_PI_ecoshspb	Eco Superheat Setpoint B	RO	AV	517	
ECO_PI_ecsh_kpa	EXV Eco. SH Kp, Cir A	RO	AV	507	
ECO_PI_ecsh_kpb	EXV Eco. SH Kp, Cir B	RO	AV	510	
ECO_PI_ecsh_nia	EXV Eco. SH NI Cir A	RO	AV	509	

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
ECO_PI_ecsh_nib	EXV Eco. SH NI Cir B	RO	AV	512	
ECO_PI_ecsh_tia	EXV Eco. SH Ti Cir A	RO	AV	508	
ECO_PI_ecsh_tib	EXV Eco. SH Ti Cir B	RO	AV	511	
EXV_CFG_dop_kp_a	Dop PI, Kp Cir A	RO	AV	432	
EXV_CFG_dop_kp_b	Dop PI, Kp Cir B	RO	AV	450	
EXV_CFG_dop_ni_a	Dop PI, NI Cir A	RO	AV	434	
EXV_CFG_dop_ni_b	Dop PI, NI Cir B	RO	AV	452	
EXV_CFG_dop_ti_a	Dop PI, Ti Cir A	RO	AV	433	
EXV_CFG_dop_ti_b	Dop PI, Ti Cir B	RO	AV	451	
EXV_CFG_dsh_kp_a	DSH PI, Kp Cir A	RO	AV	423	
EXV_CFG_dsh_kp_b	DSH PI, Kp Cir B	RO	AV	441	
EXV_CFG_dsh_ni_a	DSH PI, NI Cir A	RO	AV	425	
EXV_CFG_dsh_ni_b	DSH PI, NI Cir B	RO	AV	443	
EXV_CFG_dsh_ti_a	DSH PI, Ti Cir A	RO	AV	424	
EXV_CFG_dsh_ti_b	DSH PI, Ti Cir B	RO	AV	442	
EXV_CFG_fixeddsh	Fixed DSH Setpoint	RO	AV	415	
EXV_CFG_hsp_kp_a	High SP PI, Kp Cir A	RO	AV	426	
EXV_CFG_hsp_kp_b	High SP PI, Kp Cir B	RO	AV	444	
EXV_CFG_hsp_ni_a	High SP PI, NI Cir A	RO	AV	428	
EXV_CFG_hsp_ni_b	High SP PI, NI Cir B	RO	AV	446	
EXV_CFG_hsp_ti_a	High SP PI, Ti Cir A	RO	AV	427	
EXV_CFG_hsp_ti_b	High SP PI, Ti Cir B	RO	AV	445	
EXV_CFG_lsp_kp_a	Low SP PI, Kp Cir A	RO	AV	429	
EXV_CFG_lsp_kp_b	Low SP PI, Kp Cir B	RO	AV	447	
EXV_CFG_lsp_ni_a	Low SP PI, NI Cir A	RO	AV	431	
EXV_CFG_lsp_ni_b	Low SP PI, NI Cir B	RO	AV	449	
EXV_CFG_lsp_ti_a	Low SP PI, Ti Cir A	RO	AV	430	
EXV_CFG_lsp_ti_b	Low SP PI, Ti Cir B	RO	AV	448	
EXV_CFG_sbc_kp_a	Subcool PI, Kp Cir A	RO	AV	420	
EXV_CFG_sbc_kp_b	Subcool PI, Kp Cir B	RO	AV	438	
EXV_CFG_sbc_ni_a	Subcool PI, NI Cir A	RO	AV	422	
EXV_CFG_sbc_ni_b	Subcool PI, NI Cir B	RO	AV	440	
EXV_CFG_sbc_ti_a	Subcool PI, Ti Cir A	RO	AV	421	
EXV_CFG_sbc_ti_b	Subcool PI, Ti Cir B	RO	AV	439	

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
EXV_CFG_scsp_max	Subcooling Setpoint Max	RO	AV	416	
EXV_CFG_scsp_min	Subcooling Setpoint Min	RO	AV	417	
EXV_CFG_sh_sp_a	Superheat Setpoint A	RO	AV	418	
EXV_CFG_sh_sp_b	Superheat Setpoint B	RO	AV	419	
EXV_CFG_ssh_kp_a	Suction SH PI, Kp Cir A	RO	AV	435	
EXV_CFG_ssh_kp_b	Suction SH PI, Kp Cir B	RO	AV	453	
EXV_CFG_ssh_ni_a	Suction SH PI, NI Cir A	RO	AV	437	
EXV_CFG_ssh_ni_b	Suction SH PI, NI Cir B	RO	AV	455	
EXV_CFG_ssh_ti_a	Suction SH PI, Ti Cir A	RO	AV	436	
EXV_CFG_ssh_ti_b	Suction SH PI, Ti Cir B	RO	AV	454	
EXV_CTRL_DSH_A	Discharge Superheat A	RO	AV	157	
EXV_CTRL_DSH_B	Discharge Superheat B	RO	AV	168	
EXV_CTRL_EXV_A	EXV Position Circuit A	RO	AV	156	
EXV_CTRL_EXV_B	EXV Position Circuit B	RO	AV	167	
EXV_CTRL_exv_lsta	EXV Previous State A	RO	AV	164	
EXV_CTRL_exv_lstb	EXV Previous State B	RO	AV	175	
EXV_CTRL_exv_sta	EXV State A	RO	AV	163	
EXV_CTRL_exv_stb	EXV State B	RO	AV	174	
EXV_CTRL_exvwposa	EXV Wished Position A	RO	AV	165	
EXV_CTRL_exvwposb	EXV Wished Position B	RO	AV	176	
EXV_CTRL_ov_exv_a	EXV Override Circuit A	RO	AV	155	
EXV_CTRL_ov_exv_b	EXV Override Circuit B	RO	AV	166	
EXV_CTRL_pinch_a	Evap ExchangeDT Cir A	RO	AV	160	
EXV_CTRL_pinch_b	Evap ExchangeDT Cir B	RO	AV	171	
EXV_CTRL_SH_A	Suction Superheat A	RO	AV	158	
EXV_CTRL_SH_B	Suction Superheat B	RO	AV	169	
EXV_CTRL_sh_sp_a	Suct. Superheat Setpnt A	RO	AV	159	
EXV_CTRL_sh_sp_b	Suct. Superheat Setpnt B	RO	AV	170	
EXV_CTRL_subc_spa	Subcooling Setpoint A	RO	AV	162	
EXV_CTRL_subc_spb	Subcooling Setpoint B	RO	AV	173	
EXV_CTRL_subcoola	Subcooling Circuit A	RO	AV	161	
EXV_CTRL_subcoolb	Subcooling Circuit B	RO	AV	172	
FACTORY_cpass_nb	Evap Pass Number	RO	AV	315	
FACTORY_dxcooler	DX Evaporator Installed	RO	BV	96	

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
FACTORY_emm_nrcp	Energy Management Module	RO	BV	99	
FACTORY_fac_pass	Factory Password	RO	AV	316	
FACTORY_fan_fact	Fan Freq Factor(0.7-1.1)	RO	AV	319	
FACTORY_fMaxEnA	Enable Max Frequency A	RO	BV	102	
FACTORY_fMaxEnB	Enable Max Frequency B	RO	BV	103	
FACTORY_fMaxOvrA	Max Frequency Override A	RO	AV	317	
FACTORY_fMaxOvrB	Max Frequency Override B	RO	AV	318	
FACTORY_heat_sel	Evap Heater Installed	RO	BV	97	
FACTORY_leak_chk	Leakage Charge Detection	RO	BV	101	
FACTORY_loambopt	Low Ambient Option (STD)	RO	BV	100	
FACTORY_mfg_tier	Tier 0=STD 1=MID 2=HI	RO	AV	314	
FACTORY_mst_slv	Master Slave Setup	RO	BV	98	
FACTORY_unitsize	Unit Capacity	RO	AV	312	
FACTORY_voltage	Power Supply Voltage	RO	AV	313	
FACTORY2_eco_cnfa	Economizer A Steps Numb	RO	AV	322	
FACTORY2_eco_cnfb	Economizer B Steps Numb	RO	AV	323	
FACTORY2_exvmax_a	EXV A Maximum Steps Numb	RO	AV	320	
FACTORY2_exvmax_b	EXV B Maximum Steps Numb	RO	AV	321	
FACTORY2_vfd_cmp	Nb VFD Compressor	RO	AV	324	
FACTORY2_vfd_fana	Nb Fan Drive Cir A	RO	AV	325	
FACTORY2_vfd_fanb	Nb Fan Drive Cir B	RO	AV	326	
FAN_CFG_cp_factA	Compressor Factor A	RO	AV	498	
FAN_CFG_cp_factB	Compressor Factor B	RO	AV	499	
FAN_CFG_fan_ctrl	Fan Ctrl Type (Vari,Fix) Optimization Parameters	RO	BV	116	
FAN_CFG_fan_hlim	Fan Max Frequency	RO	AV	493	
FAN_CFG_fan_llim	Fan Min Frequency	RO	AV	494	
FAN_CFG_fldp_kpa	Fan Low DP PI, Kp, Cir A	RO	AV	487	
FAN_CFG_fldp_kpb	Fan Low DP PI, Kp, Cir B	RO	AV	490	
FAN_CFG_fldp_nia	Fan Low DP PI, NI Cir A	RO	AV	489	
FAN_CFG_fldp_nib	Fan Low DP PI, NI Cir B	RO	AV	492	
FAN_CFG_fldp_tia	Fan Low DP PI, Ti Cir A	RO	AV	488	
FAN_CFG_fldp_tib	Fan Low DP PI, Ti Cir B	RO	AV	491	
FAN_CFG_fldtfact	Fan Low Dis. Factor	RO	AV	500	

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
FAN_CFG_n_coilsA	Cir Cond Coil Number A	RO	AV	496	
FAN_CFG_n_coilsB	Cir Cond Coil Number B	RO	AV	497	
FAN_CFG_os_d_amp	Opt. Disturbance Ampl.	RO	AV	503	
FAN_CFG_os_d_per	Opt. Disturbance Period	RO	AV	504	
FAN_CFG_os_f_pow	Opt. Freeze Power Tol.		AV	505	
FAN_CFG_sync_Kp	Sychronizing Output Kp	RO	AV	495	
FAN_CFG_xt_enabl	Optimization Enable	RO	BV	117	
FAN_CFG_xt_in_tl	Opt. Deviation Tolerance	RO	AV	502	
FAN_CFG_xt_s_smp	Stablility Sample Nb	RO	AV	501	
FAN_CFG_xtos_flt	Opt. Filter Time	RO	AV	506	
FAN_CTRL_fan_f_a	Fan Freq Cir A	RO	AV	242	IR
FAN_CTRL_fan_f_b	Fan Freq Cir B	RO	AV	250	IR
FAN_CTRL_fan_lsta	Fan Previous State A	RO	AV	244	IR
FAN_CTRL_fan_lstb	Fan Previous State B	RO	AV	252	IR
FAN_CTRL_fan_moda	Fan Mode A	RO	AV	246	IR
FAN_CTRL_fan_modb	Fan Mode B	RO	AV	254	IR
FAN_CTRL_fan_sta	Fan State A	RO	AV	243	IR
FAN_CTRL_fan_stb	Fan State B	RO	AV	251	IR
FAN_CTRL_fan_txta	Fan Mode Text A	RO	AV	247	IR
FAN_CTRL_fan_txtb	Fan Mode Text B	RO	AV	255	IR
FAN_CTRL_fcont_a	Fan Contactors On A	RO	AV	249	IR
FAN_CTRL_fcont_b	Fan Contactors On B	RO	AV	257	IR
FAN_CTRL_ftotpowa	Fan Tot Pwr Filtered A	RO	AV	248	IR
FAN_CTRL_ftotpowb	Fan Tot Pwr Filtered B	RO	AV	256	IR
FAN_CTRL_wfan_f_a	Fan Wished Freq A	RO	AV	245	IR
FAN_CTRL_wfan_f_b	Fan Wished Freq B	RO	AV	253	IR
FAN_DRV_fd_CCTa1	Fan Drive Ctrl Card T A1	RO	AV	266	IR
FAN_DRV_fd_CCTa2	Fan Drive Ctrl Card T A2	RO	AV	275	IR
FAN_DRV_fd_CCTa3	Fan Drive Ctrl Card T A3	RO	AV	284	IR
FAN_DRV_fd_CCTb1	Fan Drive Ctrl Card T B1	RO	AV	293	IR
FAN_DRV_fd_CCTb2	Fan Drive Ctrl Card T B2	RO	AV	302	IR
FAN_DRV_fd_CCTb3	Fan Drive Ctrl Card T B3	RO	AV	311	IR
FAN_DRV_fd_DCVa1	Fan Drv DC Link Volt A1	RO	AV	264	IR
FAN_DRV_fd_DCVa2	Fan Drv DC Link Volt A2	RO	AV	273	IR

