POWERCIAT LX / HYDROCIAT LW

CONNECT TOUCH

Instruction manual

CIAT

PREFACE

The goal of this document is to give a broad overview of the main functions of the **Connect Touch** system used to control a range of single-circuit, dual-circuit and triple-circuit air-cooled liquid chillers (POWERCIAT LX) and single-circuit and dual-circuit water-cooled chillers (HYDROCIAT LW). The unit may come with R-134a refrigerant as standard or R-1234ze refrigerant as an option.

Instructions in this manual are given as a guide to good practice in the installation, start-up and operation of the control system. This document does not contain full service procedures for the correct operation of the equipment. The support of a qualified Service Engineer is strongly recommended to ensure optimal operation of the equipment as well as the optimization of all available functionalities.

Note that this document may refer to optional components and certain functions, options or accessories may not be available for the specific unit. The cover images are solely for illustration and form no part of any offer for sale or any sale contract.

IMPORTANT: All screenshots of the interface provided in this manual include text in English. After changing the language of the system, all labels will be displayed in the language selected by the user.

Please read all instructions prior to proceeding with any work. Pay attention to all safety warnings.

The information provided herein is solely for the purpose of allowing customers to operate and service the equipment and it is not to be reproduced, modified or used for any other purpose without the prior consent of the Manufacturer.

It is possible to monitor and manage the Connect Touch control system from either a local colour touch screen panel installed in the electrical cabinet of the machine or the web interface.

■ Please note that the Connect Touch panel has been superseded by the Connect Touch 2.0.

■ The layout and design of the web interface may differ based on the type of the touch screen installed on the machine.

  For units equipped with the legacy Connect Touch, the organisation of pages is the same both on the touch screen and the web interface.

  Connect Touch 2.0 comes with the new web user interface design which allows for easy navigation across different functionalities of the control system.

■ This document applies to both versions of the touch screen. Please refer to the relevant section of this document.

CONTENTS

1 - SAFETY CONSIDERATIONS

1.1   General description

Installation, start-up and servicing of equipment can be hazardous if certain factors particular to the installation are not considered: operating pressures, electrical components, voltages and the installation site (elevated plinths and built-up structures).

Only qualified installation engineers and fully trained technicians are authorised to install and start the equipment. All instructions and recommendations provided in the service guide, installation and operation manuals, as well as on tags and labels fixed to the equipment, components and other accompanying parts supplied separately, must be read, understood and followed. Failure to comply with the instructions provided by the manufacturer may result in injury or product damage.

- Apply all safety standards and practices.
- Wear safety glasses and gloves.
- Use the proper tools to move heavy objects. Move units carefully and set them down gently.

1.2   Safety precautions

Only personnel qualified in accordance with IEC (International Electrotechnical Commission) recommendations may be permitted access to electrical components. It is particularly recommended that all sources of electricity to the unit should be shut off before any work is begun. Shut off the main power supply at the main circuit breaker or isolator.

CAUTION: The equipment uses and emits electromagnetic signals. Tests have shown that the equipment conforms to all applicable codes with respect to electromagnetic compatibility.

RISK OF ELECTROCUTION: Even when the main circuit breaker or isolator is switched off, specific circuits may still be energised as they may be connected to a separate power source.

RISK OF BURNS: Electrical currents may cause components to get hot. Handle power cable, electrical cables and conduits, terminal box covers and motor frames with great care.

IMPORTANT: Some specific safety precautions should be taken in case of units with HFO refrigerant.

For more information about handling the equipment safely, please refer to the IOM Unit documentation (Installation, Operation and Maintenance instructions).

2 - CONTROLLER OVERVIEW

2.1   Control system

POWERCIAT LX air-cooled units and HYDROCIAT LW water-cooled units come with a Connect Touch control that serves as the user interface and configuration tool for communicating devices.

Connect Touch is an electronic control system that can be used to control:
*   POWERCIAT LX air-cooled units
*   HYDROCIAT LW standard and high-efficiency (-HE) water-cooled units

2.2   System functionalities

The Connect Touch system controls the start-up of the compressors needed to maintain the desired heat exchanger entering and leaving water temperature. The controller manages the operation of the fans in order to maintain the correct condensing pressure in each circuit. Connect Touch constantly monitors safety devices that protect the unit against failure and guarantee its optimal functioning.

The control system:
*   Allows users to control the unit via the CONNECT TOUCH user interface
*   Provides web connectivity technology
*   Includes the trending functionality
*   Supports Enhanced Control Management (BluEdge Digital, Cristo'Control2, Power'Control, Smart CIATControl) for multiple units' configuration
*   Supports Connect Service, Easy/Smart supervision solution
*   Provides direct BMS integration capabilities (Modbus RTU, Modbus TCP/IP, BACnet/IP option)

2.3   Operating modes

The control system can operate in three independent modes:
*   **Local mode:** The unit is controlled by commands from the user interface.
*   **Remote mode:** The unit is controlled by dry contacts.
*   **Network mode:** The unit is controlled by network commands. Data communication cable is used to connect the unit to the RS485 communication bus.

The operating mode can be selected with the **Start/Stop** button (see section 4.4). When the Connect Touch system operates autonomously (Local or Remote), it retains all of its control capabilities but does not offer any of the features of the Network. The Network emergency stop command stops the unit regardless of its active operating type.

2.4   Abbreviations

EMM	Energy Management Module
DCFC	Dry Cooler Free Cooling
LED	Light Emitting Diode
OAT	Outdoor Air Temperature
Network mode	Operating type: Network
Local-Off mode	Operating type: Local-Off
Local-On mode	Operating type: Local-On
Local-Schedule mode	Operating type: Local-Schedule
Master mode	Operating type: Master unit (master/slave assembly)
Remote mode	Operating type: By remote contacts
VFD	Variable Frequency Drive (VLT)
LWT	Leaving Water Temperature
EWT	Entering Water Temperature

2.5   Control panel

Navigation through the Connect Touch control is either using the touch screen interface or by connecting to the web interface.

The legacy Connect Touch panel has been superseded by the Connect Touch 2.0.

Connect Touch	Connect Touch 2.0
a resistive LCD touch screen	a capacitive LCD screen
the same layout of menus on the touch screen and the web UI	new web user interface design (web UI design different from the touch screen display)
CEPL131228-01-R* (4.3" touch panel)	CEPL131256-01-R* (4.3" touch panel)
CEPL1311228-01-R* (7' touch panel)	CEPL131258-01-R* (7" touch panel)

* The CEPL number can be found on the sticker on the back of the touch screen.

3 - HARDWARE DESCRIPTION

3.1 General description

The electrical box includes all boards controlling the unit as well as the Connect Touch user interface (4.3-inch or 7-inch colour LCD touch screen). Each circuit is by default fitted with one SIOB/CIOB board used to manage all inputs and outputs of the controller. TCPM board is used to control the operation of screw compressors and AUX1 board is used for fans control (one AUX1 per each circuit). Please note that the first AUX1 board may also include the output used to control the customer variable speed pump for single-circuit water-cooled units (see also section 7.3.5). Options such as energy management or heat reclaim require additional SIOB/CIOB boards to be installed. Additionally, chillers fitted with a dry cooler have one extra board used to control the optional dry cooler (the board is installed in the dry cooler).

NOTE: There are two types of dry coolers available, i.e. dry cooler (condenser) used for water-cooled units and free cooling dry cooler for water-cooled or air-cooled units. Each dry cooler is fitted with a separate AUX1 board.

All boards communicate via an internal bus. The controller continuously monitors the information received from various pressure and temperature probes and accordingly starts the program that controls the unit.

3.2 Connections

Depending on the size of the touch screen, connections are located on the bottom (or the bottom and the right side) of the controller.

- The control offers communication protocols such as LEN, Proprietary Protocol, Modbus, or BACnet.
- Ethernet ports allow for TCP/IP communication or BMS (Building Management System) connection.

The unit is equipped with the CONNECT TOUCH user interface:

- 4.3-inch colour LCD touch screen (standard)
- 7-inch colour LCD touch screen (optional)

Please note that the legacy Connect Touch panel has been superseded by the Connect Touch 2.0.

The position of connectors varies depending on the model of the touch screen. For example, J8 and J10 connectors are placed in the opposite order (left/right position).

Connect Touch connections

4.3-inch touch screen display (standard)

Connect Touch (view from below)
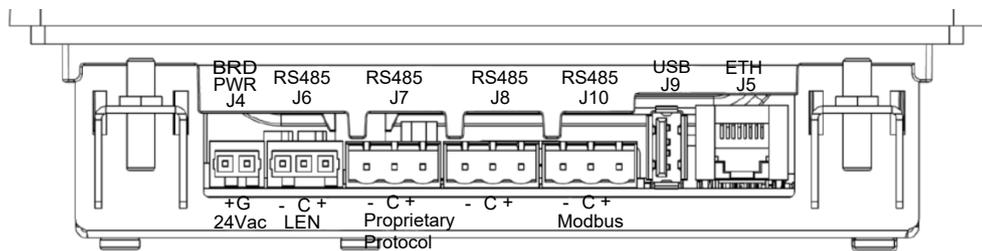
7-inch touch screen display (optional)

Connect Touch (view from below)
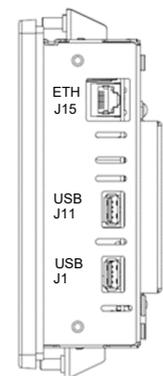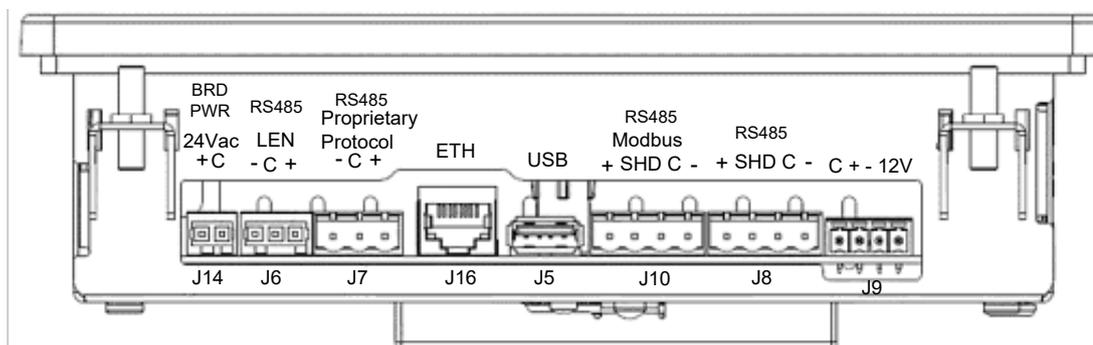
Connect Touch
(right side of the module)

3 - HARDWARE DESCRIPTION

Connect Touch 2.0 connections

4.3-inch touch screen display (standard)

Connect Touch 2.0 (view from below)
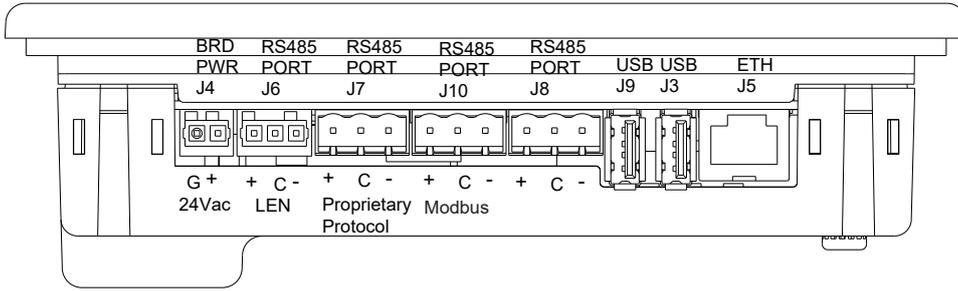
7-inch touch screen display (optional)

Connect Touch 2.0 (view from below)
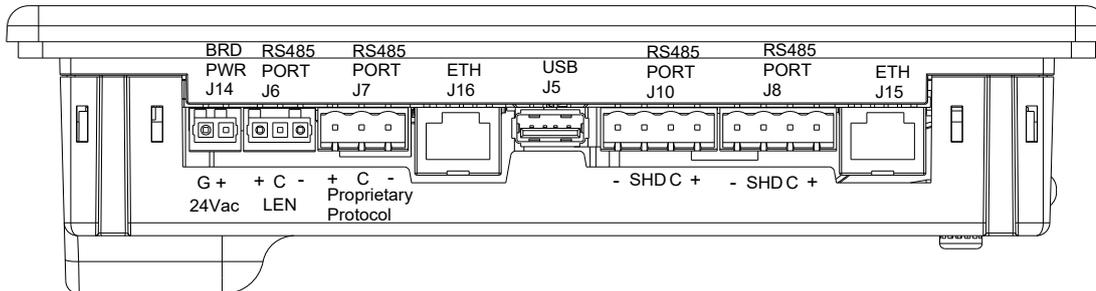
3.3 Power supply to boards

All boards are supplied from a common 24 VAC supply referred to earth.

CAUTION: Maintain correct polarity when connecting the power supply to the boards, otherwise the boards may be damaged.

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 given circuit or the unit from restarting.

The main board continuously monitors the information received from various pressure and temperature probes and accordingly starts the program that controls the unit.

The number of boards available in the electrical box depends on the number of selected options.

3.4 Light emitting diodes on boards

All boards continuously check and indicate the proper operation of their electronic circuits. A light emitting diode (LED) lights on each board when it is operating properly.

- The red LED flashing for a two-second period indicates correct operation. A different rate indicates a board or a software failure.

- The green LED flashes continuously on all boards to show that the board is communicating correctly over its internal bus. If the green LED is not flashing, this indicates the internal bus wiring problem or a configuration issue.

3.5 Pressure sensors

Two types of electronic sensors (high and low pressure) are used to measure various pressures in each circuit.

These electronic sensors deliver 0 to 5 VDC. The sensors are connected to the SIOB/CIOB board.

Discharge pressure sensors (high pressure type)

These sensors measure the discharge pressure in each circuit. They are used to control head pressure or high pressure load shedding. Discharge pressure sensors are mounted on the discharge line piping of each circuit.

Suction pressure sensors (low pressure type)

These sensors measure the suction pressure in each circuit. They are used for EXV control. Suction pressure sensors are located on the suction piping of each circuit.

Oil pressure sensors (high pressure type)

These sensors measure the oil pressure of each compressor. Oil pressure sensors are located at the oil port of the compressor. The economizer pressure is subtracted from this value to arrive at the differential oil pressure.

Economizer pressure sensors (high pressure type)

These sensors measure the intermediate pressure between high and low pressure. They are used to control the economizer performance.

Heat reclaim condenser outlet pressure sensors (optional)

These sensors (for air-cooled units with heat reclaim option) permit control of the load in the heat reclaim mode.

3.6 Temperature sensors

Temperature sensors constantly measure the temperature of various components of the unit, ensuring the correct operation of the system.

Evaporator entering and leaving water temperature sensors

The evaporator entering and leaving water temperature sensors are installed in the entering and leaving side water box. They are used for capacity control and safety purposes.

Condenser entering and leaving water temperature sensors

These sensors measure the entering and leaving water temperatures in water-cooled units or air-cooled units with the heat reclaim option.

Suction gas temperature sensor

This sensor is used to control the suction gas temperature. It is located at the suction line of each compressor.

Discharge gas temperature sensor

This sensor is used to control the discharge gas temperature, and permits control of the discharge superheat temperature. It is located at the discharge line of the compressor.

Motor temperature sensor

This sensor is used to control the motor temperature of each compressor.

Oil temperature sensor

This sensor is used to control the oil temperature of each compressor.

Temperature setpoint reset sensor

This 4-20 mA sensor can be installed remotely from the unit. It is used to reset the setpoint on the unit.

Outdoor temperature sensor

This sensor is mounted on the control box of air-cooled units. This sensor is also mounted as standard for the dry cooler option. Outdoor temperature sensor is used for start-up, setpoint temperature reset and frost protection control.

Master/slave water sensor (optional)

The water temperature sensor is used for master/slave assembly control.

3.7 Actuators

Evaporator pumps

The controller can regulate one or two evaporator pumps and takes care of the automatic changeover between these pumps.

Condenser pump

In water-cooled units the controller can regulate one condenser pump.

Electronic expansion valve

The electronic expansion valve (EXV) is used to adjust the refrigerant flow to changes in the operating conditions of the machine. To adjust the refrigerant flow, a piston moves constantly up or down to vary the cross-section of the refrigerant path. This piston is driven by an electronically controlled linear stepper motor. The high degree of accuracy with which the piston is positioned provides precise control of the refrigerant flow.

Water flow switch

The water flow switch configuration allows for the automatic control of the minimum water flow setpoint of the water flow switch. The configuration depends on the unit size and is made automatically at the start-up. If the measured water flow rate in the water loop is lower than the configuration flow rate, the alarm condition shuts off the unit.

3 - HARDWARE DESCRIPTION

3.8 Connections at the user terminal block

Connections available at the user terminal block may vary depending on the selected option.

3.8.1 General description

Some contacts can be accessed only when the unit operates in Remote mode. The following table summarises the connections at the user terminal block.

Terminal block connections

Description	Board	Input/ Output	Connector	Remarks
Standard				
On/Off switch	SIOB/CIOB, circuit A	DI-01	J1	Used for the unit on/off control if the unit is in Remote mode
Second setpoint switch	SIOB/CIOB, circuit A	DI-02	J1	The contact is taken into consideration if the unit is in Remote mode
Demand limit switch 1	SIOB/CIOB, circuit A	DI-03	J1	Used to control demand limit
Heat cool select status	SIOB/CIOB, circuit A	DI-04	J1	Used to select heat cool mode
Condenser flow status (water-cooled units only)	SIOB/CIOB, circuit A	DI-08	J1	Used to control the condenser status
Setpoint reset control	SIOB/CIOB, circuit A	AI-10	J9	Allows the customer to reset the currently selected setpoint
Alarm relay	SIOB/CIOB, circuit A	DO-05	J23	Indicates alarms
Running relay	SIOB/CIOB, circuit A	DO-06	J22	Used to signal a running status (at least one compressor started)
Variable speed pump command (dual-circuit water-cooled units and air-cooled units)	SIOB/CIOB, circuit B	AO-01	J10	Used to command the customer variable speed pump (0-10V)
Variable speed pump command (single-circuit water-cooled units)	AUX1 (1)	AO	J5	Used to command the customer variable speed pump (0-10V)
Optional				
Occupancy override	SIOB/CIOB, EMM	DI-01	J1	Enables to switch between occupied (closed contact) and unoccupied mode (open contact)
Demand limit switch 2	SIOB/CIOB, EMM	DI-02	J1	Used to control demand limit
Customer interlock	SIOB/CIOB, EMM	DI-03	J1	Used for the customer safety loops
Ice done contact	SIOB/CIOB, EMM	DI-04	J1	Used to control the setpoint according to the occupancy schedule
Capacity limit control	SIOB/CIOB, EMM	AI-10	J9	Used for capacity limitation
Chiller partially shutdown	SIOB/CIOB, EMM	DO-05	J23	Indicates the shutdown of one of the circuits
Chiller shutdown	SIOB/CIOB, EMM	DO-06	J22	Indicates the unit shutdown
Chiller capacity running output (0 to 10 V)	SIOB/CIOB, EMM	AO-01	J10	Reports the capacity percentage of the unit
Heat reclaim condenser flow status (air-cooled units only)	SIOB/CIOB, Heat reclaim	DI-01	J1	Used to verify the water flow on the condenser side
Heat reclaim enable switch (air-cooled units only)	SIOB/CIOB, Heat reclaim	DI-02	J1	Used to switch between air-condenser (open contact) and water condenser (closed contact) in Remote mode

3.8.2 Volt-free contact on/off/cooling/heating

If the unit operates in Remote mode, on/off contacts and heating/cooling contacts operate as follows:

Without multiplexing:

	Off	Cooling	Heating
On/Off contact	open	closed	closed
Cooling/Heating contact	-	open	closed

With multiplexing:

	Off	Cooling	Heating	Auto
On/Off contact	open	closed	closed	open
Cooling/Heating contact	open	open	closed	closed

Legend:
1. Off: Unit is stopped
2. Cooling: Unit is allowed to start in Cooling
3. Heating: Unit is allowed to start in Heating
4. Auto: Unit can run in Cooling or Heating in accordance with the changeover values.

3.8.3 Volt-free setpoint selection contact

This dry contact input is used to switch between setpoints. It is active only when the control is in Remote mode.

	Cooling		Heating	
	Setpoint 1	Setpoint 2	Setpoint 1	Setpoint 2
Setpoint selection contact	open	closed	open	closed

3.8.4 Volt-free demand limit selection contact

Up to two dry contacts can be used to limit unit capacity. Note that the second contact is available for units with the energy management module.

Capacity limitation with two contacts is as follows:

	100%	Limit 1	Limit 2	Limit 3
Demand limit 1 contact	open	closed	open	closed
Demand limit 2 contact	open	open	closed	closed

The limits are defined in the SETPOINT menu.

3.9   RS485 wiring (best practice)

For RS485 ports, one of the following cables can be used:

■ For Proprietary Protocol or Modbus communication which is over 300 m or in a noisy environment with Variable Frequency Drive (VFD), a cable with two twisted pairs is recommended. For example, Belden 3106A or Alpha Wire 6454.

■ For applications where the length of the cable is up to 300 m and there is no Variable Frequency Drive (VFD), it is possible to use cost-effective cable solutions, for example, Belden 8772.

Note that "+" and "-" are communication signals and they are from the same twisted pair.

The signal ground could be a single wire or a twisted pair and it should be connected to the "C" pin of J10 (Modbus RTU) or J7 (Proprietary Protocol). This wire is required so that all nodes on the bus share a common ground reference connection.

If a shield is used, then the shield cable should be properly terminated and connected as short as possible at <u>ONLY ONE END</u> to one of the following:

▪ the chassis ground for the 4.3-inch controller OR
▪ the SHD connector pin for the 7-inch controller.

3.9.1   RS485 wiring: 4.3-inch controller

The following diagrams illustrate possible RS485 wiring schemes for 4.3-inch controllers.

The first wiring scheme is the best option (RECOMMENDED), but the second or the third wiring can also be used.

No.1 RS485 wiring diagram (RECOMMENDED)

No. 4 RS485 wiring diagram (INCORRECT- Do not use!)

No. 2 RS485 wiring diagram (CORRECT)

No. 5 RS485 wiring diagram (INCORRECT- Do not use!)
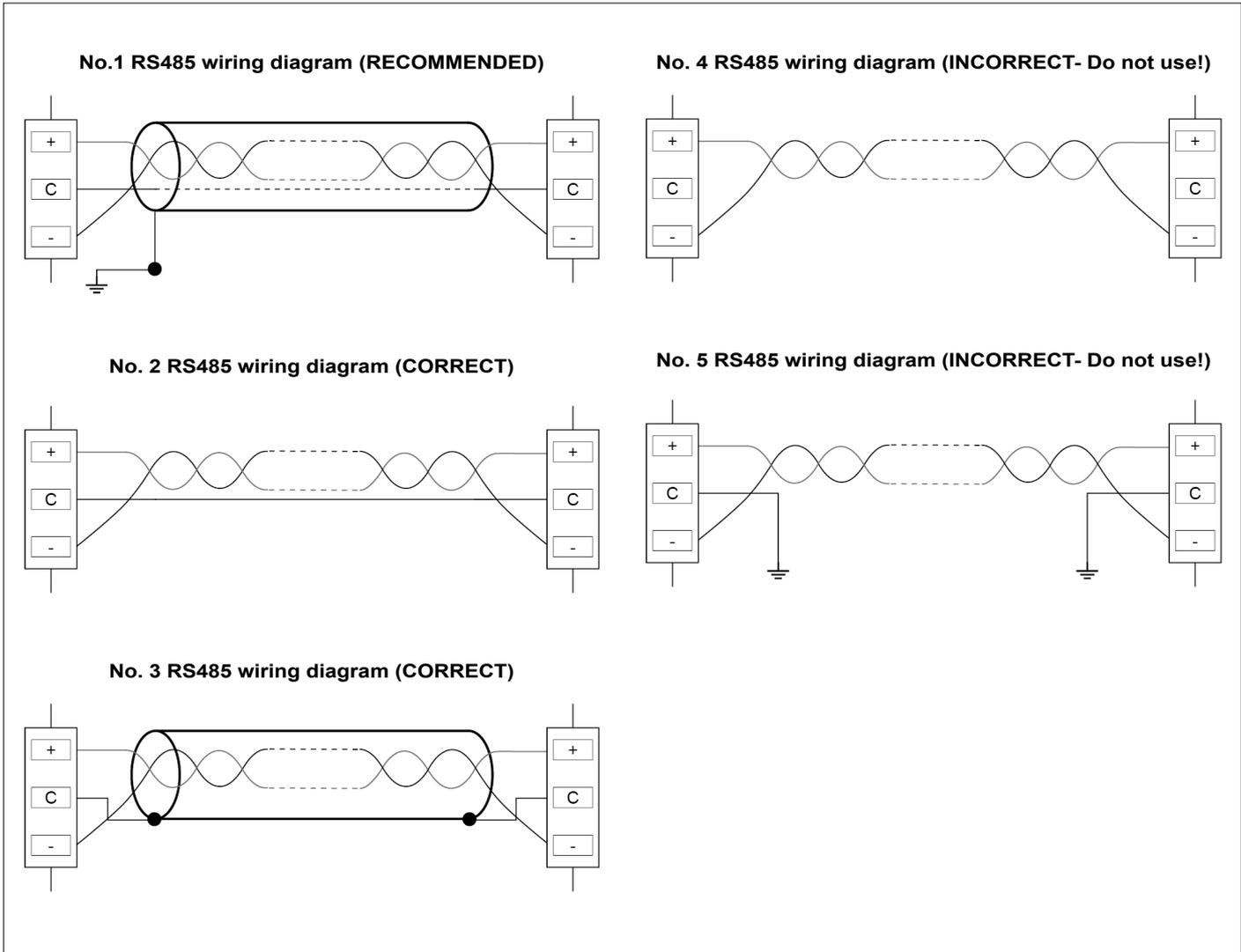
No. 3 RS485 wiring diagram (CORRECT)

3.9.2   RS485 wiring: 7-inch controller

The following diagrams illustrate possible RS485 wiring schemes for 7-inch controllers.

