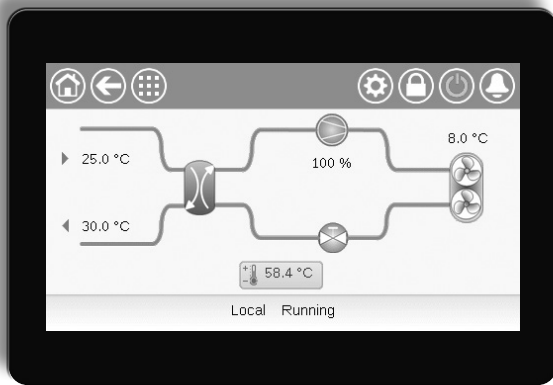


10639

12 - 2023



Instruction manual

# AQUACIATCALEO (080 - 300)

# CONNECT TOUCH



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The illustrations in this document are for illustrative purposes only and not part of any offer for sale or contract. The manufacturer reserves the right to change the design at any time without notice.

# PREFACE

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The goal of this manual is to give a broad overview of the main functions of the Connect Touch control system used to control and monitor the operation of high temperature air-to-water AQUACIAT<sup>CALEO</sup> heat pumps (080-300) using scroll compressors.

Instructions in this manual are given as a guide to good practice in the installation, start-up and operation of the control system. This document does not contain full service procedures for the correct operation of the equipment.

The support of a qualified Service Engineer is strongly recommended to ensure optimal operation of the equipment as well as the optimization of all available functionalities.

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

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

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

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

## Acronyms/abbreviations

In this manual, the refrigeration circuits is called circuit A and compressors in circuit A are labelled A1, A2. At the same time fans are labelled A1 and A2.

BMS	Building Management System
DCFC	Dry Cooler Free Cooling
DGT	Discharge Gas Temperature
EXV	Electronic Expansion Valve
EHS	Electric Heater Stage
FC	Free cooling
OAT	Outdoor Air Temperature
LED	Light Emitting Diode
LEN	Sensor Bus (internal communication bus linking the basic board to slave boards)
SCT	Saturated Condensing Temperature
SST	Saturated Suction Temperature

## Operating modes:

Network mode/Net	Operating type: Network
Local-Off/LOFF	Operating type: Local Off
Local-On/L-C	Operating type: Local On mode
Local-Schedule/L-SC	Operating type: Local On following a time schedule
Master mode/Mast	Operating type: Master unit (master/slave assembly)
Remote mode/Rem	Operating type: Remote contacts

# 1 - SAFETY CONSIDERATIONS

---

## 1.1 - Safety guidelines

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

Only properly qualified installation engineers and highly qualified installers and technicians, fully trained for the product, are authorised to install and start up the equipment safely.

During all servicing operations all instructions and recommendations which appear in the installation and service instructions for the product, as well as on tags and labels fixed to the equipment and components and 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 standard safety codes 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 be shut off before any work is begun. Shut off the main power supply at the main circuit breaker or isolator.

***IMPORTANT: This equipment conforms to all applicable codes regarding 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 the power cable, electrical cables and conduits, terminal box covers and motor frames with great care.***

## 2 - CONTROL OVERVIEW

---

### 2.1 - Control system

AQUACIAT<sup>CALEO</sup> units come with the Connect Touch control that serves as a user interface and a configuration tool for controlling the operation of the heat pump.

### 2.2 - System functionalities

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

#### Connect Touch control system:

- Manages compressor to control the water loop.
- Controls fixed or variable-speed pumps to optimise water loop operation.
- Allows users to control the unit via the Connect Touch user interface.
- Provides web connectivity technology.
- Supports Connected Services (Remote connectivity, alarm notification, remote access, performance and operation automatic reporting, technical advice).
- Provides direct BMS integration capabilities (Modbus TCP/IP as standard, BACnet/IP option or Lon option).

### 2.3 - Connect Touch components

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

- 4.3" touch screen
- BMS connection
- Scroll compressor technology
- Diagnostics
- Web connectivity / e-mail transmission
- Heating control
- Electric Heating Stages control
- Domestic Hot Water production (optional)
- Boiler control (optional)

### 2.4 - Operating modes

#### The control 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 (Proprietary Protocol / BACnet / Modbus). Data communication cable is used to connect the unit to the RS485 communication bus.

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

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

## 3 - HARDWARE DESCRIPTION

### 3.1 - Control boards

Connect Touch is the main controller that constantly monitors the unit and manages the information received from various pressure and temperature probes.

The control system includes the following modules:

- Connect Touch (controller + user interface)
- SIOB/CIOB board that manages the major inputs and outputs of the controller
- AUX1 board used for controlling DHW, electric heating and others

Boards communicate via an internal bus.

### 3.2 - Power supply to boards

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

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

### 3.3 - Light emitting diodes

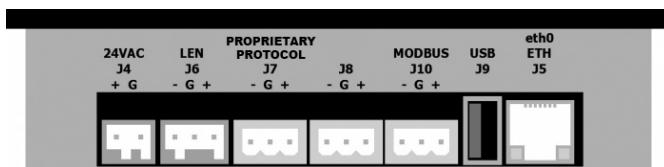
All boards continuously check and indicate the proper operation of their electronic circuits. A light emitting diode (LED) lights on each board when it is operating properly.