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
FAN_DRV_fd_DCVa3	Fan Drv DC Link Volt A3	RO	AV	282	IR
FAN_DRV_fd_DCVb1	Fan Drv DC Link Volt B1	RO	AV	291	IR
FAN_DRV_fd_DCVb2	Fan Drv DC Link Volt B2	RO	AV	300	IR
FAN_DRV_fd_DCVb3	Fan Drv DC Link Volt B3	RO	AV	309	IR
FAN_DRV_fd_Fa1	Fan Drive Frequency A1	RO	AV	262	IR
FAN_DRV_fd_Fa2	Fan Drive Frequency A2	RO	AV	271	IR
FAN_DRV_fd_Fa3	Fan Drive Frequency A3	RO	AV	280	IR
FAN_DRV_fd_Fb1	Fan Drive Frequency B1	RO	AV	289	IR
FAN_DRV_fd_Fb2	Fan Drive Frequency B2	RO	AV	298	IR
FAN_DRV_fd_Fb3	Fan Drive Frequency B3	RO	AV	307	IR
FAN_DRV_fd_HSTa1	Fan Drive Heat Sink T A1	RO	AV	265	IR
FAN_DRV_fd_HSTa2	Fan Drive Heat Sink T A2	RO	AV	274	IR
FAN_DRV_fd_HSTa3	Fan Drive Heat Sink T A3	RO	AV	283	IR
FAN_DRV_fd_HSTb1	Fan Drive Heat Sink T B1	RO	AV	292	IR
FAN_DRV_fd_HSTb2	Fan Drive Heat Sink T B2	RO	AV	301	IR
FAN_DRV_fd_HSTb3	Fan Drive Heat Sink T B3	RO	AV	310	IR
FAN_DRV_fd_Ia1	Fan Drive Amps A1	RO	AV	259	IR
FAN_DRV_fd_Ia2	Fan Drive Amps A2	RO	AV	268	IR
FAN_DRV_fd_Ia3	Fan Drive Amps A3	RO	AV	277	IR
FAN_DRV_fd_Ib1	Fan Drive Amps B1	RO	AV	286	IR
FAN_DRV_fd_Ib2	Fan Drive Amps B2	RO	AV	295	IR
FAN_DRV_fd_Ib3	Fan Drive Amps B3	RO	AV	304	IR
FAN_DRV_fd_pwra1	Fan Drive Power A1	RO	AV	258	IR
FAN_DRV_fd_pwra2	Fan Drive Power A2	RO	AV	267	IR
FAN_DRV_fd_pwra3	Fan Drive Power A3	RO	AV	276	IR
FAN_DRV_fd_pwrb1	Fan Drive Power B1	RO	AV	285	IR
FAN_DRV_fd_pwrb2	Fan Drive Power B2	RO	AV	294	IR
FAN_DRV_fd_pwrb3	Fan Drive Power B3	RO	AV	303	IR
FAN_DRV_fd_Sa1	Fan Drive Speed A1	RO	AV	261	IR
FAN_DRV_fd_Sa2	Fan Drive Speed A2	RO	AV	270	IR
FAN_DRV_fd_Sa3	Fan Drive Speed A3	RO	AV	279	IR
FAN_DRV_fd_Sb1	Fan Drive Speed B1	RO	AV	288	IR
FAN_DRV_fd_Sb2	Fan Drive Speed B2	RO	AV	297	IR
FAN_DRV_fd_Sb3	Fan Drive Speed B3	RO	AV	306	IR

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
FAN_DRV_fd_Ta1	Fan Drive Torque A1	RO	AV	263	IR
FAN_DRV_fd_Ta2	Fan Drive Torque A2	RO	AV	272	IR
FAN_DRV_fd_Ta3	Fan Drive Torque A3	RO	AV	281	IR
FAN_DRV_fd_Tb1	Fan Drive Torque B1	RO	AV	290	IR
FAN_DRV_fd_Tb2	Fan Drive Torque B2	RO	AV	299	IR
FAN_DRV_fd_Tb3	Fan Drive Torque B3	RO	AV	308	IR
FAN_DRV_fd_Va1	Fan Drive Voltage A1	RO	AV	260	IR
FAN_DRV_fd_Va2	Fan Drive Voltage A2	RO	AV	269	IR
FAN_DRV_fd_Va3	Fan Drive Voltage A3	RO	AV	278	IR
FAN_DRV_fd_Vb1	Fan Drive Voltage B1	RO	AV	287	IR
FAN_DRV_fd_Vb2	Fan Drive Voltage B2	RO	AV	296	IR
FAN_DRV_fd_Vb3	Fan Drive Voltage B3	RO	AV	305	IR
FAN_DRV2_FD_COMA1	Comm Fan Drive A1 Ok	RO	BV	88	IR
FAN_DRV2_FD_COMA2	Comm Fan Drive A2 Ok	RO	BV	89	IR
FAN_DRV2_FD_COMA3	Comm Fan Drive A3 Ok	RO	BV	90	IR
FAN_DRV2_FD_COMB1	Comm Fan Drive B1 Ok	RO	BV	91	IR
FAN_DRV2_FD_COMB2	Comm Fan Drive B2 Ok	RO	BV	92	IR
FAN_DRV2_FD_COMB3	Comm Fan Drive B3 Ok	RO	BV	93	IR
FAN_DRV2_SET_FDA1	Fan Drive A1 Attach	RO	BV	82	IR
FAN_DRV2_SET_FDA2	Fan Drive A2 Attach	RO	BV	83	IR
FAN_DRV2_SET_FDA3	Fan Drive A3 Attach	RO	BV	84	IR
FAN_DRV2_SET_FDB1	Fan Drive B1 Attach	RO	BV	85	IR
FAN_DRV2_SET_FDB2	Fan Drive B2 Attach	RO	BV	86	IR
FAN_DRV2_SET_FDB3	Fan Drive B3 Attach	RO	BV	87	IR
FAN_DRV2_stopfana	Stop Cir A Fan Drive	RO	BV	94	IR
FAN_DRV2_stopfanb	Stop Cir B Fan Drive	RO	BV	95	IR
GENCONF_ice_cnfg	Ice Mode Enable	RO	BV	2	
GENCONF_lim_sel	Demand Limit Type Select 0 = None 1 = Switch Control 2 = 4-20mA Control	RO	AV	3	
GENCONF_nh_end	Night Mode End Hour	RO	AV	5	
GENCONF_nh_limit	Night Capacity Limit	RO	AV	6	
GENCONF_nh_start	Night Mode Start Hour	RO	AV	4	
GENCONF_off_on_d	Unit Off to On Delay	RO	AV	2	

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
GENCONF_prio_cir	Cir Priority Sequence 0=Auto 1=A Prio 2=B Prio	RO	AV	1	
GENCONF_ramp_sel	Ramp Loading Enable	RO	BV	1	
GENCONF_shortcyc	Short Cycle Management	RO	BV	3	
GENUNIT_CAP_T	Percent Total Capacity	RO	AV	24	COV IR
GENUNIT_CHIL_OCC_rd	Net.: Cmd Occupied	RO	BV	7	IR
GENUNIT_CHIL_OCC_wr	Net.: Cmd Occupied	RW	BV	126	IR CMD
GENUNIT_CHIL_S_S_rd	Net.: Cmd Start/Stop	RO	BV	6	
GENUNIT_CHIL_S_S_wr	Net.: Cmd Start/Stop	RW	BV	120	IR CMD
GENUNIT_CTRL_PNT_rd	Control Point	RO	AV	26	COV IR
GENUNIT_CTRL_PNT_wr	Control Point	RW	AV	525	IR CMD
GENUNIT_CTRL_TYP	Local=0 Net.=1 Remote=2	RO	AV	20	IR
GENUNIT_DEM_LIM_rd	Active Demand Limit Val	RO	AV	27	
GENUNIT_DEM_LIM_wr	Active Demand Limit Val	RW	AV	526	IR CMD
GENUNIT_EMSTOP_rd	Emergency Stop	RO	BV	9	
GENUNIT_EMSTOP_wr	Emergency Stop	RW	BV	123	IR CMD
GENUNIT_min_left	Minutes Left for Start	RO	AV	22	
GENUNIT_min_lim	Demand Limit Minimum	RO	AV	28	
GENUNIT_SP	Current Setpoint	RO	AV	25	
GENUNIT_SP_OCC_rd	Setpoint Occupied?	RO	BV	8	
GENUNIT_SP_OCC_wr	Setpoint Occupied?	RW	BV	125	IR CMD
GENUNIT_SP_SEL_rd	Setpoint Select 0=Auto 1=Spt1 2=Spt2	RO	AV	23	
GENUNIT_SP_SEL_wr	Setpoint Select	RW	AV	527	IR CMD
GENUNIT_STATUS	Run Status	RO	AV	21	COV IR
INPUTS_HEATR_SW	Evap Heater Detector	RO	BV	19	IR
INPUTS_ICE_SW	Ice Done Storage Switch	RO	BV	17	IR
INPUTS_leak_2_v	Leakage Detector 2	RO	AV	65	IR
INPUTS_leak_v	Leakage Detector 1	RO	AV	64	IR
INPUTS_LIM_ANAL	Remote Dem. Limit	RO	AV	63	IR
INPUTS_LIM_SW1	Limit Switch 1	RO	BV	12	IR
INPUTS_LIM_SW2	Limit Switch 2	RO	BV	13	IR
INPUTS_OCC_OVSW	Occupied Override Switch	RO	BV	18	IR

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
INPUTS_OIL_L_A	Oil Level Input A	RO	BV	14	IR
INPUTS_OIL_L_B	Oil Level Input B	RO	BV	15	IR
INPUTS_ONOFF_SW	Remote On/Off Switch	RO	BV	10	IR
INPUTS_REM_LOCK	Customer Interlock	RO	BV	16	IR
INPUTS_SETP_SW	Remote Setpoint Switch	RO	BV	11	IR
INPUTS_SP_RESET	Remote Reset Setpoint	RO	AV	62	IR
LAST_POR_date_of1	PowerDown 1:day-mon-year	RO	AV	137	IR
LAST_POR_date_of2	PowerDown 2:day-mon-year	RO	AV	141	IR
LAST_POR_date_of3	PowerDown 3:day-mon-year	RO	AV	145	IR
LAST_POR_date_of4	PowerDown 4:day-mon-year	RO	AV	149	IR
LAST_POR_date_of5	PowerDown 5:day-mon-year	RO	AV	153	IR
LAST_POR_date_on1	Power On 1 :day-mon-year	RO	AV	135	IR
LAST_POR_date_on2	Power On 2 :day-mon-year	RO	AV	139	IR
LAST_POR_date_on3	Power On 3 :day-mon-year	RO	AV	143	IR
LAST_POR_date_on4	Power On 4 :day-mon-year	RO	AV	147	IR
LAST_POR_date_on5	Power On 5 :day-mon-year	RO	AV	151	IR
LAST_POR_time_of1	PowerDown 1:hour-minute	RO	AV	138	IR
LAST_POR_time_of2	PowerDown 2:hour-minute	RO	AV	142	IR
LAST_POR_time_of3	PowerDown 3:hour-minute	RO	AV	146	IR
LAST_POR_time_of4	PowerDown 4:hour-minute	RO	AV	150	IR
LAST_POR_time_of5	PowerDown 5:hour-minute	RO	AV	154	IR
LAST_POR_time_on1	Power On 1 :hour-minute	RO	AV	136	IR
LAST_POR_time_on2	Power On 2 :hour-minute	RO	AV	140	IR
LAST_POR_time_on3	Power On 3 :hour-minute	RO	AV	144	IR
LAST_POR_time_on4	Power On 4 :hour-minute	RO	AV	148	IR
LAST_POR_time_on5	Power On 5 :hour-minute	RO	AV	152	IR
LIMITS_chdpacta	ENV comp high dp act A	RO	AV	214	IR
LIMITS_chdpactb	ENV comp high dp act B	RO	AV	230	IR
LIMITS_chdpstpa	ENV comp high dp stp A	RO	AV	215	IR
LIMITS_chdpstpb	ENV comp high dp stp B	RO	AV	231	IR
LIMITS_dgtacta	dgt act A	RO	AV	224	IR
LIMITS_dgtactb	dgt_act B	RO	AV	240	IR
LIMITS_dgtstpa	dgt stp A	RO	AV	225	IR
LIMITS_dgtstpb	dgt_stp B	RO	AV	241	IR

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
LIMITS_dshacta	EXV_dsh_act A	RO	AV	210	IR
LIMITS_dshactb	EXV_dsh_act B	RO	AV	226	IR
LIMITS_dshstpa	EXV_dsh_stp A	RO	AV	211	IR
LIMITS_dshstpb	EXV_dsh_stp B	RO	AV	227	IR
LIMITS_elspacta	EXV_lsp_act A	RO	AV	212	IR
LIMITS_elspactb	EXV_lsp_act B	RO	AV	228	IR
LIMITS_elspstpa	EXV_lsp_stp A	RO	AV	213	IR
LIMITS_elspstpb	EXV_lsp_stp B	RO	AV	229	IR
LIMITS_fhdpacta	ENV fan high dp act A	RO	AV	216	IR
LIMITS_fhdpactb	ENV fan high dp act B	RO	AV	232	IR
LIMITS_fhdpstpa	ENV fan high dp stp A	RO	AV	217	IR
LIMITS_fhdpstpb	ENV fan high dp stp B	RO	AV	233	IR
LIMITS_hspacta	ENV high sp act A	RO	AV	220	IR
LIMITS_hspactb	ENV high sp act B	RO	AV	236	IR
LIMITS_hspstpa	ENV high sp stp A	RO	AV	221	IR
LIMITS_hspstpb	ENV high sp stp B	RO	AV	237	IR
LIMITS_ldpacta	ENV low dp act A	RO	AV	218	IR
LIMITS_ldpactb	ENV low dp act B	RO	AV	234	IR
LIMITS_ldpstpa	ENV low dp stp A	RO	AV	219	IR
LIMITS_ldpstpb	ENV low dp stp B	RO	AV	235	IR
LIMITS_lspacta	ENV low sp act A	RO	AV	222	IR
LIMITS_lspactb	ENV low sp act B	RO	AV	238	IR
LIMITS_lspstpa	ENV low sp stp A	RO	AV	223	IR
LIMITS_lspstpb	ENV low sp stp B	RO	AV	239	IR
M_MSTSLV_cap_max	Max Available Capacity ?	RO	BV	81	
M_MSTSLV_l_strt_d	Lag Start Delay	RO	AV	179	
M_MSTSLV_lagstat	Slave lagstat	RO	AV	182	
M_MSTSLV_lead_sel	Lead Unit is the:	RO	BV	78	
M_MSTSLV_ll_chang	Lead/lag Changeover?	RO	BV	79	
M_MSTSLV_ll_hr_d	Lead/lag Hours Delta	RO	AV	180	
M_MSTSLV_ll_pull	Lead Pulldown ?	RO	BV	80	
M_MSTSLV_ms_activ	Master/Slave Ctrl Active	RO	BV	77	
M_MSTSLV_ms_error	Master/Slave Error	RO	AV	181	
M_MSTSLV_slav_ewt	Slave Evap Ent. Fluid	RO	AV	184	

