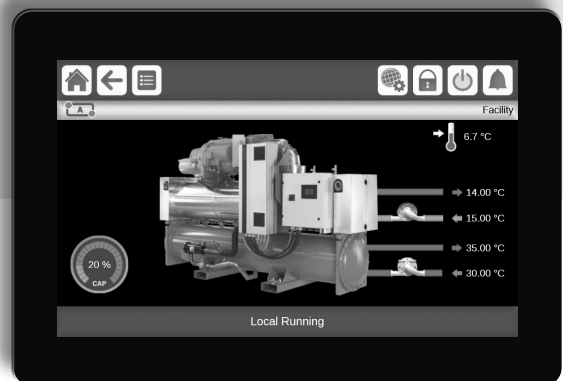




CONTROLS MANUAL



SmartVu™ Control

30XW-V / 30XWHV 30XW-VZE / 30XWHVZE

AquaForce® PUREtec with R1234ze(E)

CONTENTS

1 - SAFETY CONSIDERATIONS	5
1.1 - General description	5
1.2 - Safety precautions.....	5
2 - CONTROLLER OVERVIEW	6
2.1 - System functionalities.....	6
2.2 - Control panel.....	6
2.3 - SmartVu™ components	6
2.4 - Operating modes.....	6
3 - HARDWARE DESCRIPTION	7
3.1 - General description	7
3.2 - Power supply to boards.....	7
3.3 - SmartVu™ connections.....	7
3.4 - Light emitting diodes on boards	7
3.5 - Pressure sensors	8
3.6 - Temperature sensors.....	8
3.7 - Actuators	8
3.8 - Frequency variator	8
3.9 - Connections at the user terminal block.....	9
3.10 - RS485 wiring (best practice).....	11
4 - USER INTERFACE: OVERVIEW	12
4.1 - Touch screen display.....	12
4.2 - Home screen (synoptic view).....	12
4.3 - Circuit view.....	12
4.4 - Information message box.....	12
4.5 - Header buttons.....	13
4.6 - Subheader buttons.....	13
4.7 - Other buttons.....	14
4.8 - Screen calibration.....	14
4.9 - Warning messages.....	14
5 - USER INTERFACE: MENU STRUCTURE	15
5.1 - Main menu.....	15
5.2 - Configuration menu	21
5.3 - Schedule menu	24
5.4 - Holiday menu	24
5.5 - Network menu	25
5.6 - System menu	28
5.7 - Login menu.....	31
5.8 - Start / Stop menu	32
5.9 - Alarms menu	33
6 - CONTROL SYSTEM OPERATION	35
6.1 - Start/Stop control	35
6.2 - Unit stop function.....	35
6.3 - Heating/Cooling selection.....	35
6.4 - Pumps control	36
6.5 - Condenser water pump control	36
6.6 - Control point.....	37
6.7 - Capacity limitation	38
6.8 - Capacity control.....	38
6.9 - Night mode.....	38
6.10 - Head pressure control.....	38
6.11 - Circuit lead/lag selection (multi-circuit units)	38
6.12 - Energy management module	39
6.13 - Master/slave assembly.....	39
6.14 - Dry cooler option	39
6.15 - Maximum condenser leaving water temperature option (30XWV).....	39
6.16 - Refrigerant leak detection (option 159).....	39
6.17 - Brine option	39
6.18 - BACnet (option 149).....	39
6.19 - Modbus (option 149B).....	39
6.20 - Fast capacity recovery (option 295)	39
6.21 - Software Activation Key(s)	40
6.22 - Trending	41
6.23 - User quick test.....	41
6.24 - Schedule setting.....	42
6.25 - Holidays.....	42
7 - WEB CONNECTION	43
7.1 - Web interface	43
7.2 - Technical documentation.....	43

CONTENTS

8 - DIAGNOSTICS	44
8.1 - Control diagnostics.....	44
8.2 - Displaying current alarms.....	44
8.3 - E-mail notifications	44
8.4 - Resetting alarms	44
8.5 - Alarm history.....	44
8.6 - Alarm codes.....	45
9 - MAINTENANCE.....	50

The cover photos are solely for illustration and forms no part of any offer for sale or any sale contract. The manufacturer reserves the right to change the design at any time without notice.

PREFACE

The goal of this document is to give a broad overview of the main functions of the SmartVu™ system used to control:

- 30XW-V single-circuit or dual-circuit water-cooled units with R134a refrigerant
- 30XW-VZE single-circuit or dual-circuit water-cooled chillers with R1234ze refrigerant (standard) or R515B refrigerant (option 330)

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 Carrier 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: Heating mode is applicable only to units with "H" configuration (30XWHV and 30XWHVZE).

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 Carrier-manufactured equipment and it is not to be reproduced, modified or used for any other purpose without the prior consent of Carrier Corporation.

ABBREVIATIONS

In this manual, the refrigeration circuits are called circuit A and circuit B.

The following abbreviations are used frequently:

CCN	Carrier Comfort Network
EMM	Energy Management Module
EXV	Electronic Expansion Valve
EVSP	External Variable-Speed Pump
LED	Light Emitting Diode
LEN	Sensor Bus (internal communication bus linking the basic board to slave boards)
OAT	Outdoor Air Temperature
VFD	Variable Frequency Drive
Local-Off	Operating type: Local Off
Local-On	Operating type: Local On mode

Operating modes:

Local-Schedule	Operating type: Local On following a time schedule
Master mode	Operating type: master unit (master/slave assembly)
Network mode	Operating type: Network
Remote mode	Operating type: by remote contacts

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 R1234ze refrigerant.

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

2 - CONTROLLER OVERVIEW

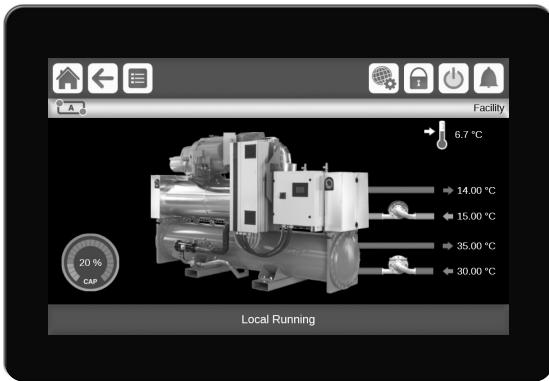
2.1 - System functionalities

The SmartVu™ system controls the start-up of the compressors needed to maintain the desired heat exchanger entering and leaving water temperature.

The control panel serves as a user interface and a configuration tool for controlling the operation of the unit. SmartVu™ constantly monitors safety devices that protect the unit against failure and guarantee its optimal functioning.

2.2 - Control panel

Navigation through the SmartVu™ control is either using the touch screen interface or by connecting to the web interface. The navigation menus are the same for both connection methods (touch screen and web browser).



NOTE: Some functions are unavailable when using the web browser interface (see also section 7.1).

2.3 - SmartVu™ components

The controller manages a number of mechanisms that allow the unit to operate effectively, including the following:

- Compressor start-up to control the water loop (screw compressor technology)
- 7" touch screen as standard (SmartVu™)
- Communication protocols (CCN, BACnet, Modbus)
- BMS connection through optional Modbus (TCP or RS485) or BACnet/IP
- Diagnostics, e-mail transmission
- Web connectivity
- Energy Management Module (optional)
- External fixed-speed or variable-speed pump control
- Brine option (option 8) (see also section 6.17)
- Remote unit management
- Energy optimization, power/energy monitoring
- Maintenance schedule management

2.4 - 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 or IP connection.

When the control operates autonomously (Local or Remote), it retains all of its control capabilities but does not offer any features of the Network.

IMPORTANT: Emergency stop! The Network emergency stop command stops the unit regardless of its active operating type.

3 - HARDWARE DESCRIPTION

3.1 - General description

The control system consists of an NRCP2 main board, variators for compressor control, PD-AUX boards and an NRCP2 board for units equipped with energy management option.

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

3.2 - 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.

3.3 - SmartVu™ connections

Connections are located on the bottom and the right side of the controller.

- The control offers communication protocols such as LEN, CCN (Carrier Comfort Network), Modbus, or BACnet.
- It is possible to enable and disable end of line resistors via the System menu (see section 5.6).
- Two Ethernet ports allow for IP communication (Web server, BACnet, Modbus, etc.) for BMS (Building Management System) connection.

7" standard touch screen - bottom view



7" standard touch screen - side view



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 on the NRCP2 board 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 a LEN bus wiring problem.

3 - HARDWARE DESCRIPTION

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 NRCP2 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.

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.

- **Suction gas temperature sensor**

This sensor is used to control the suction gas temperature. It is located inside the compressor, after the motor and before the compression screw.

- **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.

- **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 (Dry Cooler option)**

This sensor is mounted on the control box. 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 (see also section 6.4).

- **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 configured flow rate, the alarm condition shuts off the unit.

3.8 - Frequency variator

The frequency variator is used to control the compressor. It allows compressor start-up and capacity control by modifying the supply frequency. The variator continually monitors many compressor parameters in order to ensure its protection. If a problem occurs, the frequency variator triggers an alarm and if necessary stops the compressor.

The high-pressure switch is directly connected to the frequency variator.

3 - HARDWARE DESCRIPTION

3.9 - Connections at the user terminal block

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

3.9.1 - 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	Connector/channel	Terminal	Board (item in wiring diagram) / option	Remarks
Control evaporator pump 1	J2A/Ch16	90-12	NRCP2 main board (A1)	The controller can regulate one or two evaporator pumps and takes care of the automatic changeover between pumps.
Control evaporator pump 2	J2A/Ch17	90A-12	NRCP2 main board (A1)	The controller can regulate one or two evaporator pumps and takes care of the automatic changeover between pumps.
Control condenser pump 1	J2A/Ch18	95-12	NRCP2 main board (A1)	The controller can regulate one or two condenser pumps and takes care of the automatic changeover between pumps.
Control condenser pump 2	J2A/Ch19	95A-12	NRCP2 main board (A1)	The controller can regulate one or two condenser pumps and takes care of the automatic changeover between pumps.
Alarm relay output	J3/Ch24	30A-31A	NRCP2 main board (A1)	Indicates the alarms.
Running relay output	J3/Ch25	37-38	NRCP2 main board (A1)	This output is ON when at least one compressor is running.
Contact 1: on/off	J4/Ch08	32-33	NRCP2 main board (A1)	This contact is used for the unit on/off control. It is only taken into consideration if the unit is in the remote operating mode (remote mode).
Contact 2: selection of second setpoint	J4/Ch09	65-66	NRCP2 main board (A1)	This contact is only taken into consideration if the unit is in the remote operating mode (remote mode).
Contact 3: capacity limit selection 1	J4/Ch10	73-74	NRCP2 main board (A1)	See description in chapter 3.9.4
Contact 4: heating/cooling mode selection (water-cooled heat pump unit only)	J5/Ch12 (shown on terminal)	34-35	NRCP2 main board (A1)	This contact is only taken into consideration if the unit is in the remote operating mode (remote mode).
User safety loop input	J4/Ch11a	34-35	NRCP2 main board (A1)	This contact is used for the customer safety loops that require unit shut-down if it is closed.
External Variable Speed Pump	J5/Ch10	90+90-	PD-AUX (A1C)	The control can regulate the water flow via the external variable speed pump (0-10 V).
Options				
Three-way valve control output (0-10 V)	J8/Ch7 (shown on terminal)	80-80+	NRCP2 main board (A1 - option 152)	The control allows control of a three-way valve based on the saturated condensing temperature.
Contact, occupancy mode override	J4/Ch08	77-78	NRCP2 EMM (A3)/energy management (option 156)	In the remote operating mode this allows control of the unit occupancy (occupied/unoccupied).
Contact 3bis: capacity limit selection 2	J4/Ch09	73A-74A	NRCP2 EMM (A3)/energy management (option 156)	This contact is only available with the energy management option (see chapter 3.9.4).
User safety loop input	J4/Ch10	34A-35A	NRCP2 EMM (A3)/energy management (option 156)	This contact is used for the customer safety loops that require unit shut-down if it is closed. This contact is only available with the energy management option.
Ice storage contact	J4/Ch11a	75-76	NRCP2 EMM (A3)/energy management (option 156)	This contact is used to select the chilled-water setpoint.
Relay output for unit shut-down after an alarm	J3/Ch24	30-31	NRCP2 EMM (A3)/energy management (option 156)	Indicates if the unit has completely shut down due to an alarm.
Relay output for an alert	J3/Ch25	30B-31B	NRCP2 EMM (A3)/energy management (option 156)	Indicates alerts.
Condenser flow switch input	J5/Ch13 (shown on terminal)	96-97	NRCP2 EMM (A3)/energy management (option 156)	Shows that there is water flow on the condenser side.
Space temperature input for setpoint reset	J6/Ch02 (shown on terminal)	71A-72A	NRCP2 EMM (A3)/energy management (option 156)	Allows setpoint reset, if space temperature reset is selected.
Setpoint reset input	J7A/Ch05 (shown on terminal)	71-72	NRCP2 EMM (A3)/energy management (option 156)	Allows setpoint reset, if reset via the 4-20 mA input is selected.
Capacity limitation input	J7B/Ch06 (shown on terminal)	67-68	NRCP2 EMM (A3)/energy management (option 156)	Allows capacity limitation with a 4-20 mA signal.
Compressor A operation input	J2A/Ch16 (shown on terminal)	37A1 - 38A1	NRCP2 EMM (A3)/energy management (option 156)	Compressor A operating status.

3 - HARDWARE DESCRIPTION

Terminal block connections				
Description	Connector/channel	Terminal	Board (item in wiring diagram) / option	Remarks
Compressor B operation input	J2A/Ch17 (shown on terminal)	37B1 - 38B1	NRCP2 EMM (A3)/energy management (option 156)	Compressor B operating status.
Unit capacity output (0-10 V)	J8/Ch7 (shown on terminal)	79+-79-	NRCP2 EMM (A3)/energy management (option 156)	This output reports the capacity percentage of the unit.
Refrigerant leak detection input 1	J7/Ch13 (shown on terminal)	45-1-46-1	PD-AUX (A4)/leak detection (option 159)	This input is used with the refrigerant leak detection option.
Refrigerant leak detection input 2	J8/Ch14 (shown on terminal)	45-2-46-2	PD-AUX (A4)/leak detection (option 159)	This input is used with the refrigerant leak detection option.
CCN connection			ST3-HMI	RS-485 bus is used for connection to the CCN. - Pin 1: signal + - Pin 2: ground - Pin 3: signal -

3.9.2 - 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.

IMPORTANT: Heating mode is applicable only to 30XWHV and 30XWVHZE units.

3.9.3 - 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

3.9.4 - 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 table (see section 5.1).

3 - HARDWARE DESCRIPTION

3.10 - RS485 wiring (best practice)

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

- For CCN 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.