- The red LED flashing for a two-second period indicates correct operation. A different rate indicates a board or a software failure.
- The green LED flashes continuously on all boards to show that the board is communicating correctly over its internal bus (LEN bus). If the green LED is not flashing, this indicates a LEN bus wiring problem or a configuration issue.

### 3.4 - Connect Touch connections

Connections are located on the bottom of the main controller.

- The control offers communication protocols such as LEN, Proprietary Protocol, Modbus, or BACnet.
- It is possible to enable and disable end of line resistors via the System menu (see section 5.6).
- One Ethernet port allows for TCP/IP communication or BMS (Building Management System) connection.



### 3.5 - Pressure transducers

The control implements three types of pressure transducers, i.e. low pressure, high pressure, and water pressure type. The water pressure transducer is used only in case of units fitted with the hydronic module.

- **Discharge pressure transducer (high pressure type)**  
This transducer measures the discharge pressure in the circuit. It is used to control condensing pressure or high pressure load shedding. Discharge pressure sensor is mounted on the discharge line piping of the circuit.
- **Suction pressure transducer (low pressure type)**  
This transducer measures the suction pressure in the circuit. It is used to control EXV, evaporating pressure (in heating mode) and monitor suction pressure safeties related to the compressor operating envelope. Suction pressure sensor is located on the suction piping of the circuit.
- **Economizer pressure transducer (high pressure type)**  
This sensor measures the intermediary pressure between suction and discharge pressure sensors. It is used for EXV economizer control. The sensor is mounted on the plate exchanger on the economizer side.
- **Water pressure transducer**  
As an option (hydronic module), this sensor is used to monitor the water pressure. The pump is protected against cavitation (low pump entering pressure).

### 3.6 - Temperature sensors

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

- **Water heat exchanger entering and leaving water temperature sensors**  
The water heat exchanger entering and leaving water temperature sensors are used for capacity control and safety purposes. These water temperature sensors are installed in the entering and leaving side.
- **Suction temperature sensors**  
Suction temperature sensors are used to control temperature at the compressor inlet line in order to ensure correct capacity control management.
- **Economizer suction temperature sensor**  
This sensor is used for economizer EXV control. The sensor measures the temperature of gas in the plate exchanger on economizer side before entering the compressor economizer port.
- **Outdoor air temperature sensor**  
This sensor measures the outdoor air temperature used to determine the summer mode (see section 6.6.3) or calculate the control point provided that the offset (reset) is based on the outdoor air temperature reading (see section 6.5.2).
- **Defrost temperature sensors**  
These sensors are used to determine the end of the defrost cycle for a circuit. Units with two fans have two defrost sensors, one sensor per each fan.
- **Domestic hot water temperature sensor (optional)**  
This sensor is used to measure the water tank temperature and control the heating request.
- **Master/Slave water sensors (optional)**  
These sensors measure the common water temperature in the master/slave system capacity control. They are installed only in the case of master/slave units.

### 3 - HARDWARE DESCRIPTION

#### 3.7 - Actuators

- **Electronic Expansion Valve**  
 The electronic expansion valve (EXV) is used to adjust the refrigerant flow. The high degree of accuracy with which the piston is positioned provides precise control of the refrigerant flow and suction superheat.
- **Four-way valve**  
 This valve is used for switching the unit into the defrost mode when necessary (see section 6.9).
- **Flow switch**  
 For units without internal pumps, a flow switch is mounted to ensure that the minimum flow rate required for the correct operation and protection of the system is maintained. If the flow switch fails, the alarm condition shuts off the unit.
- **Water pump (optional)**  
 The controller can regulate one external water heat exchanger pump. See section 6.4.
- **Boiler (optional)**  
 The boiler is activated when the operating conditions are not suitable for thermodynamic heating or the unit is down due to a detected failure. If there is a unit fault in the heating mode this output authorises start-up and shutdown of a boiler.
- **Electric heaters**  
 Electric heaters are normally used as a supplementary heating source in the heating mode.

#### 3.8 - Terminal block connections

Connections available at the user terminal block may vary depending on the selected options. The following table summarizes connections at the user terminal block.

**IMPORTANT: Some contacts can be accessed only when the unit operates in Remote mode.**

Description	Board	Connector	Remarks
On/Off Switch	SIOB/CIOB	DI-01, 32-33	Used for the unit on/off control (Remote mode only): open = unit is Off closed = heating allowed
Setpoint Switch	SIOB/CIOB	DI-02, 65-66	When the unit is under remote control, the volt-free contact is used to determine the active setpoint (see section 6.6.1): open = heating setpoint 1 is used closed = heating setpoint 2 is used
Limit Switch	SIOB/CIOB	DI-03, 73-74	Used to control demand limit: open = 100% capacity can be used, no demand limitation is applied closed = demand limitation applied (see section 6.3)
Flow Switch / Interlock Switch	SIOB/CIOB	DI-05, 34-35	Used to control the pump and unit operation: open = pump continues to run closed = pump is stopped (unit is not allowed to start)
DHW Tank Request Switch	SIOB/CIOB	DI-06, 63-64	Used to command the domestic hot water loop in case of DHW option: open = DHW disabled closed = DHW allowed
Running Relay	SIOB/CIOB	DO-05, 37-38	Used to signal a running status (at least one compressor start)
Alarm Relay	SIOB/CIOB	DO-06, 30-31	Used to signal an alarm: open = inactive (no alarms active) closed = alarm(s) active
Electrical Heat Stage #1 or Boiler	AUX1	DO-01, 51-52	Used to control the electrical heater stage 1 or boiler: open = electrical heater or boiler not active closed = electrical heater or boiler active
Electrical Heat Stage #2	AUX1	DO-02, 53-54	Used to control the electrical heater stage 2: open = output inactive, closed = output active
Electrical Heat Stage #3	AUX1	DO-03, 55-56	Used to control the electrical heater stage 3: open = output inactive, closed = output active
Electrical Heat Stage #4	AUX1	DO-04, 57-58	Used to control the electrical heater stage 4: open = output inactive, closed = output active