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
M_MSTSLV_slav_hr	Slave Operating Hours	RO	AV	183	
M_MSTSLV_slav_lwt	Slave Evap Leav. Fluid	RO	AV	185	
M_MSTSLV_slv_capt	Slave Chiller Total Cap	RO	AV	178	
M_MSTSLV_slv_stat	Slave Chiller State	RO	AV	177	
MODES_m_2stpt	Second Setpoint In Use	RO	BV	64	IR
MODES_m_delay	Start Up Delay In Effect	RO	BV	63	IR
MODES_m_demlim	Demand Limit Active	RO	BV	66	IR
MODES_m_ice	Ice Mode In Effect	RO	BV	71	IR
MODES_m_night	Night Low Noise Active	RO	BV	69	IR
MODES_m_pmpper	Pump Periodic Start	RO	BV	68	IR
MODES_m_pmprot	Evaporator Pump Rotation	RO	BV	67	IR
MODES_m_reset	Reset In Effect	RO	BV	65	IR
MODES_m_slave	Master Slave Active	RO	BV	70	IR
MST_SLV_lag_mini	Lag Minimum Running Time	RO	AV	383	
MST_SLV_lag_pump	Lag Unit Pump Control 0=Stop if Unit Stops 1=Run if Unit Stops	RO	AV	384	
MST_SLV_lead_pul	Lead Pulldown Time	RO	AV	381	
MST_SLV_lead_sel	Lead Lag Select 0=Always Lead 1=Lag Once Failed Only 2=Lead/Lag Runtime Sel	RO	AV	378	
MST_SLV_ll_bal_d	Lead/Lag Balance Delta	RO	AV	379	
MST_SLV_ll_serie	Chiller In Series	RO	BV	113	
MST_SLV_lstr_tim	Lead/Lag Start Timer	RO	AV	380	
MST_SLV_ms_ctrl	Master Control Type 1=Local Control 2=Remote Control 3=CCN Control	RO	AV	376	
MST_SLV_ms_sel	Master/Slave Select 0=Disable 1=Master 2=Slave	RO	AV	375	
MST_SLV_slv_addr	Slave Address	RO	AV	377	
MST_SLV_start_dt	Start If Error Higher	RO	AV	382	
OUTPUTS_ALARM	Alarm Relay Status	RO	BV	34	IR
OUTPUTS_ALERT	Alert Relay State	RO	BV	36	IR
OUTPUTS_BOX_HTR	Control Box Heater	RO	BV	57	IR
OUTPUTS_C_HEATER	Evap Heater Output	RO	BV	38	IR
OUTPUTS_CAPT_010	Chiller Capacity Signal	RO	AV	70	IR
OUTPUTS_CAPT010A	Capacity Signal Cir A	RO	AV	66	IR

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
OUTPUTS_CAPT010B	Capacity Signal Cir B	RO	AV	68	IR
OUTPUTS_CP_A	Compressor A	RO	BV	21	IR
OUTPUTS_CP_B	Compressor B	RO	BV	28	IR
OUTPUTS_FCA1	Fan Contactor 1A	RO	BV	39	IR
OUTPUTS_FCA2	Fan Contactor 2A	RO	BV	40	IR
OUTPUTS_FCA3	Fan Contactor 3A	RO	BV	41	IR
OUTPUTS_FCA4	Fan Contactor 4A	RO	BV	42	IR
OUTPUTS_FCA5	Fan Contactor 5A	RO	BV	43	IR
OUTPUTS_FCA6	Fan Contactor 6A	RO	BV	44	IR
OUTPUTS_FCA7	Fan Contactor 7A	RO	BV	45	IR
OUTPUTS_FCA8	Fan Contactor 8A	RO	BV	46	IR
OUTPUTS_FCB1	Fan Contactor 1B	RO	BV	47	IR
OUTPUTS_FCB2	Fan Contactor 2B	RO	BV	48	IR
OUTPUTS_FCB3	Fan Contactor 3B	RO	BV	49	IR
OUTPUTS_FCB4	Fan Contactor 4B	RO	BV	50	IR
OUTPUTS_FCB5	Fan Contactor 5B	RO	BV	51	IR
OUTPUTS_FCB6	Fan Contactor 6B	RO	BV	52	IR
OUTPUTS_FCB7	Fan Contactor 7B	RO	BV	53	IR
OUTPUTS_FCB8	Fan Contactor 8B	RO	BV	54	IR
OUTPUTS_ISO_OP_A	Ref Iso Relay Energize A	RO	BV	24	IR
OUTPUTS_ISO_OP_B	Ref Iso Relay Energize B	RO	BV	31	IR
OUTPUTS_ISO_POSA	Ref Iso Valve State A	RO	BV	25	IR
OUTPUTS_ISO_POSB	Ref Iso Valve State B	RO	BV	32	IR
OUTPUTS_LABEL_A	CIRCUIT A	RO	BV	20	IR
OUTPUTS_LABEL_B	CIRCUIT B	RO	BV	27	IR
OUTPUTS_OIL_HT_A	Oil Heater Output A	RO	BV	26	IR
OUTPUTS_OIL_HT_B	Oil Heater Output B	RO	BV	33	IR
OUTPUTS_OIL_SL_A	Oil Solenoid Output A	RO	BV	22	IR
OUTPUTS_OIL_SL_B	Oil Solenoid Output B	RO	BV	29	IR
OUTPUTS_RUNNING	Running Relay Status	RO	BV	35	IR
OUTPUTS_SHUTDOWN	Shutdown Indicator State	RO	BV	37	IR
OUTPUTS_VFAN_A	VariFan Speed A	RO	AV	67	IR
OUTPUTS_VFAN_B	VariFan Speed B	RO	AV	69	IR
OUTPUTS_VFD_EN_A	Comp. HW Enable A	RO	BV	55	IR

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
OUTPUTS_VFD_EN_B	Comp. HW Enable B	RO	BV	56	IR
OUTPUTS_VI_A	VI Solenoid Output A	RO	BV	23	IR
OUTPUTS_VI_B	VI Solenoid Output B	RO	BV	30	IR
PRESSURE_DOP_A	Delta Oil Pressure A	RO	AV	53	COV IR
PRESSURE_DOP_B	Delta Oil Pressure B	RO	AV	59	COV IR
PRESSURE_DP_A	Discharge Pressure A	RO	AV	50	COV IR
PRESSURE_DP_B	Discharge Pressure B	RO	AV	56	COV IR
PRESSURE_ECO_P_A	Economizer Pressure A	RO	AV	54	COV IR
PRESSURE_ECO_P_B	Economizer Pressure B	RO	AV	60	COV IR
PRESSURE_LIQ_P_A	Liquid Pressure A	RO	AV	55	COV IR
PRESSURE_LIQ_P_B	Liquid Pressure B	RO	AV	61	COV IR
PRESSURE_OP_A	Oil Pressure A	RO	AV	52	COV IR
PRESSURE_OP_B	Oil Pressure B	RO	AV	58	COV IR
PRESSURE_SP_A	Main Suction Pressure A	RO	AV	51	COV IR
PRESSURE_SP_B	Main Suction Pressure B	RO	AV	57	COV IR
PUMPCONF_cpumpseq	Evap Pumps Sequence 0 = No Pump 1 = One Pump Only 2 = Two Pumps Auto 3 = Pump#1 Manual 4 = Pump#2 Manual	RO	AV	7	
PUMPCONF_pump_del	Pump Auto Rotation Delay	RO	AV	8	
PUMPCONF_pump_loc	Flow Checked If Pump Off	RO	BV	5	
PUMPCONF_pump_per	Pump Sticking Protection	RO	BV	4	
PUMPSTAT_CPUMP_1_rd	Evap Pump #1 Command	RO	BV	58	IR
PUMPSTAT_CPUMP_1_wr	Evap Pump #1 Command	RW	BV	121	IR CMD
PUMPSTAT_CPUMP_2_rd	Evap Pump #2 Command	RO	BV	59	IR
PUMPSTAT_CPUMP_2_wr	Evap Pump #2 Command	RW	BV	122	IR CMD
PUMPSTAT_FLOW_SW	Evap Flow Switch #1	RO	BV	61	IR
PUMPSTAT_FLOW_SWB	Evap Flow Switch #2	RO	BV	62	IR
PUMPSTAT_ROTCPUMP_rd	Rotate Evap Pumps ?	RO	BV	60	IR
PUMPSTAT_ROTCPUMP_wr	Rotate Evap Pumps ?	RW	BV	124	IR CMD
RESETCFG_cr_deg	Cooling Reset Deg. Value	RO	AV	19	
RESETCFG_cr_sel	Cooling Reset Select 0=None 1=OAT 2=Delta T 3=4-20mA control 4=Space Temp Do not modify ! Cooling Reset Select	RO	AV	10	

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
RESETCFG_dt_cr_fu	Delta T Full Reset Value	RO	AV	14	
RESETCFG_dt_cr_no	Delta T No Reset Value	RO	AV	13	
RESETCFG_oat_crfu	OAT Full Reset Value	RO	AV	12	
RESETCFG_oat_crno	OAT No Reset Value	RO	AV	11	
RESETCFG_spacr_fu	Space T Full Reset Value	RO	AV	18	
RESETCFG_spacr_no	Space T No Reset Value	RO	AV	17	
RESETCFG_v_cr_fu	Current Full Reset Value	RO	AV	16	
RESETCFG_v_cr_no	Current No Reset Value	RO	AV	15	
RUNTIME_HR_CP_A	Compressor A Hours	RO	AV	73	IR
RUNTIME_HR_CP_B	Compressor B Hours	RO	AV	75	IR
RUNTIME_hr_cpum1	Evap Pump #1 Hours	RO	AV	77	IR
RUNTIME_hr_cpum2	Evap Pump #2 Hours	RO	AV	78	IR
RUNTIME_HR_MACH	Machine Operating Hours	RO	AV	71	IR
RUNTIME_hrfana01	Circuit A Fan #1 Hours	RO	AV	81	IR
RUNTIME_hrfana02	Circuit A Fan #2 Hours	RO	AV	82	IR
RUNTIME_hrfana03	Circuit A Fan #3 Hours	RO	AV	83	IR
RUNTIME_hrfana04	Circuit A Fan #4 Hours	RO	AV	84	IR
RUNTIME_hrfana05	Circuit A Fan #5 Hours	RO	AV	85	IR
RUNTIME_hrfana06	Circuit A Fan #6 Hours	RO	AV	86	IR
RUNTIME_hrfana07	Circuit A Fan #7 Hours	RO	AV	87	IR
RUNTIME_hrfana08	Circuit A Fan #8 Hours	RO	AV	88	IR
RUNTIME_hrfana09	Circuit A Fan #9 Hours	RO	AV	89	IR
RUNTIME_hrfana10	Circuit A Fan #10 Hours	RO	AV	90	IR
RUNTIME_hrfana11	Circuit A Fan #11 Hours	RO	AV	91	IR
RUNTIME_hrfana12	Circuit A Fan #12 Hours	RO	AV	92	IR
RUNTIME_hrfana13	Circuit A Fan #13 Hours	RO	AV	93	IR
RUNTIME_hrfana14	Circuit A Fan #14 Hours	RO	AV	94	IR
RUNTIME_hrfanb01	Circuit B Fan #1 Hours	RO	AV	95	IR
RUNTIME_hrfanb02	Circuit B Fan #2 Hours	RO	AV	96	IR
RUNTIME_hrfanb03	Circuit B Fan #3 Hours	RO	AV	97	IR
RUNTIME_hrfanb04	Circuit B Fan #4 Hours	RO	AV	98	IR
RUNTIME_hrfanb05	Circuit B Fan #5 Hours	RO	AV	99	IR
RUNTIME_hrfanb06	Circuit B Fan #6 Hours	RO	AV	100	IR
RUNTIME_hrfanb07	Circuit B Fan #7 Hours	RO	AV	101	IR

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
RUNTIME_hrfanb08	Circuit B Fan #8 Hours	RO	AV	102	IR
RUNTIME_hrfanb09	Circuit B Fan #9 Hours	RO	AV	103	IR
RUNTIME_hrfanb10	Circuit B Fan #10 Hours	RO	AV	104	IR
RUNTIME_hrfanb11	Circuit B Fan #11 Hours	RO	AV	105	IR
RUNTIME_hrfanb12	Circuit B Fan #12 Hours	RO	AV	106	IR
RUNTIME_hrfanb13	Circuit B Fan #13 Hours	RO	AV	107	IR
RUNTIME_hrfanb14	Circuit B Fan #14 Hours	RO	AV	108	IR
RUNTIME_st_cp_a	Compressor A Starts	RO	AV	74	IR
RUNTIME_st_cp_b	Compressor B Starts	RO	AV	76	IR
RUNTIME_st_mach	Machine Starts	RO	AV	72	IR
RUNTIME_VIctA	VI Cycle Count A	RO	AV	79	IR
RUNTIME_VIctB	VI Cycle Count B	RO	AV	80	IR
SERVICE1_AntiFrz	Pump Rot. AntiFrz Protec	RO	BV	112	
SERVICE1_auto_sm	Auto Start When SM Lost	RO	BV	110	
SERVICE1_cdrv_cfg	Send comp. drive config?	RO	BV	109	
SERVICE1_ewt_cirA	EWT Probe on Cir A Side	RO	AV	331	
SERVICE1_ewt_opt	Entering Fluid Control	RO	BV	104	
SERVICE1_fastcapr	Fast Capacity Recovery	RO	AV	330	
SERVICE1_fdrv_cfg	Send fan drive config?	RO	BV	108	
SERVICE1_flui_typ	Evaporator Fluid Type 1 = Water 2 = Med Brine 3 = Low Brine	RO	AV	327	
SERVICE1_freez_ov	Freeze Override Offset	RO	AV	335	
SERVICE1_freezesp	Brine Freeze Setpoint	RO	AV	328	
SERVICE1_heatersp	Evap Heater Delta Spt	RO	AV	334	
SERVICE1_leak_thr	Leakage Charge Threshold		AV	332	
SERVICE1_leak_tmr	Leakage Charge Timer	RO	AV	333	
SERVICE1_metric	Metric Units? (Blackbox)	RO	BV	107	
SERVICE1_mini_lwt	Brine Minimum Fluid Temp	RO	AV	329	
SERVICE1_RFI_conf	Compressor RFI Filter En	RO	BV	106	
SERVICE1_ser_pass	Service Password	RO	BV	105	
SERVICE1_ViChkEn	VI Self-Test Enable	RW	BV	111	
SERVICE1_ViPwrChk	VI Self-Test Threshold	RW	AV	336	
SETPOINT_cramp_sp	Cooling Ramp Loading	RW	AV	521	
SETPOINT_csp1	Cooling Setpoint 1	RW	AV	518	