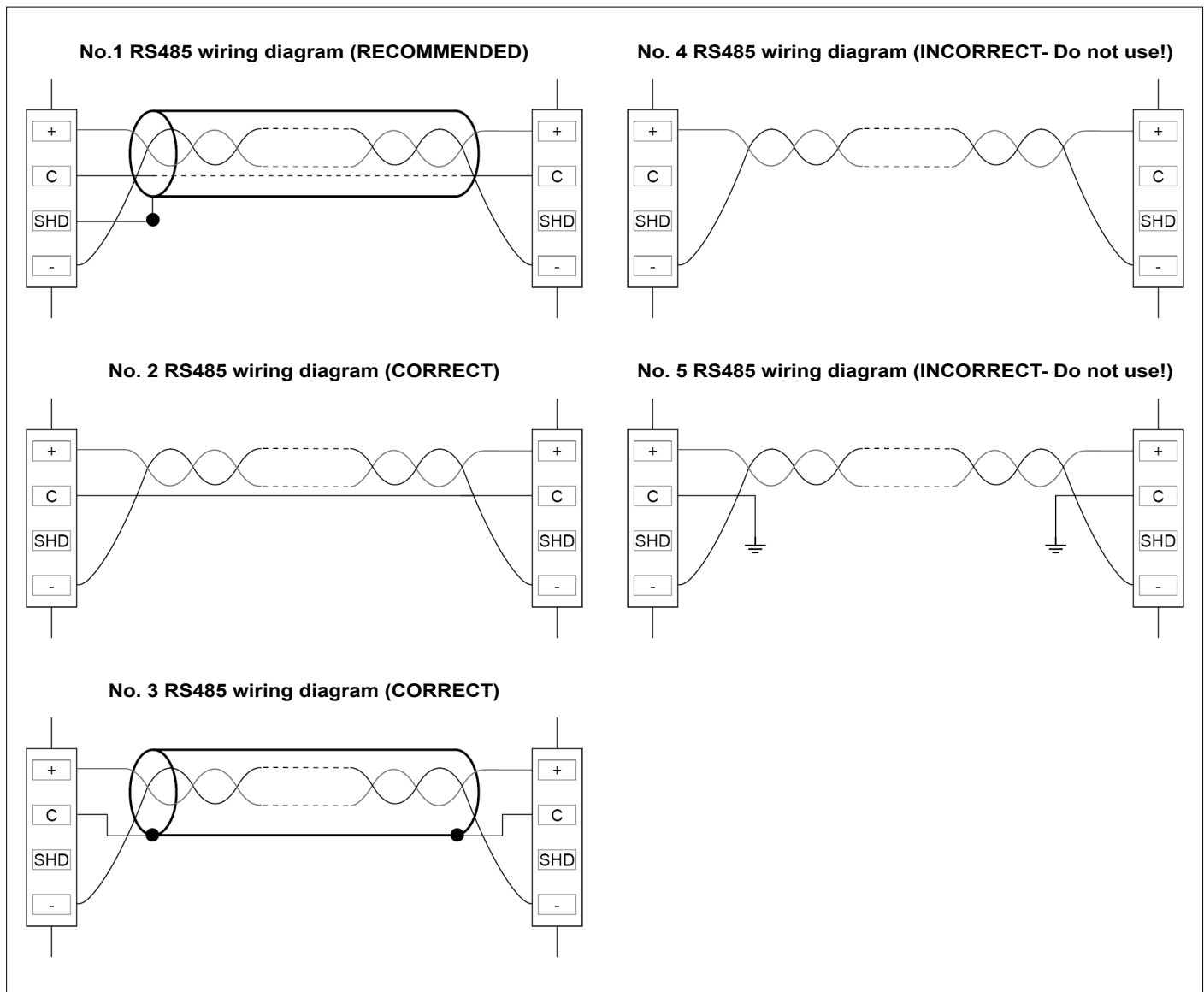
The signal ground could be a single wire or a twisted pair and it should be connected to the “C” pin of J10 (Modbus RTU) or J7 (CCN). This wire is required so that all nodes on the bus share a common ground reference connection.

If a shield is used, then the shield cable should be properly terminated and connected as short as possible at **ONLY ONE END** to the SHD connector pin (7-inch controllers).

3.10.1 - RS485 wiring: 7-inch controller

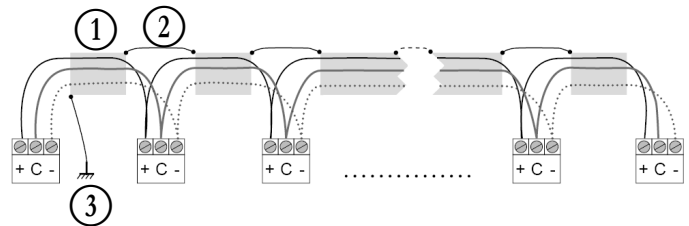
The following diagrams illustrate possible RS485 wiring schemes for 7-inch controllers.

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



3.10.2 - 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 - USER INTERFACE: OVERVIEW

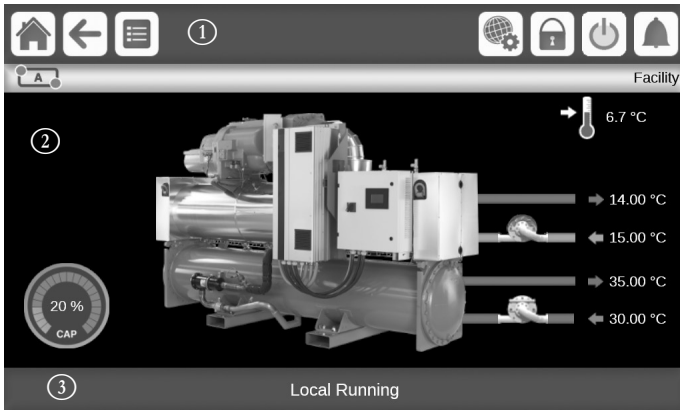
4.1 - Touch screen display

SmartVu™ is a 7-inch (standard) 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).

- **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.**
- **It is recommended to use a stylus for the navigation via the touch screen (not provided with the controller).**

4.2 - Home screen (synoptic view)

The home screen is the starting point of the controller. It is also the first screen shown after starting the user interface.



Legend:

1. Header and subheader buttons (see section 4.5 and section 4.6)
2. Synoptic view / Circuit view (see section 4.3)
3. Information message box (see section 4.4)

Please note that the picture of the chiller is for illustration only and it may differ from the actual look of the chiller that is available on field. The image displayed on the home screen represents the whole series of 30XW-V chillers.

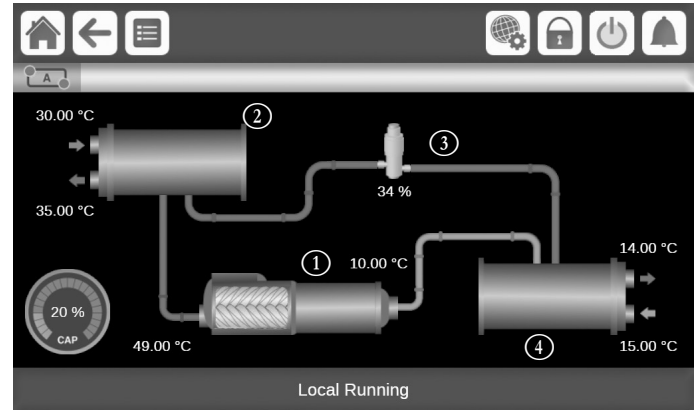
The home screen allows you to monitor basic information about the operation of the chiller and its working conditions.

Icon	Description
	Setpoint: This parameter is used to display the currently selected setpoint. Press the icon to modify the setpoint (possible only when logged in!, see section 5.7).
	Unit capacity: The gauge shows current unit capacity.
	Pump status: Press the icon to go to pump parameters. The pump image is animated when the pump is running.
	Leaving Water Temperature: This parameter shows current leaving water temperature.
	Entering Water Temperature: This parameter shows current entering water temperature.

*Please note that the subheader buttons are only available on 7-inch touch screen.

4.3 - Circuit view

The circuit view can be accessed by pressing the circuit button (see section 4.6).



Icon	Description
	(1) Compressor is used to squeeze the compressor refrigerant gas and turn it into high pressure gas. The image is animated when the screw compressor is running.
	(2) Condenser is a heat exchanger used to cool down the vapour and condense the gas into a liquid.
	(3) EXV is used to control the flow of refrigerant into the evaporator. The circuit view displays the current position of the electronic expansion valve. <i>Valve position is given in %, where 0% means closed position and 100% means open position.</i>
	(4) Evaporator absorbs heat from the air and it does the opposite of the condenser, i.e. the evaporator converts the liquid into gas.
	Circuit capacity: The gauge shows current circuit capacity.
	Leaving Water Temperature: This parameter shows current leaving water temperature.
	Entering Water Temperature: This parameter shows current entering water temperature.

4.4 - Information message box

The information displayed in the status bar at the bottom of the screen includes relevant messages related to actions taken by the user.

Message	Description
SUCCESS	Displayed when the requested action is executed.
INTERNAL COMMUNICATION FAILURE!	Displayed when the main application is not running.
HIGH FORCE IN EFFECT!	Displayed when the controller rejects the "Force" command (applicable only to status menus).
ACCESS DENIED!	Displayed when trying to perform actions not allowed at current access level.

4 - USER INTERFACE: OVERVIEW

4.5 - Header buttons



Button	Description
	Home screen: Press the button to go to the Home screen.
	Previous screen: Press the button to go back to the previous screen.
	Main menu: Press the button to go to the Main menu.
	System menu: Press the button to go to the System menu.
	Login menu: Used to log in to the controller in order to access higher configuration level.
	User is not logged in.
	Service technician access level.
	User access level.
	Factory access level.
	Start/Stop menu: Used to control the unit control mode.
	Unit is currently stopped (blue icon).
	Unit is currently running (green icon).
	Alarms menu: Press the button to go to the Alarms menu.
	The grey bell means there is currently no alarm active on the unit.
	The yellow ringing bell means that there is a partial alarm (one circuit affected by the alarm) or Alert (no action taken on the unit).
	The red ringing bell means that the unit is affected by the alarm.



















4.6 - Subheader buttons

Button *	Description
	Circuit view: Press the button to go to the circuit view.
	Green lights in the corners of the circuit icon mean the circuit is currently running.
	Grey lights in the corners of the circuit icon mean the circuit is currently stopped.

* Please note that the letter inside the circuit icon stands for the circuit, i.e. "A" stands for circuit A, "B" stands for circuit B.

4 - USER INTERFACE: OVERVIEW

4.7 - Other buttons

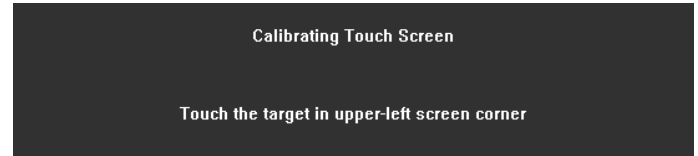
Button	Description
	Save button: Press the button to save the modification.
	Cancel button: Press the button to cancel the modification.
	Log in button: Press the button to log in at specific access level.
	Log off button: Press the button to log off.
	Confirm button: Press the button to confirm the modification.
	Cancel button: Press the button to cancel the modification.
	Up button: Press the button to scroll up.
	Down button: Press the button to scroll down.
	Force button: Press the button to force the parameter.
	Remove Force button: Press the button to remove the forced parameter.
	Trending button: Press the button to display trends.
	Refresh button: Press the button to refresh the view.
	Zoom in button: Press the button to magnify the current view.
	Zoom out button: Press the button to expand the current view.
	Left button: Press the button to go to the left.
	Rewind button: Press the button to go to the left faster than normal.
	Right button: Press the button to go to the right.
	Fast-forward button: Press the button to go the right faster than normal.

4.8 - Screen calibration

The purpose of screen calibration is to make sure that the software acts correctly upon pressing icons on the user interface.

To calibrate the screen

1. Press and hold anywhere on the screen.
2. The calibration process will start.
3. Please follow instructions displayed on the screen:
"Touch the target in (...) screen corner"



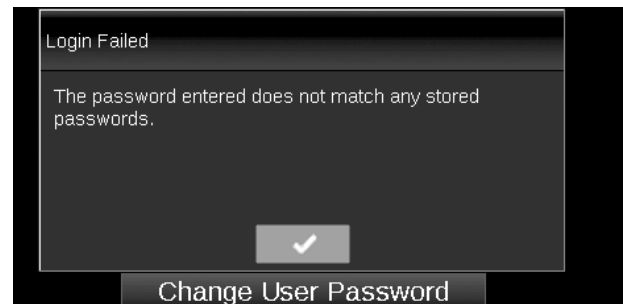
4.9 - Warning messages

Warning messages are used to inform the user that a problem occurred and the requested action cannot be completed successfully.

Login failure

If the wrong password is provided, the following warning message will be displayed:

"The password entered does not match any stored passwords"

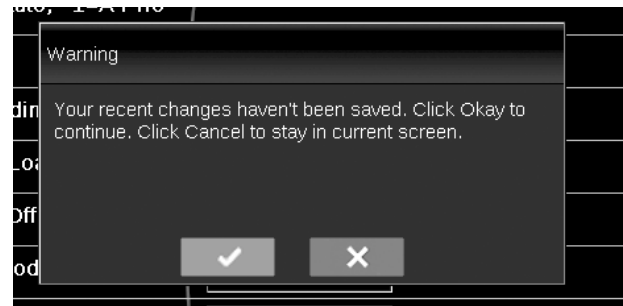


- Press the **Confirm** button and type the correct password (see section 5.7).

Saving modifications

In case a parameter has been changed, but not saved with the **Save** button, the following warning message will be displayed:

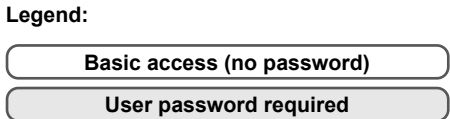
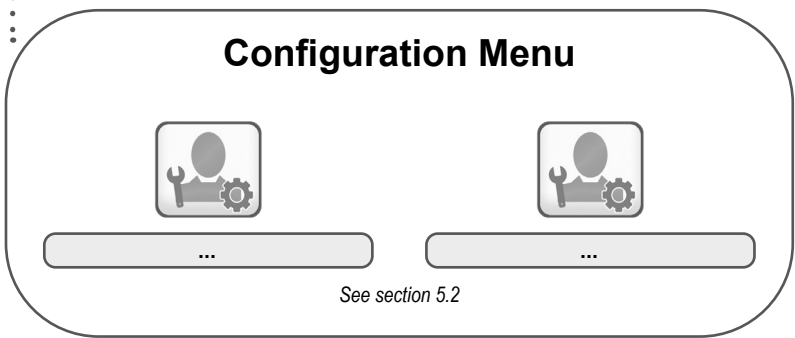
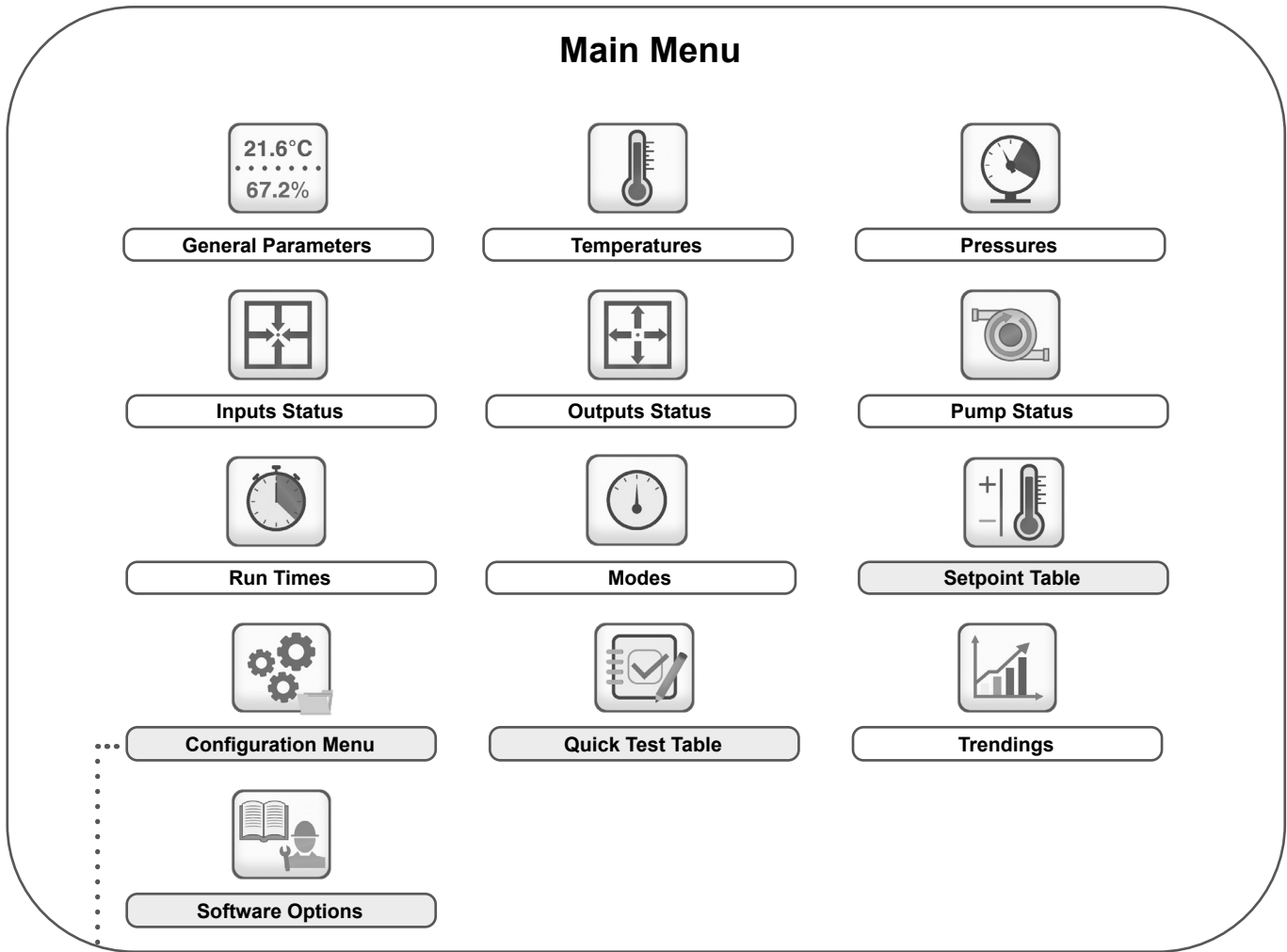
"Your recent changes haven't been saved (...)"