**NOTE: Please refer to the electrical scheme for more information about electrical terminal identification.**

### 3 - HARDWARE DESCRIPTION

#### 3.9 - RS485 wiring (best practice)

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

- For Proprietary Protocol or Modbus communication which is over 300 m or in a noisy environment with Variable Frequency Drive (VFD), a cable with two twisted pairs is recommended. For example, Belden 3106A or Alpha Wire 6454.
- For applications where the length of the cable is up to 300 m and there is no Variable Frequency Drive (VFD), it is possible to use cost-effective cable solutions, for example, Belden 8772.

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

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

If a shield is used, then the shield cable should be properly terminated and connected as short as possible at **ONLY** one end to the chassis ground (4.3-inch controllers).

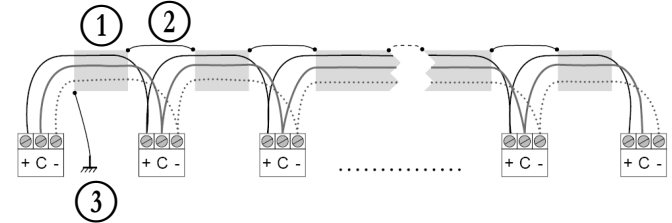
#### 3.9.1 - RS485 wiring: 4.3-inch controller