LEGEND

AV — Analog Value
BV — Binary Value
COV — Change of Value
IR — Intrinsic Reporting
RO — Read Only
RW — Read Write
TL — Trend Log

APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
SETPOINT_csp2	Cooling Setpoint 2	RW	AV	519	
SETPOINT_ice_sp	Cooling Ice Setpoint	RW	AV	520	
SETPOINT_lim_sp1	Switch Limit Setpoint 1	RW	AV	522	
SETPOINT_lim_sp2	Switch Limit Setpoint 2	RW	AV	523	
SETPOINT_lim_sp3	Switch Limit Setpoint 3	RW	AV	524	
TEMP_CHWSTEMP	Chill Water Temp (Opt.)	RO	AV	49	COV IR
TEMP_COOL_EWT	Evap Entering Fluid	RO	AV	29	COV IR
TEMP_COOL_LWT	Evap Leaving Fluid	RO	AV	30	COV IR
TEMP_CP_TMP_A	Motor Temperature Cir A	RO	AV	37	COV IR
TEMP_CP_TMP_B	Motor Temperature Cir B	RO	AV	45	COV IR
TEMP_DGT_A	Discharge Gas Temp Cir A	RO	AV	36	COV IR
TEMP_DGT_B	Discharge Gas Temp Cir B	RO	AV	44	COV IR
TEMP_ECO_T_A	EXV Eco. Tmp Cir A	RO	AV	38	COV IR
TEMP_ECO_T_B	EXV Eco. Tmp Cir B	RO	AV	46	COV IR
TEMP_LIQ_T_A	Liquid Temperature A	RO	AV	39	COV IR
TEMP_LIQ_T_B	Liquid Temperature B	RO	AV	47	COV IR
TEMP_OAT	Outdoor Air Temperature	RO	AV	31	COV IR
TEMP_SCT_A	Saturated Cond Tmp Cir A	RO	AV	32	COV IR
TEMP_SCT_B	Saturated Cond Tmp Cir B	RO	AV	40	COV IR
TEMP_SLT_A	Saturated Liquid Temp A	RO	AV	34	COV IR
TEMP_SLT_B	Saturated Liquid Temp B	RO	AV	42	COV IR
TEMP_SPACETMP	Space Temp (Opt.)	RO	AV	48	COV IR
TEMP_SST_A	Saturated Suction Temp A	RO	AV	33	COV IR
TEMP_SST_B	Saturated Suction Temp B	RO	AV	41	COV IR
TEMP_SUCT_A	Compressor Suction Tmp A	RO	AV	35	COV IR
TEMP_SUCT_B	Compressor Suction Tmp B	RO	AV	43	COV IR
TL_cap_pc_a	Estimated Capacity A	RW	TL	39	IR
TL_cap_pc_b	Estimated Capacity B	RW	TL	41	IR
TL_COOL_EWT	Evap Entering Fluid	RW	TL	4	IR
TL_COOL_LWT	Evap Leaving Fluid	RW	TL	5	IR
TL_CP_TMP_A	Motor Temperature Cir A	RW	TL	10	IR
TL_CP_TMP_B	Motor Temperature Cir B	RW	TL	15	IR
TL_ctrl_wt	Controled Water Temp	RW	TL	37	IR
TL_DEM_LIM	Active Demand Limit Val	RW	TL	3	IR

LEGEND

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
TL_DGT_A	Discharge Gas Temp Cir A	RW	TL	9	IR
TL_DGT_B	Discharge Gas Temp Cir B	RW	TL	14	IR
TL_drv_Fa	Cir A Drive Frequency	RW	TL	29	IR
TL_drv_Fb	Cir B Drive Frequency	RW	TL	32	IR
TL_drv_Ia	Cir A Drive Amps	RW	TL	28	IR
TL_drv_Ib	Cir B Drive Amps	RW	TL	31	IR
TL_drv_pwra	Cir A Drive Power	RW	TL	27	IR
TL_drv_pwrb	Cir B Drive Power	RW	TL	30	IR
TL_eco_a	EXV Eco Position Cir A	RW	TL	42	IR
TL_eco_b	EXV Eco Position Cir B	RW	TL	43	IR
TL_ECO_P_A	Economizer Pressure A	RW	TL	17	IR
TL_ECO_P_B	Economizer Pressure B	RW	TL	18	IR
TL_ECO_T_A	EXV Eco. Tmp Cir A	RW	TL	11	IR
TL_ECO_T_B	EXV Eco. Tmp Cir B	RW	TL	16	IR
TL_EXV_A	EXV Position Circuit A	RW	TL	34	IR
TL_EXV_B	EXV Position Circuit B	RW	TL	36	IR
TL_fan_f_a	Fan Freq Cir A	RW	TL	44	IR
TL_fan_f_b	Fan Freq Cir B	RW	TL	45	IR
TL_fd_pwra1	Fan Drive Power A1	RW	TL	46	IR
TL_fd_pwra2	Fan Drive Power A2	RW	TL	47	IR
TL_fd_pwrb1	Fan Drive Power B1	RW	TL	48	IR
TL_fd_pwrb2	Fan Drive Power B2	RW	TL	49	IR
TL_HR_CP_A	Compressor A Hours	RW	TL	23	IR
TL_HR_CP_B	Compressor B Hours	RW	TL	25	IR
TL_HR_MACH	Machine Operating Hours	RW	TL	21	IR
TL_OAT	Outdoor Air Temperature	RW	TL	6	IR
TL_OIL_L_A	Oil Level Input A	RW	TL	19	IR
TL_OIL_L_B	Oil Level Input B	RW	TL	20	IR
TL_ov_exv_a	EXV Override Circuit A	RW	TL	33	IR
TL_ov_exv_b	EXV Override Circuit B	RW	TL	35	IR
TL_overrida	Override Capacity Nb A	RW	TL	38	IR
TL_overridb	Override Capacity Nb B	RW	TL	40	IR
TL_SCT_A	Saturated Cond Tmp Cir A	RW	TL	7	IR
TL_SCT_B	Saturated Cond Tmp Cir B	RW	TL	12	IR

LEGEND

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APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
TL_SP_SEL	Setpoint Select	RW	TL	2	IR
TL_SST_A	Saturated Suction Temp A	RW	TL	8	IR
TL_SST_B	Saturated Suction Temp B	RW	TL	13	IR
TL_st_cp_a	Compressor A Starts	RW	TL	24	IR
TL_st_cp_b	Compressor B Starts	RW	TL	26	IR
TL_st_mach	Machine Starts	RW	TL	22	IR
TL_STATUS	Run Status	RW	TL	1	IR
Trend Log 50		RW	TL	50	IR
UPDTHOUR_hr_cp_a	Compressor A Hours	RO	AV	339	
UPDTHOUR_hr_cp_b	Compressor B Hours	RO	AV	341	
UPDTHOUR_hr_cpum1	Evap Pump #1 Hours	RO	AV	343	
UPDTHOUR_hr_cpum2	Evap Pump #2 Hours	RO	AV	344	
UPDTHOUR_hr_mach	Machine Operating Hours	RO	AV	337	
UPDTHOUR_hrfana01	Circuit A Fan #1 Hours	RO	AV	347	
UPDTHOUR_hrfana02	Circuit A Fan #2 Hours	RO	AV	348	
UPDTHOUR_hrfana03	Circuit A Fan #3 Hours	RO	AV	349	
UPDTHOUR_hrfana04	Circuit A Fan #4 Hours	RO	AV	350	
UPDTHOUR_hrfana05	Circuit A Fan #5 Hours	RO	AV	351	
UPDTHOUR_hrfana06	Circuit A Fan #6 Hours	RO	AV	352	
UPDTHOUR_hrfana07	Circuit A Fan #7 Hours	RO	AV	353	
UPDTHOUR_hrfana08	Circuit A Fan #8 Hours	RO	AV	354	
UPDTHOUR_hrfana09	Circuit A Fan #9 Hours	RO	AV	355	
UPDTHOUR_hrfana10	Circuit A Fan #10 Hours	RO	AV	356	
UPDTHOUR_hrfana11	Circuit A Fan #11 Hours	RO	AV	357	
UPDTHOUR_hrfana12	Circuit A Fan #12 Hours	RO	AV	358	
UPDTHOUR_hrfana13	Circuit A Fan #13 Hours	RO	AV	359	
UPDTHOUR_hrfana14	Circuit A Fan #14 Hours	RO	AV	360	
UPDTHOUR_hrfanb01	Circuit B Fan #1 Hours	RO	AV	361	
UPDTHOUR_hrfanb02	Circuit B Fan #2 Hours	RO	AV	362	
UPDTHOUR_hrfanb03	Circuit B Fan #3 Hours	RO	AV	363	
UPDTHOUR_hrfanb04	Circuit B Fan #4 Hours	RO	AV	364	
UPDTHOUR_hrfanb05	Circuit B Fan #5 Hours	RO	AV	365	
UPDTHOUR_hrfanb06	Circuit B Fan #6 Hours	RO	AV	366	
UPDTHOUR_hrfanb07	Circuit B Fan #7 Hours	RO	AV	367	
UPDTHOUR_hrfanb08	Circuit B Fan #8 Hours	RO	AV	368	

LEGEND

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TL — Trend Log

APPENDIX E — BACnet IP POINTS (cont)

POINT NAME	POINT DESCRIPTION	READ/WRITE	OBJECT TYPE	INSTANCE	OPTION
UPDTHOUR_hrfanb09	Circuit B Fan #9 Hours	RO	AV	369	
UPDTHOUR_hrfanb10	Circuit B Fan #10 Hours	RO	AV	370	
UPDTHOUR_hrfanb11	Circuit B Fan #11 Hours	RO	AV	371	
UPDTHOUR_hrfanb12	Circuit B Fan #12 Hours	RO	AV	372	
UPDTHOUR_hrfanb13	Circuit B Fan #13 Hours	RO	AV	373	
UPDTHOUR_hrfanb14	Circuit B Fan #14 Hours	RO	AV	374	
UPDTHOUR_st_cp_a	Compressor A Starts	RO	AV	340	
UPDTHOUR_st_cp_b	Compressor B Starts	RO	AV	342	
UPDTHOUR_st_mach	Machine Starts Number	RO	AV	338	
UPDTHOUR_VIctA	VI Cycle Count A	RO	AV	345	
UPDTHOUR_VIctB	VI Cycle Count B	RO	AV	346	
USERCONF_use_pass	User Password	RW	AV	9	
VLT_DRV_drv_CCTa	Cir A Drive Ctrl Card T	RO	AV	123	IR
VLT_DRV_drv_CCTb	Cir B Drive Ctrl Card T	RO	AV	133	IR
VLT_DRV_drv_DCVa	Cir A Drive DC Link Volt	RO	AV	121	IR
VLT_DRV_drv_DCVb	Cir B Drive DC Link Volt	RO	AV	131	IR
VLT_DRV_drv_Fa	Cir A Drive Frequency	RO	AV	119	IR
VLT_DRV_drv_Fb	Cir B Drive Frequency	RO	AV	129	IR
VLT_DRV_drv_HSTa	Cir A Drive Heat Sink T	RO	AV	122	IR
VLT_DRV_drv_HSTb	Cir B Drive Heat Sink T	RO	AV	132	IR
VLT_DRV_drv_HTRa	Cir A Drive Heater	RO	AV	124	IR
VLT_DRV_drv_HTRb	Cir B Drive Heater	RO	AV	134	IR
VLT_DRV_drv_Ia	Cir A Drive Amps	RO	AV	116	IR
VLT_DRV_drv_Ib	Cir B Drive Amps	RO	AV	126	IR
VLT_DRV_drv_pwra	Cir A Drive Power	RO	AV	115	IR
VLT_DRV_drv_pwrb	Cir B Drive Power	RO	AV	125	IR
VLT_DRV_drv_Sa	Cir A Drive Speed	RO	AV	118	IR
VLT_DRV_drv_Sb	Cir B Drive Speed	RO	AV	128	IR
VLT_DRV_drv_Ta	Cir A Drive Torque	RO	AV	120	IR
VLT_DRV_drv_Tb	Cir B Drive Torque	RO	AV	130	IR
VLT_DRV_drv_Va	Cir A Drive Voltage	RO	AV	117	IR
VLT_DRV_drv_Vb	Cir B Drive Voltage	RO	AV	127	IR
VLT_DRV_SET_DRVA	Drive A Attach	RO	BV	73	IR
VLT_DRV_SET_DRVB	Drive B Attach	RO	BV	74	IR
VLT_DRV_VLT_COMA	Comm with Drive A Ok	RO	BV	75	IR
VLT_DRV_VLT_COMB	Comm with Drive B Ok	RO	BV	76	IR