- Press the **Confirm** button to continue without saving the modification.
- Press the **Cancel** button to come back to the current screen and then save the modification with the **Save** button.

5 - USER INTERFACE: MENU STRUCTURE

5.1 - Main menu



5 - USER INTERFACE: MENU STRUCTURE

The Main menu 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 Home screen.
- Specific unit parameters can be accessed by pressing the icon corresponding to the desired category.

NOTE: The Trendings menu is displayed in form of a graph. For more information about Trendings, see section 6.22.

CAUTION: Since specific units may not include additional features, some tables may contain parameters that cannot be configured for a given unit.

21.6°C
.....
67.2%

GENUNIT – General Parameters

Name	Status	Unit	Displayed text*	Description
CTRL_TYP	0 to 2	-	Local=0 Net.=1 Remote=2	Operating mode: 0 = Local 1 = Network 2 = Remote
STATUS	-	-	Run Status	Unit running status: Off, Stopping, Delay, Running, Ready, Override, Tripout, Test, Runtest
CHIL_S_S	disable/enable	-	Net.: Cmd Start/Stop	Unit start/stop via Network
CHIL_OCC	no/yes	-	Net.: Cmd Occupied	Unit time schedule via Network
min_left	-	min	Minutes Left for Start	Minutes before the unit start-up
HEATCOOL	-	-	Heat/Cool status	Heating/cooling status
HC_SEL	0 to 2	-	Heat/Cool Select	Heating/cooling selection
	-	-	0=Cool. 1=Heat. 2=Auto	0 = Cooling 1 = Heating 2 = Automatic heating/cooling control
SP_SEL	0 to 2	-	Setpoint Select	Setpoint selection
	-	-	0=Auto. 1=Spt1. 2=Spt2	0 = Automatic setpoint selection 1 = Setpoint 1 2 = Setpoint 2
SP_OCC	no/yes	-	Setpoint Occupied?	Setpoint status
CAP_T	0 to 100	%	Percent Total Capacity	Total unit capacity
SP	-	°C / °F	Current Setpoint	Current setpoint value
CTRL_PNT	-20 to 67 -4 to 153	°C °F	Control Point	Control point
TOT_CURR	-	AMPS	Actual Chiller Current	Actual chiller current
CURR_LIM	0 to 2000	AMPS	Chiller Current Limit	Chiller current limit
EMSTOP	disable/enable	-	Emergency Stop	Emergency stop
DEM_LIM	0 to 100	%	Active Demand Limit Val	Active demand limit value

* Depends on the selected language (English by default)



TEMP – Temperatures

Name	Status	Unit	Displayed text*	Description
COOL_EWT	-	°C / °F	Cooler Entering Fluid	Evaporator entering water temperature
COOL_LWT	-	°C / °F	Cooler Leaving Fluid	Evaporator leaving water temperature
COND_EWT	-	°C / °F	Condenser Entering Fluid	Condenser entering water temperature
COND_LWT	-	°C / °F	Condenser Leaving Fluid	Condenser leaving water temperature
SCT_A	-	°C / °F	Saturated Cond Tmp cir A	Saturated condensing temperature, circuit A
SST_A	-	°C / °F	Saturated Suction Temp A	Saturated suction temperature, circuit A
SUCT_A	-	°C / °F	Compressor Suction Tmp A	Compressor suction temperature, circuit A
DGT_A	-	°C / °F	Discharge Gas Temp cir A	Discharge gas temperature, circuit A
CP_TMP_A	-	°C / °F	Motor Temperature cir A	Motor temperature, circuit A
SCT_B	-	°C / °F	Saturated Cond Tmp cir B	Saturated condensing temperature, circuit B
SST_B	-	°C / °F	Saturated Suction Temp B	Saturated suction temperature, circuit B
SUCT_B	-	°C / °F	Compressor Suction Tmp B	Compressor suction temperature, circuit B
DGT_B	-	°C / °F	Discharge Gas Temp cir B	Discharge gas temperature, circuit B
CP_TMP_B	-	°C / °F	Motor Temperature cir B	Motor temperature, circuit B
SPACETMP	-	°C / °F	Optional Space Temp	Optional space temperature
CHWSTEMP	-	°C / °F	CHWS Temperature	Master/slave common water temperature
CHWSHEAT	-	°C / °F	CHWS Heat Temp	Master/Slave common heat fluid temperature (available depending on unit configuration)
dc_lwt	-	°C / °F	Dry Cool Leav Water Tmp	Dry cooler - leaving water temperature
OAT	-	°C / °F	External Temperature	External temperature

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

5 - USER INTERFACE: MENU STRUCTURE



PRESSURE – Pressures

Name	Status	Unit	Displayed text*	Description
DP_A	-	kPa	Discharge Pressure A	Discharge pressure, circuit A
SP_A	-	kPa	Main Suction Pressure A	Suction pressure, circuit A
OP_A	-	kPa	Oil Pressure A	Oil pressure, circuit A
DOP_A	-	kPa	Oil Pressure DifferenceA	Oil pressure difference, circuit A
DP_B	-	kPa	Discharge Pressure B	Discharge pressure, circuit B
SP_B	-	kPa	Main Suction Pressure B	Suction pressure, circuit B
OP_B	-	kPa	Oil Pressure B	Oil pressure, circuit B
DOP_B	-	kPa	Oil Pressure DifferenceB	Oil pressure difference, circuit B

* Depends on the selected language (English by default)



INPUTS – Inputs Status

Name	Status	Unit	Displayed text*	Description
ONOFF_SW	open/close	-	Remote On/Off Switch	Remote On/Off switch
HC_SW	open/close	-	Remote HeatCool Switch	Remote heating/cooling selection switch
SETP_SW	open/close	-	Remote Setpoint Switch	Setpoint selection switch
LIM_SW1	open/close	-	Limit Switch 1	Demand limit switch 1
LIM_SW2	open/close	-	Limit Switch 2	Demand limit switch 2
OIL_L_A	open/close	-	Oil Level Input A	Oil level input, circuit A
OIL_L_B	open/close	-	Oil Level Input B	Oil level input, circuit B
SP_RESET	-	mA	Reset/Setpnt4-20mA Sgnl	4-20 mA signal, setpoint reset
LIM_ANAL	-	mA	Limit 4-20mA Signal	4-20 mA signal, capacity limit
leak_v	-	V	Leakage detector 1 val	Leakage detection (Refrigerant leak detection option)
leak_2_v	-	V	Leakage detector 2 val	Leakage detection (Refrigerant leak detection option)
REM_LOCK	open/close	-	Customer Interlock	Customer interlock
ICE_SW	open/close	-	Ice Done Storage Switch	Ice storage end switch
OCC_OVSW	open/close	-	Occupied Override Switch	Occupied override switch

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



OUTPUTS – Output Status

Name	Status	Unit	Displayed text*	Description
CP_A	off/on	-	Compressor A	Compressor A status
OIL_SL_A	off/on	-	Oil Solenoid Output A	Oil solenoid output, circuit A
SLID_1_A	off/on	-	Slide Valve 1 Output A	Slide valve 1 output, circuit A
SLID_2_A	off/on	-	Slide Valve 2 Output A	Slide valve 2 output, circuit A
CAPT010A	-	V	Capacity Signal Cir A	0-10 V capacity signal, circuit A
CP_B	off/on	-	Compressor B	Compressor B status
OIL_SL_B	off/on	-	Oil Solenoid Output B	Oil solenoid output, circuit B
SLID_1_B	off/on	-	Slide Valve 1 Output B	Slide valve 1 output, circuit B
SLID_2_B	off/on	-	Slide Valve 2 Output B	Slide valve 2 output, circuit B
CAPT010B	-	V	Capacity Signal Cir B	0-10 V capacity signal, circuit B
CAPT_010	-	V	Chiller Capacity signal	Chiller capacity signal
ALARM	off/on	-	Alarm Relay Status	Alarm relay status
RUNNING	off/on	-	Running Relay Status	Running relay status
ALERT	off/on	-	Alert Relay State	Alert relay state
SHUTDOWN	off/on	-	Shutdown Indicator State	Shutdown indicator status
pos_3wv	0 to 100	%	Cond 3 Way Valve Pos	Condenser 3-way valve position
dryfan_1	off/on	-	Drycooler Fan 1	Output, dry cooler 1
dryfan_2	off/on	-	Drycooler Fan 2	Output, dry cooler 2
dryfan_3	off/on	-	Drycooler Fan 3	Output, dry cooler 3
dryfan_4	off/on	-	Drycooler Fan 4	Output, dry cooler 4
dryfan_5	off/on	-	Drycooler Fan 5	Output, dry cooler 5
dryfan_6	off/on	-	Drycooler Fan 6	Output, dry cooler 6
dryfan_7	off/on	-	Drycooler Fan 7	Output, dry cooler 7
dryfan_8	off/on	-	Drycooler Fan 8	Output, dry cooler 8
dcvfan1	0 to 10	V	Dry Cool Vfan 1 Output	Dry Cooler variable speed fan 1 output
dcvfan2	0 to 10	V	Dry Cool Vfan 2 Output	Dry Cooler variable speed fan 2 output

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

5 - USER INTERFACE: MENU STRUCTURE



PUMPSTAT – Pump Status

Name	Status	Unit	Displayed text*	Description
SET_FLOW	no/yes	-	Cooler Flow Setpoint Out	Evaporator flow setpoint output
CPUMP_1	off/on	-	Cooler Pump #1 Command	Evaporator pump 1 control
CPUMP_2	off/on	-	Cooler Pump #2 Command	Evaporator pump 2 control
ROTCPUMP	no/yes	-	Rotate Cooler Pumps ?	Evaporator pumps rotation
FLOW_SW	open/close	-	Cooler Flow Switch	Evaporator flow switch
HPUMP_1	off/on	-	Condenser Pump Command1	Condenser pump 1 control
HPUMP_2	off/on	-	Condenser Pump Command2	Condenser pump 2 control (not available!)
ROTHPUMP	no/yes	-	Rotate Condenser Pumps ?	Condenser pumps rotation (not available!)
CONDFLOW	open/close	-	Condenser Flow Status	Condenser flow status
VPMP_CMD	0 to 100	%	Variable speed pump cmd	Variable speed pump command

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



RUNTIME – Run Times

Name	Status	Unit	Displayed text*	Description
HR_MACH	-	hour	Machine Operating Hours	Unit operating hours
st_mach	-	-	Machine Starts Number	Number of unit starts
hr_cp_a	-	hour	Compressor A Hours	Operating hours, compressor A
st_cp_a	-	-	Compressor A Starts	Number of starts, compressor A
hr_cp_b	-	hour	Compressor B Hours	Operating hours, compressor B
st_cp_b	-	-	Compressor B Starts	Number of starts, compressor B
hr_cpum1	-	hour	Cooler Pump #1 Hours	Operating hours, evaporator pump 1
hr_cpum2	-	hour	Cooler Pump #2 Hours	Operating hours, evaporator pump 2
hr_hpum1	-	hour	Condenser Pump #1 Hours	Operating hours, condenser pump 1
hr_hpum2	-	hour	Condenser Pump #2 Hours	Operating hours, condenser pump 2 (not available!)

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

NOTE: The displayed run times are updated every hour.



MODES – Modes

Name	Status	Unit	Displayed text*	Description
m_delay	no/yes	-	Start Up Delay In Effect	Start-up delay in effect
m_2stpt	no/yes	-	Second Setpoint In Use	Second setpoint in use
m_reset	no/yes	-	Reset In Effect	Setpoint reset active
m_demlim	no/yes	-	Demand limit Active	Demand limit active
m_pmprot	no/yes	-	Cooler Pump Rotation	Evaporator pump rotation
m_pmpper	no/yes	-	Pump Periodic Start	Pump periodic start active
m_night	no/yes	-	Night Low Noise Active	Night low noise active
m_slave	no/yes	-	Master Slave Active	Master/slave mode active
m_autoch	no/yes	-	Auto Changeover Active	Automatic changeover active
m_cpmpo	no/yes	-	Condenser Pump Rotation	Condenser pump rotation (not available!)
m_cpmppr	no/yes	-	Cond Pump Periodic Start	Condenser pump periodic start
m_ice	no/yes	-	Ice Mode In Effect	Ice storage mode active

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



SETPOINT – Setpoint Table

Name	Status	Default	Unit	Displayed text*	Description
csp1	-28.9 to 26.0 -20.0 to 78.8	6.7 44.0	°C °F	Cooling Setpoint 1	Cooling setpoint 1
csp2	-28.9 to 26.0 -20.0 to 78.8	6.7 44.0	°C °F	Cooling Setpoint 2	Cooling setpoint 2
ice_sp	-28.9 to 26.0 -20.0 to 78.8	6.7 44.0	°C °F	Cooling Ice Setpoint	Ice storage setpoint
cramp_sp	0.1 to 11.1 0.2 to 20.0	0.6 1.0	^C ^F	Cooling Ramp Loading	Cooling ramp loading setpoint
hsp1	26.7 to 63** 80.0 to 145.4**	37.8 100	°C °F	Heating Setpoint 1**	Heating setpoint 1

5 - USER INTERFACE: MENU STRUCTURE



SETPOINT – Setpoint table (continued)

Name	Status	Default	Unit	Displayed text*	Description
hsp2	26.7 to 63** 80.0 to 145.4**	37.8 100	°C °F	Heating Setpoint 2**	Heating setpoint 2
hramp_sp	0.1 to 11.1 0.2 to 20.0	0.6 1.0	°C °F	Heating Ramp Loading	Heating ramp loading setpoint
cauto_sp	3.9 to 50.0 39.0 to 122.0	23.9 75.0	°C °F	Cool Changeover Setpt	Cooling changeover setpoint
hauto_sp	0 to 46 32 to 115	17.8 64.0	°C °F	Heat Changeover Setpt	Heating changeover setpoint
w_sct_sp	26.7 to 48.9 80.0 to 120.0	35.0 95.0	°C °F	Water Val Condensing Stp	Water valve condensing setpoint
lim_sp1	0 to 100	100	%	Switch Limit Setpoint 1	Limit setpoint switch 1
lim_sp2	0 to 100	100	%	Switch Limit Setpoint 2	Limit setpoint switch 2
lim_sp3	0 to 100	100	%	Switch Limit Setpoint 3	Limit setpoint switch 3
vpmpdtsp	1.0 to 20 1.8 to 36.0	5.0 9.0	°C °F	Varipump Delta Temp Stp	Variable speed pump delta temperature setpoint