The first wiring scheme is the best option (RECOMMENDED), but the second or the third wiring can also be used.

No.1 RS485 wiring diagram (RECOMMENDED)

No. 4 RS485 wiring diagram (INCORRECT- Do not use!)

No. 2 RS485 wiring diagram (CORRECT)

No. 5 RS485 wiring diagram (INCORRECT- Do not use!)

No. 3 RS485 wiring diagram (CORRECT)
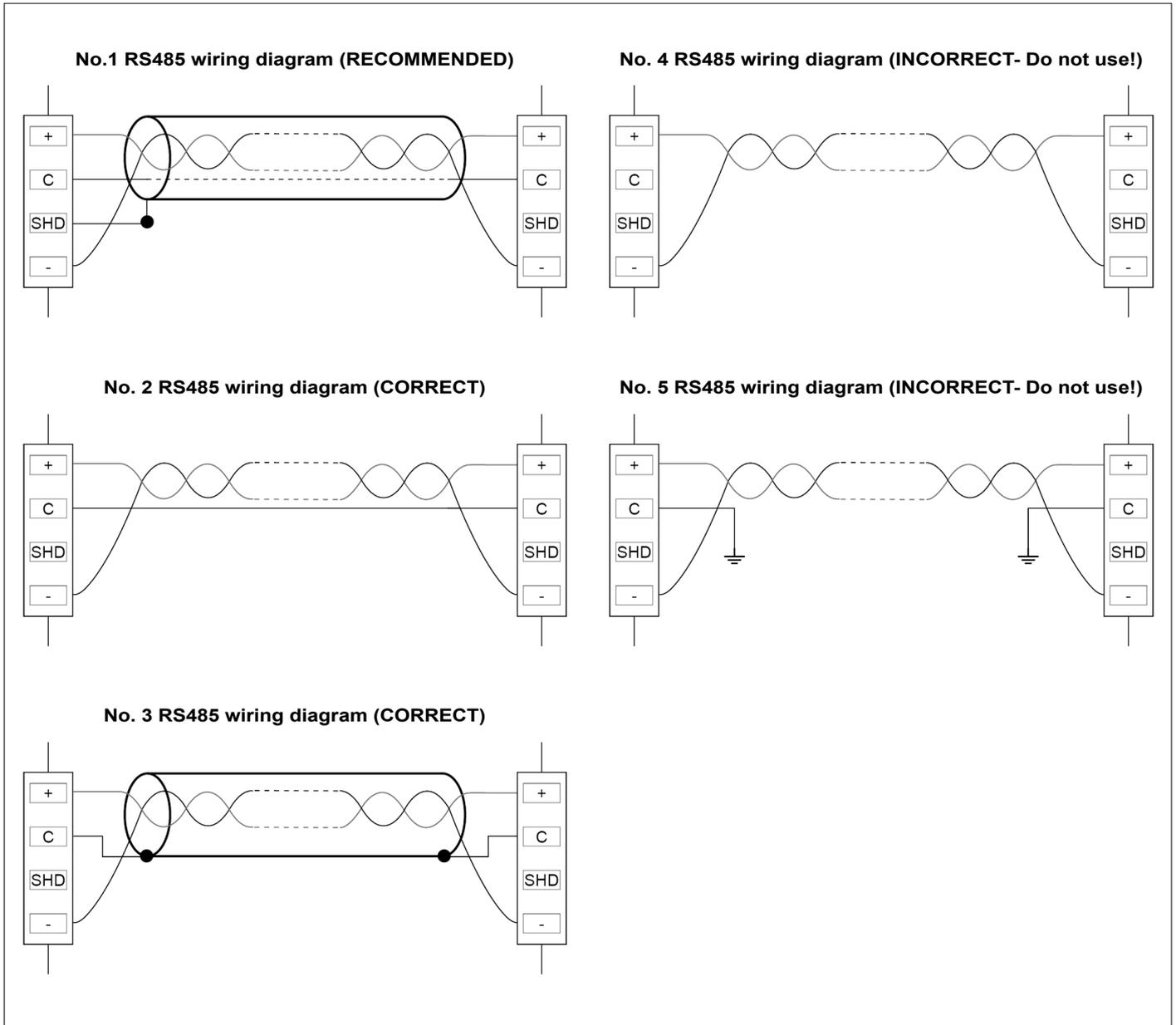
3.9.3   RS485: Daisy chain configuration

The following illustration shows proper 3-wire cable with a shield in a daisy chain configuration.
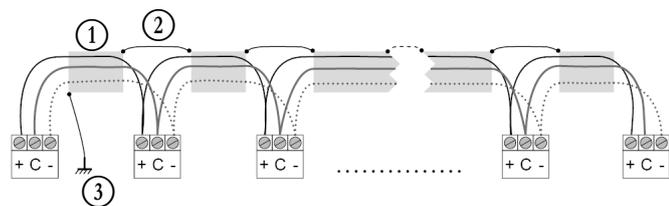
Legend

① Shield
② Keep shield continued
③ Connect shield to earth ground only at one point

End of Line Resistor: Termination is only needed when running at bus at very high speed over long distances.

The speed of the bus and the cable distance determine whether termination is needed. It is meant to balance the bus to minimize the ringing that may be caused by fast signals and the inductance of the cabling.

At 9600 baud, termination will have little or no effect on the bus.

4 - CONNECT TOUCH USER INTERFACE

4.1   Touch screen display

CONNECT TOUCH is a 4.3-inch (standard) or 7-inch (optional) colour touch screen with quick display of alarms, current unit operating status, etc. It allows for web connectivity and custom language support (control parameters displayed in the language selected by the user).

CONNECT TOUCH

The Synoptic screen provides an overview of the system control, allowing the user to monitor the vapour-refrigeration cycle.

The diagram indicates the current status of the unit, giving information on the unit capacity, the status of condenser and evaporator pump (if available), and the pre-defined setpoint parameter.

All unit functions can be accessed by pressing the **Main menu** button ⊞.

By default, the parameters are presented in metric units. For more information on how to change the system of measurement, see section 4.5.

🔔 The bell located in the upper-right part of the screen lights when any fault is detected.

> **The Connect Touch panel has been superseded by the Connect Touch 2.0.** The look of the Connect Touch display may slightly differ depending on the version of the touch screen that has been installed on the machine.

CAUTION
If the touch screen is not used for a while, the screen backlight will be turned off. The control system is always active and the operating mode remains unchanged. Press anywhere on the screen and the Home screen will be displayed.
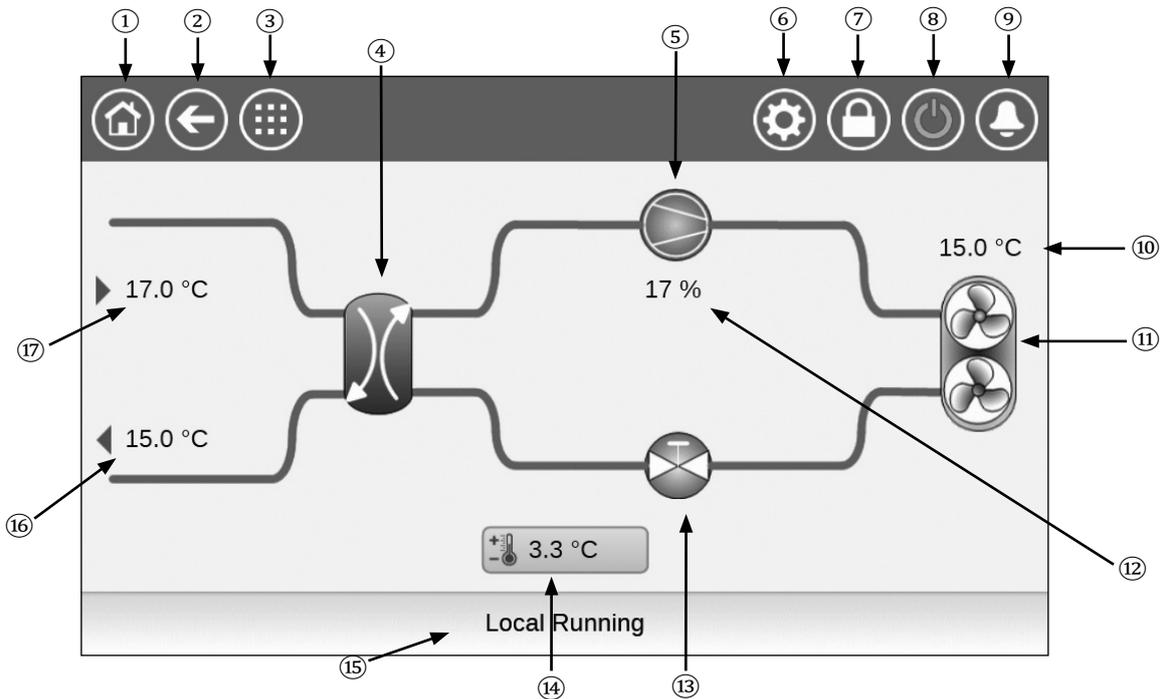
①	Home button	⑩	OAT (Outdoor Air Temperature)
②	Back button	⑪	Condenser fans
③	Main menu button	⑫	Unit capacity
④	Heat exchanger	⑬	EXV (Electronic Expansion Valve)
⑤	Compressor	⑭	Setpoint
⑥	System menu	⑮	Unit status
⑦	Login button (restricted acces to menus)	⑯	LWT (Leaving Water Temperature)
⑧	Start/Stop button	⑰	EWT (Entering Water Temperature)
⑨	Alarm button		

CONNECT TOUCH 2.0

Connect Touch 2.0 comes with a refreshed home screen design. You can control the touch screen with a bare finger or a suitable pen (a capacitive stylus pen). Pointed or cutting tools should not be used (e.g. screwdrivers).

Home screen

The home screen is the first screen displayed on the touch screen panel. This screen allows you to monitor basic information about the operation of the chiller and its working conditions.

Example: Air-cooled chillers
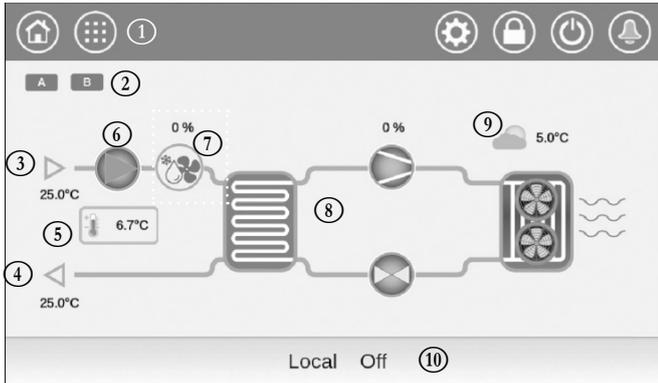
Legend:

①	Header buttons	⑥	Water pump
②	Circuit icon	⑦	Free Cooling capacity
③	Entering Water Temperature	⑧	Refrigeration cycle
④	Leaving Water Temperature	⑨	Outdoor Air Temperature
⑤	Setpoint	⑩	Message box

■ Circuit

For single-circuit chillers, there is only one circuit icon displayed (**A** for circuit A).

For dual-circuit chillers, two circuit icons will be displayed (**A** for circuit A, **B** for circuit B).
- Grey circuit icon = circuit is stopped
- Green circuit icon = circuit is running

■ Evaporator Entering Water Temperature (EWT)

This is the temperature of the water returned from the building ("return water temperature").
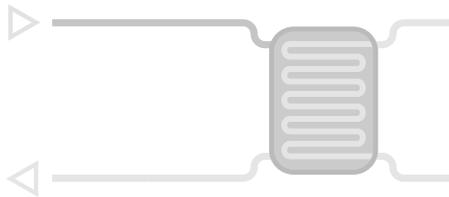
■ Evaporator Leaving Water Temperature (LWT)

This is the temperature of the chilled water produced by the chiller and supplied to the building ("supply water temperature").

■ Setpoint

Setpoint is used to define the desired supply water temperature (Evaporator LWT).

Logged-in users are allowed to access chiller setpoint settings directly from the home screen: Tap 6.7C to open the setpoint configuration menu.

■ Water pump

A single-speed or variable-speed pump is used to circulate the working fluid through the equipment.
- Green pump icon = pump is running
- Grey pump icon = pump is stopped

Logged-in users can access pump parameters directly from the home screen: Tap ⬤ to open the pump menu.

■ Free Cooling capacity (optional)

This value shows Free Cooling capacity.
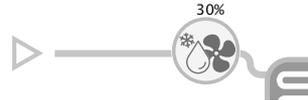
The "Free Cooling" capacity icon is displayed only for units with the Free Cooling option.

■ Refrigeration cycle
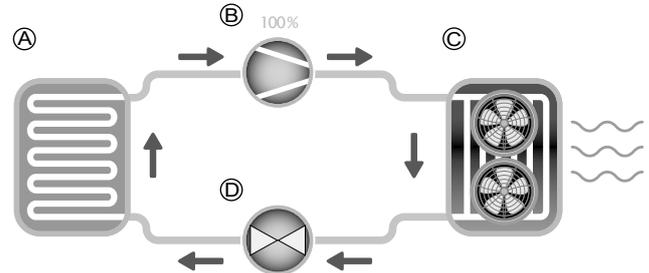
A) Evaporator
- Evaporator absorbs heat from the fluid (pure water or brine), it does the opposite of the condenser which is rejecting the heat out of the unit. Evaporator converts liquid refrigerant into vapours.

B) Compressor / circuit capacity
- This value shows current unit capacity.
- The compressor is used to squeeze the compressor refrigerant gas and turn it into high pressure gas.

C) Condenser
- Condenser is a heat exchanger used to reject the heat by cooling down the high pressure gases and taking advantage to condense the vapours into a liquid.

  The number of fans given in the picture may be different from the actual number of fans installed on the unit.

D) Electronic Expansion Valve (EXV)
- EXV is used to control the flow of refrigerant into the evaporator.
- Valve position is given in %, where 0% means closed position and 100% means open position.

■ Outdoor Air Temperature

☁ OAT sensor reading. The outdoor air temperature sensor used to measure and monitor the temperature helps to optimize the cooling process whenever possible.

4.2   Menu structure

Home	Main Menu	System Menu	Login Menu	Unit Start / Stop	Alarm Menu
				Unit Mode	Alarm Menu

Main menu

General Parameters	Temperatures	Pressures
Inputs Status	Outputs Status	Pump Status
Run Times	Modes	Reclaim
DC Free Cooling Status	Miscellaneous Status	Setpoint Table
Configuration Menu	Quick Test #1	Quick Test #2
Trendings	Software Options	

Configuration menu

General Configuration	Pump Configuration	Reset Configuration
Holiday Menu	Schedule Menu	Date/Time
Control Identification	Network Menu	Add Options

Network Menu

Modbus RTU Config.	Modbus TCP/IP Config.
BACnet Standard Conf.	Email Configuration

Legend:

No password required
(basic access = 0)

User password required
(default password =11)

4.3   Buttons

HOME SCREEN

Home button	Back button	Main Menu button	System Menu button
Home screen displayed	**Go back** to the previous screen	**Main Menu** displayed	**System Menu** displayed

Login button	Start/Stop button	Alarm button
Basic access	Unit is stopped	No alarm active on the unit
User access	Unit is running	<u>Blinking icon:</u> Partial alarm (one circuit affected by the existing alarm) or Alert (no action taken on the unit) <u>Steady icon:</u> Alarm(s) active on the unit

OTHER SCREENS

Login screen	Parameters screen(s)
Login: Confirm advanced access login	**Save** changes
Logout: Reset the user level access and go to the home screen	**Cancel** your modifications

Force screen (override)	Navigation buttons
Set force: Override the current command (if possible)	**Go to** the **previous** page
Remove force: Remove the forced command	**Go to** the **next** page

On Connect Touch 2.0: Swipe up from the bottom of the screen or swipe down from the top of the screen to display and reach other items.

Note: You can swipe up or down only in the menu view (the top bar and the bottom bar will not respond to swipe gestures).

4.4 Unit Start/Stop

With the unit in the Local off mode:

To display the list of operating modes and select the required mode, press the **Start/Stop** button in the upper-right corner of the Synoptic screen.
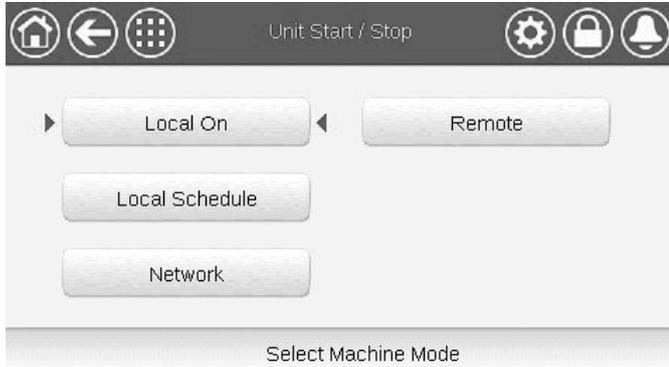
Local On	Local On: The unit is in the local control mode and allowed to start.
Local Schedule	Local Schedule: The unit is in the local control mode and allowed to start if the period is occupied.
Network	Network: The unit is controlled by network commands and allowed to start if the period is occupied.
Remote	Remote: The unit is controlled by external commands and allowed to start if the period is occupied.
Master	Master: The unit operates as the master in the master/slave assembly and allowed to start if the period is occupied. (Master button is displayed if Master/Slave Enable).

IMPORTANT: When entering the menu, please note that the currently selected item corresponds to the last running operating mode. This screen is displayed only when the unit is currently not running. If the unit was in the running state, then the Confirm stop message would be displayed.

To start the unit
1. Press the **Start/Stop** button.
2. Select the required Machine Mode.
3. The Welcome screen will be displayed.

To stop the unit
1. Press the **Start/Stop** button.
2. Confirm the unit shutdown by pressing **Confirm Stop** or cancel the unit shutdown by pressing the **Back** button.

4.5 Display settings

The Language & Unit screen allows the user to do any of the following:
- Select the language of the controller.
- Change the system of measurement (imperial or metric).

To access the Language & Unit screen, press the **Login** button in the upper-right corner of the Synoptic screen.
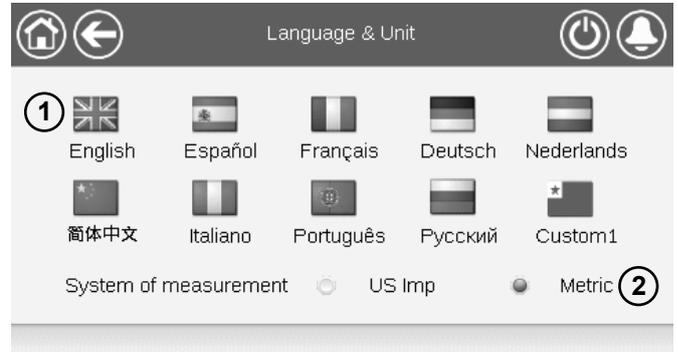
① Cursor indicating the selected language
② System of measurement: Metric/Imperial

NOTE: You may also leave the screen by pressing the **Back** button. Your changes will be saved.

The CONNECT TOUCH control system allows users to add new languages to the control. To learn more about language customization, please contact your local Manufacturer representative.

4.5.1 User login

Only logged-in users can access configurable unit parameters. By default, user password is "11".

To log in as user
1. Press the **Login** button to open User Login Screen.
2. Press the Password box.
3. A dialog box appears ("keyboard view"). Provide the password (11) and press **OK**.
4. The User Login screen appears.
5. Press the **Logged-in** button to save your changes or the **Logged-off** button to exit the screen without making modifications.

NOTE: You may also leave the screen by pressing the **Back** button.

Security access settings
▪ User-level security ensures that only authorised users are allowed to modify critical unit parameters.
▪ Only logged-in users are allowed to access the Configuration menu.
▪ It is strongly recommended to change the default password of the user interface to exclude the possibility of changing any parameters by an unqualified person.
▪ Only people qualified to manage the unit should be familiarized with the password.

4.5.2 User password

User password can be modified in the User Login menu.

To change your password

1. Press the **Login** button, and then select *User Login*.
2. Press the **Change User Password** button.
3. The **Change User Password** screen will be displayed.
4. Please provide the current password, and then type the new password twice.
5. Press the **Save** button to confirm password update or the **Cancel** button to exit the screen without making modifications.

4.5.3 Service & Factory Login

Service and factory login menus are dedicated to service technicians and factory line. To learn more about advanced access control, please refer to the Control Service Guide (service technicians only).

4.6 Monitor unit parameters

The Main menu screen provides access to the main control parameters, including general parameters, inputs and outputs status, etc.

- To access the menu, press the **Main menu** button located in the upper-left part of the Synoptic screen.
- Specific unit parameters can be accessed by pressing the icon corresponding to the desired category.
- To go back to the Synoptic screen, press the **Home** button.
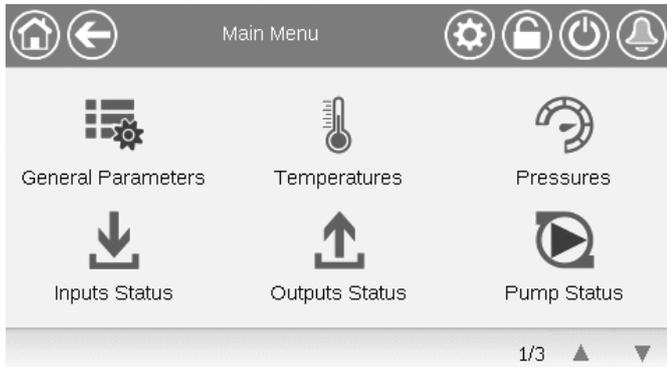
General unit parameters

The General parameters screen provides access to a set of general unit parameters.

- To access the General parameters screen, go to the Main menu and select **General Parameters** (GENUNIT).
- Press the **Up/Down** buttons to navigate between the screens.
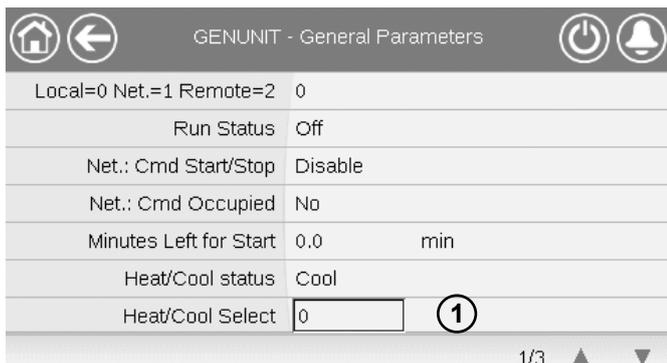
① Forceable point: In this example, it is used to change the unit mode – Cooling / Heating / Automatic changeover.

4.7 Modify unit parameters

The Configuration menu gives access to a number of user-modifiable parameters such as pump configuration, schedule menu, etc. The Configuration menu is password-protected.
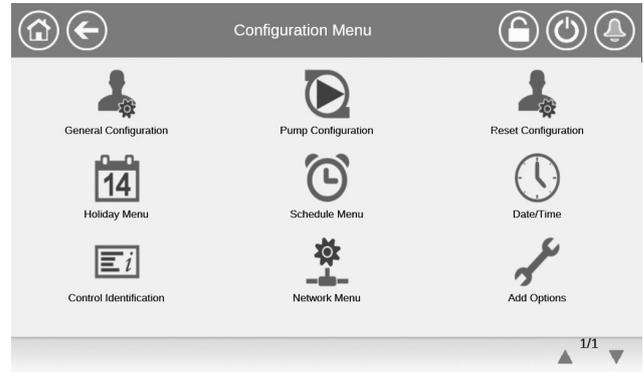
- To access the Configuration menu, press the **Main menu** button located in the upper-left part of the Synoptic screen, and then find and press **Configuration Menu**.
- Press the field corresponding to the parameter to be modified and introduce all the necessary changes.
- Press the **Up/Down** buttons to navigate between the screens.
- Once all the necessary modifications have been made, press the **Save** button to save your changes or the **Cancel** button to exit the screen without making modifications.

