Controls Operation and Troubleshooting

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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 mechanics should install, start up, and service this equipment. When working on this equipment, observe precautions in the literature, and 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.

⚠ DANGER

ELECTRICAL SHOCK HAZARD

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

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

⚠ WARNING

Electrical currents cause components to get hot either temporarily or permanently and may cause burns. Handle power cable, electrical cables and conduits, terminal box covers, and motor frames with great care.

⚠ 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. The PIC6 control boards have 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.

GENERAL

This publication contains operation and troubleshooting information for PIC (Product Integrated Control) 6, a system for controlling 23XRV variable speed screw liquid chillers.

The PIC6 control system monitors and controls all operations of the chiller. The microprocessor control system matches the capacity of the chiller to the cooling load while providing state-of-the-art chiller protection. The system controls cooling load within the set point plus or minus the dead band by sensing the water or brine temperature and regulating VFD (variable frequency drive) speed of the compressor.

See Fig. 1 for an example of the Login screen.

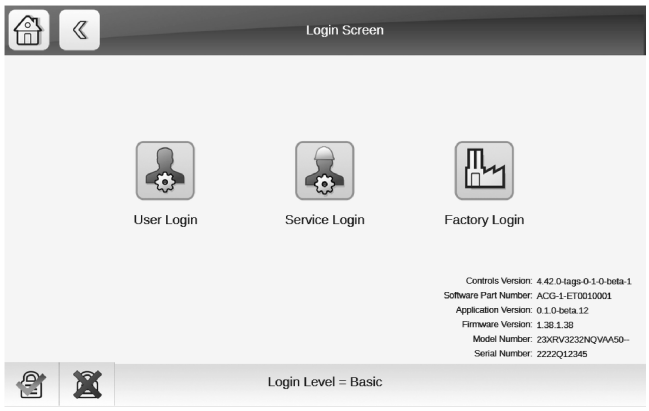


Fig. 1 — Login Screen

The PIC6 control system also provides access to a Quick Test controls function covering all outputs except compressor relay outputs.

Abbreviations Used in This Manual

The following abbreviations are used in this manual:

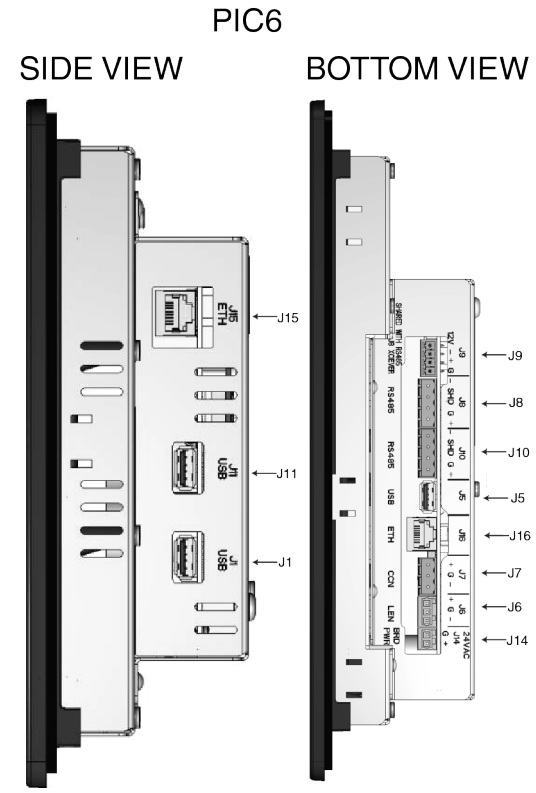
AWG	—	American Wire Gauge
CCN	—	Carrier Comfort Network®
CCN mode	—	Operating mode: CCN
DHCP	—	Dynamic Host Configuration Protocol
EC	—	Envelope Control (Hot Gas Bypass)
ECDW	—	Entering Condenser Water
ECW	—	Entering Chilled Water
EWT	—	Entering Water Temperature
EXV	—	Electronic Expansion Valve
HGBP	—	Hot Gas Bypass
HMI	—	Human Machine Interface
I/O	—	Input/Output
IOB	—	Input/Output Board
LCDW	—	Leaving Condenser Water
LCW	—	Leaving Chilled Water
LED	—	Light-Emitting Diode
LEN	—	Local Equipment Network
MCB	—	Main Control Board
NIC	—	Network Interface Card
PIC	—	Product Integrated Control
RLA	—	Rated Load Amps
RTD	—	Resistance Temperature Detector
SIOB	—	Starfire Input/Output Board
TFT	—	Thin Film Transistor
UI	—	User Interface
VFD	—	Variable Frequency Drive

HARDWARE

The PIC6 control system consists of one SIOB (Starfire Input/Output Board) module and two IOB modules. All boards communicate via an internal Local Equipment Network (LEN) bus.

Main PIC6 Control HMI

The main control board is supplied from a 24 VAC supply reference to earth ground. 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 unit from restarting. Figure 2 shows the main control interface and connectors.



LEGEND

- **J1** — USB CONNECTOR
- **J5** — USB CONNECTOR
- **J6** — LEN CONNECTOR
- **J7** — CCN CONNECTOR
- **J8** — RS485, BACnet MS/TP OR Modbus RTU (Phoenix 1757035 - not factory supplied)
- **J9** — RNET (future)
- **J10** — RS485, Modbus/RTU Comm to VFD Starter
- **J11** — USB CONNECTOR
- **J14** — POWER SUPPLY CONNECTOR (24 VAC)
- **J15** — ETHERNET CONNECTOR, PORT 0 (DEFAULT IP: 169.254.1.1, Mask: 255.255.0.0)
- **J16** — ETHERNET CONNECTOR, PORT 1 (DEFAULT IP: 192.168.100.100, mask: 255.255.255.0)

NOTES:
1. Either BACnet/MSTP or BACnet/IP can be enabled and either Modbus/RTU or Modbus/TCP/IP can be enabled. Controller does not allow both to be enabled at the same time.
2. Modbus RTU can be configured simultaneously with BACnet IP.
3. BACnet MS/TP can be configured simultaneously with Modbus TCP/IP.
4. BACnet MS/TP must be disabled in order to use Modbus RTU and visa versa.

Fig. 2 — PIC6 Connectors

⚠ CAUTION

Maintain the correct polarity when connecting the power supply to the boards. Otherwise, the boards may be damaged.

SIOB (Starfire Input/Output Board)

The SIOB is an input output board which is supplied from a 24VAC supply reference to earth ground. This board controls the EXV stepper motors.

IOB (Input/Output Board)

The IOB is supplied from a 24 VAC supply reference to earth ground.

IOB CONFIGURATION

The input/output boards are configured for different types of input/output. The IOB boards have two dip switches. Switch 1 sets the board address. For Switch 2, if a channel output for channel 1 through 10 (J16 and J15) is 4-20 mA, the corresponding dip switch 1-10 must be On for the channel.

23XRV IOB COMPONENTS AND WIRING

The components listed in Tables 1-3 are available at the user's terminal block on the IOB. Many are routed to the 7TB terminal block located on the left side of the low voltage VFD section. For field connections the appropriate connectors are identified in Tables 1-3. Figure 3 is the legend for the IOB and control wiring diagrams; Fig. 4-6 show IOB wiring diagrams; and Fig. 7-9 show additional control wiring.

Table 1 — SIOB Input/Output Descriptions

DESCRIPTION	CHANNEL	TERMINAL	TYPE	OPTIONAL
Entering Chilled Water Temperature	AI1	J25-1,2	5K Ohm	—
Leaving Chilled Water Temperature	AI2	J25-3,4	5K Ohm	—
Entering Condenser Water Temperature	AI3	J25-5,6	5K Ohm	—
Leaving Condenser Water Temperature	AI4	J25-7,8	5K Ohm	—
Evaporator Saturation Temperature (Refrigerant Liquid Temperature)	AI5	J25-9,10	5K Ohm	—
Condenser Pressure Sensor	AI6	J11-1,2,3	5VDC	—
Evaporator Pressure Sensor	AI7	J19-1,2,3	5VDC	—
Economizer Pressure Sensor	AI8	J20-1,2,3	5VDC	—
Compressor Discharge Pressure Sensor	AI9	J21-1,J19-3	5VDC	—
Demand Limit Input	AI10	J9-1,2	4-20 mA	Optional Field Connections 7TB-7,8
Spare Safety	DI2	J1-3,4	24 VAC	Optional Field Connections, 7TB-3,4 (dry contact)
Ice Build Contact	DI3	J1-5,6	24 VAC	NOTE: 23XRV is not suited for ice duty.
Oil Reclaim Actuator	AO1	J10-1,2	0 to 10V	Variable
Primary Oil Heater Relay	DO1	J2-1	24 VAC	—
Oil Pump Relay	DO2	J2-2	24 VAC	—
Vaporizer Heater Relay	DO3	J6-2	24 VAC	—
Secondary Oil Heater Relay	DO4	J6-1	24 VAC	—
Hot Gas Bypass Solenoid	DO5	J23-1,2	24 VAC	—
Condenser Expansion Valve	STRP1	J17-2,3,4,5	Stepper Motor	NOTE: Only for units with TP Compressor
Economizer Expansion Valve	STRP2	J18-2,3,4,5	Stepper Motor	NOTE: Only for units with TP Compressor

Table 2 — 23XRV Input/Output Board 1 (IOB1) Connections[a,b,c]

DESCRIPTION	CHANNEL	TERMINAL	TYPE	OPTIONAL
Compressor Discharge Temperature	AI1	J16-1,5	5K Ohm	—
Motor Winding Temperature	AI2	J16-2,6	5K Ohm	—
Oil Vaporizer Temperature	AI3	J16-3,7	5K Ohm	—
Oil Sump Temperature	AI4	J16-4,8	5K Ohm	—
Remote Reset Sensor	AI5	J15-6,12	5K Ohm	Optional Field Connection 7TB-17, 18
Economizer Gas Temperature	AI6	J15-5,11	5K Ohm	—
Oil Pump Discharge Pressure	AI7	J15-4,10	5V	—
Oil Sump Pressure	AI8	J15-3,9	5V	—
Refrigerant Leak Sensor	AI9	J15-2,8	4-20mA	Optional Field Connection 7TB-19, 20 (Ensure channel 5 on SW2 dip switch is ON)
Auto Chilled Liquid Reset	AI10	J15-1,7	4-20mA	Optional Field Connection 7TB-21, 22 (Ensure channel 9 on SW2 dip switch is ON)
Head Pressure Output	AO3	J14-3,6	4-20mA	Optional Field Connection 7TB-34, 35
Remote Contact Input	DI1	J13-1,5	24 VAC	Optional Field Connection 7TB-9,10, Dry contact. Must be configured in "Configure Startup Options" in Chiller Start/Stop Menu.
Emergency Stop	DI2	J13-2,6	24 VAC	Optional Field Connection 7TB-11,12; Dry contact
Evaporator Flow Switch	DI3	J13-4,7	24 VAC	Optional Field Connection 7TB-13,14; Closed indicates flow
Condenser Flow Switch	DI4	J13-4,8	24 VAC	Optional Field Connection 7TB-15,16; Closed indicates flow
Chiller Alert	DO1	J12-6,7	24 VAC	Optional Field Connection 7TB-24V, 27
Chiller Alarm	DO2	J12-9,10	24 VAC	Optional Field Connection 7TB-24V, 29
Discrete Chiller Run Status Output (OFF=0V, ON=24VAC)	DO3	J12-1,2	24 VAC	Optional Field Connection 7TB-24V, 31
VFD Run Permissive	DO4	J12-4,5	24 VAC	—
Condenser Liquid Level Sensor	AI11	J10-1,7	0-5V	NOTE: For TP compressors only.

NOTE(S):

a. See Fig. 5 for IOB1 wiring diagram.
b. For pressure readings, only Vout (output) terminal is indicated. See Fig. 5 for Vin (+) and ground (–).
c. Defaults are shown. In some cases the IOB can be configured differently depending on job requirements.

Table 3 — 23XRV IOB2 Connections[a,b,c]

DESCRIPTION	CHANNEL	TERMINAL	TYPE	OPTIONAL
Entering Evaporator Water Pressure	AI3	J16-3,7 Signal, J11-1	+5V	Optional Field Connections 7TB-36 (reference), 7TB-37 (Vout), 7TB-64 (Vin)
Leaving Evaporator Water Pressure	AI4	J16-4,8 Signal, J11-2	+5V	Optional Field Connections 7TB-38 (reference), 7TB-39 (Vout), 7TB-65 (Vin)
Entering Condenser Water Pressure	AI5	J15-6,12 Signal, J11-3	+5V	Optional Field Connections 7TB-41 (reference) 7TB-40 (Vout), 7TB-66 (Vin)
Leaving Condenser Water Pressure	AI6	J15-5,11 Signal, J11-4	+5V	Optional Field Connections 7TB-43 (reference), 7TB-42 (Vout), 7TB-67 (Vin)
Common Chilled Water Supply	AI7	J15-4,10	5K Ohm	Optional Field Connections 7TB-60,61
Evaporator Water Flow Measurement	AI8	J15-3,9	4-20mA	Optional Field Connections 7TB-44,45 (Channel 8 on SW2 dip switch must be ON)
Condenser Water Flow Measurement	AI9	J15-2,8	4-20mA	Optional Field Connections 7TB-46,47 (Channel 9 on SW2 dip switch must be ON)
Common Chilled Water Return	AI10	J15-1,7	5K Ohm	Optional Field Connections 7T-58,59
Head Pressure Output 2	AO3	J14-3,6	4-20mA	Optional Field Connections 7TB-56,57
Chilled Water Pump	DO1	J12-6,7	24 VAC	—
Condenser Water Pump	DO2	J12-9,10	24 VAC	—

NOTE(S):

a. See Fig. 6 for IOB2 wiring diagram.
b. For pressure readings, only Vout (output) terminal is indicated. See Fig. 6 for Vin (+) and ground (–).
c. Defaults are shown. In some cases the IOB can be configured differently depending on job requirements.

LEGEND

IOB — Input/Output Board

ABBREVIATION LISTING			
ALE	CHILLER ALERT	REM_CON	REMOTE CONTACT INPUT
ALM	CHILLER ALARM	R_RESET	REMOTE RESET
AUTO_DEM	AUTO DEMAND LIMIT INPUT	SIOB	STANDARD INPUT OUTPUT BOARD
AUTO_RES	AUTO CHILLED LIQUID RESET	TR	TRANSFORMER
CB	CIRCUIT BREAKER	VAP_HEAT	VAPORIZER HEATER
CDGT	COMPRESSOR DISCHARGE TEMPERATURE	VAP_TEMP	VAPORIZER TEMPERATURE
CDWP	CONDENSER WATER PUMP	EXV	EXPANSION VALVE
CHWP	CHILLED WATER PUMP	RUN_STAT	RUN STATUS
COND_EWP	CONDENSER LEAVING WATER PRESSURE		
COND_FL	COND WATER FLOW MEASUREMENT		
COND_FS	COND WATER FLOW SWITCH		
COND_LIQ_LVL	CONDENSER LIQUID LEVEL		
COND_LWP	CONDENSER LEAVING WATER PRESSURE		
COND_P	CONDENSER PRESSURE		
CR_TEMP	COMMON RETURN TEMPERATURE		
CS_TEMP	COMMON SUPPLY TEMPERATURE		
DISCH_P	DISCHARGE PRESSURE		
ECW	ENTERING CHILLED WATER TEMPERATURE		
ECDW	ENTERING CONDENSER WATER TEMPERATURE		
ECON_P	ECONOMIZER PRESSURE		
ECON_GAS	ECONOMIZER GAS TEMPERATURE		
EVAP_EWP	EVAPORATOR ENTERING WATER PRESSURE		
EVAP_FL	EVAPORATOR FLOW MEASUREMENT		
EVAP_FS	EVAPORATOR FLOW SWITCH		
EVAP_LWP	EVAPORATOR LEAVING WATER PRESSURE		
EVAP_P	EVAPORATER PRESSURE		
EVAP_T	EVAPORATER TEMPERATURE		
E_STOP	EMERGENCY STOP		
ES	ETHERNET SWITCH		
HDPV_OUT	HEAD PRESSURE OUTPUT		
HDPV_OU2	HEAD PRESSURE OUTPUT 2		
HGBP	HOT GAS BYPASS		
HP_SWITCH	HIGH PRESSURE SWITCH		
ICE_CON	ICE BUILD CONTACT		
IOB	INPUT OUTPUT BOARD		
LCW	LEAVING CHILLED WATER TEMPERATURE		
LCDW	LEAVING CONDENSER WATER TEMPERATURE		
MTRW	MOTOR WINDING TEMPERATURE		
PRI_OIL_HEAT	PRIMARY OIL HEATER		
SEC_OIL_HEAT	SECONDARY OIL HEATER		
OIL_PUMP	OIL PUMP		
OILT_SMP	OIL SUMP TEMPERATURE		
OILP_DIS	OIL DISCHARGE PRESSURE		
OILP_SMP	OIL SUMP PRESSURE		
PS	POWER SUPPLY		
REF_LEAK	REFRIGERANT LEAK		

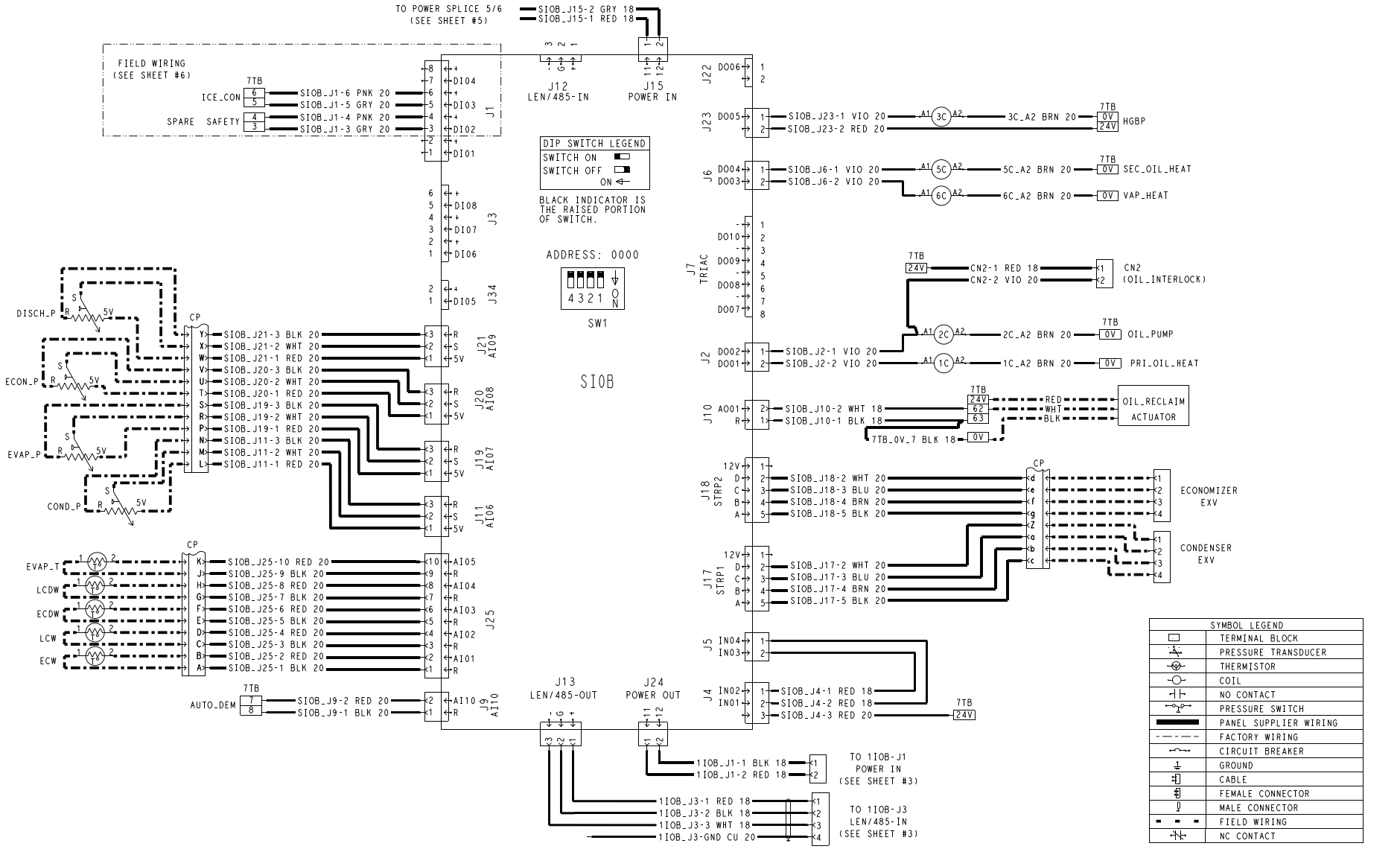
SYMBOL LEGEND	
	TERMINAL BLOCK
	PRESSURE TRANSDUCER
	THERMISTOR
	COIL
	NO CONTACT
	PRESSURE SWITCH
	PANEL SUPPLIER WIRING
	FACTORY WIRING
	CIRCUIT BREAKER
	GROUND
	CABLE
	FEMALE CONNECTOR
	MALE CONNECTOR
	FIELD WIRING
	NC CONTACT

WIRE COLOR LEGEND	
BLK	BLACK
BLU	BLUE
BRN	BROWN
GRN	GREEN
GRY	GREY
ORG	ORANGE
PNK	PINK
RED	RED
VIO	VIOLET
WHT	WHITE
YEL	YELLOW

NOTES:
1. FIELD-SUPPLIED CONTROL CONDUCTORS TO BE AT LEAST 18AWG (AMERICAN WIRE GAGE) OR LARGER. THE CONTROL CABINET SHOULD ONLY BE USED FOR LOW VOLTAGE FIELD WIRING (50-V MAXIMUM.)
2. EACH DIGITAL OUTPUT LOOP SHALL BE LIMITED TO A MAXIMUM OF 1A AC RMS STEADY-STAT @ 24VAC. LIGHT LOAD RELAY IS RECOMMENDED AND THE COIL VOLTAGE OF RELAY IS 24VAC. POWER SUPPLY SHALL BE PROVIDED BY CUSTOMER FUSED TRANSFORMER.
3. EACH DISCRETE INPUT LOOP IS POWERED BY INTERNAL 24VAC POWER SUPPLY. FIELD OPTIONAL CONTACTS OR SWITCH MUST HAVE 24VAC RATING, MAX CURRENT IS 60MA. NOMINAL CURRENT IS 10MA. SWITCHES WITH GOLD PLATED BIFURCATED CONTACTS ARE RECOMMENDED.
4. THE ANALOG INPUTS SUPPORT 5K/10K NTC THERMISTORS, 0/4-20MA SENSORS AND 5VDC SENSORS. FOR DETAILS REFER TO THE CONTROLS, OPERATIONS, AND TROUBLE SHOOTING MANUAL AND MATCH WITH SOFTWARE.
5. EACH ANALOG OUTPUT LOOP SUPPORTS 0/4-20MA OR 0/2-10VDC VOLTAGE OUTPUT. THE ANALOG OUTPUT LOOP IS POWERED BY IOB BOARD. DO NOT SUPPLY EXTERNAL POWER. FOR DETAILS REFER TO THE CONTROLS, OPERATIONS, AND TROUBLE SHOOTING MANUAL AND MATCH WITH SOFTWARE.
6. DRY TYPE CONTACT, RATED SWITCHING LOAD 230VAC/5A OR 24VDC/5A .

Carrier	23XR_PIC6_SCHEMATIC	REV.
	2000767952 SH.1 OF 7	A

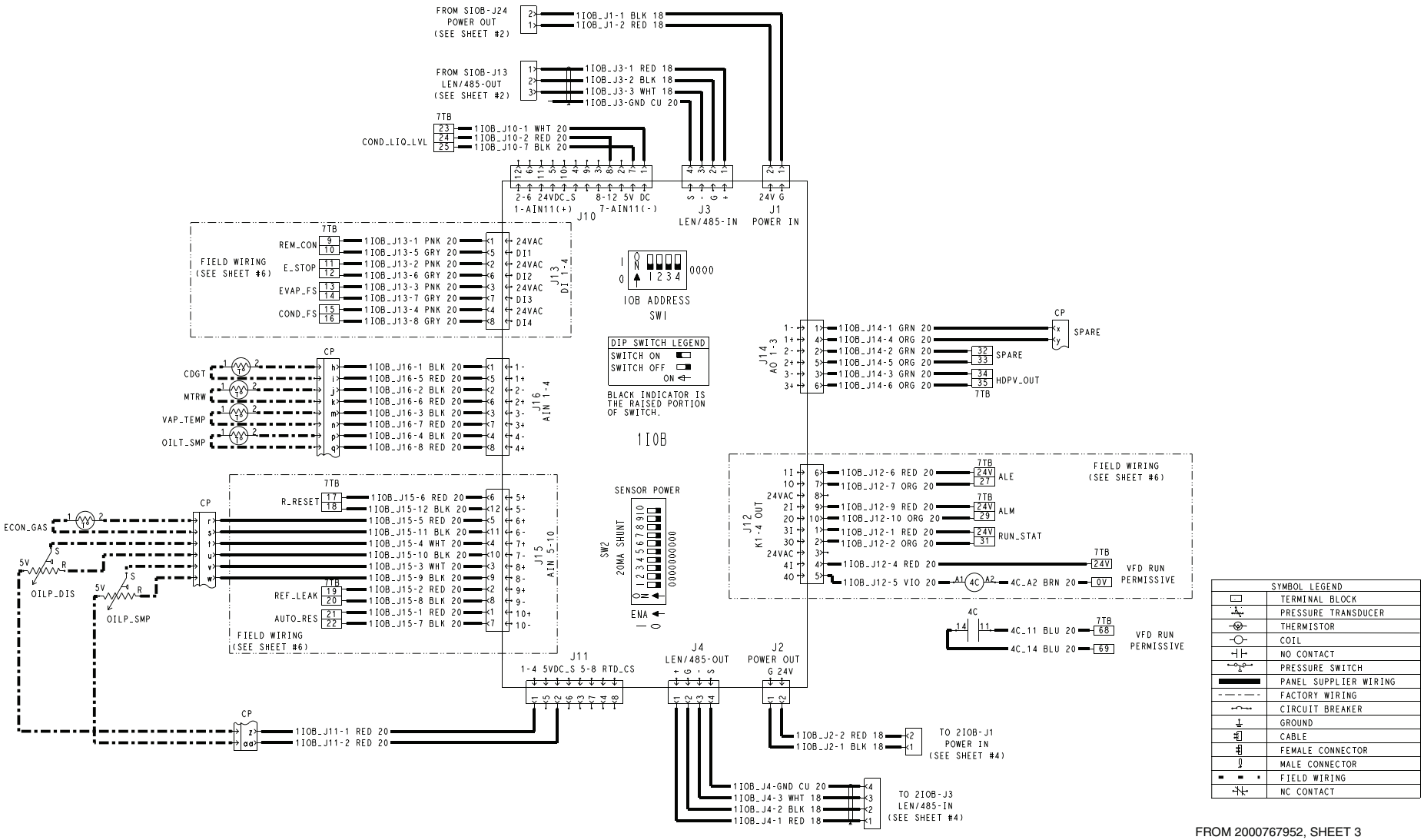
Fig. 3 — Control Panel Abbreviations



Carrier	23XR_PIC6_SCHEMATIC	REV.
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NOTE: Carrier recommends using a relay with a contact rating of 10 amp sealed RMS or greater with 24VAC coil.

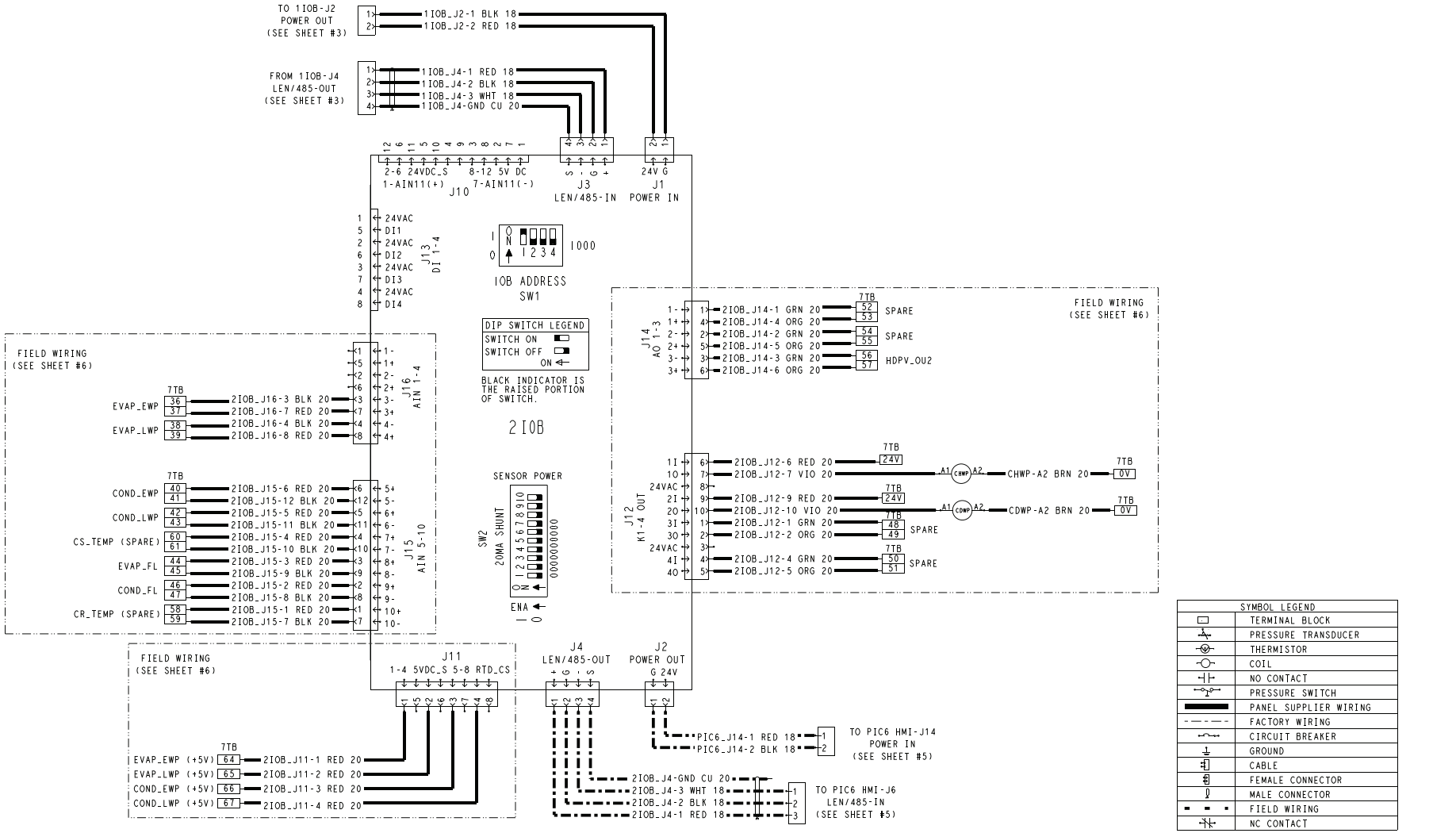
Fig. 4 — SIOB



SYMBOL LEGEND	
	TERMINAL BLOCK
	PRESSURE TRANSDUCER
	THERMISTOR
	COIL
	NO CONTACT
	PRESSURE SWITCH
	PANEL SUPPLIER WIRING
	FACTORY WIRING
	CIRCUIT BREAKER
	GROUND
	CABLE
	FEMALE CONNECTOR
	MALE CONNECTOR
	FIELD WIRING
	NC CONTACT

FROM 2000767952, SHEET 3

Fig. 5 — 1IOB



SYMBOL LEGEND	
	TERMINAL BLOCK
	PRESSURE TRANSDUCER
	THERMISTOR
	COIL
	NO CONTACT
	PRESSURE SWITCH
	PANEL SUPPLIER WIRING
	FACTORY WIRING
	CIRCUIT BREAKER
	GROUND
	CABLE
	FEMALE CONNECTOR
	MALE CONNECTOR
	FIELD WIRING
	NC CONTACT

Carrier	23XR_PIC6_SCHEMATIC	REV.
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Fig. 6 — 2IOB

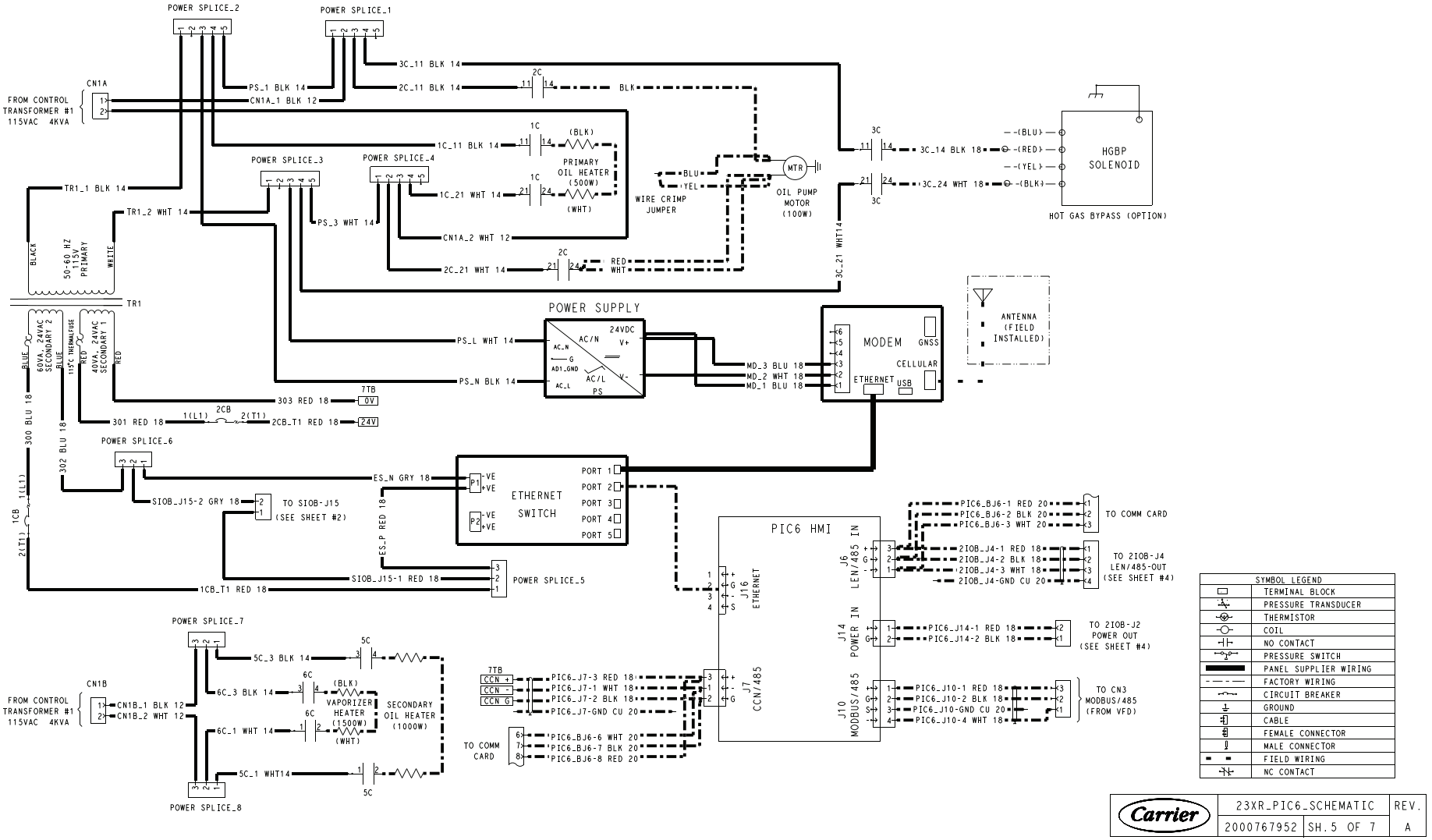


Fig. 7 — Control Wiring

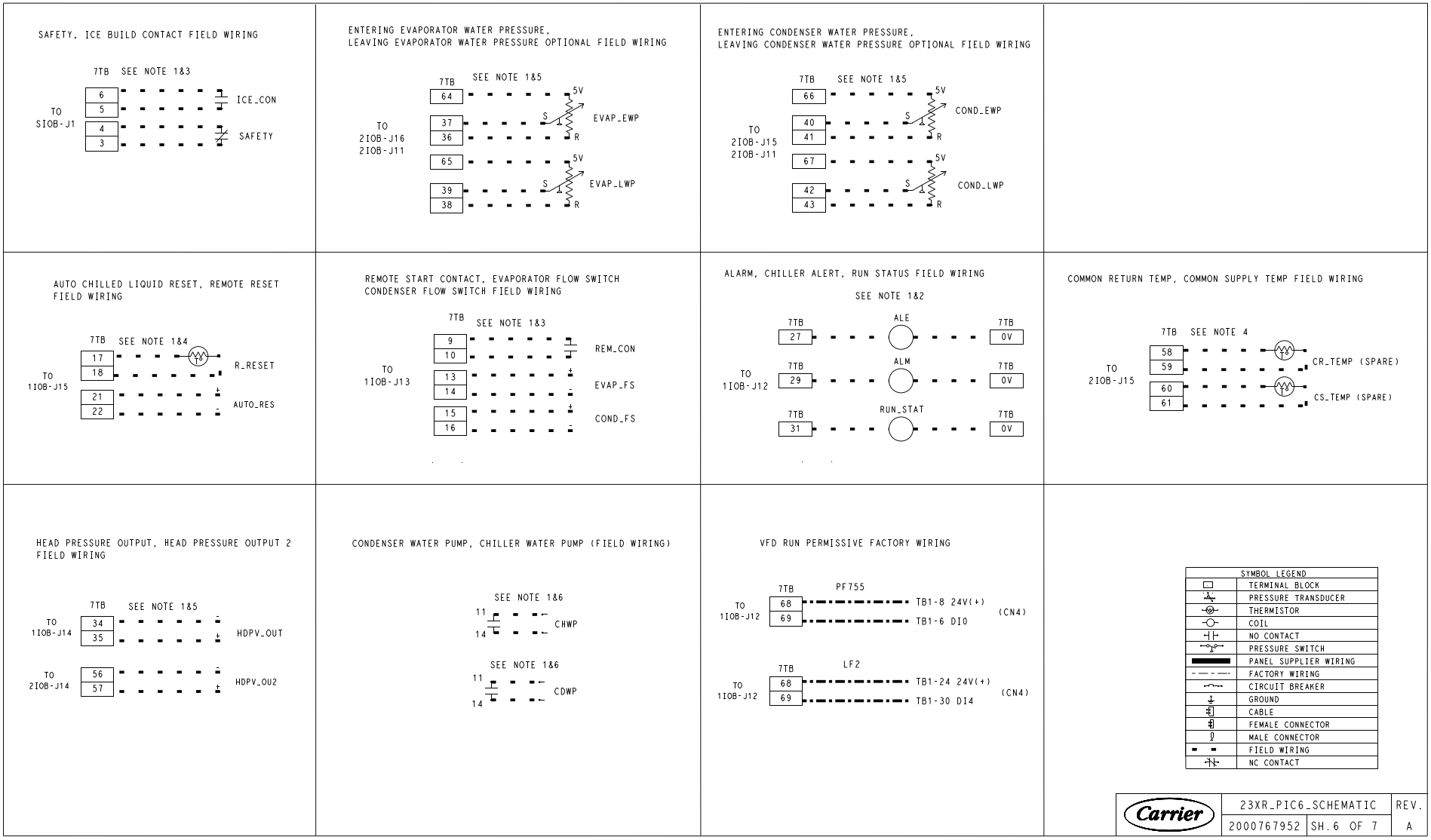


Fig. 8 — 23XRV Controls Schematic

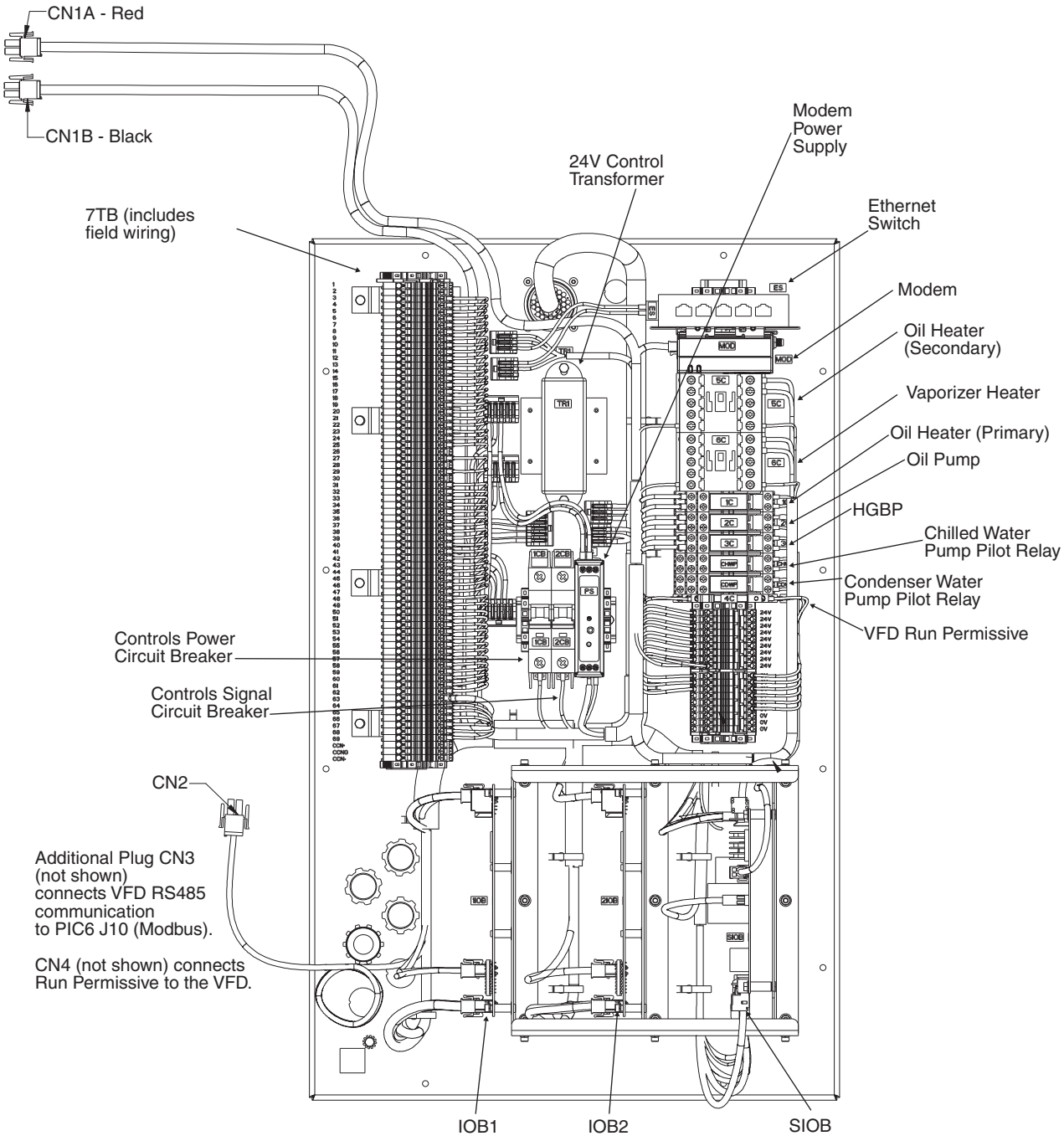


Fig. 9 — PIC6 Control Component Layout

Communication Cables

The communication transmission cables have the following electrical characteristics:

- 2 signal conductors and one ground conductor of 20 AWG or larger, 100% shielded
- One tinned copper braid (65% coverage)

Recommended cables are shown below:

USAGE	CABLE
Intra-Building	Belden 8772
High Temperature	Belden 85240
Plenum	Belden 89418
Modbus Communication	Belden 3106A

To avoid potential interference, route communication cables as far away as possible from high voltage cable and other likely disturbances. Always separate communication cables from other cables and always run wiring as directly as possible.

Sensors

PRESSURE TRANSDUCERS

Pressure transducers measure and control the pressures in the unit. These electronic sensors deliver 0 to 5 VDC. The pressure transducers are connected to the IOBs/SIOB. See Table 4.

Table 4 — Pressure Transducers

PRESSURE TRANSDUCER	PURPOSE
Pump Supply Pressure	Measures pressure at oil pump discharge.
Pump Sump Pressure	Measures oil sump pressure.
Evaporator	Measures evaporator pressure.
Condenser	Measures condenser pressure.
Economizer	Measures economizer pressure. (For unit with TP compressor and economizer option only.)
Evaporator Water Pressure Difference	(Optional) Measures pressure difference between entering and leaving water.
Condenser Water Pressure Difference	(Optional) Measures pressure difference between entering and leaving water.
Evaporator Entering Water	(Optional) Measures pressure of evaporator entering water.
Evaporator Leaving Water	(Optional) Measures pressure of evaporator leaving water.
Condenser Entering Water	(Optional) Measures pressure of condenser entering water.
Condenser Leaving Water	(Optional) Measures pressure of condenser leaving water.

TEMPERATURE SENSORS

The system uses electronic sensors to measure and control the temperatures in the unit. The temperature sensors are 5K Ohm thermistors. The temperature sensor range is –40°F (–40°C) to 245°F (118°C). See Table 5. Pressure transducers and thermistors can be calibrated in the Quick Test Menu. Pressure transducers can be adjusted up to 5 psi (34.5 kPa) and thermistors can be adjusted up to ±5°F (2.8°C).

Table 5 — Temperature Sensors

TEMPERATURE SENSOR	PURPOSE
Entering Chilled Water	Measures entering evaporator water temperature
Leaving Chilled Water	Measures leaving evaporator water temperature
Entering Condenser Water	Measures entering condenser water temperature
Leaving Condenser Water	Measures leaving condenser water temperature
Evaporator Refrigerant Liquid	Measures evaporator refrigerant liquid temperature
Compressor Discharge	Measures compressor discharge temperature
Oil Sump	Measures oil sump temperature
Vaporizer Temperature	Measures temperature of oil leaving vaporizer
Chilled Water Supply (Optional)[a]	Measures temperature of chilled water supply
Chilled Water Return (Optional)[a]	Measures temperature of chilled water return
Motor Winding	Measures temperature of each phase of compressor motor
Economizer Gas	Measures gas temperature from economizer to compressor (For unit with TP compressor and economizer option only)

NOTE(S):

a. Separate inputs used when the chiller is in network mode.

Controls Outputs

EVAPORATOR/CONDENSER WATER PUMP

The controller regulates the evaporator/condenser water pump. Note that Carrier requires full or parallel pump control since Carrier controls utilize the pumps for freeze protection and high pressure control.

ENVELOPE/HGBP CONTROL VALVE

The on/off HGBP valve artificially loads the chiller and keeps it running under low load conditions.