LEGEND

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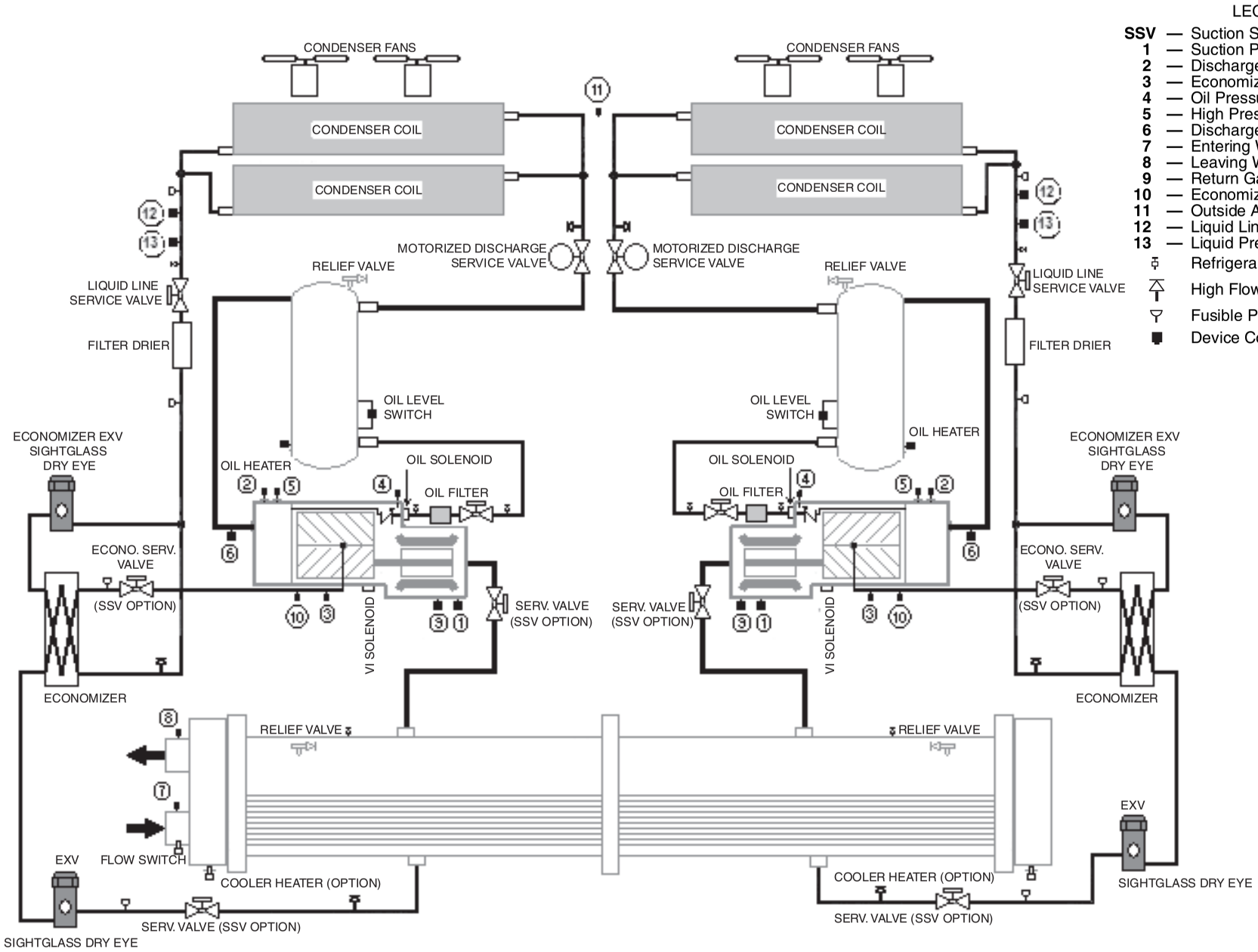
TL — Trend Log

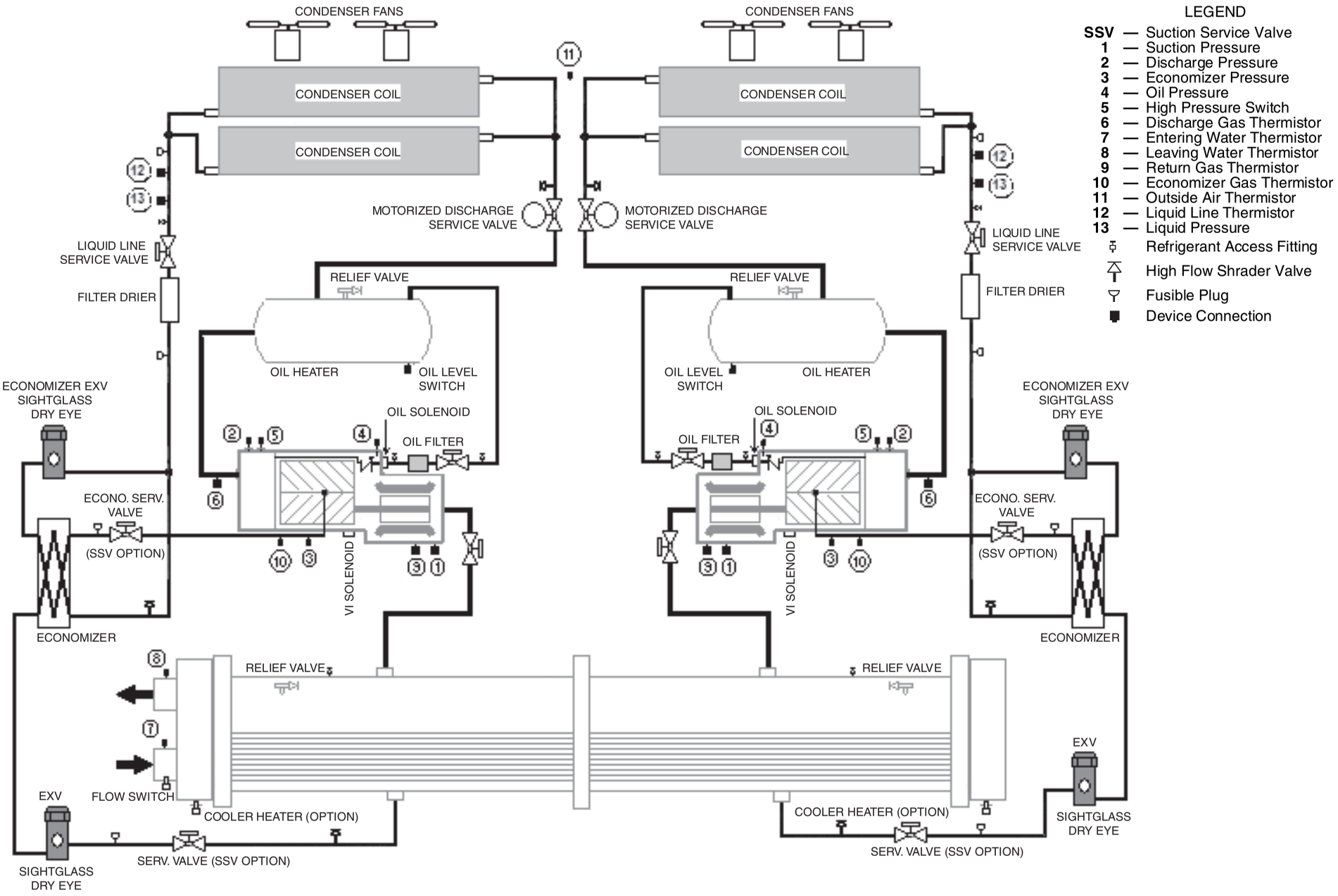
APPENDIX F — PIPING AND INSTRUMENTATION

30XV140-325 Units



APPENDIX F — PIPING AND INSTRUMENTATION (cont)

30XV350-500 Units



LEGEND

SSV — Suction Service Valve
1 — Suction Pressure
2 — Discharge Pressure
3 — Economizer Pressure
4 — Oil Pressure
5 — High Pressure Switch
6 — Discharge Gas Thermistor
7 — Entering Water Thermistor
8 — Leaving Water Thermistor
9 — Return Gas Thermistor
10 — Economizer Gas Thermistor
11 — Outside Air Thermistor
12 — Liquid Line Thermistor
13 — Liquid Pressure

Refrigerant Access Fitting
High Flow Shrader Valve
Fusible Plug
Device Connection

APPENDIX G — MAINTENANCE SUMMARY AND LOG SHEETS

30XV Monthly Maintenance Log

Month			1	2	3	4	5	6	7	8	9	10	11	12
Date			/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /
Operator														

UNIT SECTION	ACTION	UNIT	ENTRY											
Compressor	Change Oil Filter (Screw Compressors)	yes/no	Year 1 then As Needed											
	Send Oil Sample Out for Analysis	yes/no	Annually											
	Leak Test	yes/no												
	Check Oil Separator Heater		Every 3 months											
	Check Oil Filter Pressure Drop		Every 3 months											
	Check Glycol Concentration		Annually											
Evaporator	Inspect and Clean Evaporator Tubes	yes/no	Every 3 - 5 Years											
	Inspect Evaporator Heater	amps	Annually											
	Inspect Relief Valves	yes/no	Annually											
	Leak Test	yes/no												
	Record Water Pressure Differential (PSI)	PSI												
	Check glycol concentration		Annually											
	Eddy Current Test	yes/no	Every 3 - 5 Years											
Condenser	Leak Test	yes/no												
	Inspect and Clean Condenser Coils	yes/no												
	Check condenser fan operation and condition		Every 3 months											
	Inspect Relief Valves	yes/no												
Controls	General Cleaning and Tightening Connections	yes/no	Annually											
	Check Pressure Transducers for Accuracy	yes/no	Annually											
	Verify Flow Switch Operation	yes/no	Every 3 months											
	Confirm Accuracy of Thermistors	yes/no	Annually											
Electrical	General Tightening and Cleaning Connections	yes/no	Annually											
	Inspect All Contactors	yes/no	Annually											
System	Check Refrigerant Charge	yes/no	Annually											
	Verify Operation of EXVs	yes/no												
	Check moisture indicating sight glass													
	Check refrigerant joints and valves for leaks		Every 3 months											
	Check filter drier for pressure drop		Annually											
	Check chilled water strainers		Annually											
	Record System Superheat	deg. F												
Compressor VFD	Clean or replace drive filters	yes/no												
All VFD	Check cooling fan operation	yes/no												
	Verify heat sinks are clear of debris	yes/no	Every 3 months											

NOTE: Equipment failures caused by lack of adherence to the Maintenance Interval Requirements are not covered under warranty.

APPENDIX G — MAINTENANCE SUMMARY AND LOG SHEETS (cont)

30XV Seasonal Shutdown Log

Month		1	2	3	4	5	6	7	8	9	10	11	12
Date		/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /	/ /
Operator													

UNIT SECTION	ACTION	ENTRY											
Evaporator	Isolate and Drain Waterbox/Evaporator												
	Add Glycol/Water Mixture to Prevent Freeze-up												
Controls	Do Not Disconnect Control Power												

NOTE: Equipment failures caused by lack of adherence to the Maintenance Interval Requirements are not covered under warranty.

APPENDIX H — EVAPORATOR HEATER SENSOR SET POINT

Evaporator Heater Sensor Set Point

30XV UNIT SIZE	TIER*	SET POINT [AMPS]
140 - 180	All	5.2
200	S	5.2
	M, H	10.4
225 - 500	All	10.4

* 10th digit in model number.

APPENDIX I — TOUCH PILOT™ WEB AND NETWORK INTERFACE PARAMETERS

Web Interface — The Touch Pilot control can be accessed via a web browser. The layout of the web interface is similar to the Touch Pilot control interface. Connection is from a PC using a web browser with Java installed. To utilize this function, web services (HTTP and FTP) must be enabled (Main Menu → Configuration Menu → Service Parameters). Once enabled, a power cycle of the Touch Pilot is required.

Only two web connections may be authorized at the same time. The two users can be connected simultaneously with no priority between them. The last modification is taken into account.

IMPORTANT: Use firewalls and VPN for a secure connection.

MINIMUM WEB BROWSER CONFIGURATION

- Internet Explorer (version 8 or higher) or Mozilla Firefox (version 26 or higher). In the browser's connection options add the unit IP address to the exceptions list. Do not use a proxy server.
- Java platform (version 6 or higher). In the control panel, clear the Keep temporary files on my computer checkbox and use a direct connection.

For more information about web browser configuration, see the section Web Connection Settings on page 238.

WEB INTERFACE ACCESS — By default, web interface access is disabled (see Fig. A and B). To enable web interface access, navigate Main Menu → Configuration Menu → Service Parameters → HTTP Server. Select Enable and save. Control power must be cycled for the enable web interface change to take effect. To access the Touch Pilot control, enter the IP address of the unit in the address bar of the web browser (Fig. C). The default IP address is 169.254.0.1. For information on how to set the controller IP address, see Web Connection Settings section on page 238.