4.8 Override system configuration

In some cases it is possible to override system configuration. The override screen provides the option to issue the command overriding the current operation of the unit.

To access the override screen, press the forceable point of the data screen. Note that not all parameters can be overridden by the control.
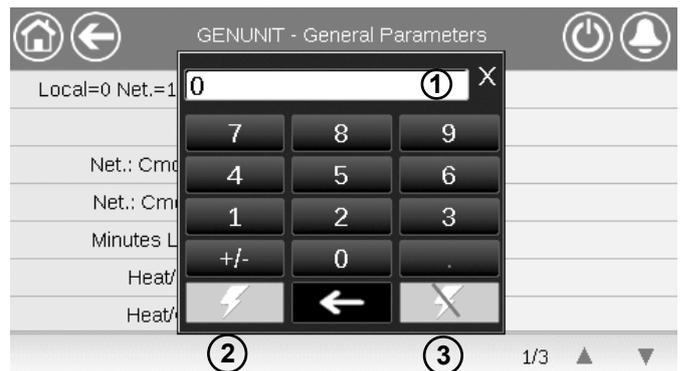
① Forced value
② Set force
③ Auto

4.9   Schedule setting

The control incorporates two time schedules, where the first one (OCCPC01S) is used for controlling the unit start/stop, whereas the second one (OCCPC02S) is used for controlling the dual setpoint.

The control offers the user the possibility of setting eight occupancy periods where each occupancy period includes the following elements to be defined:

- **Day of the week:** Select the days when the period is occupied.
- **Occupancy time ("occupied from" to "occupied to"):** Set occupancy hours for the selected days.
- **Timed Override Extension:** Extend the schedule if necessary. This parameter can be used in the case of some unplanned events. *Example: If the unit is normally scheduled to run between 8:00 to 18:00, but one day you want the air-conditioning system to operate longer, then set this timed override extension. If you set the parameter to "2", then the occupancy will end at 20:00.*

To set the unit start/stop schedule
1. Go to the Main menu.
2. Navigate to the Configuration menu (logged-in users only) and select **Schedule Menu** (SCHEDULE).
3. Go to **OCCPC01S**.
4. Select appropriate check boxes to set the unit occupancy on specific days.
5. Define the time of occupancy.
6. When the time schedule is set, the selected period will be presented in the form of the green band on the timeline.
7. Press the **Save** button to save your changes or the **Cancel** button to exit the screen without making modifications.

Example: Schedule 1 (Connect Touch 2.0)
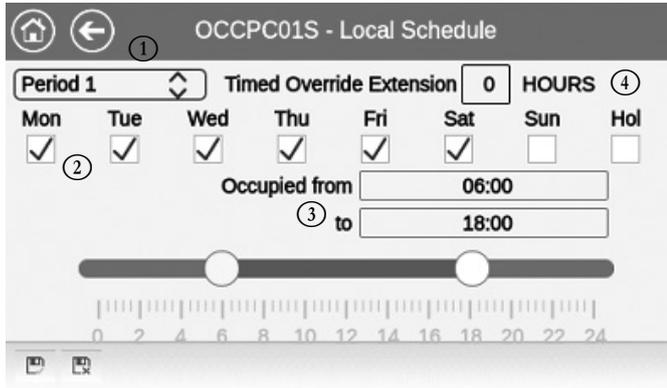
Legend
① Time period (Period 1 – Period 8)
② Selection of days for the time schedule (Monday - Sunday, Holiday)
③ Start/end of the schedule
④ Timed override extension (displayed only when «Period 1» is selected)

IMPORTANT: Only logged-in users are allowed to access the Configuration menu.

Each program is in unoccupied mode unless a schedule time period is active. If two periods overlap and are both active on the same day, the occupied mode takes priority over the unoccupied period.

Example: Schedule setting

Hour	MON	TUE	WED	THU	FRI	SAT	SUN	HOL
0:00	P1							
1:00	P1							
2:00	P1							
3:00								
4:00								
5:00								
6:00								
7:00	P2	P2	P3	P4	P4	P5		
8:00	P2	P2	P3	P4	P4	P5		
9:00	P2	P2	P3	P4	P4	P5		
10:00	P2	P2	P3	P4	P4	P5		
11:00	P2	P2	P3	P4	P4	P5		
12:00	P2	P2	P3	P4	P4			
13:00	P2	P2	P3	P4	P4			
14:00	P2	P2	P3	P4	P4			
15:00	P2	P2	P3	P4	P4			
16:00	P2	P2	P3	P4	P4			
17:00	P2	P2	P3					
18:00			P3					
19:00			P3					
20:00			P3					P6
21:00								
22:00								
23:00								

■ Occupied
□ Unoccupied

MON: Monday
TUE: Tuesday
WED: Wednesday
THU: Thursday
FRI: Friday
SAT: Saturday
SUN: Sunday
HOL: Holiday

Period / Schedule	Starts at	Stops at	Active on (days)
P1: Period 1	0:00	3:00	Monday
P2: Period 2	7:00	18:00	Monday + Tuesday
P3: Period 3	7:00	21:00	Wednesday
P4: Period 4	7:00	17:00	Thursday + Friday
P5: Period 5	7:00	12:00	Saturday
P6: Period 6	20:00	21:00	Holidays
P7: Period 7	Not used in this example		
P8: Period 8	Not used in this example		

4.10   Trendings

The Trendings screen allows you to monitor a set of selected parameters.

- To access the Trendings screen, go to the Main menu and select **Trendings** ⟋ (TRENDING).
- Select the parameters to be displayed and press the **Save** button in the lower-left part of the screen.

IMPORTANT: Please make sure that dates are not out of range (not existing dates); otherwise, an error message may be displayed.

Press ◁◁ or ▷▷ to navigate across the timeline or press

◁◁◁ or ▷▷▷ to go to the beginning or the end of the selected

period.

Press the **Zoom in** button 🔍 to magnify the view or the

Zoom out button 🔍 to expand the viewed area.

Press the **Refresh** button 🔄 to reload data.

5 - WEB CONNECTION

5.1 Web interface

The CONNECT TOUCH control provides the functionality to access and control unit parameters from a web interface.

The Connect Touch display has been superseded by the Connect Touch 2.0 display and the look of the web interface differs depending on the version of the touch screen installed on the machine (Connect Touch / Connect Touch 2.0).
- **Pre-requisites:**
  - Ethernet cable
- **Minimum web browser configuration:**
  - Internet Explorer (version 11 or later)
  - Mozilla Firefox (version 60 or later)
  - Google Chrome (version 65 or later)

Connect Touch web interface

The legacy Connect Touch web interface looks like the touch screen interface. The navigation across menus is the same regardless of the connection method.
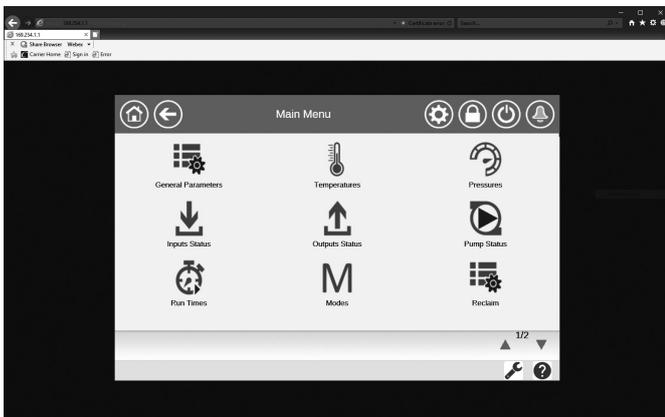
Three users can be connected simultaneously with no priority between them. The last modification is always taken into account.

Connect Touch 2.0 web interface

The Connect Touch 2.0 touch screen comes with the new user-friendly web interface. The new web interface provides a much more convenient way to monitor, set up or update the control system.
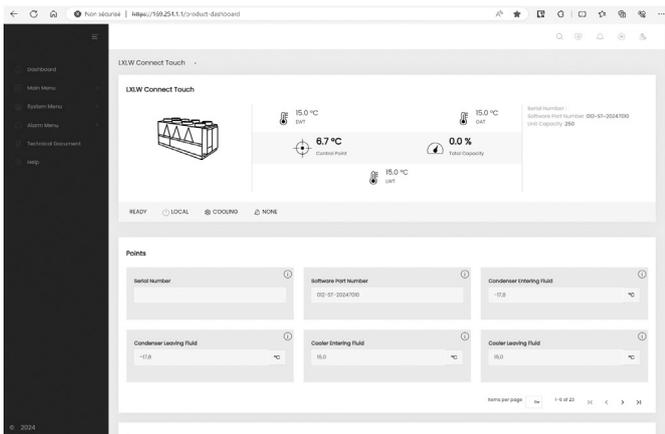
5.2 Connect to the web interface

To connect to the controller via the web interface, it is necessary to know the IP address of the unit. This can be verified on the touch screen (System Menu > Network > IP Network Interface).
- Unit default address:
  169.254.1.1 (J5 / J15, eth0)
  192.168.100.100 (J16, eth1) - (only for 7» touch screen)
- The unit IP address can be changed.

To connect to the web interface

1. Open the web browser.
2. Enter the IP address of the unit in the address bar of the web browser. Start with ***https://*** followed by the unit IP address.
   Example: https://169.254.1.1
3. Press Enter.
4. The web interface will be loaded.

For security reasons the unit cannot be started / stopped via the web interface. All other operations, including monitoring unit parameters or unit configuration, can be performed via the web browser interface.

NOTE: Make sure that your network is protected from malicious attacks and any other security threats. Do not provide open access without proper network security safeguards. CIAT does not hold any responsibility or liability for damage caused by security breach.

5.3 Technical documentation

When using the CONNECT TOUCH control via a PC web browser, you may easily access all technical documents related to the product and its components.

Connect Touch web UI: Click the **Technical documentation** button 🔧 at the bottom of the page in order to see a list of documents related to the unit.

Connect Touch 2.0 web UI: Click "Technical Document" 📄 in the navigation pane.

Technical documentation includes the following documents:
- ■ Spare parts documentation: The list of spare parts included in the unit with reference, description and drafting.
- ■ Misc: Documents such as electrical plans, dimension plans, unit certificates.
- ■ PED: Pressure Equipment Directive.
- ■ IOM: Installation operation and maintenance manual, controls installation/maintenance manual.

Connect Touch web UI: Click the **Help** button ❓ to get access to BACnet user guide, Modbus user guide and Open Source Licenses used by Connect Touch.

Connect Touch 2.0 web UI: Click "Help" ❓ in the navigation pane.

Document	Language	Type
BACnet User's guide	English	PDF
BACnet Guide utilisateur	French	PDF
ModBus User's guide	English	PDF
ModBus Guide utilisateur	French	PDF
License information	English	PDF

IMPORTANT: Please save all data (documents, drawings, diagrams, etc.), for example, on your computer. If the display is replaced, all documents will be lost. Make sure that all documents are stored and may be accessed at any time.

5.4   Connect Touch 2.0 web interface
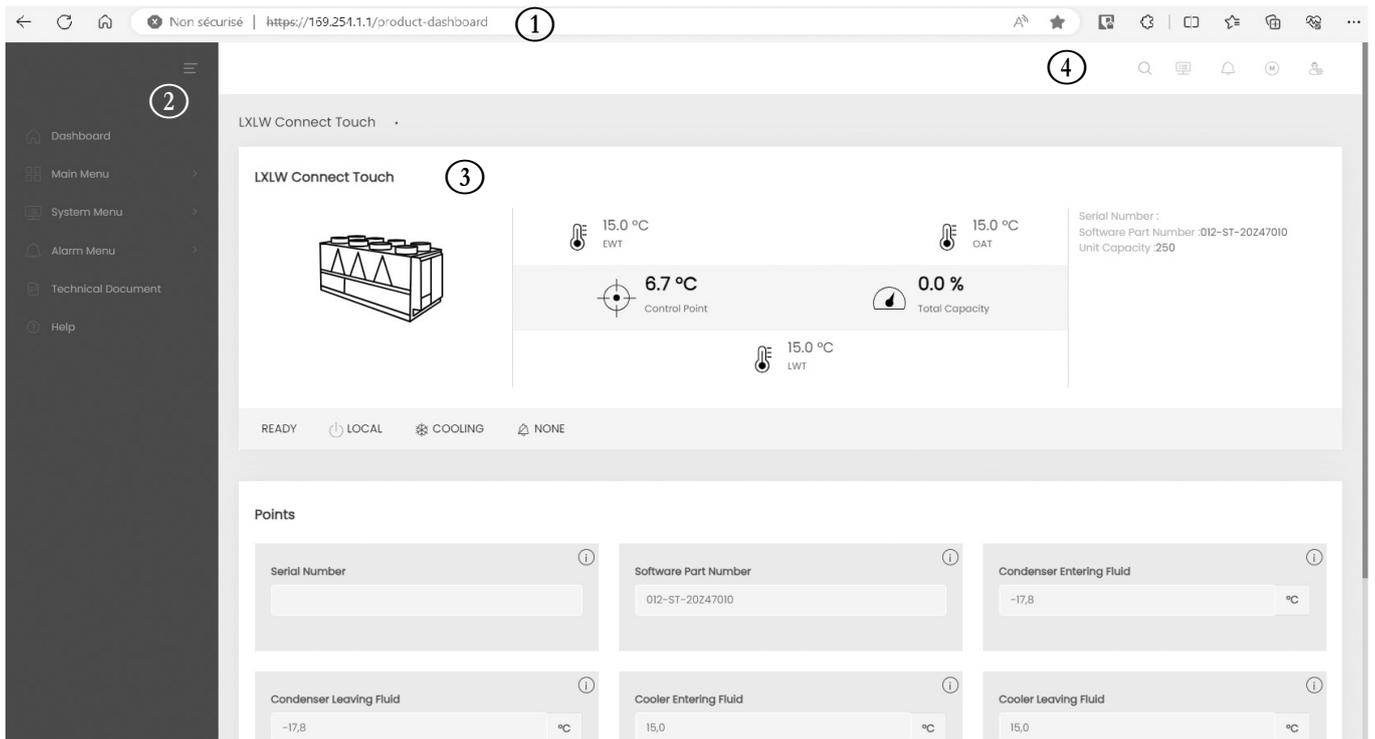
Web interface (home screen)

Web interface sections

① Address bar: Enter the IP address of the unit.

② The navigation pane on the left is used to switch between menus. Click/tap ▤ to expand/collapse the Navigation pane.

③ Main application window: Used to display the content of the selected menu.

Click/tap the menu icon in the navigation pane:
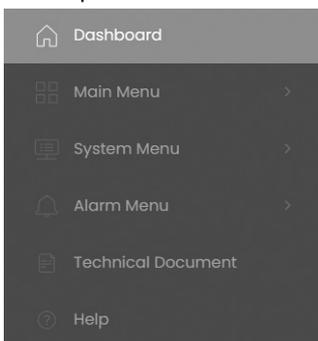
④ Quick access to Search, System menu, Alarm menu, Login and Start/Stop (read-only).

Q Quick Search tool	🖳 System menu
🔔 Alarm menu	Ⓜ Start/Stop menu
👤 Login menu (User/Service/Factory)	

Dashboard

The Dashboard is the first view displayed when connecting to the web interface. It gives a clear and comprehensive view of the current operations of the chiller.

This view is made up of several tiles that are snapshots of data presented in textual or graphical form:

■ *Aquaciat LD/ILD board*

This main tile is used to display general information concerning the running status of the machine.

Example:

① Cooler EWT (Entering Water Temperature)

② Control point

③ Cooler LWT (Leaving Water Temperature))

④ Outside air temperature

⑤ Total capacity

⑥ Additional information:
   • Serial number
   • Software version
   • Unit capacity

⑦ Status bar

   • Unit status: OFF / RUNNING / STOPPING / DELAY / TRIPOUT / READY / OVERRIDE / RUN TEST / TEST
   • Heat/Cool selection: COOLING / HEATING
   • Alarm status: ALARM / NO ALARM

TIP: Hover over the image (or value) to see its description.

6 - CONNECT TOUCH CONTROL: MENU STRUCTURE

6.1   Main menu

Icon	Displayed text *	Description	Name
	General Parameters	General parameters	GENUNIT
	Temperatures	Temperatures	TEMP
	Pressures	Pressures	PRESSURE
	Inputs Status	Inputs status	INPUTS
	Outputs Status	Outputs status	OUTPUTS
	Pump Status	Pump status	PUMPSTAT
	Run Times	Run times	RUNTIME
	Modes	Modes status	MODES
	Reclaim	Heat reclaim status	RECLAIM
	DC Free Cooling Status	Dry Cooler free cooling status	DCFC_STA
	Miscellaneous Status	Miscellaneous Status	MSC_STA
	Setpoint Table	Setpoints table	SETPOINT
	Quick Test #1	Quick test menu #1	QCK_TST1
	Quick Test #2	Quick test menu #2	QCK_TST2
	Configuration Menu	Configuration menu	CONFIG
	Trendings	Trendings	TRENDING
	Software Options	Software options	OPT_STA

* Depends on the selected language (French by default).
Since specific units may not include additional features, some tables may contain parameters that cannot be configured for a given unit.

6 - CONNECT TOUCH CONTROL: MENU STRUCTURE

General Parameters – GENUNIT

No.	Name	Status	Default	Unit	Displayed text *	Description
1	CTRL_TYP	0 to 2		-	Local=0 Net.=1 Remote=2	Operating mode: 0 = Local 1 = Network 2 = Remote
2	STATUS				Run Status	Unit running status: Off, Stopping, Delay, Running, Ready, Override, Tripout, Test, Runtest
3	CHIL_S_S	0 to 1		-	Net.: Cmd Start/Stop	Unit start/stop via Network: When the unit is in Network mode, start/stop command can be forced
4	CHIL_OCC	0 to 1		-	Net.: Cmd Occupied	Unit time schedule via Network: When the unit is in Network mode, the forced value can be used instead of the real occupancy state
5	min_left			min	Minutes Left for Start	Minutes before the unit start-up
6	HEATCOOL			-	Heat/Cool status	Heating/cooling status
7	HC_SEL	0 to 2		-	Heat/Cool Select	Heating/cooling selection
8					0=Cool. 1=Heat. 2=Auto	0 = Cooling 1 = Heating 2 = Automatic heating/cooling control
9	SP_SEL	0 to 2	0	-	Setpoint Select	Setpoint selection
10					0=Auto. 1=Spt1. 2=Spt2	0 = Automatic setpoint selection 1 = Setpoint 1 (active during occupied period) 2 = Setpoint 2 (active during unoccupied period)
11	SP_OCC	no/yes	yes	-	Setpoint Occupied?	Setpoint Occupied?
12	CAP_T			%	Percent Total Capacity	Total unit capacity
13	TOT_CURR			A	Actual Chiller Current	Actual chiller current
14	CURR_LIM	0 to 4000	4000	A	Chiller Current Limit	Chiller current limit
15	sp			°C	Current Setpoint	Current setpoint value
16	CTRL_PNT				Control Point	Control point (active setpoint + reset)
17	EMSTOP	disable/enable	disable	-	Emergency Stop	Emergency stop: Used to stop the unit regardless of its active operating type
18	DEM_LIM	0 to 100		%	Active Demand Limit Val	Active demand limit value: When the unit is in Network mode, the minimum value will be used compared to the status of the external limit switch contact and the demand limit switch setpoint
19	Cap_t_a	0 to 100		%	Actual Capacity cir A	Circuit A running capacity in %
20	Cap_t_b	0 to 100		%	Actual Capacity cir B	Circuit B running capacity in %
21	Cap_t_c	0 to 100		%	Actual Capacity cir C	Circuit C running capacity in %

*Depends on the selected language (French by default).

Temperatures – TEMP

No.	Name	Status	Default	Unit	Displayed text *	Description
1	COOL_EWT	-	-	°C	Cooler Entering Fluid	Evaporator entering water temperature: Used for capacity control
2	COOL_LWT	-	-	°C	Cooler Leaving Fluid	Evaporator leaving water temperature: Used for capacity control
3	COND_EWT	-	-	°C	Condenser Entering Fluid	Condenser entering water temperature: Used for capacity control
4	COND_LWT	-	-	°C	Condenser Leaving Fluid	Condenser leaving water temperature: Used for capacity control
5	SCT_A	-	-	°C	Saturated Cond Tmp cir A	Saturated condensing temperature, circuit A
6	SST_A	-	-	°C	Saturated Suction Temp A	Saturated suction temperature, circuit A
7	SUCT_A	-	-	°C	Compressor Suction Tmp A	Compressor suction temperature, circuit A
8	DGT_A	-	-	°C	Discharge Gas Temp cir A	Discharge gas temperature, circuit A
9	CP_TMP_A	-	-	°C	Motor Temperature cir A	Motor temperature, circuit A
10	SCT_B	-	-	°C	Saturated Cond Tmp cir B	Saturated condensing temperature, circuit B
11	SST_B	-	-	°C	Saturated Suction Temp B	Saturated suction temperature, circuit B
12	SUCT_B	-	-	°C	Compressor Suction Tmp B	Compressor suction temperature, circuit B
13	DGT_B	-	-	°C	Discharge Gas Temp cir B	Discharge gas temperature, circuit B
14	CP_TMP_B	-	-	°C	Motor Temperature cir B	Motor temperature, circuit B
15	SCT_C	-	-	°C	Saturated Cond Tmp cir C	Saturated condensing temperature, circuit C
16	SST_C	-	-	°C	Saturated Suction Temp C	Saturated suction temperature, circuit C
17	SUCT_C	-	-	°C	Compressor Suction Tmp C	Compressor suction temperature, circuit C
18	DGT_C	-	-	°C	Discharge Gas Temp cir C	Discharge gas temperature, circuit C
19	CP_TMP_C	-	-	°C	Motor Temperature cir C	Motor temperature, circuit C

Temperatures – TEMP (continued)

No.	Name	Status	Default	Unit	Displayed text *	Description
20	SPACETMP	-	-	°C	Optional Space Temp	Optional space temperaure
21	CHWSTEMP	-	-	°C	CHWS Temperature	Chws temperature
22	CHWSHEAT	-	-	°C	CHWS Heat Temp	Not applicable
23	OAT	-	-	°C	External Temperature	External temperature
24	TH_HEATR	-	-	°C	Cooler Heater Temp	Cooler heater temperature
25	T_HEAT_C	-	-	°C	Circuit C Heater Temp	Heater temperature, circuit C
26	ECO_TP_A	-	-	°C	Economizer Gas Temp A	Economizer gas temperature a
27	ECO_TP_B	-	-	°C	Economizer Gas Temp B	Economizer gas temperature b
28	ECO_TP_C	-	-	°C	Economizer Gas Temp C	Economizer gas temperature c
29	dc_lwt	-	-	°C	Dry Cool Leav Water Tmp	Dry cooler leaving water temperature
30	cool2lwt	-	-	°C	Cooling Fluid Temp. 2	Cooling Fluid Temperature 2

*Depends on the selected language (French by default).

Pressures – PRESSURE

No.	Name	Status	Default	Unit	Displayed text *	Description
1	DP_A	-	-	kPa	Discharge Pressure A	Compressor discharge pressure, circuit A
2	SP_A	-	-	kPa	Main Suction Pressure A	Compressor suction pressure, circuit A
3	OP_A	-	-	kPa	Oil Pressure A	Oil pressure, circuit A
4	DOP_A	-	-	kPa	Oil Pressure DifferenceA	Oil pressure difference, circuit A
5	ECON_P_A	-	-	kPa	Economizer Pressure A	Economiser pressure, circuit A
6	DP_B	-	-	kPa	Discharge Pressure B	Compressor discharge pressure, circuit B
7	SP_B	-	-	kPa	Main Suction Pressure B	Compressor suction pressure, circuit B
8	OP_B	-	-	kPa	Oil Pressure B	Oil pressure, circuit B
9	DOP_B	-	-	kPa	Oil Pressure DifferenceB	Oil pressure difference, circuit B
10	ECON_P_B	-	-	kPa	Economizer Pressure B	Economiser pressure, circuit B
11	DP_C	-	-	kPa	Discharge Pressure C	Compressor discharge pressure, circuit C
12	SP_C	-	-	kPa	Main Suction Pressure C	Compressor suction pressure, circuit C
13	OP_C	-	-	kPa	Oil Pressure C	Oil pressure, circuit C
14	DOP_C	-	-	kPa	Oil Pressure DifferenceC	Oil pressure difference, circuit C
15	ECON_P_C	-	-	kPa	Economizer Pressure C	Economiser pressure, circuit C

*Depends on the selected language (French by default).