VFD

The VFD modifies motor frequency to allow compressor start-up and capacity control. The VFD controls continually monitor parameters to ensure compressor protection. If a problem occurs, the controller triggers an alarm and the compressor is stopped.

USER INTERFACE

The PIC6 Human Machine Interface (HMI) is a color 10.4-in. TFT touch screen. Navigation is either direct from the touch screen interface or by connecting to a web interface at the Ethernet IP port of the controller. The navigation menus are the same for both connection methods.

Web Connection

Two web connections may be authorized at the same time. When two users are connected simultaneously, there is no priority between users; that is, the last modification is in effect regardless of the user. Connection is from a personal computer using a Java-enabled web browser. See “CONTROLLER SETTINGS” on page 34 for configuration instructions.

The minimum browser configuration includes:

- Microsoft Internet Explorer (version 8 or higher) or Mozilla Firefox (version 3.5.2 or higher). In the advanced connection options, add the unit address to the address list. Do not use a proxy server.
- Java platform (version 6 or higher). In the control panel, deselect (uncheck) the option that allows storing temporary internet files and use a direct connection.

To access the PIC6 user interface, enter the IP address of the unit in the address bar of the web browser. The IP address can be viewed or changed from the PIC6 interface. For more information on the web browser and Java platform configuration, see “DIAGNOSTICS AND TROUBLESHOOTING” on page 25.

General Interface Features

ICONS

Table 6 shows general interface icons.

Table 6 — Interface Icons

ICON	MEANING
	Green: Indicates unit is running Gray: Indicates unit is off
	Home
	Main menu
	Indicates user is logged off
	Indicates user is logged in
	Gray: Indicates no alarm or alert is active Red: Indicates alarm or alert
	Back
1/2	Previous and next screen

SCREENS

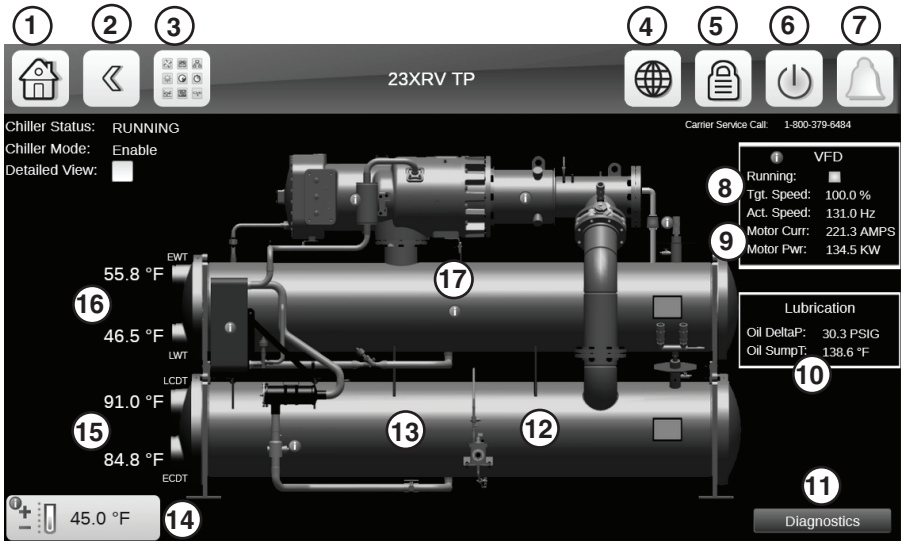
The Human Machine Interface includes the following screens:

- Home screen, which displays the main parameters
- Menu screens for navigation
- Data/configuration screens, which list the parameters by type
- Operating mode selection screen
- Password entry and language selection screen
- Parameter modification screen
- Time schedule screen

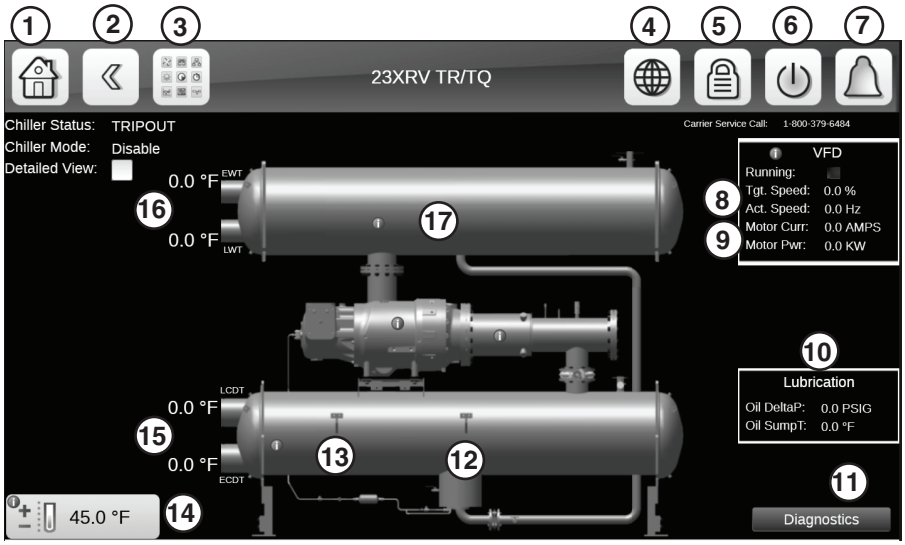
If the interface is not actively used, it goes into screen-saver mode and displays a black screen. However, the control is always active and the unit operating mode remains unchanged. When the user presses the black screen, the Home screen is displayed.

System Overview (Home) Screen

Figure 10 shows the system overview screen. Press a component image to see current status. For details, see Status Display Screens on page 15.



1 — Home Screen Access Button
2 — Back Button
3 — Main Menu Access Button
4 — Globe Button
5 — User Login Screen Access Button
6 — Unit Start/Stop Access Button
7 — Alarm Menu Access Button
8 — VFD Status
9 — Motor Load Current Percentage
10 — Oil Sump Temperature and Pressure
11 — Unit Diagnostics Access Button
12 — Condenser Discharge Temperature and Pressure
13 — Condenser Saturated Pressure and Temperature
14 — Setpoint Temperature
15 — Condenser Water Inlet and Outlet Temperature
16 — Evaporator Water Inlet and Outlet Temperature
17 — Lubrication Status



1 — Home Screen Access Button
2 — Back Button
3 — Main Menu Access Button
4 — Globe Button
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6 — Unit Start/Stop Access Button
7 — Alarm Menu Access Button
8 — VFD Status
9 — Motor Load Current Percentage
10 — Oil Sump Temperature and Pressure
11 — Unit Diagnostics Access Button
12 — Condenser Discharge Temperature and Pressure
13 — Condenser Saturated Pressure and Temperature
14 — Setpoint Temperature
15 — Condenser Water Inlet and Outlet Temperature
16 — Evaporator Water Inlet and Outlet Temperature
17 — Lubrication Status

Fig. 10 — System Overview (Home) Screen

Messages

The Set Point screen, On/Off screen, User Login screen, and Main Menu screens described in the next sections may display status messages at the bottom of the screen. See Table 7.

Table 7 — Status Messages

MESSAGE	STATUS
COMMUNICATION FAILURE!	Equipment controller did not respond while reading the table content.
ACCESS DENIED!	Equipment controller does not allow access to one of the table data blocks.
LIMIT EXCEEDED!	The value entered exceeds the table limits.
Save changes?	Modifications have been made. The interface waits to confirm exit; press Save or Cancel.
HIGHER FORCE IN EFFECT!	Equipment controller rejected a Force or Auto command because the interface force level is lower than that of the equipment controller.

Set Point Screen

The Set Point screen displays the current set point table. See Fig. 11. For more information about these settings, see the Set Point section on page 18.

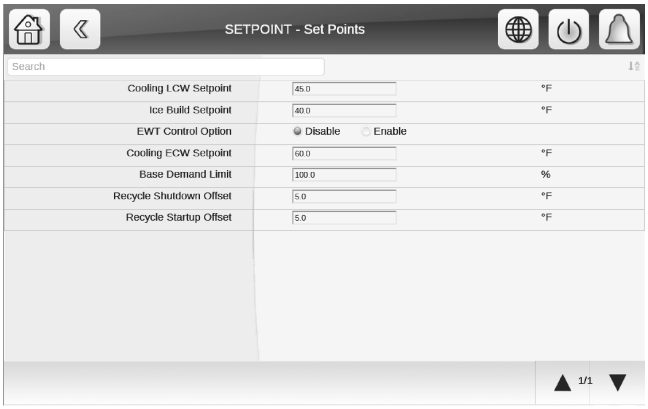


Fig. 11 — Set Points Menu

Unit Start/Stop Screen

The Unit Start/Stop screen allows the user to select the unit operating mode.

For unit start-up, with the unit in Local Off mode, press the gray Off icon to display the list of operating modes. Select the required mode to start up the chiller. See Fig. 12.



Fig. 12 — Unit Start/Stop Screen (Service/factory Log-in Screen Shown)

NOTE: If Local start is not desired then Auto Start needs to be configured for user to start as per user configurations. User login or higher is required to access the "Configure Startup Options" Menu. If Network start by CCN, BACnet or Modbus or if remote contacts are to be used for startup they will need to be enabled in the startup menu. To stop chiller each enabled start option must send a stop command.

When a start-up is initiated, a status screen displays the progress of the start-up sequence. See Fig. 13 and 14.

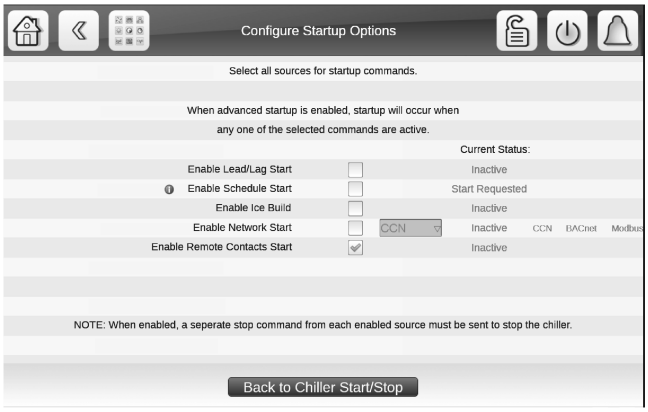


Fig. 13 — Configure Start-up Options

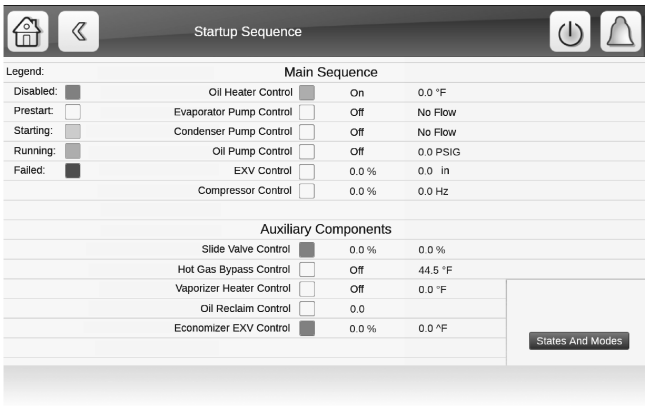


Fig. 14 — Start-Up Sequence Progress

To stop the unit when running in Local mode, press the green On icon . Then press Disable/Stop Unit to stop the unit. See Fig. 15.



Fig. 15 — Stop Unit

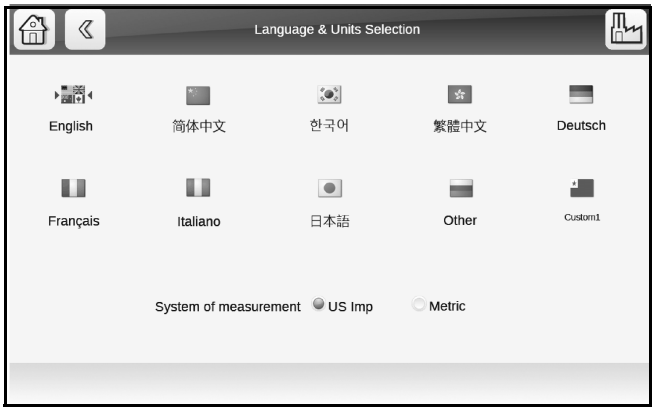
User Login Screen

Use this screen to login or log off and to set interface language and measurement system. There are three levels of password access:

- Basic access allows the user to view all data without a password.
- User access gives the user the additional ability to view and change many configuration settings, including set points and schedules. The default User password is 1111.

- Service access gives access to more tables which are required for typical service setup. In current software, service access is accessible via password 3333 or 1234.
- Factory access (located under Service Login icon) allows access to critical factory configuration settings and only authorized users will have access to these menus using Carrier Smart Service.

From the Home screen, touching the Globe icon displays the Language and Units Selection screen. See Fig. 16.



NOTE: The active language is bracketed by arrows.

Fig. 16 — User Login Screen — Language and Units Selection

The Lock icon on the Home screen allows access to the password menu and displays current software version. See Fig. 17.

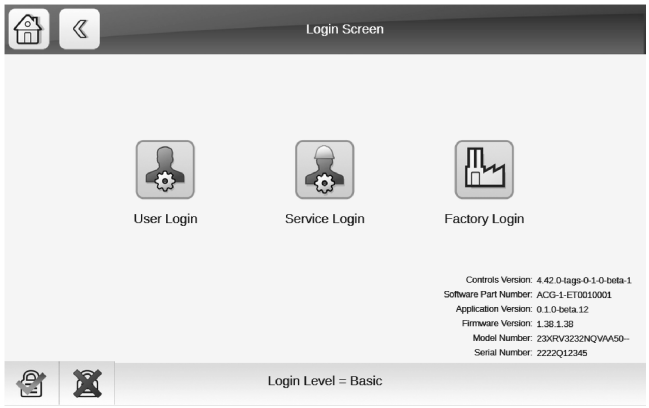


Fig. 17 — User Login, Login Level = Basic

Main Menu Screen

To access the Main Menu screen, press the Main Menu icon. Press the icons on the screen to access the appropriate table or menu. Press the arrows at the bottom right corner, if present, to navigate through pages of tables. The options shown on the Main Menu screen depend on the user's level of access (see the section User Login Screen on page 13). Figure 18 shows the Main Menu screen as it appears for the User level of access, Fig. 19 shows the Main Menu screen for Service level access, and Fig. 20 shows the Main Menu screen for Factory level access.

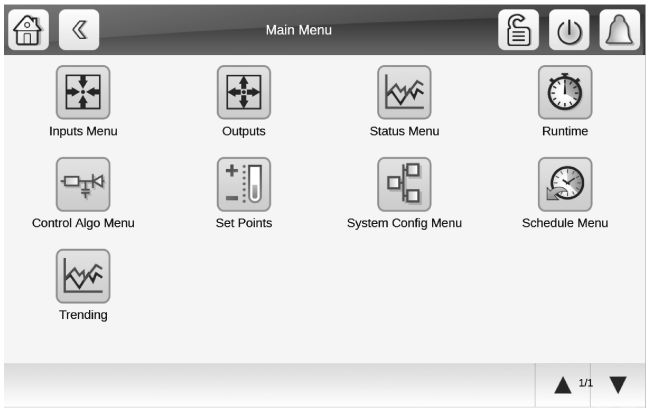


Fig. 18 — Main Menu Screen, User Level

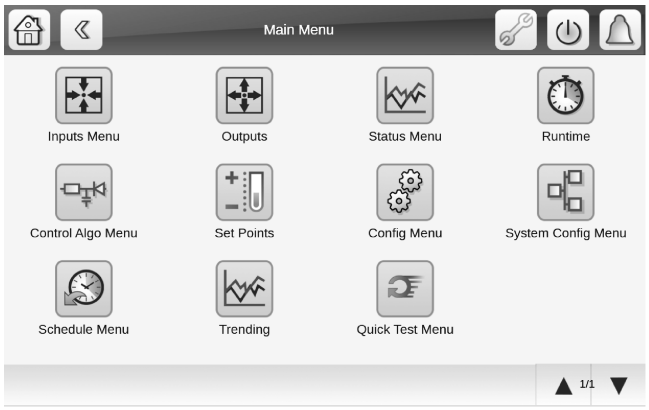


Fig. 19 — Main Menu Screen, Service Level

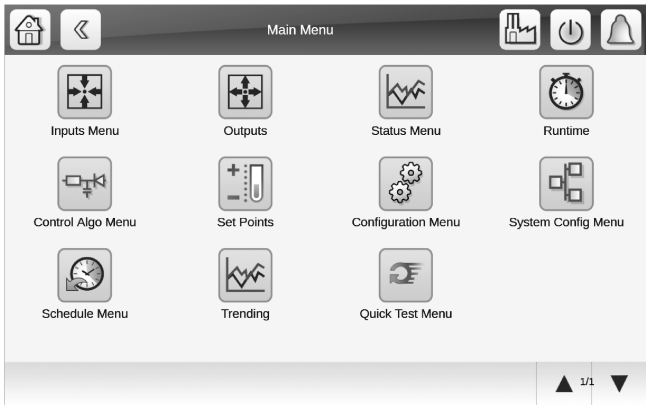


Fig. 20 — Main Menu Screen, Factory Level

Configuration Menu

To access the Configuration menu, press the Configuration icon on the Main Menu (Service or Factory access level). The Configuration menu opens. Then press the General Configuration icon on the Configuration menu. See Fig. 21. (Certain configuration settings are available only for Service or Factory access levels.) Refer to Appendix A, page 39, for more information about Configuration options.

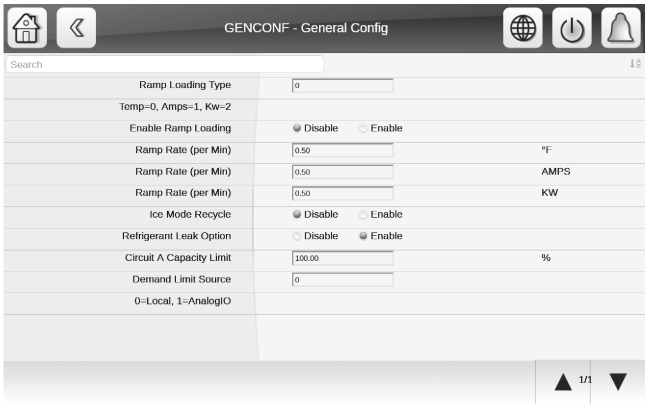


Fig. 21 — General Configuration Screen

After changing a value, press Return. The Save and Cancel icons are displayed. Press the Save icon to save the changed value.

In the General Configuration menu the ramp loading per time can be limited based on ^F, amps, or kW.

In addition the optional 4-20 mA Refrigerant Leak detection by external controller can be enabled here. Alarm limits are configured in the Limits Configuration menu.

Schedule Menu Screen

To access the Schedule Menu screen, press Config1 on the Main Menu screen. Select Local Schedule or Schedule as applicable. For Local Schedule control, select the desired time period for the chiller to run in the LOCALOCC - Local Schedule menu shown in Fig. 22. Go to Configure Startup Options (see Fig. 12) and ensure that Enable Schedule Start is checked (see Fig. 13). For Local Schedule Control press AutoStart to activate (do not press Local On as chiller will always initiate startup when Local On is pressed). Upon pressing AutoStart the chiller will now run as per the configured occupancy schedule. Press the arrows at the bottom right corner to navigate through the time periods. See Fig. 22. There is no occupancy schedule for Network.

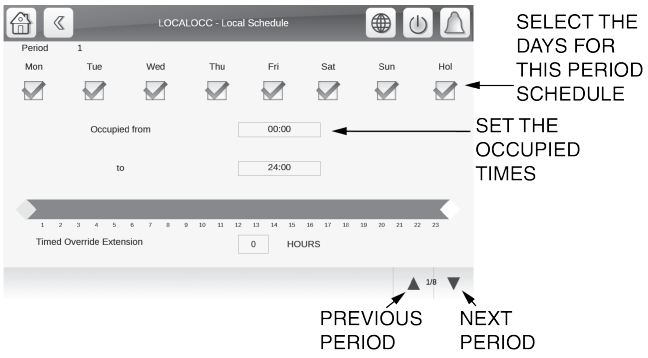


Fig. 22 — Local Schedule Menu Screen

Status Display Screens

Figure 23 shows the system status overview (home) screen. Press any component on the screen to see the status of that component. Press the arrows at the bottom right corner to navigate through the component status displays. Figures 24-31 show the component status displays.

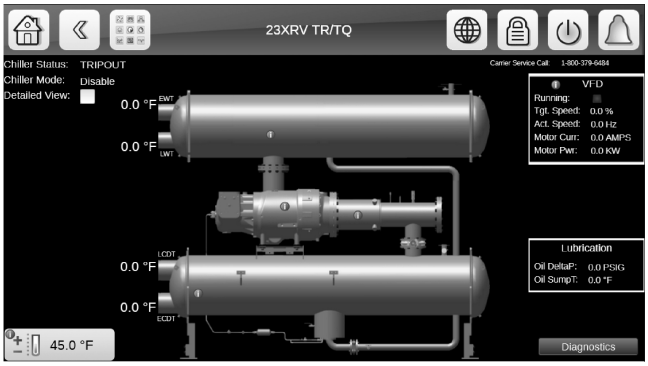


Fig. 23 — System Overview (Home) Screen

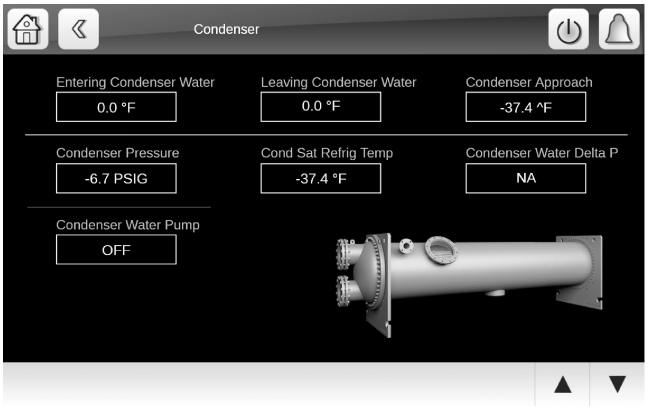


Fig. 24 — Condenser Status

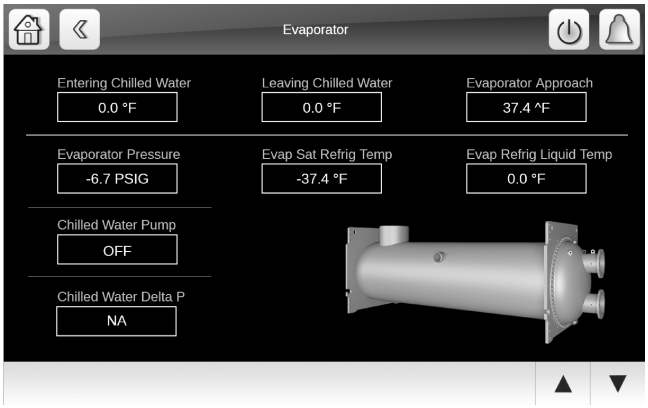


Fig. 25 — Evaporator Status

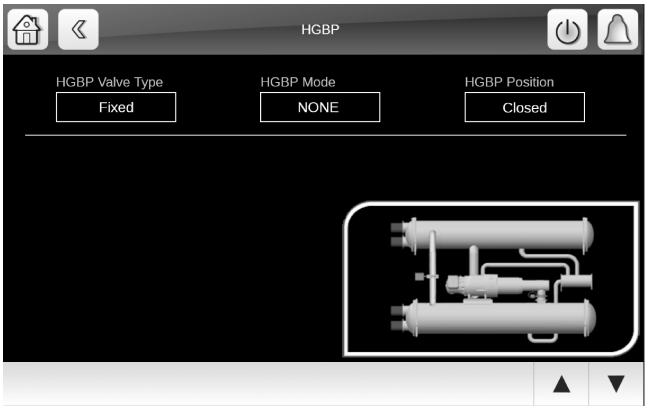


Fig. 26 — HGBP Status

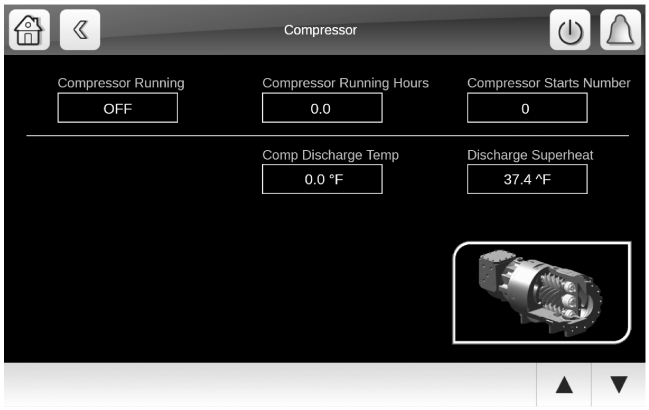


Fig. 27 — Compressor Status



Fig. 28 — Motor Status

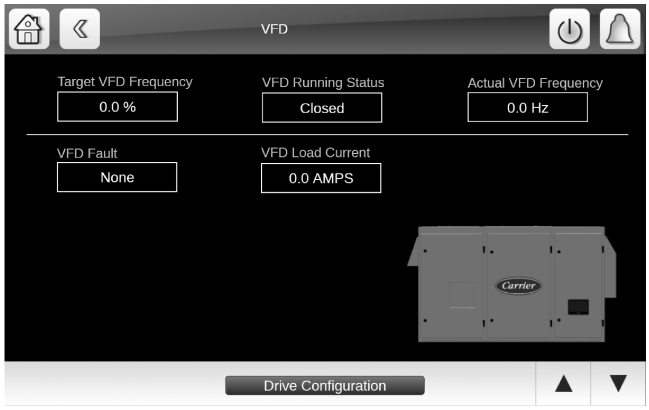


Fig. 29 — VFD Status



Fig. 30 — Economizer Status

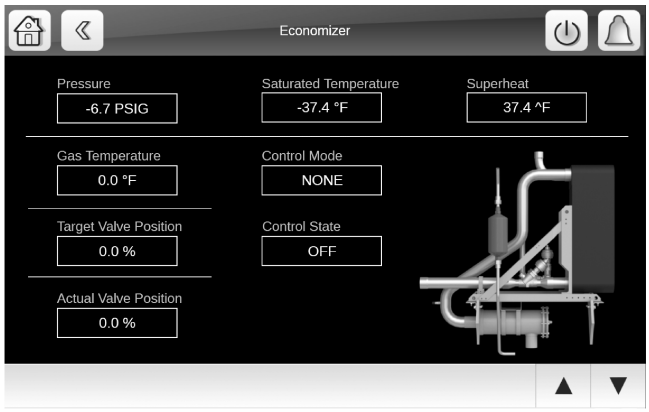


Fig. 31 — Economizer Status (TP Only)

CONTROL OPERATION

Start-Stop Control

This function controls the chiller START-STOP command. The selectable control modes are Local or AutoStart. See Unit Start/Stop Screen (Basic log-in). Specific control sources are valid to start or stop the chiller for each control mode.

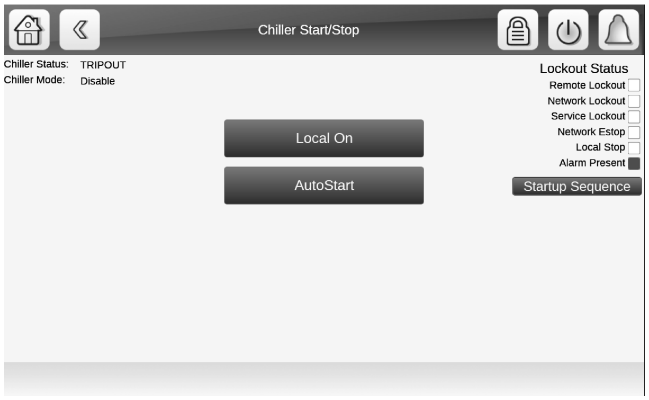


Fig. 32 — Chiller Stop/Start Screen

LOCAL

When the control mode is LOCAL, the chiller can be started by the “Local ON” button on the PIC6 interface screen, and can be shut down by the Disable / Stop Unit button under the Chiller Start / Stop Menu. Unit can be shut down with the red stop sign icon on the local Start / Stop Menu during emergency stop conditions. Stopping the unit with the red stop icon (EMSTOP) will result in an Emergency Stop alarm and will hard stop the unit.

AUTOSTART

For autostart the feature must first be configured under "Configure Startup Options"; see Fig. 13.

REMOTE CONTACTS

When start is desired from closing of a set of contacts, the "Enable Remote Contacts Start" must be checked in the Configure Startup Options. This will allow startup with a dry contact input to REM_CON (7TB-9,10) in the control panel. The chiller can be shut down by the remote discrete input, the Stop button on the PIC6 interface screen, or the EMSTOP software point.

NETWORK

When the control mode is NETWORK, the chiller can be started and stopped by the CHIL_S_S and CHIL_OCC software points, which are written by other equipment through network commands and Dual Stpt schedule (both must be TRUE for chiller to start). For quick shutdown of the chiller, use the EMSTOP software point or stop using the HMI. Network Start can be configured for

either Modbus, BACnet, or CCN, and must be enabled on the Configure Startup Options screen.

Compressor Run Status

Compressor run status is shown at the top of the system overview (home) screen. Table 8 lists chiller status names, values, and descriptions.

Table 8 — Compressor Run Status

UNIT STATUS	VALUE	DESCRIPTION
OFF	0	The unit is OFF.
DELAY	1	The unit is ON but a time delay is counting down.
READY	2	The unit is ready to run and waiting for a startup command.
RECYCLE	3	The unit is ON but not running because it has satisfied the setpoint.
PRESTART	4	The unit is about to start. It is performing pre-start checks.
STARTUP	5	The unit is starting.
AUTORESTART	6	Auto restart is enabled and the unit has just powered up and will be restarting.
RUNNING	7	The unit is running normally.
DEMAND	8	The unit is running normally but the capacity is being limited by the demand limit setpoint.
RAMPING	9	The unit is running normally but the capacity is being limited by the ramp loading ramp rate.
STOPPING	10	The unit is stopping.
TRIPOUT	11	The unit has been stopped due to an alarm.
SERVICE TEST	12	The unit is in service test mode.
PUMPDOWN	13	The pumpdown mode has been initiated, and pumpdown process has started.
LOCKOUT	14	The pumpdown process has completed and switched to LOCKOUT, or the unit has been manually set to LOCKOUT from the service menu.
RESET	15	The reset button has been pressed and the unit is resetting alarms.
LAB TEST	16	The unit is in lab test mode.

Chiller Start-Up Sequence

PRE-START CHECK

Once start-up begins, the controller performs a series of pre-start tests to verify that all pre-start alerts and safeties are within limits. Progress is shown on the Startup Sequence screen (see Fig. 33). This screen can be accessed by touching the mode title (top blue bar) of the home screen. Table 9 lists pre-start alert and alarm conditions.

The compressor RUN STATUS parameter on the default screen line now reads PRESTART. If a test is not successful, the start-up is delayed or aborted. If all tests are successful, the chilled water pump relay energizes, and the main screen line now reads STARTUP.

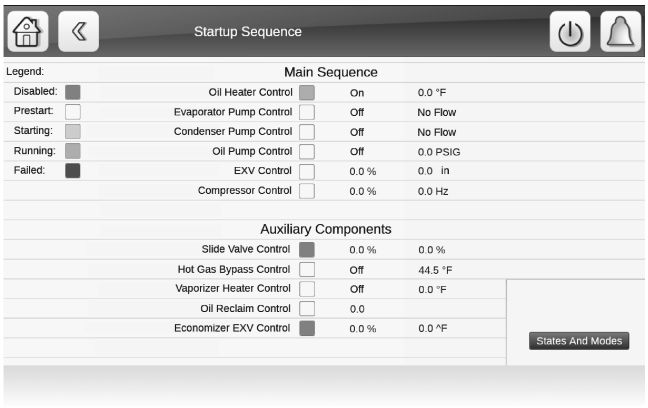


Fig. 33 — Start-Up Sequence Screen

Table 9 — Pre-Start Alerts and Alarms

PRE-START ALERT CONDITION	STATE NO.	ALARM OR ALERT
Condenser Flow not detected during flow verification time	401	Alert
Evaporator Flow not detected during flow verification time	402	Alert
Number of recycle restarts in the last 4 hours is greater than 5	403	Alert
Invalid Control Program	404	Alert
(TP only) Economizer EXV prestart check failure	405	Alert
(TP only) EXV prestart check failure	407	Alert
Condenser pressure greater than config limit (default 130 psig)	409	Alert
Discharge temperature greater than config limit (default 200°F)	411	Alert
Line Voltage greater than its high limit	413	Alert
Any motor winding temp during prestart>= 190°F (87.8°C)	415	Alert
Invalid Compressor Envelope	417	Alert
Line Voltage is below its low limit	419	Alert
Oil sump temp is below 140°F (77.8°C) AND Oil sump temp < Evap Sat Temp + 15°F (8.3°C)	421	Alert
Evaporator liquid temp is below Freeze Setpoint or if applicable Brine Freeze Setpoint (Configuration, Service Configuration=34°F default)	423	Alert
Evaporator saturated temp is below Brine Freeze Setpoint (Configuration, Service Configuration=34°F default)	425	Alert
Oil Delta P greater than 6 psig prior to startup	429	Alert
Low Oil Pressure at Startup. Occurs if oil pressure < 18 psig (124.1 kPa) and oil pump on for Oil Pressure Verification Time (default 60s)	401	Alarm
Starts in 12 hours exceed Starts Per Period value configured in Service Configuration (default 6)	431	Alert
Inverter temp high limit exceeded	433	Alert
Rectifier temp high limit exceeded	435	Alert

START-UP

After a successful pre-start check, the chilled water pump relay is energized. Condenser pump relay is turned on 5 seconds after the evaporator pump relay.

Five seconds later, the control monitors the chilled water and condenser water flow devices to confirm water flow.

After water flow is verified, the water temperature is compared to Setpoint +Recycle Shutdown Offset. If the temperature is less than or equal to this value, the control turns off the condenser pump relay and goes into RECYCLE mode.

If the RECYCLE condition is not satisfied, the start-up sequence continues. Oil pump and, if applicable, main EXV initiate start sequence and a start signal will be given to the oil pump relay.

The oil pump and a oil pressure of 18 psid followed by 20s of prelube will have to be achieved for the compressor to start

The Ramp loading feature in General Configuration controls the rate at which the compressor loads up. Ramp loading can be controlled either by temperature, amp, or kilowatts and the desired ramp rate per minute for either can be configured. This can prevent the compressor to load up too fast while the chilled liquid loop is brought down to the set point.

Chiller Shutdown Sequence

Chiller shutdown begins if any of the following occurs:

- Local Stop Unit button is pressed.
- A RECYCLE condition is present. (See “RECYCLE CONTROL” on page 18.)
- The time schedule has gone into unoccupied mode as defined in the Schedule Menu for either Local or Dual Stpt Schedule (for AutoStart).
- The chiller protective limit has been reached and chiller is in alarm.
- The start/stop status (CHIL_S_S) is overridden to stop from the network when in AutoStart mode.
- If a loss of communication between the PIC6 and the VFD occurs the run permissive relay will energize to start a shutdown sequence.

NOTE: If any safety stop command is active the chiller will perform a hard shutdown and trip the Safety Stop alarm. Safety stop can be triggered from the local Home Screen E-stop icon (red Stop Button) or Network E-Stop point. The unit will not restart until the Safety Stop command and alarm are cleared.

When a stop signal occurs, the controls set Target VFD Speed to 0. This will cause the compressor to reduce speed to the point where line amps equal the configured Soft Stop Threshold (Configuration, Service Configuration = default 50%). At that point, or one minute after the stop signal occurs (whichever is earlier), the VFD is set to Stop. When the VFD is set to Stop, the compressor is turned off.

When the compressor shut down is verified, the oil pump is turned off and VFD STOP is complete. The pumps are deactivated at least 30 seconds after the compressor is Off (for recycle shut down the evaporator pump will remain on).

If the shutdown is due to low evaporator refrigerant temperature, the chilled liquid pump continues to run until the leaving chilled liquid temperature is high enough in an effort to prevent freeze-up.

When a non-recycle, non-alarm shutdown is called for, the soft stop feature unloads the compressor by reducing speed to the point where load amps equal the Soft Stop Threshold at which point the compressor is turned off. If the chiller enters an alarm state or if the compressor enters a RECYCLE mode, the compressor deenergizes immediately.

COMPRESSOR STOPPING

If a hard stop is requested, such as any E-stop command, the system will remove the compressor request immediately and turn off all running compressors. Otherwise, the system will ramp compressor down.

OIL PUMP AND EXV (AS APPLICABLE) STOPPING

Once compressor is stopped, circuit performs oil and EXV stopping. The following actions will be executed:

- Initialize Oil Pump stop sequence
- Initialize Oil Heater, Oil Vaporizer Heater, and Oil Reclaim Valve stop sequence
- Initialize EXV stop sequence

CONDENSER PUMP STOPPING

Once all the above have stopped, the circuit executes. Once condenser pump is stopped at least 30 seconds after the circuit, stopping is done.

EVAPORATOR PUMP STOPPING

The evaporator pump must then remain active anytime compressor operation is possible, or there is an active Evaporator freeze Alarm/Alert.

When chiller is shutting down, the Evaporator Pump is deactivated at least 30 seconds after the Compressor is off.

Control Points

SET POINT

The set point can be configured at the Setpoint menu, user access level). The set point is determined by Cooling LCW Setpoint, but can be configured for entering water temperature control by enabling the EWT Control Option in which it is controlled by the Cooling ECW Setpoint value. See Fig. 34. The 23XRV chiller is not suited for Ice Build.

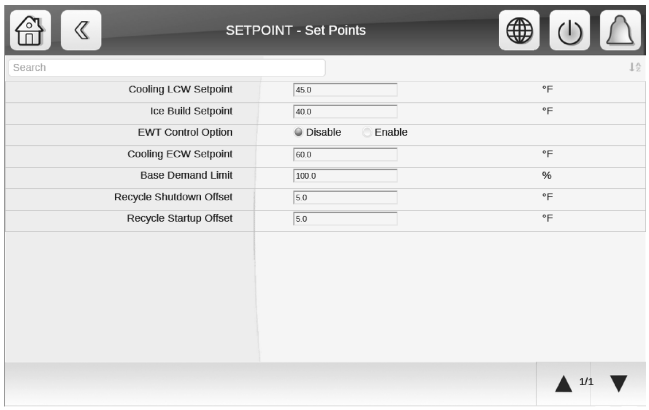


Fig. 34 — Setpoint Menu, User Access Level

RECYCLE CONTROL

The chiller may cycle off and wait until the load increases to restart when the compressor is running in a lightly loaded condition. This normal cycling is known as “recycle.”

In cooling mode, a recycle shutdown is initiated when the following conditions are true:

- Leaving chilled water temperature (or entering chilled water temperature, if the EWT CONTROL OPTION is enabled) is more than 5°F [2.8°C]) below the CONTROL POINT.
- Leaving chilled water temperature (or entering chilled water temperature) is below the CONTROL POINT, and the chilled water temperature difference is less than the Recycle Shutdown Offset (default 5°F (2.8°C).

NOTE: Recycle shutdown will not occur if the CONTROL POINT has been changed by more than 1°F (0.56°C) within the previous 5 minutes of operation.

When the chiller is in RECYCLE mode, the chilled water pump relay remains energized so the chilled water temperature

can be monitored for increasing load. The recycle control uses Recycle Startup Offset to check when the compressor should be restarted. In cooling mode, the compressor will restart when the leaving chilled water temperature (or entering chilled water temperature, if the EWT CONTROL OPTION is enabled) is greater than the CONTROL POINT plus the Recycle Startup Offset (default 5°F [2.8°C]) for 5 consecutive seconds.

CONTROL POINT TEMPERATURE

Capacity control is based on achieving and maintaining a control point temperature, which is the sum of a valid set point (from the SETPOINT screen) and a temperature reset value. The control point temperature is equal to the set point plus temperature reset.

The control point can be viewed directly on the main screen in the bottom left corner.

TEMPERATURE RESET

Three types of chilled water or brine reset are available and can be enabled and modified on the Reset Configuration screen (Fig. 35).

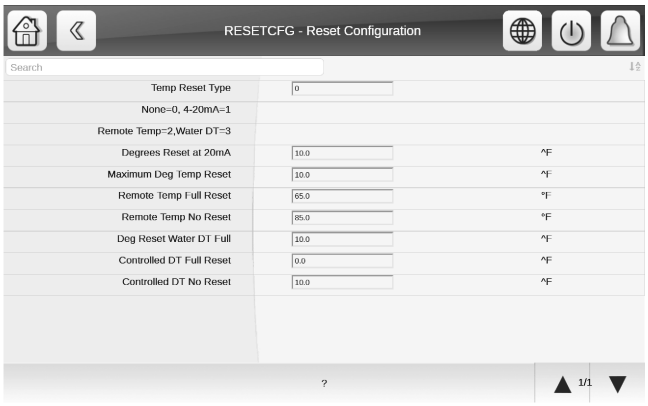


Fig. 35 — Reset Configuration Screen

The default screen indicates when the chilled water reset is active. The control point Reset on the General Parameters screen indicates the amount of reset.

To activate a reset type, access the Reset Configuration (RESETCFG) screen in the Configuration menu and input all configuration information for that reset type.

Reset Type 1: 4 to 20 mA Temperature Reset

Reset Type 1 is an automatic reset utilizing a 4 to 20 mA analog input signal provided from any external sensor, controller, or other device which is appropriately configured. For this type, Degrees Reset At 20 mA is configured in the RESETCFG table.

Reset Type 2: Remote Temperature Reset

Reset Type 2 is an automatic water temperature reset based on a remote temperature sensor input signal. This function can be accessed by setting the following configurations:

1. Configure the remote temperature at which no reset occurs (Remote Temp No Reset).
2. Configure the remote temperature at which full reset occurs (Remote Temp Full Reset).
3. Enter the amount of reset (Deg Reset Water DT Full).

Reset Type 3: Controlled Water Temp Delta Reset

Reset Type 3 is an automatic controlled water temperature reset based on chilled water temperature difference. This function can be accessed by setting the following configurations:

1. Configure the controlled water temperature delta T at which no reset occurs (Controlled DT No Reset).
2. Configure the controlled water temperature delta T at which full reset occurs (Controlled DT No Reset).
3. Enter the amount of reset (Deg Reset Water DT Full).

CAPACITY CONTROL

From the compressor relay closed point to the end of ramp loading, the VFD TARGET SPEED is the configured Motor Start Speed. When the chiller is running normally, the capacity control determines whether and how much to change VFD TARGET SPEED. When the chiller is in the shut-down process, VFD TARGET SPEED will be the minimum VFD speed.

RAMP LOADING

The ramp loading control slows the rate at which the compressor loads up. This control can prevent the compressor from loading up during the short period of time when the chiller is started and the chilled water loop has to be brought down to CONTROL POINT. Ramp loading helps reduce electrical demand charges by slowly bringing the chilled water to CONTROL POINT.

Two methods of ramp loading are available: temperature ramp loading and motor load ramp loading.

Temperature Ramp Loading

Temperature ramp loading limits the rate at which the controlled water temperature decreases. The temperature ramp loading configuration point is located in the General Configuration menu. It is enabled by setting the Ramp Loading Type to "0 = Temp".

Motor Load Ramp Loading

Motor load ramp loading limits the rate at which either the load current percentage or motor kilowatt percentage increases by incrementing the ramp demand limit at the configured rate. The Ramp Loading type can be set for either 1=Amps or 2=KW in the General Configuration Menu. The appropriate Ramp Rate per minute for either Amps or KW will also need to be configured in this menu.

HGBP CONTROL

This function is used to artificially load the chiller and keep it running under low load conditions. Since this also reduces the performance of the machine, HGBP Control is a user-selectable option (***Configuration Menu→Cir C Config Menu→Hot Gas A Config***). HGBP Control Option has to be enabled in Factory Settings to become visible. See Fig. 36.

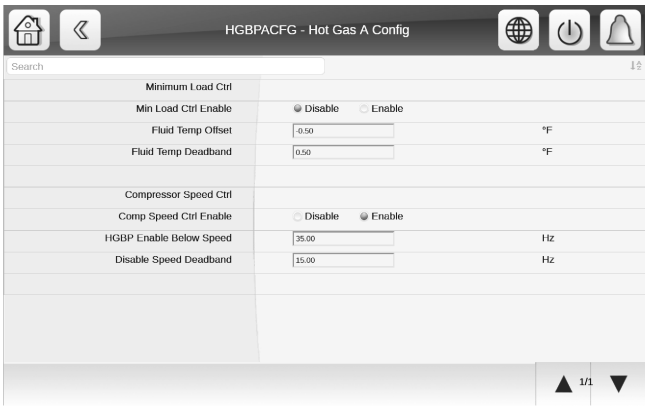


Fig. 36 — Hot Gas A Configuration Menu

The HGBP control valve is an on/off type solenoid control valve.

The 23XRV hot gas bypass operation has two different modes when installed and enabled:

- Envelope (HGBP) low load operation. In this condition, the valve will be opened to prevent a recycle shutdown from occurring. The valve will open when the evaporator fluid temp falls below the Control Point by Fluid Temp Offset. The valve will close once the fluid temp rises above the Control Point by the Fluid Temp Deadband.
- Low load operation controlled by compressor speed. This HGBP control mode is the typical 23XRV setting. It activates the HGBP valve when the compressor speed falls below the HGBP Enable Below Speed. This value is typically

set to around 30 Hz. The HGBP valve will deenergize once speed exceeds HGBP Enable Below Speed plus Disable Speed Deadband. A typical value for Disable Speed Deadband is 15 Hz.

NOTE: HGBP control based on compressor speed is the typical configuration mode.

DEMAND LIMIT

The PIC6 controls provide a feature for limiting AVERAGE LOAD CURRENT or MOTOR KILOWATTS by limiting capacity via VFD speed. The limit may be applied in two ways. The first is called ACTIVE DEMAND LIMIT, which is equal to a BASE DEMAND LIMIT value (set in the SETPOINT screen, default value 100%). ACTIVE DEMAND LIMIT may also be forced to be different from BASE DEMAND LIMIT by manually overriding (forcing) the value via a CCN network device. If the DEMAND LIMIT SOURCE exceeds the ACTIVE DEMAND LIMIT by 5% or less, capacity will be inhibited. If the DEMAND LIMIT SOURCE exceeds the ACTIVE DEMAND LIMIT by more than 5%, capacity will be decreased. See Fig. 37.

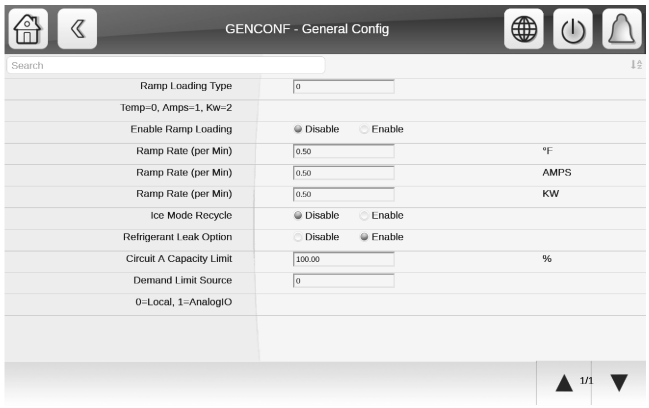


Fig. 37 — Demand Limit

In the General Configuration menu, the Demand Limit Source set to 0 = Local makes Demand Limit follow the setting in Ramp Loading Type; i.e., either load current or motor kW. A value between 20 and 100% can be entered for Circuit A Capacity Limit and the controls will load to the selected setting.