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

** For R134 units heating setpoint max is 50°C (122°F), for R1234ze and R515B units heating setpoint max is 55°C (131°F)



QCK_TEST – Quick Test Table

Name	Status	Default	Unit	Displayed text*	Description
			-	Unit must be in Loff	To enable the Quick Test functionality, the unit must be stopped (Local off mode)
QCK_TEST	disable/enable	disable	-	Quick Test Enable	This parameter is used to enable the Quick Test functionality (Quick test Enable = yes) With Quick Test enabled: Forcing a specific parameter given in this table allows the user to verify if the component behaves correctly
Q_EXVA	0 to 100	0	%	Circuit A EXV Position	EXV position, circuit A 100% = EXV fully open
Q_OILS_A	off/on	off	-	Circuit A Oil Solenoid	Oil solenoid valve test, circuit A
Q_SLI_1A	off/on	off	-	Circuit A Slide Valve 1	Slide valve 1 test, circuit A
Q_SLI_2A	off/on	off	-	Circuit A Slide Valve 2	Slide valve 2 test, circuit A
Q_010_A	0 to 100	0	%	Capacity cirA Output	Capacity output test, circuit A
Q_COMPA	off/on	off	-	Comp A running Output	Compressor running output test, circuit A
Q_EXVB	0 to 100	0	%	Circuit B EXV Position	EXV position, circuit B 100% = EXV fully open
Q_OILS_B	off/on	off	-	Circuit B Oil Solenoid	Oil solenoid valve test, circuit B
Q_SLI_1B	off/on	off	-	Circuit B Slide Valve 1	Slide valve 1 test, circuit B
Q_SLI_2B	off/on	off	-	Circuit B Slide Valve 2	Slide valve 2 test, circuit B
Q_010_B	0 to 100	0	%	Capacity cirB Output	Capacity output test, circuit B
Q_COMPB	off/on	off	-	Comp B running Output	Compressor running output test, circuit B
Q_3W_VLV	0 to 100	0	%	3 way valve position	3-way valve position
Q_CPMP1	0 to 2	0	-	Cooler Pump 1	Cooler pump 1 test: 1 = Pump shall run for a short period of time 2 = Pump shall run all the time (set the value to "0" to stop the pump test)
Q_CPMP2	0 to 2	0	-	Cooler Pump 2	Cooler pump 2 test: 1 = Pump shall run for a short period of time 2 = Pump shall run all the time (set the value to "0" to stop the pump test)
Q_HPMP1	0 to 2	0	-	Condenser Pump 1	Condenser pump 1 test: 1 = Pump shall run for a short period of time 2 = Pump shall run all the time (set the value to "0" to stop the pump test)
Q_HPMP2	0 to 2	0	-	Condenser Pump 2	Condenser pump 2 test: 1 = Pump shall run for a short period of time 2 = Pump shall run all the time (set the value to "0" to stop the pump test)
Q_ALARM	off/on	off	-	Alarm Relay Status	Alarm relay test
Q_SHUTD	off/on	off	-	Shutdown Relay Status	Shutdown relay test
Q_RUN	off/on	off	-	Running Relay Status	Running relay test
Q_ALERT	off/on	off	-	Alert Relay Switch	Alert relay switch test

5 - USER INTERFACE: MENU STRUCTURE



QCK_TEST – Quick Test Table (continued)

Name	Status	Default	Unit	Displayed text*	Description
Q_SETFLO	off/on	off	-	Set Flow Switch	Flow switch test
Q_CAP010	0 to 100	0	%	Capacity Total Output	Total capacity output test
Q_D_FAN1	off/on	off	-	Dry Cooler Fan 1	Dry cooler fan stage 1 test
Q_D_FAN2	off/on	off	-	Dry Cooler Fan 2	Dry cooler fan stage 2 test
Q_D_FAN3	off/on	off	-	Dry Cooler Fan 3	Dry cooler fan stage 3 test
Q_D_FAN4	off/on	off	-	Dry Cooler Fan 4	Dry cooler fan stage 4 test
Q_D_FAN5	off/on	off	-	Dry Cooler Fan 5	Dry cooler fan stage 5 test
Q_D_FAN6	off/on	off	-	Dry Cooler Fan 6	Dry cooler fan stage 6 test
Q_D_FAN7	off/on	off	-	Dry Cooler Fan 7	Dry cooler fan stage 7 test
Q_D_FAN8	off/on	off	-	Dry Cooler Fan 8	Dry cooler fan stage 8 test
Q_DCVF1	0 to 10	0	V	Dry Cool varifan out 1	Dry cooler Varifan output 1 test
Q_DCVF2	0 to 10	0	V	Dry Cool varifan out 2	Dry cooler Varifan output 2 test
Q_VPMP_C	0 to 100	0	%	Variable Pump Command	Variable-speed pump test
HP_TEST	-1 to 1	-1	-	Hi Press Pressostat Test	High Pressure test: When activated, the unit will run until the High Pressure Safety Switch is open -1 = No test 0 = High Pressure test, circuit A 1 = High Pressure test, circuit B

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



TRENDING – Trendings

Name	Status	Unit	Displayed text*	Description
GENUNIT_CAP_T	0 to 100	%	GENUNIT_CAP_T	Total Capacity
GENUNIT_CTRL_PNT	-	°C / °F	GENUNIT_CTRL_PNT	Control Point
TEMP_OAT	-	°C / °F	TEMP_OAT	Outdoor Air Temperature
TEMP_COOL_EWT	-	°C / °F	TEMP_COOL_EWT	Cooler Entering Fluid
TEMP_COOL_LWT	-	°C / °F	TEMP_COOL_LWT	Cooler Leaving Fluid
TEMP_SCT_A	-	°C / °F	TEMP_SCT_A	Saturated Cond Tmp cir A
TEMP_SCT_B	-	°C / °F	TEMP_SCT_B	Saturated Cond Tmp cir B
TEMP_SST_A	-	°C / °F	TEMP_SST_A	Saturated Suction Temp A
TEMP_SST_B	-	°C / °F	TEMP_SST_B	Saturated Suction Temp B

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



OPT_STA – Software Options

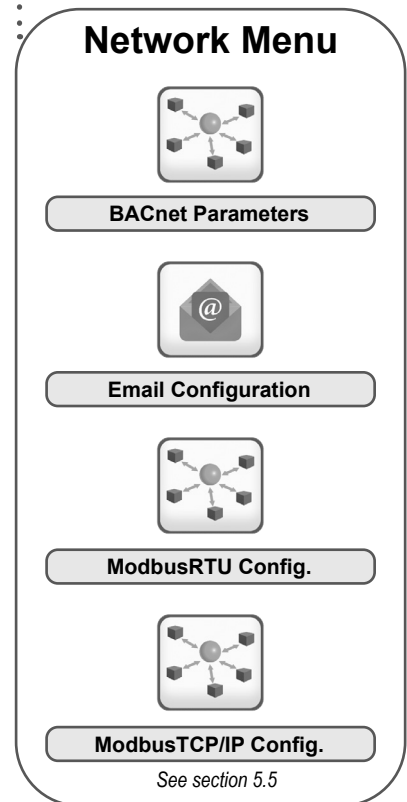
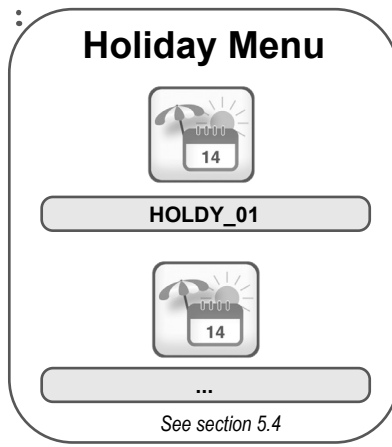
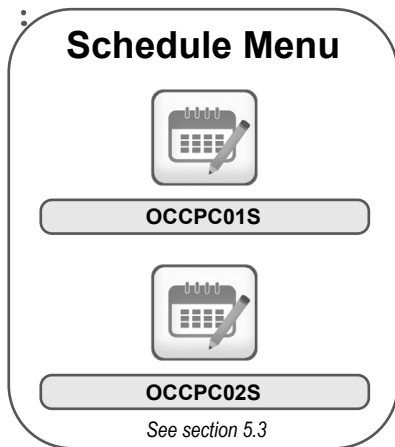
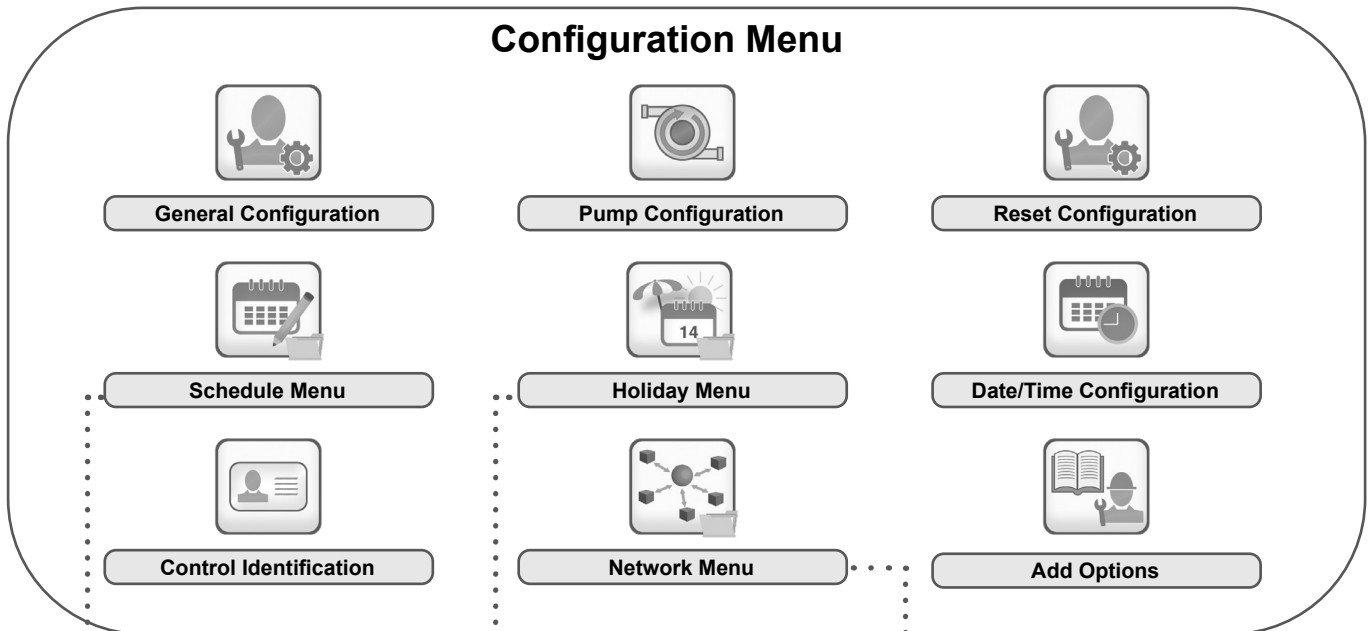
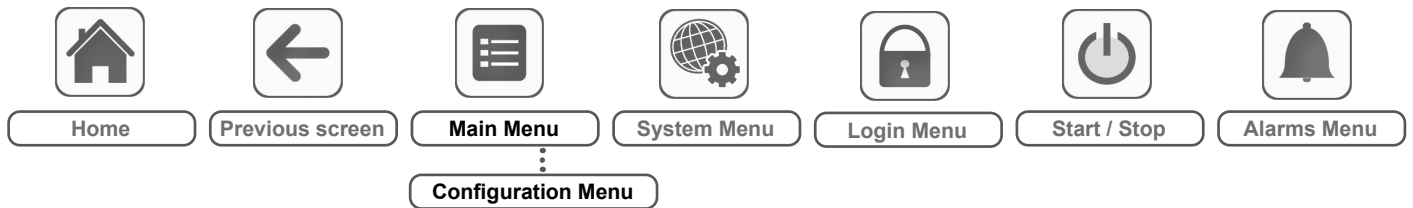
Name	Status	Default	Unit	Displayed text*	Description
opt5	no/yes	-	-	OPT5: Medium Brine	<i>Not available</i>
opt6	no/yes	-	-	OPT6: Low Brine	<i>Not available</i>
opt8	no/yes	-	-	OPT8: Light Brine	Light brine option requires a Software Activation Key (see also section 6.17)
opt149	no/yes	-	-	OPT149: BACnet	BACnet option requires a Software Activation Key (see also section 6.18)
opt149B	no/yes	-	-	OPT149B: Modbus	Modbus option requires a Software Activation Key (see also section 6.19)
opt295	no/yes	-	-	OPT295: Fast Cap Reco	Fast capacity recovery option requires a Software Activation Key (see also section 6.20)

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

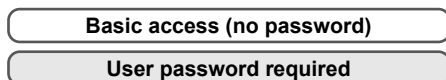
NOTE: Since specific units may not include certain options, some tables provided in the document contain parameters that cannot be configured for a given unit.

5 - USER INTERFACE: MENU STRUCTURE

5.2 - Configuration menu



Legend:



5 - USER INTERFACE: MENU STRUCTURE

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 Home screen, and then select **Configuration Menu**.
- Once all the necessary modifications have been made, press the **Save** button to confirm your changes or the **Cancel** button to exit the screen without making modifications.

System configuration override: In some cases it is possible to override system configuration. Note that not all parameters can be overridden by the control.

CAUTION: *Since specific units may not include additional features, some tables may contain parameters that cannot be configured for a given unit.*



GENCONF – General Configuration

Name	Status	Default	Unit	Displayed text*	Description
prio_cir	0 to 2	0	-	Cir Priority Sequence	Circuit priority
				0=Auto, 1=A Prio	0 = Automatic circuit selection 1 = Circuit A priority
				2=B Prio	2 = Circuit B priority
seq_typ	no/yes	no	-	Staged Loading Sequence	<i>Not available</i>
ramp_sel	no/yes	no	-	Ramp Loading Select	Ramp loading selection
off_on_d	1 to 15	1	min	Unit Off to On Delay	Unit Off to On delay
lim_sel	0 to 2	0	-	Demand Limit Type Select	Demand limit selection
				0 = None	0 = None
				1 = Switch Control	1 = Switch control
				2 = 4-20mA Control	2 = 4-20 mA control
nh_start	00:00	0	-	Night Mode Start Hour	Night mode start time
nh_end	00:00	0	-	Night Mode End Hour	Night mode end time
nh_limit	0 to 100	100	%	Night Capacity Limit	Night capacity limit
curr_sel	no/yes	no	-	Current Limit Select	<i>Not available</i>
ice_cnfg	no/yes	no	-	Ice Mode Enable	Ice mode enabled
curr_max	0 to 4000	2000	AMPS	Maximum Current Limit	<i>Not available</i>
shortcyc	no/yes	no	-	Short cycle management	Short cycle management (compressor protection)
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)
min_3w	0 to 50	0	%	3way Valve Min Position	3-way valve minimum position
max_3w	20 to 100	100	%	3way Valve Max Position	3-way valve maximum position
al_rever	no/yes	no	-	Reverse Alarms Relay	Alarm / Alert signals reverted No = standard operation Yes = alarm/alert/shutdown outputs are "On" even if there is no alarm/alert (alarm output unavailable)

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



PUMPCONF – Pump Configuration

Name	Status	Default	Unit	Displayed text*	Description
hpumpseq	0 to 4	0	-	Condenser Pumps Sequence	Condenser pumps sequence **
cpumpseq	0 to 4	0	-	Cooler Pumps Sequence	Evaporator pumps sequence
				0 = No Pump	0 = No pump
				1 = One Pump Only	1 = One pump
				2 = Two Pumps Auto	2 = Two pumps automatic control
				3 = Pump#1 Manual	3 = Pump 1 manual
				4 = Pump#2 Manual	4 = Pump 2 manual
pump_del	24 to 3000	48	hour	Pump Auto Rotation Delay	Pump rotation delay
pump_per	no/yes	no	-	Pump Sticking Protection	Pump sticking protection
pump_sby	no/yes	no	-	Stop Pump During Standby	Pump stop when the unit is in standby
pump_loc	no/yes	yes	-	Flow Checked If Pump Off	Flow check when the pump is off
stopheat	no/yes	no	-	Cooler Pump Off In Heat	Evaporator pump off in Heating
stopcool	no/yes	no	-	Cond Pump Off In Cool	Condenser pump off in Cooling
pg_evsp	-20 to 20	1.2	-	Prop PID gain EVSP Ctrl	Proportional PID gain, EVSP control
ig_evsp	-5 to 5	0.2	-	Int PID gain EVSP Ctrl	Integral PID gain, EVSP control
dg_evsp	-20 to 20	0.4	-	Deri PID gain EVSP Ctrl	Derivative PID gain, EVSP control
min_evsp	0 to 100	50	-	Min Speed EVSP Control	Minimum pump speed, EVSP control
max_evsp	0 to 100	100	-	Max Speed EVSP Control	Maximum pump speed, EVSP control