Inputs Status – INPUTS

No.	Name	Status	Default	Unit	Displayed text *	Description
1	ONOFF_SW	open/close		-	Remote On/Off Switch	Remote on/off switch
2	HC_SW	open/close		-	Remote HeatCool Switch	Remote heating/cooling selection switch
3	RECL_SW	open/close		-	Remote Reclaim Switch	Remote heat reclaim switch
4	FC_SW	open/close		-	Free Cooling Disable Sw	Not applicable
5	SETP_SW	open/close		-	Remote Setpoint Switch	Remote setpoint selection switch
6	LIM_SW1	open/close		-	Limit Switch 1	Demand limit switch 1
7	LIM_SW2	open/close		-	Limit Switch 2	Demand limit switch 2 (EMM option)
8	OIL_L_A	open/close		-	Oil Level Input A	Oil level input, circuit A
9	OIL_L_B	open/close		-	Oil Level Input B	Oil level input, circuit B
10	OIL_L_C	open/close		-	Oil Level Input C	Oil level input, circuit C
11	CURREN_A			A	Motor Current A	Motor current, circuit A
12	CURREN_B			A	Motor Current B	Motor current, circuit B
13	CURREN_C			A	Motor Current C	Motor current, circuit C

Inputs Status – INPUTS (continued)

No.	Name	Status	Default	Unit	Displayed text *	Description
14	SP_RESET			mA	Reset/Setpnt4-20mA Sgnl	4-20 mA reset signal
15	REM_LOCK	open/close		-	Customer Interlock	Customer interlock: When the contact is closed, the unit will be stopped with no delay. The switch is provided on the customer's terminal block of the optional EMM.
16	ICE_SW	open/close		-	Ice Done Storage Switch	Ice storage end switch
17	OCC_OVSW	open/close		-	Occupied Override Switch	Occupied override switch
18	LIM_ANAL			mA	Limit 4-20mA Signal	Limit 4-20mA signal, capacity limit
19	ELEC_BOX	open/close		-	Electrical Box Interlock	Electrical box interlock
20	HEATR_SW	open/close		-	Cooler Heater Feedback	Cooler heater command
21	leak_v			V	Leakage detector 1 val	Leakage detection (refrigerant leak detection option)
22	leak_2_v			V	Leakage detector 2 val	Leakage detection (refrigerant leak detection option)
23	ElBxF1_s	off/on		-	ElecBoxFan1 input state	Electrical box fan status 1 (units with HFO)
24	ElBxF2_s	off/on		-	ElecBoxFan2 input state	Electrical box fan status 2 (units with HFO)
25	ElBxF3_s	off/on		-	ElecBoxFan3 input state	Electrical box fan status 3 (units with HFO)
26	PwrPrtIn	-		-	Power Protection Inputs	Power Protection Inputs

*Depends on the selected language (French by default).

Outputs Status – OUTPUTS

No.	Name	Status	Default	Unit	Displayed text *	Description
1	COMP_A	off/on		-	Compressor A	Compressor A command
2	OIL_SL_A	off/on		-	Oil Solenoid Output A	Oil solenoid output, circuit A
3	SLID_1_A	off/on		-	Slide Valve 1 Output A	Slide valve 1 output, circuit A
4	SLID_2_A	off/on		-	Slide Valve 2 Output A	Slide valve 2 output, circuit A
5	CAPT010A			V	Capacity Signal Cir A	0-10V capacity signal, circuit A
6	COMP_B	off/on		-	Compressor B	Compressor B command
7	OIL_SL_B	off/on		-	Oil Solenoid Output B	Oil solenoid output, circuit B
8	SLID_1_B	off/on		-	Slide Valve 1 Output B	Slide valve 1 output, circuit B
9	SLID_2_B	off/on		-	Slide Valve 2 Output B	Slide valve 2 output, circuit B
10	CAPT010B			V	Capacity Signal Cir B	0-10V capacity signal, circuit B
11	COMP_C	off/on		-	Compressor C	Compressor C command
12	OIL_SL_C	off/on		-	Oil Solenoid Output C	Oil solenoid output, circuit C
13	SLID_1_C	off/on		-	Slide Valve 1 Output C	Slide valve 1 output, circuit C
14	SLID_2_C	off/on		-	Slide Valve 2 Output C	Slide valve 2 output, circuit C
15	CAPT010C			V	Capacity Signal Cir C	0-10V capacity signal, circuit C
16	CAPT_010			V	Chiller Capacity signal	Chiller capacity signal
17	ALARM	off/on		-	Alarm Relay Status	Alarm relay status
18	RUNNING	off/on		-	Running Relay Status	Running relay status
19	ALERT	off/on		-	Alert Relay State	Alert relay status
20	SHUTDOWN	off/on		-	Shutdown Indicator State	Shutdown indicator status
21	pos_3wv	0 to 100		%	Cond 3 Way Valve Pos	Condenser 3-way valve position
22	COOLHEAT	off/on		-	Cooler Heater Command	Evaporator heater command status
23	READY	off/on		-	Ready or Running Status	Unit ready/running status
24	cond_htr	off/on		-	Reclaim Condenser Heater	Reclaim condenser heater status
25	iso_cl_a	off/on		-	Ball Valve Close Out A	Ball valve close output, circuit A
26	iso_op_a	off/on		-	Ball Valve Open OutA	Ball valve open output, circuit A
27	iso_cl_b	off/on		-	Ball Valve Close Out B	Ball valve close output, circuit B
28	iso_op_b	off/on		-	Ball Valve Open OutB	Ball valve open output, circuit B
29	iso_cl_c	off/on		-	Ball Valve Close Out C	Ball valve close output, circuit C
30	iso_op_c	off/on		-	Ball Valve Open Out C	Ball valve open output, circuit C

Outputs Status – OUTPUTS (continued)

No.	Name	Status	Default	Unit	Displayed text *	Description
31	FAN_ST_A			-	Fan Staging Number A	Fan stage, circuit A
32	FAN_ST_B			-	Fan Staging Number B	Fan stage, circuit B
33	FAN_ST_C			-	Fan Staging Number C	Fan stage, circuit C
34	hd_pos_a			%	Head Press Act Pos A	Head pressure control – actuator position, circuit A
35	hd_pos_b			%	Head Press Act Pos B	Head pressure control – actuator position, circuit B
36	hd_pos_c			%	Head Press Act Pos C	Head pressure control – actuator position, circuit C
37	OIL_HT_A	off/on		-	Oil Heater Output A	Oil heater output, circuit A
38	OIL_HT_B	off/on		-	Oil Heater Output B	Oil heater output, circuit B
39	OIL_HT_C	off/on		-	Oil Heater Output C	Oil heater output, circuit C
40	RV_A	off/on		-	4 Way Refrig Valve A	4-way refrigerant valve position, circuit A
41	RV_B	off/on		-	4 Way Refrig Valve B	4-way refrigerant valve position, circuit B
42	iso_refa	close/open		-	Ball Valve Position A	Ball Valve Position, circuit A
43	iso_refb	close/open		-	Ball Valve Position B	Ball Valve Position, circuit B
44	iso_refc	close/open		-	Ball Valve Position C	Ball Valve Position, circuit C
45	ALARMOUT	off/on		-	Alarm Relay Status	Not used
46	ElBxFan	off/on		-	Electrical Box Fan	Electrical box fan (units with HFO)
47	dcvfan1	0 to 10		V	Dry Cool Vfan1 Output	Dry cooler – variable speed fan 1
48	dcvfan2	0 to 10		V	Dry Cool Vfan2 Output	Dry cooler – variable speed fan 2
49	dcfan1	off/on		-	Dry Cool fan stage 1	Dry cooler fan stage 1
50	dcfan2	off/on		-	Dry Cool fan stage 2	Dry cooler fan stage 2
51	dcfan3	off/on		-	Dry Cool fan stage 3	Dry cooler fan stage 3
51	dcfan4	off/on		-	Dry Cool fan stage 4	Dry cooler fan stage 4
53	dcfan5	off/on		-	Dry Cool fan stage 5	Dry cooler fan stage 5
54	dcfan6	off/on		-	Dry Cool fan stage 6	Dry cooler fan stage 6
55	dcfan7	off/on		-	Dry Cool fan stage 7	Dry cooler fan stage 7
56	dcfan8	off/on		-	Dry Cool fan stage 8	Dry cooler fan stage 8

*Depends on the selected language (French by default).

Pump Status – PUMPSTAT

No.	Name	Status	Default	Unit	Displayed text *	Description
1	SET_FLOW	no/yes		-	Cooler Flow Setpoint Out	Evaporator flow setpoint output
2	CPUMP_1	off/on		-	Cooler Pump #1 Command	Evaporator pump 1 command
3	CPUMP_2	off/on		-	Cooler Pump #2 Command	Evaporator pump 2 command
4	ROTCPUMP	no/yes		-	Rotate Cooler Pumps ?	Evaporator pumps rotation
5	FLOW_SW	open/close		-	Cooler Flow Switch	Evaporator flow switch output
6	HPUMP_1	off/on		-	Condenser Pump Command1	Condenser pump command
7	HPUMP_2	off/on		-	Condenser Pump Command2	Not applicable
8	ROTHPUMP	no/yes		-	Rotate Condenser Pumps ?	Not applicable
9	watpres1			kPa	Water pres before cooler	Evaporator entering water pressure
10	watpres2			kPa	Water pres after cooler	Evaporator leaving water pressure
11	watpres3			kPa	Water pres before filter	Water pressure before filter
12	watpres4			kPa	Water pres after filter	Water pressure after filter
13	wat_flow			GPS	Water flow	Water flow rate
14	cool_pwr			kPa	Cooling power	Cooling power
15	CONDFLOW	open/close		-	Condenser Flow Status	Condenser flow rate
16	VPMP_CMD	0 to 100		%	Variable speed pump cmd	Variable speed pump command

*Depends on the selected language (French by default).

6 - CONNECT TOUCH CONTROL: MENU STRUCTURE

Run Times – RUNTIME

No.	Name	Status	Default	Unit	Displayed text *	Description
1	HR_MACH			hour	Machine Operating Hours	Unit operating hours
2	st_mach			-	Machine Starts Number	Number of unit starts
3	hr_cp_a			hour	Compressor A Hours	Operating hours, compressor A
4	st_cp_a			-	Compressor A Starts	Number of starts, compressor A
5	hr_cp_b			hour	Compressor B Hours	Operating hours, compressor B
6	st_cp_b			-	Compressor B Starts	Number of starts, compressor B
7	hr_cp_c			hour	Compressor C Hours	Operating hours, compressor C
8	st_cp_c			-	Compressor C Starts	Number of starts, compressor C
9	hr_cpum1			hour	Cooler Pump #1 Hours	Operating hours, evaporator pump 1
10	hr_cpum2			hour	Cooler Pump #2 Hours	Operating hours, evaporator pump 2
11	hr_hpum1			hour	Condenser Pump #1 Hours	Operating hours, condenser pump
12	hr_hpum2			hour	Condenser Pump #2 Hours	Not applicable
13	hr_fcm_a			hour	Free Cool A Pump Hours	Not applicable
14	hr_fcm_b			hour	Free Cool B Pump Hours	Not applicable
15	st_Rcl_a			hour	Reclaim cir A Hours	Reclaim session - operating hours, circuit A
16	hr_Rcl_a			-	Reclaim cir A Starts	Reclaim session - number of starts, circuit A
17	st_Rcl_b			hour	Reclaim cir B Hours	Reclaim session - operating hours, circuit B
18	hr_Rcl_b			-	Reclaim cir B Starts	Reclaim session - number of starts, circuit B

*Depends on the selected language (French by default).

Modes – MODES

No.	Name	Status	Default	Unit	Displayed text *	Description
1	m_delay	no/yes		-	Start Up Delay In Effect	Start-up delay in effect
2	m_2stpt	no/yes		-	Second Setpoint In Use	Second setpoint in use: The setpoint used during unoccupied periods
3	m_reset	no/yes		-	Reset In Effect	Setpoint reset active
4	m_demlim	no/yes		-	Demand limit active	Demand limit active
5	m_ramp	no/yes		-	Ramp Loading Active	Ramp loading active
6	m_clheat	no/yes		-	Cooler Heater Active	Cooler heater active
7	m_pmprot	no/yes		-	Cooler Pump Rotation	Cooler pumps rotation
8	m_pmpper	no/yes		-	Pump Periodic Start	Pump periodic start
9	m_night	no/yes		-	Night Low Noise Active	Night low noise option active
10	m_slave	no/yes		-	Master Slave Active	Master/Slave mode active
11	m_autoc	no/yes		-	Auto Changeover Active	Automatic changeover active
12	m_lowEwt	no/yes		-	Heating Low EWT Lockout	Heating low EWT lockout
13	m_cpmpro	no/yes		-	Condenser Pump Rotation	Not applicable
14	m_cpmppr	no/yes		-	Cond Pump Periodic Start	Condenser pump periodic start
15	m_ice	no/yes		-	Ice Mode In Effect	Ice mode active
16	m_defA	no/yes		-	Defrost Active On Cir A	Defrost mode active, circuit A (heat pumps)
17	m_defB	no/yes		-	Defrost Active On Cir B	Defrost mode active, circuit B (heat pumps)
18	m_freec	no/yes		-	Free Cooling Active	Not applicable
19	m_recla	no/yes		-	Reclaim Active	Reclaim mode active
20	m_sst_a	no/yes		-	Low Suction Circuit A	Low suction, circuit A
21	m_sst_b	no/yes		-	Low Suction Circuit B	Low suction, circuit B
22	m_sst_c	no/yes		-	Low Suction Circuit C	Low suction, circuit B
23	m_map_a	no/yes		-	Map compressor Circuit A	Map compressor, circuit A
24	m_map_b	no/yes		-	Map compressor Circuit B	Map compressor, circuit B
25	m_map_c	no/yes		-	Map compressor Circuit C	Map compressor, circuit C

M **Modes Menu – MODES (continued)**

No.	Name	Status	Default	Unit	Displayed text *	Description
26	m_hp_a	no/yes		-	High Pres Override Cir A	High pressure override, circuit A
27	m_hp_b	no/yes		-	High Pres Override Cir B	High pressure override, circuit B
28	m_hp_c	no/yes		-	High Pres Override Cir C	High pressure override, circuit C

*Depends on the selected language (French by default).

Reclaim – RECLAIM

No.	Name	Status	Default	Unit	Displayed text *	Description
1	RECL_SEL	no/yes		-	Heat Reclaim Select	Heat reclaim selection
2	HR_EWT			°C	Reclaim Entering Fluid	Reclaim entering water temperature
3	HR_LWT			°C	Reclaim Leaving Fluid	Reclaim leaving water temperature
4	hr_v_pos			%	Reclaim Valve Position	Reclaim valve position
5	hrstat_a			-	Reclaim Status Circuit A	Reclaim status, circuit A
6	PD_P_A			kPa	Pumpdown Pressure Cir A	Pump-down pressure, circuit A
7	hr_subta			°C	Sub Condenser Temp Cir A	Subcooling condenser temperature, circuit A
8	hr_sat_a			°C	Pumpdown Saturated Tmp A	Pump-down saturated temperature, circuit A
9	hr_subca			^C	Subcooling Temperature A	Subcooling temperature, circuit A
10	hr_ea_a	off/on		-	Air Cond Entering Valv A	Air condenser entering valve status, circuit A
11	hr_ew_a	off/on		-	Water Cond Enter Valve A	Water condenser entering valve status, circuit A
12	hr_la_a	off/on		-	Air Cond Leaving Valve A	Air condenser leaving valve status, circuit A
13	hr_lw_a	off/on		-	Water Cond Leaving Val A	Water condenser leaving valve status, circuit A
14	hrstat_b			-	Reclaim Status Circuit B	Reclaim status, circuit B
15	PD_P_B			kPa	Pumpdown Pressure Cir B	Pump-down pressure, circuit B
16	hr_subtb			°C	Sub Condenser Temp Cir B	Subcooling condenser temperature, circuit B
17	hr_sat_b			°C	Pumpdown Saturated Tmp B	Pump-down saturated temperature, circuit B
18	hr_subcb			^C	Subcooling Temperature B	Subcooling temperature, circuit B
19	hr_ea_b	off/on		-	Air Cond Entering Valv B	Air condenser entering valve status, circuit B
20	hr_ew_b	off/on		-	Water Cond Enter Valve B	Water condenser entering valve status, circuit B
21	hr_la_b	off/on		-	Air Cond Leaving Valve B	Air condenser leaving valve status, circuit B
22	hr_lw_b	off/on		-	Water Cond Leaving Val B	Water condenser leaving valve status, circuit B

*Depends on the selected language (French by default).

DC Free Cooling Status – DCFC_STA

No.	Name	Status	Default	Unit	Displayed text *	Description
1	oat	-		°C	OAT Free Cooling	Free Cooling / Dry Cooler: OAT
2	lwt	-		°C	FC Leaving Water Temp	Free Cooling / Dry Cooler: Leaving water temperature
3	wloop	-		°C	FC Water Loop Temp	Free Cooling / Dry Cooler: Water loop temperature
4	m_dcfc	no/yes		-	Free Cooling Mode Active	Dry Cooler Free Cooling mode active
5	dcfc_cap	0 to 100		%	FC Capacity	Free Cooling / Dry Cooler capacity
6	f_stage	0 to 20		-	Fix Speed Fans Stage	Free Cooling / Dry Cooler fan stage (fixed speed fans)
7	vf_speed	0 to 100		%	Varifan Speed	Free Cooling / Dry Cooler: Fan speed
8	pid_out	0 to 100		%	PID Output Value	Status of PID output
9	FC_HOUR	0 to 999999		hour	DCFC Operating Hours	Free Cooling / Dry Cooler: Operating hours
10	FC_FAN1S	0 to 999999		-	DCFC Fan Stage 1 Start	DCFC / Fan stage 1: Number of starts
11	FC_FAN1H	0 to 999999		hour	DCFC Fan Stage 1 Hours	DCFC / Fan stage 1: Operating hours
12	FC_FAN2S	0 to 999999		-	DCFC Fan Stage 2 Start	DCFC / Fan stage 2: Number of starts
13	FC_FAN2H	0 to 999999		hour	DCFC Fan Stage 2 Hours	DCFC / Fan stage 2: Operating hours
14	FC_FAN3S	0 to 999999		-	DCFC Fan Stage 3 Start	DCFC / Fan stage 3: Number of starts

DC Free Cooling Status Menu – DCFC_STA (continued)

No.	Name	Status	Default	Unit	Displayed text *	Description
15	FC_FAN3H	0 to 999999		hour	DCFC Fan Stage 3 Hours	DCFC / Fan stage 3: Operating hours
16	FC_FAN4S	0 to 999999		-	DCFC Fan Stage 4 Start	DCFC / Fan stage 4: Number of starts
17	FC_FAN4H	0 to 999999		hour	DCFC Fan Stage 4 Hours	DCFC / Fan stage 4: Operating hours
18	FC_FAN5S	0 to 999999		-	DCFC Fan Stage 5 Start	DCFC / Fan stage 5: Number of starts
19	FC_FAN5H	0 to 999999		hour	DCFC Fan Stage 5 Hours	DCFC / Fan stage 5: Operating hours
20	FC_FAN6S	0 to 999999		-	DCFC Fan Stage 6 Start	DCFC / Fan stage 6: Number of starts
21	FC_FAN6H	0 to 999999		hour	DCFC Fan Stage 6 Hours	DCFC / Fan stage 6: Operating hours
22	FC_FAN7S	0 to 999999		-	DCFC Fan Stage 7 Start	DCFC / Fan stage 7: Number of starts
23	FC_FAN7H	0 to 999999		hour	DCFC Fan Stage 7 Hours	DCFC / Fan stage 7: Operating hours
24	FC_VFANS	0 to 999999		-	DCFC Variable Fan Start	DCFC / Variable speed fan: Number of starts
25	FC_VFANH	0 to 999999		hour	DCFC Variable Fan Hours	DCFC / Variable speed fan: Operating hours

*Depends on the selected language (French by default).

Miscellaneous status – MSC_STAT

No.	Name	Status	Default	Unit	Displayed text *	Description
1	m_ecopmp	no / yes	no	-	Eco Pump Mode Active	Eco pump mode active

*Depends on the selected language (French by default).

Setpoint Table – SETPOINT

No.	Name	Status	Default	Unit	Displayed text *	Description
1	csp1	-28.9 to 26.0	6.7	°C	Cooling Setpoint 1	Cooling setpoint 1
2	csp2	-28.9 to 26.0	6.7	°C	Cooling Setpoint 2	Cooling setpoint 2
3	ice_sp	-28.9 to 26.0	6.7	°C	Cooling Ice Setpoint	Cooling ice setpoint
4	cramp_sp	0.1 to 11.1	0.6	^C	Cooling Ramp Loading	Cooling ramp loading
5	hsp1	26.7 to 86.0	37.8	°C	Heating Setpoint 1	Heating setpoint 1
6	hsp2	26.7 to 86.0	37.8	°C	Heating Setpoint 2	Heating setpoint 2
7	hramp_sp	0.1 to 11.1	0.6	^C	Heating Ramp Loading	Heating ramp loading
8	cauto_sp	3.9 to 50.0	23.9	°C	Cool Changeover Setpt	Cooling changeover setpoint
9	hauto_sp	0 to 46.1	17.8	°C	Heat Changeover Setpt	Heating changeover setpoint
10	w_sct_sp	26.7 to 60	35.0	°C	Water Val Condensing Stp	Water valve condensing setpoint
11	lim_sp1	0 to 100	100	%	Switch Limit Setpoint 1	Switch limit setpoint 1
12	lim_sp2	0 to 100	100	%	Switch Limit Setpoint 2	Switch limit setpoint 2
13	lim_sp3	0 to 100	100	%	Switch Limit Setpoint 3	Switch limit setpoint 3
14	rsp	35 to 60	50	°C	Reclaim Setpoint	Heat reclaim setpoint
15	hr_deadb	2.8 to 15.0	5	^C	Reclaim Deadband	Reclaim deadband
16	vpmpdtsp	1 to 20	5	^C	Varipump Delta Temp Stp	Variable speed pump delta temperature setpoint

*Depends on the selected language (French by default).