If Demand Limit Source is selected to be 1=AnalogIO the Demand Limit is controlled by a 4-20 mA input to 7TB-7,8 (AUTO_DEM). The Demand Limit at 20 mA is configured in the Service Configuration Menu. See Fig. 38-39.

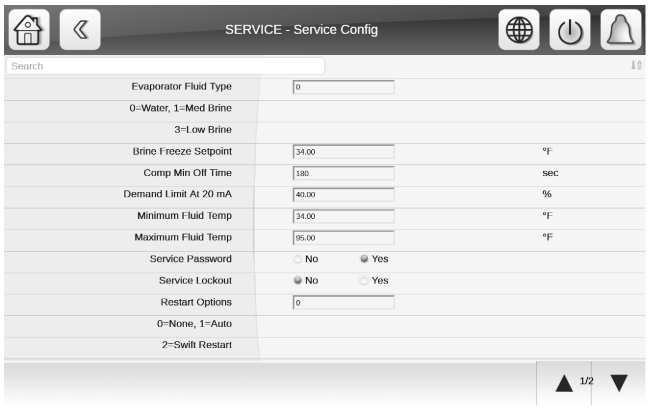


Fig. 38 — Service Configuration, Screen 1



Fig. 39 — Service Configuration, Screen 2

RUNNING TIMERS AND COUNTERS

The PIC6 control maintains several run-time clocks: Service Runtime, Machine Operating Hours, and Compressor Hours. Machine Operating Hours and Compressor Hours are typically the same and indicates to total machine/compressor run hours, but they could be different in the case of a compressor replacement. Service Runtime is a timer that can be used to indicate the hours since the last service visit or any other event. A separate counter tallies compressor starts as Compressor A Starts. All of these can be viewed on the RUNTIME screen. Manual changes to SERVICE ONTIME from the screen are permitted at any time. Runtime timers and counters can be set from ***Configuration Menu→Update Runtime***; see Fig. 40. Factory Level Password is required.

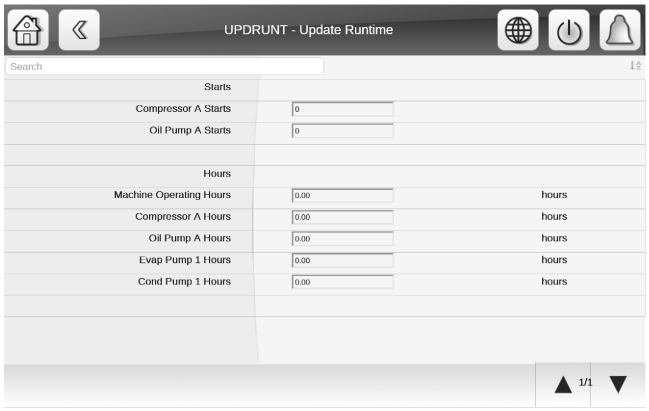


Fig. 40 — Update Runtime

The chiller also maintains a start-to-start timer and a stop-to-start timer. These timers limit how soon the chiller can be started. Time Until Start can be viewed in the ***Status Menu→Unit Status*** table. They must expire before the chiller starts. If the timers have not expired, the Unit Status is Timeout.

WATER PUMPS CONTROL (FREEZE PREVENTION)

Carrier must have direct or parallel control of the chiller water pumps. Pump control connection must be either hardwire of controlled via BMS commands that originates from chiller controller. Pump control is critical for freeze protection and warranty may be voided should freeze-up occur without proper control installation.

Evaporator Freeze Prevention

Evaporator freeze protection is in effect in all run statuses. Alarm shutdown shall be tripped. If chiller is in recycle mode then it shall transition to trip out.

If any of the CALC EVAP SAT TEMP, EVAP REFRIG LIQUID TEMP, LCW or ECW is less than or equal to the EVAP REFRIG TRIPPOINT plus 1°F (0.55°C), evap freeze flag shall be set to true and the Evaporator Freeze Protection shall be activated and remain on until all are greater than the EVAP REFRIG TRIPPOINT plus 5°F (2.8°C).

Alarm 515 for evaporator freeze protection will be initiated when the sensed water temperature is below the Fluid Freeze Point + 1°F (0.55°C). Default Fluid Freeze Point = 34°F (1.1°C). Alarm 531 for low refrigerant temp is activated when the calculated evaporator suction temperature or measured liquid temperature is less than the Fluid Freeze Point + 1°F (0.55°C). Cooler pump will remain on in the case of either alarm.

NOTE: If the chiller is in recycle mode, it will transition to TRIPOUT, and the CHILLED WATER PUMP will remain on.

The alarm will be clearable when the evaporator saturated refrigerant temperature, evaporator refrigerant temperature, leaving chilled water temperature, and entering chilled water temperature rise 5°F (2.8°C) above the Fluid Freeze Point.

Condenser Freeze Prevention

This control helps prevent condenser tube freezing by energizing the condenser pump relay. The PIC6 module controls the pump and, by starting it, helps to prevent the water in the condenser from freezing.

When the chiller is off and condenser saturated refrigerant temperature is less than or equal to the condenser freeze point (same as Brine Freeze Point for 23XRV since unit is not rated for ice duty), the condenser water pump will be energized (Alarm State 511, Protective Limit - Condenser Freeze). The fault state will clear and the pump will turn off when the condenser saturated refrigerant temperature is more than 5°F (2.7°C) above the condenser freeze point and the entering condenser water temperature is greater than the condenser freeze point. If the chiller is in recycle shutdown mode when the condition occurs, the controls will transition to a non-recycle shutdown.

CONTROL TEST- QUICK TEST

This feature allows the operator to quick-test the controls and related hardware, including all unit-controlled outputs.

The unit must be off to run the test function. If the unit is on, the test function cannot be accessed. The test function requires Service or Factory access. To access Quick Test the function must first be activated under the Start / Stop Menu. See Fig. 41.

Upon selection of QuickTest, the Chiller Status and Mode goes to Service Test; see Fig. 42.

Select QuickTest Menu on the Chiller Start/Stop Screen as a shortcut to access the Quick Test Menu (an alternate path is ***Main Menu→Quick***). See Fig. 43. All control test parameters are accessible through the Quick Test Menu. To perform the control test function, turn appropriable parameter On or set to desired value and then verify output. See Fig. 44.

Unless otherwise noted, all protective limits remain active during the controls test.



Fig. 41 — Quick Test

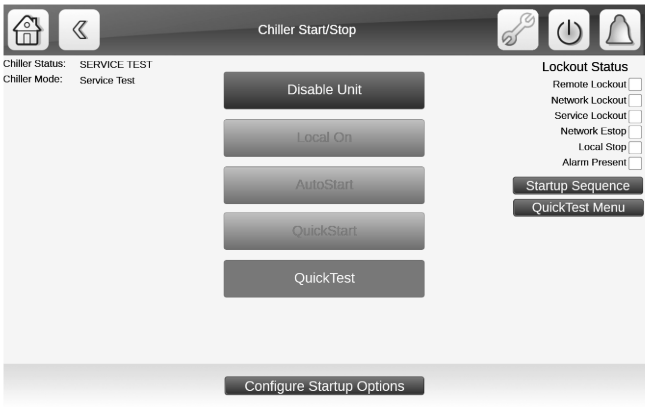


Fig. 42 — Quick Test — Service Test

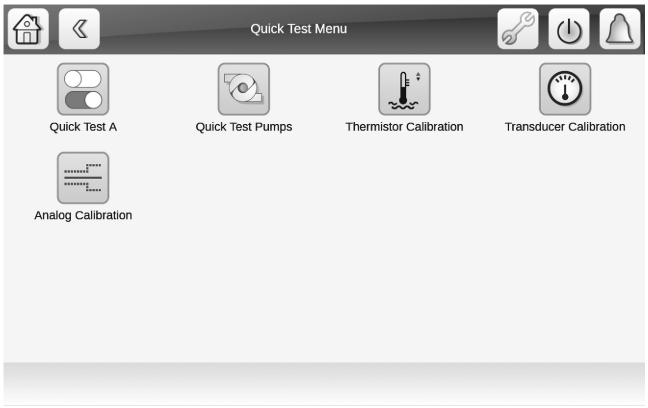


Fig. 43 — Quick Test Menu



Fig. 44 — Quick Test A

Discrete Outputs

The Quick Test Menu allows testing of the following discrete outputs: Hot Gas Bypass, Oil Pump, Oil Heater - Primary, Oil Heater - Secondary, Vaporizer Heater, Alert Relay, Alarm Relay, Running Relay, Evap Pump, Condenser Pump.

Analog Output

The Quick Test Menu allows testing of the following analog outputs: Main EXV, Economizer EXV, Oil Reclaim Valve position, Unit Status, and Head Pressure Output.

Once the controls testing is completed, disable the Quick Test from the Chiller Start / Stop menu.

AUTO RESTART AND SWIFT RESTART

Controls have two restart options. Auto Restart can be selected for automatic restart after power failure. When selected the unit will automatically turn back on when power is returned to normal. Swift Restart is designed for data center or other applications. It allows the chiller to be restarted quickly to meet building load requirements.

To enable this function, user must navigate to ***Configuration Menu→Service Configuration***. In the Service Configuration Menu set Restart Options to 1=Auto Restart and 2=Swift Restart. See Fig. 38 and 39.

For Swift Restart.the water flow verification time, refrigerant prelube time and other delays will be decreased compared to a normal start-up. It is recommended to set the unit for 1=Auto Restart unless there are special circumstances that require faster than normal startup after power failure.

WATER PUMP CONTROL

Note that the chiller must always maintain pump control or warranty may be voided. Carrier pump control is required to help safeguard the chiller from evaporator and condenser freeze conditions. In addition condenser pump control is required for condenser pressure override.

HEAD PRESSURE CONTROL

If the chiller system is equipped with a head pressure control valve, and the HEAD PRESSURE VALVE option in the Head Pressure Config table is configured, the PIC6 control system will control the opening of the head pressure valve to maintain the pressure difference between condenser and evaporator. The output of this valve is 4 to 20 mA type and is based on the configurable Delta P (Condenser Pressure-Evaporator Pressure) reference curve. Delta P at 100%, Delta P at 0%, and Head Pressure Minimum Output are configurable parameters for this algorithm. The output is designed for use with non-grounded controllers with a maximum impedance of 500 ohms. Head pressure reference output will be active whenever the condenser pump is operating. If a condenser freeze condition is detected the head pressure valve will automatically go to 100% (20 mA).

Before using this function, the pressure difference values for 20 mA and 4 mA should be set. See Fig. 45 and 46.

The head pressure valve should be in fully closed position when chiller is in OFF mode.

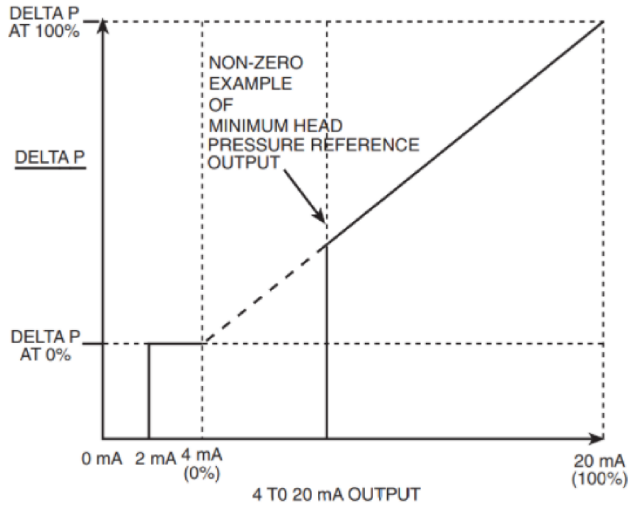


Fig. 45 — Minimum Head Pressure Reference Output

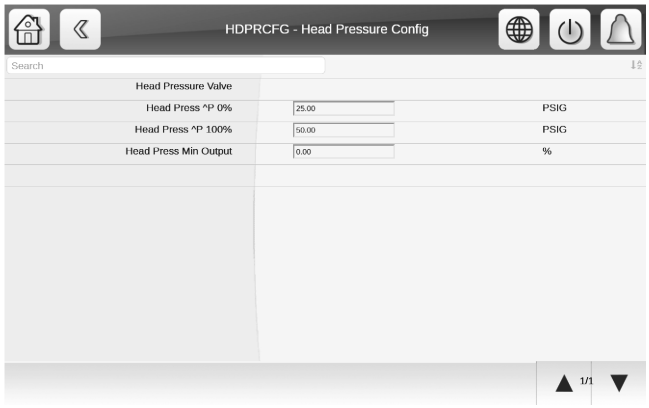


Fig. 46 — Head Pressure Configuration Menu

TIME SCHEDULE

The PIC6 control has the following schedules:

- Local schedule
- Holiday Schedule

Each schedule has 8 time segments. If two time segments overlap, the unoccupied time segment takes priority.

There are 16 holiday time segments. Each holiday time segment is determined by three parameters—month, start date, and holiday days. The controller will be in unoccupied mode when a holiday time segment is active. For Network and Remote Contact Starts there are no Time Schedule tables. These are enabled at the Configure Startup Options menu found at the Chiller Start/Stop Menu.

BLACK BOX

The black box task continuously stores parameters in memory every 5 seconds. Reporting of a chiller operation alarm triggers the controller to generate a collection of data records. Each collection contains up to 180 records that consist of 168 records (corresponding to 14 min.) before the alarm and 12 records (corresponding to 1 min.) after the alarm. Each record is associated with a time stamp. Files are saved as csv files; up to 20 files can be stored. Any Alarm (not Alert) will trigger a Black Box recording and data will be overwritten once 20 files are reached.

The black box file can be uploaded with the Carrier Service Tool or the USB Log Export feature (***Main Menu→System Config Menu→USB Log Export***). For Black Box data select Export Technical Data = Yes and install USB stick in the PIC6 controller and then select Export Data.. Once the upload is done, the original files are automatically deleted. See Fig. 47.



Fig. 47 — USB Log Export Menu

Black box data can be triggered manually which is useful for troubleshooting. Login level is Service or higher and the black box data can be generated from the "Trigger BlackBox" icon near the bottom right corner of the 23XRV Diagnostics Menu (Fig. 48).

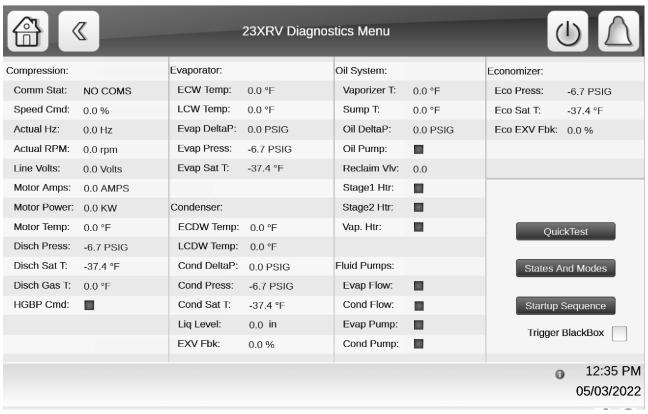


Fig. 48 — 23XRV Diagnostics Menu

PRESSURE TRANSDUCER CALIBRATION

The HMI pressure readings are displayed in the ***Main Menu → Inputs Menu→Pressure*** screen. See Fig. 49.

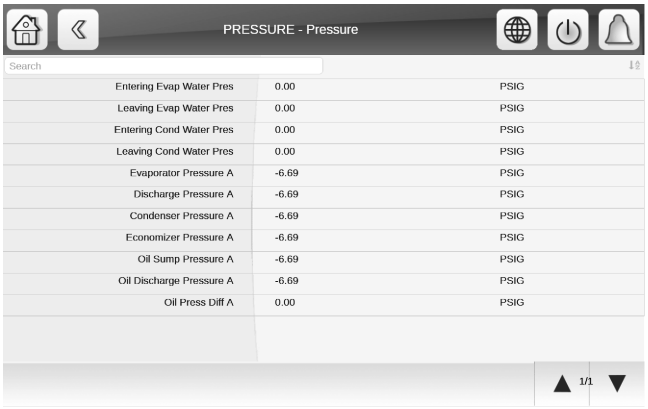


Fig. 49 — Pressure Screen

Once a year the pressure transducers should be checked against a pressure gauge. Attach a set of accurate refrigeration gauges to the transducer being checked and compare the two readings. If there is a difference the transducer can be calibrated as described below. Calibration requires Service level or higher access to the HMI.

NOTE: It is usually not necessary to calibrate at initial start-up unless chiller is at high altitude.

1. Go to ***Main Menu → Quick Test Menu → Transducer Calibration***. See Fig. 50.

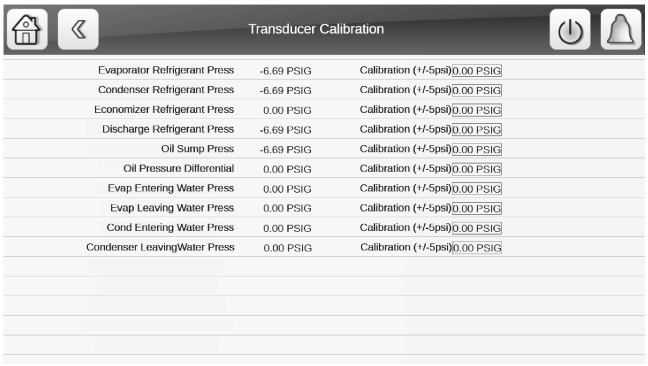


Fig. 50 — Transducer Calibration Menu

2. Each transducer is supplied with 5 vdc from the 1IOB and SIOB. Calibration is done by adjusting the appropriate Pressure Sensor on the Transducer Calibration screen. If required calibration is more than 5 psig (34.5 KPa) the transducer needs to be replaced.

TEMPERATURE SENSOR CALIBRATION

The thermistors can be calibrated to have their temperature readings offset by a specified amount (up to ±5°F (2.8°C)). Follow these steps for each sensor:

1. Go to ***Main Menu → Quick Test Menu → Thermistor Calibration***. See Fig. 51-53.
   Temperature readings are conveniently available at ***Main Menu→Inputs Menu→Temperature.***

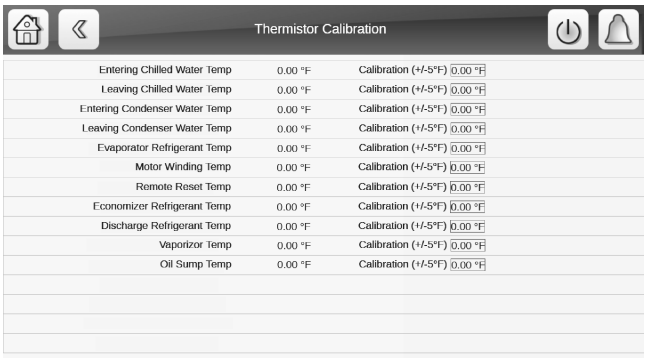


Fig. 51 — Thermistor Calibration Menu

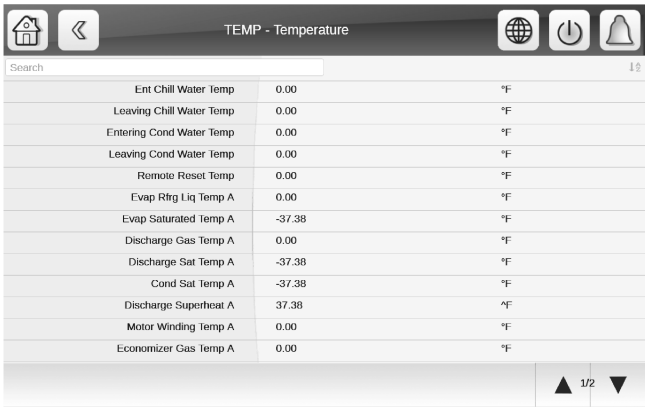


Fig. 52 — Temperature Input Menu, Page 1

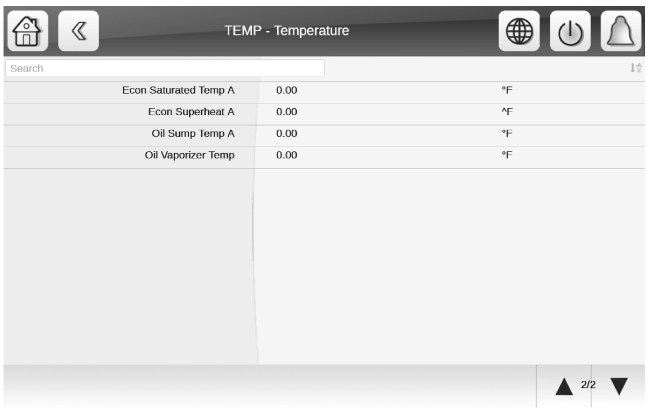


Fig. 53 — Temperature Input Menu, Page 2

2. Place the temperature sensor in a 32°F (0°C) water solution or other known temperature in range where the sensor is used.
3. Read the sensor raw temperature on the Temperature screen.
4. Calculate the offset to be applied as follows:
   Actual temperature (F) 32 – sensor raw temp (°F)

   Example:

   ECW sensor raw temperature reads 32.6°F.

   ECW temperature offset must be set to –0.6°F
   (32 – 32.6 = –0.6)
5. In the Thermistor Calibration screen, enter the temperature offset for the appropriate sensor as calculated in Step 4. See Fig. 51.
6. Verify that the measured temperature value is the same as the controlled temperature.

ALARM EMAIL

The alarm email function sends automatic email messages to specified service personnel for remote maintenance purposes. This function can be set up from the second page of ***Main Menu → System Config→ Menu→ Alarm Email Config***. Subsequently if there is an alarm the function will send an e-mail message. Another message is sent when all alarms return to normal. See Fig. 54.

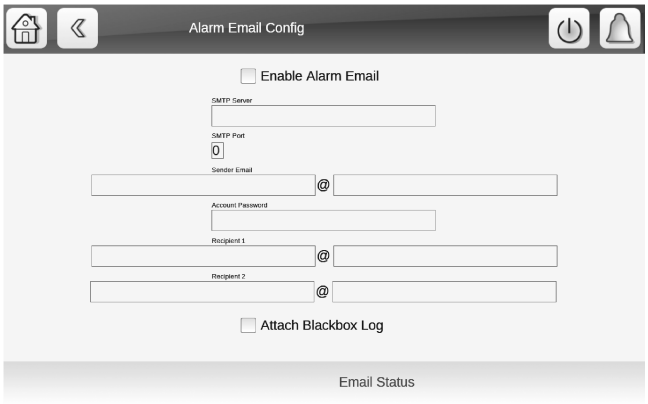


Fig. 54 — Alarm Email Configuration Screen

The alarm task runs periodically. At each alarm task run time, the status change of each alarm is checked and one email message is sent to each specified recipient when one or more alarms are switched on.

The e-mail message provides the unit device name and location stored in the Controller ID table, available from the System Configuration Menu. See Fig. 55.

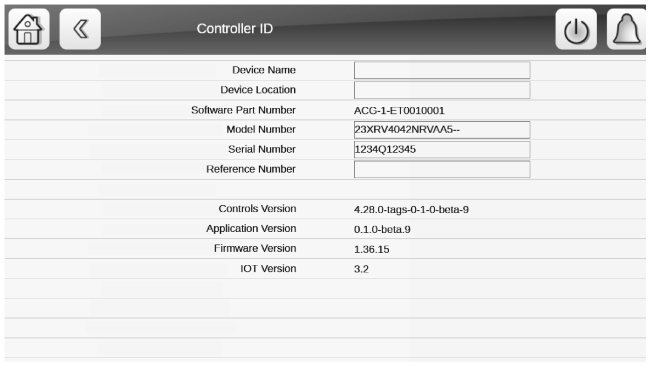


Fig. 55 — Controller ID Screen

Displaying Data Trends

The PIC6 control system offers the ability to configure and display color-coded system trends. Select ***Main Menu → Trending***.

On the Trending screen (see Fig. 56), check the data points which are to be tracked, and set the beginning and end points for the selected data. To change a data color, select the colored square and choose a new color from the pop-up color bar. To view data trends, select the down arrow at the bottom right of the Trending screen. The next page displays the selected data in the chosen colors. See Fig. 57.

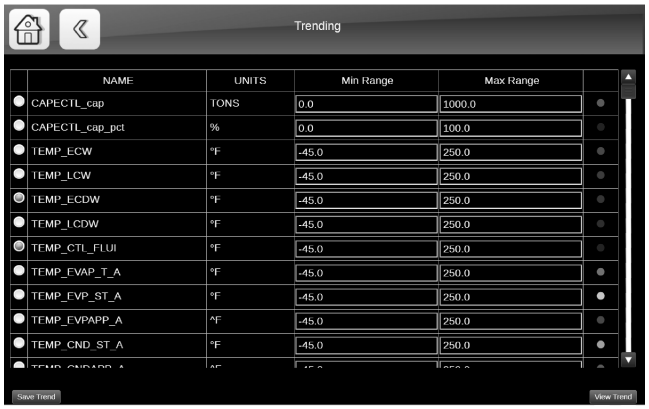


Fig. 56 — Trending Screen Set-Up Page



Fig. 57 — Trending Screen Display Page

Hydraulic Option

The 23XR unit can be equipped with two normally open flow switches; one for the evaporator and the other for the condenser. The evaporator/condenser water flow will indicate the flow status (see wiring schematic). In Option 2, Water Flow Determination must be set to "1=Flow Switch" for this option to be active. Connections are 7TB-44/45 for evaporator and 7TB-46/47 for condenser.

WATER PRESSURE OPTION

When entering and leaving water pressure transducers (Delta P) are installed, the PIC6 control system can compute or read the water pressure difference between entering and leaving water pressure, and thereby determine if the water is flowing. After the water pump is switched on, if the water pressure difference reaches the threshold, the water flow check is passed and the chiller can start. Otherwise there will be an alarm shutdown.

HYDRONICS CONFIGURATION

Flow detection method can be modified in ***Main Menu→ Configuration→Hydronics Configuration***. Default selection is based on water temps.

Evap Flow Detection

0 = Calculated (default)

1=Discrete (Field supplied flow switch)

2=Delta P (Field supplied pressure transducers in inlet and outlet nozzles)

Cond Flow Detection

0 = Calculated (default)

1= Discrete (Field supplied flow switch)

2=Delta P (Field supplied pressure transducers in inlet and outlet nozzles)

For flow selection 2 the minimum flow delta P must be configured for minimum acceptable flow. See Fig. 58.

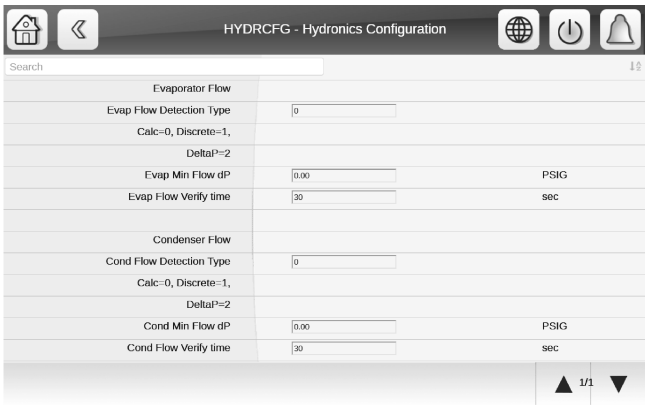


Fig. 58 — Hydronics Configuration Menu

DIAGNOSTICS AND TROUBLESHOOTING

The 23XRV PIC6 control system has many fault tracing aid functions. The local interface and its various menus give access to all unit operating conditions.

If an operating fault is detected, an alert or alarm is activated. The alarm code is displayed in the Alarms menu, sub-menus Reset alarms and Current alarms. The control displays alarms and alerts at the bottom of the Home Screen. See Fig. 59. For diagnostics, always check Current Alarms and History Alarm menus since multiple alarms may be active at the same time.



Fig. 59 — Example of Alarm on Home Screen

Alarm/Alert Codes

Table 10 lists PIC6 alert codes. Table 11 lists PIC6 alarm codes. Alerts do not cause machine shutdown and are typically automatically reset when the situation returns to normal, while alarms typically result in machine shutdown. See the Alarms menu in Fig. 60.



Fig. 60 — Alarm Menu

Displaying Alarms

The alarm icon on the interface (see the section Icons on page 12) indicates unit status as follows:

- A flashing red icon shows that the unit is operating but there is an alert.
- A steady red icon shows that the unit has been shut down due to a fault.

The Current Alarms menu displays up to eight alarm codes that are active on the unit. Table 11 lists alarm codes.

Resetting Alarms

When the cause of the alarm has been identified and corrected, the alarm can be reset either automatically or manually (depending on the type of alarm). To reset the alarms, enter the Reset Alarm menu, select the Alarm Reset icon, select Yes in the pop-up window, and execute.

In the event of a power supply interrupt, if Auto Restart Option is set to ENABLE in the Option Configuration menu, the unit restarts automatically without the need for an external command.

A manual reset must be run from the main menu via the Reset Alarms Feature.

All information regarding solved alarms is stored in the Alarm History. Alarm History stores last 50 alarms even after alarms have been corrected or reset.

Table 10 — PIC6 Alert Codes

CODE	HITS TO ACTIVATE	HITS TO RESET	RESET TYPE	RESPONSE	MESSAGE	TRIP CONDITION	TROUBLESHOOTING
ALT003	10	10	AUTOMATIC	Notify	ALT-003 Sensor Alert - Entering Cond Water Temp	Entering condenser water temperature (TEMP_ECDW) is outside range.	Verify continuity to SIOB. Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature.
ALT004	10	10	AUTOMATIC	Notify	ALT-004 Sensor Alert - Entering Cond Water Press	Tested when the compressor is on all of the run status: If condenser flow detection type (HYDRCFG_condfdtp) is set to DeltaP (2) AND If entering condenser water transducers voltage is outside the range of 0.3V to 4.75V	Check 5V supply from IOB. Check transducer output and ground. Replace transducer if voltage checks out good.
ALT005	10	10	AUTOMATIC	Notify	ALT-005 Sensor Alert - Entering Chilled Water Press	Tested when the compressor is on all of the run status: If evaporator flow detection type (HYDRCFG_evapfdtp) is set to DeltaP (2) AND If entering condenser water transducers voltage is outside the range of 0.3V to 4.75V	Check 5V supply from IOB. Check transducer output and ground. Replace transducer if voltage checks out good.
ALT007	10	10	AUTOMATIC	Notify	ALT-007 Sensor Alert - Leaving Cond Water Temp	Leaving condenser water temperature (TEMP_LCDW) is outside range.	Verify continuity to SIOB. Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature.
ALT008	10	10	AUTOMATIC	Notify	ALT-008 Sensor Alert - Leaving Cond Water Press	Tested when the compressor is on all of the run status: If condenser flow detection type (HYDRCFG_condfdtp) is set to DeltaP (2) AND If entering condenser water transducers voltage is outside the range of 0.3V to 4.75V.	Check 5V supply from IOB. Check transducer output and ground. Replace transducer if voltage checks out good.
ALT009	10	10	AUTOMATIC	Notify	ALT-009 Sensor Alert - Leaving Chilled Water Press	Tested when the compressor is on all of the run status, If evaporator flow detection type (HYDRCFG_evapfdtp) is set to DeltaP (2) AND If the entering chilled water transducers voltage is outside range.	Check 5V supply from IOB. Check transducer output and ground. Replace transducer if voltage checks out good.

Table 10 — PIC6 Alert Codes (cont)

CODE	HITS TO ACTIVATE	HITS TO RESET	RESET TYPE	RESPONSE	MESSAGE	TRIP CONDITION	TROUBLESHOOTING
ALT011	10	10	AUTOMATIC	Notify	ALT-011 Sensor Alert - Remote Temperature Out of Range	Remote reset temperature (TEMP_R_RESET) is outside range.	Verify continuity to SIOB. Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature. Verify 1IOB dipswitch setting.
ALT013	0	0	AUTOMATIC	Notify	ALT-013 Sensor Alert - VFD Speed Out Of Range	VLT Drive Actual Frequency > (VFD Speed Command + VFD Speed Alert Deadband) for 75 sec	Check VFD actual speed.
ALT101	0	0	MANUAL	Notify	ALT-101 Coms Alert - LEN Scan Warning	LEN scan warning (the traffic is a little bad) but still works	
ALT201	0	0	AUTOMATIC	Notify	ALT-201 Configuration Error - Controlled Water Delta T Reset		
ALT202	0	0	AUTOMATIC	Notify	ALT-202 Configuration Error - Head Pressure		
ALT203	0	0	AUTOMATIC	Notify	ALT-203 Configuration Error - Temp Reset		
ALT401	0	0	AUTOMATIC	Prevent Unit Startup	ALT-401 Prestart Alert - Low Condenser Flow	No flow detected during Flow Verification Time	Verify that with no flow there is 24 VAC across 7TB-15,16. Verify that with flow there is 0 VAC across 7TB-15,16. Verify continuity from 7TB to 1IOB.
ALT402	0	0	AUTOMATIC	Prevent Unit Startup	ALT-402 Prestart Alert - Low Evaporator Flow	No flow detected during Flow Verification Time	Verify that with no flow there is 24 VAC across 7TB-13,14. Verify that with flow there is 0 VAC across 7TB-13,14. Verify continuity from 7TB to 1IOB.
ALT403	0	0	AUTOMATIC	Prevent Unit Startup	ALT-403 Prestart Alert - Excessive Recycle Starts	Number of recycle restarts in the last 4 hours is greater than 5	Verify that there is sufficient load to run the unit. Repeated recycle result in oil dilution.
ALT404	0	0	AUTOMATIC	Prevent Unit Startup	ALT-404 Prestart Alert - Invalid Control Program	Compressor envelope control logic is set to 0	Install new software package.
ALT405	0	0	AUTOMATIC	Prevent Circuit Startup	ALT-405 Prestart Alert - Eco EXV Prestart Check Cir A	One or more of the following are TRUE: Cir A Eco EXV is not in manual testing mode; Cir A Eco EXV is not overridden by invalid force readiness conditions; Cir A Eco EXV failed precheck movement and not responsive; Cir A Eco EXV is not at zero position; Cir A Eco EXV is not overridden by invalid external readiness conditions	Power cycle EXV. Verify EXV wiring per wiring schematic. Replace EXV.
ALT407	0	0	AUTOMATIC	Prevent Circuit Startup	ALT-407 Prestart Alert - EXV Prestart Check Cir A	One or more of the following are TRUE: Cir A Main EXV is not in manual testing mode; Cir A Main EXV is not overridden by invalid force readiness conditions; Cir A Main EXV failed precheck movement and not responsive; Cir A Main EXV is not at zero position; Cir A Main EXV is not overridden by invalid external readiness conditions	Power cycle EXV. Verify EXV wiring per wiring schematic. Replace EXV.
ALT409	0	0	AUTOMATIC	Prevent Circuit Startup	ALT-409 Prestart Alert - High Condenser Pressure Cir A	Check condenser saturated temperature is above its high limit (TEMP_CND_ST_A)	Check the condenser pressure. Check for high condenser water temperature, low water flow, tube fouling. Check c sensor resistance and voltage drop. Check for wiring in accordance with schematic.
ALT411	5	4	AUTOMATIC	Prevent Circuit Startup	ALT-411 Prestart Alert - High Discharge Temp Cir A	Discharge temperature is above its high limit (TEMP_DGT_A)	Check the condenser pressure. Check for high condenser water temperature, low water flow, tube fouling. Check sensor resistance and voltage drop. Check wiring in accordance with schematic.
ALT413	0	0	AUTOMATIC	Prevent Circuit Startup	ALT-413 Prestart Alert - High Line Voltage Cir A	VFD or STARTER line voltage is above its high limit (DRVA1STS_hi_volt)	Check actual line voltage and match against VFD nameplate and jobsite requirements. Consult power utility if voltage is high.
ALT415	0	0	AUTOMATIC	Prevent Circuit Startup	ALT-415 Prestart Alert - High Motor Temperature Cir A	Tested only on prestart condition if all of the motor temperature sensors are in the range AND if one of the COMP MOTOR WINDING TEMP is greater than 190°F (88°C)	Check thermistor temperature. Check sensor wiring per unit schematic. Check motor cooling line and isolation valves for possible restrictions including refrigerant filter drier.

Table 10 — PIC6 Alert Codes (cont)

CODE	HITS TO ACTIVATE	HITS TO RESET	RESET TYPE	RESPONSE	MESSAGE	TRIP CONDITION	TROUBLESHOOTING
ALT417	0	0	AUTOMATIC	Prevent Circuit Startup	ALT-417 Prestart Alert - Invalid Compressor Envelope - Cir A	Compressor envelope selection is invalid	Reload software
ALT419	0	0	AUTOMATIC	Prevent Circuit Startup	ALT-419 Prestart Alert - Low Line Voltage Cir A	VFD or STARTER line voltage is below its high limit (DRVA1STS_low_volt)	Check actual line voltage and match against VFD nameplate and jobsite requirements.
ALT421	0	0	AUTOMATIC	Prevent Circuit Startup	ALT-421 Prestart Alert - Low Oil Temperature Cir A	Oil sump temp is below 140°F (77.8°C) AND Oil sump temp < Evap Sat Temp + 15°F (8.3°C)	Check oil temperature. Check that oil heater contactor/relay is energized and that there is voltage present on secondary of contactor. Check if temperature is still rising to determine if additional time will solve the issue. Check wiring. Check resistance across the sensor.
ALT423	0	0	AUTOMATIC	Prevent Circuit Startup	ALT-423 Prestart Alert - Low Refrigerant Sensor Temp Cir A	Check evaporator liquid temp > freeze temp limit (SERVICE1_freezesp)	Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature. Check Verify freeze temp limit setting in Configuration Service menu. Verify that isolation valves are open.
ALT425	0	0	AUTOMATIC	Prevent Circuit Startup	ALT-425 Prestart Alert - Low Saturated Refrigerant Temp Cir A	Check evaporator saturated temp > freeze temp limit (SERVICE1_freezesp)	Check 5V supply from IOB to evaporator pressure transducer. Check pressure transducer reference and ground. Replace transducer if voltage checks out good. Check freeze set point in Service Configuration.
ALT429	0	0	AUTOMATIC	Prevent Circuit Startup	ALT-429 Prestart Alert - Oil Transducers Calibration Cir A	Oil Delta P is greater than 6 psi before startup	Verify oil sump pressure and oil discharge pressure sensors individually. Verify wiring and that each have 5V supply and check pressure transducers output and ground.
ALT431	0	0	AUTOMATIC	Prevent Circuit Startup	ALT-431 Prestart Alert - Starts Limit Exceeded Comp A	Tested only on prestart run status, if number of compressor starts is greater than Starts Per Period Lim (SERVICE1_stpperlim_A) within Comp Start Period (SERVICE1_cmpstper_A) time.; NOTE: This alarm can be bypassed when Starts Limit Bypass (SERVICE1_stlim_by) is set (1).	Verify that there is sufficient load to run the unit. Default is 4 starts per hour.
ALT433	5	4	AUTOMATIC	Prevent Circuit Startup	ALT-433 Prestart Alert - VFD Fault - Inverter Overtemp Cir A	Inverter temperature is below its high limit (DRVA1STS_inv_ot)	Check drive inverter temperature. Check Drive Configuration. Check VFD cooling fan operation. If applicable check refrigerant cooling line for flow.
ALT435	5	4	AUTOMATIC	Prevent Circuit Startup	ALT-435 Prestart Alert - VFD Fault - Rectifier Overtemp Cir A	Rectifier temperature is below its high limit (DRVA1STS_rect_ot)	Check drive rectifier temperature. Check Drive Configuration. Check VFD cooling fan operation. If applicable check refrigerant cooling line for flow. Check drive PWM setting.
ALT501	0	0	AUTOMATIC	Notify	ALT-501 Process Alert - High Oil Pressure Differential Cir A	Oil Pump is ON (OUTPUTS_OILR_A) AND OIL PRESSURE DELTA (PRESSURE_OIL_PD_A) > 45 PSI; Conditions persist (with PRESSURE_OIL_PD_A > 40 PSI) for 55 sec.	Check oil pump. Check oil filter.
ALT505	10	0	AUTOMATIC	Notify	ALT-505 Process Alert - High Condenser Press Chiller Off Cir A	Saturated condenser temp (TEMP_CND_ST_A) >= SATURATED CONDENSER TEMP LIMIT (130°F/54°C) AND ENTERING CONDENSER WATER TEMP (TEMP_ECDW) < 115°F/46°C AND chiller is OFF (GENUNIT_STATUS = 0)	Check for high condenser water temperatures. Check for low water flow, tube fouling, division plate/gasket bypass or plugged condenser water strainers. Check condenser pressure sensor measurement.

Table 10 — PIC6 Alert Codes (cont)

CODE	HITS TO ACTIVATE	HITS TO RESET	RESET TYPE	RESPONSE	MESSAGE	TRIP CONDITION	TROUBLESHOOTING
ALT511	0	4	AUTOMATIC	Notify	ALT-511 Process Alert - Condenser Freeze Cir A	System maintains CRT(TEMP_CND_ST_A) at or above the Condenser Freeze Point subject to ALL of the following: • Unit is not in pumpdown (GENUNIT_STATUS != 11) • Unit is not in pumpdown lockout (GENUNIT_STATUS != 12) with Condenser Freeze Protection disabled (HYDRCFG_cnd_fz_d) • CRT < Condenser Freeze Point (34°F); If evaporator fluid type is set to med or low brine (SERVICE1_flui_typ > 0) this generates an alert	Check condenser pressure transducer for accuracy. Check condenser pressure transducer wiring. Check refrigerant charge. Check configuration value in Service configuration.
ALT517	0	0	AUTOMATIC	Notify	ALT-517 Process Alert - Low Discharge Superheat Cir A	Compressor is ON AND running at least 10 min AND Discharge Superheat (TEMP_DSH) ≤ Discharge Superheat low limit (EXV_STP_dShLStpt) (default 2°F)	Review configurations in in "Comp A Config". Check oil level. Check for excess refrigerant charge.
ALT519	10	10	AUTOMATIC	Notify	ALT-519 Process Alert - Low Oil Pressure Difference Cir A	Oil pressure difference is between 15 and 18 psid AND STARTUP COMPLETE (4 < GENUNIT_STATUS < 9)	Check oil pump operation, check oil level, check oil filters, check for frequent start/stop of unit which will prevent proper oil recovery.
ALT521	0	0	MANUAL	Notify	ALT-521 Process Alert - Low Refrigerant Charge Cir A	Compressor is running but not in ramp loading status AND Condenser approach (TEMP_CNDAPP_A) > low refrigerant charge condenser approach threshold (LIMITCFG_rch_cath) AND Evaporator approach (TEMP_EVPAPP_A) is 2°F greater than design approach (LIMITCFG_ap_dgap)	Check evaporator pressure, evaporator saturation refrigerant temp, and evaporator refrigerant liquid temp. Verify pressure transducer and thermistor wiring. Check for low chilled water supply temperature. Add charge and check.
ALT523	0	0	MANUAL	Notify	ALT-523 Process Alert - Oil Filter Replacement Cir A	Oil pump control test is active (only during start verify time) AND If the oil pressure differential (PRESSURE_PD) < alert threshold (startDiffPressMin) default startDiffPressMin = 18psig <15-20 psig>, 2psig hysteresis	
ALT525	0	0	MANUAL	Notify	ALT-525 Process Alert - Transducer Calibration Cir A	Compressor is OFF for at least 5 min AND Differences in the evaporator (PRESSURE_CRP), condenser (PRESSURE_CRP), and economizer (PRESSURE_ECON_P) refrigerant pressure transducer readings are greater than the Trans Calibration Required Limit (default 2 psig)	Recalibrate transducers. Replace transducer if calibration cannot be resolved.
ALT527	0	0	AUTOMATIC	Notify	ALT-527 Process Alert - High Discharge Gas Temp Cir A	Compressor is running AND Discharge Gas Temp (TEMP_DGT_A) > Discharge Gas Temp Alert (LIMITCFG_dgt_alrt)	Check discharge gas temp thermistor and wiring. Check for excessive starts. Check compressor discharge alert setting in Limit configuration.
ALT800	2	10	Automatic	Notify	ALT-800 - VFD Alert - VFD A1 Loss of Feedback		

Table 11 — PIC6 Alarm Codes

CODE	HITS TO ACTIVATE	HITS TO RESET	RESET TYPE	RESPONSE	MESSAGE	TRIP CONDITION	TROUBLESHOOTING
ALM002	5	5	AUTOMATIC	Prevent Unit Startup or Hard Stop	ALM-002 Sensor Fault - Entering Chilled Water	Entering chilled water temperature (TEMP_ECW) is outside range.	Verify continuity to appropriate board. Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature.
ALM004	5	5	AUTOMATIC	Prevent Unit Startup or Hard Stop	ALM-004 Sensor Fault - Leaving Chilled Water	Leaving chilled water temperature (TEMP_LCW) is outside range.	Verify continuity to appropriate board. Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature.
ALM005	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-005 Sensor Fault - Comp Discharge Temp A	Compressor discharge temperature (TEMP_DGT_A) is outside range.	Verify continuity to appropriate board. Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature.
ALM007	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-007 Sensor Fault - Compressor Motor Temp A	Compressor motor temperature (TEMP_MTRW_A) is outside range.	Verify continuity to appropriate board. Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature.
ALM009	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-009 Sensor Fault - Condenser Pressure A	Condenser pressure (PRESSURE_CND_P_A) is outside range.	Check 5V supply from board. Check transducer output and ground. Replace transducer if voltage checks out good.
ALM011	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-011 Sensor Fault - Discharge Pressure A	Discharge pressure (PRESSURE_DIS_P_A) is outside range.	Check 5V supply from board. Check transducer output and ground. Replace transducer if voltage checks out good.
ALM013	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-013 Sensor Fault - Economizer Pressure A	Economizer pressure (PRESSURE_ECO_P_A) is outside range.	Check 5V supply from board. Check transducer output and ground. Replace transducer if voltage checks out good.
ALM015	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-015 Sensor Fault - Economizer Temp A	Economizer temperature (TEMP_ECO_T_A) is outside range.	Verify continuity to circuit board. Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature.
ALM017	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-017 Sensor Fault - Evaporator Pressure A	Evaporator pressure (PRESSURE_EVAP_P_A) is outside range.	Check 5V supply from board. Check transducer output and ground. Replace transducer if voltage checks out good.
ALM019	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-019 Sensor Fault - Evap Refrig Liquid Temp A	Evaporator refrigerant temperature (TEMP_EVAP_T_A) is outside range.	Verify continuity to circuit board. Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature.
ALM023	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-023 Sensor Fault - Liquid Line Press A	Liquid line pressure (PRESSURE_LIQ_P_A) is outside range.	Check 5V supply from board. Check transducer output and ground. Replace transducer if voltage checks out good.
ALM025	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-025 Sensor Fault - Liquid Line Temp A	Liquid line temperature (TEMP_LIQ_T_A) is outside range.	Verify continuity to circuit board. Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature.
ALM029	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-029 Sensor Fault - Oil Supply Pressure A	Oil Supply Pressure (PRESSURE_OIL_DP_A) is outside range.	Check 5V supply from board. Check transducer output and ground. Replace transducer if voltage checks out good.
ALM033	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-033 Sensor Fault - Oil Sump Pressure A	Oil Sump Pressure (PRESSURE_OILPSMPA) is outside range.	Check 5V supply from board. Check transducer output and ground. Replace transducer if voltage checks out good.
ALM035	5	5	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-035 Sensor Fault - Oil Sump Temp A	Oil Sump temperature (TEMP_OILTSMPA) is outside range.	Verify continuity to circuit board. Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature.
ALM041	5	5	AUTOMATIC	Prevent Unit Startup or Hard Stop	ALM-041 Sensor Fault - Vaporizer Temp Cir A	Vaporizer temperature (TEMP_VAP_TEMP) is outside range.	Verify continuity to circuit board. Verify voltage and ohm reading across sensor. Replace sensor if ohm reading is incorrect based on temperature.
ALM042	5	5	AUTOMATIC	Prevent Unit Startup or Hard Stop	ALM-042 Sensor Fault - Condenser Liquid Level Input A	Units with TP compressors only. Condenser liquid level sensor voltage is outside the normal range.	Verify level sensor resistance. Resistance between red and black wires across the sensor should be approximately 1800 ohms when unconnected.
ALM101	0	0	MANUAL	Prevent Unit Startup or Hard Stop	ALM-101 LEN Scan Error	An error was detected in the LEN serial driver	Cycle power.