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

** Please note that the unit can control only one condenser pump. This value can be set to "0" or "1".

5 - USER INTERFACE: MENU STRUCTURE



RESETCFG – Reset Configuration

Name	Status	Default	Unit	Displayed text*	Description
cr_sel	0 to 4	0	-	Cooling Reset Select	Cooling reset selection
hr_sel	0 to 4	0	-	Heating Reset Select	Heating reset selection
				0=None, 1=OAT	0 = None 1 = OAT
				2=Delta T, 4=Space Temp	2 = Delta T 4 = Space temperature
				3=4-20mA control	3 = 4-20 mA control
				Cooling	Cooling
oat_crno	-10.0 to 51.7 14.0 to 125.0	-10 14	°C °F	OAT No Reset Value	OAT, no reset value
oat_crfu	-10.0 to 51.7 14.0 to 125.0	-10 14	°C °F	OAT Full Reset Value	OAT, max. reset value
dt_cr_no	0 to 13.9 0 to 25.0	0 0	°C °F	Delta T No Reset Value	Delta T, no reset value
dt_cr_fu	0 to 13.9 0 to 25.0	0 0	°C °F	Delta T Full Reset Value	Delta T, max. reset value
v_cr_no	0 to 20	0	mA	Current No Reset Value	Current, no reset value
v_cr_fu	0 to 20	0	mA	Current Full Reset Value	Current, max. reset value
spacr_no	-10.0 to 51.7 14.0 to 125.0	-10 14	°C °F	Space T No Reset Value	Space temperature, no reset value
spacr_fu	-10.0 to 51.7 14.0 to 125.0	-10 14	°C °F	Space T Full Reset Value	Space temperature, max. reset value
cr_deg	-16.7 to 16.7 -30.0 to 30.0	0 0	°C °F	Cooling Reset Deg. Value	Maximum cooling reset value
				Heating	Heating
oat_hrno	-10.0 to 51.7 14.0 to 125.0	-10 14	°C °F	OAT No Reset Value	OAT, no reset value
oat_hrfu	-10.0 to 51.7 14.0 to 125.0	-10 14	°C °F	OAT Full Reset Value	OAT, max. reset value
dt_hr_no	0 to 13.9 0 to 25.0	0 0	°C °F	Delta T No Reset Value	Delta T, no reset value
dt_hr_fu	0 to 13.9 0 to 25.0	0 0	°C °F	Delta T Full Reset Value	Delta T, max. reset value
v_hr_no	0 to 20	0	mA	Current No Reset Value	Current, no reset value
v_hr_fu	0 to 20	0	mA	Current Full Reset Value	Current, max. reset value
spahr_no	-10.0 to 51.7 14.0 to 125.0	-10 14	°C °F	Space T No Reset Value	Space temperature, no reset value
spahr_fu	-10.0 to 51.7 14.0 to 125.0	-10 14	°C °F	Space T Full Reset Value	Space temperature, max. reset value
hr_deg	-16.7 to 16.7 -30.0 to 30.0	0 0	°C °F	Heating Reset Deg. Value	Maximum heating reset value

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



DATETIME – Date/Time Configuration

Status	Default	Displayed text*
on/off	Daylight Saving Time	Summer/winter time activation
Greenwich Mean Time (UTC)	Location	Time zone
YYYY/MM/DD, HH:MM:SS	Date/Time	Current date and time (must be set manually)
no/yes	Today is a Holiday	Information about holidays (read-only). Please note that holidays are set in the Holiday menu (see also section 5.4)
no/yes	Tomorrow is a Holiday	Information about the upcoming holiday period (read-only). Please note that holidays are set in the Holiday menu (see also section 5.4)

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

NOTE: The Date/Time Configuration menu appears also in the System menu (see also section 5.6).

5 - USER INTERFACE: MENU STRUCTURE



CTRLID – Control Identification

Status	Default	Displayed text*	Description
1-239	1	CCN Element Number	Element number
0-239	0	CCN Bus Number	Bus number
9600 / 19200 / 38400	9600	CCN Baud Rate	Communication speed
-	30XWV PIC6	Device Description	Unit description
-	-	Location Description	Location description: The number corresponds to the country
-	ECG-SR-20xxxxx	Software Part Number	Software version
-	-	Serial Number	Serial number (MAC address)

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



ADD_OPT – Add Options

Displayed text*	Description
MAC Address	Controller MAC address: This MAC address is requested by Carrier service technician when ordering any software-protected option (see also section 6.21)
Please Enter Your Software Activation Key	Software Activation Key provided by Carrier service technician (see also section 6.21)
Unit must be Off	The unit should not be operating when installing the Software Activation Key

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

NOTE: If you need to add an option, please contact your local Carrier Service provider.

5.3 - Schedule menu

The Schedule menu includes two time schedules, where the first one (OCCPC01S) is used to control the unit start/stop and the second one (OCCPC02S) is used to control the dual setpoint.

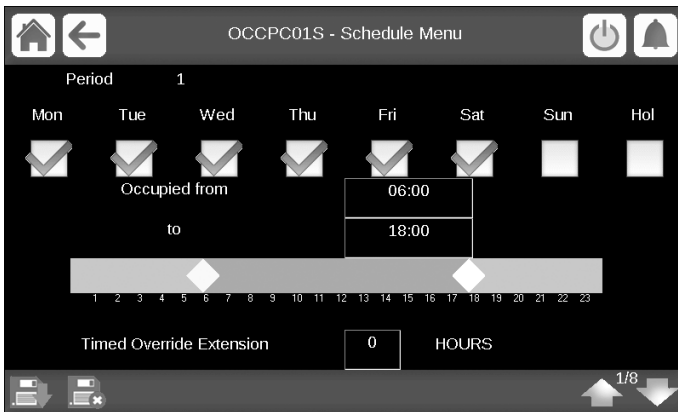


SCHEDULE – Schedule Menu

Icon	Name	Displayed text*	Description
	OCCPC01S	OCCPC01S - Schedule Menu	Unit on/off time schedule
	OCCPC02S	OCCPC02S - Schedule Menu	Unit setpoint selection time schedule

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

Example: Setting occupancy schedule



IMPORTANT: For more information about schedule setting, please see section 6.24.

5.4 - Holiday menu

The Holiday menu allows the user to set up to 16 holiday periods, which are defined by the start month, start day, and duration.



HOLIDAY – Holiday Menu

Icon	Name	Displayed text*	Description
	HOLDY_01	HOLIDAY - HOLDY_01	Holiday period No.1 settings

	HOLDY_16	HOLIDAY - HOLDY_16	Holiday period No.16 settings

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



HOLIDAY - HOLDY_01 (...)

Name	Status	Default	Displayed text*	Description
HOL_MON	0-12	0	Holiday Start Month	Holiday start month
HOL_DAY	0-31	0	Start Day	Holiday start day
HOL_LEN	0-99	0	Duration (days)	Holiday duration (days)

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





IMPORTANT: For more information about holiday setting, please see section 6.25.

5 - USER INTERFACE: MENU STRUCTURE

5.5 - Network menu



NETWORK – Network Menu

Icon	Name	Displayed text*	Description
	BACnet	BACnet Parameters	BACnet parameters
	EMAILCFG	Email Configuration	Email settings
	MODBUSRS	ModbusRTU Config.	Modbus RTU configuration
	MODBUSIP	ModbusTCP/IP Config.	Modbus TCP/IP configuration

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

NOTE: For more information about web connection functionality, please see section 7.



BACNET – BACnet Parameters

Name	Status	Default	Unit	Displayed text*	Description
bacena	disable/enable	disable	-	BACnet Enable	BACnet Enable
bacunit	no/yes	yes	-	Metric Units	Metric Units
network	1 to 40000	1600	-	Network	Network
udpport	47808 to 47823	47808	-	UDP Port Number	UDP Port Number
bac_id	1 to 4194302	1600001	-	Device Id Manual	Device Id Manual
aid_opt	disable/enable	disable	-	Device Id Auto Option	Device Id Auto Option
balmena	disable/enable	enable	-	Alarm reporting	Alarm reporting
mng_occ	no/yes	no	-	BACnet Manage Occupancy	BACnet Manage Occupancy
conifnam	0 to 1	1	-	IP port interface name	IP port interface name
				0 = J5 / J15	0 = J5 / J15
				1 = J16	1 = J16

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

NOTE: If you need to add an option, please contact your local Carrier Service provider.



EMAILCFG – E-mail Configuration

Name	Status	Default	Unit	Displayed text*	Description
senderP1			-	Sender Email Part1	Sender e-mail, identifier part
				@	@
senderP2			-	Sender Email Part2	Sender e-mail, identifier part
recip1P1			-	Recip1 Email Part1	Recipient 1,identifier part
				@	@
recip1P2			-	Recip1 Email Part2	Recipient 1, domain part
recip2P1			-	Recip2 Email Part1	Recipient 2,identifier part
				@	@
recip2P2			-	Recip2 Email Part2	Recipient 2, domain part
smtpP1	0 to 255		-	SMTP IP Addr Part1	SMTP IP address part 1
smtpP2	0 to 255		-	SMTP IP Addr Part2	SMTP IP address part 2
smtpP3	0 to 255		-	SMTP IP Addr Part3	SMTP IP address part 3
smtpP4	0 to 255		-	SMTP IP Addr Part4	SMTP IP address part 4

5 - USER INTERFACE: MENU STRUCTURE



EMAILCFG – E-mail Configuration (continued)

Name	Status	Default	Unit	Displayed text*	Description
accP1			-	Account Email Part1 @	Account e-mail, identifier part @
accP2			-	Account Email Part2	Account e-mail, domain part
accPass			-	Account Password	Account password
portNbr	0 to 65535		-	Port Number	Port number
srvTim	0 to 255		sec	Server Timeout	Server timeout
srvAut	0 to 1		-	Server Authentication	

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



MODBUSRS – ModbusRTU Configuration

Name	Status	Default	Unit	Displayed text*	Description
modrt_en	no/yes	no	-	RTU Server Enable	RTU Server Enable
ser_UID	1 to 247	1	-	Server UID	Server UID
metric	no/yes	yes	-	Metric Unit	Metric Unit
swap_b	0 to 1	0	-	Swap Bytes 0 = Big Endian 1 = Little Endian	Swap Bytes 0 = Big Endian 1 = Little Endian
baudrate	0 to 2	0	-	Baudrate 0 = 9600 1 = 19200 2 = 38400	Baudrate 0 = 9600 1 = 19200 2 = 38400
parity	0 to 2	0	-	Parity 0 = No Parity 1 = Odd Parity 2 = Even Parity	Parity 0 = No Parity 1 = Odd Parity 2 = Even Parity
stop_bit	0 to 1	1	-	Stop bit 0 = One Stop Bit 1 = Two Stop Bit	Stop bit 0 = One Stop Bit 1 = Two Stop Bit
real_typ	0 to 1	1	-	Real type management 0 = Float X10 1 = IEEE 754	Real type management 0 = Float X10 1 = IEEE 754
reg32bit	0 to 1	1	-	Enable 32 bits registers 0 = IR/HR in 16 bit mode 1 = IR/HR 32 bit mode	Enable 32 bits registers 0 = IR/HR in 16 bit mode 1 = IR/HR 32 bit mode

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

NOTE: If you need to add an option, please contact your local Carrier Service provider.

5 - USER INTERFACE: MENU STRUCTURE



MODBUSIP – Modbus TCP/IP Config.

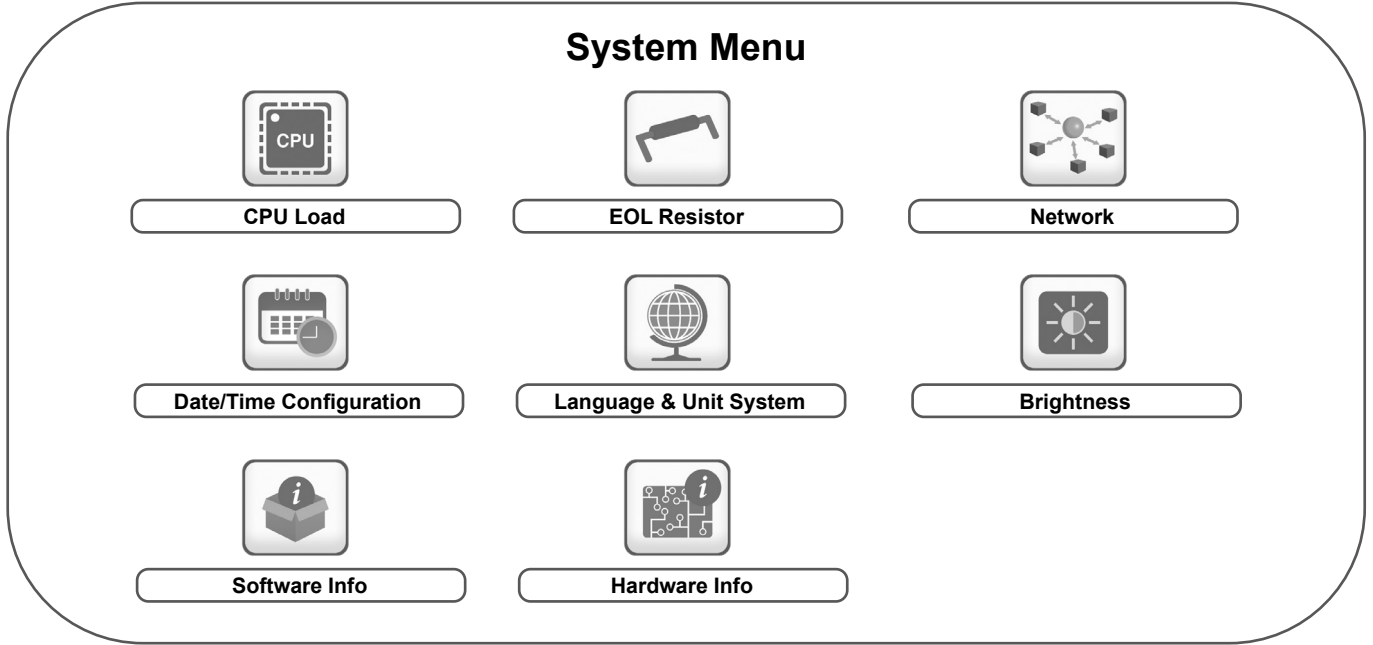
Name	Status	Default	Unit	Displayed text*	Description
modip_en	no/yes	no	-	TCP/IP Server Enable	TCP/IP Server Enable
ser_UID	1 to 247	1	-	Server UID	Server UID
port_nbr	0 to 65535	502	-	IP Port Number	IP Port Number
metric	no/yes	yes	-	Metric Unit	Metric Unit
swap_b	0 to 1	0	-	Swap Bytes	Swap Bytes
				0 = Big Endian	0 = Big Endian
				1 = Little Endian	1 = Little Endian
real_typ	0 to 1	1	-	Real Type Management	Real Type Management
				0 = Float X10	0 = Float X10
				1 = IEE 754	1 = IEE 754
reg32bit	0 to 1	1	-	Enable 32 bits registers	Enable 32 bits registers
				0 = IR/HR in 16 bit mode	0 = IR/HR in 16 bit mode
				1 = IR/HR in 32 bit mode	1 = IR/HR in 32 bit mode
conifnam	0 to 1	0	-	IP port interface name	IP port interface name
				0 = J5 / J15	0 = J5 / J15
				1 = J16	1 = J16
timeout	60 to 600	120	sec	Com. timeout (s)	Com. timeout (s)
idle	0 to 30	10	sec	Keepalive idle delay(s)	Keepalive idle delay(s)
intrvl	0 to 2	1	sec	Keepalive interval(s)	Keepalive interval(s)
probes	0 to 10	10	-	Keepalive probes nb	Keepalive probes nb

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

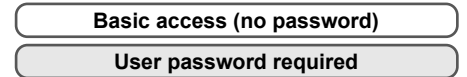
NOTE: If you need to add an option, please contact your local Carrier Service provider.

5 - USER INTERFACE: MENU STRUCTURE

5.6 - System menu



Legend:



The **System menu** allows the user to verify software, hardware, or network information and change some display settings, including language, date/time, or brightness.

CAUTION: Since specific units may not include additional features, some tables may contain parameters that cannot be configured for a given unit.

- To access the System menu, press the **System menu** button located in the upper-right part of the Home screen.