Quick Test #1 – QCK_TST1

No.	Name	Status	Unit	Displayed text *	Description
1	QCK_TEST	off/on	-	Quick Test Enable	This parameter is used to enable the Quick Test functionality (Quick Test Enable = on) With Quick Test enabled: Forcing a specific parameter given in this table allows the user to verify if the component behaves correctly
2					
3	Q_EXVA	0 to 100	%	Circuit A EXV Position	EXV position, circuit A 100% = EXV fully open
4	Q_EXVB	0 to 100	%	Circuit B EXV Position	EXV position, circuit B 100% = EXV fully open
5	Q_EXVC	0 to 100	%	Circuit C EXV Position	EXV position, circuit C 100% = EXV fully open
6	Q_ECO_A	0 to 100	%	Circuit A Eco EXV Pos	Economizer EXV position, circuit A 100% = EXV fully open
7	Q_ECO_B	0 to 100	%	Circuit B Eco EXV Pos	Economizer EXV position, circuit B 100% = EXV fully open
8	Q_ECO_C	0 to 100	%	Circuit C Eco EXV Pos	Economizer EXV position, circuit C 100% = EXV fully open
9	Q_FAN_A	0 to 10	-	Circuit A Fan Stages	Fan stages test, circuit A
10	Q_FAN_B	0 to 10	-	Circuit B Fan Stages	Fan stages test, circuit B
11	Q_FAN_C	0 to 10	-	Circuit C Fan Stages	Fan stages test, circuit C
12	Q_VFANA	0 to 100	%	Circuit A VariFan	Variable speed fan test, circuit A
13	Q_VFANB	0 to 100	%	Circuit B VariFan	Variable speed fan test, circuit B
14	Q_VFANC	0 to 100	%	Circuit C VariFan	Variable speed fan test, circuit C
15	Q_HT_A	off/on	-	Circuit A Oil Heater	Oil heater test, circuit A
16	Q_OILS_A	off/on	-	Circuit A Oil Solenoid	Oil solenoid test, circuit A
17	Q_SLI_1A	off/on	-	Circuit A Slide Valve 1	Slide valve 1 test, circuit A
18	Q_SLI_2A	off/on	-	Circuit A Slide Valve 2	Slide valve 2 test, circuit A
19	Q_BVL_A	off/on	-	Circuit A Ball Valve	Ball valve test, circuit A
20	Q_HGBP_A	off/on	-	Circuit A Hot Gas Bypass	Hot Gas Bypass test, circuit A
21	Q_HT_B	off/on	-	Circuit B Oil Heater	Oil heater test, circuit B
22	Q_OILS_B	off/on	-	Circuit B Oil Solenoid	Oil solenoid test, circuit B
23	Q_SLI_1B	Off/on	-	Circuit B Slide Valve 1	Slide valve 1 test, circuit B
24	Q_SLI_2B	off/on	-	Circuit B Slide Valve 2	Slide valve 2 test, circuit B
25	Q_BVL_B	off/on	-	Circuit B Ball Valve	Ball valve test, circuit B
26	Q_HGBP_B	off/on	-	Circuit B Hot Gas Bypass	Hot Gas Bypass test, circuit B
27	Q_HT_C	off/on	-	Circuit C Oil Heater	Oil heater test, circuit C
28	Q_OILS_C	off/on	-	Circuit C Oil Solenoid	Oil solenoid test, circuit C
29	Q_SLI_1C	off/on	-	Circuit C Slide Valve 1	Slide valve 1 test, circuit C
30	Q_SLI_2C	off/on	-	Circuit C Slide Valve 2	Slide valve 2 test, circuit C
31	Q_BVL_C	off/on	-	Circuit C Ball Valve	Ball valve test, circuit C
32	Q_HGBP_C	off/on	-	Circuit C Hot Gas Bypass	Hot Gas Bypass test, circuit C
33	Q_CL_HT	off/on	-	Cooler Heater	Cooler heater test
34	Q_SETFLW	off/on	-	Quick Test Set flow	Flow quick test
35	Q_PMP1	0 to 2	-	Cooler Pump 1	Cooler pump 1 test: 0 = No test 1 = [ON] Pump shall run for 20 seconds 2 = [FORCED] Pump shall run all the time (set the value to "0" to stop the pump test)
36	Q_PMP2	0 to 2	-	Cooler Pump 2	Cooler pump 2 test: 0 = No test 1 = [ON] Pump shall run for 20 seconds 2 = [FORCED] Pump shall run all the time (set the value to "0" to stop the pump test)
37	Q_HPMP1	0 to 2	-	Condenser Pump 1	Condenser pump 1 test: 0 = No test 1 = [ON] Pump shall run for 20 seconds 2 = [FORCED] Pump shall run all the time (set the value to "0" to stop the pump test)
38	Q_ELBOXF	off/on	-	Electrical Box Fan	Electrical box fan test
39	Q_READY	off/on	-	Chiller Ready Output	Chiller Ready Output test

☑ **Quick Test #1 – QCK_TST1 (continued)**

No.	Name	Status	Unit	Displayed text *	Description
40	Q_RUN	off/on	-	Chiller Running Output	Chiller Running Output test
41	Q_CATO	0 to 100	%	Chiller Capacity in0-10V	Chiller capacity in 0-10V test
42	Q_RUN_A	off/on	-	Cir A Running Output	Running output test, circuit A
43	Q_RUN_B	off/on	-	Cir B Running Output	Running output test, circuit B
44	Q_RUN_C	off/on	-	Cir C Running Output	Running output test, circuit C
45	Q_SHUT	off/on	-	Shutdown Relay Status	Shutdown relay test
46	Q_ALARM	off/on	-	Alarm Relay Status	Alarm relay test
47	Q_ALERT	off/on	-	Alert Relay Switch	Alert relay test
48	HP_TEST	-1 to 2	-	Hi Press Pressostat Test	High Pressure test: When activated, the unit will run until the High Pressure Safety Switch is open
49				-1=OFF / 0=CirA / 1=CirB	-1 = No test 0 = High Pressure test, circuit A 1 = High Pressure test, circuit B 2 = High Pressure test, circuit C

*Depends on the selected language (French by default).

☑ **Quick Test #2 – QCK_TST2**

No.	Name	Status	Unit	Displayed text *	Description
1	Q_HREA_A	off/on	-	Air Cond Enter Valve A	Air-cooled condenser entering valve test, circuit A
2	Q_HRLA_A	off/on	-	Air Cond Leaving Valve A	Air-cooled condenser leaving valve test, circuit A
3	Q_HREW_A	off/on	-	Water Cond Enter Valve A	Water-cooled condenser entering valve test, circuit A
4	Q_HRLW_A	off/on	-	Water Cond Lvg Valve A	Water-cooled condenser leaving valve test, circuit A
5	Q_HREA_B	off/on	-	Air Cond Enter Valve B	Air-cooled condenser entering valve test, circuit B
6	Q_HRLA_B	off/on	-	Air Cond Leaving Valve B	Air-cooled condenser leaving valve test, circuit B
7	Q_HREW_B	off/on	-	Water Cond Enter Valve B	Water-cooled condenser entering valve test, circuit B
8	Q_HRLW_B	off/on	-	Water Cond Lvg Valve B	Water-cooled condenser leaving valve test, circuit B
9	Q_3W_VLV	0 to 100	-	3 way valve position	3-way valve position 100% = EXV fully open
10	Q_CD_HT	off/on	-	HR Condenser Heater	Heat Reclaim condenser heater test
11	Q_RV_A	off/on	-	4 way valve Circuit A	4-way valve test, circuit A
12	Q_RV_B	off/on	-	4 way valve Circuit B	4-way valve test, circuit B
13	Q_DHTR_A	off/on	-	Drain Coil Heater Cir A	Drain coil heater test, circuit A
14	Q_DHTR_B	off/on	-	Drain Coil Heater Cir B	Drain coil heater test, circuit B
15	Q_XQPUMP	off/on	-	30XQ cooler pump	*This parameter is not applicable to Powerciat/Hydrociat units*
16				Free Cooling circuit A	*This parameter is not applicable to Powerciat/Hydrociat units*
17	Q_FCBYPA	off/on	-	Free Cool Bypass valve A	*This parameter is not applicable to Powerciat/Hydrociat units*
18	Q_FCDISA	off/on	-	Free Cool Disch. valve A	*This parameter is not applicable to Powerciat/Hydrociat units*
19	Q_FCHTRA	off/on	-	Free Cool Heater A	*This parameter is not applicable to Powerciat/Hydrociat units*
20	Q_FCEXVA	0 to 100	%	Free Cool EXV Position A	*This parameter is not applicable to Powerciat/Hydrociat units*
21				Free Cooling circuit B	*This parameter is not applicable to Powerciat/Hydrociat units*
22	Q_FCBYPB	off/on	-	Free Cool Bypass valve B	*This parameter is not applicable to Powerciat/Hydrociat units*
23	Q_FCDISB	off/on	-	Free Cool Disch. valve B	*This parameter is not applicable to Powerciat/Hydrociat units*
24	Q_FCHTRB	off/on	-	Free Cool Heater B	*This parameter is not applicable to Powerciat/Hydrociat units*
25	Q_FCEXVB	0 to 100	%	Free Cool EXV Position B	*This parameter is not applicable to Powerciat/Hydrociat units*
26	Q_DCF1	off/on	-	Dry Cool fan output1	Dry cooler fan output 1 test
27	Q_DCF2	off/on	-	Dry Cool fan output2	Dry cooler fan output 2 test
28	Q_DCF3	off/on	-	Dry Cool fan output3	Dry cooler fan output 3 test
29	Q_DCF4	off/on	-	Dry Cool fan output4	Dry cooler fan output 4 test
30	Q_DCF5	off/on	-	Dry Cool fan output5	Dry cooler fan output 5 test
31	Q_DCF6	off/on	-	Dry Cool fan output6	Dry cooler fan output 6 test

Quick Test #2 – QCK_TST2 (continued)

No.	Name	Status	Unit	Displayed text *	Description
32	Q_DCF7	off/on	-	Dry Cool fan output7	Dry cooler fan output 7 test
33	Q_DCF8	off/on	-	Dry Cool fan output8	Dry cooler fan output 8 test
34	Q_DCVF1	0 to 10	V	Dry Cool varifan out1	Dry cooler varifan output 1 test
35	Q_DCVF2	0 to 10	V	Dry Cool varifan out2	Dry cooler varifan output 2 test
36				DRY COOLER FREE COOLING	Dry Cooler Free Cooling (DCFC)
37	Q_FDC_WV	off/on	-	FCDC Water Valve Ouputs	DCFC, water valve outputs test
38	Q_FDC_VF	0 to 100	%	FCDC Variable Fan Speed	DCFC, variable-speed fan test
39	Q_FDC_SF	0 to 7	-	FCDC Simple Fan Number	DCFC, single-speed fan test
40				Eco Design Variable Pump	Eco design test, variable-speed pump
41	Q_VPMP_C	0 to 100	%	Variable Pump Command	Variable-speed pump test
42	Q_DUOCAP	0 to 10	V	Duo 0-10 Cap totale	Capacity display output test for dual units

*Depends on the selected language (French by default).

Trendings – TRENDING

No.	Status	Unit	Displayed text *	Description
1	-	°C / °F	TEMP_COOL_LWT	Cooler Leaving Fluid
2	-	°C / °F	TEMP_COOL_EWT	Cooler Entering Fluid
3	-	°C / °F	TEMP_COND_LWT	Condenser Leaving Fluid
4	-	°C / °F	TEMP_COND_EWT	Condenser Entering Fluid
5	-	°C / °F	TEMP_OAT	Outdoor Air Temperature
6	-	°C / °F	TEMP_SCT_A	Saturated Cond Tmp cir A
7	-	°C / °F	TEMP_SST_A	Saturated Suction Temp A
8	-	°C / °F	TEMP_SCT_B	Saturated Cond Tmp cir B
9	-	°C / °F	TEMP_SST_B	Saturated Suction Temp B
10	-	°C / °F	TEMP_SCT_C	Saturated Cond Tmp cir C
11	-	°C / °F	TEMP_SST_C	Saturated Suction Temp C

*Depends on the selected language (French by default).

Software Options – OPT_STA

No.	Name	Status	Unit	Displayed text *	Description
1	opt5	no/yes	-	OPT5: Medium Brine	Parameter set to "yes" means that Medium brine option which requires the Software Key is activated (see also section 7.26)
2	opt6	no/yes	-	OPT6: Low Brine	Parameter set to "yes" means that Low brine option which requires the Software Key is activated (see also section 7.26)
3	opt8	no/yes	-	OPT8: Light Brine	Parameter set to "yes" means that Light brine option which requires the Software Key is activated (see also section 7.26)
4	opt149	no/yes	-	OPT149: BACnet	Parameter set to "yes" means that BACnet option which requires the Software Key is activated (see also section 7.27)
5	opt295	no/yes	-	OPT295: Fast Cap Reco	Fast capacity recovery is a free LX/LW option and does not require a software protection key (see also section 7.28)
6	opt149B	no/yes	-	OPT149B: Modbus	Modbus is a free LX/LW option and does not require a software protection key (see also section 7.29)

*Depends on the selected language (French by default).

6.2   Configuration menu

Icon	Displayed text *	Description	Name
	General Configuration	General configuration	GENCONF
	Pump Configuration	Pump configuration	PUMPCONF
	Reset Configuration	Reset configuration	RESETCFG
	Holiday Menu	Holiday menu	HOLIDAY
	Schedule Menu	Schedule menu	SCHEDULE
	Date/Time	Date/Time configuration	DATETIME
	Control Identification	Control identification	CTRL_ID
	Network Menu	Network menu	NETWORKS
	Add Options	Add options	ADD_OPT

* Depends on the selected language (French by default).

General Configuration – GENCONF

No.	Name	Status	Default	Unit	Displayed text *	Description
1	lead_cir	0 to 2	0	-	Cir Priority Sequence	Circuit priority
2					0=Auto, 1=A Prio	0 = Automatic circuit selection 1 = Circuit A priority
3					2=B Prio	2 = Circuit B priority
4	seq_typ	no/yes	no	-	Staged Loading Sequence	Staged loading sequence
5	ramp_sel	no/yes	no	-	Ramp Loading Select	Ramp loading selection
6	off_on_d	1 to 15	1	min	Unit Off to On Delay	Unit Off to On delay
7	nh_start	00:00			Night Mode Start Hour	Night mode start hour
8	nh_end	00:00			Night Mode End Hour	Night mode end hour
9	nh_limit	0 to 100	100	%	Night Capacity Limit	Night capacity limit
10	bas_menu		0		Basic Menu Configuration	Basic Menu Configuration
11					0 = All Access	0 = all access
12					1 = no alarm menu	1 = no alarm menu
13					2 = no setpoint menu	2 = no setpoint menu
14					3 = 1 + 2	3 = 1 + 2
15	lim_sel	0 to 2	0	-	Demand Limit Type Select	Demand limit selection
16					0 = None	0 = None
17					1 = Switch Control	1 = Switch control
18					2 = 4-20mA Control	2 = 4-20 mA control
19	lim_mx	0 to 20	0	mA	mA For 100% Demand Limit	100% demand Limit (mA)
20	lim_ze	0 to 20	10	mA	mA For 0% Demand Limit	0% demand Limit (mA)
21	curr_sel	no/yes	no	-	Current Limit Select	Current limit selection
22	curr_ful	0 to 4000	2000	A	CurrentLimit at 100%	Current limit at 100%
23	free_dt	8 to 15	10	^C	Free Cooling Delta T Th	Not applicable
24	fc_tmout	20 to 300	30	min	Full Load Timeout	Full load timeout

General Configuration – GENCONF (continued)

No.	Name	Status	Default	Unit	Displayed text *	Description
25	ice_cnfg	0 to 1	0	-	Ice Mode Enable	Ice mode enabled
26	al_rever	0 to 1	0	-	Reverse Alarms Relay	Reverse alarms relay
27	UnVltDly	0 to 10	5	min	Under Volt. Delay Start	Under voltage delay start
28	fan_max	70 to 100	100	%	Maximum ducted fan speed	Maximum fan speed for ducted units
29	ewt_opt	no/yes	no	-	Entering Fluid Control	Entering fluid control option (if selected, the system controls unit capacity based on the entering fluid temperature; otherwise the control is based on the leaving fluid temperature)

*Depends on the selected language (French by default).

Pump Configuration – PUMPCONF

No.	Name	Status	Default	Unit	Displayed text *	Description
1	hpumpseq	0 to 4	0	-	Condenser Pumps Sequence	Condenser Pumps Sequence **
2	cpumpseq	0 to 4	0	-	Cooler Pumps Sequence	Evaporator Pumps Sequence
3					0 = No Pump	0 = No pump
4					1 = One Pump Only	1 = One pump only
5					2 = Two Pumps Auto	2 = Two pumps automatic control
6					3 = Pump#1 Manual	3 = Pump 1 manual
7					4 = Pump#2 Manual	4 = Pump 2 manual
8	pump_del	24 to 3000	48	hour	Pump Auto Rotation Delay	Pump rotation delay
9	pump_per	no/yes	no	-	Pump Sticking Protection	Pump sticking protection
10	pump_sby	no/yes	no	-	Stop Pump During Standby	Pump stop when the unit is in standby
11	pump_loc	no/yes	yes	-	Flow Checked If Pump Off	Flow check when the pump is off
12	stopheat	no/yes	no	-	Cooler Pump Off In Heat	Evaporator pump off in Heating
13	stopcool	no/yes	no	-	Cond Pump Off In Cool	Evaporator pump off in Cooling
14	pg_evsp	-20 to 20	1.2	-	Prop PID gain EVSP Ctrl	External variable-speed pump control, PID proportional gain
15	ig_evsp	-5 to 5	0.2	-	Int PID gain EVSP Ctrl	External variable-speed pump control, PID integral gain
16	dg_evsp	-20 to 20	0.4	-	Deri PID gain EVSP Ctrl	External variable-speed pump control, PID derivative gain
17	min_evsp	0 to 100	50	%	Min Speed EVSP Control	External variable-speed pump control, minimum speed
18	max_evsp	0 to 100	100	%	Max Speed EVSP Control	External variable-speed pump control, maximum speed

*Depends on the selected language (French by default).
** Please note that the unit can control only one condenser pump. This value can be set to "0" or "1".

Reset Configuration – RESETCFG

No.	Name	Status	Default	Unit	Displayed text *	Description
1	cr_sel	0 to 4	0	-	Cooling Reset Select	Cooling reset select
2	hr_sel	0 to 4	0	-	Heating Reset Select	Heating reset select
3					0=None, 1=OAT	0=None, 1=OAT
4					2=Delta T, 4=Space Temp	2=Delta T, 4=Space Temp
5					3=4-20mA control	3=4-20mA control
6						
7					Cooling	Cooling
8	oat_crno	-10 to 52	-10	°C	OAT No Reset Value	OAT, no reset value
9	oat_crfu	-10 to 52	-10	°C	OAT Full Reset Value	OAT, max. reset value
10	dt_cr_no	0 to 14	0	^C	Delta T No Reset Value	Delta T, no reset value
11	dt_cr_fu	0 to 14	0	^C	Delta T Full Reset Value	Delta T, max. reset value
12	v_cr_no	0 to 20	0	mA	Current No Reset Value	Current, no reset value
13	v_cr_fu	0 to 20	0	mA	Current Full Reset Value	Current, max. reset value

Reset Configuration Menu – RESETCFG (continued)

No.	Name	Status	Default	Unit	Displayed text *	Description
14	spacr_no	-10 to 52	-10	°C	Space T No Reset Value	Space temperature, no reset value
15	spacr_fu	-10 to 52	-10	°C	Space T Full Reset Value	Space temperature, max. reset value
16	cr_deg	-17 to 17	0	^C	Cooling Reset Deg. Value	Maximum cooling reset value
17						
18					Heating	Heating
19	oat_hrno	-10 to 52	-10	°C	OAT No Reset Value	OAT, no reset value
20	oat_hrfu	-10 to 52	-10	°C	OAT Full Reset Value	OAT, max. reset value
21	dt_hr_no	0 to 14	0	^C	Delta T No Reset Value	Delta T, no reset value
22	dt_hr_fu	0 to 14	0	^C	Delta T Full Reset Value	Delta T, max. reset value
23	v_hr_no	0 to 20	0	mA	Current No Reset Value	Current, no reset value
24	v_hr_fu	0 to 20	0	mA	Current Full Reset Value	Current, max. reset value
25	spahr_no	-10 to 52	-10	°C	Space T No Reset Value	Space temperature, no reset value
26	spahr_fu	-10 to 52	-10	°C	Space T Full Reset Value	Space temperature, max. reset value
27	hr_deg	-17 to 17	0	^C	Heating Reset Deg. Value	Maximum cooling reset value
28	heat_th	-20 to 0		°C	Heating OAT threshold	Heating OAT threshold
29	both_sel	no/yes	no	-	HSM Both Command Select	HSM both command select
30	auto_sel	no/yes	no	-	Auto Changeover Select	Automatic changeover selection

*Depends on the selected language (French by default).

Holiday Menu – HOLIDAY

No.	Name	Status	Default	Unit	Displayed text *	Description
1	HOL_MON	0-12	0	-	Holiday Start Month	Holiday start month
2	HOL_DAY	0-31	0	-	Start Day	Holiday start day
3	HOL_LEN	0-99	0	-	Duration (days)	Holiday duration (days)

*Depends on the selected language (French by default).

Schedule Menu – SCHEDULE

No.	Name	Displayed text *	Description
1	OCCPC01S	OCCPC01S - Schedule Menu	Unit on/off time schedule
2	OCCPC02S	OCCPC02S - Schedule Menu	Unit setpoint selection time schedule

*Depends on the selected language (French by default).

Date/Time – DATETIME

Displayed text*		Status	Description
Connect Touch	Connect Touch 2.0		
Daylight Saving Time	-	on/off	Information of setting the clocks forward one hour from standard time during the summer months, and back again in the fall, in order to make better use of natural daylight
Location	Location	UTC	Time zone (Connect Touch 2.0: Time zone setting includes DST control)
Date/Time	Date/Time	YYYY/MM/DD, HH:MM:SS	Current date and time (must be set manually)
Today is a Holiday	Today is a Holiday	no/yes	Information about holidays (read-only). Please note that holidays are set in the Holiday menu (see also section 4.9)
Tomorrow is a Holiday	Tomorrow is a Holiday	no/yes	Information about the upcoming holiday period (read-only). Please note that holidays are set in the Holiday menu (see also section 4.9)

*Depends on the selected language (French by default).

6 - CONNECT TOUCH CONTROL: MENU STRUCTURE

Control Identification – CTRL_ID

No.	Status	Default	Displayed text*	Description
1	1-239	1	CCN Element Number	Element number
2	0-239	0	CCN Bus Number	Bus number
3	9600 / 19200 / 38400	9600	CCN Baud Rate	Communication speed
4	-	LXLW PIC6	Device Description	Unit description
5	-	-	Location Description	Location description: The number corresponds to the country
6	-	ECG-SR-20W47100	Software Version	Software version
7	-	-	Serial Number	Serial number (MAC address)

*Depends on the selected language (French by default).

Add Options – ADD_OPT

No.	Displayed text*	Description
1	MAC address	Controller MAC address: This MAC address is requested by your local service representative when ordering any software-protected option (see section 7.30)
2	Please Enter Your Software Activation Key:	Type the Software Activation Key provided by your local service representative (see section 7.30)
3	Unit must be OFF	The unit should not be operating when installing the Software Activation Key

*Depends on the selected language (French by default).

6.3   Network menu

Icon	Displayed text *	Description	Name
	ModbusRTU Config.	ModbusRTU configuration	MODBUSRS
	ModbusTCP/IP Config.	ModbusTCP/IP confiuration	MODBUSIP
	BACnet Standard Conf.	BACnet standard configuration	BACNET
	Email Configuration	Email configuration	EMAILCFG

* Depends on the selected language (French by default).

ModbusRTU Config. – MODBUSRS

No.	Name	Status	Default	Displayed text *	Description
1	modrt_en	no/yes	no	RTU Server Enable	Enabling RTU Server
2	ser_UID	1 to 247	1	Server UID	Server unique identifier
3	metric	no/yes	yes	Metric Unit	Metric unit
4	swap_b	0 to 1	0	Swap Bytes	Swap bytes
5				0 = Big Endian	0 = Big Endian
6				1= Little Endian	1 = Little Endian
7	baudrate	0 to 2	0	Baudrate	Baud rate
8				0 = 9600	0 = 9600
9				1 = 19200	1 = 19200
10				2 = 38400	2 = 38400
11	parity	0 to 2	0	Parity	Parity
12				0 = No Parity	0 = No Parity
13				1 = Odd Parity	1 = Odd Parity
14				2 = Even Parity	2 = Even Parity
15	stop_bit	0 to 1	0	Stop bit	Stop bit
16				0 = One Stop Bit	0 = One Stop Bit

ModbusRTU Config. Menu – MODBUSRS (continued)

No.	Name	Status	Default	Displayed text *	Description
17				1 = two Stop Bits	1 = Two Stop Bits
18	real_typ	0 to 1	0	Real type management	Real type management
19				0 = Float X10	0 = Float X10
20				1 = IEEE 754	1 = IEEE 754
21	reg32bit	0 to 1	1	Enable 32 bits registers	Enable 32 bits registers
22				0 = IR/HR in 16 bit mode	0 = IR/HR in 16 bit mode
23				1 = IR/HR 32 bit mode	1 = IR/HR 32 bit mode

*Depends on the selected language (French by default).

ModbusTCP/IP Config. – MODBUSIP

No.	Name	Status	Default	Displayed text *	Description
1	modip_en	no/yes	no	TCP/IP Server Enable	Enabling TCP/IP server
2	ser_UID	1 to 247	1	Server UID	Server unique identifier
3	port_nbr	0 to 65535	502	Port Number	Port number
4	metric	no/yes	yes	Metric Unit	Metric unit
5	swap_b	0 to 1	0	Swap Bytes	Swap bytes
6				0 = Big Endian	0 = Big Endian
7				1 = Little Endian	1 = Little Endian
8	real_typ	0 to 1	1	Real type management	Real type management (floating point)
9				0 = Float X10	0 = Float X10
10				1 = IEEE 754	1 = IEEE 754
11	reg32bit	0 to 1	1	Enable 32 bits registers	Enable 32 bits registers
12				0 = IR/HR in 16 bit mode	0 = IR/HR in 16 bit mode
13				1 = IR/HR in 32 bit mode	1 = IR/HR in 32 bit mode
14	conifnam	0 to 1	1	IP port interface name	IP port interface name
15				0 = J5 / J15	0 = J5 / J15
16				1 = J16	1 = J16
17	timeout	60 to 600	120	Com. timeout (s)	Com. timeout (s)
18	idle	0 to 30	10	Keepalive idle delay(s)	Keepalive idle delay(s)
19	intrvl	0 to 2	1	Keepalive interval(s)	Keepalive interval(s)
20	probes	0 to 10	10	Keepalive probes nb	Keepalive probes nb

*Depends on the selected language (French by default).