Table 11 — PIC6 Alarm Codes (cont)

CODE	HITS TO ACTIVATE	HITS TO RESET	RESET TYPE	RESPONSE	MESSAGE	TRIP CONDITION	TROUBLESHOOTING
ALM102	5	2	AUTOMATIC	Prevent Circuit Startup or Hard Stop	ALM-102 VFD Fault - Lost Communication With VFDA1	Communication between main controller with VFDA1 lost for 10 consecutive seconds	Verify comm wiring. Verify correct terminations at VFD. Verify grounding to comm wire leg. Enable auto restart so unit restarts automatically once comm has been reestablished.
ALM107	10	10	AUTOMATIC	Prevent Unit Startup or Hard Stop	ALM-107 Coms Loss - Lost Communication With IOB1	Communication between main controller with IOB1 lost for 10 consecutive seconds	Verify that green LED on board does not flash. Inspect LEN wiring between SIOB and 1IOB. Power cycle boards. Verify address on board.
ALM108	10	10	AUTOMATIC	Prevent Unit Startup or Hard Stop	ALM-108 Coms Loss - Lost Communication With IOB2	Communication between main controller with IOB2 lost for 10 consecutive seconds	Verify that green LED on board does not flash. Inspect LEN wiring between 1IOB and 2IOB. Power cycle boards. Verify address of board.
ALM115	10	10	AUTOMATIC	Prevent Unit Startup or Hard Stop	ALM-115 Coms Loss - Lost Communication With SIOB1	Communication between main controller with SIOB1 lost for 10 consecutive seconds	Verify that green LED on board does not flash. Inspect LEN wiring to SIOB.
ALM117	10	10	AUTOMATIC	Prevent Unit Startup or Hard Stop	ALM-117 Modbus Client Coms Error	An error was detected in the Modbus Client driver	Power cycle PIC6 controller.
ALM118	10	10	AUTOMATIC	Prevent Unit Startup or Hard Stop	ALM-118 Modbus Server Coms Error	An error was detected in the Modbus Server driver	
ALM202	0	0	AUTOMATIC	Prevent Unit Startup or Hard Stop	ALM-202 Invalid Model/ Serial Number	Model number or serial number does not pass validation checks	Retype model and serial number in accordance with chiller nameplate.
ALM302	10	10	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-302 ECO EXV Motor Fault Cir A	The Motor Failure can occur in the following cases: Overcurrent protection; Thermal shutdown; Undervoltage Lockout	EXV motor windings resistance should be 52 Ohms (±10%) for coil A and coil B. If motor is faulty a new part is required.
ALM304	0	0	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-304 EXV Motor Fault Cir A	The Motor Failure can occur in the following cases: Overcurrent protection; Thermal shutdown; Undervoltage Lockout:	EXV motor windings resistance should be 52 Ohms (±10%) for coil A and coil B. If motor is faulty a new part is required.
ALM401	0	0	MANUAL	Prevent Circuit Startup	ALM-401 Prestart Failure - Low Oil Pressure at Startup Cir A	The system shall prevent the unit from starting if ALL of the following are TRUE: • Oil Differential Pressure (PRESSURE_OIL_PD_A) < 18 psi (124.1 kPa) • Oil Pump is ON (OUTPUTS_OILR) for Oil Pressure Verification Time* * Default value is 60 seconds	Check oil pump operation, check oil level, check oil filters, check for frequent start/stop of unit which will prevent proper oil recovery.
ALM501	0	0	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-501 Protective Limit - Compressor Reverse Rotation Cir A	Discharge pressure (PRESSURE_DIS_P_A) drops more than 2 psi for five consecutive seconds after VFDSTART (CMPA1CTL_cmd) > 0. This alarm checking occurs up to 20 seconds after the start command.	Reverse connections of any two VFD load connections.
ALM503	3	4	MANUAL	Prevent Unit Startup or Hard Stop	ALM-503 Protective Limit - Emergency Stop	When any of the emergency stop sources are set to TRUE. Local Emergency Stop (APP_LocalEstop); CCN Emergency Stop (PROTOCOL_CCNESTOP); BACnet Emergency Stop (PROTOCOL_BACESTOP); Modbus Emergency Stop (PROTOCOL_MODESTOP); Remote Emergency Stop (INPUTS_E_STOP).	Emergency Stop Input. Investigate cause of emergency stop prior to restart of unit.
ALM505	0	4	MANUAL	Prevent Unit Startup or Hard Stop	ALM-505 Protective Limit - Low Chilled Water Flow	Compressor operation is allowed AND (HYDRCFG_eflo_vt) has expired AND IF (HYDRCFG_evapfdtp) = 1 and (INPUTS_EVAP_FSW) is FALSE OR IF (HYDRCFG_evapfdtp) = 2 and (PRESSURE_EVAP_WDP) < (HYDRCFG_evapfldp) OR IF (HYDRCFG_evapfdtp_ = 3 and (INPUTS_EVAP_FL) <(HYDRCFG_evapfgpm)	Verify setting in Hydronics Configuration.

Table 11 — PIC6 Alarm Codes (cont)

CODE	HITS TO ACTIVATE	HITS TO RESET	RESET TYPE	RESPONSE	MESSAGE	TRIP CONDITION	TROUBLESHOOTING
ALM506	0	4	MANUAL	Prevent Unit Startup or Hard Stop	ALM-506 Protective Limit - Low Condenser Water Flow	Compressor operation is allowed AND (HYDRCFG_cflo_vt) has expired AND IF (HYDRCFG_condfdtp) = 1 and (INPUTS_COND_FSW) is FALSE OR IF (HYDRCFG_condfdtp) = 2 and (PRESSURE_COND_WDP) < (HYDRCFG_condfldp) OR IF (HYDRCFG_condfdtp_ = 3 and (INPUTS_COND_FL) <(HYDRCFG_condfgpm)	Verify setting in Hydronics Configuration. Verify flow pressure drop through unit.
ALM507	10	4	MANUAL	Prevent Unit Startup or Hard Stop	ALM-507 Protective Limit - Refrigerant Leak	REFRIGERANT LEAK OPTION is ENABLED and REFRIGERANT LEAK SENSOR > REFRIG LEAK ALARM mA (leak_ma)	
ALM508	10	4	MANUAL	Prevent Unit Startup or Hard Stop	ALM-508 Protective Limit - Spare Safety Device	Spare safety input on SIOB goes to Open when Spare Safety Option Enabled Service Config menu	Spare Safety is Normally Closed i.e., Alarm if input is open
ALM509	0	0	MANUAL	Prevent Unit Startup or Hard Stop	ALM-509 Protective Limit - Stop Override	Stop override (stp_over) is enabled	
ALM510	0	0	MANUAL	Prevent Unit Startup or Hard Stop	ALM-510 Protective Limit - Swift Restarts Limit Exceeded	Chiller swift restart counter > 4 in one hour	
ALM511	0	0	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-511 Protective Limit - Compressor Motor Stall Cir A	A compressor stall is detected when the MOTOR CURRENT (DRVA1STS_MOT_CUR) OR (STRTSTS_MOT_CUR) increases by DELTA AMPS PERCENT over a 1 second interval. If COMPRESSOR STALL COUNT (CMPA1CTL_stall_ct) = 5 in STALL TIME PERIOD chiller will shut down. DELTA AMPS PERCENT = 10% and STALL TIME PERIOD = 8 min.	
ALM513	0	4	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-513 Protective Limit - Condenser Freeze Cir A	System maintains CRT (TEMP_CND_ST_A) at or above the Condenser Freeze Point subject to ALL of the following: • Unit is not in pumpdown (GENUNIT_STATUS != 11) • Unit is not in pumpdown lockout (GENUNIT_STATUS != 12) with Condenser Freeze Protection disabled (HYDRCFG_cnd_fz_d) • CRT < Condenser Freeze Point (34°F). If evaporator fluid type is set to water (SERVICE1_flui_typ = 0), this alarm will be generated.	
ALM515	0	4	MANUAL	Prevent Unit Startup or Hard Stop	ALM-515 Protective Limit - Evaporator Freeze Cir A	System prevents unit from operating if ANY of the following are TRUE: • EEFT (TEMP_ECW) < Fluid Freeze Point + 0.55°C (1°F) • ELFT (TEMP_LCW) < Fluid Freeze Point + 0.55°C (1°F)	
ALM517	0	0	MANUAL	Prevent Unit Startup or Hard Stop	ALM-517 Protective Limit - High Discharge Pressure Cir A	System maintains DST (TEMP_DIS_ST_A) at or below the maximum value given by the Compressor Envelope (CMPA1CTL_eDSTMx) at all times during compressor operation.	
ALM519	0	0	MANUAL	Prevent Unit Startup or Hard Stop	ALM-519 Protective Limit - High Suction Pressure Cir A	System maintains SST (TEMP_EVP_ST_A) at or below the maximum value given by the Compressor Envelope subject to operation above compressor envelope maximum SST (CMPA1CTL_eSSTMx) ≥ 1 hour cumulative	
ALM521	10	4	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-521 Protective Limit - High Condenser Pressure Cir A	System maintains Condenser Pressure (PRESSURE_CND_P_A) at or below Condenser Maximum Pressure* subject to ALL of the following: • Unit is not in pumpdown (GENUNIT_STATUS != 11) • Unit is not in pumpdown lockout (GENUNIT_STATUS != 12) with Condenser Freeze Protection (HYDRCFG_cnd_fz_d) disabled *Default 1000 kPa (145 psi) - FIXED	

Table 11 — PIC6 Alarm Codes (cont)

CODE	HITS TO ACTIVATE	HITS TO RESET	RESET TYPE	RESPONSE	MESSAGE	TRIP CONDITION	TROUBLESHOOTING
ALM523	10	4	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-523 Protective Limit - High Discharge Temp Cir A	Chiller is running AND compressor discharge temperature sensor is in range AND compressor discharge temp (TEMP_DGT_A) > 140°F. System maintains DT at or below Compressor Maximum Discharge Temperature* at all times** during compressor operation. * Default 60°C (140°F) ** Except for 30 seconds following compressor start.	
ALM525	10	4	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-525 Protective Limit - High Motor Temperature Cir A	System maintains Compressor Motor Temperature* (TEMP_MTRW_A) at or below Compressor Motor Maximum Temperature at all times during compressor operation. * Default 93.3°C (200°F). Threshold, hysteresis, and persistence are configurable.	
ALM529	0	0	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-529 Protective Limit - Low Disch Pressure Cir A	System maintains DST (TEMP_DIS_ST_A) at or above the lower limit given by the Compressor Envelope (CMPA1CTL_eDSTMn) subject to operation below compressor envelope minimum DST(CMPA1CTL_eDSTMn) ≥ 10 minutes	
ALM531	10	4	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-531 Protective Limit - Low Evap Refrigerant Temp Cir A	System maintains ERT (TEMP_EVAP_T_A) no less than 0.55°ΔC [1.0°ΔF] above the freeze point (SERVICE1_freezesp) of the chilled fluid subject to operation below (fluid freeze point (SERVICE1_freezesp) + 0.55°ΔC [1.0°ΔF])>= 60 seconds at startup	
ALM535	0	4	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-535 Protective Limit - Low Oil Pressure Difference Cir A	System ceases operation when the Oil Differential Pressure (PRESSURE_OIL_PD_A) < (PRESSURE_OILPA1RQ) while the following is TRUE: • Oil Pump is ON (23XRV ONLY); - Compressor is ON • PRESSURE_OILPA1RQ is fixed at 15 psi	
ALM545	0	0	MANUAL	Hard Stop	ALM-545 Protective Limit - Evap Reverse Flow	TEMP_ECW < TEMP_LCW after running for 60 sec	
ALM546	0	0	MANUAL	Hard Stop	ALM-546 Protective Limit - Cond Reverse Flow	TEMP_LCDW < TEMP_ECDW after running for 60 sec	
ALM547	0	0	MANUAL	Hard Stop	ALM-547 Protective Limit - Compressor A Feedback	Feedback from compressor has not been received after 10 seconds of sending command. This could be a signal that there is a communication issue to starter or VFD.	
ALM550	0	0	MANUAL	Hard Stop	ALM-550 Protective Limit - VFD A Speed Out Of Range	This fault detection is enabled only during steady state conditions; hence this fault is not monitored during compressor speed ramp up and ramp down. (DRVA1STS_SPD) > ((CMPA1CTL_cmd) + VFD Speed Alert Dead band*) for 75 sec. * Default 10%	
ALM801	0	0	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-801 VFD Fault - VFD A1 Fault1	First fault detected in VFDA1.	
ALM802	0	0	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-802 VFD Fault - VFD A1 Fault2	Second fault detected in VFDA1.	
ALM803	0	0	MANUAL	Prevent Circuit Startup or Hard Stop	ALM-801 VFD Fault - VFD A1 Fault3	Third fault detected in VFDA1.	
ALM901	0	0	MANUAL	Prevent Unit Startup or Hard Stop	ALM-901 JSON Error - Parsing Error		
ALM902	0	0	MANUAL	Prevent Unit Startup or Hard Stop	ALM - 902 Software Exception [populated at runtime]	Any exception from the application (variable text)	
ALM903	0	0	MANUAL	Prevent Unit Startup or Hard Stop	ALM-903 Protective Limit - UI Freeze Reboot	UI is frozen more than 60 seconds.	

CONTROLLER SETTINGS

The controller settings are accessible through the System Config Menu (Service password access required). See Fig. 61 and 62.

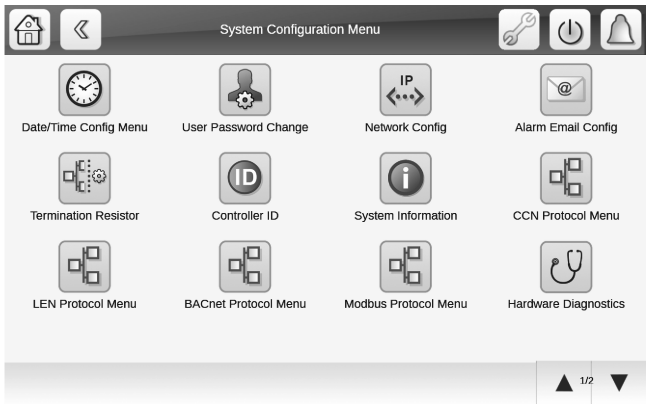


Fig. 61 — System Configuration Menu

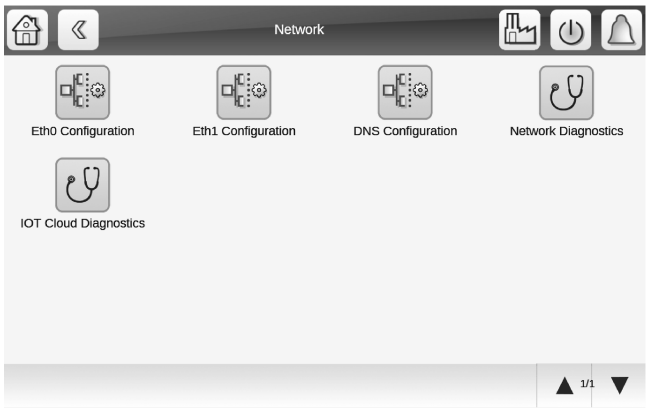


Fig. 62 — Network Menu

Unit IP Address

On the System Config Menu screen, press Network Configuration to display the network parameters. See Fig. 63.

NOTE: You must request an IP address, the subnet mask, and the default gateway from the system administrator before connecting the unit to the local Ethernet network.

To change IP address manually, select the applicable ethernet configuration port from the Network Menu. See Fig. 63.

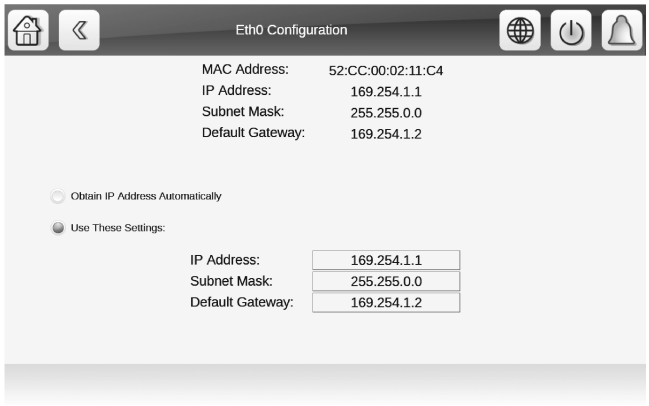


Fig. 63 — Ethernet Configuration

Enter the new address, Subnet Mask, and Default Gateway and validate it by pressing OK and Save. Return to the Network screen and enter the subnet mask and default gateway using the same method. Then return to the application and save the changes.

DNS Configuration

Select DNS Configuration from the Network Menu and change the DNS IP to desired value and then select OK and then Apply. Status will be updated accordingly. See Fig. 64.

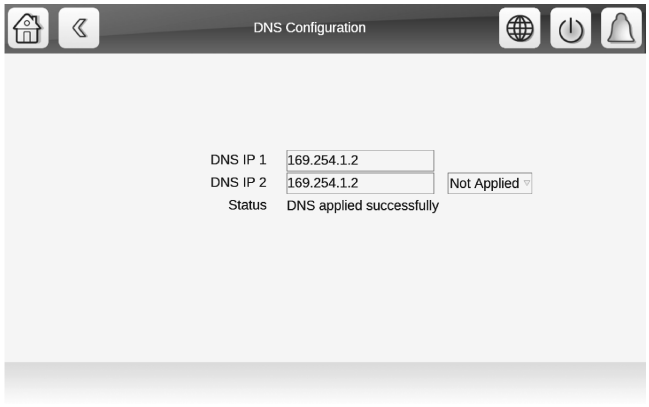


Fig. 64 — DNS Configuration

CCN Configuration

To modify the CCN configuration, select CCN Protocol Menu from the System Configuration Menu. The PIC6 CCN address, bus number and baud rate and be adjusted as per requirements. See Fig. 65.

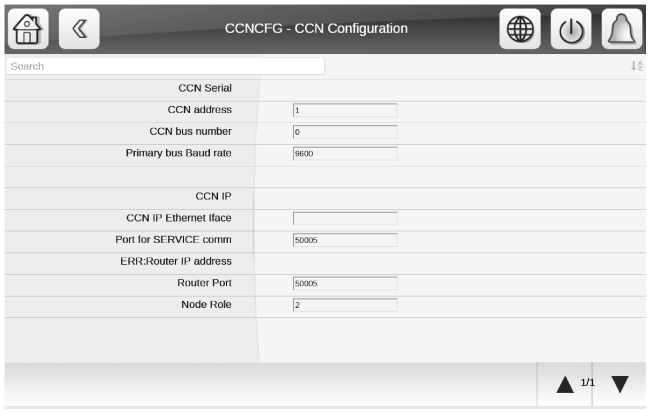


Fig. 65 — Control Identification Screen

Building Automation System Communication

The PIC6 controller has onboard interface capability to communicate with building automation systems without the need for a third party translator. The controller can communicate via the following protocols: BACnet MS/TP (Master-Slave/Token-Passing), BACnet/IP (internet protocol), Modbus RTU (remote terminal unit) and Modbus TCP/IP (Transmission Control Protocol/Internet Protocol).

Establishing communication between a site building automation system and the PIC6 controller is not part of the standard Carrier startup process. If it is necessary to support chiller control integration with the site building automation system, it will require a request from the Carrier Service Office/Distributor for a control technician to complete this task and additional charges will apply.

Both BACnet and Modbus configuration menus can be selected from System Configuration Menu.

BACnet MS/TP and Modbus RTU interface with PIC6 Port J8.

BACNET MS/TP

Adjust MS_TP MAC address. The MAC (media address control), MS_TP Baud Rate as required and keep MS_TP Max Masters as low as possible to limit the associated bandwidth with master polling. See Fig. 66.

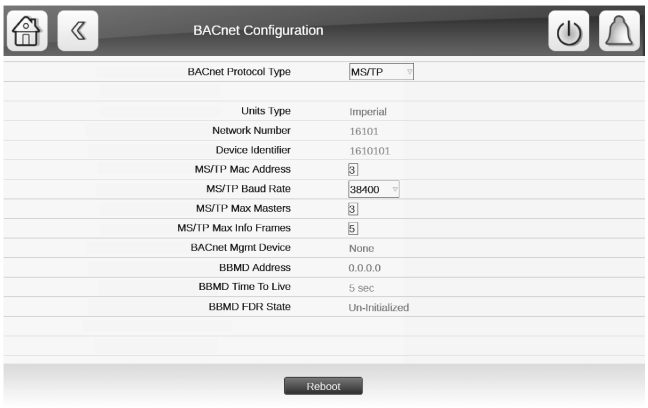


Fig. 66 — BACnet MS/TP

BACNET IP

Adjust IP Config and DNS servers for proper communication and if an IP BACnet Broadcast Management Device (BBMD) is utilized configure this as well. Select Reboot to configure the selected parameters. See Fig. 67.

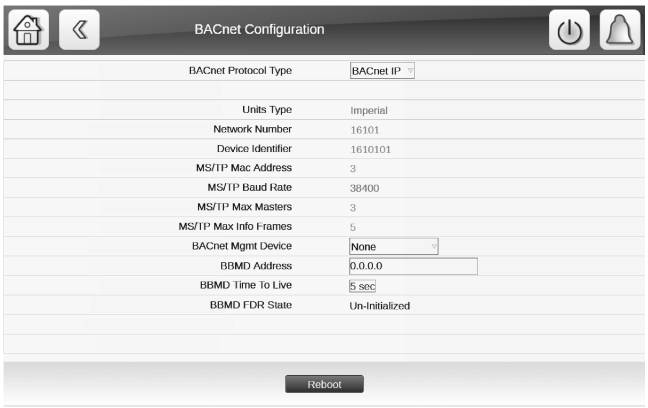


Fig. 67 — BACnet IP

MODBUS RTU

Select Baudrate, parity, stop bit, units, Register Bit Mode, Real Type, Swap Endian and click Reboot. See Fig. 68.

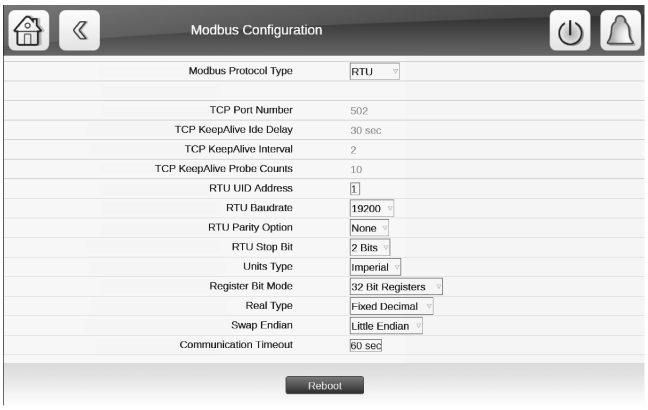


Fig. 68 — Modbus RTU

MODBUS TCP

Adjust IP Config and DNS servers for proper communication. Adjust TCP Port Number, Units, Register Bit Mode, Real Type, Swap Endian as required and click Reboot to configure. See Fig. 69.

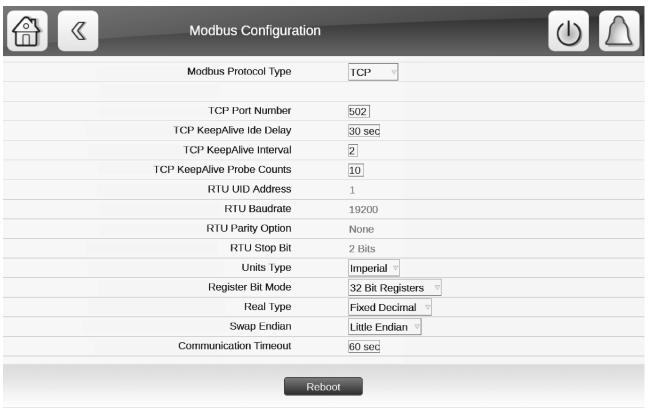


Fig. 69 — Modbus TCP

TOUCH SCREEN CALIBRATION

Depending on the user and the position of the panel, it may be necessary to calibrate the touch screen if the cursor does not move precisely with the user's touch. When the user presses and holds an inactive part of the screen for 10 seconds, the screen will turn black with white text displaying "Calibrating Touch Screen" and white cross hairs. Touch the center of the cross-hair sight with a touch pen or similar blunt-ended stylus (do not use a metal object). When the cross-hair sight is touched, it moves to a new position; touch the center of the cross hairs again. When all positions have been configured, the calibration is complete and the screen returns to the Home Screen.

COMMUNICATION PROBLEMS

Hardware Problems

See Table 12 for potential communication issues caused by hardware problems.

Web Interface Problems

See Table 13 for potential communication issues caused by web interface issues. The intranet site of the unit is the IP address (see Unit IP Address on page 34).

NOTE: The unit cannot automatically obtain the network parameters via a DHCP server.

Table 12 — Hardware Problems

SYMPTOMS	POSSIBLE CAUSES	CHECKS	SOLUTIONS
The unit does not respond to the instructions sent by the supervision PC on the CCN bus.	Problem at the RS485 converter level of the PC or connection problem on the primary CCN bus.	Check the CCN cable connections. The unit CCN address is 0.1 and the communication speed is 9600 baud by default.	Replace the RS485 connector.
Communication problem when connecting two buses (primary bus and secondary bus).	Electrical problem between 0 v CCN of the primary bus and 0 v CCN of the secondary bus.	Check the connection of the metal part of the interface casing to earth.	Connect the metal part of the interface casing to earth.

Table 13 — Web Interface Problems[a,b]

SYMPTOMS	POSSIBLE CAUSES	CHECKS	SOLUTIONS
Start-up page loads, then goes to fault state.	Network property details are not valid.	Check the network parameters (see the section Ethernet/IP Connection Problems on page 36).	Contact your system administrator.
	Ethernet network is not available.	Check to see if the orange LED on the unit is flashing.	Check the Ethernet connection to the local network if the orange LED does not flash.
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 the system administrator, open the Runtime Java control panel and select Direct Connection in the system parameters and/or request in the web browser (***Tools→Options→ Connection→ System parameters***) that no proxy server is used to go to the local addresses. If possible, uncheck "use of an automatic configuration script." Restart the web browser.
The application has been launched, but the screens are not shown in the web browser.	A proxy server is used to access the unit and this supplies the old screens to the browser. Incorrect configuration of the Java application.	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. (***Tools→Options →Connection→System parameters→"No proxy for"***). See the section Java Application Configuration on page 38.

NOTE(S):

a. The unit cannot automatically obtain the network parameters via a DHCP (Dynamic Host Configuration Protocol) server.

b. The intranet site address of the unit is the IP address.

Ethernet/IP Connection Problems

Use the following methods to troubleshoot:

UNIT IS POINT-TO-POINT CONNECTED TO A PC

Ensure controller is powered on prior to configuration and check Ethernet connection and PC Network Interface Card (NIC).

NOTE: In addition to the following procedure, it may be necessary to check the Ethernet connection and/or configure the PC network board.

In Network Settings, open Local Area Connection Properties. Select Internet Protocol and click Properties. See Fig. 70.

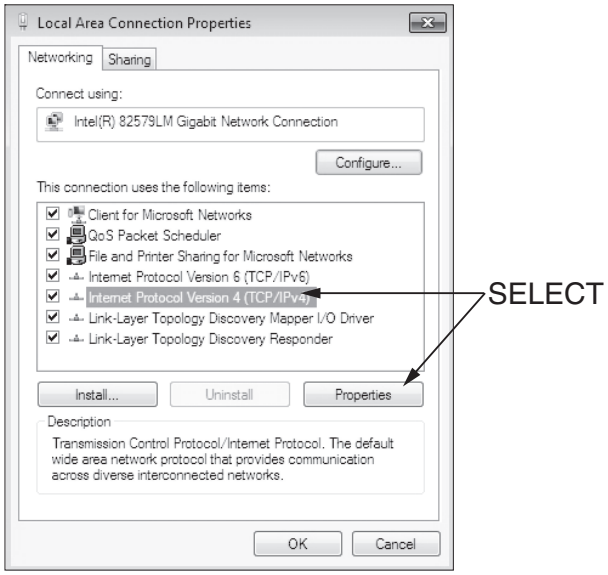


Fig. 70 — Local Area Connection Properties

The Internet Protocol Properties window is displayed.

- If no IP address is configured in the General and Alternative Configuration tabs, the unit IP address must be configured to 169.254.xxx.xxx. Modify the unit IP address and then restart the system.
- If the PC has a fixed IP address configured in one of the two tabs (General and Alternative Configuration), 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. Carry out the necessary modifications and try to access the unit again.

In the case of a problem, open a Windows command window (Start, Execute, type **cmd** and press Enter), then type the command **ping**, followed by the unit IP address. In the example shown in Fig. 71, the PC receives four positive responses (replies).

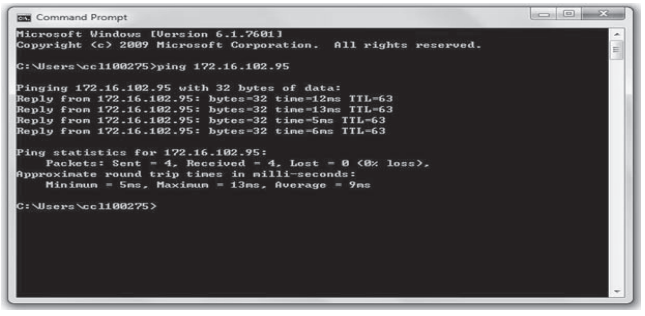


Fig. 71 — Ping — Positive Replies

In the example shown in Fig. 72, the PC receives four negative responses (request timed out).

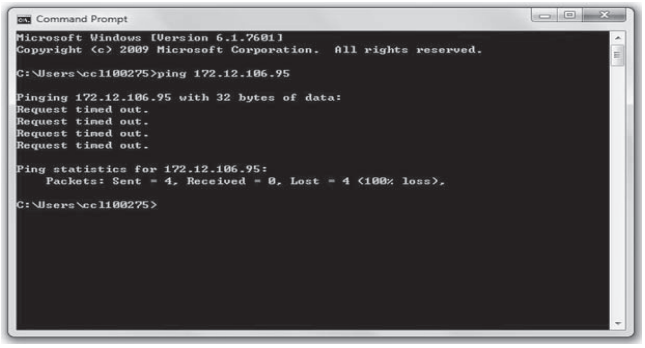


Fig. 72 — Ping — Negative Responses

If the PC receives four negative responses, check the internet browser parameters to determine if a proxy server or an automatic configuration script has been configured. If this is the case:

- Deselect the proxy server or the configuration script and restart the browser,
- Or refer to the section Java Application Configuration (page 38).

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. Open a Windows command window (Start, Execute, type **cmd** and press Enter), then type the command **ping**, followed by the unit IP address.

If the responses are positive (see Fig. 71), the internet browser configuration is faulty. Check the system parameters of the internet browser to determine if a proxy server or an automatic configuration script has been configured (***Tools→ Internet Options→ Connections→ System Parameters***). See Fig. 73.

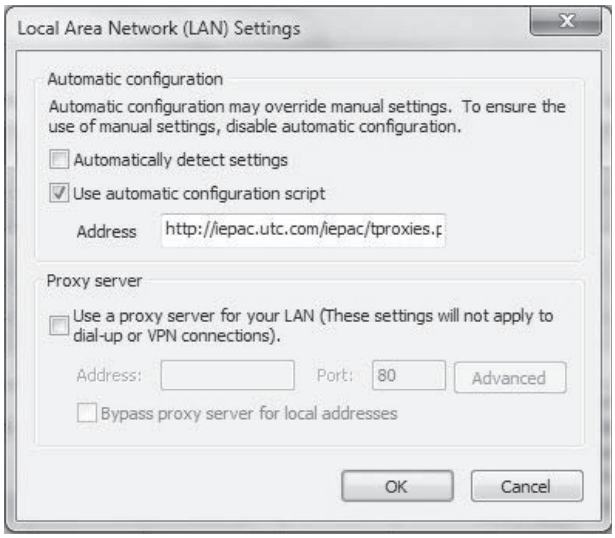


Fig. 73 — Local Area Network Settings

If a proxy server is used, add the unit IP address to the exceptions list of the proxy server (advanced proxy configuration). See Fig. 74.

If a configuration script is used, it is not possible to add the unit IP address to the exceptions list. In this case, see the section Java Application Configuration below.

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 network and sub-system in common. The last part of the IP address is the host number and must be unique on the subsystem; for example: Unit address — 172.30.101.11 and PC address — 172.30.101.182. In this example, 172.30 corresponds to the system network, and 101 corresponds to the sub-system. The host numbers are 11 and 182 respectively.

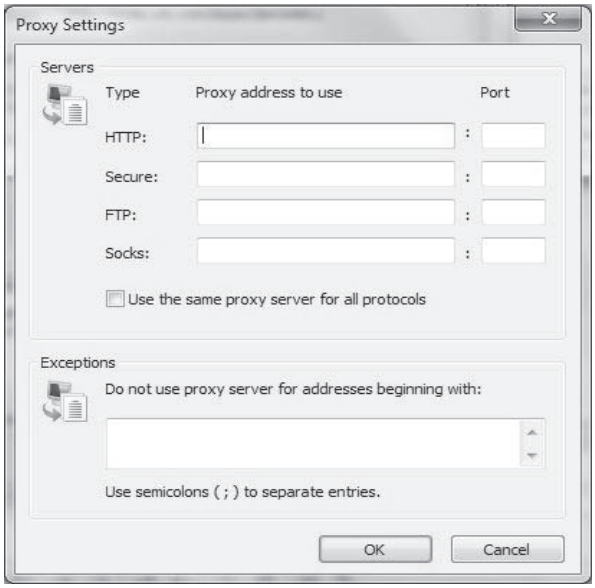


Fig. 74 — Proxy Settings

ETHERNET CONNECTION ON THE PC

Open the network configuration window of the PC and double-click Network Connections. Find the system interface board and check that no red "X" appears on the icon.

The connection to the local network must be authorized and in the connected status. If this is not the case, check the connections and authorize/repair the network connection.

JAVA APPLICATION CONFIGURATION

Open the Internet configuration window of the PC and double-click the Java application icon. If Java is not installed, a free download is available at http://www.java.com.

If Java has already been installed, check if it is used by other applications. If so, check that these are compatible with the following settings in the Java control panel. See Fig. 75.

- Network settings: In the Java Control Panel, click Network Settings. Select a direct connection to bypass the proxy server or select the automatic configuration script. See Fig 76.
- Temporary internet files: In the Java Control Panel, click Settings in the Temporary Internet Files section. Be sure the setting **Keep temporary files on my computer** is unchecked (clear). See Fig. 77.

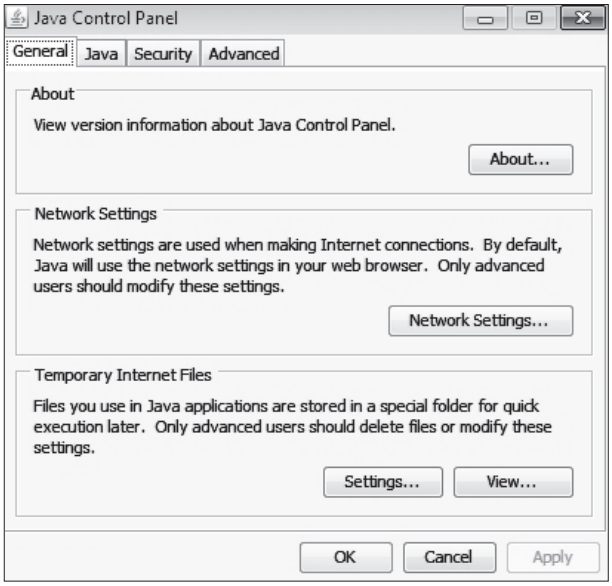


Fig. 75 — Java Control Panel



Fig. 76 — Network Settings

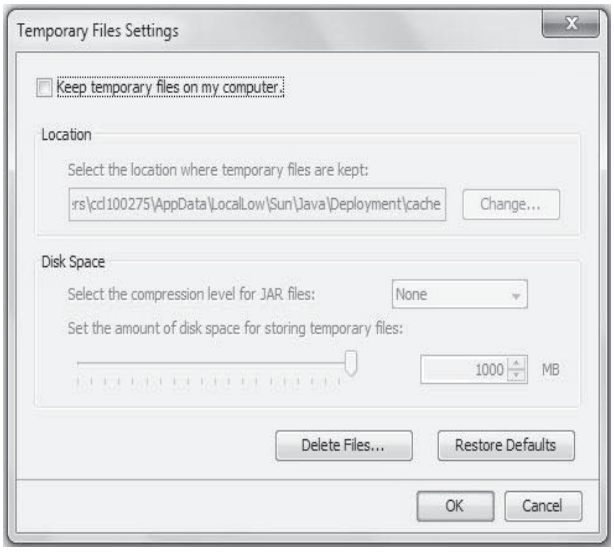


Fig. 77 — Temporary File Settings

APPENDIX A — PIC6 SCREEN AND TABLE STRUCTURE

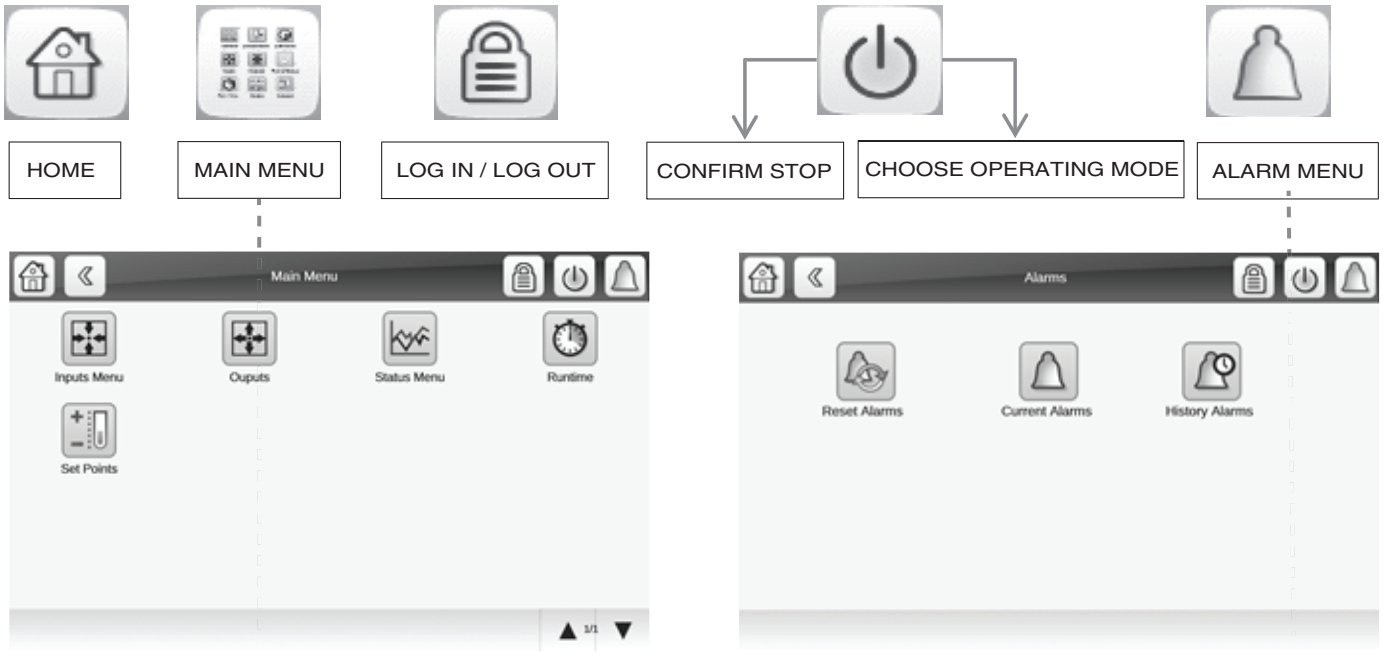


Fig. A — Screen Structure, Basic Level (All) Access (No Password Required)

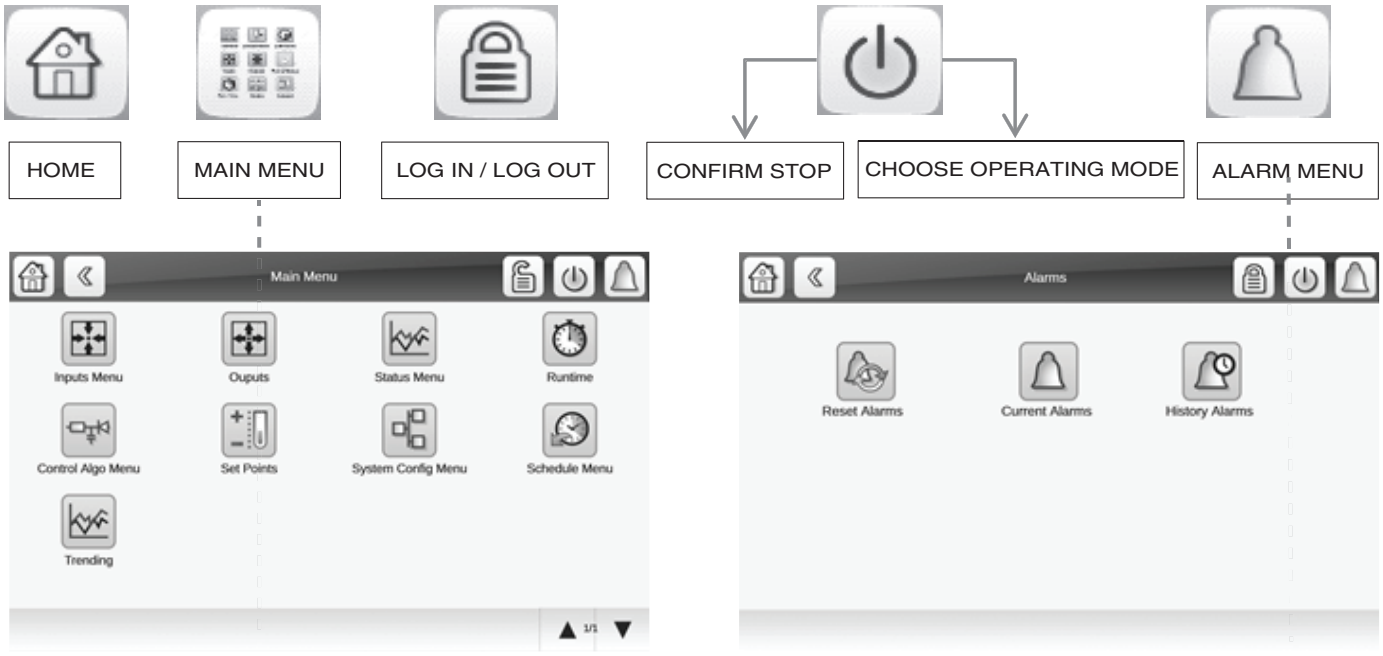


Fig. B — Screen Structure, User Level Access (User Password 1111 Required)

APPENDIX A — PIC 6 SCREEN AND TABLE STRUCTURE (cont)

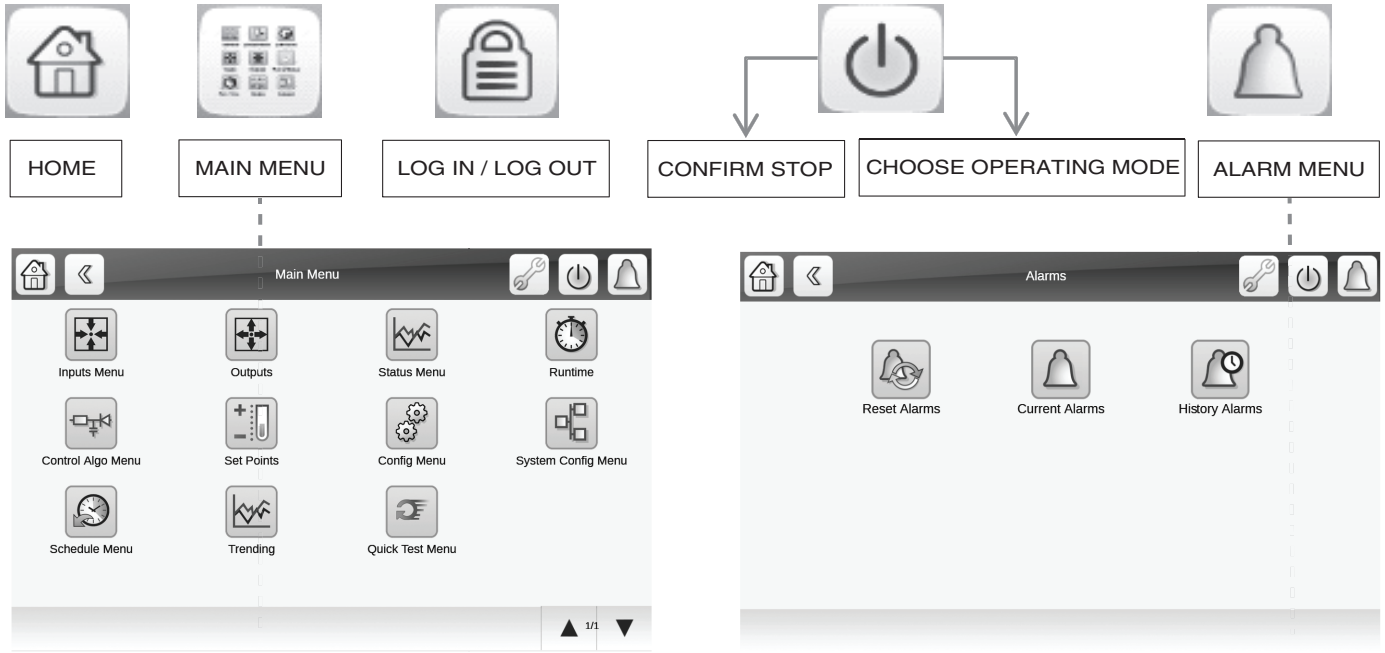


Fig. C — Screen Structure, Service Level Access
(Service Password 1234 or 3333 Required)

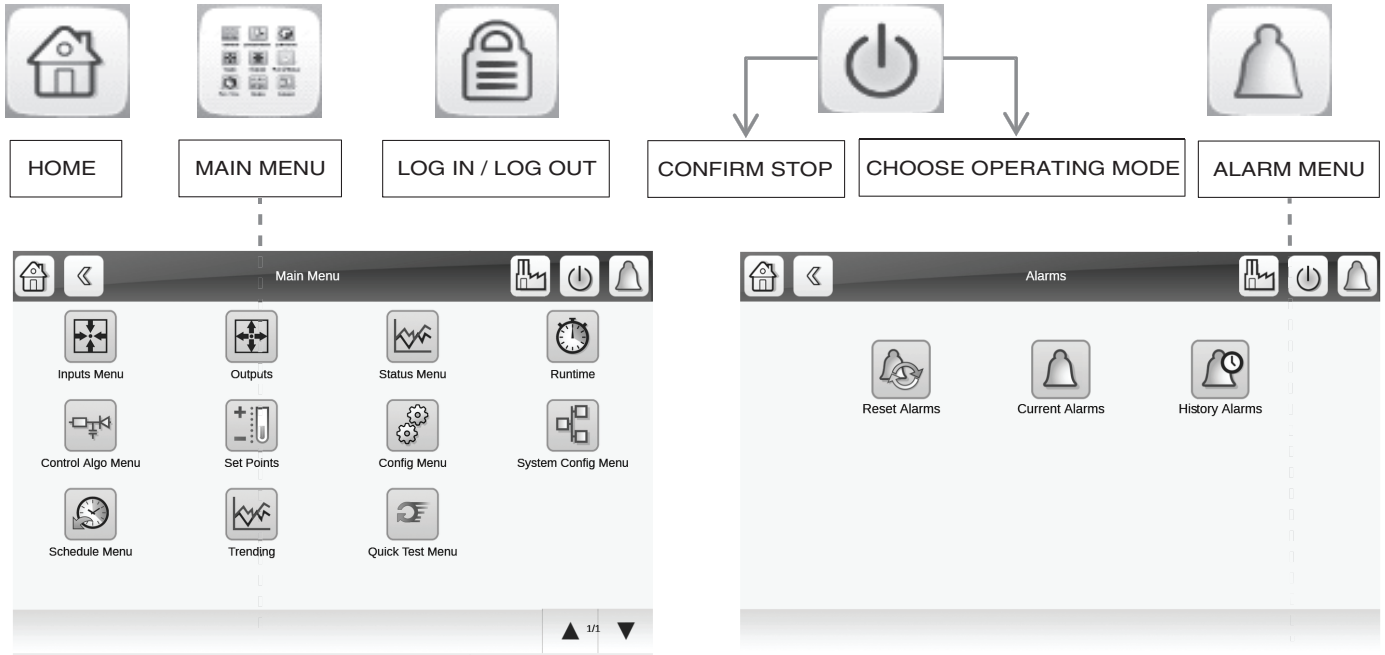


Fig. D — Screen Structure, Factory User Level Access
(Factory Password Required; must be deciphered using QR Code after initial 48 hours of powerup)

APPENDIX A — PIC 6 SCREEN AND TABLE STRUCTURE (cont)

Main Menu Description[a]

ICON	DISPLAYED TEXT[b]	ACCESS	ASSOCIATED TABLE
	Inputs Menu	All	Inputs Menu
	Outputs	All	OUTPUTS
	Status	All	Status
	Runtime	All	RUNTIME
	Control Algo Menu	User	Control Algorithm Menu
	Setpoint	All	SETPOINT
	Configuration Menu	Service, Factory	Configuration Menu
	System Configuration Menu	User, Service	System Configuration Menu
	Schedule Menu	User	Occupancy Schedule
	Trending	User	TRENDING
	Quick Test Menu	Service	Quick Test Menu

NOTE(S):

a. In most cases User login does not gain access to all configurations screens in a given menu.
b. Displayed text depends on the selected language (default is English).