CPULOAD – CPU Load

Status	Default	Unit	Displayed text*	Description
0 to 100	-	%	CPU load	CPU utilization
0 to 100	-	%	RAM Memory utilization	RAM usage
0 to 100	-	%	FLASH Memory utilization	Flash memory usage

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



EOLRES – EOL Resistor

Status	Default	Displayed text*	Description
disable/enable	disable	End of Line Res. J6 (LEN)	End of line resistor J6 (LEN bus)
disable/enable	disable	End of Line Res. J7 (CCN)	End of line resistor J7 (CCN bus)
disable/enable	disable	End of Line Resistor J8	End of line resistor J8
disable/enable	disable	End of Line Resistor J10	End of line resistor J10 (Modbus)

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

5 - USER INTERFACE: MENU STRUCTURE



NETWORK – Network

Status	Default	Displayed text*	Description
		IP Network Interface J15 (eth0):	IP Network Interface J15 (Ethernet 0):
	xx:xx:xx:xx:xx:xx	MAC Address	MAC Address
-	169.254.1.1	TCP/IP Address	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).
-	255.255.255.0	Subnet Mask	Subnet Mask
-	169.254.1.3	Default Gateway	Default Gateway
-	255.255.0.0	Gateway Mask	Gateway Mask
-	169.254.1.3	Domain Name Server (DNS)	Domain Name Server (DNS)
-	169.254.1.4		
		IP Network Interface J16 (eth1):	IP Network Interface J16 (Ethernet 1):
	xx:xx:xx:xx:xx:xx	MAC Address	MAC Address
-	192.168.100.100	TCP/IP Address	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).
-	255.255.255.0	Subnet Mask	Subnet Mask
-	192.168.100.1	Default Gateway	Default Gateway
-	0.0.0.0	Gateway Mask	Gateway Mask
-	169.254.1.3	Domain Name Server (DNS)	Domain Name Server (DNS)
-	169.254.1.4		

*Depends on the selected language (English 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.



DATETIME – Date/Time Configuration

Displayed text*	Status	Description
Daylight Saving Time	on/off	Summer/winter time activation
Location	Greenwich Mean Time (UTC)	Time zone
Date/Time	YYYY/MM/DD, HH:MM:SS	Current date and time (must be set manually)
Today is a Holiday	no/yes	Information about holidays (read-only). Please note that holidays are set in the Holiday menu (see also section 5.4)
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 5.4)

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

NOTE: The Date/Time configuration appears also in the Configuration menu (see also section 5.2).



LANGUNIT – Language & Unit System

Displayed text*	Description
(Languages)	<p>Languages: English, Spanish, French, German, Dutch, Chinese, Italian, Portuguese, Greek and “undefined” (custom language).</p> <p>Custom language: The control system allows users to add new languages to the control. To learn more about language customization, please contact your local Carrier service representative. Custom languages can be uploaded only by Carrier service representative.</p>
System of measurement: US Imp/Metric	<p>US Imp = Parameters displayed in US Imperial units Metric = Parameters displayed in metric units</p>

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

5 - USER INTERFACE: MENU STRUCTURE



BRIGHTNS – Brightness

Status	Displayed text*	Description
0 to 100%	Brightness	Screen brightness

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



SWINFO – Software Info

Status	Displayed text*	Description
ECG-ST-20W49077	Software Version	Software version number
N.NNN.N	SDK Version	SDK version number
NN	UI Version	User interface version
Carrier	Brand	Brand

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



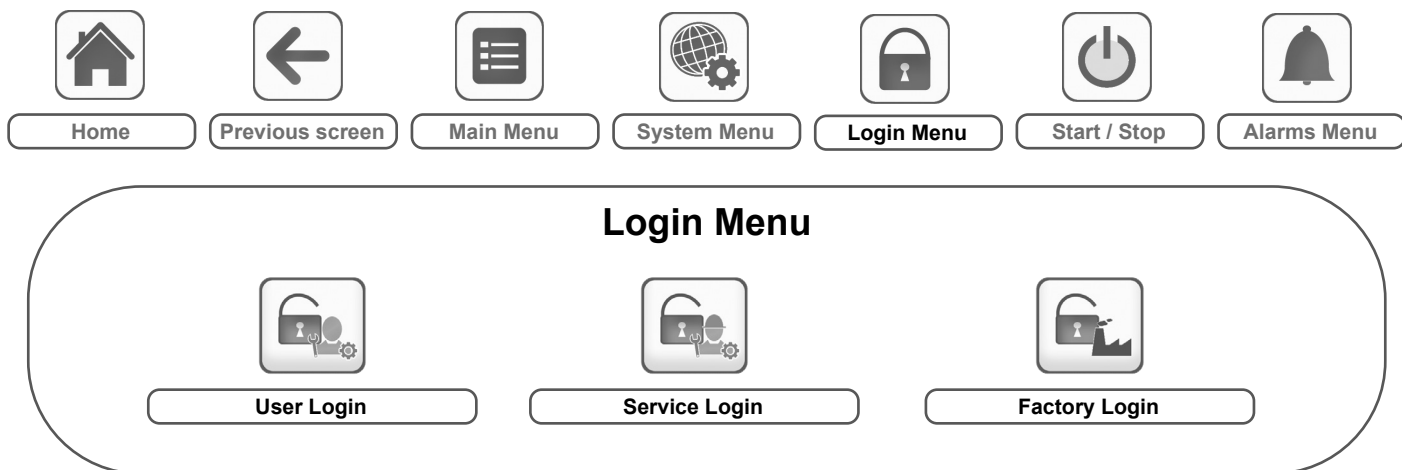
HWINFO – Hardware Info

Status	Displayed text*	Description
-	Board Variant	Board variant
-	Board Revision	Board revision
-	Board Serial Number	Board Serial Number
70	Screen size	Screen size in inches (7")

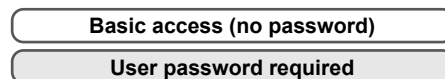
*Depends on the selected language (English by default).

5 - USER INTERFACE: MENU STRUCTURE

5.7 - Login menu



Legend:



5.7.1 - Access control

- Login menu provides access to three different access levels, i.e. user configuration, service configuration, and factory configuration.
- Multilevel security ensures that only authorised users are allowed to modify critical unit parameters.
- Only people qualified to manage the unit should be familiarized with the password.
- Configuration menu can be accessed only by logged-in users (user configuration level or higher).

IMPORTANT: 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.

5.7.2 - User login

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

To log in

1. Press the **Login** button, and then select *User Login*.
2. Press the Password box.
3. Provide the password (11) and press the **Confirm** button.



4. The User Login screen appears.

5.7.3 - Service & Factory login

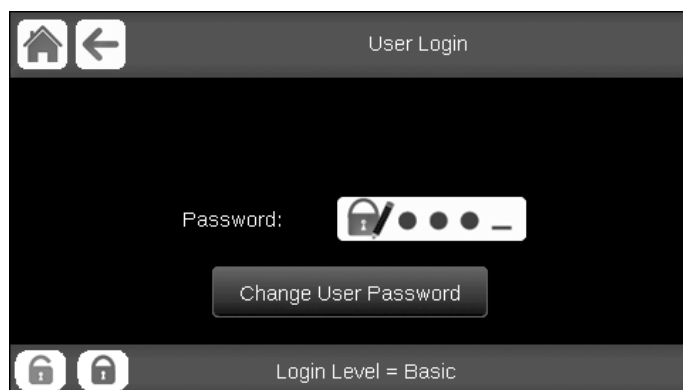
Service and factory login menus are dedicated to Carrier service representative and factory line. To learn more about advanced access control, please refer to the Control Service Guide (service technicians only).

5.7.4 - User password

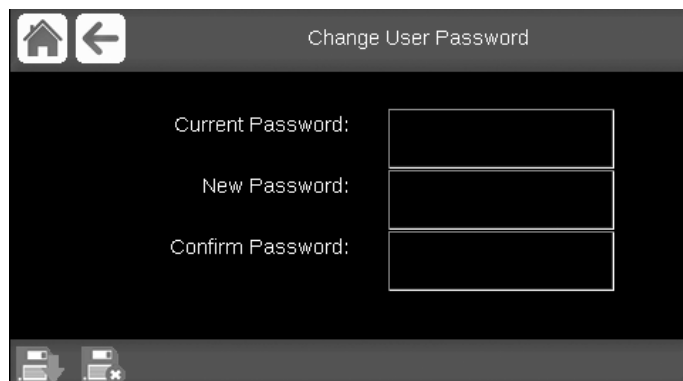
User password can be modified in the Login menu.

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.

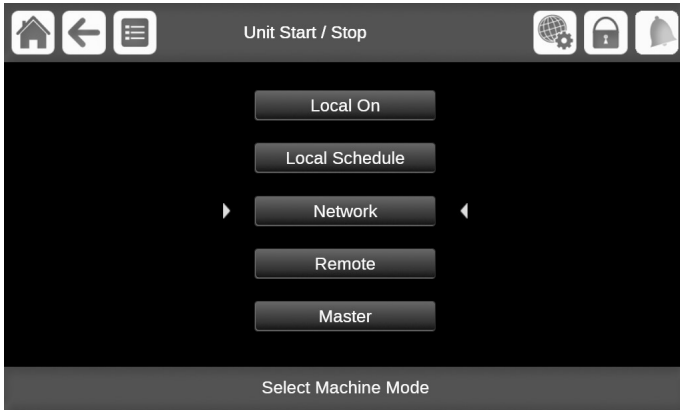
5 - USER INTERFACE: MENU STRUCTURE

5.8 - Start / Stop menu



5.8.1 - Unit operating mode

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.



IMPORTANT: When entering the menu, please note that the currently selected item corresponds to the last running operating mode.

Unit start/stop screen (operating modes)	
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 it is allowed to start if the period is occupied.

5.8.2 - Unit start

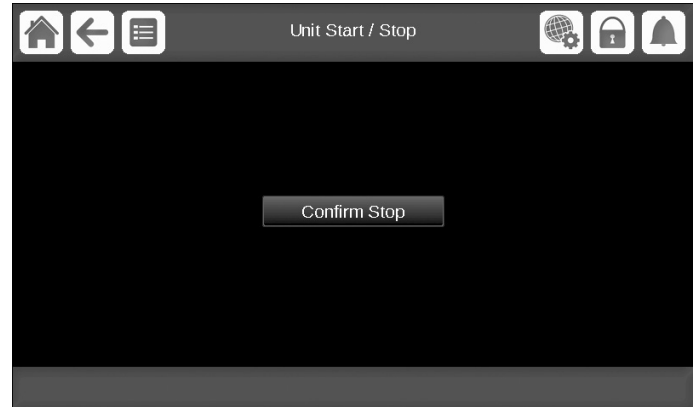
To start the unit

1. Press the **Start/Stop** button.
2. Select the required Machine Mode.
 - Local On
 - Local Schedule
 - Network
 - Remote
 - Master
3. The Home screen will be displayed.

5.8.3 - Unit stop

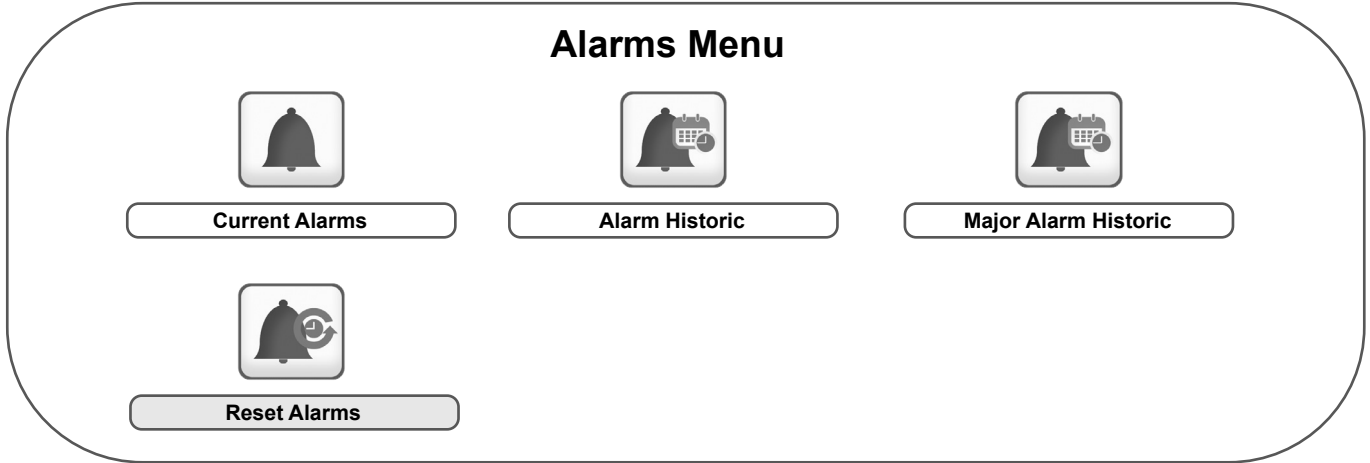
To stop the unit

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.

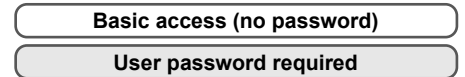


5 - USER INTERFACE: MENU STRUCTURE

5.9 - Alarms menu



Legend:



The **Alarms menu** allows the user to monitor alarms that occurred on the unit as well as reset alarms that require manual reset.

- To access the Alarms menu, press the **Alarms menu** button located in the upper-right part of the Home screen.

The Alarm history is divided into two parts:

- Alarm Historic that displays up to 50 recent general alarms.
- Major Alarm Historic that displays up to 50 recent major alarms, including alarms connected with process failure, compressor failure, and VFD drives.

IMPORTANT: For more information about alarms, please go to section 8.1.



CUR_ALM – Current Alarms

Name	Date	Hour	Alarm text
Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)
Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)
Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)

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



ALMHIST1 – Alarm Historic

Name	Date	Hour	Alarm text
Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)
Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)
Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)

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

5 - USER INTERFACE: MENU STRUCTURE



ALMHIST2 – Major Alarm Historic

Name	Date	Hour	Alarm text
Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)
Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)
Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)

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



ALARMRST – Reset Alarms

Name	Status	Displayed text*	Description
RST_ALM	no/yes	Alarm Reset	Used to reset active alarms
ALM	-	Alarm State	Alarm state: Normal = No alarm Partial = There is an alarm, but the unit continues to operate Shutdown = Unit shuts down
alarm_1c	-	Current Alarm 1	Alarm code (see section 8.6)
alarm_2c	-	Current Alarm 2	Alarm code (see section 8.6)
alarm_3c	-	Current Alarm 3	Alarm code (see section 8.6)
alarm_4c	-	Current Alarm 4	Alarm code (see section 8.6)
alarm_5c	-	Current Alarm 5	Alarm code (see section 8.6)
alarm_1	-	Jbus Current Alarm 1	JBus alarm code (see section 8.6)
alarm_2	-	Jbus Current Alarm 2	JBus alarm code (see section 8.6)
alarm_3	-	Jbus Current Alarm 3	JBus alarm code (see section 8.6)
alarm_4	-	Jbus Current Alarm 4	JBus alarm code (see section 8.6)
alarm_5	-	Jbus Current Alarm 5	JBus alarm code (see section 8.6)

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

IMPORTANT:

- **JBus vs. Modbus: Data exchange services offered by Modbus and JBus protocols are the same and therefore these terms can be used interchangeably.**

6 - CONTROL SYSTEM OPERATION

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.

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

LOFF	Local off
L-C	Local on
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 operating type.

- 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 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 lead/lag arrangement, the master unit may be set to be controlled locally, remotely or via network.

- **Start/stop time 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.

6.2 - 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.

6.3 - 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).

Parameter status					
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.

Active operating type						Parameters status						Control type	Unit state
LOFF	L-C	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		
-	-	-	-	-	-	-	-	-	-	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

6 - CONTROL SYSTEM OPERATION

6.4 - 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

6.4.1 - 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 5.7). 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)

6.4.2 - 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.

6.4.3 - Customer pump

The control provides the option to install 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)

The pump is commanded by the 0-10V output on AUX1 board.

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.

6.4.4 - 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).

6.5 - Condenser water pump control

This function ensures constant water pumps control, providing the optimum condenser water flow rate and operating cost savings.

6 - CONTROL SYSTEM OPERATION

6.6 - 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.

6.6.1 - 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 (CCN, BACnet or Modbus) 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 SmartVu™ 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						Active setpoint
Heating/cooling operating mode	Setpoint selection	Heating/Cooling selection in local mode	Ice storage configuration	Setpoint switch	Schedule 2 status	
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						Active setpoint
Heating/cooling operating mode	Setpoint selection	Ice storage configuration	Ice done contact	Setpoint switch	Schedule 2 status	
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						Active setpoint
Heating/cooling operating mode	Setpoint selection	Ice storage configuration	Ice done contact	Setpoint switch	Schedule 2 status	
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.

6 - CONTROL SYSTEM OPERATION

6.6.2 - 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.