BACnet Standard Conf. – BACNET

No.	Name	Status	Default	Displayed text *	Description
1	bacena	disable/enable	disable	BACnet Enable	BACnet Enable
2	bacunit	no/yes	yes	Metric Unit?	Metric Unit?
3	network	1 to 4000	1600	Network	Network
4	udpport	47808 to 47823	47808	UDP Port Number	UDP Port Number
5	bac_id	1 to 4194302	1600001	Device Id Manual	Device Id Manual
6	auid_opt	disable/enable	disable	Device Id Auto Option	Device Id Auto Option
7	balmena	disable/enable	enable	Alarm reporting	Alarm reporting
8	mng_occ	no/yes	no	BACnet Manage Occupancy	BACnet Manage Occupancy
9	conifnam	0 to1	0	IP port Interface name	IP port Interface name
10				0 = J5 / J15	0 = J5 / J15
11				1 = J16	1 = J16

*Depends on the selected language (French by default).

✉ Email Configuration – EMAILCFG

No.	Name	Status	Default	Displayed text *	Description
1	senderP1	"xx chars"		Sender Email Part1	Sender e-mail, identifier part
2				@	@
3	senderP2	"xx chars"		Sender Email Part2	Sender e-mail, domain part
4	recip1P1	"xx chars"		Recip1 Email Part1	Recipient 1, identifier part
5				@	@
6	recip1P2	"xx chars"		Recip1 Email Part2	Recipient 1, domain part
7	recip2P1	"xx chars"		Recip2 Email Part1	Recipient 2, identifier part
8				@	@
9	recip2P2	"xx chars"		Recip2 Email Part2	Recipient 2, domain part
10	smtpP1	0 to 255	0	SMTP IP Addr Part 1	SMTP IP address part 1
11	smtpP2	0 to 255	0	SMTP IP Addr Part 2	SMTP IP address part 2
12	smtpP3	0 to 255	0	SMTP IP Addr Part 3	SMTP IP address part 3
13	smtpP4	0 to 255	0	SMTP IP Addr Part 4	SMTP IP address part 4
14	accP1	-	-	Account Email Part1	Account e-mail, identifier part
15				@	@
16	accP2	-	-	Account Email Part2	Account e-mail, domain part
17	accPass	-	-	Account Password	Account password
18	portNbr	0 to 65535	25	Port Number	Port number
19	srvTim	0 to 255	30	Server Timeout	Server timeout
20	srvAut	0 to 1	0	Server Authentication	Server authentication

*Depends on the selected language (French by default).

6.4 System Menu

Icon	Displayed text *	Description	Name
	CPU Load	CPU Load	CPULOAD
	EOL Resistor	EOL Resistor	EOLRES
	Network	Network	NETWORK
	Date/Time	Date/Time Configuration	DATETIME
	Language & Unit	Language & Unit	LANGUNIT
	Brightness	Brightness	BRIGHTNS
	Software Info	Software Info	SWINFO
	Hardware Info	Hardware Info	HWINFO

* Depends on the selected language (French by default).

CPU Load – CPULOAD

No.	Status	Default	Displayed text *	Description
1	0 to 100	-	CPU load	CPU utilization
2	0 to 100	-	RAM Memory utilization	RAM usage
3	0 to 100	-	FLASH Memory utilization	Flash memory usage

*Depends on the selected language (French by default).

6 - CONNECT TOUCH CONTROL: MENU STRUCTURE

EOL Resistor – EOLRES (not used on Connect Touch 2.0)

No.	Status	Default	Displayed text *	Description
1	disable/enable	disable	End of Line Res. J6 (LEN)	End of line resistor J6 (LEN bus)
2	disable/enable	disable	End of Line Res. J7	End of line resistor J7
3	disable/enable	disable	End of Line Resistor J8	End of line resistor J8
4	disable/enable	disable	End of Line Resistor J10	End of line resistor J10 (Modbus)

*Depends on the selected language (French by default).

Network – NETWORK

Displayed text*		Status	Description
Connect Touch	**Connect Touch 2.0**		
IP Network Interface J15 (eth0):	**Ethernet 0 (J15)**		**IP network interface J15 (Ethernet 0):** ***Note: For 4.3-inch controllers, we have one Ethernet port J5 (eth0).***
MAC Address	MAC Address	xx:xx:xx:xx:xx:xx	MAC address
-	DHCP	disabled	DHCP server configuration
TCP/IP Address	IP Address	169.254.1.1	TCP/IP address: Changing the IP address and mask is possible but a reboot is mandatory if Modbus TCP or BACnet IP is enabled (the reboot is required to make changes effective).
Subnet Mask	Subnet Mask	255.255.255.0	Subnet mask
Default Gateway	Default Gateway	169.254.1.3	Default gateway
Gateway Mask	Gateway Dest/Mask	169.254.0.0/16	Gateway mask in CIDR format Gateway IP address / CIDR notation / Gateway in CIDR format 169.254.1.3 — xxx.xxx.xxx.0/24 — 169.254.1.0/24 169.254.1.3 — xxx.xxx.0.0/16 — 169.254.0.0/16 169.254.1.3 — xxx.0.0.0/8 — 169.0.0.0/8 0.0.0.0 — 0.0.0.0/0 — 0.0.0.0/0 Note: "xxx" shown in the CIDR notation above refers to the Gateway IP address.
IP Network Interface J16 (eth1):	**Ethernet 1 (J16)**		**IP Network Interface J16 (Ethernet 1):**
MAC Address	MAC Address	xx:xx:xx:xx:xx:xx	MAC address
-	DHCP	disabled	DHCP server configuration
TCP/IP Address	IP Address	192.168.100.100	IP Address (see above)
Subnet Mask	Subnet Mask	255.255.255.0	Subnet Mask
Default Gateway	Default Gateway	192.168.100.1	Default Gateway
Gateway Mask	Gateway Dest/Mask	192.0.0.0/8	Gateway mask in CIDR format (see above)
Domain Name Server (DNS)	**DNS:** Primary DNS	169.254.1.3	Domain name server (DNS), primary address
-	**DNS:** Alternate DNS	169.254.1.4	Domain name server (DNS), secondary address

*Depends on the selected language (French by default).

NOTE: Having an IP address on the same network ID for both Eth0 and Eth1 is not allowed as it may cause confusion and affect the controller routing functionality.

Date/Time – DATETIME

Displayed text*		Status	Description
Connect Touch	**Connect Touch 2.0**		
Daylight Saving Time	-	on/off	Information of setting the clocks forward one hour from standard time during the summer months, and back again in the fall, in order to make better use of natural daylight
Location	Location	UTC	Time zone (Connect Touch 2.0: Time zone setting includes DST control)
Date/Time	Date/Time	YYYY/MM/DD, HH:MM:SS	Current date and time (must be set manually)
Today is a Holiday	Today is a Holiday	no/yes	Information about holidays (read-only). Please note that holidays are set in the Holiday menu (see also section 4.9)
Tomorrow is a Holiday	Tomorrow is a Holiday	no/yes	Information about the upcoming holiday period (read-only). Please note that holidays are set in the Holiday menu (see also section 4.9)

*Depends on the selected language (French by default).

6 - CONNECT TOUCH CONTROL: MENU STRUCTURE

Language & Unit – LANGUNIT

Displayed text *	Description
(Languages) Language & Unit English Español Français Deutsch Nederlands 简体中文 Italiano Português Русский Custom1 System of measurement US Imp Metric	Depending on factory configuration, one of the following sets of languages is available: 1) English, Spanish, French, German, Dutch, Chinese, Italian, Portuguese, Russian and "undefined" (custom language). 2) English, Spanish, French, German, Dutch, Turkish, Italian, Portuguese, Russian and "undefined" (custom language). Custom language: The control system allows users to add new languages to the control. To learn more about language customization, please contact your local service representative. Custom languages can be uploaded only by a service representative.
System of measurement: US Imp/Metric	US Imp = Parameters displayed in US Imperial units Metric = Parameters displayed in metric units

*Depends on the selected language (French by default).

Brightness – BRIGHTNS

Displayed text*		Status	Description
Connect Touch	Connect Touch 2.0		
Brightness	Brightness	0 to 100%	Screen brightness
-	Theme Selection	Dark/Light	Theme selection (Dark theme / Light theme)

*Depends on the selected language (French by default).

Software Info – SWINFO

Displayed text*		Status	Description
Connect Touch	Connect Touch 2.0		
Software Version	Software Version	ECG-ST-20W47100	Software version number
SDK Version	SDK Version	N.NNN.N	SDK version number
-	App version	NN.N	Application version
UI Version	UI Version	NN	User interface version
Brand	Brand	CIAT	Brand name

*Depends on the selected language (French by default).

Hardware Info – HWINFO

No.	Status	Displayed text *	Description
1	-	Board Variant	Board variant
2	-	Board Revision	Board revision
3	43	Screen size	Screen size in inches

*Depends on the selected language (French by default).

6.5   Alarms Menu

Icon	Displayed text *	Description	Name
	Reset Alarms	Alarm reset	ALARMRST
	Current Alarms	Current alarms	CUR_ALM
	Alarm Historic	Alarms historic	ALMHIST1
	Major Alarm Historic	Major alarm historic	ALMHIST2

* Depends on the selected language (French by default).

 Reset Alarms – ALARMRST

No.	Name	Status	Displayed text *	Description
1	RST_ALM	no/yes	Alarm Reset	Used to reset active alarms
2	ALM	-	Alarm State	Alarm state: Normal = No alarm Partial = There is an alarm, but the unit continues to operate Shutdown = Unit shuts down
3	alarm_1c	-	Current Alarm 1	Alarm code (see section 8.3)
4	alarm_2c	-	Current Alarm 2	Alarm code (see section 8.3)
5	alarm_3c	-	Current Alarm 3	Alarm code (see section 8.3)
6	alarm_4c	-	Current Alarm 4	Alarm code (see section 8.3)
7	alarm_5c	-	Current Alarm 5	Alarm code (see section 8.3)
8	alarm_1	-	Current Alarm 1 index	Alarm code (see section 8.3)
9	alarm_2	-	Current Alarm 2 index	Alarm code (see section 8.3)
10	alarm_3	-	Current Alarm 3 index	Alarm code (see section 8.3)
11	alarm_4	-	Current Alarm 4 index	Alarm code (see section 8.3)
12	alarm_5	-	Current Alarm 5 index	Alarm code (see section 8.3)

*Depends on the selected language (French by default).

 Current Alarms – CUR_ALM

No.	Name	Date	Hour	Alarm text
1	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.3)
...	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.3)
10	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.3)

*Depends on the selected language (French by default).

 Alarm Historic – ALMHIST1

No.	Name	Date	Hour	Alarm text
1	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.3)
...	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.3)
50	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.3)

*Depends on the selected language (French by default).

 Major Alarm Historic – ALMHIST2

No.	Name	Date	Hour	Alarm text
1	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.3)
...	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.3)
50	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.3)

*Depends on the selected language (French by default).

7 - STANDARD CONTROL OPERATIONS AND OPTIONS

This section points out the most significant control functionalities, e.g. unit start/stop operation, heat/cool control. It also gives instructions on how to perform critical operations of the main control system.

7.1   Start/Stop control

The unit state is determined based on a number of factors, including its operating type, active overrides, open contacts, master/slave configuration, or alarms triggered due to operating conditions.

The table given below summarises the unit control type and its running status with regard to the following parameters:

- **Operating type:** This operating type is selected using the Start/Stop button on the user interface.

LOFF	Local On
L-On	Local Off
L-SC	Local Schedule
Rem	Remote
Net	Network
Mast	Master unit

- **Start/stop force command:** Chiller start/stop force command can be used to control the chiller state in the Network mode.
- **Command set to stop:** The unit is halted.
- **Command set to start:** The unit runs in accordance with schedule 1.

- **Remote start/stop contact status:** Start/Stop contact status can be used to control the chiller state in the Remote operating type.
- **Master control type:** When the unit is the master unit in a two-chiller master/slave arrangement, the master unit may be set to be controlled locally, remotely or via network.
- **Start/stop schedule:** Occupied or unoccupied status of the unit.
- **Network emergency stop command:** If activated, the unit shuts down regardless of the active operating type.
- **General alarm:** The unit shuts down due to failure.

7.2   Unit stop function

This function controls the unit compressor capacity reduction. If there is an alarm or a demand to stop, it forces the compressors to the minimum capacity before stopping them.

IMPORTANT: When the unit is stopping or there is a demand to stop the unit, compressors are stopped consecutively. In case of emergency stop, all compressors are stopped at the same time.

Active operating type						Parameters status						Result	
LOFF	L-On	L-SC	Rem	Net	Mast	Start/stop force command	Remote start/stop contact	Master control type	Start/stop time schedule	Network emergency shutdown	General alarm	Control type	Unit state
-	-	-	-	-	-	-	-	-	-	enabled	-	-	off
-	-	-	-	-	-	-	-	-	-	-	yes	-	off
active	-	-	-	-	-	-	-	-	-	-	-	local	off
-	-	active	-	-	-	-	-	-	unoccupied	-	-	local	off
-	-	-	active	-	-	-	open	-	-	-	-	remote	off
-	-	-	active	-	-	-	-	-	unoccupied	-	-	remote	off
-	-	-	-	active	-	disabled	-	-	-	-	-	network	off
-	-	-	-	active	-	-	-	-	unoccupied	-	-	network	off
-	-	-	-	-	active	-	-	local	unoccupied	-	-	local	off
-	-	-	-	-	active	-	open	remote	-	-	-	remote	off
-	-	-	-	-	active	-	-	remote	unoccupied	-	-	remote	off
-	-	-	-	-	active	disabled	-	network	-	-	-	network	off
-	-	-	-	-	active	-	-	network	unoccupied	-	-	network	off
-	active	-	-	-	-	-	-	-	-	disabled	no	local	on
-	-	active	-	-	-	-	-	-	occupied	disabled	no	local	on
-	-	-	active	-	-	-	closed	-	occupied	disabled	no	remote	on
-	-	-	-	active	-	enabled	-	-	occupied	disabled	no	network	on
-	-	-	-	-	active	-	-	local	occupied	disabled	no	local	on
-	-	-	-	-	active	-	closed	remote	occupied	disabled	no	remote	on
-	-	-	-	-	active	enabled	-	network	occupied	disabled	no	network	on

7.3   Pumps control

The main control can manage one or two water exchanger pumps, determining each pump on/off state. Both pumps cannot run together. The pump is turned on when this option is configured and when the unit is running.

The pump is turned off when the unit is shut down due to an alarm unless the fault is a frost protection error. The pump can be started in particular operating conditions when the water exchanger heater is active.

If the pump has failed and another pump is available, the unit is stopped and started again with the second pump. If there is no pump available, the unit shuts down.

Units are fitted with the flow switch, allowing for the water flow control. For more information about actuators, see Water flow switch in section 3.7.

7.3.1   Pumps configuration

Basic pump configuration can be performed via the Configuration menu (PUMPCONF – Pump Configuration). Only logged-in users can access the menu (see also section 4.5.1). The unit must be stopped.

For units with two pumps, these pumps can be controlled automatically or each pump can be started manually.

Pump(s) available	Pumps sequence (PUMPCONF)
No pump	0 (no pump)
One fixed-speed pump	1 (one pump only)
Two fixed-speed pumps	2 (two pumps auto) 3 (pump#1 manual) 4 (pump#2 manual)

7.3.2   Automatic pump selection

If two pumps are controlled and the reversing function has been selected (PUMPCONF – Pump Configuration), the control tries to limit the pump run time to the configured pump changeover delay. If this delay has elapsed, the pump reversing function is activated.

7.3.3   Pumps protection

The control provides the option to automatically start the pump each day at 14:00 for 2 seconds when the unit is off. The heater for the heat exchanger and the water pump (for units with a pump) can be energised so that it protects the heat exchanger or the water pump against any damage when the unit is shut down for a long time at low outdoor temperature.

If the unit is fitted with two pumps, the first pump is started on even days and the second pump is started on odd days. Starting the pump periodically for a few seconds extends the lifetime of the pump bearings and the tightness of the pump seal. Periodical pump quick start can be selected via the Configuration menu (Pump Sticking Protection, PUMPCONF – Pump Configuration).

7.3.4   Eco pump mode

The control provides the Eco pump functionality which allows for stopping the pump periodically when the unit is in satisfied mode (no cooling or heating is required). This Eco pump mode allows for energy-cost savings.

IMPORTANT: The Eco pump mode is not available when the controller manages a variable speed pump.

7.3.5   Customer pump

HYDROCIAT LW chillers as well as POWERCIAT LX chillers may be fitted with one external variable speed cooler pump (often also referred to as "customer cooler pump").

Customer cooler pump can be configured as follows:

Pump available	Cooler Pumps Sequence (PUMPCONF)
No pump	0 (no pump)
One pump (fixed or variable speed)	1 (one pump only)

Depending on the unit (LW/LX), the pump is commanded by one of the following outputs:
*   0-10V output on AUX1 board for single-circuit HYDROCIAT LW chillers,
*   0-10V output on the second SIOB/CIOB board for dual-circuit HYDROCIAT LW chillers and POWERCIAT LX chillers.

The "Varipump Delta Temp Stp" parameter in the SETPOINT menu is used to define the delta T that has to be maintained between cooler entering and leaving water temperatures.

7.4   Condenser water pump control

The water condenser pump control applies to air-cooled units fitted with the optional heat reclaim module as well as water-cooled units. This function ensures constant water pumps control, providing the optimum condenser water flow rate and operating cost savings.

7.5   Heating/Cooling selection

For units configured in the heat pump mode, heating/cooling selection can be controlled in various ways, depending on the active operating type. By default, the cooling mode is selected. Heating/cooling control can be automatic or manual.

Heating/Cooling selection can be determined as follows:
*   locally at the unit in the GENUNIT menu,
*   remotely via the heating/cooling selection contact if the unit is in the Remote operating type,
*   via a network command if the unit is in the Network operating type.

In the automatic mode, the outdoor air temperature determines the heating/cooling/standby changeover (see the SETPOINT menu for cooling and heating mode changeover thresholds).The automatic changeover is optional and requires user configuration (GENUNIT – General Parameters).

On/Off status	Control type	Heating/ Cooling selection in local mode	Heating/ Cooling contact in local mode	Heat/Cool select	Operating mode
off	-	-	-	-	cooling
on	local	cooling	-	-	cooling
on	local	heating	-	-	heating
on	remote	-	on cooling	-	cooling
on	remote	-	on heating	-	heating
on	network	-	-	cooling	cooling
on	network	-	-	heating	heating

NOTE: Please remember that the automatic changeover mode cannot be selected on water-cooled units.

7.6 Control point

The control point represents the water temperature that the unit must produce. It enables to decrease the required capacity depending on the unit load operating conditions.

Control point = Active setpoint + Reset

The control point is calculated based on the active setpoint and the reset calculation. The forced value can be used instead of any other setpoint calculation only when the unit is in the Network operating type.

7.6.1 Active setpoint

Two setpoints can be selected. Depending on the current operation type, the active setpoint can be selected manually in the Main menu (GENUNIT – General Parameters), with the volt-free user contacts, with network commands (Modbus or BACnet) or automatically with the setpoint time schedule (schedule 2).

The following tables summarise possible selections depending on the control type (Local, Remote or Network) and the following parameters:

- **Heating or Cooling operating mode:** Heat/Cool select (GENUNIT menu)
- **Setpoint selected via the Connect Touch user interface:** Setpoint select permits selection of the active setpoint if the unit is in the Local operating type (GENUNIT menu)
- **Setpoint switch status:** Remote setpoint switch (INPUTS menu)
- **Schedule 2 status:** Schedule for setpoint selection

LOCAL OPERATING TYPE

Parameter status						
Heating/cooling operating mode	Setpoint selection	Heating/Cooling selection in local mode	Ice storage configuration	Setpoint switch	Schedule 2 status	Active setpoint
cooling	csp1	-	*	*	-	cooling setpoint 1
cooling	csp2	no	*	*	-	cooling setpoint 2
cooling	csp2	yes	closed	*		cooling setpoint 2
cooling	csp2	yes	open	*		ice storage setpoint
cooling	auto	-	*	*	occupied	cooling setpoint 1
cooling	auto	no	*	*	unoccupied	cooling setpoint 2
cooling	auto	yes	closed	*	unoccupied	cooling setpoint 2
cooling	auto	yes	open	*	unoccupied	ice storage setpoint
heating	hsp1	-	*	*	-	heating setpoint 1
heating	hsp2	-	*	*	-	heating setpoint 2
heating	auto	-	*	*	occupied	heating setpoint 1
heating	auto	-	*	*	unoccupied	heating setpoint 2

*Any configuration, (-) default configuration.

REMOTE OPERATING TYPE

Parameter status						
Heating/cooling operating mode	Setpoint selection	Ice storage configuration	Ice done contact	Setpoint switch	Schedule 2 status	Active setpoint
cooling	-	-	*	open	-	cooling setpoint 1
cooling	-	no	*	closed	-	cooling setpoint 2
cooling	-	yes	closed	closed	-	cooling setpoint 2
cooling	-	yes	open	closed	-	ice storage setpoint
heating	-	-	*	open	-	heating setpoint 1
heating	-	-	*	closed	-	heating setpoint 2

*Any configuration, (-) default configuration.

NETWORK OPERATING TYPE

Parameter status						
Heating/cooling operating mode	Setpoint selection	Ice storage configuration	Ice done contact	Setpoint switch	Schedule 2 status	Active setpoint
cooling	-	-	*	*	occupied	cooling setpoint 1
cooling	-	-	*	*	unoccupied	cooling setpoint 2
heating	-	-	*	*	occupied	heating setpoint 1
heating	-	-	*	*	unoccupied	heating setpoint 2

*Any configuration, (-) default configuration.

NOTE: Ice storage configuration and ice done contact apply only to units with the optional energy management module.

7.6.2   Reset

Reset means the active setpoint is modified so that less machine capacity is required. In the cooling mode the setpoint is increased, whereas in the heating mode it is decreased. This modification is in general a reaction to a drop in the load.

The reset can be based on the following parameters:
*   OAT that gives the measure of the load trends for the building
*   Return water temperature (ΔT provides the average building load)
*   Space temperature (EMM option)
*   Dedicated 4-20 mA input

The reset source and the reset parameters can be configured in the Main menu (RESETCFG – Reset Configuration). In response to a drop in the reset source, the cooling setpoint is normally reset upwards to optimise unit performance.

The amount of reset is determined by linear interpolation based on the following parameters:
*   A reference at which reset is zero (no reset value)
*   A reference at which reset is maximum (full reset value)
*   The maximum reset value
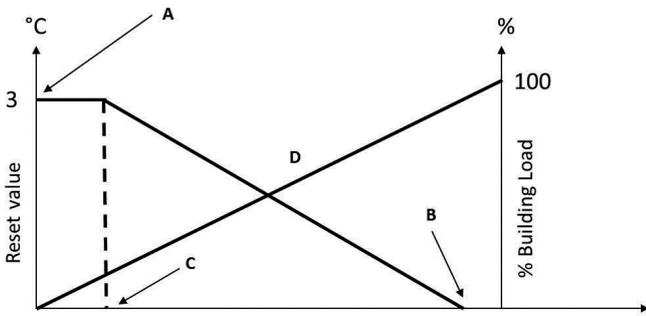
20	Reset based on OAT	25
0	Reset based on delta T	3
4	Reset based on analog input	20
no_reset	selection	full_reset

Legend:

A: Maximum reset value   C: Reference for maximum reset

B: Reference for zero reset   D: Building load

7.7   Capacity limitation

The Connect Touch control system allows for the constant control of the unit capacity by setting its maximum allowable capacity.

The main control system enables to limit the unit capacity using one of the external orders:
*   By means of user-controlled volt-free contacts.
    Units without the energy management module have one contact. Units with the energy management module permit three capacity limitation levels (see also section 3.8). The unit capacity can never exceed the limit setpoint activated by these contacts. The limit setpoints can be modified in the SETPOINT menu.
*   By lag limit set by the master unit (master/slave assembly).
*   By night mode limitation control. The demand limit value in the night mode is selectable if the value is below the selected limit. A limit value of 100% means that the unit can use all capacity stages.

In certain conditions, the unit power consumption can exceed the capacity limitation threshold to protect the compressors.

7.8   Current limitation

Current limitation is used via the demand limit function. If the current limitation is active (Current Limit Select in the GENCONF menu), the control calculates the sum of compressors current to obtain the total compressor current. If this value exceeds the pre-defined limit, the control commands a reduction of the compressor load, until it is below the limit again. Before loading a capacity stage, the control estimates the future total compressor current and ensures that it does not exceed the limit.

The current limit is based on two parameters:
*   The current limit that corresponds to 100% capacity (*CurrentLimit at 100%*, GENCONF – General Configuration)
*   The active demand limit determined either by the demand limit contact (see also section 3.8) or by the network (*Active Demand Limit Val*, GENUNIT – General Parameters)

Chiller current limit is displayed in the GENUNIT menu. Current limitation is disabled if the unit operates in the master/slave mode or the night mode is active.