APPENDIX A — PIC6 SCREEN AND TABLE STRUCTURE (cont)

NOTE: The PIC6 controls platform is utilized across multiple product lines. In this appendix, all PIC6 software lines are shown, as configured for 23XR software. Not all lines may be applicable for the 23XR product.

Temperature

CCN TABLE NAME: TEMP

PIC6 PATH: Main Menu → Inputs Menu → Temperature



LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/WRITE
1	Ent Chill Water Temp	ECW			°F	RO
2	Leaving Chill Water Temp	LCW			°F	RO
3	Entering Cond Water Temp	ECDW			°F	RO
4	Leaving Cond Water Temp	LCDW			°F	RO
5	Remote Reset Temp	R_RESET			°F	RO
6	Evap Rfrg Liq Temp A	EVAP_T_A			°F	RO
7	Evap Saturated Temp A	EVP_ST_A			°F	RO
8	Evaporator Approach A	EVPAPP_A			^F	RO
9	Discharge Gas Temp A	DGT_A			°F	RO
10	Discharge Sat Temp A	DIS_ST_A			°F	RO
11	Cond Sat Temp A	CND_ST_A			°F	RO
12	Discharge Superheat A	DSH_A			^F	RO
13	Condenser Approach A	CNDAPP_A			^F	RO
14	Motor Winding Temp A	MTRW_A			°F	RO
15	Economizer Gas Temp A	ECO_T_A			°F	RO
16	Econ Saturated Temp A	ECOST_A			°F	RO
17	Econ Superheat A	ECO_SH_A			^F	RO
18	Oil Sump Temp A	OILTSMPA			°F	RO
19	Oil Vaporizer Temp	VAP_TEMP			°F	RO

LEGEND

RO — Read Only

Pressure

CCN TABLE NAME: PRESSURE

PIC6 PATH: Main Menu → Inputs Menu → Pressure



LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/WRITE
1	Entering Evap Water Pres	EVAP_EWP			PSIG	RO
2	Leaving Evap Water Pres	EVAP_LWP			PSIG	RO
3	Evap Water Delta P	EVAP_WDP			PSIG	RO
4	Entering Cond Water Pres	COND_EWP			PSIG	RO
5	Leaving Cond Water Pres	COND_LWP			PSIG	RO
6	Cond Water Delta P	COND_WDP			PSIG	RO
7	Evaporator Pressure A	EVAP_P_A			PSIG	RO
8	Discharge Pressure A	DIS_P_A			PSIG	RO
9	Condenser Pressure A	CND_P_A			PSIG	RO
10	Economizer Pressure A	ECO_P_A			PSIG	RO
11	Oil Sump Pressure A	OILPSMPA			PSIG	RO
12	Oil Discharge Pressure A	OIL_DP_A			PSIG	RO
13	Oil Press Diff A	OIL_PD_A			PSIG	RO

LEGEND

RO — Read Only

Inputs

CCN TABLE NAME: INPUTS

PIC6 PATH: Main Menu → Inputs Menu → Inputs



LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE	UNIT	READ/WRITE
1	Auto Demand Limit Input	AUTO_DEM	0 to 100		%	RO
2	Emergency Stop Contact	E_STOP	ENABLE_EMSTOP		—	RO
3	Ice Build Contact	ICE_CON	NO_YES		—	RO
4	Refrig Leakage Sensor	REF_LEAK	4 to 20		mA	RO
5	Remote Start/Stop	REM_CON	STOP_START		—	RO
6	Spare Safety Input	SAFETY	CLOSE_OPEN		—	RO
7	Condenser Flow Switch	COND_FSW	OPEN_CLOSE		—	RO
8	Evaporator Flow Switch	EVAP_FSW	NO_YES		—	RO
9	Cond Liq Lev A	CNDLVL_A	0 to 5		—	RO
10	High Pressure Switch A	HPS_A	OPEN_CLOSE		—	RO

LEGEND

RO — Read Only

APPENDIX A — PIC6 SCREEN AND TABLE STRUCTURE (cont)

Outputs

CCN TABLE NAME: OUTPUTS

PIC6 PATH: Main Menu → Outputs

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	Alert Relay	ALE	OFF_ON		—	RO
2	Alarm Relay	ALM	OFF_ON		—	RO
3	Running Relay	RUN	OFF_ON		—	RO
4	Chiller Stat Output	CHST_OUT			%	RO
5	Head Pres Output	HDPV_OUT			%	RO
6	Tower Fan Relay High	TFR_HIGH	OFF_ON		—	RO
7	Tower Fan Relay Low	TFR_LOW	OFF_ON		—	RO
8	VFD Tower Fan	TOW_FAN	0 to 100		%	RO
9	Economizer EXV A	ECOEXV_A	0 to 100		%	RO
10	Main EXV A	EXV_A	0 to 100		%	RO
11	HGBP Solenoid A	HGBP_A	OFF_ON		—	RO
12	VFD Coolant Solenoid A	VFDSOL_A	OFF_ON		—	RO
13	Comp A VFD Lockout	CPA_LOCK	OFF_ON		—	RO
14	Vaporizer Heater	VAP_HEAT	OFF_ON		—	RO
15	Oil Heater - Primary	OILHEAT1	OFF_ON		—	RO
16	Oil Heater - Secondary	OILHEAT2	OFF_ON		—	RO
17	Oil Reclaim Valve	OIL_RECL	0 to 100		—	RO
18	Oil Pump Relay	OILR	OFF_ON		—	RO

NOTE(S):

a. Default value is shown only if configurable.

LEGEND

RO — Read Only

Unit Status

CCN TABLE NAME: GENUNIT

PIC6 PATH: Main Menu → Status Menu → Unit Status



LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	Unit Status	STATUS	0 to 16		—	RO
2	Unit Status Text	sts_txt	CHARS24		—	RO
3	Time Until Start	min_left			min	RO
4	Minimum Runtime Timer	min_run			min	RO
5	BACnet Occupied	BAC_OCC	OFF_ON		—	RO
6	Unit Mode 0=Disabled, 1=Enabled, 2=Serv Strt, 3=Serv Tst	ONOFFSVC	0 to 3		—	RO
7	HMI Start/Stop Cmd	LCL_S_S	OFF_ON		—	RO
8	Cmd Start/Stop	CHIL_S_S	OFF_ON		—	RO
9	Control Point	CTRL_PNT	–4 to 153		°F	RO
10	Emergency Stop	EMSTOP	NO_YES		—	RO
11	Active Demand Limit	DEM_LIM	0 to 100		%	RO
12	Lag Demand Limit	LAG_LIM	0 to 100		%	RO
13	Local Sched Occupied	LOC_OCC	NO_YES		—	RO
14	Ice Build Occupied	ICE_OCC	NO_YES		—	RO
15	Ice Building	ice_bld	0 to 3		—	RO
16	System State 0=Off, 1=Delay, 2=On, 3=Tripout	SYS_STAT	0 to 3		—	RO
17	Swift Restart State Text	rrst_txt	CHARS24		—	RO
18	Swift Restart State 0=Disabled, 1=Enabled, 2=Active, 3=Complete	rpdrstst	0 to 3		—	RO
19	Ramp Loading Active	ramp_act	NO_YES		—	RO
20	Ramp Rate (per Min)	ramprate			—	RO
21	Ramp Type	rmptyptx	CHARS24		—	RO

NOTE(S):

a. Default value is shown only if configurable.

LEGEND

RO — Read Only

APPENDIX A — PIC6 SCREEN AND TABLE STRUCTURE (cont)

Drive A Status

CCN TABLE NAME: DRVA1STS

PIC6 PATH: Main Menu → Status Menu → Drive A Status 

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	VFD Coms Status 0=OK, 1=PARTIAL, 2=NO COMS	COMS	0 to 2		—	RO
2	VFD Coms Status Text	coms_txt	CHARS8		—	RO
3	VFD Average Line Voltage	LINE_V			V	RO
4	VFD Average Line Current	LINE_CUR			A	RO
5	VFD Average Line KW	LINE_KW			kW	RO
6	VFD Bus Voltage	BUS_V			V	RO
7	VFD Motor Current	MOT_CUR			A	RO
8	VFD Motor Curr Pct Rated	AMPS_PCT			%	RO
9	VFD Motor KW	MOT_KW			kW	RO
10	VFD Capacity	PCT			%	RO
11	VFD Speed	SPD			Hz	RO
12	VFD Inverter Temp	INV_T			°F	RO
13	VFD IGBT Temp	IGBT_T			°F	RO
14	VFD Rectifier Temp	RECT_T			°F	RO
15	VFD Motor Rpm	MOT_RPM			rpm	RO
16	VFD Last Fault Code	LAST_FLT			—	RO
17	VFD Status Word1	STAT_WD1			—	RO
18	VFD Status Word2	STAT_WD2			—	RO
19	VFD Alert Word1	ALT_WD1			—	RO
20	VFD Alert Word2	ALT_WD2			—	RO
21	VFD Alarm Word1	ALM_WD1			—	RO
22	VFD Alarm Word2	ALM_WD2			—	RO

NOTE(S):

a. Default value is shown only if configurable.

LEGEND

RO — Read Only

Hydronics Status

CCN TABLE NAME: HYDRSTS

PIC6 PATH: Main Menu → Status Menu → Hydronics Status 

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
Evaporator						
1	Chill Water Pump	CHWP1	NO_YES		—	RO
2	Flow Established	ehas_flo	0 to 1		—	RO
3	Evaporator Flow Switch	EVAP_FSW	OFF_ON		—	RO
4	Entering Evap Water Pres	EVAP_EWP	OFF_ON		PSIG	RO
5	Leaving Evap Water Pres	EVAP_LWP	NO_YES		PSIG	RO
6	Evap Water Delta P	EVAP_WDP	NO_YES		PSIG	RO
7	Actual Evap GPM	aegpm			GPM	RO
Condenser						
1	Cond Water Pump	CDWP1	NO_YES		—	RO
2	Flow Established	chas_flo	NO_YES		—	RO
3	Condenser Flow Switch	COND_FSW	0 to 1		—	RO
4	Entering Cond Water Pres	COND_EWP	0 to 0		PSIG	RO
5	Leaving Cond Water Pres	COND_LWP			PSIG	RO
6	Cond Water Delta P	COND_WDP			PSIG	RO
7	Actual Cond GPM	acgpm			GPM	RO

NOTE(S):

a. Default value is shown only if configurable.

LEGEND

RO — Read Only

APPENDIX A — PIC6 SCREEN AND TABLE STRUCTURE (cont)

Protocol Commands

CCN TABLE NAME: PROTOCOL

PIC6 PATH: Main Menu→Status Menu→Protocol Commands

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
CCN						
1	CCN Occupy	CCNOCC	OFF_ON	OFF	—	RW
2	CCN Demand Limit	CCNDEML	40 to 100		%	RO
3	CCN Estop	CCNESTOP	ENABLE_EMSTOP		—	RW
4	CCN Fire Safety	CCNSFTY	OFF_ON	OFF	—	RW
5	CCN Start/Stop	CCN_S_S	STOP_START		—	RW
6	CCN Lockout	CCNLKOUT	OFF_ON	OFF	—	RW
BACNET						
1	BACNET Occupy	BACOCC	OFF_ON		—	RO
2	BACNET Demand Limit	BACDEML	40 to 100		%	RO
3	BACNET Estop	BACESTOP	ENABLE_EMSTOP		—	RO
4	BACNET Fire Safety	BACSFTY	OFF_ON		—	RO
5	BACNET Start/Stop	BAC_S_S	STOP_START		—	RO
6	BACNET Lockout	BACLKOUT	OFF_ON		—	RO
7	BACNET Alarm Flag	BACALARM	OFF_ON		—	RO
8	BACNET Alert Flag	BACALERT	OFF_ON		—	RO
MODBUS						
1	MODBUS Occupy	MODOCC	OFF_ON		—	RO
2	MODBUS Demand Limit	MODDEML	40 to 100		%	RO
3	MODBUS Estop	MODESTOP	ENABLE_EMSTOP		—	RO
4	MODBUS Fire Safety	MODSFTY	OFF_ON		—	RO
5	MODBUS Start/Stop	MOD_S_S	STOP_START		—	RO
6	MODBUS Lockout	MODLKOUT	OFF_ON		—	RO

NOTE(S):

a. Default value is shown only if configurable.

Runtime[a]

CCN TABLE NAME: RUNTIME

PIC6 PATH: Main Menu → Runtime

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[b]	UNIT	READ/WRITE
Starts						
1	Compressor A Starts	st_compa			—	RO
2	Oil Pump A Starts	st_oilpa			—	RO
3	CompA Starts in 12 Hrs	st12_a			—	RO
4	CompA Recy Strts in 4 Hrs	rcycst_a			—	RO
5	Swift Restarts in 1 Hr	swiftcnt			—	RO
6	Comp A Start to Start	stst_a			—	RO
7	Comp A Stop to Start	spst_a			—	RO
Hours						
1	Service Runtime	hr_svc			hours	RO
2	Machine Operating Hours	hr_mach			hours	RO
3	Compressor A Hours	hr_compa			hours	RO
4	Oil Pump A Hours	hr_oilpa			hours	RO
5	Evap Pump 1 Hours	hr_epmp1			hours	RO
6	Cond Pump 1 Hours	hr_cpmp1			hours	RO
Controller						
1	PIC6 Uptime	uptime			day-hour-min	RO
2	Last Reboot Reason	last_rr				RO
Power On Reset						
1	Power On Reset Time 1	por_tm1			mo-dy-yr-hr-mn-sc	RO
2	Power On Reset Time2	por_tm2			mo-dy-yr-hr-mn-sc	RO
3	Power On Reset Time 3	por_tm3			mo-dy-yr-hr-mn-sc	RO
4	Power On Reset Time 4	por_tm4			mo-dy-yr-hr-mn-sc	RO
5	Power On Reset Time 5	por_tm5			mo-dy-yr-hr-mn-sc	RO
6	Power On Reset Time 6	por_tm6			mo-dy-yr-hr-mn-sc	RO
7	Power On Reset Time 7	por_tm7			mo-dy-yr-hr-mn-sc	RO
8	Power On Reset Time 8	por_tm8			mo-dy-yr-hr-mn-sc	RO
9	Power On Reset Time 9	por_tm9			mo-dy-yr-hr-mn-sc	RO
10	Power On Reset Time 10	por_tm10			mo-dy-yr-hr-mn-sc	RO

NOTE(S):

a. The displayed runtime is updated every hour. To avoid the loss of data in case of disruption, the values are backed up.
b. Default value is shown only if configurable.

LEGEND

RO — Read Only
RW — Read/Write

APPENDIX A — PIC6 SCREEN AND TABLE STRUCTURE (cont)

Control Algo

CCN TABLE NAME: CONTROL

PIC6 PATH: Main Menu → Control Algo Menu

	MENU NAME	MENU TEXT DESCRIPTION	ACCESS	MENU ICONS
1	CIRACTL	Circuit A Control Menu	USER	
2	CAPCTL	Capacity Control	USER	
3	EPMPCTL	Evap Pump Control	USER	
4	CPMPCTL	Cond Pump Control	USER	
5	OILVCTL	Oil Viscosity Control	USER	
6	HDPRCTL	Head Pressure Control	USER	

Set Points

CCN TABLE NAME: SETPOINT

PIC6 PATH: Main Menu → Set Points

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	Cooling LCW Setpoint	lcw_sp	10 to 120	45	°F	RW
2	Ice Build Setpoint	ice_sp	15 to 60	40	°F	RW
3	EWT Control Option	EWT_OPT	DSABLE_ENABLE	0	—	RW
4	Cooling ECW Setpoint	ecw_sp	15 to 120	60	°F	RW
5	Base Demand Limit	dem_base	25 to 100	100	%	RW
6	Recycle Shutdown Offset	rcyc_lo	0 to 10	5	°F	RW
7	Recycle Startup Offset	rcyc_hi	0 to 10	5	°F	RW

NOTE(S):

a. Default value is shown only if configurable.

LEGEND

RW — Read/Write

General Configuration

CCN TABLE NAME: GENCONF

PIC6 PATH: Main Menu → Config Menu → General Config 

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	Ramp Loading Type Temp=0, Amps=1, Kw=2	rampsel	0 to 2	0	—	RW
2	Enable Ramp Loading	ramp_en	DSABLE_ENABLE		—	RW
3	Ramp Rate (per Min)	rrate_t	0.5 to 32	0.5	°F	RW
4	Ramp Rate (per Min)	rrate_a	0.5 to 100	0.5	A	RW
5	Ramp Rate (per Min)	rrate_k	0.5 to 100	0.5	kW	RW
6	Ice Mode Enable	ice_cnfg	DSABLE_ENABLE		—	RW
7	Ice Mode Recycle	ice_rec	DSABLE_ENABLE		—	RW
8	Refrigerant Leak Option	leak_en	DSABLE_ENABLE		—	RW
9	Circuit A Capacity Limit	caplim_a	20 to 100	100	%	RW
10	Demand Limit Source 0=Local, 1=AnalogIO	dem_sel	0 to 1	0	—	RW

NOTE(S):

a. Default value is shown only if configurable.

LEGEND

RW — Read/Write

APPENDIX A — PIC6 SCREEN AND TABLE STRUCTURE (cont)

Reset Configuration

CCN TABLE NAME: RESETCFG

PIC6 PATH: Main Menu → Configuration Menu → Reset Config



LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	Temp Reset Type None=0, 4-20mA=1, Remote Temp=2,Water DT=3	res_sel	0 to 3	0	—	RW
2	Degrees Reset at 20mA	der_20ma	–30 to 30	10.0	^F	RW
3	Maximum Deg Temp Reset	deg_rset	–30 to 30	10.0	^F	RW
4	Remote Temp Full Reset	remtm_fu	–40 to 245	65.0	°F	RW
5	Remote Temp No Reset	remtm_no	–40 to 245	85.0	°F	RW
6	Deg Reset Water DT Full	drwdt_fu	–30 to 30	10.0	^F	RW
7	Controlled DT Full Reset	ctldt_fu	0 to 15	0	^F	RW
8	Controlled DT No Reset	ctldt_no	0 to 15	10	^F	RW

NOTE(S):

a. Default value is shown only if configurable.

Service Configuration

CCN TABLE NAME: SERVICE

PIC6 PATH: Main Menu → Configuration Menu → Service Config → CFG



LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	Evaporator Fluid Type 0=Water, 1=Med Brine, 3=Low Brine	flui_typ	0 to 2	0	—	RW
2	Brine Freeze Setpoint	freezesp	–20 to 34	34	°F	RW
3	Comp Min Off Time	min_off	60 to 1200	120	sec	RW
4	Demand Limit At 20 mA	dem_20ma	10 to 100	40	%	RW
5	Minimum Fluid Temp	min_lwt	–20 to 38	38	°F	RW
6	Maximum Fluid Temp	max_lwt	38 to 153	95	°F	RW
7	Service Password	ser_pass	NO_YES		—	RW
8	Service Lockout	lockout	NO_YES		—	RW
9	Restart Options 0=None, 1=Auto, 2=Swift Restart	rstrtopt	0 to 2	0	—	RW
10	Starts Limit Bypass	stlim_by	NO_YES		—	RW
11	Starts Per Period Lim	stpperlA	0 to 0	8	—	RW
12	Comp Start Period	cmpstA	0 to 0	3800	—	RW
13	Starts Per Period Lim	stpperlB	0 to 0	8	—	RW
14	Comp Start Period	cmpstB	0 to 0	3800	—	RW
15	Reset Service Runtime	rsthrsvc	NO_YES		—	RW
16	Soft Stop Enable	sftst_en	DSABLE_ENABLE		—	RW
17	Soft Stop Threshold	sftst_th	0 to 100	50	%	RW
18	Emergency Stop Enable	emstopen	DSABLE_ENABLE		—	RW
19	Spare Safety Enable	spstopen	DSABLE_ENABLE			RW
20	Powerloss Autoreset Lim	pwaulim	4 to 168	168	hours	RW

NOTE(S):

a. Default value is shown only if configurable.

Factory Configuration

CCN TABLE NAME: FACTORY

PIC6 PATH: Menu → Config Menu → Factory Config



LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	Refrigerant Type 4=R-134a, 11=R-513A	refrig	0 to 15	4	—	RW
2	Chiller Tons	tons	100 to 600	100	TONS	RW
3	HGBP Control Option	hgbp_opt	DSABLE_ENABLE		—	RW
4	Design Input kW	din_kw	0 to 0	0	kW	RW
5	Design Input kW/Ton	dkw_ton	0 to 0	0	kW	RW
6	Design Ent Evap Temp	dewt	0 to 0	0	°F	RW
7	Design Lvg Evap Temp	dlwt	0 to 0	0	°F	RW
8	Design Evap GPM	degpm	0 to 0	0	GPM	RW
9	Design Evap Press Drop	depdft	0 to 0	0	Feet	RW
10	Design Evap Refrig Temp	dert	0 to 0	0	°F	RW
11	Design Ent Cond Temp	decwt	0 to 0	0	°F	RW
12	Design Lvg Cond Temp	dlcwt	0 to 0	0	°F	RW
13	Design Cond GPM	dcgpm	0 to 0	0	GPM	RW
14	Design Cond Press Drop	dcpdft	0 to 0	0	Feet	RW
15	Design Cond Refrig Temp	dcrt	0 to 0	0	°F	RW

NOTE(S):

a. Default value is shown only if configurable.

LEGEND

RW — Read/Write

APPENDIX A — PIC6 SCREEN AND TABLE STRUCTURE (cont)

Comp A Config

CCN TABLE NAME: CMPA1CFG

PIC6 PATH: Main Menu → Configuration Menu → Circuit A Config Menu → Comp A Config

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	Cmp A LowSatSuctOffset	CSSTLa	0 to 10	2	°F	RW
2	Cmp A HiDischTempOffset	hiDTOff	0 to 10	10	°F	RW
3	Cmp A HiDischSatOffset	hiDSTOff	0 to 10	5	°F	RW

NOTE(S):

a. Default value is shown only if configurable.

LEGEND

RW — Read/Write

Hot Gas A Config

CCN TABLE NAME: HGBPACFG

PIC6 PATH: Main Menu → Configuration Menu → Circuit A Config Menu → Hot Gas A Config

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	Minimum Load Ctrl					
2	Min Load Ctrl Enable	flt_en	DSABLE_ENABLE		—	RW
3	Fluid Temp Offset	flt_off	0 to 0	–0.5	°F	RW
4	Fluid Temp Deadband	fltdband	0 to 0	0.5	°F	RW
5	Compressor Speed Ctrl					
6	Comp Speed Ctrl Enable	cpspd_en	DSABLE_ENABLE		—	RW
7	HGBP Enable Below Speed	maxcpspd	0 to 0	35	Hz	RW
8	Disable Speed Deadband	cpspdbnd	0 to 0	15	Hz	RW

NOTE(S):

a. Default value is shown only if configurable.

LEGEND

RW — Read/Write

EXV A Configuration

CCN TABLE NAME: EXVACFG

PIC6 PATH: Main Menu → Configuration Menu → Circuit A Config Menu → EXV A Config

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	EXV Cond Liq Lvl Stpt	cll_stpt	0 to 0	1	—	RW
2	EXV Approach Setpoint	aTStpt	0 to 0	5	—	RW
3	EXV Lo Disch Superh Stpt	lo_dshsp	0 to 0	1	—	RW
4	EXV Lo Disch Superh Ofst	lo_dshof	0 to 0	0	—	RW
5	EXV Max Disch Temp Stpt	max_dist	0 to 0	180	—	RW
6	EXV Subcooling Min Stpt	sbc_min	0 to 0	0	—	RW
7	EXV Subcooling Min Ofst	sbc_of	0 to 0	0	—	RW
8	EXV LowSatSuctOffset	sSTLeMOa	0 to 10	3	°F	RW

NOTE(S):

a. Default value is shown only if configurable.

LEGEND

RW — Read/Write

APPENDIX A — PIC6 SCREEN AND TABLE STRUCTURE (cont)

Drive A Configuration

CCN TABLE NAME: DRVA1CFG

PIC6 PATH: Main Menu → Configuration Menu → Circuit A Config Menu → Drive A Config

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	Rated Line Voltage	rlv_i	0 to 0	460	V	RW
2	Motor Rated Load Amps	rla_m	10 to 5000	200	A	RW
3	Motor Nameplate Voltage	rlv	0 to 0	460	V	RW
4	Motor Nameplate Current	rla	0 to 0	200	A	RW
5	Motor Nameplate RPM	rlrpm	0 to 0	3000	rpm	RW
6	Motor Nameplate KW	rlkw	0 to 0	1500	kW	RW
7	Compressor 100% Speed	rlhz	0 to 200	90	Hz	RW
8	Compressor Unload Spd	min_spd	0 to 0	20	Hz	RW
9	Compressor Start Spd	strt_spd	0 to 0	25	Hz	RW
10	Torque Limit Percent	torq_lim	0 to 0	115	%	RW
11	Current Limit Percent	curr_lim	0 to 0	110	%	RW
12	PWM Switch Frequency	pwm_freq	0 to 0	2	kHz	RW
13	Skip Frequency 1	skipfrq1	0 to 0	30	Hz	RW
14	Skip Frequency 2	skipfrq2	0 to 0	30	Hz	RW
15	Skip Frequency 3	skipfrq3	0 to 0	30	Hz	RW
16	Skip Frequency Band	skipband	0 to 0	0	Hz	RW
17	Increase Ramp Time	ramp_inc	0 to 0	100	sec	RW
18	Decrease Ramp Time	ramp_dec	0 to 0	10	sec	RW

NOTE(S):

a. Default value is shown only if configurable.

Lube A Config

CCN TABLE NAME: LUBECFGA

PIC6 PATH: Main Menu → Configuration Menu → Circuit A Config Menu → Lube A Config

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	Vaporizer Heater On	vphton		100	—	RW
2	Vaporizer Heater Off	vphtoff		120	—	RW
3	Sump1 Heater On	smp1on		140	—	RW
4	Sump1 Heater Off	smp1off		145	—	RW
5	Sump2 Heater On	smp2on		125	—	RW
6	Sump2 Heater Off	smp2off		140	—	RW
7	Turn On HGBP	hgbpon		200	—	RW
8	Turn Off HGBP	hgbpoff		5	—	RW
9	Minimum Lift	minlift		200	—	RW
10	Minimum Hz	minhz		24	—	RW

NOTE(S):

a. Default value is shown only if configurable.

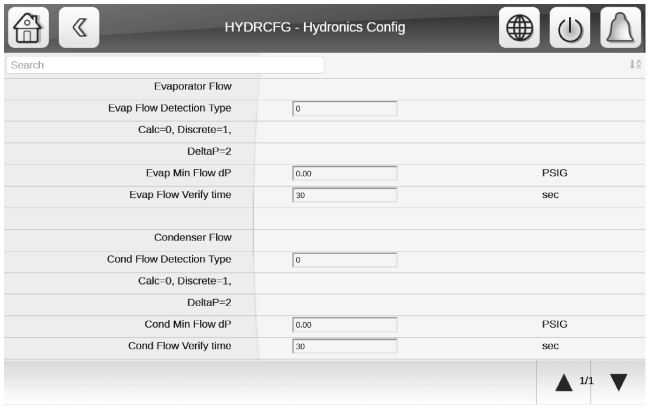
LEGEND

RW — Read/Write

Hydronics Configuration

CCN TABLE NAME: HYDRCFG

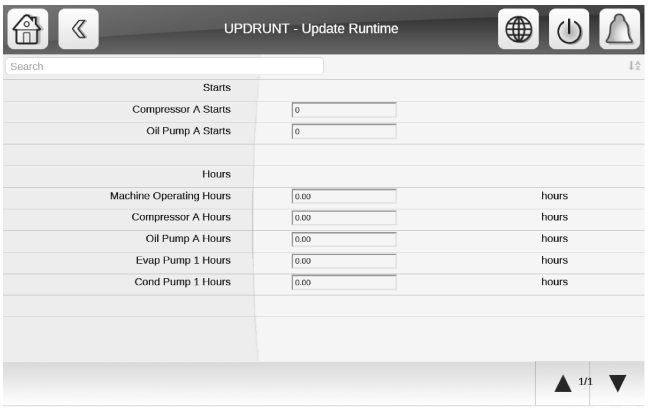
PIC6 PATH: Main Menu → Configuration Menu → Hydronics Config



Update Runtime

CCN TABLE NAME: UPDRUNT

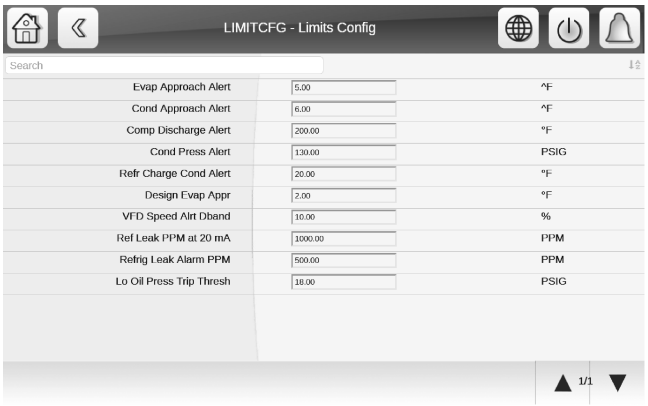
PIC6 PATH: Main Menu → Configuration Menu → Update Run Time



Limits Configuration

CCN TABLE NAME: LIMITCFG

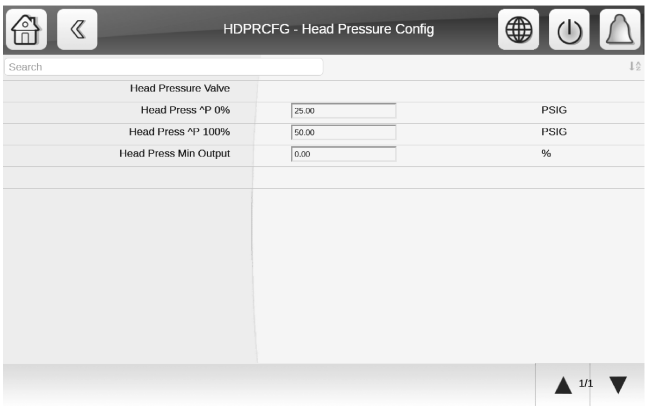
PIC6 PATH: Main Menu → Configuration Menu → Limits Config



Head Pressure Config

CCN TABLE NAME: HDPRCFG

PIC6 PATH: Main Menu → Configuration Menu → Head Pressure Config



APPENDIX A — PIC6 SCREEN AND TABLE STRUCTURE (cont)

Date/Time Config Menu

CCN TABLE NAME: TIMECFG

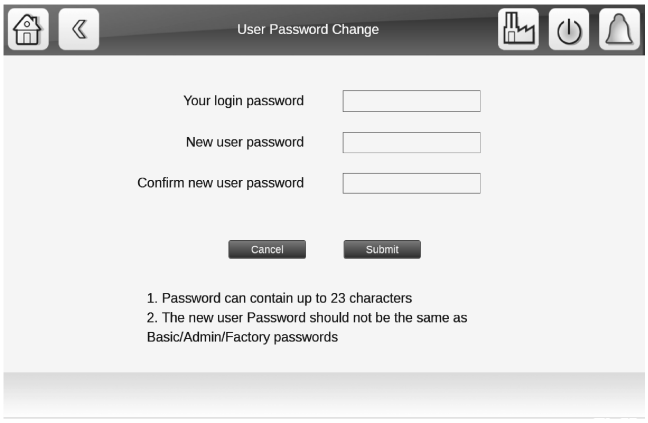
PIC6 PATH: Main Menu → System Configuration Menu → Date/Time Configuration Menu

	MENU NAME	MENU TEXT DESCRIPTION	ACCESS	MENU ICONS
1	Date/Time Configuration	DATETIME	USER	
2	NTP Time Sync	NPCTIME	USER	

User Password Change

CCN TABLE NAME: USERPASS

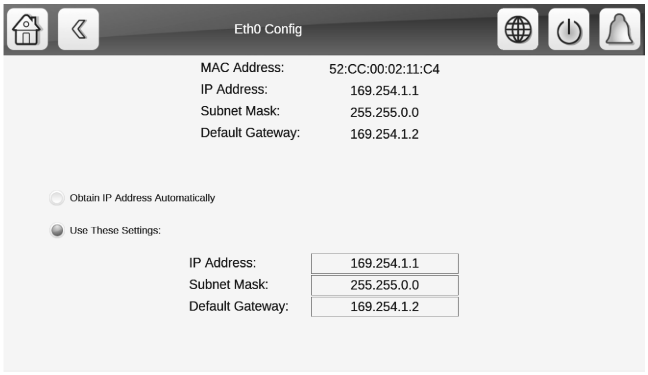
PIC6 PATH: Main Menu → System Configuration Menu → User Password Change



Network Configuration - Eth0 Configuration

CCN TABLE NAME: ETH0CONF

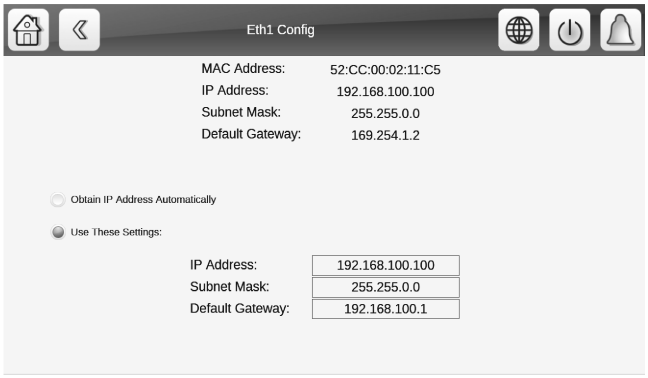
PIC6 PATH: Main Menu → Systems Configuration Menu → Network → Eth0 Config



Network Configuration - Eth1 Configuration

CCN TABLE NAME: ETH1CONF

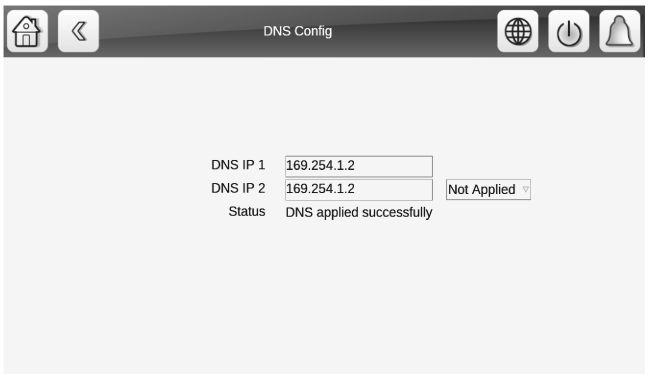
PIC6 PATH: Main Menu → Systems Configuration Menu → Network → Eth1 Config



Network Configuration - DNS Configuration

CCN TABLE NAME: DNS

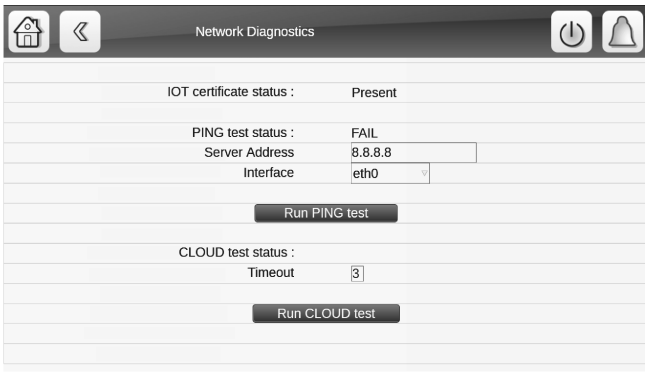
PIC6 PATH: Main Menu → Systems Configuration Menu → Network → DNS Config



Network Configuration - Network Diagnostics

CCN TABLE NAME: NETDIAG

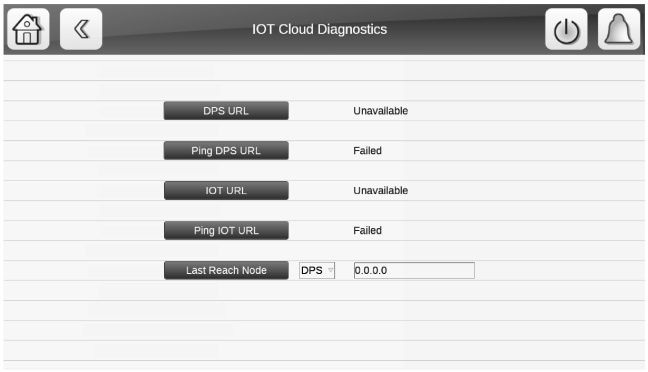
PIC6 PATH: Main Menu → Systems Configuration Menu → Network → Network Diagnostics



Network Configuration - IOT Cloud Diagnostics

CCN TABLE NAME: IOTCLDDG

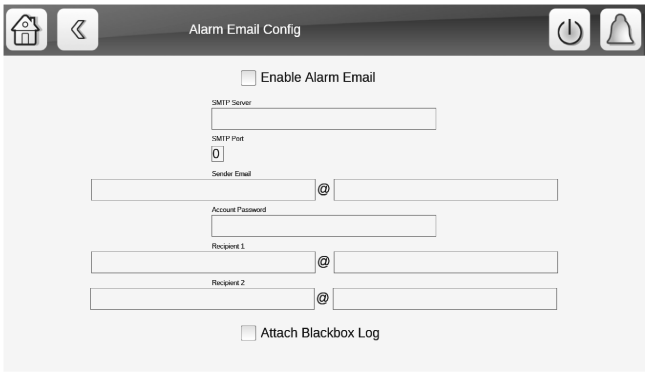
PIC6 PATH: Main Menu → Systems Configuration Menu → Network → IOT Cloud Diagnostics



Alarm Email Config

CCN TABLE NAME: EMAILCFG

PIC6 PATH: Main Menu → Systems Configuration Menu → Alarm Email Config



Termination Resistor

CCN TABLE NAME: TERMRES

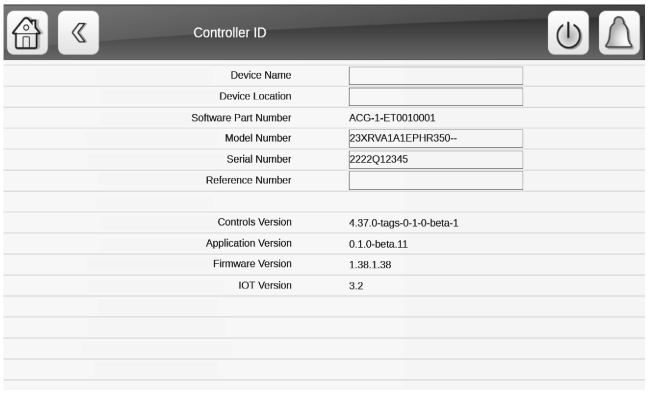
PIC6 PATH: Main Menu → Systems Configuration Menu → Termination Resistor



Controller ID

CCN TABLE NAME: CTRLID

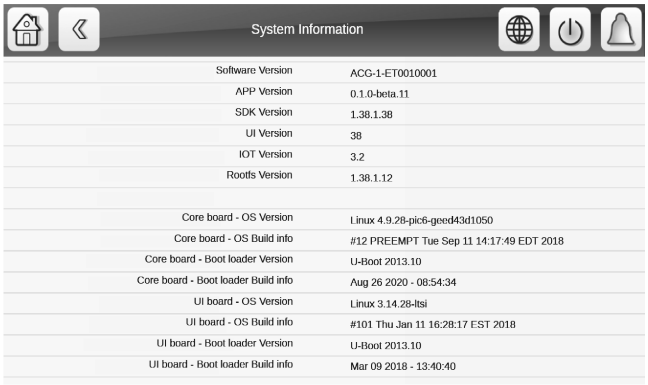
PIC6 PATH: Main Menu → Systems Configuration Menu → Controller ID



System Information

CCN TABLE NAME: SYSINFO

PIC6 PATH: Main Menu → Systems Configuration Menu → System Information



CCN Protocol Menu - CCN Configuration

CCN TABLE NAME: CNN

PIC6 PATH: Main Menu → Systems Configuration Menu → CCN Protocol Menu

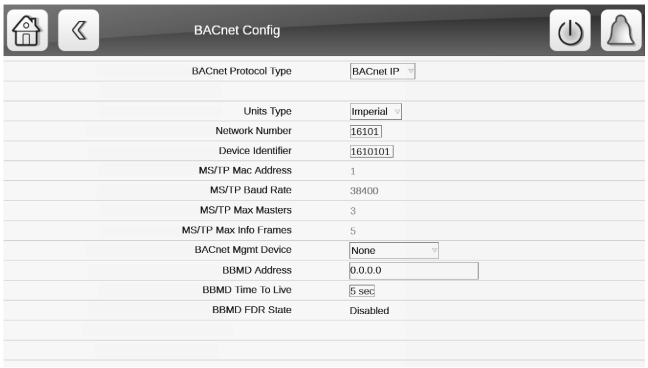


APPENDIX A — PIC6 SCREEN AND TABLE STRUCTURE (cont)

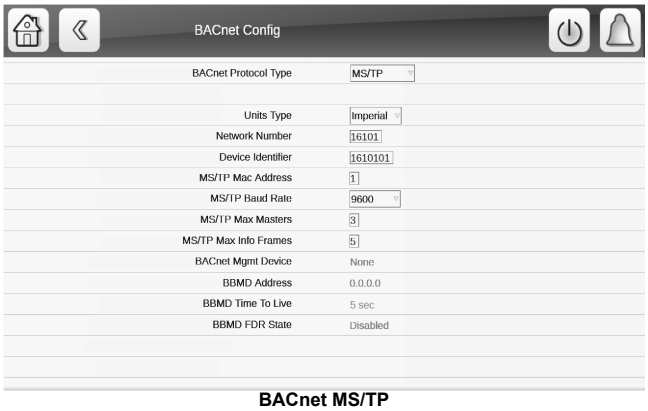
BACnet Protocol Menu

CCN TABLE NAME: BACNET

PIC6 PATH: Main Menu → System Configuration Menu → BACnet Protocol Menu → BACnet Config