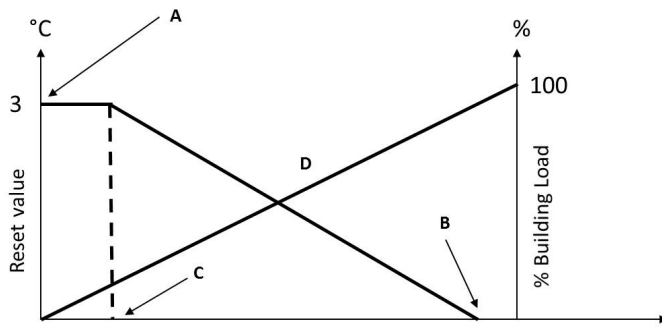
The reset can be based on the following parameters:

- 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
- B: Reference for zero reset
- C: Reference for maximum reset
- D: Building load

6.7 - Capacity limitation

The SmartVu™ 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 3.9.4). 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.

6.8 - Capacity control

This function adjusts the capacity 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).

6.9 - 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.

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 5.7).

6.10 - Head pressure control

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 Carrier service.

6.11 - 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 or circuit B. 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 or B selected as the lead circuit. The selected circuit is always the leader. It is the first to start and the last to stop.

6 - CONTROL SYSTEM OPERATION

6.12 - 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 NRCP2 board.

Energy management option – board connections				
Description	Input/Output	Connector	Type	Remarks
Space temperature	Ch02	J6	Analogue input	Active setpoint reset via space temperature control
Setpoint control reset	Ch05	J7A	Analogue input	Active setpoint reset via unit capacity control (4-20 mA)
Capacity limit control	CH06	J7B	Analogue input	Active setpoint reset via unit capacity control (4-20 mA)
Occupancy override control	Ch08	J4	Digital input	If the contact is closed in Remote mode, the unit goes into the occupied mode
Capacity limitation	Ch09	J4	Digital input	See chapter 6.7
Customer interlock	Ch10	J4	Digital input	Permits immediate unit shutdown (Remote mode only)
Ice storage	Ch11	J4	Digital input	If the contact is closed, the unit enters the ice storage mode
Unit capacity	Ch07	J8	Analogue output	0 to 10 VDC output
Compressor A	Ch17	J2A	Digital output	Output active if compressor A is operating
Compressor B	Ch18	J2A	Digital output	Output active if compressor B is operating
Chiller shutdown	Ch24	J3	Digital output	Output active (relay output) when the unit has completely stopped due to an alarm
Chiller in alert	Ch25	J3	Digital output	Output active (relay output) when the alert has been tripped

6.13 - 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 Carrier service.

6.14 - Dry cooler option

30XWV units may come with the dry cooler option that enables the control of a Carrier dry cooler.

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

6.15 - Maximum condenser leaving water temperature option (30XWV)

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.

6.16 - Refrigerant leak detection (option 159)

This option permits refrigerant leak detection. Two sensors (not supplied) that detect the refrigerant concentration in the air must be installed on the unit. If one of the two sensors detects an abnormal refrigerant level for more than one hour, an alarm is triggered, without shutting the unit down.

The refrigerant level and the time before triggering an alert are configurable. To modify them, contact Carrier Service.

6.17 - Brine option

30XWV chillers offer a few different cooler fluid types, including standard water fluid as well as the optional brine fluid, i.e. light brine (option 8). The brine option is commonly used for low temperature applications.

NOTE: Brine option requires a Software Activation Key (see section 6.21).

6.18 - BACnet (option 149)

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

NOTE: BACnet option requires a Software Activation Key (see section 6.21).

6.19 - Modbus (option 149B)

The Modbus communication protocol is used by the building management system or the programmable controllers to communicate with the SmartVu™ control. Modbus communication settings (Modbus RTU or Modbus TCP) can be configured only by service technicians.

NOTE: Modbus option requires a Software Activation Key (see section 6.21).

6.20 - 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 option requires a Software Activation Key (see section 6.21).

6 - CONTROL SYSTEM OPERATION

6.21 - Software Activation Key(s)

30XWV units with SmartVu™ offer some additional options which require Software Activation Keys:

- **Cooler fluid type:**
 - light brine (option 8)
- **BACnet** communication (option 149)
- **Modbus** communication (option 149B)
- **Fast capacity recovery** (option 295)

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.

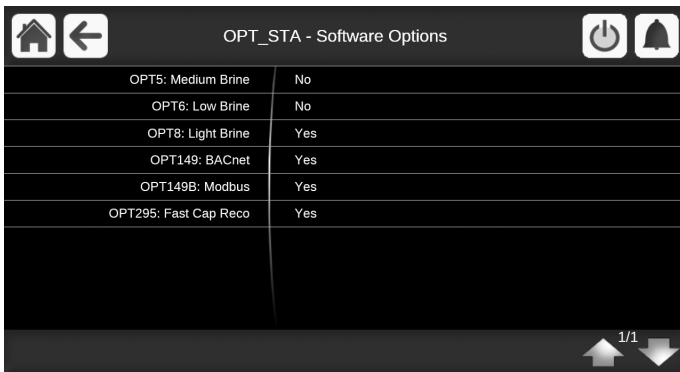
To obtain the Software Activation Key, please contact your local Carrier Service representative.

6.21.1 - Software options

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

To verify 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.



Option	Status
OPT5: Medium Brine	No
OPT6: Low Brine	No
OPT8: Light Brine	Yes
OPT149: BACnet	Yes
OPT149B: Modbus	Yes
OPT295: Fast Cap Reco	Yes

IMPORTANT: In case the controller is replaced, the NEW Software Activation Key(s) based on the new MAC address must be installed again (see section 6.21.2).

6.21.2 - 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 Carrier representatives 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.

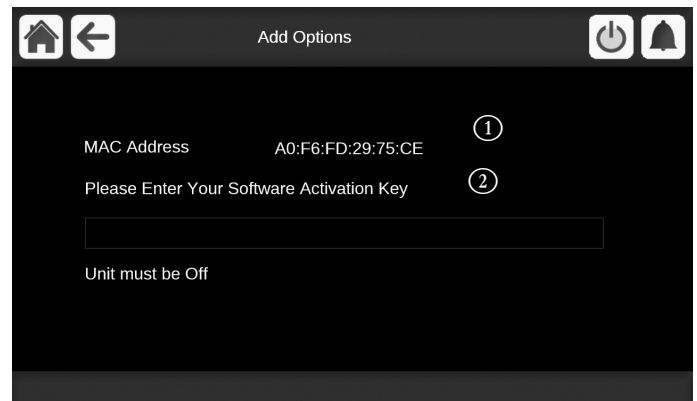
The Replacement mode ends when the Software Activation Key is installed or the period of 7 days elapsed (7 days since the first start of the compressor).

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

6.21.3 - Software key installation

To install the Software Activation Key via SmartVu™

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.



MAC Address A0:F6:FD:29:75:CE 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”.

6 - CONTROL SYSTEM OPERATION

6.22 - Trending

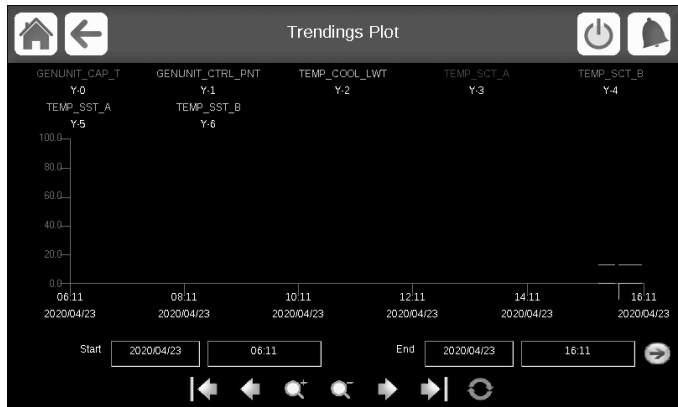
This function enables to visualise the operations of the unit and monitor a set of selected parameters.

To display trends

1. Go to the Main menu.
2. Select *Trendings* (TRENDING).
3. Select parameters to be displayed and press the **Save** button in the lower-left part of the screen.



4. Press the **Trending** button to display the graph showing trends for the set of selected parameters.



- Set the time range (start/end dates and time) and press the **Arrow** button to display the graph showing the performance of the unit within a selected period of time (only available for 7" touch screen).

- Press to navigate across the timeline or press 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.

NOTE: The 7" touch screen can display 10 points instead of 4 on the graph.

6.23 - 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 Table* (QCK_TEST). The menu can be accessed when logged in at user access level.
3. Set *Quick Test Enable* [QCK_TEST] to "enable".

Quick Test Enable [QCK_TEST]

disable/enable enable

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. For more details, please see the Quick Test Table description (QCK_TEST – Quick Test Table) in section 5.1.

6 - CONTROL SYSTEM OPERATION

6.24 - 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 first timer program (schedule 1, OCCPC01S) provides a means to automatically switch the unit from an occupied mode to an unoccupied mode. The unit is started during occupied periods.

The second timer program (schedule 2, OCCPC02S) provides a means to automatically switch the active setpoint from an occupied setpoint to an unoccupied setpoint. Cooling setpoint 1 is used during occupied periods and cooling setpoint 2 during unoccupied periods.

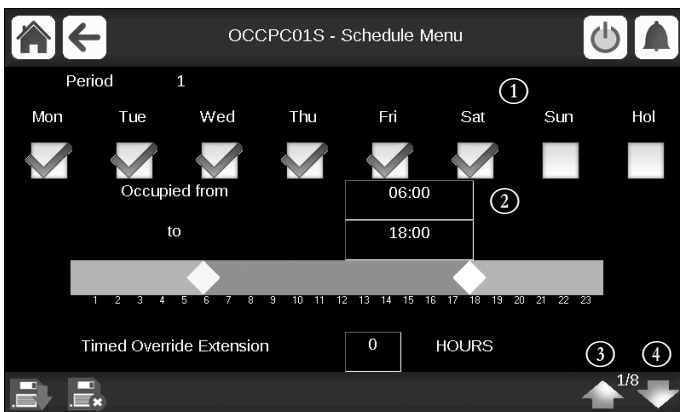
Occupancy periods

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.



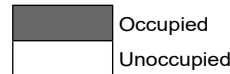
- Legend:**
1. Selection of days for the time schedule
 2. Start/end of the schedule
 3. Previous time period
 4. Next time period

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, then the occupied mode takes priority over the unoccupied period.

Example: Schedule setting (schedule 1)

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								



- 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		

6.25 - Holidays

The control allows the user to define 16 holiday periods, where each period is defined by three parameters: the month, the start day and the duration of the holiday period.

During the holiday periods, the controller will be in occupied or unoccupied mode, depending on the periods validated as holidays. Each holiday period can be modified by the user via the Configuration menu (see also section 5.4).

7 - WEB CONNECTION

7.1 - Web interface

The SmartVu™ control provides the functionality to access and control unit parameters from a web interface. To connect to the controller via the web interface, it is necessary to know the IP address of the unit.

To verify unit IP address

1. Go to the System menu.
2. Select *Network* (NETWORK).
3. Verify TCP/IP Address for "IP Network Interface J15 (eth0)" and "IP Network Interface J16 (eth1)". See also section 3.3.
 - Unit default address:
169.254.1.1 (J15, eth0)
192.168.100.100 (J16, eth1)
 - The unit IP address can be changed.

To access SmartVu™ 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.

IMPORTANT: Three users can be connected simultaneously with no priority between them. The last modification is always taken into account.



Minimum web browser configuration:

- Internet Explorer (version 11 or higher)
- Mozilla Firefox (version 60 or higher)
- Google Chrome (version 65 or higher) - recommended browser

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.

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.

Carrier does not hold any responsibility or liability for damage caused by security breach.


7.2 - Technical documentation

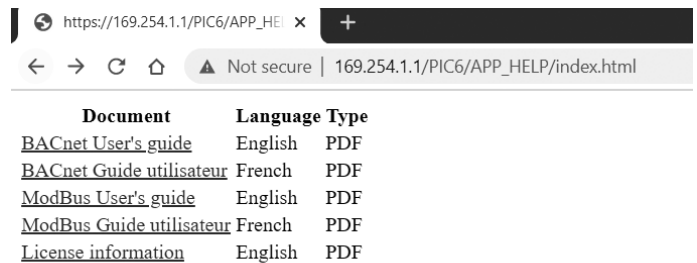
When using the SmartVu™ control via a PC web browser, you may easily access all technical documents related to the product and its components.

Once you connect to the SmartVu™ control, click the **Technical documentation** button  in order to see a list of documents related to the unit.

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.

Click the **Help** button  to get access to BACnet user guide , Modbus user guide and Open Source Licenses used by SmartVu™.



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

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. The local interface gives quick access to monitor all unit operating conditions. If an operating fault is detected, the alarm is triggered.

In the event of an alarm:

- The bell on the SmartVu™ user interface starts ringing.



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



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

- The corresponding alarm output(s) is/are activated.
- Error code is displayed.
- Message is sent over the network.

SmartVu™ 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.

IMPORTANT: All information regarding alarms (current and past alarms) can be found in the Alarms menu (see also section 5.9).

8.2 - Displaying current alarms

The Current alarms menu may display up to 10 current alarms.

To access the list of currently active alarms

1. Press the **Alarms menu** button in the upper-right part of the screen.
2. Select *Current Alarms* (CUR_ALM).
3. The list of active alarms will be displayed.



8.3 - 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.

IMPORTANT: E-mail notifications can be set only by Carrier service representative.

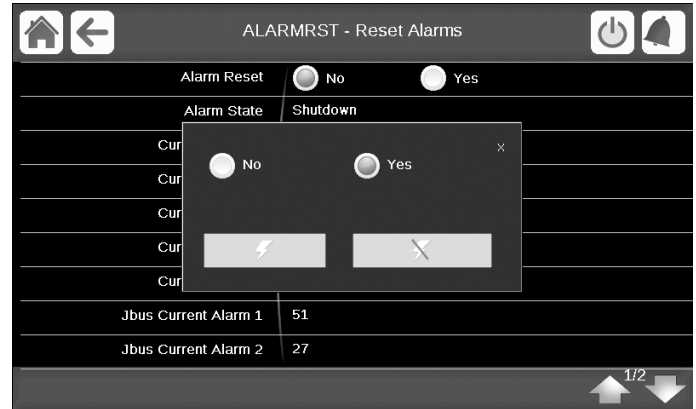
8.4 - Resetting alarms

The alarm can be reset either automatically by the control or manually through the touch panel display or the web interface.

- The Reset alarms menu displays up to 5 alarm codes which are currently active on the unit.
- Alarms can be reset without stopping the machine.
- Only logged-in users can reset the alarms on the unit.

To reset the alarm manually

1. Press the **Alarms menu** button in the upper-right part of the screen.
2. Select *Reset Alarms* (ALARMRST).
3. Set "Alarm Reset" to "Yes" and press the **Force** button.



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.

IMPORTANT: Not all alarms can be reset by the user. Some alarms are reset automatically when operating conditions return to normal.

8.5 - 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.

To access the alarm history

1. Press the **Alarms menu** button in the upper-right part of the screen.
2. Select *Alarm Historic* (ALMHIST1) or *Major Alarm Historic* (ALMHIST2).
3. The history of alarms will be displayed.



8 - DIAGNOSTICS

8.6 - Alarm codes

The alarm codes are displayed in the Reset Alarms menu, while in the Current Alarm menu and alarm histories textual information regarding the event is provided.