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

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

#### 3.9.2 - RS485: Daisy chain configuration

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

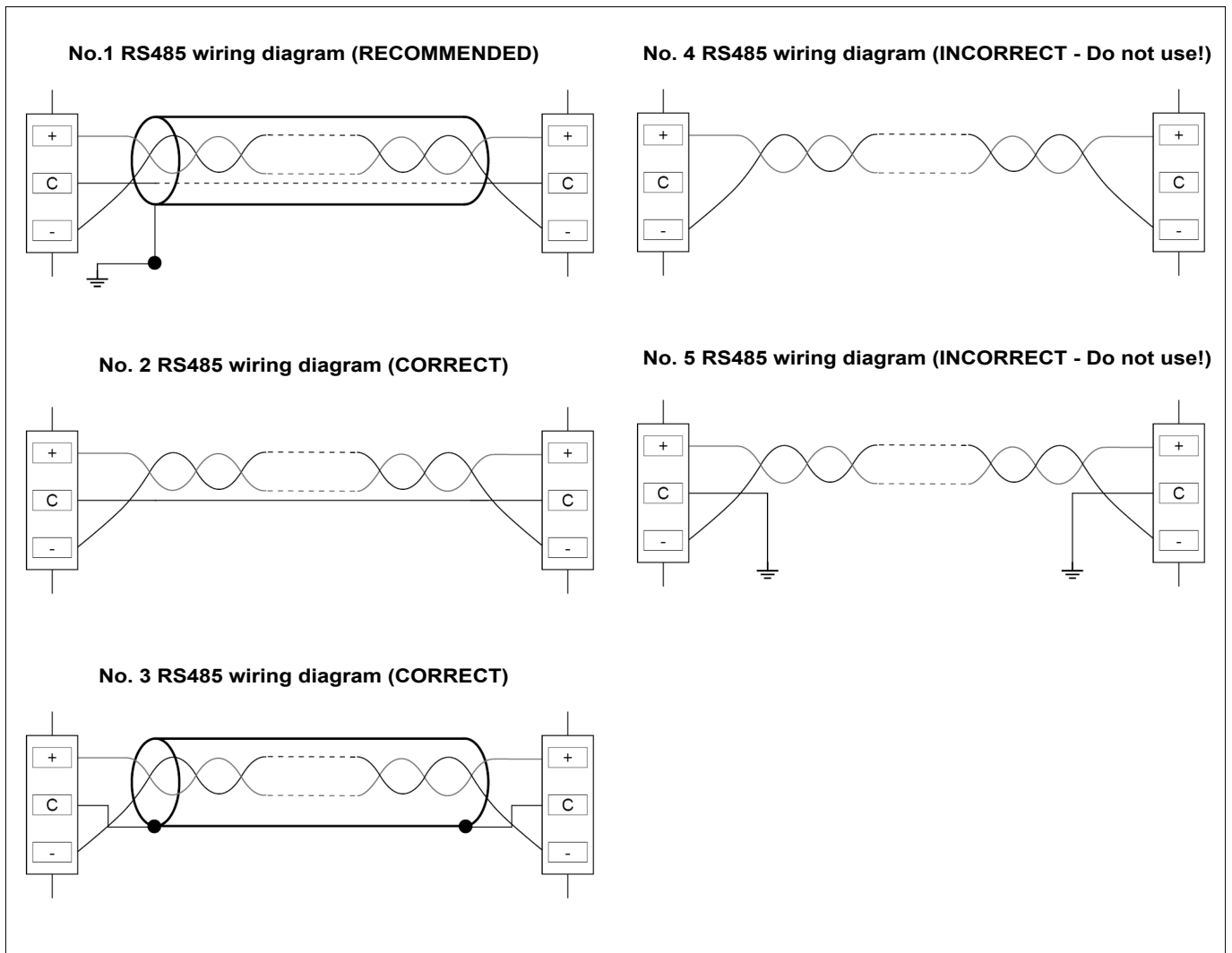


- Legend**
- ① Shield
  - ② Keep shield continued
  - ③ Connect shield to earth ground only at one point

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

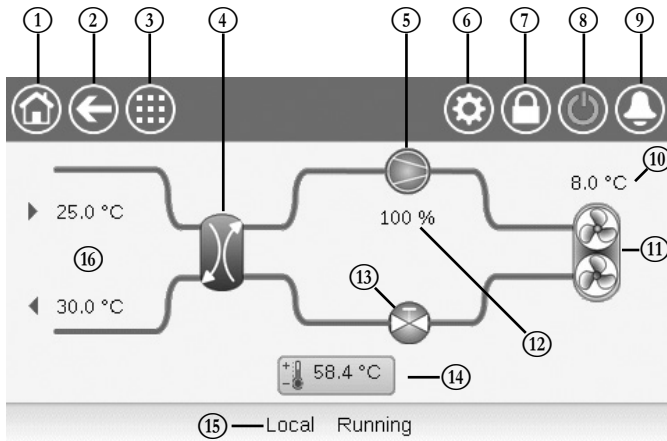
### 4.1 - Touch screen display

CONNECT TOUCH is a 4.3 in. 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 will go black. 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.

### 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.



- |   |                                    |
|---|------------------------------------|
| ① Home button                               | ⑨ Alarm button                     |
| ② Back button                               | ⑩ OAT (Outdoor Air Temperature)    |
| ③ Main menu button                          | ⑪ Condenser fans                   |
| ④ Heat exchanger                            | ⑫ Unit capacity                    |
| ⑤ Compressor                                | ⑬ EXV (Electronic Expansion Valve) |
| ⑥ System menu                               | ⑭ Setpoint                         |
| ⑦ Login button (restricted access to menus) | ⑮ Unit status                      |
| ⑧ Start/Stop button                         | ⑯ LWT and EWT (condenser)          |

### 4.3 - 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.

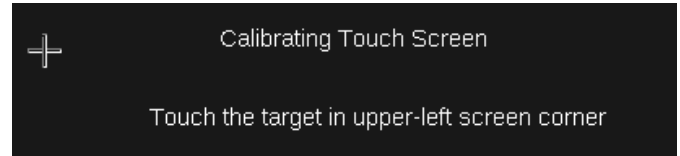
MESSAGE	STATUS
SUCCESS	Displayed when the requested action is executed.
INTERNAL COMMUNICATION FAILURE!	Displayed when the main application is not running.
HIGH FORCE IN EFFECT!	Displayed when the controller rejects the "Force" command (applicable only to status menus).
ACCESS DENIED!	Displayed when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

### 4.4 - 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"



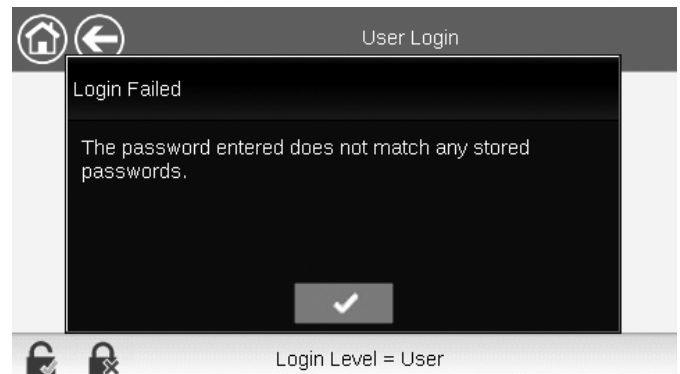
### 4.5 - Warning messages

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"

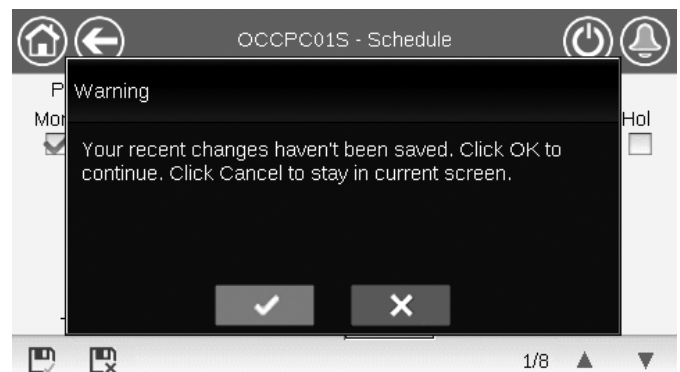


- Press **OK** and type the correct password (see section 5.7).