BACnet IP

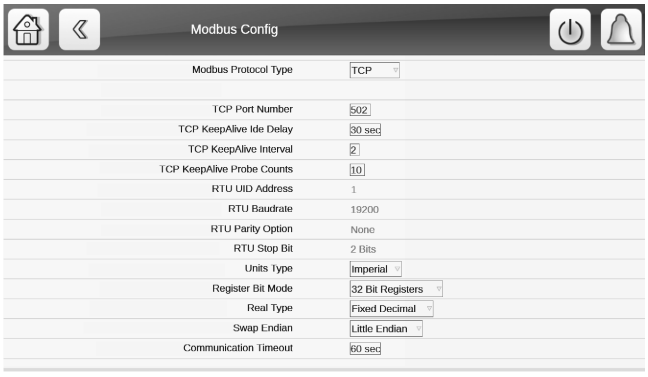


BACnet MS/TP

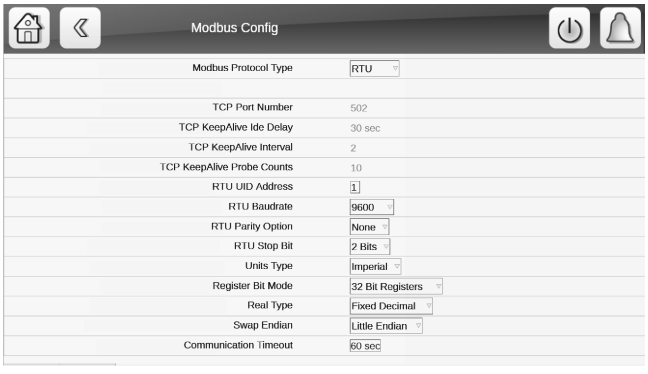
Modbus Protocol Menu

CCN TABLE NAME: MODBUS

PIC6 PATH: Main Menu → Systems Configuration Menu → Modbus Protocol Menu → Modbus Config



Modbus TCP

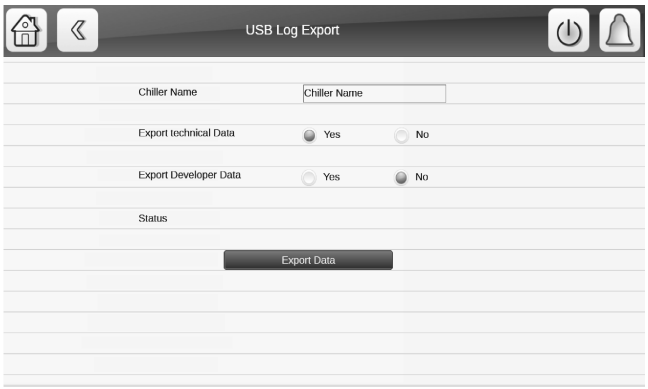


Modbus RTU

USB Log Export

CCN TABLE NAME: USBEXPRT

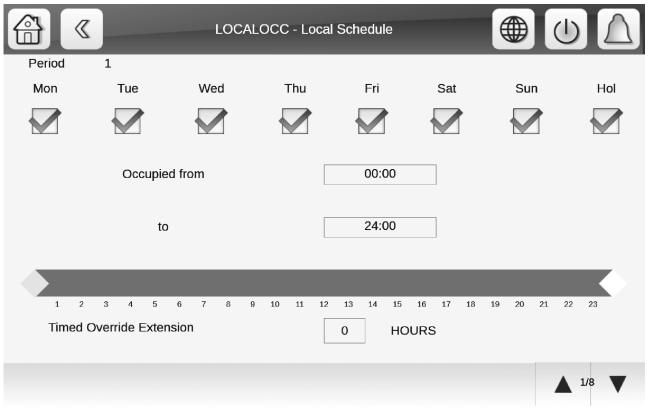
PIC6 PATH: Main Menu → Systems Configuration Menu → USB Log Export



Local Schedule

CCN TABLE NAME: LOCALOCC

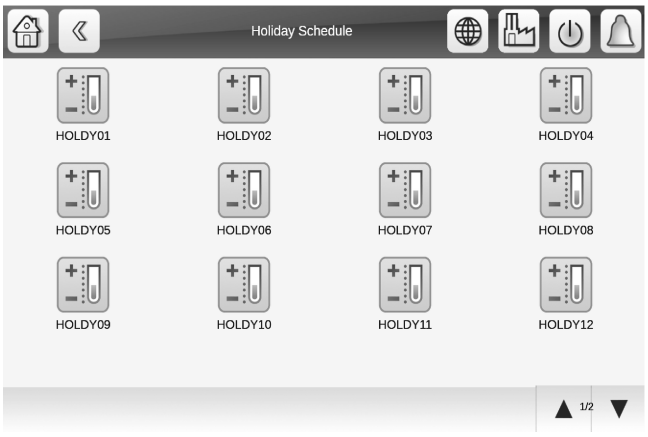
PIC6 PATH: Main Menu → Schedule Menu → Local Schedule



Holiday Schedule

CCN TABLE NAME: HOLIDAY

PIC6 PATH: Main Menu → Schedule Menu → Holiday Schedule

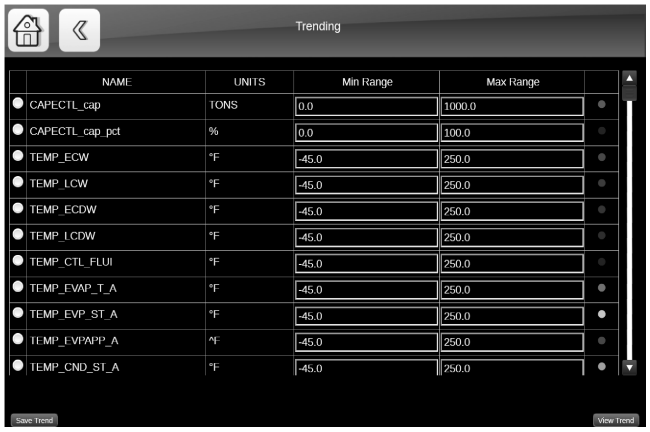


APPENDIX A — PIC6 SCREEN AND TABLE STRUCTURE (cont)

Trending

CCN TABLE NAME: TRENDING

PIC6 PATH: Main Menu → Trending



Quick Test A

CCN TABLE NAME: QCKTESTA

PIC6 PATH: Main Menu → Quick Test Menu → Quick Test A

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[a]	UNIT	READ/WRITE
1	Elapsed Time in Svc Test	ELAPSED	0 to 65535	0	min	RW
2	Main EXV A	TR_EXVA	0 to 100	0	%	RW
3	Econ EXV A	TR_EEXVA	0 to 100	0	%	RW
4	Hot Gas Bypass A	TR_HGBPA	OFF_ON		—	RW
5	Oil Pump	TR_OILR	OFF_ON		—	RW
6	Oil Reclaim Valve	TR_OILMA	0 to 100	0	%	RW
7	Oil Heater - Primary	TR_OLHT1	OFF_ON		—	RW
8	Oil Heater - Secondary	TR_OLHT2	OFF_ON		—	RW
9	Vaporizor Heater	TR_VHEAT	OFF_ON		—	RW
10	Alert Relay	TR_ALE	OFF_ON		—	RW
11	Alarm Relay	TR_ALM	OFF_ON		—	RW
12	Running Relay	TR_RUN	OFF_ON		—	RW
13	Unit Status	TR_STAT	0 to 20	0	mA	RW
14	Tower Fan Speed	TR_T_FAN	0 to 100	0	%	RW
15	Tower Fan High	TR_T_F_H	OFF_ON		—	RW
16	Tower Fan Low	TR_T_F_L	OFF_ON		—	RW
17	Head Pressure Output mA	TR_HDPV	0 to 100	0	%	RW
18	Evap Pump 1	TR_CHWP1	OFF_ON		—	RW
19	Evap Pump 1 Speed	TRCHWPV1	0 to 100	0	%	RW
20	Cond Water Pump 1	TR_CDWP1	OFF_ON		—	RW
21	Cond Water Pump 1 Speed	TRCDWPV1	0 to 100	0	%	RW

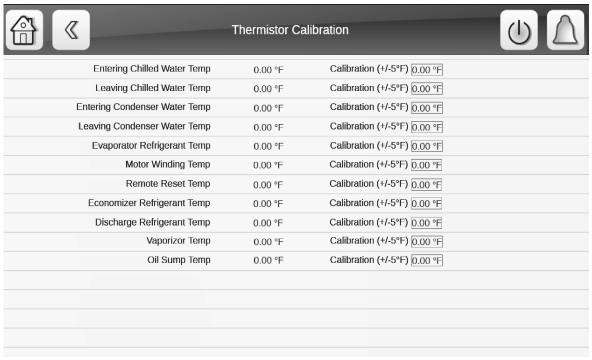
NOTE(S):

a. Default value is shown only if configurable.

Thermistor Calibration

CCN TABLE NAME: THRMCALB

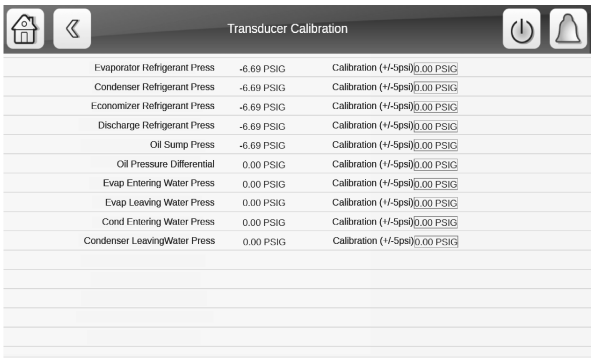
PIC6 PATH: Main Menu → Quick Test Menu → Thermistor Calibration



Transducer Calibration

CCN TABLE NAME: TRNSCALB

PIC6 PATH: Main Menu → Quick Test Menu → Transducer Calibration



Alarms Menu Description

ICON	DISPLAYED TEXT	ACCESS	ASSOCIATED TABLE	PAGE NO.
	Reset Alarms	All	ALARMRST	58
	Current Alarms	All	CUR_ALM	
	History Alarms	All	ALMHIST1	

Alarm Reset[a]

CCN TABLE NAME: ALARMRST

PIC6 PATH: Main Menu → Alarm Menu → Alarm Reset

LINE	PIC6 DESCRIPTION	CCN NAME	RANGE	DEFAULT VALUE[b]	UNIT	READ/WRITE
1	Alarm Reset	RST_ALM	NO/YES	NO	—	RW
2	Alarm State	ALM_STAT			—	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

NOTE(S):

a. For more information about viewing and resetting alarms, see the Diagnostics and Troubleshooting section on page 25.
b. Default value is shown only if configurable.

LEGEND

RO — Read Only
RW — Read/Write

APPENDIX B — CONTROL PANEL PCB BOARD STATUS INDICATORS

INPUT/OUTPUT BOARD (IOB)

All IOB boards have LED indicators that show control board and communication status.

A red LED on each control module operates in the following manner:

- Power not present or power supply failure: LED is off
- Power present but microprocessor in Reset: LED is off
- Microprocessor operational but not communicating: LED flashes 3 seconds on, 3 seconds off
- Microprocessor operational and communicating with control system: LED flashes at 0.5 Hz rate (1 second on, 1 second off) in sync (±100 ms) with all other new control modules on the same communication bus
- Microprocessor in boot mode: LED flashes at 0.2 seconds on, 0.2 seconds off

Each independent communication port has a green status LED. The green LED is on when data is being transmitted by the board.

All RS485 ports have a green LED.

SIOB BOARD

For diagnostic purposes the SIOB can visually be checked as follows:

- While data is transmitted on the LEN bus a green LED will flash
- If no data is transmitted on the LEN bus the green LED will be OFF

APPENDIX C — NETWORK CONFIGURATION

BACnet Points List

OBJECT NAME	TYPE	INSTANCE	OPTION	COVINC	PV ACCESS	DESCRIPTION
ALARMRST_alarm_1	AV	411	Type 6	0	RO	Jbus Current Alarm 1
ALARMRST_alarm_2	AV	412	Type 6	0	RO	Jbus Current Alarm 2
ALARMRST_alarm_3	AV	413	Type 6	0	RO	Jbus Current Alarm 3
ALARMRST_alarm_4	AV	414	Type 6	0	RO	Jbus Current Alarm 4
ALARMRST_alarm_5	AV	415	Type 6	0	RO	Jbus Current Alarm 5
ALARMRST_RST_ALM	BV	161	Type 4	0	RO	Alarm Reset
ALARMRST_SYS_ALM	AV	410	Type 6	0	RO	System Alert/Alarm
CAPDCTL_actstpt	AV	313	Type 6	0	RW	Active Fluid Temp Setpt
CAPDCTL_ck1capmn	AV	314	Type 6	0	RW	cirVarSpdCapLimMinArray
CAPDCTL_ck1capmx	AV	315	Type 6	0	RW	cirVarSpdCapLimMaxArray
CAPDCTL_ck1caprq	AV	316	Type 6	0	RW	Circ Cap Req Array
CAPDCTL_compldrq	AV	317	Type 6	0	RW	Comp Load Required
CAPDCTL_dem_act	BV	131	Type 4	0	RW	Demand Limit Active
CAPDCTL_ramp_act	BV	130	Type 4	0	RW	Ramp Loading Active
CAPDCTL_scstptof	AV	318	Type 6	0	RW	Short Cycle Setpt Offset
CAPDCTL_stptbst	AV	319	Type 6	0	RW	Setpoint Boost
CAPDCTL_syscapmx	AV	320	Type 6	0	RW	sysVarSpdCapLimMax
CAPDCTL_syscaprq	AV	321	Type 6	0	RW	System Capacity Req
CAPECTL_act_ccap	AV	322	Type 6	0	RW	System Actual Comp Cap
CAPECTL_act_fcap	AV	323	Type 6	0	RW	sysActualFixSpdComprCap
CAPECTL_act_vcap	AV	324	Type 6	0	RW	sysActualVarSpdComprCap
CAPECTL_avl_cap	AV	325	Type 6	0	RW	System Avail Comp Cap
CAPECTL_avl_fcap	AV	326	Type 6	0	RW	SysAvailFixSpdComprCap
CAPECTL_avl_vcap	AV	327	Type 6	0	RW	SysAvailVarSpdComprCap
CAPECTL_cap	AV	328	Type 6	0	RW	System Capacity
CAPECTL_cap_pct	AV	329	Type 6	0	RW	System Capacity Percent
CAPECTL_run_fcap	AV	330	Type 6	0	RW	sysRunFixSpdComprCap
CAPECTL_run_vcap	AV	331	Type 6	0	RW	sysRunVarSpdComprCap
CIRCACTL_cap_tons	AV	332	Type 6	0	RW	System Capacity Tons
CIRCACTL_circ_wrd	AV	333	Type 6	0	RW	Circuit A Diag Word
CIRCACTL_ck1_acap	AV	334	Type 6	0	RW	Circ A Avail Comp Cap
CIRCACTL_ck1_cap	AV	335	Type 6	0	RW	Circuit A Capacity
CIRCACTL_ck1_capp	AV	336	Type 6	0	RW	Circuit A Capacity Pct
CIRCACTL_ck1accap	AV	337	Type 6	0	RW	Circ A Actual Comp Cap
CIRCACTL_ck1afcap	AV	338	Type 6	0	RW	cirAAvailFixSpdComprCap
CIRCACTL_ck1afscp	AV	339	Type 6	0	RW	cirAActualFixSpdComprCap
CIRCACTL_ck1avcap	AV	340	Type 6	0	RW	cirAAvailVarSpdComprCap
CIRCACTL_ck1avscp	AV	341	Type 6	0	RW	cirAActualVarSpdComprCap
CIRCACTL_ck1rfcap	AV	342	Type 6	0	RW	cirARunFixSpdComprCap
CIRCACTL_ck1rvcap	AV	343	Type 6	0	RW	cirARunVarSpdComprCap
CIRCACTL_cmpn_wrd	AV	344	Type 6	0	RW	Compression A Diag Word
CIRCACTL_status	AV	345	Type 6	0	RW	Circuit A Status
CIRCACTL_stdystat	BV	132	Type 4	0	RW	Circ A Steady State Flag
CMPA1CTL_aDSTMn	AV	179	Type 6	0	RO	CmpA AbsDischSatTMin
CMPA1CTL_aDSTMx	AV	180	Type 6	0	RO	CmpA AbsDischSatTMax
CMPA1CTL_aSSTMn	AV	181	Type 6	0	RO	CmpA AbsSuctSat TMin
CMPA1CTL_aSSTMx	AV	182	Type 6	0	RO	CmpA AbsSuctSatTMax
CMPA1CTL_cAN	AV	183	Type 6	0	RO	CmpA Act Nom Capacity
CMPA1CTL_cANp	AV	184	Type 6	0	RO	CmpA Act Nom Cap Pct
CMPA1CTL_cASp	AV	185	Type 6	0	RO	CmpA Act Scal Cap pct
CMPA1CTL_cMax	AV	186	Type 6	0	RO	CmpA Capacity Max
CMPA1CTL_cmd	AV	189	Type 6	0	RO	CmpA Command
CMPA1CTL_cMin	AV	187	Type 6	0	RO	CmpA Capacity Min
CMPA1CTL_cObj	AV	188	Type 6	0	RO	CmpA Current Obj
CMPA1CTL_dSTS	AV	190	Type 6	0	RO	CmpA SatDischTempSetpt
CMPA1CTL_dTS	AV	191	Type 6	0	RO	CmpA DischTempSetpt
CMPA1CTL_eDSTMn	AV	193	Type 6	0	RO	CmpA EnvDischSatTMin
CMPA1CTL_eDSTMx	AV	194	Type 6	0	RO	CmpA EnvDischSatTMax
CMPA1CTL_elubsp	AV	205	Type 6	0	RO	CmpA Oil Guidance Setpt
CMPA1CTL_envwrd	AV	206	Type 6	0	RO	CmpA Env Diag Word
CMPA1CTL_eSSTMn	AV	195	Type 6	0	RO	CmpA EnvSuctSatTMin
CMPA1CTL_eSSTMx	AV	196	Type 6	0	RO	CmpA EnvSuctSatTMax
CMPA1CTL_fTStp	AV	197	Type 6	0	RO	CmpA Fluid Temp Setpt
CMPA1CTL_fWd	AV	198	Type 6	0	RO	CmpA Fault Word
CMPA1CTL_isEnable	BV	89	Type 4	0	RO	CmpA Enable
CMPA1CTL_isNom	BV	90	Type 4	0	RO	CmpA Nominal
CMPA1CTL_isRd2Go	BV	91	Type 4	0	RO	CmpA Ready to Start

APPENDIX C — NETWORK CONFIGURATION (cont)

BACnet Points List (cont)

OBJECT NAME	TYPE	INSTANCE	OPTION	COVINC	PV ACCESS	DESCRIPTION
CMPA1CTL_isRd2St	BV	92	Type 4	0	RO	CmpA Ready to Stop
CMPA1CTL_isStart	BV	93	Type 4	0	RO	CmpA Started
CMPA1CTL_isStop	BV	94	Type 4	0	RO	CmpA Stopped
CMPA1CTL_iTS	AV	199	Type 6	0	RO	CmpA Inverter Temp Setpt
CMPA1CTL_mTS	AV	200	Type 6	0	RO	CmpA Motor Temp Setpt
CMPA1CTL_oVS	AV	201	Type 6	0	RO	CmpA Oil Viscosity Setpt
CMPA1CTL_rTS	AV	202	Type 6	0	RO	CmpA RectifierTemp Setpt
CMPA1CTL_shrt_cyc	BV	95	Type 4	0	RO	CmpA Short Cycle Prevent
CMPA1CTL_sSTS	AV	203	Type 6	0	RO	CmpA Sat Suct Temp Setpt
CMPA1CTL_stall_ct	AV	204	Type 6	0	RO	CmpA Stall Count
CMPA1CTL_statwrd	AV	192	Type 6	0	RO	CmpA State Diag Word
CMPA1CTL_vi_cmd	BV	96	Type 4	0	RO	CmpA Vi Command
CMPA1CTL_vi_cObj	AV	209	Type 6	0	RO	CmpA Vi Curr Objective
CMPA1CTL_vi_dword	AV	210	Type 6	0	RO	CmpA Vi Diag Word
CMPA1CTL_vi_sp1	AV	207	Type 6	0	RO	CmpA Vi Stpt 1
CMPA1CTL_vi_sp2	AV	208	Type 6	0	RO	CmpA Vi Stpt 2
CPMPCTL_disc_cmd	BV	123	Type 4	0	RO	Cond Pump Cmd
CPMPCTL_dWd	AV	290	Type 6	0	RO	Diagnostic Word
CPMPCTL_fWd	AV	291	Type 6	0	RO	Fault Word
CPMPCTL_has_flo	BV	55	Type 4	0	RO	Flow Established
CPMPCTL_isEnable	BV	124	Type 4	0	RO	Enable
CPMPCTL_isNom	BV	125	Type 4	0	RO	Nominal
CPMPCTL_isRd2Go	BV	126	Type 4	0	RO	Ready to Start
CPMPCTL_isRd2St	BV	127	Type 4	0	RO	Ready to Stop
CPMPCTL_isStart	BV	128	Type 4	0	RO	Started
CPMPCTL_isStop	BV	129	Type 4	0	RO	Stopped
CTLSTATE_ice_bld	AV	38	Type 6	0	RO	Ice Building
DRVA1CFG_curr_lim	AV	396	Type 6	0	RW	Current Limit Percent
DRVA1CFG_min_spd	AV	393	Type 6	0	RW	Compressor Unload Spd
DRVA1CFG_pwm_freq	AV	397	Type 6	0	RW	PWM Switch Frequency
DRVA1CFG_ramp_dec	AV	403	Type 6	0	RW	Decrease Ramp Time
DRVA1CFG_ramp_inc	AV	402	Type 6	0	RW	Increase Ramp Time
DRVA1CFG_rla	AV	389	Type 6	0	RW	Motor Nameplate Current
DRVA1CFG_rla_m	AV	387	Type 6	0	RW	Motor Rated Load Amps
DRVA1CFG_rlhz	AV	392	Type 6	0	RW	Compressor 100% Speed
DRVA1CFG_rlkw	AV	391	Type 6	0	RW	Motor Nameplate KW
DRVA1CFG_rlrpm	AV	390	Type 6	0	RW	Motor Nameplate RPM
DRVA1CFG_rlv	AV	388	Type 6	0	RW	Motor Nameplate Voltage
DRVA1CFG_rlv_i	AV	386	Type 6	0	RW	Rated Line Voltage
DRVA1CFG_skipband	AV	401	Type 6	0	RW	Skip Frequency Band
DRVA1CFG_skipfrq1	AV	398	Type 6	0	RW	Skip Frequency 1
DRVA1CFG_skipfrq2	AV	399	Type 6	0	RW	Skip Frequency 2
DRVA1CFG_skipfrq3	AV	400	Type 6	0	RW	Skip Frequency 3
DRVA1CFG_strt_spd	AV	394	Type 6	0	RW	Compressor Start Spd
DRVA1CFG_torq_lim	AV	395	Type 6	0	RW	Torque Limit Percent
DRVA1STS_ALM_WD1	AV	174	Type 6	0	RO	VFD Alarm Word1
DRVA1STS_ALM_WD2	AV	175	Type 6	0	RO	VFD Alarm Word2
DRVA1STS_ALT_WD1	AV	172	Type 6	0	RO	VFD Alert Word1
DRVA1STS_ALT_WD2	AV	173	Type 6	0	RO	VFD Alert Word2
DRVA1STS_AMPS_PCT	AV	161	Type 6	0	RO	VFD Motor Curr Pct Rated
DRVA1STS_BUS_V	AV	159	Type 6	0	RO	VFD Bus Voltage
DRVA1STS_COMS	MV	8	Type 5	0	RO	VFD Coms Status
DRVA1STS_IGBT_T	AV	166	Type 6	0	RO	VFD IGBT Temp
DRVA1STS_INV_T	AV	165	Type 6	0	RO	VFD Inverter Temp
DRVA1STS_LAST_FLT	AV	169	Type 6	0	RO	VFD Last Fault Code
DRVA1STS_LINE_CUR	AV	157	Type 6	0	RO	VFD Average Line Current
DRVA1STS_LINE_KW	AV	158	Type 6	0	RO	VFD Average Line KW
DRVA1STS_LINE_V	AV	156	Type 6	0	RO	VFD Average Line Voltage
DRVA1STS_MOT_CUR	AV	160	Type 6	0	RO	VFD Motor Current
DRVA1STS_MOT_KW	AV	162	Type 6	0	RO	VFD Motor KW
DRVA1STS_MOT_RPM	AV	168	Type 6	0	RO	VFD Motor Rpm
DRVA1STS_PCT	AV	163	Type 6	0	RO	VFD Capacity
DRVA1STS_RECT_T	AV	167	Type 6	0	RO	VFD Rectifier Temp
DRVA1STS_SPD	AV	164	Type 6	0	RO	VFD Speed
DRVA1STS_STAT_WD1	AV	170	Type 6	0	RO	VFD Status Word1
DRVA1STS_STAT_WD2	AV	171	Type 6	0	RO	VFD Status Word2
ECOACTL_cObj	AV	226	Type 6	0	RO	Current Objective

APPENDIX C — NETWORK CONFIGURATION (cont)

BACnet Points List (cont)

OBJECT NAME	TYPE	INSTANCE	OPTION	COVINC	PV ACCESS	DESCRIPTION
ECOACTL_dTStpt	AV	227	Type 6	0	RO	Econ Disch Temp Setpoint
ECOACTL_dWd	AV	228	Type 6	0	RO	Diag Word
ECOACTL_fWd	AV	229	Type 6	0	RO	Fault Word
ECOACTL_isEnable	BV	104	Type 4	0	RO	Enable
ECOACTL_isNom	BV	105	Type 4	0	RO	Nominal
ECOACTL_isRd2Go	BV	106	Type 4	0	RO	Ready to Start
ECOACTL_isRd2St	BV	107	Type 4	0	RO	Ready to Stop
ECOACTL_isStart	BV	108	Type 4	0	RO	Started
ECOACTL_isStop	BV	109	Type 4	0	RO	Stopped
ECOACTL_shTStpt	AV	230	Type 6	0	RO	Econ Superheat Setpoint
ENERGY_acgpm	AV	139	Type 6	0	RO	Actual Cond GPM
ENERGY_aegpm	AV	138	Type 6	0	RO	Actual Evap GPM
ENERGY_dcgpm	AV	377	Type 6	0	RW	Design Cond GPM
ENERGY_dcpdft	AV	378	Type 6	0	RW	Design Cond Press Drop
ENERGY_dcrt	AV	379	Type 6	0	RW	Design Cond Refrig Temp
ENERGY_decwt	AV	375	Type 6	0	RW	Design Ent Cond Temp
ENERGY_degpm	AV	372	Type 6	0	RW	Design Evap GPM
ENERGY_depdft	AV	373	Type 6	0	RW	Design Evap Press Drop
ENERGY_dert	AV	374	Type 6	0	RW	Design Evap Refrig Temp
ENERGY_dewt	AV	370	Type 6	0	RW	Design Ent Evap Temp
ENERGY_din_kw	AV	368	Type 6	0	RW	Design Input kW
ENERGY_dkw_ton	AV	369	Type 6	0	RW	Design Input kW/Ton
ENERGY_dlcwt	AV	376	Type 6	0	RW	Design Lvg Cond Temp
ENERGY_dlwt	AV	371	Type 6	0	RW	Design Lvg Evap Temp
EPMPCTL_disc_cmd	AV	348	Type 6	0	RO	Evap Pump Cmd
EPMPCTL_dWd	AV	349	Type 6	0	RO	Diagnostic Word
EPMPCTL_fWd	AV	350	Type 6	0	RO	Fault Word
EPMPCTL_has_flo	AV	137	Type 6	0	RO	Flow Established
EPMPCTL_isEnable	BV	140	Type 4	0	RO	Enable
EPMPCTL_isNom	BV	141	Type 4	0	RO	Nominal
EPMPCTL_isRd2Go	BV	142	Type 4	0	RO	Ready to Start
EPMPCTL_isRd2St	BV	143	Type 4	0	RO	Ready to Stop
EPMPCTL_isStart	BV	144	Type 4	0	RO	Started
EPMPCTL_isStop	BV	145	Type 4	0	RO	Stopped
EXVACFG_aTStpt	AV	7	Type 6	0	RW	EXV Approach Setpoint
EXVACFG_cll_stpt	AV	6	Type 6	0	RW	EXV Cond Liq Lvl Stpt
EXVACFG_lo_dshof	AV	9	Type 6	0	RW	EXV Lo Disch Superh Ofst
EXVACFG_lo_dshsp	AV	8	Type 6	0	RW	EXV Lo Disch Superh Stpt
EXVACFG_max_dist	AV	10	Type 6	0	RW	EXV Max Disch Temp Stpt
EXVACFG_sbc_min	AV	11	Type 6	0	RW	EXV Subcooling Min Stpt
EXVACFG_sbc_of	AV	12	Type 6	0	RW	EXV Subcooling Min Ofst
EXVACFG_spsSTLeMO	AV	13	Type 6	0	RW	EXV LowSatSuctOffset
EXVACTL_aTStpt	AV	211	Type 6	0	RO	Approach Setpoint
EXVACTL_cll_stpt	AV	213	Type 6	0	RO	Cond Liq Level Setpoint
EXVACTL_cObj	AV	212	Type 6	0	RO	Current Objective
EXVACTL_dPHStpt	AV	214	Type 6	0	RO	Hi Disch Sat Temp Stpt
EXVACTL_dWd	AV	215	Type 6	0	RO	Diag Word
EXVACTL_ecliqlvl	AV	223	Type 6	0	RO	Est Cond Liq Level
EXVACTL_estcflo	AV	225	Type 6	0	RO	Est Cond Flow
EXVACTL_esteflo	AV	224	Type 6	0	RO	Est Evap Flow
EXVACTL_estflag	BV	103	Type 4	0	RO	Cond Lvl Est Flag
EXVACTL_fWd	AV	216	Type 6	0	RO	Fault Word
EXVACTL_hi_dtsp	AV	221	Type 6	0	RO	Disch Temp Hi Stpt
EXVACTL_isEnable	BV	97	Type 4	0	RO	Enable
EXVACTL_isNom	BV	98	Type 4	0	RO	Nominal
EXVACTL_isRd2Go	BV	99	Type 4	0	RO	Ready to Start
EXVACTL_isRd2St	BV	100	Type 4	0	RO	Ready to Stop
EXVACTL_isStart	BV	101	Type 4	0	RO	Started
EXVACTL_isStop	BV	102	Type 4	0	RO	Stopped
EXVACTL_lo_dshsp	AV	217	Type 6	0	RO	Low Disch S/H Stpt
EXVACTL_lo_sbcsp	AV	222	Type 6	0	RO	Subcool Low Stpt
EXVACTL_max_dist	AV	218	Type 6	0	RO	Max Discharge Temp
EXVACTL_sPHStpt	AV	219	Type 6	0	RO	suctSatTempHighStpt
EXVACTL_sPLStpt	AV	220	Type 6	0	RO	suctSatTempLowStpt
FACTORY_aux_io	AV	366	Type 6	0	RW	Auxilary IO Location
FACTORY_comp_typ	MV	11	Type 5	0	RW	Compressor Type
FACTORY_econ_opt	MV	15	Type 5	0	RW	Economizer Option

APPENDIX C — NETWORK CONFIGURATION (cont)

BACnet Points List (cont)

OBJECT NAME	TYPE	INSTANCE	OPTION	COVINC	PV ACCESS	DESCRIPTION
FACTORY_exv_opt	MV	14	Type 5	0	RW	EXV Control Type
FACTORY_hgbp_opt	BV	159	Type 4	0	RW	HGBP Control Option
FACTORY_oilassy	AV	367	Type 6	0	RW	Oil Assembly Option
FACTORY_refrig	MV	12	Type 5	0	RW	Refrigerant Type
FACTORY_tons	AV	365	Type 6	0	RW	Chiller Tons
FACTORY_vfd_opt	MV	13	Type 5	0	RW	VFD Option
GENCONF_caplim_a	AV	4	Type 6	0	RW	Circuit A Capacity Limit
GENCONF_caplim_b	AV	5	Type 6	0	RW	Circuit B Capacity Limit
GENCONF_dem_sel	MV	3	Type 5	0	RW	Demand Limit Source
GENCONF_ice_rec	BV	2	Type 4	0	RW	Ice Mode Recycle
GENCONF_lead_ck	MV	2	Type 5	0	RW	Lead Circuit Selection
GENCONF_leak_en	BV	3	Type 4	0	RW	Refrigerant Leak Option
GENCONF_ramp_en	BV	1	Type 4	0	RW	Enable Ramp Loading
GENCONF_rampsel	MV	1	Type 5	0	RW	Ramp Loading Type
GENCONF_rrate_a	AV	2	Type 6	0	RW	Ramp Rate (per Min)
GENCONF_rrate_k	AV	3	Type 6	0	RW	Ramp Rate (per Min)
GENCONF_rrate_t	AV	1	Type 6	0	RW	Ramp Rate (per Min)
GENUNIT_BAC_OCC	BV	4	Type 4	0	RO	BACnet Occupied
GENUNIT_CHIL_S_S	BV	6	Type 4	0	RO	Cmd Start/Stop
GENUNIT_CTRL_PNT	AV	35	Type 6	0	RO	Control Point
GENUNIT_DEM_LIM	AV	36	Type 6	0	RO	Active Demand Limit
GENUNIT_EMSTOP	BV	7	Type 4	0	RO	Emergency Stop
GENUNIT_ICE_OCC	BV	9	Type 4	0	RO	Ice Build Occupied
GENUNIT_LAG_LIM	AV	37	Type 6	0	RO	Lag Demand Limit
GENUNIT_LCL_S_S	BV	5	Type 4	0	RO	HMI Start/Stop Cmd
GENUNIT_LOC_OCC	BV	8	Type 4	0	RO	Local Sched Occupied
GENUNIT_min_left	AV	33	Type 6	0	RO	Time Until Start
GENUNIT_min_run	AV	34	Type 6	0	RO	Minimum Runtime Timer
GENUNIT_ONOFFSVC	MV	5	Type 5	0	RO	Unit Mode
GENUNIT_ramp_act	BV	10	Type 4	0	RO	Ramp Loading Active
GENUNIT_ramprate	AV	39	Type 6	0	RO	Ramp Rate (per Min)
GENUNIT_rpdrstst	MV	7	Type 5	0	RO	Swift Restart State
GENUNIT_STATUS	MV	4	Type 5	0	RO	Unit Status
GENUNIT_SYS_STAT	MV	6	Type 5	0	RO	System State
HGBPACTL_cmd	AV	233	Type 6	0	RO	HGBPA Command
HGBPACTL_cObj	AV	231	Type 6	0	RO	HGBPA Current Obj
HGBPACTL_cSS	AV	235	Type 6	0	RO	HGBPA Comp Spd Stpt
HGBPACTL_do_cmd	BV	110	Type 4	0	RO	HGBPA Disc Out Cmd
HGBPACTL_dWd	AV	237	Type 6	0	RO	HGBPA Diag Word
HGBPACTL_fTS	AV	234	Type 6	0	RO	HGBPA Fluid T Stpt
HGBPACTL_fWd	AV	238	Type 6	0	RO	HGBPA Fault Word
HGBPACTL_hgbpa_pt	AV	232	Type 6	0	RO	HGBPA Process Temp
HGBPACTL_isEnable	BV	111	Type 4	0	RO	HGBPA Enable
HGBPACTL_isNom	BV	112	Type 4	0	RO	HGBPA Nominal
HGBPACTL_isRd2Go	BV	113	Type 4	0	RO	HGBPA Ready to Start
HGBPACTL_isRd2St	BV	114	Type 4	0	RO	HGBPA Ready to Stop
HGBPACTL_isStart	BV	115	Type 4	0	RO	HGBPA Started
HGBPACTL_isStop	BV	116	Type 4	0	RO	HGBPA Stopped
HGBPACTL_svPS	AV	236	Type 6	0	RO	HGBPA SV Pos Stpt
HYDRCFG_cflo_vt	AV	385	Type 6	0	RW	Cond Flow Verify time
HYDRCFG_condfdtp	AV	383	Type 6	0	RW	Cond Flow Detection Type
HYDRCFG_condfldp	AV	384	Type 6	0	RW	Cond Min Flow dP
HYDRCFG_eflo_vt	AV	382	Type 6	0	RW	Evap Flow Verify time
HYDRCFG_evapfdtp	AV	380	Type 6	0	RW	Evap Flow Detection Type
HYDRCFG_evapfldp	AV	381	Type 6	0	RW	Evap Min Flow dP
INPUTS_AUTO_DEM	AV	127	Type 6	0	RO	Auto Demand Limit Input
INPUTS_AUTO_RES	AV	128	Type 6	0	RO	Auto Water Temp Reset
INPUTS_CNDLVL_A	AV	133	Type 6	0	RO	Cond Liq Lev A
INPUTS_CNDLVL_B	AV	136	Type 6	0	RO	Cond Liq Lev B
INPUTS_COND_FSW	BV	49	Type 4	0	RO	Condenser Flow Switch
INPUTS_E_STOP	BV	42	Type 4	0	RO	Emergency Stop Contact
INPUTS_ECOA_FBK	AV	131	Type 6	0	RO	Econ A EXV Feedback
INPUTS_ECOB_FBK	AV	135	Type 6	0	RO	Econ B EXV Feedback
INPUTS_EVAP_FSW	BV	50	Type 4	0	RO	Evaporator Flow Switch
INPUTS_EXVA_FBK	AV	130	Type 6	0	RO	Main EXV A Feedback
INPUTS_EXVB_FBK	AV	134	Type 6	0	RO	Main EXV B Feedback
INPUTS_FS_LOCK	BV	43	Type 4	0	RO	Fire Security Interlock

APPENDIX C — NETWORK CONFIGURATION (cont)

BACnet Points List (cont)

OBJECT NAME	TYPE	INSTANCE	OPTION	COVINC	PV ACCESS	DESCRIPTION
INPUTS_HPS_A	BV	52	Type 4	0	RO	High Pressure Switch A
INPUTS_HPS_B	BV	54	Type 4	0	RO	High Pressure Switch B
INPUTS_ICE_CON	BV	44	Type 4	0	RO	Ice Build Contact
INPUTS_ICE_SW	BV	45	Type 4	0	RO	Ice Done Storage Switch
INPUTS_OIL_L_A	BV	51	Type 4	0	RO	Oil Level Input A
INPUTS_OIL_L_B	BV	53	Type 4	0	RO	Oil Level Input B
INPUTS_REF_LEAK	AV	129	Type 6	0	RO	Refrig Leakage Sensor
INPUTS_REM_CON	BV	46	Type 4	0	RO	Remote Start/Stop
INPUTS_REM_LOCK	BV	47	Type 4	0	RO	Remote Lockout
INPUTS_SAFETY	BV	48	Type 4	0	RO	Spare Safety Input
INPUTS_SVA_FBK	AV	132	Type 6	0	RO	Slide Valve A Feedback
LIMITCFG_ap_dgap	AV	29	Type 6	0	RW	Design Evap Appr
LIMITCFG_cdp_alrt	AV	27	Type 6	0	RW	Cond Press Alert
LIMITCFG_cond_al	AV	25	Type 6	0	RW	Cond Approach Alert
LIMITCFG_dgt_alrt	AV	26	Type 6	0	RW	Comp Discharge Alert
LIMITCFG_evap_al	AV	24	Type 6	0	RW	Evap Approach Alert
LIMITCFG_PpmLim	AV	32	Type 6	0	RW	Refrig Leak Alarm PPM
LIMITCFG_rch_cath	AV	28	Type 6	0	RW	Refr Charge Cond Alert
LIMITCFG_RefPpm20	AV	31	Type 6	0	RW	Ref Leak PPM at 20 mA
LIMITCFG_vfdsptad	AV	30	Type 6	0	RW	VFD Speed Alrt Dband
LUBECFG_hgbpoff	AV	21	Type 6	0	RW	Turn Off HGBP
LUBECFG_hgbpon	AV	20	Type 6	0	RW	Turn On HGBP
LUBECFG_minhz	AV	23	Type 6	0	RW	Minimum Hz
LUBECFG_minlift	AV	22	Type 6	0	RW	Minimum Lift
LUBECFG_smp1off	AV	17	Type 6	0	RW	Sump1 Heater Off
LUBECFG_smp1on	AV	16	Type 6	0	RW	Sump1 Heater On
LUBECFG_smp2off	AV	19	Type 6	0	RW	Sump2 Heater Off
LUBECFG_smp2on	AV	18	Type 6	0	RW	Sump2 Heater On
LUBECFG_vphtoff	AV	15	Type 6	0	RW	Vaporizer Heater Off
LUBECFG_vphton	AV	14	Type 6	0	RW	Vaporizer Heater On
OILHCTL_fWd	AV	264	Type 6	0	RO	Fault Word
OILHCTL_isEnable	AV	265	Type 6	0	RO	Enable
OILHCTL_isNom	AV	266	Type 6	0	RO	Nominal
OILHCTL_isRd2Go	AV	267	Type 6	0	RO	Ready to Start
OILHCTL_isRd2St	AV	268	Type 6	0	RO	Ready to Stop
OILHCTL_isStart	AV	269	Type 6	0	RO	Started
OILHCTL_isStop	AV	270	Type 6	0	RO	Stopped
OILPCTL_fWd	AV	271	Type 6	0	RO	Fault Word
OILPCTL_isEnable	AV	272	Type 6	0	RO	Enable
OILPCTL_isNom	AV	273	Type 6	0	RO	Nominal
OILPCTL_isRd2Go	AV	274	Type 6	0	RO	Ready to Start
OILPCTL_isRd2St	AV	275	Type 6	0	RO	Ready to Stop
OILPCTL_isStart	AV	276	Type 6	0	RO	Started
OILPCTL_isStop	AV	277	Type 6	0	RO	Stopped
OILRCTL_isEnable	AV	278	Type 6	0	RO	Enable
OILRCTL_isNom	AV	279	Type 6	0	RO	Nominal
OILRCTL_isRd2Go	AV	280	Type 6	0	RO	Ready to Start
OILRCTL_isRd2St	AV	281	Type 6	0	RO	Ready to Stop
OILRCTL_isStart	AV	282	Type 6	0	RO	Started
OILRCTL_isStop	AV	283	Type 6	0	RO	Stopped
OILVCTL_oil_visc	AV	346	Type 6	0	RO	Oil Viscosity
OUTPUTS_ALE	BV	11	Type 4	0	RO	Alert Relay
OUTPUTS_ALM	BV	12	Type 5	0	RO	Alarm Relay
OUTPUTS_BP_ECO_A	BV	26	Type 4	0	RO	Econ Bypass Solenoid A
OUTPUTS_BP_ECO_B	BV	40	Type 4	0	RO	Econ Bypass Solenoid B
OUTPUTS_CAPOUT_A	AV	120	Type 6	0	RO	Analog Capacity Output A
OUTPUTS_CAPOUT_B	AV	124	Type 6	0	RO	Analog Capacity Output B
OUTPUTS_CAPT	AV	116	Type 6	0	RO	Capacity Output Total
OUTPUTS_CDWP1	BV	16	Type 4	0	RO	Cond Water Pump
OUTPUTS_CHST_OUT	AV	117	Type 6	0	RO	Unit Status Output
OUTPUTS_CHWP1	BV	17	Type 4	0	RO	Chill Water Pump
OUTPUTS_CP_A_LOCK	BV	27	Type 4	0	RO	Comp A VFD Interlock
OUTPUTS_CP_B_LOCK	BV	41	Type 4	0	RO	Comp B VFD Interlock
OUTPUTS_ECOEXV_A	AV	121	Type 6	0	RO	Economizer EXV A
OUTPUTS_ECOEXV_B	AV	125	Type 6	0	RO	Economizer EXV B
OUTPUTS_EXV_A	AV	122	Type 6	0	RO	Main EXV A
OUTPUTS_EXV_B	AV	126	Type 6	0	RO	Main EXV B

APPENDIX C — NETWORK CONFIGURATION (cont)

BACnet Points List (cont)