8.6.1 - General alarm codes

No.	Code	Alarm description	Reset type	Action taken	Possible cause
THERMISTOR FAILURE					
1	15001	Cooler Entering Fluid Thermistor	Automatic if the temperature measured by the sensor returns to normal	Unit shuts down	Defective thermistor
2	15002	Cooler Leaving Fluid Thermistor	As above	Unit shuts down	As above
3	15006	Condenser Entering Fluid Thermistor	As above	Unit shuts down, if entering water control in heating mode. Otherwise none.	As above
4	15007	Condenser Leaving Fluid Thermistor	As above	Unit shuts down, if leaving water control in heating mode. Otherwise none.	As above
5	15011	Master/Slave Common Fluid Thermistor	As above	Unit returns to stand-alone mode	As above
6	15032	Master/Slave Common Heat Fluid Thermistor	As above	Unit returns to stand-alone mode	As above
7	15012	Circuit A Suction Gas Thermistor	As above	Circuit A shuts down	As above
8	15013	Circuit B Suction Gas Thermistor	As above	Circuit B shuts down	As above
9	15015	Circuit A Discharge Gas Thermistor	As above	Circuit A shuts down	As above
10	15016	Circuit B Discharge Gas Thermistor	As above	Circuit B shuts down	As above
11	15033	Circuit A compressor Motor Thermistor	As above	Circuit A shuts down	As above
12	15034	Circuit B compressor Motor Thermistor	As above	Circuit B shuts down	As above
13	15021	Space Temperature Thermistor	As above	None	As above
14	15036	Dry Cooler Leaving thermistor Failure	As above	None	As above
15	15010	Outdoor air Thermistor	As above	None	As above
PRESSURE TRANSDUCER					
16	12001	Circuit A Discharge Transducer	Automatic, if the voltage transmitted by the sensor returns to normal	Circuit A shuts down	Transducer fault or installation fault
17	12002	Circuit B Discharge Transducer	As above	Circuit B shuts down	As above
18	12004	Circuit A Suction Transducer	As above	Circuit A shuts down	As above
19	12005	Circuit B Suction Transducer	As above	Circuit B shuts down	As above
20	12010	Circuit A Oil Pressure Transducer	As above	Circuit A shuts down	As above
21	12011	Circuit B Oil Pressure Transducer	As above	Circuit B shuts down	As above
COMMUNICATION FAILURE					
22	4401	Loss of communication with EXV Board Number 1	Automatic if the communication is re-established	Unit shuts down	Bus installation fault or defective slave board
23	4501	Loss of communication with Aux Board Number 1	As above	Unit continues to operate, but the functions linked to the board are deactivated	As above
24	4502	Loss of communication with Aux Board Number 2	As above	Unit shuts down	As above
25	4503	Loss of communication with Aux Board Number 3	As above	Circuit B shuts down	As above
26	4504	Loss of communication with Aux Board Number 4	As above	Circuit B shuts down	As above
27	4601	Loss of communication with Main NRCP2 Board	As above	Unit shuts down	As above
28	4603	Loss of communication with Energy Management NRCP2 Board	As above	Unit continues to operate, but the functions linked to the board are deactivated	As above
29	4701	Loss of communication with VLT Drive Board Number 1	As above	Circuit A shuts down	As above
30	4702	Loss of communication with VLT Drive Board Number 2	As above	Circuit B shuts down	As above
PROCESS FAILURE					
31	10001	Cooler Freeze Protection	Automatic, if the same alarm has not tripped during the last 24 hours, otherwise manual	Unit shuts down. Start-up of the evaporator pump, if the unit has shut down	Lack of water flow or defective thermistor
32	10002	Circuit A Condenser Freeze Protection	Automatic, if the saturated discharge temperature is above 4.4°C (39.9°F)	Circuit shuts down. Start-up of the condenser pump, if the unit has shut down	Discharge pressure transducer defective, refrigerant leak or low condenser water temperature
33	10003	Circuit B Condenser Freeze Protection	As above	As above	As above

8 - DIAGNOSTICS

No.	Code	Alarm description	Reset type	Action taken	Possible cause
34	10005	Circuit A Low Suction Temperature	Automatic, if the temperature returns to normal and if the same alarm has not tripped during the last 24 hours	Compressor capacity increase or unloading stopped, depending on the temperature value	Pressure sensor, EXV blocked or lack of refrigerant
35	10006	Circuit B Low Suction Temperature	As above	As above	As above
40	10014	Customer Interlock failure	Automatic, if the same alarm has not tripped during the last 24 hours	Unit shuts down	Customer interlock input set on
41	10030	Master/Slave communication Failure	Automatic	Master/slave operation is disabled and the unit returns to the stand-alone mode	CCN bus installation defective
42	10067	Low Oil Pressure, circuit A	Manual	Circuit A shuts down	Pressure sensor or wiring defective or oil filter badly installed
43	10068	Low Oil Pressure, circuit B	Manual	Circuit B shuts down	As above
44	10070	Maximum Oil Filter Pressure Differential, circuit A	Manual	Circuit A shuts down	As above
45	10071	Maximum Oil Filter Pressure Differential, circuit B	Manual	Circuit B shuts down	As above
46	10084	Circuit A High Oil Filter Pressure Drop	Manual	None	Defective transducer or installation fault or suction valve closed
47	10085	Circuit B High Oil Filter Pressure Drop	Manual	None	As above
48	10075	Low Oil Level, circuit A	Manual	Circuit A shuts down	Oil level too low or oil level detector defective
49	10076	Low Oil Level, circuit B	Manual	Circuit B shuts down	As above
MASTER/SLAVE CONFIGURATION FAILURE					
50	90nn	Configuration error, master unit 1 to nn	Automatic, when the master configuration returns to normal or when the unit is no longer in master/slave mode	Unit cannot start in master/slave mode	Configuration failure (see section 8.6.2)
FACTORY CONFIGURATION FAILURE					
51	8000	Initial factory configuration required	Automatic, when the configuration is entered	Unit cannot start	The unit size has not been configured
52	700n	Illegal configuration	Manual	Unit cannot start	Unit size has been configured with an incorrect value
PROCESS FAILURE					
53	10031	Unit is in emergency stop	Manual	Unit shuts down	Network command
54	10032	Cooler pump #1 fault	Manual	Unit shut down except if there is a second pump that can take over	Pump overheating or poor pump connection
55	10033	Cooler pump #2 fault	As above	As above	As above
56	10015	Condenser Flow Switch Failure	Automatic	Unit shuts down	Defective sensor
57	10037	Circ A - High condensing temperature out of map compressor	Automatic	Circuit A shuts down	Defective transducer or condensing pressure too high or too low
58	10038	Circ B - High condensing temperature out of map compressor	Automatic	Circuit B shuts down	As above
59	10040	Circuit A - Repeated low suction temp overrides	Automatic, if no override has occurred for 30 minutes	None	As above
60	10041	Circuit B - Repeated low suction temp overrides	Automatic, if no override has occurred for 30 minutes	None	As above
61	10050	Refrigerant Leakage Detection	Automatic	None	Refrigerant leak or leak detector defective
62	10073	Condenser pump #1 fault	Manual	Unit shuts down	Pump overheats or poor pump connection
63	10074	Condenser pump #2 fault	Manual	Unit shuts down	Pump overheats or poor pump connection
64	10078	Circuit A High Discharge Gas Temperature	Manual	Circuit A shuts down	Defective transducer or refrigerant charge too high
65	10079	Circuit B High Discharge Gas Temperature	Manual	Circuit B shuts down	As above
66	10081	Circuit A Suction valve closed	Manual	Circuit A shuts down	Defective transducer or installation fault or suction valve closed
67	10082	Circuit B Suction valve closed	Manual	Circuit B shuts down	As above
68	10090	Cooler Flow Switch Setpoint Configuration Failure	Manual	Unit is not allowed to restart	Defective or incorrectly wired flow controller

8 - DIAGNOSTICS

No.	Code	Alarm description	Reset type	Action taken	Possible cause
69	10091	Cooler Flow Switch Failure	Conditional if at least one compressor operates, otherwise automatic	Unit shuts down	Evaporator pump defect or water flow switch defect
70	10097	Water Exchanger Temperature Sensors Swapped	Manual	Unit shuts down	Sensors of the evaporator reversed in cooling mode or of the water condenser in heating mode
71	13001	Service maintenance alert Number # nn 13004: Maintenance servicing required	Manual	None (alert)	Servicing action required. Contact Carrier service
84	13005	F-Gas Scheduled Check required	Manual	None (alert)	Servicing action required. Contact Carrier service
DRIVE FAILURE					
72	17001	Circuit A Compressor VFD Failure	Manual	The circuit continues to operate, the speed controller slows down the motor. The circuit shuts down	Speed controller fault or alert
73	18001	Circuit B Compressor VFD Failure	Manual	As above	As above
74	35001	Circuit A Compressor VFD Warning	Automatic	As above	As above
75	36001	Circuit B Compressor VFD Warning	Automatic	As above	As above
COMPRESSOR FAILURE					
76	1101	Compressor A Motor temperature too high	Automatic	Circuit A shuts down	Motor/wiring fault
77	2101	Compressor B Motor temperature too high	Automatic	Circuit B shuts down	As above
78	1103	Compressor A High Pressure Switch protection	Manual	Circuit A shuts down	Lack of condenser flow, condenser valve blocked, high condenser water temperature
79	2103	Compressor B High Pressure Switch protection	Manual	Circuit B shuts down	As above
86	10016	Compressor A1 Not Started or Pressure Increase not established	Manual	Circuit A shuts down	Compressor fault or compressor drive start relay fault (the relay is located between AUX1 and the drive)
87	10020	Compressor B1 Not Started or Pressure Increase not established	Manual	Circuit B shuts down	As above
SOFTWARE MODULE FAILURE					
80	55001	Database module Failure	Automatic	Unit shuts down	Software problem. Contact Carrier Service
81	56001	Lenscan module Failure	Automatic	Unit shuts down	Software problem. Contact Carrier Service
REPLACEMENT MODE: SOFTWARE ACTIVATION KEY(S) MISSING					
82	10122	Replacement Mode: please contact Carrier 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 Carrier service representative to obtain activation key(s) to retrieve (or activate) software options	SmartVu™ controller was replaced, but Software Activation Key is not installed
CONFIGURATION FAILURE					
83	8001	Illegal Brand Identifier	Automatic, if configuration is corrected	Unit not allowed to start	Incorrect unit configuration
CURRENT LIMITATION					
85	54005	Current Limit Exceeded	Manual	Unit shuts down	Unit current exceeds the preconfigured current limit (CURR_LIM, GENUNIT)

8 - DIAGNOSTICS

8.6.2 - Master/Slave configuration alarms

Code	Description
9001	Lag pump control is selected while pump configuration is missing
9002	Master unit and Slave unit have the same address
9003	No Slave unit configured
9004	Slave lag pump is selected while slave pump configuration is missing
9005	Master unit and Slave unit should have the same water control type (control based on EWT)
9006	Master unit and Slave unit have the same water control type (control based on LWT)
9007	Master lag pump control is configured while the slave lag pump control is not configured
9008	Master lag pump control is not configured while the slave lag pump control is configured
9009	Slave unit is not in Network mode
9010	Slave unit failure due to a detected alarm
9011	Master unit is not in Network mode
9012	Communication between Master unit and Slave lost
9013	Master/Slave units heat/cool selection conflict
9014	Master and Slave parallel/series selection conflict
9015	Master unit has EWT option configured in conflict with chiller in series setting
9016	Slave unit has EWT option configured in conflict with chiller in series setting

8.6.3 - Drive alarms

The tables below present 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
2	Alarm	Error at function "Live Zero"	Contact Carrier Service
4	Alarm	Phase loss detection	Check the VFD supply voltage and the phase balance ($\pm 3\%$)
7	Alarm	Overvoltage detected	Contact Carrier Service
8	Alarm	Undervoltage detected	Contact Carrier Service
9	Alarm	Inverter overload	Check the VFD output current/compressor current
10	Alarm	Motor overheated	Check the motor temperature
11	Alarm	Motor overheat thermistor defective	Contact Carrier Service
12	Critical alarm	Torque limit exceeded	Check the VFD output current/compressor current
13	Critical alarm	Overcurrent detected	Check the VFD output current/compressor current
14	Critical alarm	Poor earthing	Check if an earth fault exists
16	Critical alarm	Motor short-circuit detected	Check if there is a short-circuit at the VFD terminals
17	Alarm	Communication loss with the frequency converter	Check the connections and the shielding of the serial communication cable
18	Alarm	Start failed	Contact Carrier Service
23**	Alarm	Internal fan operating problem	Check the internal fan rotation
25	Alarm	Brake resistor short-circuited	Contact Carrier Service
26	Alarm	Capacity dissipated by the brake resistor too high	Contact Carrier Service
28	Alarm	Brake verification	Contact Carrier Service
29	Critical alarm	VFD temperature too high	Space temperature too high or VFD ventilation obstructed or damaged
30	Critical alarm	Motor phase U missing	Check wiring of phase U
31	Critical alarm	Motor phase V missing	Check wiring of phase V
32	Critical alarm	Motor phase W missing	Check wiring of phase W
33	Alarm	Current demand too high	Let the VFD cool down for 20 minutes before starting it
34	Alarm	Problem on the site communication bus	Check the connections and the shielding of the serial communication cable
36	Alarm	Supply voltage problem	Check the VFD supply voltage and the phase balance ($\pm 3\%$)
38	Critical alarm	Internal frequency variator problem	Contact Carrier Service
47	Alarm	24 V supply too low	Contact Carrier Service
48	Alarm	1.8 V supply too low	Contact Carrier Service
57***	Alarm	No response from AMA	Contact Carrier Service
65	Alarm	Control board overheated	Check the space temperature and the VFD fan
67	Critical alarm	Option configuration modifications	Contact Carrier Service
68	Alarm	Numerical input 37 - emergency stop activated	Contact Carrier Service
71	Alarm	Emergency stop at thermistor PTC1	Contact Carrier Service
72	Critical alarm	Emergency stop	Contact Carrier Service
80	Alarm	Frequency variator reset to default values	Contact Carrier Service
94	Alarm	Curve end	Contact Carrier Service
95	Alarm	Torque loss	Contact Carrier Service
243	Alarm	IGBT defective	Contact Carrier Service

8 - DIAGNOSTICS

Code	Alarm /Alert	Description	Action to be taken
251†	Critical alarm	New parts detached	Contact Carrier Service
301	Alarm	Problem in set 1 of the configuration parameters	Check the communication bus connections and the software version
302	Alarm	Problem in set 2 of the configuration parameters	Check the communication bus connections and the software version
303	Alarm	Problem in set 3 of the configuration parameters	Check the communication bus connections and the software version
Variator sub-code alerts (WY-XXX*)			
1	Alert	10 V supply to low	Contact Carrier Service
2	Alert	Error at function "Live Zero"	Contact Carrier Service
3	Alert	No motor	Check the motor connections
4	Alert	Phase loss detection	Check the VFD supply voltage and the phase balance (±3%)
5	Alert	Intermediate voltage too high	Check the VFD supply voltage and the phase balance (±3%)
6	Alert	Intermediate voltage too high	Check the VFD supply voltage and the phase balance (±3%)
7	Alert	Intermediate voltage too high	Contact Carrier Service
8	Alert	Intermediate voltage too high	Contact Carrier Service
9	Alert	Inverter overload	Check the VFD output current/compressor current
10	Alert	Motor overheated	Check the motor temperature
11	Alert	Motor overheat thermistor defective	Contact Carrier Service
12	Alert	Torque limit exceeded	Check the VFD output current/compressor current
13	Alert	Overcurrent detected	Check the VFD output current/compressor current
14	Alert	Poor earthing	Check if an earth fault exists
17	Alert	Motor short-circuit detected	Check the connections and the shielding of the serial communication cable
23**	Alert	Communication loss with the frequency converter	Check the internal fan rotation
25	Alert	Brake resistor short-circuited	Contact Carrier Service
26	Alert	Capacity dissipated by the brake resistor too high	Contact Carrier Service
28	Alert	Brake verification	Contact Carrier Service
34	Alert	Problem on the site communication bus	Check the connections and the shielding of the serial communication cable
36	Alert	Supply voltage problem	Check the VFD supply voltage and the phase balance (±3%)
47	Alert	24 V supply too low	Contact Carrier Service
49	Alert	Motor speed limit exceeded	Contact Carrier Service
59	Alert	Current limit exceeded	Check the VFD output current/compressor current
62	Alert	Frequency at the maximum limit	Check the VFD output current/compressor current
64	Alert	Voltage limit	Supply voltage too low
65	Alert	Control board overheated	Check the space temperature and the VFD fan
66	Alert	Internal frequency variator temperature too low	Space temperature too low
71	Alert	Emergency stop at thermistor PTC1	Contact Carrier Service
72	Alert	Emergency stop	Contact Carrier Service
90 ††	Alert	Encoder loss	Contact Carrier Service
94	Alert	Curve end	Contact Carrier Service
95	Alert	Torque loss	Contact Carrier Service
96	Alert	Start-up delayed	Contact Carrier Service
97	Alert	Stop delayed	Contact Carrier Service
98	Alert	Clock problem	Contact Carrier Service
243	Alert	IGBT defective	Contact Carrier Service
247	Alert	Capacity board temperature	Contact Carrier Service

* Y = 0: circuit A; Y=1: circuit B; XXX = sub-code

** Error 24 and 104 possible

*** Error 50 to 58 possible

† Error 250 or 70 possible

†† Not applicable for variator size 102

9 - MAINTENANCE

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

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

The Carrier Service Maintenance Contract represents not only the best way to ensure the maximum operating life of your equipment, but also, through the expertise of Carrier qualified personnel, the optimal tool to manage your system in a cost-effective manner.