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

## 4 - USER INTERFACE: OVERVIEW

### 4.7 - Header buttons

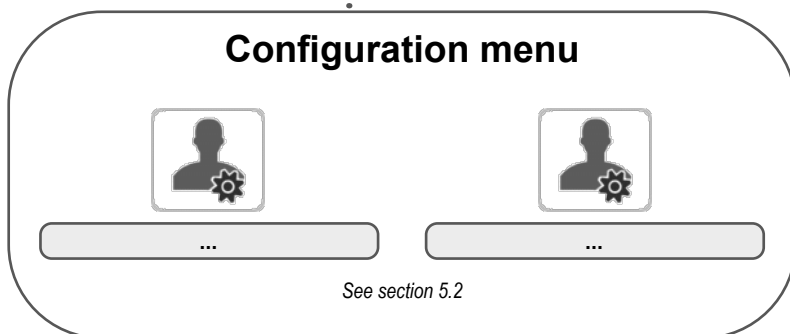
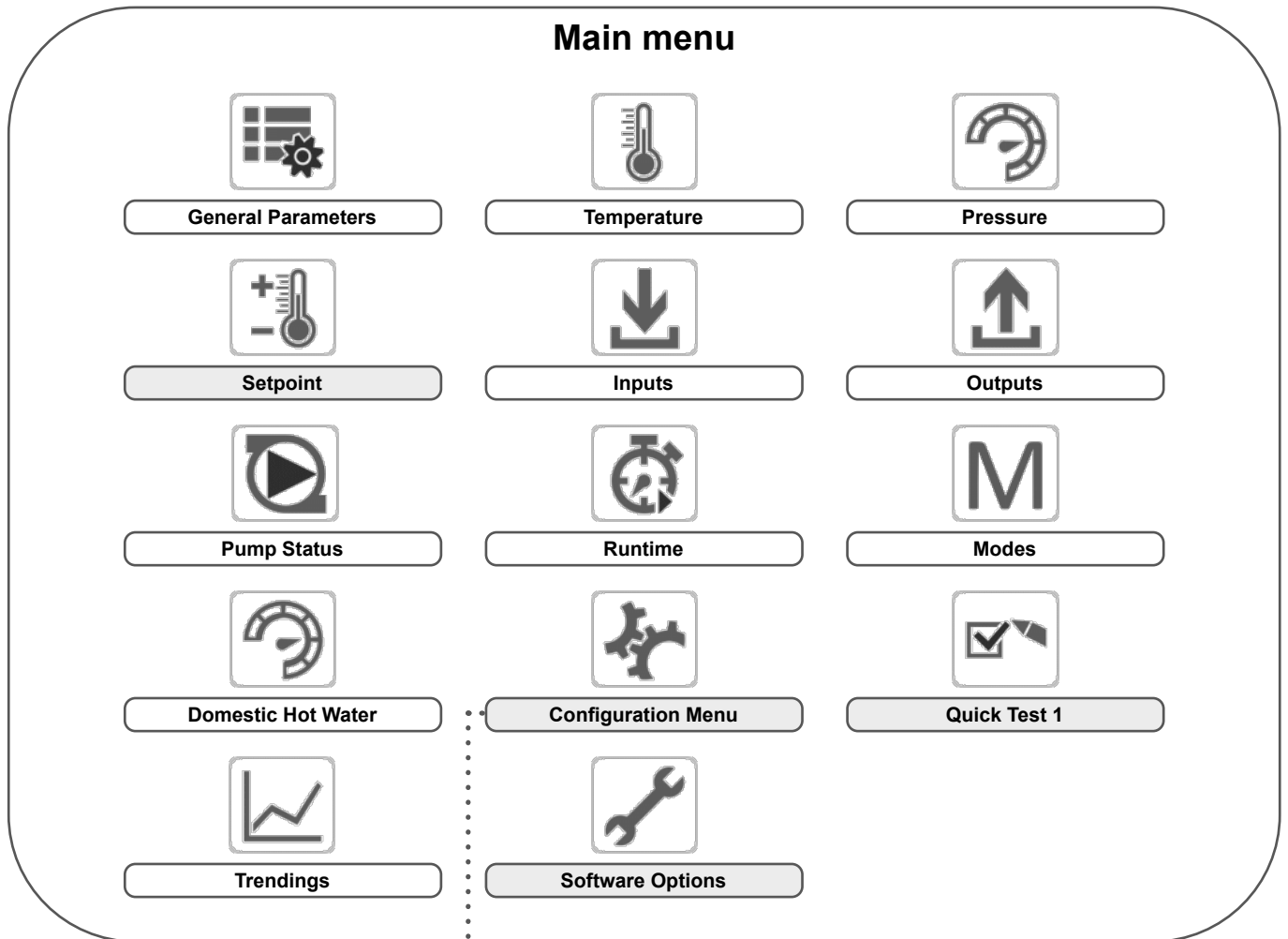
Button	Description
	<b>Home screen:</b> Press the button to go to the Home screen.
	<b>Previous screen:</b> Press the button to go back to the previous screen.
	<b>Main menu:</b> Press the button to go to the Main menu.
	<b>System menu:</b> Press the button to go to the System menu.
	<b>Login menu:</b> Used to log in to the controller in order to access higher configuration level.
	User is not logged in.
	User access level.
	<b>Unit Start/Stop:</b> Used to control the unit control mode.
	Unit is stopped.
	Unit is running.
	<b>Alarm menu:</b> Press the button to go to the Alarms menu.
	No alarm active on the unit
	<b>Blinking icon:</b> Partial alarm (one circuit affected by the existing alarm) or Alert (no action taken on the unit) <b>Steady icon:</b> Alarm(s) active on the unit