OBJECT NAME	TYPE	INSTANCE	OPTION	COVINC	PV ACCESS	DESCRIPTION
OUTPUTS_HDPV_OUT	AV	118	Type 6	0	RO	Head Pres Output
OUTPUTS_HGBP_A	BV	20	Type 4	0	RO	HGBP Soleniod A
OUTPUTS_HGBP_B	BV	34	Type 4	0	RO	HGBP Soleniod B
OUTPUTS_MTR_CL_A	BV	22	Type 4	0	RO	Motor Cooling Solenoid A
OUTPUTS_MTR_CL_B	BV	36	Type 4	0	RO	Motor Cooling Solenoid B
OUTPUTS_OIL_DL_A	BV	23	Type 4	0	RO	Dual Oil Flow Solenoid A
OUTPUTS_OIL_DL_B	BV	37	Type 4	0	RO	Dual Oil Flow Solenoid B
OUTPUTS_OIL_RECL	AV	123	Type 6	0	RO	Oil Reclaim Valve
OUTPUTS_OILHEAT1	BV	31	Type 4	0	RO	Oil Heater - Primary
OUTPUTS_OILHEAT2	BV	32	Type 4	0	RO	Oil Heater - Secondary
OUTPUTS_OILR	BV	33	Type 4	0	RO	Oil Pump Relay
OUTPUTS_OILSOL_A	BV	21	Type 4	0	RO	Oil Solenoid A
OUTPUTS_OILSOL_B	BV	35	Type 4	0	RO	Oil Solenoid B
OUTPUTS_RUN	BV	13	Type 4	0	RO	Running Relay
OUTPUTS_SET_FLOW	BV	14	Type 4	0	RO	Cooler Flow SP Out
OUTPUTS_SHTDN	BV	15	Type 4	0	RO	Shutdown Relay
OUTPUTS_SLV_LD_A	BV	28	Type 4	0	RO	Slide Valve Load A
OUTPUTS_SLV_UL_A	BV	29	Type 4	0	RO	Slide Valve Unload A
OUTPUTS_TFR_HIGH	BV	18	Type 4	0	RO	Tower Fan Relay High
OUTPUTS_TFR_LOW	BV	19	Type 4	0	RO	Tower Fan Relay Low
OUTPUTS_TOW_FAN	AV	119	Type 6	0	RO	VFD Tower Fan
OUTPUTS_VAP_HEAT	BV	30	Type 4	0	RO	Vaporizer Heater
OUTPUTS_VFDSOL_A	BV	24	Type 4	0	RO	VFD Coolant Solenoid A
OUTPUTS_VFDSOL_B	BV	38	Type 4	0	RO	VFD Coolant Solenoid B
OUTPUTS_VI_CMP_A	BV	25	Type 4	0	RO	VI Piston Solenoid A
OUTPUTS_VI_CMP_B	BV	39	Type 4	0	RO	VI Piston Solenoid B
PLTSPRT_rs485_u1_tres	BV	146	Type 4	0	RW	LEN Port J6 Term Res
PLTSPRT_rs485_u3_tres	BV	147	Type 4	0	RW	CCN Port J7 Term Res
PLTSPRT_rs485_u4_tres	BV	148	Type 4	0	RW	Mod Master J10 Term Res
PLTSPRT_rs485_u5_tres	BV	149	Type 4	0	RW	BMS Port J8 Term Res
PRESSURE_CND_P_A	AV	97	Type 6	0	RO	Condenser Pressure A
PRESSURE_CND_P_B	AV	108	Type 6	0	RO	Condenser Pressure B
PRESSURE_COND_EWP	AV	91	Type 6	0	RO	Entering Cond Water Pres
PRESSURE_COND_LWP	AV	92	Type 6	0	RO	Leaving Cond Water Pres
PRESSURE_COND_WDP	AV	93	Type 6	0	RO	Cond Water Delta P
PRESSURE_DIS_P_A	AV	96	Type 6	0	RO	Discharge Pressure A
PRESSURE_DIS_P_B	AV	107	Type 6	0	RO	Discharge Pressure B
PRESSURE_ECO_P_A	AV	98	Type 6	0	RO	Economizer Pressure A
PRESSURE_ECO_P_B	AV	109	Type 6	0	RO	Economizer Pressure B
PRESSURE_EVAP_EWP	AV	88	Type 6	0	RO	Entering Evap Water Pres
PRESSURE_EVAP_LWP	AV	89	Type 6	0	RO	Leaving Evap Water Pres
PRESSURE_EVAP_P_A	AV	94	Type 6	0	RO	Evaporator Pressure A
PRESSURE_EVAP_P_B	AV	105	Type 6	0	RO	Evaporator Pressure B
PRESSURE_EVAP_WDP	AV	90	Type 6	0	RO	Evap Water Delta P
PRESSURE_LIQ_P_A	AV	103	Type 6	0	RO	Liquid Line Press A
PRESSURE_LIQ_P_B	AV	114	Type 6	0	RO	Liquid Line Press B
PRESSURE_MTR_P_A	AV	104	Type 6	0	RO	Motor Injection Press A
PRESSURE_MTR_P_B	AV	115	Type 6	0	RO	Motor Injection Press B
PRESSURE_OIL_DP_A	AV	100	Type 6	0	RO	Oil Discharge Pressure A
PRESSURE_OIL_DP_B	AV	111	Type 6	0	RO	Oil Discharge Pressure B
PRESSURE_OIL_PD_A	AV	101	Type 6	0	RO	Oil Press Diff A
PRESSURE_OIL_PD_B	AV	112	Type 6	0	RO	Oil Press Diff B
PRESSURE_OILPA1RQ	AV	102	Type 6	0	RO	Oil Pressure Required A
PRESSURE_OILPB1RQ	AV	113	Type 6	0	RO	Oil Pressure Required B
PRESSURE_OILPSMPA	AV	99	Type 6	0	RO	Oil Sump Pressure A
PRESSURE_OILPSMPB	AV	110	Type 6	0	RO	Oil Sump Pressure B
PRESSURE_SUCT_P_A	AV	95	Type 6	0	RO	Suction Pressure A
PRESSURE_SUCT_P_B	AV	106	Type 6	0	RO	Suction Pressure B
PROTOCOL_BAC_S_S	BV	136	Type 4	0	RO	BACNET Start/Stop
PROTOCOL_BACALARM	BV	138	Type 4	0	RO	BACNET Alarm Flag
PROTOCOL_BACALERT	BV	139	Type 4	0	RO	BACNET Alert Flag
PROTOCOL_BACDEML	AV	347	Type 6	0	RO	BACNET Demand Limit
PROTOCOL_BACESTOP	BV	134	Type 4	0	RO	BACNET Estop
PROTOCOL_BACLKOUT	BV	137	Type 4	0	RO	BACNET Lockout
PROTOCOL_BACOCC	BV	133	Type 4	0	RO	BACNET Occupy
PROTOCOL_BACSFTY	BV	135	Type 4	0	RO	BACNET Fire Safety
RUNTIME_hr_comp_a	AV	307	Type 6	0	RO	Compressor A Hours

APPENDIX C — NETWORK CONFIGURATION (cont)

BACnet Points List (cont)

OBJECT NAME	TYPE	INSTANCE	OPTION	COVINC	PV ACCESS	DESCRIPTION
RUNTIME_hr_comp_b	AV	308	Type 6	0	RO	Compressor B Hours
RUNTIME_hr_cpmp1	AV	312	Type 6	0	RO	Cond Pump 1 Hours
RUNTIME_hr_epmp1	AV	311	Type 6	0	RO	Evap Pump 1 Hours
RUNTIME_hr_mach	AV	306	Type 6	0	RO	Machine Operating Hours
RUNTIME_hr_oilpa	AV	309	Type 6	0	RO	Oil Pump A Hours
RUNTIME_hr_oilpb	AV	310	Type 6	0	RO	Oil Pump B Hours
RUNTIME_hr_svc	AV	305	Type 6	0	RO	Service Runtime
RUNTIME_rcycst_a	AV	298	Type 6	0	RO	CompA Recy Strts in 4 Hr
RUNTIME_rcycst_b	AV	299	Type 6	0	RO	CompB Recy Strts in 4 Hr
RUNTIME_spst_a	AV	303	Type 6	0	RO	Comp A Stop to Start
RUNTIME_spst_b	AV	304	Type 6	0	RO	Comp B Stop to Start
RUNTIME_st_oilpa	AV	294	Type 6	0	RO	Oil Pump A Starts
RUNTIME_st_oilpb	AV	295	Type 6	0	RO	Oil Pump B Starts
RUNTIME_st12_a	AV	296	Type 6	0	RO	CompA Starts in 12 Hrs
RUNTIME_st12_b	AV	297	Type 6	0	RO	CompB Starts in 12 Hrs
RUNTIME_str_comp_a	AV	292	Type 6	0	RO	Compressor A Starts
RUNTIME_str_comp_b	AV	293	Type 6	0	RO	Compressor B Starts
RUNTIME_stst_a	AV	301	Type 6	0	RO	Comp A Start to Start
RUNTIME_stst_b	AV	302	Type 6	0	RO	Comp B Start to Start
RUNTIME_swiftcnt	AV	300	Type 6	0	RO	Swift Restarts in 1 Hr
SERVICE1_CirA_En	BV	155	Type 4	0	RW	Enable Circuit A
SERVICE1_CirB_En	BV	156	Type 4	0	RW	Enable Circuit B
SERVICE1_cmpstper_A	AV	359	Type 6	0	RW	Comp Start Period
SERVICE1_cmpstper_B	AV	361	Type 6	0	RW	Comp Start Period
SERVICE1_dem_20ma	AV	353	Type 6	0	RW	Demand Limit At 20 mA
SERVICE1_emstopen	BV	150	Type 4	0	RW	Emergency Stop Enable
SERVICE1_flui_typ	MV	9	Type 5	0	RW	Evaporator Fluid Type
SERVICE1_freezesp	AV	351	Type 6	0	RW	Brine Freeze Setpoint
SERVICE1_lockout	BV	151	Type 4	0	RW	Service Lockout
SERVICE1_max_lwt	AV	355	Type 6	0	RW	Maximum Fluid Temp
SERVICE1_min_lwt	AV	354	Type 6	0	RW	Minimum Fluid Temp
SERVICE1_min_off	AV	352	Type 6	0	RW	Comp Min Off Time
SERVICE1_oilsw_by_A	BV	153	Type 4	0	RW	Oil Switch Bypass A
SERVICE1_oilsw_by_B	BV	154	Type 4	0	RW	Oil Switch Bypass B
SERVICE1_pwautlim	AV	364	Type 6	0	RW	Powerloss Autoreset Lim
SERVICE1_rspdmaxA	AV	356	Type 6	0	RW	Comp Speed Max A
SERVICE1_rspdmaxB	AV	357	Type 6	0	RW	Comp Speed Max B
SERVICE1_rsthrsvc	BV	157	Type 4	0	RW	Reset Service Runtime
SERVICE1_rstrtopt	MV	10	Type 5	0	RW	Restart Options
SERVICE1_sftst_en	BV	158	Type 4	0	RW	Soft Stop Enable
SERVICE1_sftst_th	AV	362	Type 6	0	RW	Soft Stop Threshold
SERVICE1_spstopen	AV	363	Type 6	0	RW	Spare Safety Enable
SERVICE1_stlim_by	BV	152	Type 4	0	RW	Starts Limit Bypass
SERVICE1_stpperlim_A	AV	358	Type 6	0	RW	Starts Per Period Lim
SERVICE1_stpperlim_B	AV	360	Type 6	0	RW	Starts Per Period Lim
SETPOINT_dem_base	AV	407	Type 6	0	RW	Base Demand Limit
SETPOINT_ecw_sp	AV	406	Type 6	0	RW	Cooling ECW Setpoint
SETPOINT_EWT_OPT	BV	160	Type 4	0	RW	EWT Control Option
SETPOINT_ice_sp	AV	405	Type 6	0	RW	Ice Build Setpoint
SETPOINT_lcw_sp	AV	404	Type 6	0	RW	Cooling LCW Setpoint
SETPOINT_rcyc_hi	AV	409	Type 6	0	RW	Recycle Startup Offset
SETPOINT_rcyc_lo	AV	408	Type 6	0	RW	Recycle Shutdown Offset
SLVA1CTL_cAN	AV	247	Type 6	0	RO	SVA Act Nom Capacity
SLVA1CTL_cANp	AV	248	Type 6	0	RO	SVA Actual Nom Cap Pct
SLVA1CTL_cASp	AV	249	Type 6	0	RO	SVA Actual Scal Cap Pct
SLVA1CTL_cMax	AV	250	Type 6	0	RO	SVA Capacity Max
SLVA1CTL_cmd	AV	239	Type 6	0	RO	SVA Command
SLVA1CTL_cMin	AV	251	Type 6	0	RO	SVA Capacity Min
SLVA1CTL_cObj	AV	252	Type 6	0	RO	SVA Current Objective
SLVA1CTL_dstcmd	AV	240	Type 6	0	RO	Hi Disch Sat Temp PI
SLVA1CTL_dSTS	AV	253	Type 6	0	RO	SVA SatDischTempSetpt
SLVA1CTL_dtcmd	AV	241	Type 6	0	RO	Hi Disch Temp PI
SLVA1CTL_dTS	AV	254	Type 6	0	RO	SVA Disch Temp Setpt
SLVA1CTL_dty_cyc	AV	256	Type 6	0	RO	SVA Duty Cycle
SLVA1CTL_dWd	AV	255	Type 6	0	RO	SVA Diag Word
SLVA1CTL_ftcmd	AV	242	Type 6	0	RO	Fluid Temp PI
SLVA1CTL_fTStp	AV	257	Type 6	0	RO	SVA Fluid Temp Setpt

APPENDIX C — NETWORK CONFIGURATION (cont)

BACnet Points List (cont)

OBJECT NAME	TYPE	INSTANCE	OPTION	COVINC	PV ACCESS	DESCRIPTION
SLVA1CTL_fWd	AV	258	Type 6	0	RO	SVA Fault Word
SLVA1CTL_isEnable	BV	117	Type 4	0	RO	SVA Enable
SLVA1CTL_isNom	BV	118	Type 4	0	RO	SVA Nominal
SLVA1CTL_isRd2Go	BV	119	Type 4	0	RO	SVA Ready to Start
SLVA1CTL_isRd2St	BV	120	Type 4	0	RO	SVA Ready to Stop
SLVA1CTL_isStart	BV	121	Type 4	0	RO	SVA Started
SLVA1CTL_isStop	BV	122	Type 4	0	RO	SVA Stopped
SLVA1CTL_iTS	AV	259	Type 6	0	RO	SVA Inverter Temp Setpt
SLVA1CTL_mCS	AV	260	Type 6	0	RO	SVA Motor Current Setpt
SLVA1CTL_mcurcmd	AV	243	Type 6	0	RO	Motor Curr PI
SLVA1CTL_mtmpmd	AV	244	Type 6	0	RO	Motor Temp PI
SLVA1CTL_mTS	AV	261	Type 6	0	RO	SVA Motor Temp Setpt
SLVA1CTL_oilrecmd	AV	245	Type 6	0	RO	Oil Recovery PI
SLVA1CTL_oVS	AV	262	Type 6	0	RO	SVA Oil Viscosity Setpt
SLVA1CTL_sstcmd	AV	246	Type 6	0	RO	Lo Sat Evap Temp PI
SLVA1CTL_sSTS	AV	263	Type 6	0	RO	SVA Sat Suct Temp Setpt
STGECTL_cmp1cknb	AV	176	Type 6	0	RO	Cmp 1 Circ Num
STGECTL_cmp1hgbp	BV	83	Type 4	0	RO	Cmp 1 HGBP
STGECTL_cmp1ldrq	BV	84	Type 4	0	RO	Cmp1 Load Required
STGECTL_comp_ld	BV	85	Type 4	0	RO	Cmp Load
STGECTL_comp_ul	BV	86	Type 4	0	RO	Cmp Unload
STGECTL_ld_alwd	BV	87	Type 4	0	RO	Loading Allowed
STGECTL_leadck	AV	177	Type 6	0	RO	Lead Circ Num
STGECTL_stat_wrd	AV	178	Type 6	0	RO	Stage Status Word
STGECTL_ul_alwd	BV	88	Type 4	0	RO	Unloading Allowed
STRTSTS_accelflt	BV	76	Type 4	0	RO	Starter Accel Fault
STRTSTS_amp_unb	BV	62	Type 4	0	RO	Current Imbalance
STRTSTS_AMPS_AVG	AV	147	Type 6	0	RO	Average Line Current
STRTSTS_AMPS_H1	AV	144	Type 6	0	RO	Line Current Phase 1
STRTSTS_AMPS_H2	AV	145	Type 6	0	RO	Line Current Phase 2
STRTSTS_AMPS_H3	AV	146	Type 6	0	RO	Line Current Phase 3
STRTSTS_ampstop	BV	79	Type 4	0	RO	Motor Amps When Stopped
STRTSTS_calfc_er	BV	81	Type 4	0	RO	Calibration Factor Error
STRTSTS_conf_err	BV	82	Type 4	0	RO	Invalid Configuration
STRTSTS_cycle_1	BV	58	Type 4	0	RO	Single Cycle Dropout
STRTSTS_FREQ_H	AV	148	Type 6	0	RO	Line Frequency
STRTSTS_freqflt	BV	69	Type 4	0	RO	Frequency Out of Range
STRTSTS_GRFT_H1	AV	149	Type 6	0	RO	Ground Fault Phase 3
STRTSTS_GRFT_H2	AV	150	Type 6	0	RO	Ground Fault Phase 2
STRTSTS_GRFT_H3	AV	151	Type 6	0	RO	Ground Fault Phase 1
STRTSTS_grnd_flt	BV	67	Type 4	0	RO	Ground Fault
STRTSTS_hardware	BV	80	Type 4	0	RO	Hardware Failure
STRTSTS_highamps	BV	77	Type 4	0	RO	Excessive Motor Amps
STRTSTS_ism_por	BV	70	Type 4	0	RO	ISM Power On Reset
STRTSTS_KW	AV	155	Type 6	0	RO	Motor KW
STRTSTS_lratrip	BV	65	Type 4	0	RO	Locked Rotor Trip
STRTSTS_m1_flt	BV	71	Type 4	0	RO	1M Start/Run Fault
STRTSTS_m1m2stop	BV	78	Type 4	0	RO	1M/2M Stop Fault
STRTSTS_m2_flt	BV	72	Type 4	0	RO	2M Start/Run Fault
STRTSTS_no_amps	BV	75	Type 4	0	RO	Motor Amps Not Sensed
STRTSTS_ov_volt	BV	60	Type 4	0	RO	Over Voltage
STRTSTS_overload	BV	64	Type 4	0	RO	Overload Trip
STRTSTS_ph_loss	BV	59	Type 4	0	RO	Phase Loss
STRTSTS_ph_rev	BV	68	Type 4	0	RO	Phase Reversal
STRTSTS_prs_trip	BV	73	Type 4	0	RO	Pressure Trip Contact
STRTSTS_slratrip	BV	66	Type 4	0	RO	Starter Lock Rotor Trip
STRTSTS_start_ok	BV	56	Type 4	0	RO	1CR Start Complete
STRTSTS_stop_ok	BV	57	Type 4	0	RO	1CR Stop Complete
STRTSTS_strt_flt	BV	74	Type 4	0	RO	Starter Fault
STRTSTS_sum1ht_h	AV	152	Type 6	0	RO	I2T Sum Heat Phase 1
STRTSTS_sum2ht_h	AV	153	Type 6	0	RO	I2T Sum Heat Phase 2
STRTSTS_sum3ht_h	AV	154	Type 6	0	RO	I2T Sum Heat Phase 3
STRTSTS_un_volt	BV	61	Type 4	0	RO	Under Voltage
STRTSTS_VOLT_AVG	AV	143	Type 6	0	RO	Average Line Voltage
STRTSTS_VOLT_H1	AV	140	Type 6	0	RO	Line Voltage Phase 1
STRTSTS_VOLT_H2	AV	141	Type 6	0	RO	Line Voltage Phase 2
STRTSTS_VOLT_H3	AV	142	Type 6	0	RO	Line Voltage Phase 3

APPENDIX C — NETWORK CONFIGURATION (cont)

BACnet Points List (cont)

OBJECT NAME	TYPE	INSTANCE	OPTION	COVINC	PV ACCESS	DESCRIPTION
STRTSTS_volt_unb	BV	63	Type 4	0	RO	Voltage Imbalance
TEMP_CND_ST_A	AV	55	Type 6	0	RO	Cond Sat Temp A
TEMP_CND_ST_B	AV	76	Type 6	0	RO	Cond Sat Temp B
TEMP_CNDAPP_A	AV	57	Type 6	0	RO	Condenser Approach A
TEMP_CNDAPP_B	AV	78	Type 6	0	RO	Condenser Approach
TEMP_CTL_FLUI	AV	45	Type 6	0	RO	Control Fluid Temp
TEMP_DGT_A	AV	53	Type 6	0	RO	Discharge Gas Temp A
TEMP_DGT_B	AV	74	Type 6	0	RO	Discharge Gas Temp B
TEMP_DIS_ST_A	AV	54	Type 6	0	RO	Discharge Sat Temp A
TEMP_DIS_ST_B	AV	75	Type 6	0	RO	Discharge Sat Temp B
TEMP_DSH_A	AV	56	Type 6	0	RO	Discharge Superheat A
TEMP_DSH_B	AV	77	Type 6	0	RO	Discharge Superheat B
TEMP_ECDW	AV	42	Type 6	0	RO	Entering Cond Water Temp
TEMP_ECO_SH_A	AV	61	Type 6	0	RO	Econ Superheat A
TEMP_ECO_SH_B	AV	82	Type 6	0	RO	Econ Superheat B
TEMP_ECO_T_A	AV	59	Type 6	0	RO	Economizer Gas Temp A
TEMP_ECO_T_B	AV	80	Type 6	0	RO	Economizer Gas Temp B
TEMP_ECOST_A	AV	60	Type 6	0	RO	Econ Saturated Temp A
TEMP_ECOST_B	AV	81	Type 6	0	RO	Econ Saturated Temp B
TEMP_ECW	AV	40	Type 6	0	RO	Ent Chill Water Temp
TEMP_EVAP_T_A	AV	46	Type 6	0	RO	Evap Rfrg Liq Temp A
TEMP_EVAP_T_B	AV	68	Type 6	0	RO	Evap Rfrg Liq Temp B
TEMP_EVP_ST_A	AV	47	Type 6	0	RO	Evap Saturated Temp A
TEMP_EVP_ST_B	AV	69	Type 6	0	RO	Evap Saturated Temp B
TEMP_EVPAPP_A	AV	48	Type 6	0	RO	Evaporator Approach A
TEMP_EVPAPP_B	AV	70	Type 6	0	RO	Evaporator Approach B
TEMP_LCDW	AV	43	Type 6	0	RO	Leaving Cond Water Temp
TEMP_LCW	AV	41	Type 6	0	RO	Leaving Chill Water Temp
TEMP_LIQ_T_A	AV	62	Type 6	0	RO	Liquid Line Temp A
TEMP_LIQ_T_B	AV	83	Type 6	0	RO	Liquid Line Temp B
TEMP_LLS_A	AV	64	Type 6	0	RO	Liquid Line Subcool A
TEMP_LLS_B	AV	85	Type 6	0	RO	Liquid Line Subcool B
TEMP_MTRW_A	AV	58	Type 6	0	RO	Motor Winding Temp A
TEMP_MTRW_B	AV	79	Type 6	0	RO	Motor Winding Temp B
TEMP_OIL_A	AV	67	Type 6	0	RO	Oil Temp A
TEMP_OIL_B	AV	87	Type 6	0	RO	Oil Temp B
TEMP_OILTSMPA	AV	65	Type 6	0	RO	Oil Sump Temp A
TEMP_OILTSMPB	AV	86	Type 6	0	RO	Oil Sump Temp B
TEMP_R_RESET	AV	44	Type 6	0	RO	Remote Reset Temp
TEMP_ROT_T_A	AV	50	Type 6	0	RO	Rotor Inlet Temp A
TEMP_SLT_A	AV	63	Type 6	0	RO	Saturated Liquid Temp A
TEMP_SLT_B	AV	84	Type 6	0	RO	Saturated Liquid Temp B
TEMP_SSH_A	AV	52	Type 6	0	RO	Suction Superheat A
TEMP_SSH_B	AV	73	Type 6	0	RO	Suction Superheat B
TEMP_SST_A	AV	51	Type 6	0	RO	Suct Saturated Temp A
TEMP_SST_B	AV	72	Type 6	0	RO	Suct Saturated Temp B
TEMP_SUCT_T_A	AV	49	Type 6	0	RO	Suction Temperature A
TEMP_SUCT_T_B	AV	71	Type 6	0	RO	Suction Temperature B
TEMP_VAP_TEMP	AV	66	Type 6	0	RO	Oil Vaporizer Temp
VAPCTL_isEnable	AV	284	Type 6	0	RO	Enable
VAPCTL_isNom	AV	285	Type 6	0	RO	Nominal
VAPCTL_isRd2Go	AV	286	Type 6	0	RO	Ready to Start
VAPCTL_isRd2St	AV	287	Type 6	0	RO	Ready to Stop
VAPCTL_isStart	AV	288	Type 6	0	RO	Started
VAPCTL_isStop	AV	289	Type 6	0	RO	Stopped

LEGEND

AV — Analog Value
BV — Binary Value
RO — Read Only
RW — Read Write

APPENDIX D — MODBUS CONFIGURATION[a]

ADDRESS		REG. N°	PARAMETER	DESCRIPTION	DISPLAY MODE (16BITS)	TYPE	UNIT	VALUE			COMMENT
HEXADEC.	DEC.							MIN.	MAX.	DEFAULT	
0x0001	1	1	GENCONF_rampsel	Ramp Loading Type	UINT	IR		0	2	0	MV:0=Temp, 1=Current, 2=KW
0x0002	2	1	GENCONF_ramp_en	Enable Ramp Loading	UINT	IR		0	1	0	
0x0003	3	2	GENCONF_rrate_t	Ramp Rate (per Min)	FLOAT	IR	°F	0.5	32	0.5	
							°C	–17.5	0.00	–17.5	
0x0004	4	2	GENCONF_rrate_a	Ramp Rate (per Min)	FLOAT	IR	amp	0.5	100	0.5	
0x0005	5	2	GENCONF_rrate_k	Ramp Rate (per Min)	FLOAT	IR	kW	0.5	100	0.5	
0x0006	6	1	GENCONF_ice_cnfg	Ice Mode Enable	UINT	IR		0	1	0	
0x0007	7	1	GENCONF_ice_rec	Ice Mode Recycle	UINT	IR		0	1	0	
0x0008	8	1	GENCONF_leak_en	Refrigerant Leak Option	UINT	IR		0	1	0	
0x0009	9	1	GENCONF_lead_ck	Lead Circuit Selection	UINT	IR		0	2	0	MV:0=auto, 1=cka, 2=ckb
0x000A	10	2	GENCONF_caplim_a	Circuit A Capacity Limit	FLOAT	IR	%	20	100	100	
0x000B	11	2	GENCONF_caplim_b	Circuit B Capacity Limit	FLOAT	IR	%	20	100	100	
0x000C	12	1	GENCONF_dem_sel	Demand Limit Source	UINT	IR		0	1	0	MV:0=Local, 1=Analog,
0x000D	13	2	EXVACFG_cll_stpt	EXV Cond Liq Lvl Stpt	FLOAT	IR				0	
0x000E	14	2	EXVACFG_aTStpt	EXV Approach Setpoint	FLOAT	IR				3	
0x000F	15	2	EXVACFG_lo_dshsp	EXV Lo Disch Superh Stpt	FLOAT	IR				1	
0x0010	16	2	EXVACFG_lo_dshof	EXV Lo Disch Superh Ofst	FLOAT	IR				0	
0x0011	17	2	EXVACFG_max_dist	EXV Max Disch Temp Stpt	FLOAT	IR				210	
0x0012	18	2	EXVACFG_sbc_min	EXV Subcooling Min Stpt	FLOAT	IR				1	
0x0013	19	2	EXVACFG_sbc_of	EXV Subcooling Min Ofst	FLOAT	IR				0	
0x0014	20	2	EXVACFG_spsSTLeMO	EXV LowSatSuctOffset	FLOAT	IR	°F	0	10	3	
							°C	–17.78	–12.22	–16.11	
0x0015	21	2	LUBECFG_vphton	Vaporizer Heater On	FLOAT	IR	°F			100	
							°C			37.78	
0x0016	22	2	LUBECFG_vphtoff	Vaporizer Heater Off	FLOAT	IR	°F			120	
							°C			48.89	
0x0017	23	2	LUBECFG_smp1on	Sump1 Heater On	FLOAT	IR	°F			140	
							°C			60.00	
0x0018	24	2	LUBECFG_smp1off	Sump1 Heater Off	FLOAT	IR	°F			145	
							°C			62.78	
0x0019	25	2	LUBECFG_smp2on	Sump2 Heater On	FLOAT	IR	°F			125	
							°C			51.67	
0x001A	26	2	LUBECFG_smp2off	Sump2 Heater Off	FLOAT	IR	°F			140	
							°C			60.00	
0x001B	27	2	LUBECFG_hgbpon	Turn On HGBP	FLOAT	IR	°F			20	
							°C			–6.67	
0x001C	28	2	LUBECFG_hgbpoff	Turn Off HGBP	FLOAT	IR	°F			5	
							°C			–15	
0x001D	29	2	LUBECFG_minlift	Minimum Lift	FLOAT	IR	^F			20	
							^C			11.11	
0x001E	30	2	LUBECFG_minhz	Minimum Hz	FLOAT	IR	Hz			24	
0x001F	31	2	LIMITCFG_evap_al	Evap Approach Alert	FLOAT	IR	^F	0.5	15	5	
							^C	0.28	8.33	2.78	
0x0020	32	2	LIMITCFG_cond_al	Cond Approach Alert	FLOAT	IR	^F	0.5	15	6	
							^C	0.28	8.33	3.33	
0x0021	33	2	LIMITCFG_dgt_alrt	Comp Discharge Alert	FLOAT	IR	°F	125	300	200	
							°C	51.67	148.89	93.33	
0x0022	34	2	LIMITCFG_cdp_alrt	Cond Press Alert	FLOAT	IR	psig	125	300	130	
							kPa	861.88	2068.50	896.35	
0x0023	35	2	LIMITCFG_rch_cath	Refr Charge Cond Alert	FLOAT	IR	°F	20	40	20	
							°C	–6.67	4.44	–6.67	
0x0024	36	2	LIMITCFG_ap_dgap	Design Evap Appr	FLOAT	IR	°F	0	10	2	
							°C	–17.78	–12.22	–16.67	
0x0025	37	2	LIMITCFG_vfdsptad	VFD Speed Alrt Dband	FLOAT	IR	%	0	20	10	
0x0026	38	2	LIMITCFG_RefPpm20	Ref Leak PPM at 20 mA	FLOAT	IR	ppm	4	9999	1000	
0x0027	39	2	LIMITCFG_PpmLim	Refrig Leak Alarm PPM	FLOAT	IR	ppm	4	9999	500	

APPENDIX D — MODBUS CONFIGURATION[a] (cont)

ADDRESS		REG. N°	PARAMETER	DESCRIPTION	DISPLAY MODE (16BITS)	TYPE	UNIT	VALUE			COMMENT
HEXADEC.	DEC.							MIN.	MAX.	DEFAULT	
0x0028	40	1	GENUNIT_STATUS	Unit Status	UINT	HR		0	16	0	MV: 0=OFF, 1=DELAY, 2=READY, 3=RECYCLE, 4=PRESTART, 5=STARTUP, 6=AUTORESTART, 7=RUNNING, 8=DEMAND, 9=RAMPING, 10=STOPPING, 11=TRIPOUT, 12=SERV_TEST, 13=PUMPDOWN, 14=LOCKOUT, 15=RESET, 16=LAB_TEST
0x002A	42	2	GENUNIT_min_left	Time Until Start	FLOAT	HR	min	0	0	0	
0x002B	43	2	GENUNIT_min_run	Minimum Runtime Timer	FLOAT	HR	min	0	0	0	
0x002C	44	1	GENUNIT_BAC_OCC	BACnet Occupied	UINT	HR		0	1	0	
0x002D	45	1	GENUNIT_ONOFFSVC	Unit Mode	UINT	HR		0	3	0	MV: 0=Disabled, 1=Enabled, 2=Serv Strt, 3=Serv Tst
0x002E	46	1	GENUNIT_LCL_S_S	HMI Start/Stop Cmd	UINT	HR		0	1	0	
0x002F	47	1	GENUNIT_CHIL_S_S	Cmd Start/Stop	UINT	HR		0	1	0	
0x0030	48	2	GENUNIT_CTRL_PNT	Control Point	FLOAT	HR	°F	–4	153	0	
							°C	–20	67.22	–17.78	
0x0031	49	1	GENUNIT_EMSTOP	Emergency Stop	UINT	HR		0	1	0	
0x0032	50	1	GENUNIT_DEM_LIM	Active Demand Limit	UINT	HR	%	0	100	0	
0x0033	51	1	GENUNIT_LAG_LIM	Lag Demand Limit	UINT	HR	%	0	100	0	
0x0034	52	1	GENUNIT_LOC_OCC	Local Sched Occupied	UINT	HR		0	1	0	
0x0035	53	1	GENUNIT_ICE_OCC	Ice Build Occupied	UINT	HR		0	1	0	
0x0036	54	1	GENUNIT_SYS_STAT	System State	UINT	HR		0	3	0	MV: 0=Off, 1=Delay, 2=On, 3=Tripout
0x0038	56	1	GENUNIT_rpdrstst	Swift Restart State	UINT	HR		0	3	0	MV: 0=Disabled, 1=Enabled, 2=Active, 3=Complete
0x0039	57	1	GENUNIT_ramp_act	Ramp Loading Active	UINT	HR		0	1	0	
0x003A	58	2	GENUNIT_ramprate	Ramp Rate (per Min)	FLOAT	HR				0	
0x003B	59	2	TEMP_ECW	Ent Chill Water Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x003C	60	2	TEMP_LCW	Leaving Chill Water Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x003D	61	2	TEMP_ECDW	Entering Cond Water Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x003E	62	2	TEMP_LCDW	Leaving Cond Water Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x003F	63	2	TEMP_R_RESET	Remote Reset Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x0040	64	2	TEMP_CTL_FLUI	Control Fluid Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x0041	65	2	TEMP_EVAP_T_A	Evap Rfrg Liq Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x0042	66	2	TEMP_EVP_ST_A	Evap Saturated Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x0043	67	2	TEMP_EVPAPP_A	Evaporator Approach A	FLOAT	IR	^F			0	
							^C			0	
0x0044	68	2	TEMP_SUCT_T_A	Suction Temperature A	FLOAT	IR	°F			0	
							°C			–17.78	
0x0045	69	2	TEMP_ROT_T_A	Rotor Inlet Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x0046	70	2	TEMP_SST_A	Suct Saturated Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x0047	71	2	TEMP_SSH_A	Suction Superheat A	FLOAT	IR	^F			0	
							^C			0	
0x0048	72	2	TEMP_DGT_A	Discharge Gas Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x0049	73	2	TEMP_DIS_ST_A	Discharge Sat Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x004A	74	2	TEMP_CND_ST_A	Cond Sat Temp A	FLOAT	IR	°F			0	
							°C			–17.78	

APPENDIX D — MODBUS CONFIGURATION[a] (cont)

ADDRESS		REG. N°	PARAMETER	DESCRIPTION	DISPLAY MODE (16BITS)	TYPE	UNIT	VALUE			COMMENT
HEXADEC.	DEC.							MIN.	MAX.	DEFAULT	
0x004B	75	2	TEMP_DSH_A	Discharge Superheat A	FLOAT	IR	^F			0	
							^C			0	
0x004C	76	2	TEMP_CNDAPP_A	Condenser Approach A	FLOAT	IR	^F			0	
							^C			0	
0x004D	77	2	TEMP_MTRW_A	Motor Winding Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x004E	78	2	TEMP_ECO_T_A	Economizer Gas Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x004F	79	2	TEMP_ECOST_A	Econ Saturated Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x0050	80	2	TEMP_ECO_SH_A	Econ Superheat A	FLOAT	IR	^F			0	
							^C			0	
0x0051	81	2	TEMP_LIQ_T_A	Liquid Line Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x0052	82	2	TEMP_SLT_A	Saturated Liquid Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x0053	83	2	TEMP_LLS_A	Liquid Line Subcool A	FLOAT	IR	^F			0	
							^C			0	
0x0054	84	2	TEMP_OILTSMPA	Oil Sump Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x0055	85	2	TEMP_VAP_TEMP	Oil Vaporizer Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x0056	86	2	TEMP_OIL_A	Oil Temp A	FLOAT	IR	°F			0	
							°C			–17.78	
0x0057	87	2	TEMP_EVAP_T_B	Evap Rfrg Liq Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x0058	88	2	TEMP_EVP_ST_B	Evap Saturated Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x0059	89	2	TEMP_EVPAPP_B	Evaporator Approach B	FLOAT	IR	^F			0	
							^C			0	
0x005A	90	2	TEMP_SUCT_T_B	Suction Temperature B	FLOAT	IR	°F			0	
							°C			–17.78	
0x005B	91	2	TEMP_SST_B	Suct Saturated Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x005C	92	2	TEMP_SSH_B	Suction Superheat B	FLOAT	IR	^F			0	
							^C			0	
0x005D	93	2	TEMP_DGT_B	Discharge Gas Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x005E	94	2	TEMP_DIS_ST_B	Discharge Sat Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x005F	95	2	TEMP_CND_ST_B	Cond Sat Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x0060	96	2	TEMP_DSH_B	Discharge Superheat B	FLOAT	IR	^F			0	
							^C			0	
0x0061	97	2	TEMP_CNDAPP_B	Condenser Approach	FLOAT	IR	^F			0	
							^C			0	
0x0062	98	2	TEMP_MTRW_B	Motor Winding Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x0063	99	2	TEMP_ECO_T_B	Economizer Gas Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x0064	100	2	TEMP_ECOST_B	Econ Saturated Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x0065	101	2	TEMP_ECO_SH_B	Econ Superheat B	FLOAT	IR	^F			0	
							^C			0	
0x0066	102	2	TEMP_LIQ_T_B	Liquid Line Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x0067	103	2	TEMP_SLT_B	Saturated Liquid Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x0068	104	2	TEMP_LLS_B	Liquid Line Subcool B	FLOAT	IR	^F			0	
							^C			0	
0x0069	105	2	TEMP_OILTSMPB	Oil Sump Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x006A	106	2	TEMP_OIL_B	Oil Temp B	FLOAT	IR	°F			0	
							°C			–17.78	
0x006B	107	2	PRESSURE_EVAP_EWP	Entering Evap Water Pres	FLOAT	IR	psig			0	
							kPa			0	

APPENDIX D — MODBUS CONFIGURATION[a] (cont)

ADDRESS		REG. N°	PARAMETER	DESCRIPTION	DISPLAY MODE (16BITS)	TYPE	UNIT	VALUE			COMMENT
HEXADEC.	DEC.							MIN.	MAX.	DEFAULT	
0x006C	108	2	PRESSURE_EVAP_LWP	Leaving Evap Water Pres	FLOAT	IR	psig			0	
							kPa			0	
0x006D	109	2	PRESSURE_EVAP_WDP	Evap Water Delta P	FLOAT	IR	psig			0	
							kPa			0	
0x006E	110	2	PRESSURE_COND_EWP	Entering Cond Water Pres	FLOAT	IR	psig			0	
							kPa			0	
0x006F	111	2	PRESSURE_COND_LWP	Leaving Cond Water Pres	FLOAT	IR	psig			0	
							kPa			0	
0x0070	112	2	PRESSURE_COND_WDP	Cond Water Delta P	FLOAT	IR	psig			0	
							kPa			0	
0x0071	113	2	PRESSURE_EVAP_P_A	Evaporator Pressure A	FLOAT	IR	psig			0	
							kPa			0	
0x0072	114	2	PRESSURE_SUCT_P_A	Suction Pressure A	FLOAT	IR	psig			0	
							kPa			0	
0x0073	115	2	PRESSURE_DIS_P_A	Discharge Pressure A	FLOAT	IR	psig			0	
							kPa			0	
0x0074	116	2	PRESSURE_CND_P_A	Condenser Pressure A	FLOAT	IR	psig			0	
							kPa			0	
0x0075	117	2	PRESSURE_ECO_P_A	Economizer Pressure A	FLOAT	IR	psig			0	
							kPa			0	
0x0076	118	2	PRESSURE_OILPSMPA	Oil Sump Pressure A	FLOAT	IR	psig			0	
							kPa			0	
0x0077	119	2	PRESSURE_OIL_DP_A	Oil Discharge Pressure A	FLOAT	IR	psig			0	
							kPa			0	
0x0078	120	2	PRESSURE_OIL_PD_A	Oil Press Diff A	FLOAT	IR	psig			0	
							kPa			0	
0x0079	121	2	PRESSURE_OILPA1RQ	Oil Pressure Required A	FLOAT	IR	psig			0	
							kPa			0	
0x007A	122	2	PRESSURE_LIQ_P_A	Liquid Line Press A	FLOAT	IR	psig			0	
							kPa			0	
0x007B	123	2	PRESSURE_MTR_P_A	Motor Injection Press A	FLOAT	IR	psig			0	
							kPa			0	
0x007C	124	2	PRESSURE_EVAP_P_B	Evaporator Pressure B	FLOAT	IR	psig			0	
							kPa			0	
0x007D	125	2	PRESSURE_SUCT_P_B	Suction Pressure B	FLOAT	IR	psig			0	
							kPa			0	
0x007E	126	2	PRESSURE_DIS_P_B	Discharge Pressure B	FLOAT	IR	psig			0	
							kPa			0	
0x007F	127	2	PRESSURE_CND_P_B	Condenser Pressure B	FLOAT	IR	psig			0	
							kPa			0	
0x0080	128	2	PRESSURE_ECO_P_B	Economizer Pressure B	FLOAT	IR	psig			0	
							kPa			0	
0x0081	129	2	PRESSURE_OILPSMPB	Oil Sump Pressure B	FLOAT	IR	psig			0	
							kPa			0	
0x0082	130	2	PRESSURE_OIL_DP_B	Oil Discharge Pressure B	FLOAT	IR	psig			0	
							kPa			0	
0x0083	131	2	PRESSURE_OIL_PD_B	Oil Press Diff B	FLOAT	IR	psig			0	
							kPa			0	
0x0084	132	2	PRESSURE_OILPB1RQ	Oil Pressure Required B	FLOAT	IR	psig			0	
							kPa			0	
0x0085	133	2	PRESSURE_LIQ_P_B	Liquid Line Press B	FLOAT	IR	psig			0	
							kPa			0	
0x0086	134	2	PRESSURE_MTR_P_B	Motor Injection Press B	FLOAT	IR	psig			0	
							kPa			0	
0x0087	135	1	OUTPUTS_ALE	Alert Relay	UINT	IR		0	1	0	
0x0088	136	1	OUTPUTS_ALM	Alarm Relay	UINT	IR		0	1	0	
0x0089	137	1	OUTPUTS_RUN	Running Relay	UINT	IR		0	1	0	
0x008A	138	2	OUTPUTS_CAPT	Capacity Output Total	FLOAT	IR		0	100	0	
0x008B	139	2	OUTPUTS_CHST_OUT	Unit Status Output	FLOAT	IR	%			0	
0x008C	140	2	OUTPUTS_HDPV_OUT	Head Pres Output	FLOAT	IR	%			0	
0x008D	141	1	OUTPUTS_SET_FLOW	Cooler Flow SP Out	UINT	IR		0	1	0	
0x008E	142	1	OUTPUTS_SHTDN	Shutdown Relay	UINT	IR		0	1	0	
0x008F	143	1	OUTPUTS_CDWP1	Cond Water Pump	UINT	IR		0	1	0	
0x0090	144	1	OUTPUTS_CHWP1	Chill Water Pump	UINT	IR		0	1	0	
0x0091	145	1	OUTPUTS_TFR_HIGH	Tower Fan Relay High	UINT	IR		0	1	0	
0x0092	146	1	OUTPUTS_TFR_LOW	Tower Fan Relay Low	UINT	IR		0	1	0	
0x0093	147	2	OUTPUTS_TOW_FAN	VFD Tower Fan	FLOAT	IR	%	0	100	0	

APPENDIX D — MODBUS CONFIGURATION[a] (cont)

ADDRESS		REG. N°	PARAMETER	DESCRIPTION	DISPLAY MODE (16BITS)	TYPE	UNIT	VALUE			COMMENT
HEXADEC.	DEC.							MIN.	MAX.	DEFAULT	
0x0094	148	2	OUTPUTS_CAPOUT_A	Analog Capacity Output A	FLOAT	IR		0	100	0	
0x0095	149	2	OUTPUTS_ECOEXV_A	Economizer EXV A	FLOAT	IR	%	0	100	0	
0x0096	150	2	OUTPUTS_EXV_A	Main EXV A	FLOAT	IR	%	0	100	0	
0x0097	151	1	OUTPUTS_HGBP_A	HGBP Soleniod A	UINT	IR		0	1	0	
0x0098	152	1	OUTPUTS_OILSOL_A	Oil Solenoid A	UINT	IR		0	1	0	
0x0099	153	1	OUTPUTS_MTR_CL_A	Motor Cooling Solenoid A	UINT	IR		0	1	0	
0x009A	154	1	OUTPUTS_OIL_DL_A	Dual Oil Flow Solenoid A	UINT	IR		0	1	0	
0x009B	155	1	OUTPUTS_VFDSOL_A	VFD Coolant Solenoid A	UINT	IR		0	1	0	
0x009C	156	1	OUTPUTS_VI_CMP_A	VI Piston Solenoid A	UINT	IR		0	1	0	
0x009D	157	1	OUTPUTS_BP_ECO_A	Econ Bypass Solenoid A	UINT	IR		0	1	0	
0x009E	158	1	OUTPUTS_CP_A_LOCK	Comp A VFD Interlock	UINT	IR		0	1	0	
0x009F	159	1	OUTPUTS_SLV_LD_A	Slide Valve Load A	UINT	IR		0	1	0	
0x00A0	160	1	OUTPUTS_SLV_UL_A	Slide Valve Unload A	UINT	IR		0	1	0	
0x00A1	161	1	OUTPUTS_VAP_HEAT	Vaporizer Heater	UINT	IR		0	1	0	
0x00A2	162	1	OUTPUTS_OILHEAT1	Oil Heater - Primary	UINT	IR		0	1	0	
0x00A3	163	1	OUTPUTS_OILHEAT2	Oil Heater - Secondary	UINT	IR		0	1	0	
0x00A4	164	2	OUTPUTS_OIL_RECL	Oil Reclaim Valve	FLOAT	IR		0	100	0	
0x00A5	165	1	OUTPUTS_OILR	Oil Pump Relay	UINT	IR		0	1	0	
0x00A6	166	2	OUTPUTS_CAPOUT_B	Analog Capacity Output B	FLOAT	IR		0	100	0	
0x00A7	167	2	OUTPUTS_ECOEXV_B	Economizer EXV B	FLOAT	IR	%	0	100	0	
0x00A8	168	2	OUTPUTS_EXV_B	Main EXV B	FLOAT	IR	%	0	100	0	
0x00A9	169	1	OUTPUTS_HGBP_B	HGBP Soleniod B	UINT	IR		0	1	0	
0x00AA	170	1	OUTPUTS_OILSOL_B	Oil Solenoid B	UINT	IR		0	1	0	
0x00AB	171	1	OUTPUTS_MTR_CL_B	Motor Cooling Solenoid B	UINT	IR		0	1	0	
0x00AC	172	1	OUTPUTS_OIL_DL_B	Dual Oil Flow Solenoid B	UINT	IR		0	1	0	
0x00AD	173	1	OUTPUTS_VFDSOL_B	VFD Coolant Solenoid B	UINT	IR		0	1	0	
0x00AE	174	1	OUTPUTS_VI_CMP_B	VI Piston Solenoid B	UINT	IR		0	1	0	
0x00AF	175	1	OUTPUTS_BP_ECO_B	Econ Bypass Solenoid B	UINT	IR		0	1	0	
0x00B0	176	1	OUTPUTS_CP_B_LOCK	Comp B VFD Interlock	UINT	IR		0	1	0	
0x00B1	177	2	INPUTS_AUTO_DEM	Auto Demand Limit Input	FLOAT	IR	%			0	
0x00B2	178	2	INPUTS_AUTO_RES	Auto Water Temp Reset	FLOAT	IR	mA			0	
0x00B3	179	1	INPUTS_E_STOP	Emergency Stop Contact	UINT	IR		0	1	0	
0x00B4	180	1	INPUTS_FS_LOCK	Fire Security Interlock	UINT	IR		0	1	0	
0x00B5	181	1	INPUTS_ICE_CON	Ice Build Contact	UINT	IR		0	1	0	
0x00B6	182	1	INPUTS_ICE_SW	Ice Done Storage Switch	UINT	IR		0	1	0	
0x00B7	183	2	INPUTS_REF_LEAK	Refrig Leakage Sensor	FLOAT	IR	mA			0	
0x00B8	184	1	INPUTS_REM_CON	Remote Start/Stop	UINT	IR		0	1	0	
0x00B9	185	1	INPUTS_REM_LOCK	Remote Lockout	UINT	IR		0	1	0	
0x00BA	186	1	INPUTS_SAFETY	Spare Safety Input	UINT	IR		0	1	0	
0x00BB	187	1	INPUTS_COND_FSW	Condenser Flow Switch	UINT	IR		0	1	0	
0x00BC	188	1	INPUTS_EVAP_FSW	Evaporator Flow Switch	UINT	IR		0	1	0	
0x00BD	189	2	INPUTS_EXVA_FBK	Main EXV A Feedback	FLOAT	IR	%	0	100	0	
0x00BE	190	2	INPUTS_ECOA_FBK	Econ A EXV Feedback	FLOAT	IR	%	0	100	0	
0x00BF	191	2	INPUTS_SVA_FBK	Slide Valve A Feedback	FLOAT	IR	%	0	100	0	
0x00C0	192	2	INPUTS_CNDLVL_A	Cond Liq Lev A	FLOAT	IR				0	
0x00C1	193	1	INPUTS_OIL_L_A	Oil Level Input A	UINT	IR		0	1	0	
0x00C2	194	1	INPUTS_HPS_A	High Pressure Switch A	UINT	IR		0	1	0	
0x00C3	195	2	INPUTS_EXVB_FBK	Main EXV B Feedback	FLOAT	IR	%	0	100	0	
0x00C4	196	2	INPUTS_ECOB_FBK	Econ B EXV Feedback	FLOAT	IR	%	0	100	0	
0x00C5	197	2	INPUTS_CNDLVL_B	Cond Liq Lev B	FLOAT	IR				0	
0x00C6	198	1	INPUTS_OIL_L_B	Oil Level Input B	UINT	IR		0	1	0	
0x00C7	199	1	INPUTS_HPS_B	High Pressure Switch B	UINT	IR		0	1	0	
0x00C8	200	1	EPMPCTL_has_flo	Flow Established	UINT	IR		0	1	0	
0x00C9	201	1	CPMPCTL_has_flo	Flow Established	UINT	IR		0	1	0	
0x00CA	202	2	STRTSTS_VOLT_H1	Line Voltage Phase 1	FLOAT	IR	V			0	
0x00CB	203	2	STRTSTS_VOLT_H2	Line Voltage Phase 2	FLOAT	IR	V			0	
0x00CC	204	2	STRTSTS_VOLT_H3	Line Voltage Phase 3	FLOAT	IR	V			0	
0x00CD	205	2	STRTSTS_VOLT_AVG	Average Line Voltage	FLOAT	IR	V			0	
0x00CE	206	2	STRTSTS_AMPS_H1	Line Current Phase 1	FLOAT	IR	amp			0	
0x00CF	207	2	STRTSTS_AMPS_H2	Line Current Phase 2	FLOAT	IR	amp			0	
0x00D0	208	2	STRTSTS_AMPS_H3	Line Current Phase 3	FLOAT	IR	amp			0	
0x00D1	209	2	STRTSTS_AMPS_AVG	Average Line Current	FLOAT	IR	amp			0	
0x00D2	210	2	STRTSTS_FREQ_H	Line Frequency	FLOAT	IR	Hz			0	
0x00D3	211	2	STRTSTS_GRFT_H1	Ground Fault Phase 3	FLOAT	IR	amp			0	
0x00D4	212	2	STRTSTS_GRFT_H2	Ground Fault Phase 2	FLOAT	IR	amp			0	
0x00D5	213	2	STRTSTS_GRFT_H3	Ground Fault Phase 1	FLOAT	IR	amp			0	
0x00D6	214	2	STRTSTS_sum1ht_h	I2T Sum Heat Phase 1	FLOAT	IR	%			0	