7.9   Capacity control

This function adjusts the capacity using the compressor slide valve to keep the water exchanger temperature at its setpoint. The control system continuously takes account of the temperature error with respect to the setpoint, the rate of change in this error and the difference between entering and leaving water temperatures in order to determine the optimal moment at which to add or withdraw capacity.

Compressors are started and stopped in a sequence designed to equalise the number of start-ups (value weighted by their operating time). For more information about compressors sequence, see Balanced loading sequence and Staged loading sequence in section 7.13.

7.10   Night mode

Night mode allows users to configure the unit to operate with specific parameters in a specific time period. During the night period, the unit capacity is limited and the number of operating fans is reduced.

The night period is defined by a start time and an end time that are the same for each day of the week. The Night mode settings or the maximum capacity value can be configured via the Configuration menu (GENCONF – General Configuration). Only logged-in users can modify Night Mode settings (see also section 4.5.1).

During the night period the condensing point is increased to limit the number of fans operating (units with dry cooler condensing control option).

7.11 Head pressure control

For air-cooled units, the condensing pressure of each circuit is generated by 10 fans maximum. As an option, a speed variator can be used to control up to four fans so that the speed of the fans is adjusted to maintain the head pressure setpoint. The condensing pressure is independently controlled in each circuit based on the saturated condensing temperature. The control permanently adjusts its setpoint to guarantee optimal performance and ensure anti-short-cycle protection of the fans.

For water-cooled units, condensing pressure control is assured if the three-way valve option is selected. The saturated condensing temperature is controlled based on a user-configurable fixed setpoint (SETPOINT menu). The three-way valve control can be configured only by service technicians.

7.12 Circuit lead/lag selection (multi-circuit units)

This function determines the lead and lag circuit on dual-circuit or triple-circuit units. It controls the start/stop sequence of the refrigeration circuits called circuit A, circuit B or circuit C. The circuit authorised to start first is the lead circuit. Lead circuit is used first for capacity increases and at the same time should be decreased last when decreasing capacity. The lead/lag circuits can be selected manually or automatically according to the unit configuration (GENCONF – General Configuration).

- **Automatic lead/lag circuit determination:** The control system determines the lead circuit to equalise the operating time of each circuit (value weighted by the number of start-ups of each circuit). As a result, the circuit with the lowest number of operating hours always starts first.
- **Manual lead/lag circuit determination:** Circuit A, B or C selected as the lead circuit. The selected circuit is always the leader. It is the first to start and the last to stop.

7.13 Compressor loading sequence

This function determines in which order the circuit capacity is changed. Compressor loading is managed by starting/stopping the compressors and controlling the position of the slide valve. Two types of sequencing are available and can be configured by the user via the Connect Touch user interface (GENCONF – General Configuration).

- **Balanced loading sequence:** The control maintains equal capacity between all circuits as the machine loads and unloads.
- **Staged loading sequence:** The control loads the lead circuit completely before the lag circuits are started. When the load is decreasing, the lag circuits are unloaded first.

Staged loading sequence is incorporated under the following conditions:
- One of the circuits is shut down due to its failure
- One of the circuits is in capacity override mode
- Remaining circuits are shut down or fully charged

7.14 Circuit capacity loading sequence

7.14.1 Dual circuit – balanced capacity loading

Loading sequence (%)		Unloading sequence (%)	
Lead circuit	Lag circuit	Lead circuit	Lag circuit
0	0	100	100
30 (15)	0	100	95
35	0	95	95
40	0	95	90
45	0	90	90
50	0	90	85
55	0	85	85
60	0	85	80
65	0	80	80
70	0	80	75
70	30 (15)	75	75
70	35	75	70
70	40	70	70
70	45	70	65
70	50	65	65
70	55	65	60
70	65	60	60
70	70	60	55
75	70	55	55
75	75	55	50
80	75	50	50
80	80	50	45
85	80	45	45
85	85	45	40
90	85	40	40
90	90	40	35
95	90	40	30 (15)
95	95	40	0
100	95	35	0
100	100	30 (15)	0
100	100	0	0

7.14.2 Dual circuit – priority given to one circuit

Loading sequence (%)		Unloading sequence (%)	
Lead circuit	Lag circuit	Lead circuit	Lag circuit
0	0	100	100
30 (15)	0	100	95
35	0	100	90
40	0	100	85
45	0	100	80
50	0	100	75
55	0	100	70
60	0	100	65
65	0	100	60
70	0	100	55
75	0	100	50
80	0	100	45
85	0	100	40
90	0	100	35
95	0	100	30 (15)
100	0	95	30 (15)
100	30 (15)	90	30 (15)
100	35	85	30 (15)
100	40	80	30 (15)
100	45	75	30 (15)
100	50	70	30 (15)
100	55	70	0
100	60	65	0
100	65	60	0
100	70	55	0
100	75	50	0
100	80	45	0
100	85	40	0
100	90	35	0
100	95	30 (15)	0
100	100	0	0

Note: (15) minimum capacity for standard water-cooled units (without the option for high condensing temperature).

7.14.3 Triple circuit – balanced capacity loading

Loading sequence (%)			Unloading sequence (%)		
Lead circ.	Lag circ. 1	Lag circ. 2	Lead circ.	Lag circ. 1	Lag circ. 2
0	0	0	100	100	100
30	0	0	100	100	95
35	0	0	100	95	95
40	0	0	95	95	95
45	0	0	95	95	90
50	0	0	95	90	90
55	0	0	90	90	90
60	0	0	90	90	85
65	0	0	90	85	85
70	30	0	85	85	85
70	35	0	85	85	80
70	40	0	85	80	80
70	45	0	80	80	80
70	50	0	80	80	75
70	55	0	80	75	75
70	60	0	75	75	75
70	65	0	75	75	70
70	70	0	75	70	70
70	70	30	70	70	70
70	70	35	70	70	65
70	70	40	70	65	65
70	70	45	65	65	65
70	70	50	65	65	60
70	70	55	65	60	60
70	70	60	60	60	60
70	70	65	60	60	55
70	70	70	60	55	55
75	70	70	55	55	55
75	75	70	55	55	50
75	75	75	55	50	50
80	75	75	50	50	50
80	80	75	50	50	45
80	80	80	50	45	45
85	80	80	45	45	45
85	85	80	45	45	40
85	85	85	45	40	40
90	85	85	40	40	40
90	90	85	40	40	35
90	90	90	40	40	30
95	90	90	40	40	0
95	95	90	40	35	0
95	95	95	40	30	0
100	95	95	35	0	0
100	100	95	30	0	0
100	100	100	0	0	0

7.14.4 Triple circuit – priority given to one circuit

Loading sequence (%)			Unloading sequence (%)		
Lead circ.	Lag circ. 1	Lag circ. 2	Lead circ.	Lag circ. 1	Lag circ. 2
0	0	0	100	100	100
30	0	0	100	100	95
35	0	0	100	100	90
40	0	0	100	100	85
45	0	0	100	100	80
50	0	0	100	100	75
55	0	0	100	100	70
60	0	0	100	100	65
65	0	0	100	100	60
70	0	0	100	100	55
75	0	0	100	100	50
80	0	0	100	100	45
85	0	0	100	100	40
90	0	0	100	100	35
100	0	0	100	100	30
100	30	0	100	95	30
100	35	0	100	90	30
100	40	0	100	85	30
100	45	0	100	80	30
100	50	0	100	75	30
100	55	0	100	70	30
100	60	0	100	65	0
100	65	0	100	60	0
100	70	0	100	55	0
100	75	0	100	50	0
100	80	0	100	45	0
100	85	0	100	40	0
100	90	0	100	35	0
100	100	0	100	30	0
100	100	30	95	30	0
100	100	35	90	30	0
100	100	40	85	30	0
100	100	45	80	30	0
100	100	50	75	30	0
100	100	55	70	30	0
100	100	60	65	0	0
100	100	65	60	0	0
100	100	70	55	0	0
100	100	75	50	0	0
100	100	80	45	0	0
100	100	85	40	0	0
100	100	90	35	0	0
100	100	100	30	0	0
			0	0	0

7.15 Master/Slave assembly

Two units can be linked to create the master/slave assembly. The master unit can be controlled locally, remotely or by network commands. Master/slave assembly must be validated in order to start the master/slave chiller operation. All control commands to the master/slave assembly (start/stop, setpoint selection, heating/cooling operation, load shedding, etc.) are handled by the unit which is configured as the master. The commands are transmitted automatically to the slave unit. If the master chiller is turned off while the master/slave function is active, then the slave chiller will be stopped. Under certain circumstances, the slave unit may be started first to balance the run times of the two units.

In the event of a communication failure between the two units, each unit will return to an autonomous operating mode until the fault is cleared. If the master unit is stopped due to an alarm, the slave unit is authorised to start.

NOTE: Master/slave assembly can be configured only by service technicians.

7.16 Heat reclaim option (POWERCIAT LX)

Air-conditioning system consumes a significant amount of energy that leaves the system in the form of wasted heat. Heat reclaim condenser water pump control enables to capture the energy and convert it into a useful heat source without decreasing the chiller plant capacity.

For air-cooled units fitted with water heat reclaim condenser, the option requires the installation of Reclaim SIOB/CIOB board. The heat reclaim mode can be controlled locally with the Connect Touch interface (RECLAIM – Reclaim mode), remotely with the user contact or by Network command.

The heat reclaim function is active when the heat reclaim entering water temperature is lower than the heat reclaim setpoint. The difference between the heat reclaim entering water temperature (RECLAIM menu) and the heat reclaim setpoint (SETPOINT menu) determines the number of circuits required to provide heat reclaim capacity.

Depending on the control mode, the Heat Reclaim option can be enabled as follows:

Mode	Description
Local	Use the Connect Touch user interface to set "Heat Reclaim Select" parameter to "yes" in the Reclaim menu (Main menu).
Remote	Close the RECL_SW input (DI-02, Reclaim SIOB/CIOB board).
Network	Force the RECL_SW parameter to "yes" through the Network bus (RECLAIM table).

Units in Master/Slave assembly

When the unit is a Slave and operating in the Master/Slave assembly, the option is active depending on conditions given in the table below:

Reclaim mode	Local mode (Heat Reclaim Select = yes)	Remote mode (RECL_SW)	Network mode (RECL_SEL bus)
no	no	open	no
yes	yes/no	closed	yes/no
yes	yes	open	yes/no
yes	yes/no	open	yes

The heat reclaim function can be deactivated manually or automatically when the heat reclaim entering water temperature is higher than the heat reclaim setpoint, plus half of the heat reclaim deadband. In the deadband the heat reclaim function is still active.

Changeover procedure from cooling to heat reclaim mode:
1. Start-up of the condenser pump.
2. Verification of the condenser flow switch control contact. If this remains open after one minute of the condenser pump operation, the circuit remains in cooling mode and an alarm will be activated.
3. As soon as delta between saturated condensing temperature and saturated suction temperature reaches 10°C, the pump-down sequence is activated.
4. Pump down. Opening of the water condenser water inlet valve and closing of the air condenser air valve.
5. The heat reclaim function starts after about three minutes.

7.17 Energy Management Module

The energy management module enables to control the level of energy consumption, providing users with information such as current unit status, compressors operating status, etc. This option requires the installation of an additional SIOB/CIOB board.

Energy management option – board connections				
Description	Input/ Output	Connector	Type	Remarks
Occupancy override control	DI-01	J1	Digital input	If the contact is closed in Remote mode, the unit goes into the occupied mode
Demand limit switch 2	DI-02	J1	Digital input	If the contact is closed, the second capacity limit switch is active
Customer interlock	DI-03	J1	Digital input	Permits immediate unit shutdown
Ice storage	DI-04	J1	Digital input	If the contact is closed, the unit enters the ice storage mode
Space temperature	AI-01	J25	Analogue input	Active setpoint reset via space temperature control
Capacity limit control	AI-10	J9	Analogue input	Active setpoint reset via unit capacity control (4-20 mA)
Compressor A	DO-01	J2	Digital output	Output active if compressor A is operating
Compressor B	DO-02	J2	Digital output	Output active if compressor B is operating
Compressor C	DO-03	J6	Digital output	Output active if compressor C is operating
Chiller shutdown	DO-05	J23	Digital output	Output active (relay output) when the unit has completely stopped due to an alarm
Chiller in alert	DO-06	J22	Digital output	Output active (relay output) when the alert has been tripped
Unit capacity	A0-01	J10	Analogue output	0 to10 VDC output

7.18 Variable speed fans option

Air-cooled units fitted with the variable speed fans option allow for reducing the total unit consumption by adjusting the fan speed to the current operating conditions.

The control determines the optimum fan speed based on the current compressor capacity, outdoor air temperature, and leaving water temperature.

7.19   Evaporator heater option (POWERCIAT LX)

The evaporator heater protects the evaporator against frost when the unit is stopped at low ambient air temperature. The heater is activated in the case of low outdoor air temperature conditions.

7.20   Dry cooler free cooling (POWERCIAT LX / HYDROCIAT LW)

Both POWERCIAT LX and HYDROCIAT LW units can be fitted with a dry cooler which thanks to the use of low outside air temperature facilitates the process of chilling water that is later used in the air-conditioning system ("dry cooler free cooling").

This free cooling option may be activated when there is a unit (chiller or heat pump) working alongside a dry cooler. This "dry cooler free cooling" mode is enabled when the outside air temperature is below the water loop temperature and the service-configured start threshold parameter.

NOTE: Dry cooler water loop temperature and free cooling OAT measured by the control are read-only values that can be verified in the DC Free Cooling Status menu (DCFC_STA).

The control distinguishes between two types of fan control for a dry cooler free cooling option, where the first one embraces the use of fan staging and the second one that includes the use of variable speed fan. Mixed configuration can also be used (fixed and variable-speed fan control at the same time).

Free Cooling is normally stopped when the free cooling OAT is above the water loop temperature and the service-configured start/stop threshold. However, if it turns out that the cooling power of the dry cooler is not enough in order to reach the cooling setpoint, then the mechanical cooling will be started (when FC capacity is at 100%, then mechanical cooling can be started).

7.21   Dry cooler option – condensing pressure control (HYDROCIAT LW)

Water-cooled units may come with the dry cooler option, where the dry cooler is used to reject heat from the air-conditioning unit (split systems) and allows for condensing temperature control. Dry cooler fan stages are controlled by reference to a fixed dry cooler water outlet (value adjustable).

Fan type (fixed or variable speed), the number of fans and their arrangement may differ depending on service configuration.

The chiller and the dry cooler have to be connected through LEN RS-485.

7.22   Hydronic kit option (POWERCIAT LX)

The hydronic kit option allows for continuous monitoring of the water flow rate.

Hydronic kit option provides the following parameters:
*   Inlet and outlet water pressure
    (PUMPSTAT in the Main menu)
*   Evaporator flow rate
*   Evaporator capacity

The water flow rate is based on the pressure difference between the evaporator inlet and outlet pressures and the evaporator pressure drop curves.

The evaporator capacity is calculated according to the flow rate, the water constant, and the difference between the entering and leaving evaporator water temperature.

7.23   Electrical box fan protection

Units using R1234ze refrigerant (mildly flammable A2L category) come with advanced electrical box fan protection. In the case of the electrical box fan failure, the unit is shut down and alarm 10100 is triggered.

7.24   High condensing temperature option

7.24.1 R134a refrigerant
Condenser leaving water temperature can reach a maximum of 63°C (145°F) compared with a maximum of 50°C (122°F) for units that are not fitted with this option.

7.24.2 R1234ze refrigerant
Condenser leaving water temperature can reach a maximum of 70°C (158°F) compared with a maximum of 55°C (131°F) for units that are not fitted with this option.

7.25   Maximum condenser leaving water temperature option (HYDROCIAT LW)

For water-cooled units only, this option allows the user to limit the condenser leaving water temperature to 45°C (113°F) and enables to limit the current absorbed by the compressor. When the condensing temperature reaches 44°C (111°F), the increase in the compressor loading is stopped. When the temperature exceeds 45°C (113°F), the compressor is unloaded.

7.26   Brine options

Powerciat LX/Hydrociat LW chillers offer a few different cooler fluid types, including standard water fluid as well as the optional brine fluid, i.e. medium brine (option 5), low brine (option 6) and light brine (option 8). The brine option is commonly used for low temperature applications.

NOTE: This option requires the Software Activation Key (see section 7.30).

7.27   BACnet (option 149)

The BACnet/IP communication protocol is used by the building management system or the programmable controllers to communicate with the CONNECT TOUCH control.

NOTE: This option requires the Software Activation Key (see section 7.30).

7.28   Fast capacity recovery (option 295)

Fast capacity recovery is an option allowing for accelerating the unit start-up and fast loading after a short power cut. For units with fast capacity recovery enabled, the loading sequence is modified so that the chiller will reach its maximum capacity much faster when compared to the standard loading sequence.

NOTE: Fast capacity recovery is a free LX/LW option and does not require a software protection key.

7.29   Modbus (option 149B)

The Modbus communication protocol is used by the building management system or the programmable controllers to communicate with the CONNECT TOUCH control.

NOTE: Modbus is a free LX/LW option and does not require a software protection key.

7.30 Software Activation Key(s)

Powerciat LX/Hydrociat LW units with CONNECT TOUCH offer some additional options which require Software Activation Keys:

■ **Cooler fluid type:**
  - Medium brine (option 5)
  - Low brine (option 6)
  - Light brine (option 8)

■ **BACnet** communication (option 149)

These software-protected options can be factory-installed or installed on-site by the service technician or the customer.

Each option requires an individual software activation key.

To obtain the Software Activation Key, please contact your local service representative.

7.30.1 Software options

The list of available software activation keys can be verified via the Main menu.

To veify available software options

1. Go to the Main menu.
2. Select *Software Options* (OPT_STA).
   The menu can be accessed when logged in at user access level.
   - If the status of the option is set to "yes", it means that the Software Activation Key for this option is installed.

OPT_STA - Software Options	
OPT5: Medium Brine	No
OPT6: Low Brine	No
OPT8: Light Brine	No
OPT149: BACnet	No
OPT295: Fast Cap Reco	Yes
OPT149B: Modbus	Yes
	1/1 ▲ ▼

IMPORTANT: In case the controller is replaced, the NEW Software Activation Key(s) based on the new MAC address must be installed again (see also section 7.30.2).

7.30.2 Replacement mode

If the controller is replaced with a new one, the system will be in the Replacement mode which may last up to 7 days beginning at the first start of the compressor.

■ When replacing the controller, it is necessary to install NEW Software Activation Key(s).

■ Please contact your local service representative immediately to request NEW Software Activation Key(s).

In the Replacement mode:

■ Software option(s) will be unlocked for a limited period of time (7 days since the first start of the compressor). Only options that have been installed on the unit before will be active in the Replacement mode!

■ The list of available software options can be verified via the Main menu (OPT_STA – Software Options).

■ Alarm 10122 will be triggered. If the NEW Software Activation Key is not installed during the Replacement mode, the alarm will be reset automatically and software option(s) will be blocked.

The Replacement mode ends when the Software Activation Key is installed or the period of 7 days elapsed (7 days since the first start of the compressor).

IMPORTANT: Only software options that were installed on the unit before replacing the controller will be active during the Replacement mode!

7.30.3 Software key installation

To install the Software Activation Key via CONNECT TOUCH

1. Go to the Main menu.
2. Navigate to the Configuration menu (logged-in users only).
3. Select *Add Options* (ADD_OPT).
   - When installing the Software Activation Key, please make sure that the unit is stopped.

Add Options	
MAC Address	96:01:D1:89:24:98 ①
Please Enter Your Software Activation Key ②	
Unit must be Off	

Legend:
① Controller MAC address
② Software Activation Key

4. Enter the **Software Activation Key**.
   - If the Software Key ends with two equality signs (==), then these signs can be omitted. The Key will be accepted.
   - The Software Activation Key is case-sensitive.
5. Once the Software Activation Key is provided in the Keyboard screen, press **OK**.
6. Once the Software Activation Key is validated, the following message will be displayed: **"Software Activation Key Added"**.
7. The parameter connected with the activated functionality is set automatically and the control system will also be rebooted automatically.
   - If the Software Activation Key is incorrect, the following message will be displayed: "Software Activation Key is Invalid".
   - If the Software Activation Key has been added before, the following message will be displayed: "Key Already Set".

7.31 User quick test

The Quick Test functionality allows users to test and verify if certain components of the unit behave correctly (only logged-in users can activate the Quick Test).

To enable Quick Test

1. Navigate to the Main menu.
2. Select *Quick Test #1* (QCK_TST1). The menu can be accessed when logged in at user access level.
3. Set *Quick Test Enable* [QCK_TEST] to "on".

Quick Test Enable [QCK_TEST]	
off/on	on

IMPORTANT: To enable the Quick Test functionality, the unit must be stopped (Local off mode).

Once the Quick Test functionality is enabled, it is possible to test parameters such as fans' outputs, pumps' commands, etc.

8 - DIAGNOSTICS

8.1   Control diagnostics

The control system has many fault tracing aid functions, protecting the unit against risks that could result in the failure of the unit.

8.2   E-mail notifications

The control provides the option to define one or two recipients who receive e-mail notifications each time the new alarm occurs or all existing alarms have been reset.

NOTE: E-mail notifications can be configured only by service technicians.

8.3   Displaying alarms

The CONNECT TOUCH user interface enables the quick display of the unit status.

The **blinking bell** icon indicates that there is an alarm, but the **unit is still running**.

The **highlighted bell** icon indicates that the **unit is shut down** due to a detected fault.

The local interface – CONNECT TOUCH – gives the user quick access to monitor all unit operating conditions. If an operating fault is detected, the alarm is triggered. All information regarding the existing alarms (current and past alarms) can be found in the Alarms menu.

Alarms menu	Access	Viewing alarm information			
		Date	Hour	Code	Description
Current Alarms		Basic	+	+		+
Reset Alarms		User			+	
Alarm Historic		Basic	+	+		+
Major Alarm Historic		Basic	+	+		+

8.4   Current alarms

The Current alarms view provides a list of currently active alarms, including the date and time the alarm occurred. The control displays up to 10 current alarms.

To access the Current alarms view, press the **Alarm** button in the upper-right part of the screen, and then select Current Alarms.

8.5   Resetting alarms

Connect Touch control distinguishes between two types of alarms:
*   General alarms are used to indicate pumps failure, transducers faults, network connection problems, etc.
*   Major alarms are used to indicate process failure.

The alarm can be reset either automatically or manually via the Reset alarms menu. The Reset alarms menu displays up to five alarm codes which are currently active on the unit. Only logged-in users can access the menu (see also section 4.5.1).

To access the Reset alarms menu, press the **Alarm** button and select Reset Alarms.

The alarm can be reset without stopping the machine. In the event of a power supply interrupt, the unit restarts automatically without the need for an external command. However, any faults active when the supply is interrupted are saved and may in certain cases prevent a circuit or a unit from restarting. Once the cause of the alarm has been identified and corrected, it will be displayed in the alarm history.

8 - DIAGNOSTICS

8.6   Alarm history

Information regarding resolved alarms is stored in the Alarm history menu which is divided into 50 recent alarms and 50 recent major alarms. Alarm history can be accessed through the Connect Touch user interface or the Network Service Tool.

To access the Alarm history menu, press the **Alarm** button and select **Alarm Historic**.