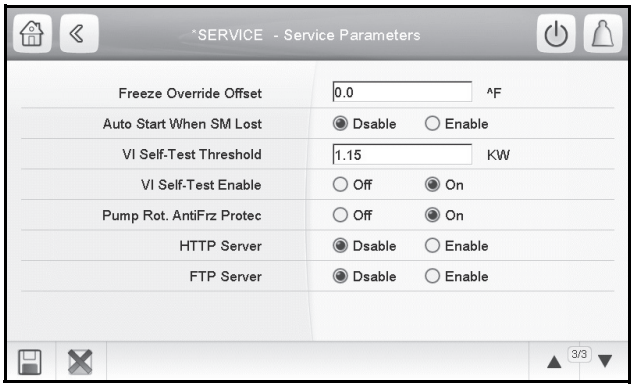


Fig. A — Default with Access Disabled

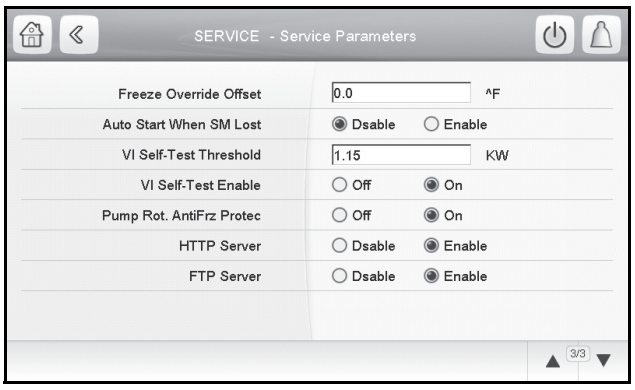


Fig. B — Enable Web Interface Access

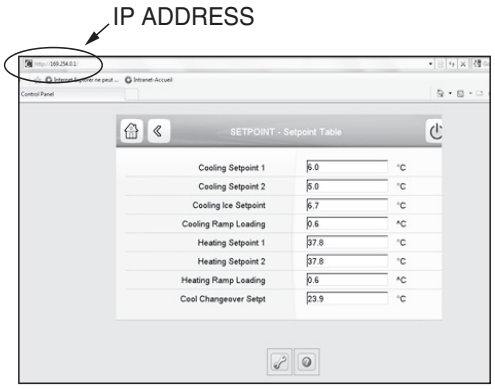


Fig. C — IP Address in Web Browser

TECHNICAL DOCUMENTATION — When the Touch Pilot control is used via a PC web browser, the user can access the technical documentation for the product.

Select the Technical document button to access a list of documents related to the unit and its components. Technical documentation includes the following documents:

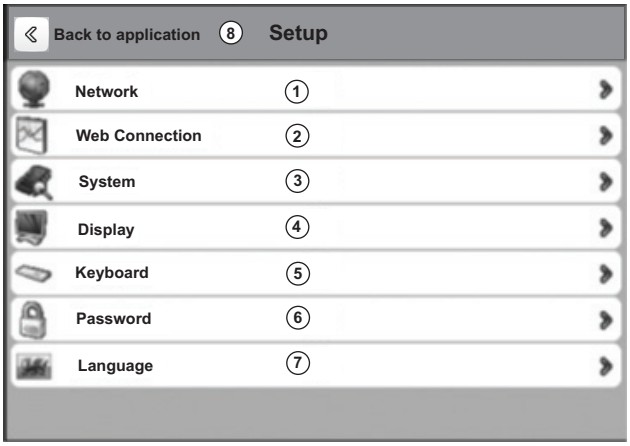
- Spare parts documentation — The list of spare parts included in the unit with reference, description and drafting.
- Misc — Documents such as electrical plans, dimension plans, unit certificates.
- PED — Pressure Equipment Directive.
- IOM — Installation, operation and maintenance manual, controls installation/maintenance manual.

Touch Pilot Interface Parameters — The Touch Pilot screen can be customized with additional parameters for connectivity and display.

⚠ CAUTION

Only parameters specified in this section can be changed by the user. Do not modify any other parameters. Changing other parameters may result in losing some of the features of the touch screen, or the screen may stop working. If in doubt, do not change anything; contact Carrier service.

SETUP MENU — The Setup Menu allows users to modify settings such as network information, web connections, and display settings. The Setup menu can be accessed at any time via the Touch Pilot interface. To access the Setup Menu, press anywhere on the Main Menu screen (excluding buttons or text fields) and hold for about 4 seconds. By default, the Setup Menu is not password-protected. (For more information about Setup Menu password settings, see page 240.) See Fig. D.



LEGEND

1 — System properties for Ethernet interface
2 — Additional network configuration properties
3 — System settings such as software version, buzzer
4 — Display settings such as contrast, backlight, timeout, rotation
5 — Keyboard: Not applicable
6 — Password for Setup Menu access
7 — Language display for Setup Menu only
8 — Select to return to application

Fig. D — Setup Menu

Once the desired parameters have been specified, return to the application by pressing the Back to application arrow in the upper left corner of the Setup Menu window. The confirmation dialog is displayed (Fig. E). Press the Save button to confirm changes or the Revert button to discard changes.

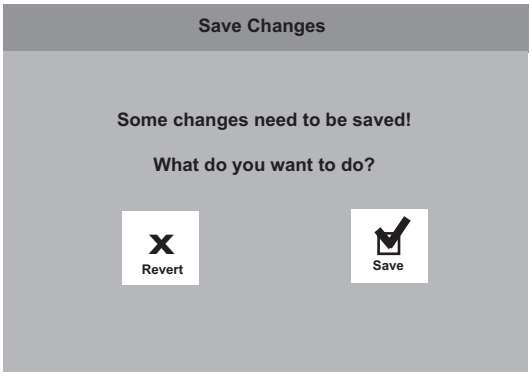


Fig. E — Save Changes Confirmation

NETWORK SETTINGS — You must request an IP address, subnet mask and default gateway from the system administrator before connecting the unit to the local Ethernet network. The Network Menu allows the user to define network parameters, including TCP/IP address. To access the menu, press the Network field in the Setup Menu. The Network Settings screen opens. See Fig. F.

NOTE: The Touch Pilot™ does not support DHCP (Dynamic Host Configuration Protocol). The unit cannot automatically obtain the network parameters via a DHCP server.

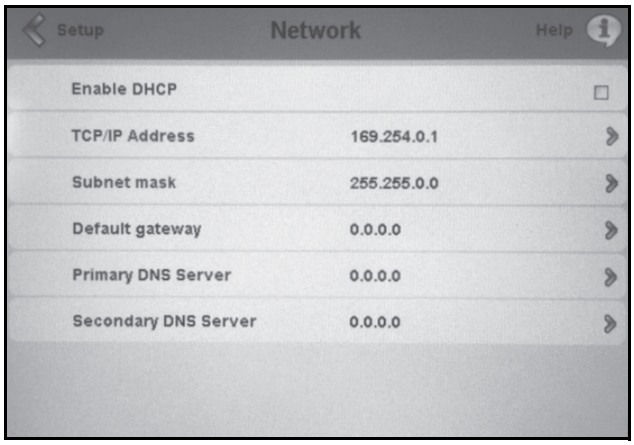


Fig. F — Network Menu

To find and modify the unit IP address, follow these steps:

1. Press Network in the Setup menu.
2. In the Network Menu, press the TCP/IP Address arrow. The TCP/IP Address dialog box is displayed. See Fig. G.

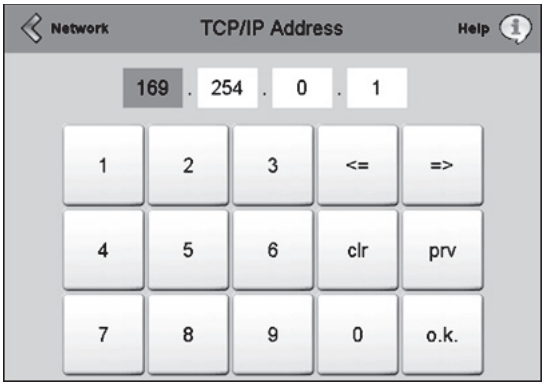


Fig. G — TCP/IP Address Dialog Box

3. Enter the correct IP address for the unit.
4. Press OK to confirm, or press the Network arrow at the top left of the screen to exit the dialog box without saving the modification.

WEB CONNECTION SETTINGS — The Startup Connection menu provides options required for accessing the Touch Pilot display from a remote network. To access the menu, press the Web Connection field in the Setup menu and then select the Edit Connect field. The remote host IP address, remote port number, and remote PWD can be obtained by contacting the site network administrator. See Fig. H and I.

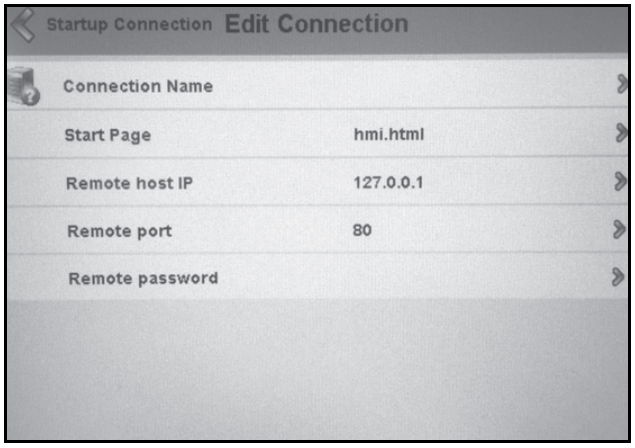
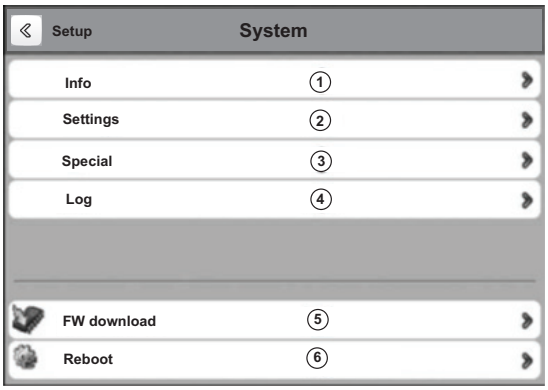


Fig. H — Edit Connection Menu

Fig. I — Startup Connection Menu

SYSTEM SETTINGS — The System menu provides information regarding the installed software and allows system settings configuration. To access the menu, press the System field in the Setup Menu. The System screen opens. See Fig. J.

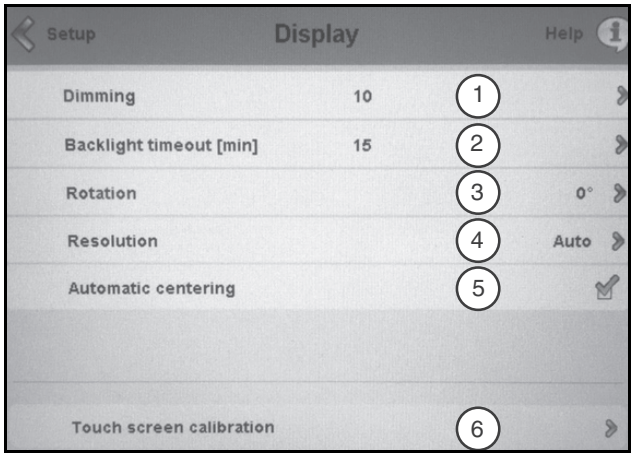


LEGEND

1 — System information
2 — System settings such as buzzer, file search option, delay during start-up, introduction screen
3 — Special options settings: DO NOT MODIFY
4 — Unit start-up history
5 — Firmware update
6 — Unit reboot

Fig. J — System Menu

DISPLAY SETTINGS — The Display menu allows users to modify a set of display parameters such as contrast, backlight timeout, and rotation. To access the menu, press the Display field in the Setup Menu. The Display screen opens. See Fig. K.



LEGEND

1 — Contrast information
2 — Backlight timeout: After the specified period the screen goes blank
3 — Screen rotation
4 — Screen resolution
5 — Automatic centering
6 — Touch screen calibration

Fig. K — Display Menu

SETUP PASSWORD SETTINGS — The Password screen provides users with the ability to control access to the Setup menu. To access the screen, press the Password field in the Setup Menu. The Password screen opens. See Fig. L. Enter the password and press OK to save, or press the Setup arrow in the upper left corner of the screen to cancel this action.

NOTE: To disable password authentication for the Setup Menu, leave the password box empty and press OK twice.

Fig. L — Setup Menu Password Screen

LANGUAGE SETTINGS — The Language screen provides a set of languages for the options in the Setup menu. To access the screen, press the Language field in the Setup Menu. The Language screen opens. See Fig. M. Select the language for the touch screen display setup options, and press the Setup arrow in the upper left corner of the screen to exit the screen.

NOTE: This selection affects only the screens available from the Setup Menu. The language choices may different from the languages available for the Touch Pilot™ interface itself. For more information about selecting a language for the interface, see Changing the Touch Pilot Display Language on page 8.

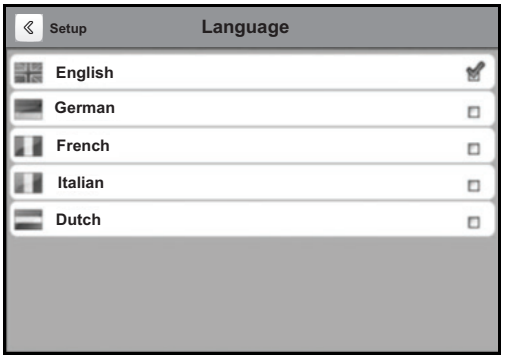


Fig. M — Setup Language Screen

Communication Diagnostics and Troubleshooting — The following sections provide basic troubleshooting support for remote connection to the Touch Pilot™ controls. For additional assistance, such as obtaining an IP Address or configuring network settings, contact the site system administrator.

WEB INTERFACE CONNECTION PROBLEMS — The intranet site address of the unit is the IP address. This address must be obtained from the site network administrator and configured in the Network menu (see the Network Settings section on page 238). Table A lists some possible web interface connection problems and solutions.

NOTE: The unit cannot automatically obtain the network parameters via a DHCP (Dynamic Host Configuration Protocol) server.

Table A — Web Interface Connection Problems

SYMPTOMS	POSSIBLE CAUSES	CONDITIONS TO CHECK	SOLUTIONS
Error after loading the start-up page.	Network property details are invalid. Ethernet network is not available.	Check the network parameters. Check that the orange LED is flashing on the unit (Ethernet connector).	Contact your system administrator. If the orange LED does not flash, check the Ethernet connection to the local network.
While accessing the unit via the web browser, the Java platform launches, but remains blocked. No file is loaded.	Proxy server problem in the local network.	Contact your system administrator.	In agreement with your system administrator, find the Java control panel and select direct connection parameters (see the Javanet Connection section on page 242) and/or disable the proxy server settings on the browser. Restart web browser.
The application has been launched, but the screens cannot be accessed via the web browser.	A proxy server is used to access the unit. Invalid Java configuration.	Check that the web browser does not go via a proxy server to access the unit. Check that the Java application does not store the internet files on the PC.	Open the browser and in the system connection parameters add the IP address of the unit in the proxy exceptions.