### 4.8 - Other buttons

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

# 5 - USER INTERFACE: MENU STRUCTURE

## 5.1 - Main menu



Legend:

- Basic access (no password)
- User password required

## 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 6.16.**

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



### GENUNIT – General Parameters

No.	Name	Status	Unit	Displayed text*	Description
1	CTRL_TYP	0 to 2	-	Local=0 Net.=1 Remote=2	Operating mode: 0 = Local, 1 = Network, 2 = Remote
2	STATUS	xxx	-	Running Status	Unit running status: 0 = Off, 1 = Running, 2 = Stopping, 3 = Delay, 4 = Trip out, 5 = Ready, 6 = Override, 7 = Defrost, 8 = Run Test, 9 = Test
3	min_left	-	min	Minutes Left for Start	Minutes left before the unit start-up
4	SP_SEL	0 to 2	-	Setpoint Select	Setpoint select
5				0=Auto. 1=Spt1. 2=Spt2	0 = Auto, 1 = Setpoint 1, 2 = Setpoint 2
6	SP_OCC	no/yes	-	Setpoint Occupied?	Setpoint occupied?
7	CHIL_S_S	disable/enable	-	Net.: Cmd Start/Stop	Unit start/stop via Network: When the unit is in Network mode, start/stop command can be forced
8	CHIL_OCC	no/yes	-	Net.: Cmd Occupied	Unit time schedule via Network: When the unit is in Network mode, the forced value can be used instead of the real occupancy state
9	CAP_T	0 to 100	%	Percent Total Capacity	Total unit capacity
10	DEM_LIM	0 to 100	%	Active Demand Limit Val	Active demand limit value: When the unit is Network mode, the minimum value will be used compared to the status of the external limit switch contact and the demand limit switch setpoint
11	SP	-	°C/°F	Current Setpoint	Current setpoint
12	CTRL_PNT	26.7 to 65.0 80.0 to 149.0	°C °F	Control Point	Control point: Water temperature that the unit must produce
13	CTRL_WT	-	°C/°F	Control Water Temp	Control water temperature
14	EMSTOP	disable/enable	-	Emergency Stop	Emergency stop
15	ALM	xxx	-	Alarm	Alarm status

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



### TEMP – Temperature

No.	Name	Status	Unit	Displayed text*	Description
1	EWT	-	°C/°F	Entering Water Temp	Entering water temperature: Used for capacity control
2	LWT	-	°C/°F	Leaving Water Temp	Leaving water temperature: Used for capacity control
3	OAT	-	°C/°F	Outside Air Temperature	Outdoor air temperature: Used to determine a number of control mechanisms such as heat/cool changeover, water exchanger heater operation, defrost cycle
4	CHWSTEMP	-	°C/°F	Master/Slave Temperature	Master/slave temperature
5	SCT_A	-	°C/°F	Saturated Condensing Tp	Saturated condensing temperature
6	SST_A	-	°C/°F	Saturated Suction Tmp	Saturated suction temperature
7	SUCT_A	-	°C/°F	Suction Gas Temperature	Suction gas temperature
8	ECO_SST	-	°C/°F	Eco. Saturated Suction T	Economizer saturated suction temperature
9	ECO_SUCT	-	°C/°F	Economizer Suction Gas T	Economizer suction gas temperature
10	DEFRT_A	-	°C/°F	Defrost Temperature A	Defrost temperature 1 – sensor linked to the first fan
11	DEFRT_2	-	°C/°F	Defrost Temp Second Coil	Defrost temperature 2 – sensor linked to the second fan (only for unit size 200, 300)
12	DHW_TT	-	°C/°F	DHW Tank Temperature	Domestic hot water tank temperature

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

## 5 - USER INTERFACE: MENU STRUCTURE



### PRESSURE – Pressure

No.	Name	Status	Unit	Displayed text*	Description
1	DP_A	-	kPa/PSI	Discharge Pressure	Compressor discharge pressure
2	SP_A	-	kPa/PSI	Main Suction Pressure	Compressor suction pressure
3	ECO_SP_A	-	kPa/PSI	Eco. Suction Pressure	Economizer suction pressure
4					
5				INTERNAL HYDRONIC MODULE	Internal hydronic module
6	W_P_IN	-	kPa/PSI	Inlet Water Pressure	Inlet water pressure

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



### SETPOINT – Setpoint

No.	Name	Status	Default	Unit	Displayed text*	Description
1	hsp1	26.7 to 65.0 80.0 to 149.0	65.0 149.0	°C °F	Heating Setpoint 1	Heating setpoint 1 (used during occupied periods)
2	hsp2	26.7 to 65.0 80.0 to 149.0	65.0 149.0	°C °F	Heating Setpoint 2	Heating setpoint 2 (used during unoccupied periods)
3	hramp_sp	0.1 to 1.1 0.2 to 2.0	0.5 1.0	^C ^F	Heating Ramp Loading	Ramp loading setpoint (rate at which the water temperature may change within one minute)
4	lim_sp1	0 to 100	100	%	Switch Limit Setpoint	Setpoint used for capacity limitation