8.6.1   General alarm codes

No.	Code	Alarm description	Reset type	Action taken	Possible cause
THERMISTOR FAILURE					
1	15001	Evaporator entering water thermistor fault	Automatic, if thermistor reading returns to normal	Unit shuts down	Defective thermistor
2	15002	Evaporator leaving water thermistor fault	As above	Unit shuts down	As above
3	15050	Cooler Leaving Fluid #2 Thermistor	As above	Unit shuts down	As above
4	15003	Defrost thermistor fault, circuit A	As above	Cooling mode: Alert is displayed Heating mode: Circuit A shuts down	As above
5	15004	Defrost thermistor fault, circuit B	As above	Cooling mode: Alert is displayed Heating mode: Circuit B shuts down	As above
6	15006	Condenser entering water thermistor fault	As above	Heating mode: Unit shuts down	As above
7	15007	Condenser leaving water thermistor fault	As above	As above	As above
8	15008	Reclaim condenser entering thermistor fault, circuit A	As above	Unit returns to the air-cooled mode	As above
9	15009	Reclaim condenser leaving thermistor fault, circuit B	As above	As above	As above
10	15010	OAT thermistor fault	As above	Unit shuts down	As above
11	15011	Master/slave common water thermistor fault	As above	Master/slave operation is disabled and the unit returns to the stand-alone mode	As above
12	15032	MASTER/Slave Common Heat Fluid Thermistor	As above	As above	As above
13	15012	Suction gas thermistor fault, circuit A	As above	Circuit A shuts down	As above
14	15013	Suction gas thermistor fault, circuit B	As above	Circuit B shuts down	As above
15	15014	Suction gas thermistor fault, circuit C	As above	Circuit C shuts down	As above
16	15015	Discharge gas thermistor fault, circuit A	As above	Circuit A shuts down	As above
17	15016	Discharge gas thermistor fault, circuit B	As above	Circuit B shuts down	As above
18	15017	Discharge gas thermistor fault, circuit C	As above	Circuit C shuts down	As above
19	15036	Dry Cooler Leaving thermistor failure	As above	None	As above
20	15046	Free Cooling Water Loop Thermistor Failure	As above	Dry cooler free cooling disabled	As above
21	15047	Free Cooling Leaving Water Thermistor Failure	As above	Dry cooler free cooling disabled	As above
22	15048	Free Cooling OAT Thermistor Failure	As above	Dry cooler free cooling disabled	As above
23	15018	Condenser subcooling liquid thermistor fault, circuit A	As above	Unit returns to the air-cooled mode	As above
24	15019	Condenser subcooling liquid thermistor fault, circuit B	As above	As above	As above
25	15021	Space temperature thermistor fault	As above	None	As above
26	15023	Evaporator heater feedback thermistor fault	As above	None	As above
27	15024	Economizer gas thermistor fault, circuit A	As above	Economizer function disabled	As above
28	15025	Economizer gas thermistor fault, circuit B	As above	As above	As above
29	15026	Economizer gas thermistor fault, circuit C	As above	As above	As above
TRANSDUCER FAILURE					
32	12001	Discharge transducer fault, circuit A	Automatic, if sensor voltage reading returns to normal	Circuit A shuts down	Defective transducer or installation fault
33	12002	Discharge transducer fault, circuit B	As above	Circuit B shuts down	As above
34	12003	Discharge transducer fault, circuit C	As above	Circuit C shuts down	As above
35	12004	Suction transducer fault, circuit A	As above	Circuit A shuts down	As above
36	12005	Suction transducer fault, circuit B	As above	Circuit B shuts down	As above
37	12006	Suction transducer fault, circuit C	As above	Circuit C shuts down	As above
38	12007	Heat reclaim pump-down pressure transducer fault, circuit A	As above	Reclaim session stopped and the unit returns to the air-cooled mode	As above
39	12008	Heat reclaim pump-down pressure transducer fault, circuit B	As above	As above	As above
40	12010	Oil pressure transducer fault, circuit A	As above	Circuit A shuts down	As above
41	12011	Oil pressure transducer fault, circuit B	As above	Circuit B shuts down	As above
42	12012	Oil pressure transducer fault, circuit C	As above	Circuit C shuts down	As above
43	12013	Economizer pressure transducer fault, circuit A	As above	Circuit A shuts down	As above

No.	Code	Alarm description	Reset type	Action taken	Possible cause
44	12014	Economizer pressure transducer fault, circuit B	As above	Circuit B shuts down	As above
45	12015	Economizer pressure transducer fault, circuit C	As above	Circuit C shuts down	As above
50	12022	Circuit A Heatpump Approach Pressure Transducer	As above	Cooler pinch control disabled in Cooling mode; discharge superheat control is required	As above
51	12023	Circuit B Heatpump Approach Pressure Transducer	As above	As above	As above
52	12024	Water pressure 1 transducer failure (before the evaporator)	As above	Alert - the values read by the hydronic kit function are not reliable	As above
53	12025	Water pressure 2 transducer failure (after the evaporator)	As above	As above	As above
54	12026	Water pressure 3 transducer failure (before the filter)	As above	As above	As above
55	12027	Water pressure 4 transducer failure (after the filter)	As above	As above	As above
57	12029	Water Pressure too low - pump cavitation risks	As above	Alert – the unit continues to operate	Water loop pressure too low, risk of pump cavitation
COMMUNICATION FAILURE					
59	4101	Loss of communication with Compressor Board A	Automatic, if communication is re-established	Unit shuts down	Bus installation fault or defective board
60	4201	Loss of communication with Compressor Board B	As above	Unit shuts down	As above
61	4301	Loss of communication with Compressor Board C	As above	Unit shuts down	As above
62	4901	Loss of communication with SIOB/CIOB Board Number A	As above	Unit shuts down	As above
63	4902	Loss of communication with SIOB/CIOB Board Number B	As above	Unit shuts down	As above
64	4903	Loss of communication with SIOB/CIOB Board Number C	As above	Unit shuts down	As above
65	4904	Loss of communication with SIOB/CIOB Board Free Cooling	As above	Unit shuts down	As above
66	4905	Loss of communication with SIOB/CIOB Board Heat Reclaim	As above	Unit shuts down	As above
67	4906	Loss of communication with SIOB/CIOB Board Energy Management	As above	Alert (EMM is not working, but the unit continues to operate)	As above
68	4501	Communication loss with Fan Board Number 1	As above	Circuit A shuts down	As above
69	4502	Communication loss with Fan Board Number 2	As above	Circuit B shuts down	As above
70	4503	Communication loss with Fan Board Number 3	As above	Circuit C shuts down	As above
71	4504	Loss of communication with FC Dry Cooler Board	As above	Dry cooler free cooling disabled and the unit returns to mechanical cooling	As above
72	4505	Loss of communication with Dry Cooler Board	As above	Dry cooler mode is stopped	As above
73	4801	Communication loss with VLT Board Number 1, (units w/o option 17)	As above	Circuit A shuts down	As above
74	4802	Communication loss with VLT Board Number 2, (units w/o option 17)	As above	Circuit B shuts down	As above
75	4803	Communication loss with VLT Board Number 3, (units w/o option 17)	As above	Circuit C shuts down	As above
76	4704	Loss of communication with Fan VLT Drive Board A1 (option 17)	As above	Circuit A shuts down	As above
77	4705	Loss of communication with Fan VLT Drive Board A2 (option 17)	As above	Circuit A shuts down	As above
78	4706	Loss of communication with Fan VLT Drive Board A3 (option 17)	As above	Circuit A shuts down	As above
79	4707	Loss of communication with Fan VLT Drive Board B1 (option 17)	As above	Circuit B shuts down	As above
80	4708	Loss of communication with Fan VLT Drive Board B2 (option 17)	As above	Circuit B shuts down	As above
81	4709	Loss of communication with Fan VLT Drive Board B3 (option 17)	As above	Circuit B shuts down	As above
PROCESS FAILURE					
85	10001	Evaporator frost protection	Manual	Unit shuts down, but the pump continues to run	No water flow, defective thermistor
86	10002	Condenser frost protection, circuit A	Automatic (if saturated discharge temperature is more than 4.4°C) or Manual	Circuit A shuts down, but the pump is running	Discharge pressure transducer defective, refrigerant leak or low condenser water temperature

No.	Code	Alarm description	Reset type	Action taken	Possible cause
87	10003	Condenser frost protection, circuit B	As above	Circuit B shuts down, but the pump is running	As above
88	10004	Condenser frost protection, circuit C	As above	Circuit C shuts down, but the pump is running	As above
89	10005	Low suction temperature, circuit A	Automatic (the first alarm in the last 24 hours) or Manual	Circuit A shuts down	Pressure sensor defective, EXV blocked or lack of refrigerant
90	10006	Low suction temperature, circuit B	As above	Circuit B shuts down	As above
91	10007	Low suction temperature, circuit C	As above	Circuit C shuts down	As above
92	10008	High superheat, circuit A	Manual	Circuit A shuts down	As above
93	10009	High superheat, circuit B	Manual	Circuit B shuts down	As above
94	10010	High superheat, circuit C	Manual	Circuit C shuts down	As above
95	10011	Low superheat, circuit A	Manual	Circuit A shuts down	As above
96	10012	Low superheat, circuit B	Manual	Circuit B shuts down	As above
97	10013	Low superheat, circuit C	Manual	Circuit C shuts down	As above
98	10014	Customer safety loop failure	Automatic (the first alarm in the last 24 hours) or Manual	Unit shuts down	Customer interlock closed
99	10028	Electrical Box Thermostat or Electrical Interlock failure	Automatic	Unit shuts down	Electrical box fault: Control box poorly ventilated or poor electrical connection
101	10030	Master/slave communication failure	Automatic	Master/slave control disabled	As above
102	10067	Low oil pressure, circuit A	Manual	Circuit A shuts down	Pressure sensor fault, defective wiring or oil filter installation fault
103	10068	Low oil pressure, circuit B	Manual	Circuit B shuts down	As above
104	10069	Low oil pressure, circuit C	Manual	Circuit C shuts down	As above
105	10070	Maximum oil filter differential pressure, circuit A	Manual	The affected compressor is stopped, other compressors continue to run	As above
106	10071	Maximum oil filter differential pressure, circuit B	Manual	As above	As above
107	10072	Maximum oil filter differential pressure, circuit C	Manual	As above	As above
108	10084	High oil filter drop pressure, circuit A	Manual	None	Pressure sensor fault, wiring defective, oil filter installation fault
109	10085	High oil filter drop pressure, circuit B	Manual	None	As above
110	10086	High oil filter drop pressure, circuit C	Manual	None	As above
111	10075	Low oil level, circuit A	Automatic (three alarms in the last 24 hours) or Manual	Circuit A shuts down	Oil level too low or oil level detector defective
112	10076	Low oil level, circuit B	As above	Circuit B shuts down	As above
113	10077	Low oil level, circuit C	As above	Circuit C shuts down	As above
CONFIGURATION FAILURE					
114	9001	Master chiller configuration error Number #1 to nn	Automatic, if master/slave configuration returns to normal	Master/Slave control disabled	Incorrect unit configuration
115	8000	Initial factory configuration required	Automatic, if configuration is made	Unit not allowed to start	Factory configuration required
116	7001	Illegal factory configuration	Automatic, if configuration is corrected	Unit not allowed to start	Incorrect unit configuration
PROCESS FAILURE					
117	10031	Emergency stop	Automatic	Unit shuts down	Network emergency stop command
118	10032	Evaporator pump 1 fault	Manual	Unit is restarted with another pump running. If no pumps are available, the unit shuts down	Pump overheats or poor pump connection
119	10033	Evaporator pump 2 fault	Manual	As above	As above
120	10015	Flow controller fault - condenser flow switch failure	Automatic (the first alarm in the last 24 hours) or Manual	Condenser pump is stopped	Condenser flow switch open
121	10034	Reclaim operation failure, circuit A	Manual	Circuit A returns to the air-cooled mode	Low condenser flow
122	10035	Reclaim operation failure, circuit B	Manual	Circuit B returns to the air-cooled mode	As above
123	10037	High condensing temperature, circuit A	Automatic	Circuit A shuts down	Defective transducer

No.	Code	Alarm description	Reset type	Action taken	Possible cause
124	10038	High condensing temperature, circuit B	Automatic	Circuit B shuts down	As above
125	10039	High condensing temperature, circuit C	Automatic	Circuit C shuts down	As above
129	10043	Low entering water temperature in heating	Automatic, if EWT returns to normal or Heating mode is disabled	None	Entering water temperature is below 3.3°C
130	10073	Condenser pump 1 fault	Manual	Unit is restarted with another pump running. If no pumps are available, the unit shuts down	Pump overheats or poor pump connection
131	10074	Condenser pump 2 fault (not available!)	Manual	As above	As above
132	10078	High discharge gas temperature, circuit A	Manual	Circuit A shuts down	Defective transducer, max. condensing temperature setpoint too low or refrigerant charge too high
133	10079	High discharge gas temperature, circuit B	Manual	Circuit B shuts down	As above
134	10080	High discharge gas temperature, circuit C	Manual	Circuit C shuts down	As above
135	10081	Suction valve closed, circuit A	Manual	Circuit A shuts down	Economizer pressure transducer defective, suction valve fault
136	10082	Suction valve closed, circuit B	Manual	Circuit B shuts down	As above
137	10083	Suction valve closed, circuit C	Manual	Circuit C shuts down	As above
138	10087	Slide valve control unverifiable, circuit A	Manual	None	Defective or incorrectly wired solenoid valves, defective current transformer
139	10088	Slide valve control unverifiable, circuit B	Manual	None	As above
140	10089	Slide valve control unverifiable, circuit C	Manual	None	As above
141	10090	Flow controller configuration fault	Manual	Unit is not allowed to restart	Defective flow controller or wiring error
142	10091	Flow controller fault – evaporator flow switch failure	Automatic (the first alarm in the last 24 hours) or Manual	Compressors and the evaporator pump are stopped	As above
143	10100	Electrical box fan failure (units with HFO only)	Manual	Unit shuts down	Electrical box fan malfunction or fan current probe malfunction
146	10097	Water exchanger temperature sensors swapped	Manual	Unit shuts down	Leaving water temperature is higher than entering water temperature

MAINTENANCE ALARMS

No.	Code	Alarm description	Reset type	Action taken	Possible cause
147	13001	Service maintenance alert	Manual	None	Preventive maintenance date has passed

VLT DRIVE FAILURE

No.	Code	Alarm description	Reset type	Action taken	Possible cause
148	20nnn	VLT Fan Drive A1 Failure (option 17)	Manual	Circuit A shuts down	Speed controller fault (see section 8.6.2)
149	21nnn	VLT Fan Drive A2 Failure (option 17)	Manual	Circuit A shuts down	As above
150	22nnn	VLT Fan Drive A3 Failure (option 17)	Manual	Circuit A shuts down	As above
151	23nnn	VLT Fan Drive B1 Failure (option 17)	Manual	Circuit B shuts down	As above
152	24nnn	VLT Fan Drive B2 Failure (option 17)	Manual	Circuit B shuts down	As above
153	25nnn	VLT Fan Drive B3 Failure (option 17)	Manual	Circuit B shuts down	As above
154	26nnn	VLT Fan Drive C1 Failure (option 17)	Manual	Circuit C shuts down	As above
155	27nnn	VLT Fan Drive C2 Failure (option 17)	Manual	Circuit C shuts down	As above
156	28nnn	VLT Fan Drive C3 Failure (option 17)	Manual	Circuit C shuts down	As above
157	38nnn	Variable speed controller A1 alert (option 17)	Automatic	None	As above
158	39nnn	Variable speed controller A2 alert (option 17)	Automatic	None	As above
159	40nnn	Variable speed controller A3 alert (option 17)	Automatic	None	As above
160	41nnn	Variable speed controller B1 alert (option 17)	Automatic	None	As above
161	42nnn	Variable speed controller B2 alert (option 17)	Automatic	None	As above
162	43nnn	Variable speed controller B3 alert (option 17)	Automatic	None	As above
163	44nnn	Variable speed controller C1 alert (option 17)	Automatic	None	As above
164	45nnn	Variable speed controller C2 alert (option 17)	Automatic	None	As above
165	46nnn	Variable speed controller C3 alert (option 17)	Automatic	None	As above

No.	Code	Alarm description	Reset type	Action taken	Possible cause
SOFTWARE FAILURE					
166	55001	Database module fault	Automatic	Unit shuts down	Software problem. Contact Service Technicians
167	56001	Lenscan module fault	Automatic	Unit shuts down	Software problem. Contact Service Technicians
EXV FAILURE					
168	57020	Main EXV stepper motor Failure - cir A	Manual	Circuit A shuts down	Stepper motor failure
169	57021	Main EXV stepper motor Failure - cir B	Manual	Circuit B shuts down	As above
170	57022	Main EXV stepper motor Failure - cir C	Manual	Circuit C shuts down	As above
171	57023	EXV eco stepper motor Failure - cir A	Manual	Circuit A shuts down	As above
172	57024	EXV eco stepper motor Failure - cir B	Manual	Circuit B shuts down	As above
173	57025	EXV eco stepper motor Failure - cir C	Manual	Circuit C shuts down	As above
PROCESS FAILURE					
174	10050	Refrigerant Leakage Detection	Manual	None	Refrigerant leak or leak detector defective
175	10101	Free Cooling Dry Cooler Process Failure	Automatic, if free cooling conditions return to normal	Dry cooler free cooling stopped and the unit returns to mechanical cooling	Conditions not suitable for dry cooler free cooling
MAINTENANCE ALARMS					
176	13005	Fgas check needed, call your maintenance company	Manual	None	As above
REPLACEMENT MODE: SOFTWARE ACTIVATION KEY(S) MISSING					
177	10122	Replacement Mode: please contact service representative to activate options	Automatic, if Software Activation Key is installed. Automatic, if Software Activation Key is not provided within 7 days since the first compressor start (the alarm will be reset and software-protected options will be blocked)	Replacement Mode: Please contact your local service representative to obtain activation key(s) to retrieve (or activate) software options	CONNECT TOUCH controller was replaced, but Software Activation Key is not installed
POWER FAILURE					
178 179	54011 54012	Power Capacitor 1/2 Temperature Failure	Manual	Unit shuts down	Power Capacitor Temperature failure
180 181	54014 54015	Under Voltage 1/2 Failure	Automatic	Unit shuts down	Under Voltage failure
CONFIGURATION FAILURE					
182	8001	Illegal brand identifier	Automatic, if configuration is corrected	Unit not allowed to start	Incorrect unit configuration
COMPRESSOR FAILURE					
183	11nn	Compressor A fault	Manual	Unit shuts down	See section 8.6.3
184	21nn	Compressor B fault	Manual	Unit shuts down	As above
185	31nn	Compressor C fault	Manual	Unit shuts down	As above

8.6.2 Drive alarms

The table below presents the most common alarms associated with the variator malfunction. Please refer to the applicable Danfoss documentation for more information on other alarms.

Code	Alarm/Alert	Description	Action to be taken
Variator alarms			
2	Alarm	Live zero fault	Contact Service Technicians
4	Alarm	Mains phase loss	Check the VFD supply voltage and the phase balance (±3%)
7	Alarm	Overvoltage	Contact Service Technicians
8	Alarm	Undervoltage	Contact Service Technicians
9	Alarm	Inverter overloaded	Check the VFD output current
10	Alarm	Motor overtemperature	Check the motor temperature
11	Alarm	Motor thermistor	Contact Service Technicians
12	Alarm	Torque limit exceeded	Check the VFD output current
13	Alarm	Overcurrent	Check the VFD output current
14	Alarm	Earth fault	Check if an earth fault exists
16	Alarm	Motor short-circuit	Check if there is a short-circuit at the VFD terminals
17	Alarm	Serial communication timeout	Check the connections and the shielding of the serial communication cable
23*	Alarm	Internal fan fault	Check the internal fan rotation
25	Alarm	Brake resistor short-circuited	Contact Service Technicians
26	Alarm	Brake resistor power limit	Contact Service Technicians
28	Alarm	Brake verification	Contact Service Technicians
29	Alarm	VFD temperature too high	Space temperature too high or VFD ventilation obstructed or damaged
30	Alarm	Motor phase U missing	Check wiring of phase U
31	Alarm	Motor phase V missing	Check wiring of phase V
32	Alarm	Motor phase W missing	Check wiring of phase W
33	Alarm	Inrush fault	Current demand too high: Let the VFD cool down for 20 minutes before starting it again
34	Alarm	Fieldbus communication fault	Check the connections and the shielding of the serial communication cable
36	Alarm	Mains failure	Check the VFD supply voltage and the phase balance (±3%)
38	Alarm	Internal fault	Contact Service Technicians
47	Alarm	24 V supply low	Contact Service Technicians
48	Alarm	1.8 V supply low	Contact Service Technicians
57**	Alarm	AMA timeout	Contact Service Technicians
65	Alarm	Control board overtemperature	Check the space temperature and the VFD fan
67	Alarm	Option configuration has changed	Contact Service Technicians
68	Alarm	Emergency stop	Contact Service Technicians
71	Alarm	PTC 1 emergency stop	Contact Service Technicians
72	Alarm	Emergency stop	Contact Service Technicians
80	Alarm	Drive initialized to default value	Contact Service Technicians
94	Alarm	End of curve	Contact Service Technicians
95	Alarm	Torque loss	Contact Service Technicians
243	Alarm	IGBT defective	Contact Service Technicians
251***	Alarm	New parts detached	Contact Service Technicians
Variator alerts (-nnn)			
1	Alert	10 V low	Contact Service Technicians
2	Alert	Live zero error	Contact Service Technicians
3	Alert	No motor	Check the motor connections
4	Alert	Mains phase loss	Check the VFD supply voltage and the phase balance (±3%)
5	Alert	DC link voltage high	Check the VFD supply voltage and the phase balance (±3%)
6	Alert	DC link voltage low	Check the VFD supply voltage and the phase balance (±3%)
7	Alert	DC overvoltage	Contact Service Technicians
8	Alert	DC undervoltage	Contact Service Technicians
9	Alert	Inverter overloaded	Check the VFD output current
10	Alert	Motor overtemperature	Check the motor temperature
11	Alert	Motor thermistor	Contact Service Technicians
12	Alert	Torque limit exceeded	Check the VFD output current

Code	Alarm/Alert	Description	Action to be taken
13	Alert	Overcurrent	Check the VFD output current
14	Alert	Earth fault	Check if an earth fault exists
17	Alert	Control word timeout	Check the connections and the shielding of the serial communication cable
23***	Alert	Internal fan fault	Check the internal fan rotation
25	Alert	Brake resistor short-circuited	Contact Service Technicians
26	Alert	Brake resistor power limit	Contact Service Technicians
28	Alert	Brake verification	Contact Service Technicians
34	Alert	Fieldbus communication fault	Check the connections and the shielding of the serial communication cable
36	Alert	Mains failure	Check the VFD supply voltage and the phase balance (±3%)
47	Alert	24 V supply low	Contact Service Technicians
49	Alert	Motor speed limit exceeded	Contact Service Technicians
59	Alert	Current limit exceeded	Check the VFD output current
62	Alert	Output frequency at maximum limit	Check the VFD output current
64	Alert	Voltage limit	Supply voltage too low
65	Alert	Control board overtemperature	Check the space temperature and the VFD fan
66	Alert	Heat sink temperature low	Space temperature too low
71	Alert	PTC1 emergency stop	Contact Service Technicians
72	Alert	Emergency stop	Contact Service Technicians
90†	Alert	Encoder loss	Contact Service Technicians
94	Alert	End of curve	Contact Service Technicians
95	Alert	Torque loss	Contact Service Technicians
96	Alert	Start delayed	Contact Service Technicians
97	Alert	Stop delayed	Contact Service Technicians
98	Alert	Clock fault	Contact Service Technicians
203	Alert	Missing motor	Contact Service Technicians
204	Alert	Locked rotor	Contact Service Technicians
243	Alert	IGBT defective	Contact Service Technicians
247	Alert	Capacity board temperature	Contact Service Technicians

*	Error 24 and 104 possible
**	Error 50 to 58 possible
***	Error 70 or 250 possible
†	Not applicable to variator size 102

8.6.3 Compressor alarms

Code*	Description	Reset type	Possible cause
XX-01	Motor temperature too high	Manual	Motor/wiring fault
XX-02	Motor temperature outside the range	Manual	Probe defective or incorrect wiring
XX-03	High pressure switch protection	Manual	Coil fouled, lack of condenser flow, condenser valve blocked, fan circuit fault, high entering air or condenser water temperature
XX-04	Current consumption too high	Manual	-
XX-05	Locked rotor	Manual	Mechanical compressor fault, motor fault or defective compressor slide valve
XX-06	Phase L1 lost	Manual	Power supply wiring fault
XX-07	Phase L2 lost	Manual	As above
XX-08	Phase L3 lost	Manual	As above
XX-09	Low current alarm	Manual	Defective contactor or capacity fault
XX-10	Current increase fault during the star-delta passage	Manual	Incorrect wiring or no power for the delta contactor
XX-11	Contactor fault	Manual	Incorrect wiring or defective contactor or TCPM board
XX-12	Motor stop impossible	Manual	Incorrect wiring or defective contactor
XX-13	Phase reversal	Manual	-
XX-14	MTA configuration fault	Manual	MTA configuration incorrect or defective TCPM board
XX-15	Incorrect configuration switch	Manual	Configuration switch S1 incorrect wiring or defective TCPM board
XX-16	Switch modification detected	Manual	As above
XX-17	Power supply cut during operation	Automatic	Verify that power supply cuts have occurred
XX-18	Critical software error (UL 1998)	Manual	Power network noise or defective TCPM board
XX-19	Critical error on two current parameters (UL 1998)	Manual	Power network noise or defective TCPM board

*XX stands for compressor (11 – compressor A, 21 – compressor B, 31 – compressor C)

9 - MAINTENANCE

In order to ensure the optimal operation of the equipment as well as the optimization of all the available functionalities, it is recommended to activate a Maintenance Contract with your local Service Agency.

The contract will ensure your equipment is regularly inspected by specialists so that any malfunction is detected and corrected quickly and no serious damage can occur to your equipment.

Your local Service Agency provides a wide range of service contracts which embrace the assistance of highly qualified HVAC engineering professionals ready to help if needed. The Maintenance contracts represent not only the best way to ensure the maximum operating life of your equipment, but also, through the expertise of qualified personnel, the optimal tool to manage your system in a cost-effective manner.

To find the best type of contract that will meet all of your expectations, please contact your local Manufacturer representatives.