NOTE: For more information about web browser configuration, see Proxy Server and Automatic Configuration Script section on page 242.

ETHERNET/IP CONNECTION PROBLEMS — If the unit is point-to-point connected to a PC (the cable can be crossed or uncrossed) and the unit is energized, it may be necessary to check the Ethernet connection and/or configure the PC network board. See also the section Unit Is Connected to the Local Network below.

To verify the unit's IP address, perform the following steps:

1. From the computer connected to the Touch Pilot controls, go to Local Area Connection Properties and select Internet Protocol (TCP/IP). See Fig. N.

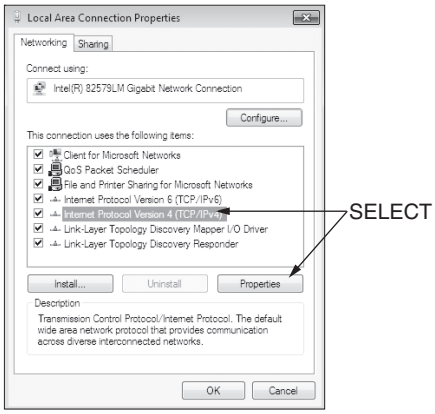


Fig. N — Local Area Connection Properties

2. Click the Properties button. The Internet Protocol Properties window opens. See Fig. O.
3. Verify the IP address.

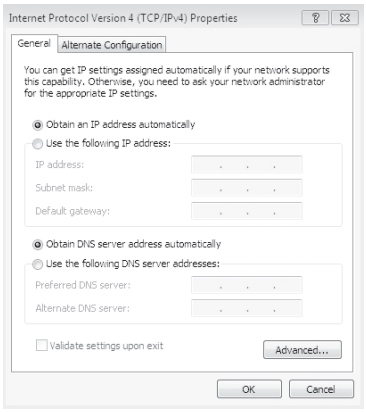


Fig. O — Internet Protocol Properties

If no IP address is configured in the General or Alternate Configuration tabs, the unit IP address must be configured to 169.254.xxx.xxx. Modify the unit IP address and restart the system.

If the PC has a fixed IP address configured in the General or Alternate Configuration tabs, the IP address of the PC and the unit IP address must have the system and sub-system fields in common. The last part of the IP address is the host number and must be unique on the sub-system.

For example:

Unit address: 172.30.101.11 and PC address: 172.30.101.182. In this example 172.30 corresponds to the network, and 101 corresponds to the sub-system.

4. Carry out all the necessary modifications, and click OK to accept or Cancel to discard changes.
5. Try to access the unit again.

If it is still impossible to access the unit, ping the unit by following these steps:

1. Open a Windows command prompt using one of the following methods:
   - Press the Windows logo key + R to access the Run command. Then type the CMD command and press Enter.

   or

   - Click the Start button and then click Run. Type the CMD command and press Enter.
2. At the command prompt, type the ping command followed by the unit IP address.

In the example shown in Fig. P, the PC receives four positive responses (replies).

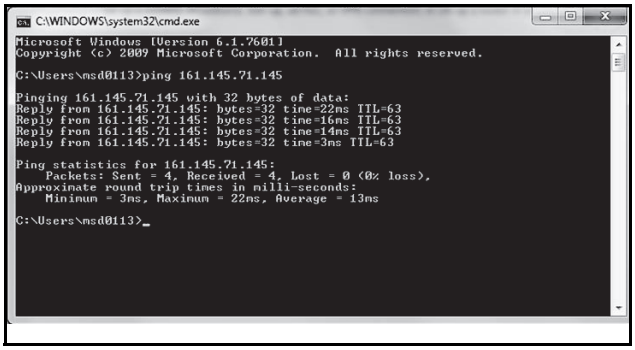


Fig. P — Ping — Positive Replies

In the example shown in Fig. Q, the PC receives four negative responses (request timed out).

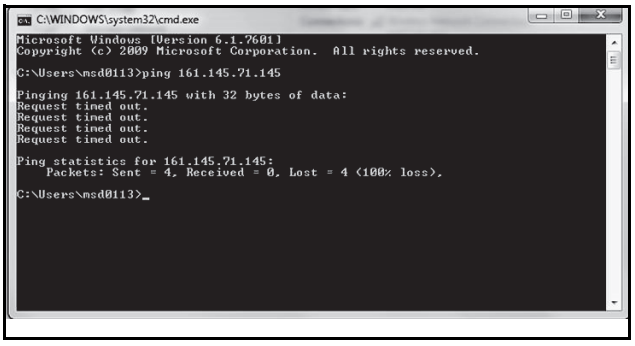


Fig. Q — Ping — Negative Responses

If the PC receives four negative responses, check the web browser parameters to determine if a proxy server or an automatic configuration script has been configured (see the section Proxy Server and Automatic Configuration Script below). Additionally, Java settings may require configuration (see the section Javanet Connection below).

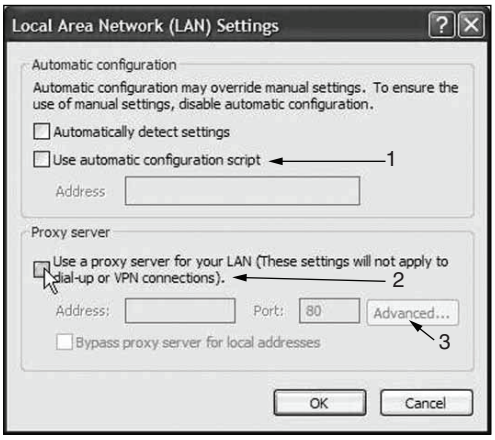
Try to access the unit again. If the PC still does not receive a response from the unit, restart the unit. Contact your system administrator.

UNIT IS CONNECTED TO THE LOCAL NETWORK — The unit is connected to the local network by an uncrossed cable, and the unit is energized. From a computer connected to the same network as the Touch Pilot controls, open a Windows command window (Start, Execute, type **controls** and press Enter), then type the command **ping**, followed by the unit IP address.

If the responses are positive (see Fig. P), the web browser configuration may be faulty. Check the system parameters to determine if a proxy server or an automatic configuration script has been configured.

Proxy Server and Automatic Configuration Script — To check these parameters in a modern web browser (for example, Internet Explorer version 8 or higher), follow these steps:

1. Click the web browser Tools button and select Internet Options from the drop-down menu. The Internet Options dialog box opens.
2. Click the Connections tab, and click LAN settings on the Connections tabbed page. The Local Area Network (LAN) Settings dialog is displayed (Fig. R).



LEGEND

1 — Automatic configuration script
2 — Proxy server
3 — Advanced proxy configuration

Fig. R — Local Area Network Settings

3. Clear the Use automatic configuration script checkbox.
4. If a proxy server is used, add the unit IP address to the Exceptions list of the proxy server (click Advanced Proxy Configuration). See Fig. S.

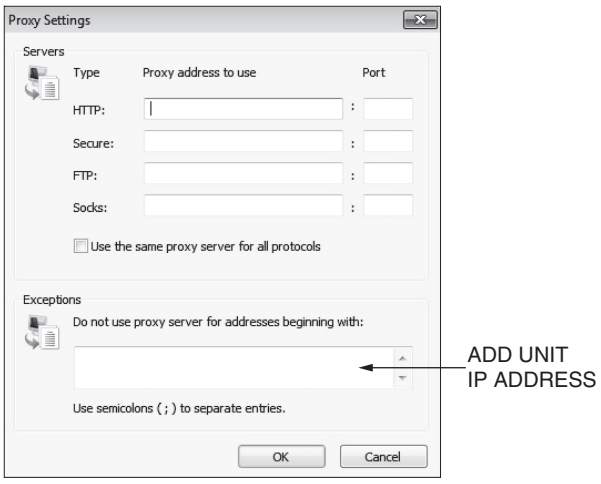


Fig. S — Proxy Settings

5. Click OK to save or Cancel to discard changes.

NOTE: For web browsers other than Internet Explorer, refer to the browser Help files for information on verifying system parameters.

Negative Response — If the response to the ping command is negative, verify the IP address of the PC and the IP address of the unit. They must have the system and sub-system in common. For example: Unit address: 172.30.101.11 and PC address: 172.30.101.182. In this example 172.30 corresponds to the network, and 101 corresponds to the sub-system.

The last part of the IP address is the host number and must be unique on the sub-system.

Ethernet Connection — To check the Ethernet connection on the PC, open the Control Panel and navigate to Network Connections. Find the system interface board and confirm that there is no red "X" on the icon.

The connection to the local network must be authorized and in the connected status. If the problem continues to occur, verify connections and if necessary repair the network connection.

Javanet Connection — To configure proxy settings for Java, follow these steps:

NOTE: If Java is not installed, a free download is available at http://www.java.com. If the Java application is installed and used by other applications, check their compatibility with the following configuration.

1. Open the PC Control Panel and select Programs.
2. In the Programs window, click the Java application icon  . The Java Control Panel is displayed (Fig. T).

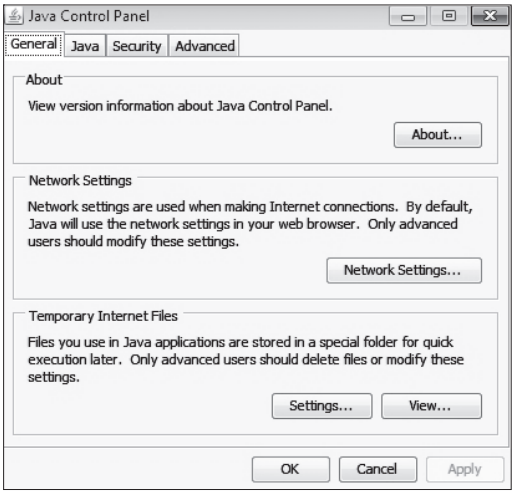


Fig. T — Java Control Panel

3. Click Network Settings on the General tabbed page. The Network Settings dialog box opens (Fig. U).

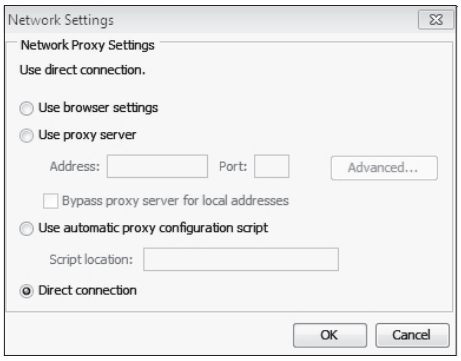


Fig. U — Java Network Settings

4. Select the Direct Connection option and click OK to save the change.
5. On the Java Control Panel—General tabbed page (see Fig. T), click Settings under Temporary Internet Files. The Temporary Files Settings dialog box opens (Fig. V).
6. Clear the checkbox for Keep temporary files on my computer.
7. Click OK to save the change.

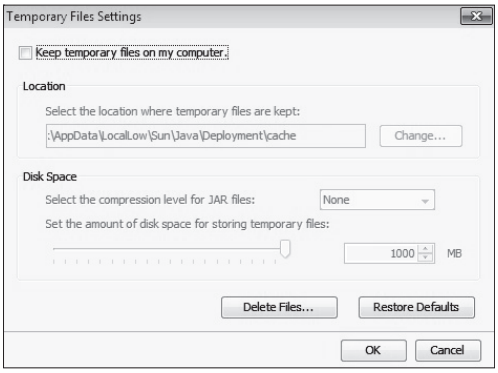


Fig. V — Java Temporary Files Settings

APPENDIX J — COMPRESSOR CIRCUIT BREAKER FACTORY TRIP SETTINGS

Table B — Mid/High Tier*

UNIT SIZE	V-HZ (3 PH)	BREAKER AMPS	STANDARD SCCR	FACTORY TRIP SETTING	HIGH SCCR	FACTORY TRIP SETTING
30XV140-200	200	800	MDL3800W	4	HMDL3800W	4
	380	400	KD3400W	5	HKD3400W	5
	460, 575	300	KD3300W	5	HKD3300W	5
30XV225-325	380, 460, 575	500	LD3500W	5	HLD3500W	5

Table C — Standard Tier*

UNIT SIZE	V-HZ (3 PH)	BREAKER AMPS	STANDARD SCCR	FACTORY TRIP SETTING	HIGH SCCR	FACTORY TRIP SETTING
30XV140-200	200	800	MDL3800W	4	HMDL3800W	4
	380, 460, 575	300	KD3300W	5	HKD3300W	5
30XV225-325	380, 460, 575	500	LD3500W	5	HLD3500W	5

LEGEND

SCCR — Short Circuit Current Rating

*Unit tier is designated by 10th character in the model number.
S = Standard Tier, M = Mid Tier and H = High Tier.

INDEX

START-UP CHECKLIST FOR 30XV LIQUID CHILLERS

(Remove and use for Job File)

NOTE: To avoid injury to personnel and damage to equipment or property when completing the procedures listed in this start-up checklist, use good judgment, follow safe practices, and adhere to the safety considerations/information as outlined in preceding sections of this Controls, Start-Up, Operation, Service and Troubleshooting document.