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



### INPUTS – Inputs

No.	Name	Status	Unit	Displayed text*	Description
1	ONOFF_SW	open/close	-	Remote On/Off Switch	Remote On/Off switch
2	SETP_SW	open/close	-	Remote Setpoint Switch	Remote setpoint switch: open = setpoint 1 closed = setpoint 2
3	LIM_SW	open/close	-	Limit Switch	Demand limit switch
4	LIM_ANAL	-	mA	Limit Analog Input	Limit Analog Input 4-20mA
5	FLOW_SW	open/close	-	Flow Switch	Water exchanger flow switch
6	HP_SW_A	open/close	-	HP Switch Circuit A	High pressure switch, circuit A
7	DHW_REQ	open/close	-	DHW Tank Request	Domestic hot water tank request
8	FDBK_A1	open/close	-	CPA1 Safety FeedBack	Compressor A1 safety feedback (open contact = compressor is stopped)
9	FDBK_A2	open/close	-	CPA2 Safety FeedBack	Compressor A2 safety feedback (open contact = compressor is stopped)

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



### OUTPUTS – Outputs

No.	Name	Status	Unit	Displayed text*	Description
1	CP_A1	off/on	-	Compressor A1 Output	Compressor A1 status
2	CP_A2	off/on	-	Compressor A2 Output	Compressor A2 status
3	FAN_A1LS	off/on	-	Fan A1LS Output	Fan A1 low speed status
4	FAN_A1HS	off/on	-	Fan A1HS Output	Fan A1 high speed status
5	FAN_A2LS	off/on	-	Fan A2LS Output	Fan A2 low speed status
6	FAN_A2HS	off/on	-	Fan A2HS Output	Fan A2 high speed status
7	EXV_A	-	%	Main EXV Position	Main EXV position
8	EXV_ECO	-	%	Economizer EXV Position	Economizer EXV position
9	EV_VALV1	off / on	-	ECO/CPA1 Isolation Valve	Economizer / compressor A1 isolation valve
10	EV_VALV2	off / on	-	ECO/CPA2 Isolation Valve	Economizer / compressor A2 isolation valve
11	RV_A	off/on	-	4 Way Refrigerant ValveA	4-way refrigerant valve, circuit A: Used to manage cooling / heating / defrost operation (heat pumps)
12	EXCH_HTR	off / on	-	Exchangers Heaters	Exchanger heater status (used to protect the water exchanger against freezing in case of low OAT)
13	BOILER	off / on	-	Boiler Command	Boiler command
14	EHS_STEP	0 to 4	-	Electrical Heat Stage	Electrical heating stage
15	PUMP_1	off / on	-	Pump 1 Output	Pump 1 output (internal pump)

## 5 - USER INTERFACE: MENU STRUCTURE



### OUTPUTS – Outputs (continued)

No.	Name	Status	Unit	Displayed text*	Description
16	PUMP_EXT	0 to 10	V	External Pump Output	External pump output
17	ALARM	off / on	-	Alarm Relay Status	Alarm relay status
18	RUNNING	off / on	-	Running Relay Status	Running relay status
19	DHW_3WV	off / on	-	Domestic Hot Water Valve	Domestic hot water valve

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



### PUMPSTAT – Pump Status

No.	Name	Status	Unit	Displayed text*	Description
1				DRIVE PUMP STATUS	Drive pump status
2	drv_pct	-	%	Pump Drive Percent	Pump drive percent
3	drv_pwr	-	kW	Pump Drive Power	Pump drive power
4	drv_i	-	A	Pump Drive Amps	Pump drive amps
5	drv_ver	-	-	Pump Drive Version	Pump drive version
6				0-10V PUMP STATUS	0-10V pump status
7	PUMP_EXT	0 to 100	%	External Pump Output	External pump output

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



### RUNTIME – Runtime

No.	Name	Status	Unit	Displayed text*	Description
1	hr_mach	-	hour	Machine Operating Hours	Machine operating hours
2	st_mach	-	-	Machine Starts Number	Number of machine starts
3	hr_cp_a1	-	hour	Compressor A1 Hours	Operating hours, compressor A1
4	st_cp_a1	-	-	Compressor A1 Starts	Number of starts, compressor A1
5	hr_cp_a2	-	hour	Compressor A2 Hours	Operating hours, compressor A2
6	st_cp_a2	-	-	Compressor A2 Starts	Number of starts, compressor A2
7	hr_fana1	-	hour	Circuit A Fan #1 Hours	Operating hours, fan 1
8	hr_fana2	-	hour	Circuit A Fan #2 Hours	Operating hours, fan 2
9	hr_pump1	-	hour	Water Pump Hours	Operating hours, water pump