APPENDIX D — MODBUS CONFIGURATION[a] (cont)

ADDRESS		REG. N°	PARAMETER	DESCRIPTION	DISPLAY MODE (16BITS)	TYPE	UNIT	VALUE			COMMENT
HEXADEC.	DEC.							MIN.	MAX.	DEFAULT	
0x00D7	215	2	STRTSTS_sum2ht_h	I2T Sum Heat Phase 2	FLOAT	IR	%			0	
0x00D8	216	2	STRTSTS_sum3ht_h	I2T Sum Heat Phase 3	FLOAT	IR	%			0	
0x00D9	217	2	STRTSTS_KW	Motor KW	FLOAT	IR	kW			0	
0x00DA	218	1	STRTSTS_start_ok	1CR Start Complete	UINT	IR		0	1	0	
0x00DB	219	1	STRTSTS_stop_ok	1CR Stop Complete	UINT	IR		0	1	0	
0x00DC	220	1	STRTSTS_cycle_1	Single Cycle Dropout	UINT	IR		0	1	0	
0x00DD	221	1	STRTSTS_ph_loss	Phase Loss	UINT	IR		0	1	0	
0x00DE	222	1	STRTSTS_ov_volt	Over Voltage	UINT	IR		0	1	0	
0x00DF	223	1	STRTSTS_un_volt	Under Voltage	UINT	IR		0	1	0	
0x00E0	224	1	STRTSTS_amp_unb	Current Imbalance	UINT	IR		0	1	0	
0x00E1	225	1	STRTSTS_volt_unb	Voltage Imbalance	UINT	IR		0	1	0	
0x00E2	226	1	STRTSTS_overload	Overload Trip	UINT	IR		0	1	0	
0x00E3	227	1	STRTSTS_lratrip	Locked Rotor Trip	UINT	IR		0	1	0	
0x00E4	228	1	STRTSTS_slratrip	Starter Lock Rotor Trip	UINT	IR		0	1	0	
0x00E5	229	1	STRTSTS_grnd_flt	Ground Fault	UINT	IR		0	1	0	
0x00E6	230	1	STRTSTS_ph_rev	Phase Reversal	UINT	IR		0	1	0	
0x00E7	231	1	STRTSTS_freqflt	Frequency Out of Range	UINT	IR		0	1	0	
0x00E8	232	1	STRTSTS_ism_por	ISM Power On Reset	UINT	IR		0	1	0	
0x00E9	233	1	STRTSTS_m1_flt	1M Start/Run Fault	UINT	IR		0	1	0	
0x00EA	234	1	STRTSTS_m2_flt	2M Start/Run Fault	UINT	IR		0	1	0	
0x00EB	235	1	STRTSTS_prs_trip	Pressure Trip Contact	UINT	IR		0	1	0	
0x00EC	236	1	STRTSTS_strt_flt	Starter Fault	UINT	IR		0	1	0	
0x00ED	237	1	STRTSTS_no_amps	Motor Amps Not Sensed	UINT	IR		0	1	0	
0x00EE	238	1	STRTSTS_accelflt	Starter Accel Fault	UINT	IR		0	1	0	
0x00EF	239	1	STRTSTS_highamps	Excessive Motor Amps	UINT	IR		0	1	0	
0x00F0	240	1	STRTSTS_m1m2stop	1M/2M Stop Fault	UINT	IR		0	1	0	
0x00F1	241	1	STRTSTS_ampstop	Motor Amps When Stopped	UINT	IR		0	1	0	
0x00F2	242	1	STRTSTS_hardware	Hardware Failure	UINT	IR		0	1	0	
0x00F3	243	1	STRTSTS_calfc_er	Calibration Factor Error	UINT	IR		0	1	0	
0x00F4	244	1	STRTSTS_conf_err	Invalid Configuration	UINT	IR		0	1	0	
0x00F5	245	1	DRVA1STS_COMS	VFD Coms Status	UINT	IR		0	2	0	MV: 0=OK, 1=PARTIAL, 2=NO COMS
0x00F7	247	2	DRVA1STS_LINE_V	VFD Average Line Voltage	FLOAT	IR	V			0	
0x00F8	248	2	DRVA1STS_LINE_CUR	VFD Average Line Current	FLOAT	IR	amp			0	
0x00F9	249	2	DRVA1STS_LINE_KW	VFD Average Line KW	FLOAT	IR	kW			0	
0x00FA	250	2	DRVA1STS_BUS_V	VFD Bus Voltage	FLOAT	IR	V			0	
0x00FB	251	2	DRVA1STS_MOT_CUR	VFD Motor Current	FLOAT	IR	amp			0	
0x00FC	252	2	DRVA1STS_AMPS_PCT	VFD Motor Curr Pct Rated	FLOAT	IR	%			0	
0x00FD	253	2	DRVA1STS_MOT_KW	VFD Motor KW	FLOAT	IR	kW			0	
0x00FE	254	2	DRVA1STS_PCT	VFD Capacity	FLOAT	IR	%			0	
0x00FF	255	2	DRVA1STS_SPD	VFD Speed	FLOAT	IR	Hz			0	
0x0100	256	2	DRVA1STS_INV_T	VFD Inverter Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x0101	257	2	DRVA1STS_IGBT_T	VFD IGBT Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x0102	258	2	DRVA1STS_RECT_T	VFD Rectifier Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x0103	259	2	DRVA1STS_MOT_RPM	VFD Motor Rpm	FLOAT	IR	rpm			0	
0x0104	260	2	DRVA1STS_LAST_FLT	VFD Last Fault Code	FLOAT	IR				0	
0x0105	261	2	DRVA1STS_STAT_WD1	VFD Status Word1	FLOAT	IR				0	
0x0106	262	2	DRVA1STS_STAT_WD2	VFD Status Word2	FLOAT	IR				0	
0x0107	263	2	DRVA1STS_ALT_WD1	VFD Alert Word1	FLOAT	IR				0	
0x0108	264	2	DRVA1STS_ALT_WD2	VFD Alert Word2	FLOAT	IR				0	
0x0109	265	2	DRVA1STS_ALM_WD1	VFD Alarm Word1	FLOAT	IR				0	
0x010A	266	2	DRVA1STS_ALM_WD2	VFD Alarm Word2	FLOAT	IR				0	
0x010B	267	1	STGECTL_cmp1cknb	Cmp 1 Circ Num	UINT	IR				0	
0x010C	268	1	STGECTL_cmp1hgbp	Cmp 1 HGBP	UINT	IR		0	1	0	
0x010D	269	1	STGECTL_cmp1ldrq	Cmp1 Load Required	UINT	IR				0	
0x010E	270	1	STGECTL_comp_ld	Cmp Load	UINT	IR		0	1	0	
0x010F	271	1	STGECTL_comp_ul	Cmp Unload	UINT	IR		0	1	0	
0x0110	272	1	STGECTL_ld_alwd	Loading Allowed	UINT	IR		0	1	0	
0x0111	273	1	STGECTL_leadck	Lead Circ Num	UINT	IR				0	
0x0112	274	1	STGECTL_stat_wrd	Stage Status Word	UINT	IR				0	
0x0114	276	1	STGECTL_ul_alwd	Unloading Allowed	UINT	IR		0	1	0	
0x0115	277	2	CMPA1CTL_aDSTMn	CmpA AbsDischSatTMin	FLOAT	IR				0	
0x0116	278	2	CMPA1CTL_aDSTMx	CmpA AbsDischSatTMax	FLOAT	IR				0	
0x0117	279	2	CMPA1CTL_aSSTMn	CmpA AbsSuctSat TMin	FLOAT	IR				0	

APPENDIX D — MODBUS CONFIGURATION[a] (cont)

ADDRESS		REG. N°	PARAMETER	DESCRIPTION	DISPLAY MODE (16BITS)	TYPE	UNIT	VALUE			COMMENT
HEXADEC.	DEC.							MIN.	MAX.	DEFAULT	
0x0118	280	2	CMPA1CTL_aSSTMx	CmpA AbsSuctSatTMax	FLOAT	IR				0	
0x0119	281	2	CMPA1CTL_cAN	CmpA Act Nom Capacity	FLOAT	IR				0	
0x011A	282	2	CMPA1CTL_cANp	CmpA Act Nom Cap Pct	FLOAT	IR	%	0	100	0	
0x011B	283	2	CMPA1CTL_cASp	CmpA Act Scal Cap pct	FLOAT	IR	%	0	100	0	
0x011C	284	2	CMPA1CTL_cMax	CmpA Capacity Max	FLOAT	IR				0	
0x011D	285	2	CMPA1CTL_cMin	CmpA Capacity Min	FLOAT	IR				0	
0x011E	286	2	CMPA1CTL_cObj	CmpA Current Obj	FLOAT	IR				0	
0x0120	288	2	CMPA1CTL_cmd	CmpA Command	FLOAT	IR	%			0	
0x0121	289	2	CMPA1CTL_dSTS	CmpA SatDischTempSetpt	FLOAT	IR				0	
0x0122	290	2	CMPA1CTL_dTS	CmpA DischTempSetpt	FLOAT	IR				0	
0x0123	291	1	CMPA1CTL_statwrd	CmpA State Diag Word	UINT	IR				0	
0x0125	293	2	CMPA1CTL_eDSTMn	CmpA EnvDischSatTMin	FLOAT	IR				0	
0x0126	294	2	CMPA1CTL_eDSTMx	CmpA EnvDischSatTMax	FLOAT	IR				0	
0x0127	295	2	CMPA1CTL_eSSTMn	CmpA EnvSuctSatTMin	FLOAT	IR				0	
0x0128	296	2	CMPA1CTL_eSSTMx	CmpA EnvSuctSatTMax	FLOAT	IR				0	
0x0129	297	2	CMPA1CTL_fTStp	CmpA Fluid Temp Setpt	FLOAT	IR				0	
0x012A	298	1	CMPA1CTL_fWd	CmpA Fault Word	UINT	IR				0	
0x012B	299	2	CMPA1CTL_iTS	CmpA Inverter Temp Setpt	FLOAT	IR				0	
0x012C	300	1	CMPA1CTL_isEnable	CmpA Enable	UINT	IR		0	1	0	
0x012D	301	1	CMPA1CTL_isNom	CmpA Nominal	UINT	IR		0	1	0	
0x012E	302	1	CMPA1CTL_isRd2Go	CmpA Ready to Start	UINT	IR		0	1	0	
0x012F	303	1	CMPA1CTL_isRd2St	CmpA Ready to Stop	UINT	IR		0	1	0	
0x0130	304	1	CMPA1CTL_isStart	CmpA Started	UINT	IR		0	1	0	
0x0131	305	1	CMPA1CTL_isStop	CmpA Stopped	UINT	IR		0	1	0	
0x0132	306	2	CMPA1CTL_mTS	CmpA Motor Temp Setpt	FLOAT	IR				0	
0x0133	307	2	CMPA1CTL_oVS	CmpA Oil Viscosity Setpt	FLOAT	IR				0	
0x0134	308	2	CMPA1CTL_rTS	CmpA RectifierTemp Setpt	FLOAT	IR				0	
0x0135	309	2	CMPA1CTL_sSTS	CmpA Sat Suct Temp Setpt	FLOAT	IR				0	
0x0136	310	1	CMPA1CTL_shrt_cyc	CmpA Short Cycle Prevent	UINT	IR		0	1	0	
0x0137	311	1	CMPA1CTL_stall_ct	CmpA Stall Count	UINT	IR				0	
0x0138	312	2	CMPA1CTL_elubsp	CmpA Oil Guidance Setpt	FLOAT	IR				0	
0x0139	313	1	CMPA1CTL_envwrd	CmpA Env Diag Word	UINT	IR				0	
0x013B	315	2	CMPA1CTL_vi_sp1	CmpA Vi Stpt 1	FLOAT	IR				0	
0x013C	316	2	CMPA1CTL_vi_sp2	CmpA Vi Stpt 2	FLOAT	IR				0	
0x013D	317	2	CMPA1CTL_vi_cObj	CmpA Vi Curr Objective	FLOAT	IR				0	
0x013E	318	1	CMPA1CTL_vi_cmd	CmpA Vi Command	UINT	IR		0	1	0	
0x013F	319	1	CMPA1CTL_vi_dword	CmpA Vi Diag Word	UINT	IR				0	
0x0140	320	2	EXVACTL_aTStpt	Approach Setpoint	FLOAT	IR				0	
0x0141	321	2	EXVACTL_cObj	Current Objective	FLOAT	IR				0	
0x0142	322	2	EXVACTL_cll_stpt	Cond Liq Level Setpoint	FLOAT	IR		0	2.25	0	
0x0143	323	2	EXVACTL_dPHStpt	Hi Disch Sat Temp Stpt	FLOAT	IR				0	
0x0144	324	1	EXVACTL_dWd	Diag Word	UINT	IR				0	
0x0145	325	1	EXVACTL_fWd	Fault Word	UINT	IR				0	
0x0146	326	1	EXVACTL_isEnable	Enable	UINT	IR		0	1	0	
0x0147	327	1	EXVACTL_isNom	Nominal	UINT	IR		0	1	0	
0x0148	328	1	EXVACTL_isRd2Go	Ready to Start	UINT	IR		0	1	0	
0x0149	329	1	EXVACTL_isRd2St	Ready to Stop	UINT	IR		0	1	0	
0x014A	330	1	EXVACTL_isStart	Started	UINT	IR		0	1	0	
0x014B	331	1	EXVACTL_isStop	Stopped	UINT	IR		0	1	0	
0x014C	332	2	EXVACTL_lo_dshsp	Low Disch S/H Stpt	FLOAT	IR				0	
0x014D	333	2	EXVACTL_max_dist	Max Discharge Temp	FLOAT	IR		0	250	0	
0x014E	334	2	EXVACTL_sPHStpt	suctSatTempHighStpt	FLOAT	IR				0	
0x014F	335	2	EXVACTL_sPLStpt	suctSatTempLowStpt	FLOAT	IR				0	
0x0150	336	2	EXVACTL_hi_dtsp	Disch Temp Hi Stpt	FLOAT	IR				0	
0x0151	337	2	EXVACTL_lo_sbcsp	Subcool Low Stpt	FLOAT	IR				0	
0x0152	338	2	EXVACTL_ecliqlvl	Est Cond Liq Level	FLOAT	IR				0	
0x0153	339	1	EXVACTL_estflag	Cond Lvl Est Flag	UINT	IR		0	1	0	
0x0154	340	2	EXVACTL_esteflo	Est Evap Flow	FLOAT	IR	gpm			0	
							l/min			0	
0x0155	341	2	EXVACTL_estcflo	Est Cond Flow	FLOAT	IR	gpm			0	
							l/min			0	
0x0156	342	2	ECOACTL_cObj	Current Objective	FLOAT	IR				0	
0x0157	343	2	ECOACTL_dTStpt	Econ Disch Temp Setpoint	FLOAT	IR				0	
0x0158	344	1	ECOACTL_dWd	Diag Word	UINT	IR				0	
0x0159	345	1	ECOACTL_fWd	Fault Word	UINT	IR				0	
0x015A	346	1	ECOACTL_isEnable	Enable	UINT	IR		0	1	0	
0x015B	347	1	ECOACTL_isNom	Nominal	UINT	IR		0	1	0	

APPENDIX D — MODBUS CONFIGURATION[a] (cont)

ADDRESS		REG. N°	PARAMETER	DESCRIPTION	DISPLAY MODE (16BITS)	TYPE	UNIT	VALUE			COMMENT
HEXADEC.	DEC.							MIN.	MAX.	DEFAULT	
0x015C	348	1	ECOACTL_isRd2Go	Ready to Start	UINT	IR		0	1	0	
0x015D	349	1	ECOACTL_isRd2St	Ready to Stop	UINT	IR		0	1	0	
0x015E	350	1	ECOACTL_isStart	Started	UINT	IR		0	1	0	
0x015F	351	1	ECOACTL_isStop	Stopped	UINT	IR		0	1	0	
0x0160	352	2	ECOACTL_shTStpt	Econ Superheat Setpoint	FLOAT	IR				0	
0x0161	353	2	HGBPACTL_cObj	HGBPA Current Obj	FLOAT	IR	°F			0	
							°C			–17.78	
0x0162	354	2	HGBPACTL_hgbpa_pt	HGBPA Process Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x0163	355	2	HGBPACTL_cmd	HGBPA Command	FLOAT	IR	%			0	
0x0164	356	1	HGBPACTL_do_cmd	HGBPA Disc Out Cmd	UINT	IR		0	1	0	
0x0165	357	2	HGBPACTL_fTS	HGBPA Fluid T Stpt	FLOAT	IR	°F			0	
							°C			–17.78	
0x0166	358	2	HGBPACTL_cSS	HGBPA Comp Spd Stpt	FLOAT	IR	Hz			0	
0x0167	359	2	HGBPACTL_svPS	HGBPA SV Pos Stpt	FLOAT	IR	%			0	
0x0168	360	1	HGBPACTL_dWd	HGBPA Diag Word	UINT	IR				0	
0x0169	361	1	HGBPACTL_fWd	HGBPA Fault Word	UINT	IR				0	
0x016A	362	1	HGBPACTL_isEnable	HGBPA Enable	UINT	IR		0	1	0	
0x016B	363	1	HGBPACTL_isNom	HGBPA Nominal	UINT	IR		0	1	0	
0x016C	364	1	HGBPACTL_isRd2Go	HGBPA Ready to Start	UINT	IR		0	1	0	
0x016D	365	1	HGBPACTL_isRd2St	HGBPA Ready to Stop	UINT	IR		0	1	0	
0x016E	366	1	HGBPACTL_isStart	HGBPA Started	UINT	IR		0	1	0	
0x016F	367	1	HGBPACTL_isStop	HGBPA Stopped	UINT	IR		0	1	0	
0x0172	370	2	SLVA1CTL_cmd	SVA Command	FLOAT	IR	%			0	
0x0173	371	2	SLVA1CTL_dstcmd	Hi Disch Sat Temp PI	FLOAT	IR	%			0	
0x0174	372	2	SLVA1CTL_dtcmd	Hi Disch Temp PI	FLOAT	IR	%			0	
0x0175	373	2	SLVA1CTL_ftcmd	Fluid Temp PI	FLOAT	IR	%			0	
0x0176	374	2	SLVA1CTL_mcurcmd	Motor Curr PI	FLOAT	IR	%			0	
0x0177	375	2	SLVA1CTL_mtmpmd	Motor Temp PI	FLOAT	IR	%			0	
0x0178	376	2	SLVA1CTL_oilrecmd	Oil Recovery PI	FLOAT	IR	%			0	
0x0179	377	2	SLVA1CTL_sstcmd	Lo Sat Evap Temp PI	FLOAT	IR	%			0	
0x017A	378	2	SLVA1CTL_cAN	SVA Act Nom Capacity	FLOAT	IR	ton			0	
0x017B	379	2	SLVA1CTL_cANp	SVA Actual Nom Cap Pct	FLOAT	IR	%	0	100	0	
0x017C	380	2	SLVA1CTL_cASp	SVA Actual Scal Cap Pct	FLOAT	IR	%	0	100	0	
0x017D	381	2	SLVA1CTL_cMax	SVA Capacity Max	FLOAT	IR	ton			0	
0x017E	382	2	SLVA1CTL_cMin	SVA Capacity Min	FLOAT	IR	ton			0	
0x017F	383	2	SLVA1CTL_cObj	SVA Current Objective	FLOAT	IR				0	
0x0180	384	2	SLVA1CTL_dSTS	SVA SatDischTempSetpt	FLOAT	IR	°F			0	
							°C			–17.78	
0x0181	385	2	SLVA1CTL_dTS	SVA Disch Temp Setpt	FLOAT	IR	°F			0	
							°C			–17.78	
0x0182	386	1	SLVA1CTL_dWd	SVA Diag Word	UINT	IR				0	
0x0183	387	2	SLVA1CTL_dty_cyc	SVA Duty Cycle	FLOAT	IR				0	
0x0184	388	2	SLVA1CTL_fTStp	SVA Fluid Temp Setpt	FLOAT	IR	°F			0	
							°C			–17.78	
0x0185	389	1	SLVA1CTL_fWd	SVA Fault Word	UINT	IR				0	
0x0186	390	2	SLVA1CTL_iTS	SVA Inverter Temp Setpt	FLOAT	IR	°F			0	
							°C			–17.78	
0x0187	391	1	SLVA1CTL_isEnable	SVA Enable	UINT	IR		0	1	0	
0x0188	392	1	SLVA1CTL_isNom	SVA Nominal	UINT	IR		0	1	0	
0x0189	393	1	SLVA1CTL_isRd2Go	SVA Ready to Start	UINT	IR		0	1	0	
0x018A	394	1	SLVA1CTL_isRd2St	SVA Ready to Stop	UINT	IR		0	1	0	
0x018B	395	1	SLVA1CTL_isStart	SVA Started	UINT	IR		0	1	0	
0x018C	396	1	SLVA1CTL_isStop	SVA Stopped	UINT	IR		0	1	0	
0x018D	397	2	SLVA1CTL_mCS	SVA Motor Current Setpt	FLOAT	IR	amp			0	
0x018E	398	2	SLVA1CTL_mTS	SVA Motor Temp Setpt	FLOAT	IR	°F			0	
							°C			–17.78	
0x018F	399	2	SLVA1CTL_oVS	SVA Oil Viscosity Setpt	FLOAT	IR				0	
0x0190	400	2	SLVA1CTL_sSTS	SVA Sat Suct Temp Setpt	FLOAT	IR	°F			0	
							°C			–17.78	
0x0191	401	1	OILHCTL_fWd	Fault Word	UINT	IR				0	
0x0192	402	1	OILHCTL_isEnable	Enable	UINT	IR		0	1	0	
0x0193	403	1	OILHCTL_isNom	Nominal	UINT	IR		0	1	0	
0x0194	404	1	OILHCTL_isRd2Go	Ready to Start	UINT	IR		0	1	0	
0x0195	405	1	OILHCTL_isRd2St	Ready to Stop	UINT	IR		0	1	0	
0x0196	406	1	OILHCTL_isStart	Started	UINT	IR		0	1	0	
0x0197	407	1	OILHCTL_isStop	Stopped	UINT	IR		0	1	0	

APPENDIX D — MODBUS CONFIGURATION[a] (cont)

ADDRESS		REG. N°	PARAMETER	DESCRIPTION	DISPLAY MODE (16BITS)	TYPE	UNIT	VALUE			COMMENT
HEXADEC.	DEC.							MIN.	MAX.	DEFAULT	
0x0198	408	1	OILPCTL_fWd	Fault Word	UINT	IR				0	
0x019A	410	1	OILPCTL_isEnable	Enable	UINT	IR		0	1	0	
0x019B	411	1	OILPCTL_isNom	Nominal	UINT	IR		0	1	0	
0x019C	412	1	OILPCTL_isRd2Go	Ready to Start	UINT	IR		0	1	0	
0x019D	413	1	OILPCTL_isRd2St	Ready to Stop	UINT	IR		0	1	0	
0x019E	414	1	OILPCTL_isStart	Started	UINT	IR		0	1	0	
0x019F	415	1	OILPCTL_isStop	Stopped	UINT	IR		0	1	0	
0x01A0	416	1	OILRCTL_isEnable	Enable	UINT	IR		0	1	0	
0x01A1	417	1	OILRCTL_isNom	Nominal	UINT	IR		0	1	0	
0x01A2	418	1	OILRCTL_isRd2Go	Ready to Start	UINT	IR		0	1	0	
0x01A3	419	1	OILRCTL_isRd2St	Ready to Stop	UINT	IR		0	1	0	
0x01A4	420	1	OILRCTL_isStart	Started	UINT	IR		0	1	0	
0x01A5	421	1	OILRCTL_isStop	Stopped	UINT	IR		0	1	0	
0x01A6	422	1	VAPCTL_isEnable	Enable	UINT	IR		0	1	0	
0x01A7	423	1	VAPCTL_isNom	Nominal	UINT	IR		0	1	0	
0x01A8	424	1	VAPCTL_isRd2Go	Ready to Start	UINT	IR		0	1	0	
0x01A9	425	1	VAPCTL_isRd2St	Ready to Stop	UINT	IR		0	1	0	
0x01AA	426	1	VAPCTL_isStart	Started	UINT	IR		0	1	0	
0x01AB	427	1	VAPCTL_isStop	Stopped	UINT	IR		0	1	0	
0x01AE	430	1	CPMPCTL_disc_cmd	Cond Pump Cmd	UINT	IR		0	1	0	
0x01AF	431	1	CPMPCTL_dWd	Diagnostic Word	UINT	IR				0	
0x01B0	432	1	CPMPCTL_fWd	Fault Word	UINT	IR				0	
0x01B1	433	1	CPMPCTL_isEnable	Enable	UINT	IR		0	1	0	
0x01B2	434	1	CPMPCTL_isNom	Nominal	UINT	IR		0	1	0	
0x01B3	435	1	CPMPCTL_isRd2Go	Ready to Start	UINT	IR		0	1	0	
0x01B4	436	1	CPMPCTL_isRd2St	Ready to Stop	UINT	IR		0	1	0	
0x01B5	437	1	CPMPCTL_isStart	Started	UINT	IR		0	1	0	
0x01B6	438	1	CPMPCTL_isStop	Stopped	UINT	IR		0	1	0	
0x01B7	439	2	RUNTIME_str_comp_a	Compressor A Starts	FLOAT	IR				0	
0x01B8	440	2	RUNTIME_str_comp_b	Compressor B Starts	FLOAT	IR				0	
0x01B9	441	2	RUNTIME_hr_svc	Service Runtime	FLOAT	IR	HOURS			0	
0x01BA	442	2	RUNTIME_hr_mach	Machine Operating Hours	FLOAT	IR	HOURS	0	99999999	0	
0x01BB	443	2	RUNTIME_hr_comp_a	Compressor A Hours	FLOAT	IR	HOURS			0	
0x01BC	444	2	RUNTIME_hr_comp_b	Compressor B Hours	FLOAT	IR	HOURS			0	
0x01BD	445	2	RUNTIME_hr_epmp1	Evap Pump 1 Hours	FLOAT	IR	HOURS			0	
0x01BE	446	2	RUNTIME_hr_cpmp1	Cond Pump 1 Hours	FLOAT	IR	HOURS			0	
0x01BF	447	2	CAPDCTL_actstpt	Active Fluid Temp Setpt	FLOAT	IR	°F			0	
							°C			–17.78	
0x01C0	448	2	CAPDCTL_ck1capmn	cirVarSpdCapLimMinArray	FLOAT	IR				0	
0x01C1	449	2	CAPDCTL_ck1capmx	cirVarSpdCapLimMaxArray	FLOAT	IR				0	
0x01C2	450	2	CAPDCTL_ck1caprq	Circ Cap Req Array	FLOAT	IR				0	
0x01C3	451	1	CAPDCTL_compldrq	Comp Load Required	UINT	IR		0	1	0	
0x01C4	452	2	CAPDCTL_scstptof	Short Cycle Setpt Offset	FLOAT	IR				0	
0x01C5	453	2	CAPDCTL_stptbst	Setpoint Boost	FLOAT	IR				0	
0x01C6	454	2	CAPDCTL_syscapmx	sysVarSpdCapLimMax	FLOAT	IR	%			0	
0x01C7	455	2	CAPDCTL_syscaprq	System Capacity Req	FLOAT	IR	%			0	
0x01C8	456	1	CAPDCTL_ramp_act	Ramp Loading Active	UINT	IR		0	1	0	
0x01C9	457	1	CAPDCTL_dem_act	Demand Limit Active	UINT	IR		0	1	0	
0x01CA	458	2	CAPECTL_act_ccap	System Actual Comp Cap	FLOAT	IR	ton			0	
0x01CB	459	2	CAPECTL_act_fcap	sysActualFixSpdComprCap	FLOAT	IR	ton			0	
0x01CC	460	2	CAPECTL_act_vcap	sysActualVarSpdComprCap	FLOAT	IR	ton			0	
0x01CD	461	2	CAPECTL_avl_cap	System Avail Comp Cap	FLOAT	IR	ton			0	
0x01CE	462	2	CAPECTL_avl_fcap	SysAvailFixSpdComprCap	FLOAT	IR	ton			0	
0x01CF	463	2	CAPECTL_avl_vcap	SysAvailVarSpdComprCap	FLOAT	IR	ton			0	
0x01D0	464	2	CAPECTL_cap	System Capacity	FLOAT	IR	ton			0	
0x01D1	465	2	CAPECTL_cap_pct	System Capacity Percent	FLOAT	IR	%			0	
0x01D2	466	2	CAPECTL_run_fcap	sysRunFixSpdComprCap	FLOAT	IR	ton			0	
0x01D3	467	2	CAPECTL_run_vcap	sysRunVarSpdComprCap	FLOAT	IR	ton			0	
0x01D4	468	2	CIRCACTL_cap_tons	System Capacity Tons	FLOAT	IR	ton			0	
0x01D5	469	1	CIRCACTL_circ_wrd	Circuit A Diag Word	UINT	IR				0	
0x01D7	471	2	CIRCACTL_ck1_acap	Circ A Avail Comp Cap	FLOAT	IR	ton			0	
0x01D8	472	2	CIRCACTL_ck1_cap	Circuit A Capacity	FLOAT	IR	ton			0	
0x01D9	473	2	CIRCACTL_ck1_capp	Circuit A Capacity Pct	FLOAT	IR	%			0	
0x01DA	474	2	CIRCACTL_ck1accap	Circ A Actual Comp Cap	FLOAT	IR	ton			0	
0x01DB	475	2	CIRCACTL_ck1afcap	cirAAvailFixSpdComprCap	FLOAT	IR	ton			0	
0x01DC	476	2	CIRCACTL_ck1afscp	cirAActualFixSpdComprCap	FLOAT	IR	ton			0	
0x01DD	477	2	CIRCACTL_ck1avcap	cirAAvailVarSpdComprCap	FLOAT	IR	ton			0	

APPENDIX D — MODBUS CONFIGURATION[a] (cont)

ADDRESS		REG. N°	PARAMETER	DESCRIPTION	DISPLAY MODE (16BITS)	TYPE	UNIT	VALUE			COMMENT
HEXADEC.	DEC.							MIN.	MAX.	DEFAULT	
0x01DE	478	2	CIRCACTL_ck1avscp	cirAActualVarSpdComprCap	FLOAT	IR	ton			0	
0x01DF	479	2	CIRCACTL_ck1rfcap	cirARunFixSpdComprCap	FLOAT	IR	ton			0	
0x01E0	480	2	CIRCACTL_ck1rvcap	cirARunVarSpdComprCap	FLOAT	IR	ton			0	
0x01E1	481	1	CIRCACTL_cmpn_wrd	Compression A Diag Word	UINT	IR				0	
0x01E3	483	1	CIRCACTL_status	Circuit A Status	UINT	IR				0	
0x01E4	484	1	CIRCACTL_stdystat	Circ A Steady State Flag	UINT	IR		0	1	0	
0x01E5	485	2	OILVCTL_oil_visc	Oil Viscosity	FLOAT	IR				0	
0x01E6	486	1	PROTOCOL_MODOCC	MODBUS Occupy	UINT	HR		0	1	0	
0x01E7	487	2	PROTOCOL_MODDEML	MODBUS Demand Limit	FLOAT	HR	%	40	100	100	
0x01E8	488	1	PROTOCOL_MODESTOP	MODBUS Estop	UINT	HR		0	1	0	
0x01E9	489	1	PROTOCOL_MODSFTY	MODBUS Fire Safety	UINT	HR		0	1	0	
0x01EA	490	1	PROTOCOL_MOD_S_S	MODBUS Start/Stop	UINT	HR		0	1	0	
0x01EB	491	1	PROTOCOL_MODLKOUT	MODBUS Lockout	UINT	HR		0	1	0	
0x01EE	494	1	EPMPCTL_disc_cmd	Evap Pump Cmd	UINT	IR		0	1	0	
0x01EF	495	1	EPMPCTL_dWd	Diagnostic Word	UINT	IR				0	
0x01F0	496	1	EPMPCTL_fWd	Fault Word	UINT	IR				0	
0x01F1	497	1	EPMPCTL_isEnable	Enable	UINT	IR		0	1	0	
0x01F2	498	1	EPMPCTL_isNom	Nominal	UINT	IR		0	1	0	
0x01F3	499	1	EPMPCTL_isRd2Go	Ready to Start	UINT	IR		0	1	0	
0x01F4	500	1	EPMPCTL_isRd2St	Ready to Stop	UINT	IR		0	1	0	
0x01F5	501	1	EPMPCTL_isStart	Started	UINT	IR		0	1	0	
0x01F6	502	1	EPMPCTL_isStop	Stopped	UINT	IR		0	1	0	
0x01F7	503	1	PLTSPRT_rs485_u1_tres	LEN Port J6 Term Res	UINT	HR		0	1	0	
0x01F8	504	1	PLTSPRT_rs485_u3_tres	CCN Port J7 Term Res	UINT	HR		0	1	0	
0x01F9	505	1	PLTSPRT_rs485_u4_tres	Mod Master J10 Term Res	UINT	HR		0	1	0	
0x01FA	506	1	PLTSPRT_rs485_u5_tres	BMS Port J8 Term Res	UINT	HR		0	1	0	
0x01FB	507	1	SERVICE1_flui_typ	Evaporator Fluid Type	UINT	IR		0	2	0	MV: 1=Water, 2=Med Brine, 3=Low Brine
0x01FC	508	2	SERVICE1_freezesp	Brine Freeze Setpoint	FLOAT	IR	°F	–20	34	34	
							°C	–28.89	1.11	1.11	
0x01FD	509	2	SERVICE1_min_off	Comp Min Off Time	FLOAT	IR	sec	60	1200	120	
0x01FE	510	2	SERVICE1_dem_20ma	Demand Limit At 20 mA	FLOAT	IR	%	10	100	40	
0x01FF	511	2	SERVICE1_min_lwt	Minimum Fluid Temp	FLOAT	IR	°F	–20	38	38	
							°C	–28.89	3.33	3.33	
0x0200	512	2	SERVICE1_max_lwt	Maximum Fluid Temp	FLOAT	IR	°F	38	153	95	
							°C	3.33	67.22	35	
0x0201	513	1	SERVICE1_emstopen	Emergency Stop Enable	UINT	IR		0	1	1	
0x0202	514	2	SERVICE1_rspdmaxA	Comp Speed Max A	FLOAT	IR	Hz			132	
0x0203	515	2	SERVICE1_rspdmaxB	Comp Speed Max B	FLOAT	IR	Hz			132	
0x0204	516	1	SERVICE1_ser_pass	Service Password	UINT	IR		0	9999	88	
0x0205	517	1	SERVICE1_lockout	Service Lockout	UINT	IR		0	1	0	
0x0206	518	1	SERVICE1_rstrtopt	Restart Options	UINT	IR		0	2	0	MV: 0=None, 1=Auto-Restart, 2=Rapid-Restart
0x0207	519	1	SERVICE1_stlim_by	Starts Limit Bypass	UINT	IR		0	1	0	
0x0208	520	2	SERVICE1_stpperlim_A	Starts Per Period Lim	FLOAT	IR				8	
0x0209	521	2	SERVICE1_cmpstper_A	Comp Start Period	FLOAT	IR				3800	
0x020A	522	2	SERVICE1_stpperlim_B	Starts Per Period Lim	FLOAT	IR				8	
0x020B	523	2	SERVICE1_cmpstper_B	Comp Start Period	FLOAT	IR				3800	
0x020C	524	1	SERVICE1_oilsw_by_A	Oil Switch Bypass A	UINT	IR		0	1	0	
0x020D	525	1	SERVICE1_oilsw_by_B	Oil Switch Bypass B	UINT	IR		0	1	0	
0x020E	526	1	SERVICE1_CirA_En	Enable Circuit A	UINT	IR		0	1	1	
0x020F	527	1	SERVICE1_CirB_En	Enable Circuit B	UINT	IR		0	1	1	
0x0210	528	1	SERVICE1_rsthrsvc	Reset Service Runtime	UINT	IR		0	1	1	
0x0211	529	1	SERVICE1_sftst_en	Soft Stop Enable	UINT	IR		0	1	1	
0x0212	530	2	SERVICE1_sftst_th	Soft Stop Threshold	FLOAT	IR	%	0	100	50	
0x0213	531	1	FACTORY_comp_typ	Compressor Type	UINT	IR		0	4	1	MV: 1=P, 2=Q\R, 3=TC, 4=TD
0x0214	532	1	FACTORY_refrig	Refrigerant Type	UINT	IR		0	15	4	MV: 0=R11, 1=R12, 2=R123, 3=R22, 4=R134A, 5=R404A, 6=R407C, 7=R410A, 8=R454B, 9=R500, 10=R507, 11=R513A, 12=R515A, 13=R515B, 14=R1233ZD, 15=R1234ZE
0x0215	533	1	FACTORY_tons	Chiller Tons	UINT	IR	ton	100	600	100	
							ton	90.7	544.2	90.7	

APPENDIX D — MODBUS CONFIGURATION[a] (cont)

ADDRESS		REG. N°	PARAMETER	DESCRIPTION	DISPLAY MODE (16BITS)	TYPE	UNIT	VALUE			COMMENT
HEXADEC.	DEC.							MIN.	MAX.	DEFAULT	
0x0216	534	1	FACTORY_vfd_opt	VFD Option	UINT	IR		0	7	0	MV: 0=None, 1=FS VFD, 2=Carrier, 3=Rockwell LF2, 4=Eaton, 5=Rockwell STD, 6=ABB, 7=Danfoss
0x0217	535	1	FACTORY_exv_opt	EXV Control Type	UINT	IR		0	3	0	MV: 0=Disabled, 1=ApprCtrl, 2=EvapLvl, 3=CondLvl
0x0218	536	1	FACTORY_econ_opt	Economizer Option	UINT	IR		0	2	0	MV:0=None, 1=Float, 2=EXV
0x0219	537	1	FACTORY_hgbp_opt	HGBP Control Option	UINT	IR		0	1	0	
0x021A	538	1	FACTORY_aux_io	Auxilary IO Location	UINT	IR		0	1	0	0=IOB, 1=Starter
0x021B	539	1	FACTORY_oilassy	Oil Assembly Option	INT	IR		1	2	1	1=one piece vap, 2=two piece vap
0x021C	540	2	ENERGY_din_kw	Design Input kW	FLOAT	IR	kW			0	
0x021D	541	2	ENERGY_dkw_ton	Design Input kW/Ton	FLOAT	IR	kW			0	
0x021E	542	2	ENERGY_dewt	Design Ent Evap Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x021F	543	2	ENERGY_dlwt	Design Lvg Evap Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x0220	544	2	ENERGY_degpm	Design Evap GPM	FLOAT	IR	gpm			0	
							l/min			0	
0x0221	545	2	ENERGY_depdft	Design Evap Press Drop	FLOAT	IR	ft			0	
							m			0	
0x0222	546	2	ENERGY_dert	Design Evap Refrig Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x0223	547	2	ENERGY_decwt	Design Ent Cond Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x0224	548	2	ENERGY_dlcwt	Design Lvg Cond Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x0225	549	2	ENERGY_dcgpm	Design Cond GPM	FLOAT	IR	gpm			0	
							l/min			0	
0x0226	550	2	ENERGY_dcpdft	Design Cond Press Drop	FLOAT	IR	ft			0	
							m			0	
0x0227	551	2	ENERGY_dcrt	Design Cond Refrig Temp	FLOAT	IR	°F			0	
							°C			–17.78	
0x0228	552	1	HYDRCFG_evapfdtp	Evap Flow Detection Type	UINT	IR		0	2	0	
0x0229	553	2	HYDRCFG_evapfldp	Evap Min Flow dP	FLOAT	IR	psig	0	0	0	
							kPa	0	0	0	
0x022A	554	1	HYDRCFG_eflo_vt	Evap Flow Verify time	UINT	IR	sec	30	300	30	
0x022B	555	1	HYDRCFG_condfdtp	Cond Flow Detection Type	UINT	IR		0	2	0	
0x022C	556	2	HYDRCFG_condfldp	Cond Min Flow dP	FLOAT	IR	psig	0	0	0	
							kPa	0	0	0	
0x022D	557	1	HYDRCFG_cflo_vt	Cond Flow Verify time	UINT	IR	sec	30	300	30	
0x022E	558	1	DRVA1CFG_rlv_i	Rated Line Voltage	UINT	IR	V			460	
0x022F	559	1	DRVA1CFG_rla_m	Motor Rated Load Amps	UINT	IR	amp	10	5000	200	
0x0230	560	1	DRVA1CFG_rlv	Motor Nameplate Voltage	UINT	IR	V			460	
0x0231	561	1	DRVA1CFG_rla	Motor Nameplate Current	UINT	IR	amp			200	
0x0232	562	1	DRVA1CFG_rlrpm	Motor Nameplate RPM	UINT	IR	rpm			3000	
0x0233	563	1	DRVA1CFG_rlkw	Motor Nameplate KW	UINT	IR	kW			1500	
0x0234	564	1	DRVA1CFG_rlhz	Compressor 100% Speed	UINT	IR	Hz	0	200	90	
0x0235	565	1	DRVA1CFG_min_spd	Compressor Unload Spd	UINT	IR	Hz			25	
0x0236	566	1	DRVA1CFG_strt_spd	Compressor Start Spd	UINT	IR	Hz			25	
0x0237	567	2	DRVA1CFG_torq_lim	Torque Limit Percent	FLOAT	IR	%			115	
0x0238	568	2	DRVA1CFG_curr_lim	Current Limit Percent	FLOAT	IR	%			110	
0x0239	569	2	DRVA1CFG_pwm_freq	PWM Switch Frequency	FLOAT	IR		0	0	2	
0x023A	570	2	DRVA1CFG_skipfrq1	Skip Frequency 1	FLOAT	IR	Hz			102	
0x023B	571	2	DRVA1CFG_skipfrq2	Skip Frequency 2	FLOAT	IR	Hz			102	
0x023C	572	2	DRVA1CFG_skipfrq3	Skip Frequency 3	FLOAT	IR	Hz			102	
0x023D	573	2	DRVA1CFG_skipband	Skip Frequency Band	FLOAT	IR	Hz			0	
0x023E	574	1	DRVA1CFG_ramp_inc	Increase Ramp Time	UINT	IR	sec			30	
0x023F	575	1	DRVA1CFG_ramp_dec	Decrease Ramp Time	UINT	IR	sec			30	
0x0240	576	2	SETPOINT_lcw_sp	Cooling LCW Setpoint	FLOAT	HR	°F	10	120	45	
							°C	–12.22	48.89	7.22	
0x0241	577	2	SETPOINT_ice_sp	Ice Build Setpoint	FLOAT	HR	°F	15	60	40	
							°C	–9.44	15.56	4.44	
0x0242	578	1	SETPOINT_EWT_OPT	EWT Control Option	UINT	HR		0	1	0	

APPENDIX D — MODBUS CONFIGURATION[a] (cont)

ADDRESS		REG. N°	PARAMETER	DESCRIPTION	DISPLAY MODE (16BITS)	TYPE	UNIT	VALUE			COMMENT
HEXADEC.	DEC.							MIN.	MAX.	DEFAULT	
0x0243	579	2	SETPOINT_ecw_sp	Cooling ECW Setpoint	FLOAT	HR	°F	15	120	60	
							°C	–9.44	48.89	15.56	
0x0244	580	2	SETPOINT_dem_base	Base Demand Limit	FLOAT	HR	%	25	100	100	
0x0245	581	2	SETPOINT_rcyc_lo	Recycle Shutdown Offset	FLOAT	HR	°F	0	10	5	
							°C	–17.78	–12.22	–15	
0x0246	582	2	SETPOINT_rcyc_hi	Recycle Startup Offset	FLOAT	HR	°F	0	10	5	
							°C	–17.78	–12.22	–15	
0x0247	583	1	ALARMRST_RST_ALM	Alarm Reset	UINT	IR		0	1	0	
0x0249	585	1	ALARMRST_alarm_1	Jbus Current Alarm 1	UINT	IR				0	
0x024A	586	1	ALARMRST_alarm_2	Jbus Current Alarm 2	UINT	IR				0	
0x024B	587	1	ALARMRST_alarm_3	Jbus Current Alarm 3	UINT	IR				0	
0x024C	588	1	ALARMRST_alarm_4	Jbus Current Alarm 4	UINT	IR				0	
0x024D	589	1	ALARMRST_alarm_5	Jbus Current Alarm 5	UINT	IR				0	

NOTE(S):

a. Not all points are applicable to 23XRV; this list is common between products sharing the same software platform.

LEGEND

CO — COILS_MEDIA
DEC — Decimal
DI — DISCR_INPUT_MEDIA
HEXIDEC — Hexadecimal
HR — HOLDING_REG_MEDIA
IR — INPUT_REG_MEDIA
MV — Multi-State Value

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