A. PROJECT INFORMATION

Job name _____
Address _____
City _____State ____Zip_____

Equipment tag/mark for_____
Installing contractor_____
Sales office _____
Start-up performed by_____

Design Information

	CAPACITY	EWT	LWT	FLUID TYPE	FLOW RATE	P.D.	AMBIENT
Evaporator							

Unit

Model _____ Serial_____

Compressors

Compressor A
Model _____ Serial _____

Compressor B
Model _____ Serial_____

Evaporator

Model _____ Serial _____

B. PRELIMINARY EQUIPMENT CHECK (This section to be completed by installing contractor)

1.	Is there any physical damage?	☐ Yes ☐ No
	Will this prevent start-up?	☐ Yes ☐ No
	Description:	
2.	Unit is installed level as per the installation instructions.	☐ Yes ☐ No
3.	Power supply agrees with the unit nameplate.	☐ Yes ☐ No
4.	Correct control voltage _____vac.	☐ Yes ☐ No
5.	Electrical power wiring is installed properly.	☐ Yes ☐ No
6.	Unit is properly grounded.	☐ Yes ☐ No
7.	Electrical circuit protection has been sized and installed properly.	☐ Yes ☐ No
8.	All terminals are tight.	☐ Yes ☐ No
9.	All plug assemblies are tight.	☐ Yes ☐ No
10.	All cables, thermistors and transducers have been inspected for cross wires.	☐ Yes ☐ No
11.	All thermistors are fully inserted into wells.	☐ Yes ☐ No
12.	Oil separator heaters energized for 24 hours before start-up.	☐ Yes ☐ No
13.	Relief valve vent piping per local codes.	☐ Yes ☐ No

Chilled Water System Check

1. All chilled water valves are open. ☐ Yes ☐ No
2. All piping is connected properly. ☐ Yes ☐ No
3. All air has been purged from the system. ☐ Yes ☐ No
4. Chilled water pump starter controlled by chiller. ☐ Yes ☐ No
5. Chilled water flow switch operational. ☐ Yes ☐ No
6. Units installed in open loop: inlet piping to evaporator includes a 20 mesh strainer within 10 ft of unit. ☐ Yes ☐ No
7. Water loop volume greater than 3 gal/ton (40 L/kW) for air conditioning or 6 gal/ton (80 L/kW) for process cooling and low ambient operation. ☐ Yes ☐ No
8. Proper loop freeze protection provided to ____ °F (°C).
   Antifreeze type_____ Concentration _____%. ☐ Yes ☐ No
   (If antifreeze solution is not utilized on 30XV machines and the minimum outdoor ambient is below 32 F (0° C), then items 10 and 11 have to be completed to provide evaporator freeze protection to –20 F (–28.9 C). Refer to Installation Instructions for proper evaporator winterization procedure.)
9. Outdoor piping wrapped with electric heater tape. ☐ Yes ☐ No
10. Evaporator heaters and oil separator heaters installed and operational. ☐ Yes ☐ No
11. Is the Unit equipped with low ambient head pressure control? ☐ Yes ☐ No
    a. If yes, are wind baffles installed? ☐ Yes ☐ No

C. UNIT START-UP

1. All liquid line service valves are open. ☐ Yes ☐ No
2. Verify actuated ball valve (ABV) operation. ☐ Yes ☐ No
3. All suction and discharge service valves are open. ☐ Yes ☐ No
4. Economizer service valves open. (Leaving Main EXV and Leaving Brazed Plate Heat Exchanger [Economizer]) ☐ Yes ☐ No
5. Oil service valves open. ☐ Yes ☐ No
6. Leak check unit. Locate, repair and report any refrigerant leaks. ☐ Yes ☐ No
7. Voltage at terminal block is within unit nameplate range. ☐ Yes ☐ No

   Check voltage imbalance: A-B_____ A-C_____B-C_____

   Average voltage = _____ (A-B + A-C + B-C)/3
   Maximum deviation from average voltage = _____
   Voltage imbalance = _____% (max. deviation / average voltage) X 100

   Is voltage imbalance less than 2%. ☐ Yes ☐ No

   (DO NOT start chiller if voltage imbalance is greater than 2%. Contact local utility for assistance.)
8. Verify evaporator flow rate

   Pressure entering evaporator _____ psig (kPa)

   Pressure leaving evaporator _____ psig (kPa)

   Evaporator pressure drop _____ psig (kPa)

   Psig x 2.31 ft/psi = _____ ft of water

   kPa x 0.334 m/psi = _____ mm of water

   Evaporator flow rate _____ gpm (L/s) (See Evaporator Pressure Drop Curve)

Start and Operate Machine

1. Complete component test utilizing Quick Test Mode
2. Operate all condenser fans and verify operation and rotation.
3. Operate compressors using manual test mode.
4. Check refrigerant and oil charge. Record charge information.
5. Record compressor and condenser fan motor current.
6. Record operating data.
7. Provide operating instructions to owner's personnel.

CUT ALONG DOTTED LINE

CUT ALONG DOTTED LINE

Refrigerant Charge

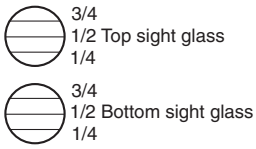
Additional charge required Circuit A _____ Circuit B _____

Oil Charge

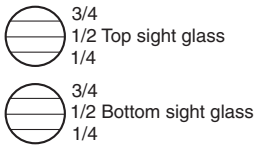
Additional charge required Circuit A_____ Circuit B _____

Oil Separator Oil Level Unit Sizes 140-325 and 350 Circuit B

Circuit A



Circuit B



NOTE: Oil level should be visible in top sight glass.

Touch Pilot™ Software Version

ACG-SR-10A2AA ___ ___ ___

To obtain software version, allow screen to lock out. The software number is displayed under the model number on the Welcome screen.

Record Configuration Information

PATH	TOUCH PILOT™ DESCRIPTION	DEFAULT	ENTRY
Login Button	Language	English	
	Units	US Imp	
Main Menu→General Parameters	Setpoint Select	0 (Auto)	
Main Menu→Configuration Menu→ General Configuration	Cir Priority Sequence	0 (Auto)	
	Ramp Loading Enable	0 (No)	
	Unit Off to On Delay	1 min	
	Demand Limit Type Select	0 (None)	
	Night Mode Start Hour	0	
	Night Mode End Hour	0	
	Night Capacity Limit	100%	
	Ice Mode Enable	0 (No)	
Main Menu→Configuration Menu→ Pump Configuration	Evap Pumps Sequence	0 (No Pump)	
	Pump Auto Rotation Delay	48 hours	
	Pump Sticking Protection	0 (No)	
	Flow Checked If Pump Off	1 (Yes)	
Main Menu→Configuration Menu→User Config.	User Password	11	
Main Menu→Configuration Menu→ Reset Configuration	Cooling Reset Select	0 (No reset)	
	OAT No Reset Value	14° F (–10° C)	
	OAT Full Reset Value	14° F (–10° C)	
	Delta T No Reset Value	0 °F (0 °C)	
	Delta T Full Reset Value	0 °F (0 °C)	
	Current No Reset Value	0 mA	
	Current Full Reset Value	0 mA	
	Space T No Reset Value	14° F (–10° C)	
	Space T Full Reset Value	14° F (–10° C)	
	Cooling Reset Deg. Value	0° F (0° C)	
Main Menu→Configuration Menu→ Factory Parameters	Unit Capacity	Unit Dependent	
	Power Supply Voltage	Unit Dependent	
	Energy Management Module	0	
	Leakage Charge Detection	0	

CUT ALONG DOTTED LINE

CUT ALONG DOTTED LINE

Record Configuration Information

PATH	TOUCH PILOT™ DESCRIPTION	DEFAULT	ENTRY
Main Menu→Configuration Menu→ Service Parameters	Evaporator Fluid Type	1 (Water)	
	Entering Fluid Control	no	
	Brine Freeze Setpoint	34° F (1.1° C)	
	Brine Minimum fluid temp	38° F (3.3° C)	
	Fast Capacity Recovery	0	
	EWT Probe on cir A side	yes	
	Service Password	88	
	Leakage Charge Threshold	2.5 Volts	
	Leakage Charge Timer	60 min.	
	Compressor RFI Filter En	on	
	Metric Units?	no	
	Send fan drive config?	yes	
	Send comp. Drive config?	yes	
	Evaporator Heater Delta Spt	2 (Number of deg added to brine freeze setpoint to enable heater)	
	Freeze override offset	0 °F (0 °C)	
	Auto Start When SM Lost	0 (disable)	
	VI Self-Test Threshold	1.15 kW	
	Pump Rot. AntiFrz Protec	on	
	HTTP Server	0 (disable)	
	FTP Server	0 (disable)	
Main Menu→Configuration Menu→ Master Slave Config	Master/Slave Select	0 (disable)	
	Master Control Type	1 (Local)	
	Slave Address	2	
	Lead Lag Select	0 (Always Lead)	
	Lead/Lag Balance Delta	168 hours	
	Lead/Lag Start Timer	10 min	
	Lead Pulldown Time	0 min	
	Start If Error Higher	4 °F (2.2 °C)	
	Lag Minimum Running Time	0 min	
	Lag Unit Pump Control	0 (Stop if Unit Stops)	
	Chiller In Series	0 (No)	
Main Menu→Setpoint Table	Cooling Setpoint 1	44° F (6.7° C)	
	Cooling Setpoint 2	44° F (6.7° C)	
	Cooling Ice Setpoint	44° F (6.7° C)	
	Cooling Ramp Loading	1°F (0.6 °C)	
	Switch Limit Setpoint 1	100%	
	Switch Limit Setpoint 2	100%	
	Switch Limit Setpoint 3	100%	

Component Test — Complete the following tests to make sure all peripheral components are operational before the compressors are started.

PATH	TOUCH PILOT™ DESCRIPTION	CHECK WHEN COMPLETE
Main Menu→Quick Test Table	Quick Test Enable (Unit must be in Local OFF)	
	Circuit A EXV Position	
	Circuit A Oil Solenoid	
	EXV Eco Position Cir A	
	Oil Heater Circuit A	
	Capacity Cir A Output	
	Comp A Running Output	
	Isolation Valve State A	
	Circuit A VI	
	VariFan Speed A	
	Circuit B EXV Position	
	Circuit B Oil Solenoid	
	EXV Eco Position Cir B	
	Oil Heater Circuit B	
	Capacity Cir B Output	
	Comp B Running Output	
	Isolation Valve State B	
	Circuit B VI	
	VariFan Speed B	
	Evaporator Heater	
	Evaporator Pump 1	
	Evaporator Pump 2	
	Alarm Relay Status	
	Shutdown Relay Status	
	Running Relay Status	
	Alert Relay Switch	
	Set Flow Switch	
	Capacity Total Output	
	Comp drive heater A	
	Comp drive heater B	
	Fan Contactor 1A	
	Fan Contactor 2A	
	Fan Contactor 3A	
	Fan Contactor 4A	
	Fan Contactor 5A	
	Fan Contactor 6A	
	Fan Contactor 7A	
	Fan Contactor 8A	
	Fan Contactor 1B	
	Fan Contactor 2B	
	Fan Contactor 3B	
	Fan Contactor 4B	
	Fan Contactor 5B	
	Fan Contactor 6B	
	Fan Contactor 7B	
	Fan Contactor 8B	
	Comp. HW Enable A	
	Comp. HW Enable B	
	Control Box Heater	

CUT ALONG DOTTED LINE

CUT ALONG DOTTED LINE

Operating Data:

Record the following information from the Run Status, Temperatures and Outputs Modes when machine is in a stable operating condition.

TEMPERATURES

EVAPORATOR ENTERING FLUID	_____
EVAPORATOR LEAVING FLUID	_____
CONTROL POINT	_____
CAPACITY	_____
OUTSIDE AIR TEMPERATURE	_____
CHWS TEMPERATURE	_____ (Dual Chiller Control Only)

CIRCUIT A		CIRCUIT B	
SATURATED COND TMP CIRC A	_____	SATURATED COND TMP CIRC B	_____
SATURATED SUCTION TEMP A	_____	SATURATED SUCTION TEMP B	_____
SATURATED LIQUID TMP A	_____	SATURATED LIQUID TMP B	_____
COMPRESSOR SUCTION TMP A	_____	COMPRESSOR SUCTION TMP B	_____
DISCHARGE GAS TEMP CIR A	_____	DISCHARGE GAS TEMP CIR B	_____
MOTOR TEMPERATURE CIR A	_____	MOTOR TEMPERATURE CIR B	_____
EXV ECO. TMP CIR A	_____	EXV ECO. TMP CIR B	_____
LIQUID TEMPERATURE A	_____	LIQUID TEMPERATURE B	_____

COMPRESSOR MOTOR CURRENT

	L1	L2	L3
COMPRESSOR A1	_____	_____	_____
COMPRESSOR B1	_____	_____	_____

CONDENSER FAN MOTOR CURRENT, STANDARD TIER UNITS

	L1	L2	L3		L1	L2	L3
FAN MOTOR A1	____	____	____	FAN MOTOR B1	____	____	____
FAN MOTOR A2	____	____	____	FAN MOTOR B2	____	____	____
FAN MOTOR A3	____	____	____	FAN MOTOR B3	____	____	____
FAN MOTOR A4	____	____	____	FAN MOTOR B4	____	____	____
FAN MOTOR A5	____	____	____	FAN MOTOR B5	____	____	____
FAN MOTOR A6	____	____	____	FAN MOTOR B6	____	____	____
FAN MOTOR A7	____	____	____	FAN MOTOR B7	____	____	____
FAN MOTOR A8	____	____	____	FAN MOTOR B8	____	____	____
FAN MOTOR A9	____	____	____	FAN MOTOR B9	____	____	____
FAN MOTOR A10	____	____	____	FAN MOTOR B10	____	____	____
FAN MOTOR A11	____	____	____	FAN MOTOR B11	____	____	____
FAN MOTOR A12	____	____	____	FAN MOTOR B12	____	____	____

CONDENSER FAN MOTOR CURRENT, STANDARD TIER WITH LOW AMBIENT MID AND HIGH TIER

	Hz	A
VFD A1	____	____
VFD A2	____	____
VFD B1	____	____
VFD B2	____	____

HEATER CURRENT

EVAPORATOR HEATER CURRENT	_____
OIL SEPARATOR HEATER CURRENT CIRCUIT A	_____
OIL SEPARATOR HEATER CURRENT CIRCUIT B	_____

COMMENTS:

CUT ALONG DOTTED LINE

CUT ALONG DOTTED LINE

SIGNATURES:

Start-up Technician _____ Date_____

Customer Representative _____ Date_____