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



### MODES – Modes

No.	Name	Status	Unit	Displayed text*	Description
1	m_limit	no/yes	-	Demand Limit Active	Demand limit active
2	m_ramp	no/yes	-	Ramp Loading Active	Ramp loading active
3	m_cooler	no/yes	-	Cooler Heater Active	Exchanger heater active
4	m_leadla	no/yes	-	Master Slave Active	Master/Slave active
5	m_heater	no/yes	-	Electric Heat Active	Electric heating active
6	m_boiler	no/yes	-	Boiler Active	Boiler active
7	m_summer	no/yes	-	Summer Active	Summer mode active
8	m_dhw	no/yes	-	DHW Active	DHW mode active
9	m_defr_a	no/yes	-	Defrost Active	Defrost mode active
10	m_spedfr	no/yes	-	Special Defrost Active	Free defrost mode active
11	m_sst_a	no/yes	-	Low Suction	Low suction temperature protection active (unit capacity cannot be increased)
12	m_dgt_a	no/yes	-	Compressor Envelope	Compressor envelope protection active (unit not allowed to start if water temperature is out of range)
13	m_hp_a	no/yes	-	High Pressure Override	High pressure override active
14	m_sh_a	no/yes	-	Low SuperHeat	Low superheat protection is active (unit will not be started)

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

## 5 - USER INTERFACE: MENU STRUCTURE



### DHW\_STAT – Domestic Hot Water

No.	Name	Status	Unit	Displayed text*	Description
1	dhw_mode	0 to 2	-	Mode	Mode
2				0=SHC, 1=DHW, 2=AntiLeg	0 = Space Heating Control (SHC) 1 = Domestic Hot Water (DHW) 2 = Anti-Legionella mode
3	dhw_dem	no/yes	-	DHW Demand	DHW demand
4	dhw_ovr	-1 to 100	-	DHW Override	DHW override
5	dhw_time	-	min	Current DHW Runtime	Current DHW runtime
6	shc_time	-	min	Current SHC Runtime	Current SHC runtime
7	sum_mode	no/yes	-	Summer Active	Yes = Summer mode active No = Summer mode not active
8	ctrl_pnt	-	°C/°F	Control Point	Current control point
9	DHW_TT	-40.0 to 115.0 -40.0 to 239.0	°C °F	DHW Tank Temperature	DHW tank temperature
10	DHW_REQ	open/close	-	DHW Request Input	DHW request input (used when tank water temperature sensor is not available)
11	dhw_vlv	open/close	-	Domestic Hot Water Valve	DHW valve output
12	leg_hour	-	hour	Antileg Last Start Hour	Number of hours passed since the start of anti-legionella session (the program cannot be activated more than once within 6 hours)

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



### QCK\_TST1 – Quick Test 1

No.	Name	Status	Default	Unit	Displayed text*	Description
1	QCK_TEST	no/yes	no	-	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
2	Q_F_A1LS	off/on	off	-	Fan Stage Circuit A1LS	Fan stage A1 low speed output, circuit A
3	Q_F_A1HS	off/on	off	-	Fan Stage Circuit A1HS	Fan stage A1 high speed output, circuit A
4	Q_F_A2LS	off/on	off	-	Fan Stage Circuit A2LS	Fan stage A2 low speed output, circuit A
5	Q_F_A2HS	off/on	off	-	Fan Stage Circuit A2HS	Fan stage A2 high speed output, circuit A
6	Q_EXV_A	0 to 100	0	%	Main EXV position	Main EXV position
7	Q_EXVECO	0 to 100	0	%	Economizer EXV Position	Economizer EXV Position
8	Q_VALV1	off/on	off	-	ECO/CPA1 Isolation Valve	ECO/CPA1 Isolation Valve
9	Q_VALV2	off/on	off	-	ECO/CPA2 Isolation Valve	ECO/CPA2 Isolation Valve
10	Q_RV_A	off/on	off	-	4-Way Refrigerant Valve	4-Way Refrigerant Valve
11	Q_HEAT_A	off/on	off	-	Exchangers Heaters	Exchangers Heaters
12	Q_BOILER	off/on	off	-	Boiler Command	Boiler Command
13	Q_EHS_ST	0 to 4	0	-	Electrical Heat Stage	Electric heating command (number of electric heating stages depends on factory configuration)
14	Q_DHWVLV	off/on	off	-	Domestic Hot Water Valve	Domestic Hot Water Valve
15	Q_PUMP1	0 to 2	0	-	Pump 1 Output	Pump 1 Output
16	Q_VPUMP1	0 to 100	0	%	Variable pump 1	Variable pump 1
17	Q_ALARM	off/on	off	-	Alarm Relay Status	Alarm Relay Status
18	Q_RUN	off/on	off	-	Running Relay Status	Running Relay Status

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

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

## 5 - USER INTERFACE: MENU STRUCTURE



### Trendings

No.	Name	Status	Unit	Displayed text*	Description
1	TEMP_LWT	-	°C/°F	-	Leaving water temperature
2	TEMP_EWT	-	°C/°F	-	Entering water temperature
3	TEMP_SCT_A	-	°C/°F	-	Saturated suction temperature, circuit A
4	TEMP_SST_A	-	°C/°F	-	Saturated suction temperature, circuit B
5	TEMP_SCT_B	-	°C/°F	-	Saturated condensing temperature, circuit A
6	TEMP_SST_B	-	°C/°F	-	Saturated condensing temperature, circuit B

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



### OPT\_STA – Software Options

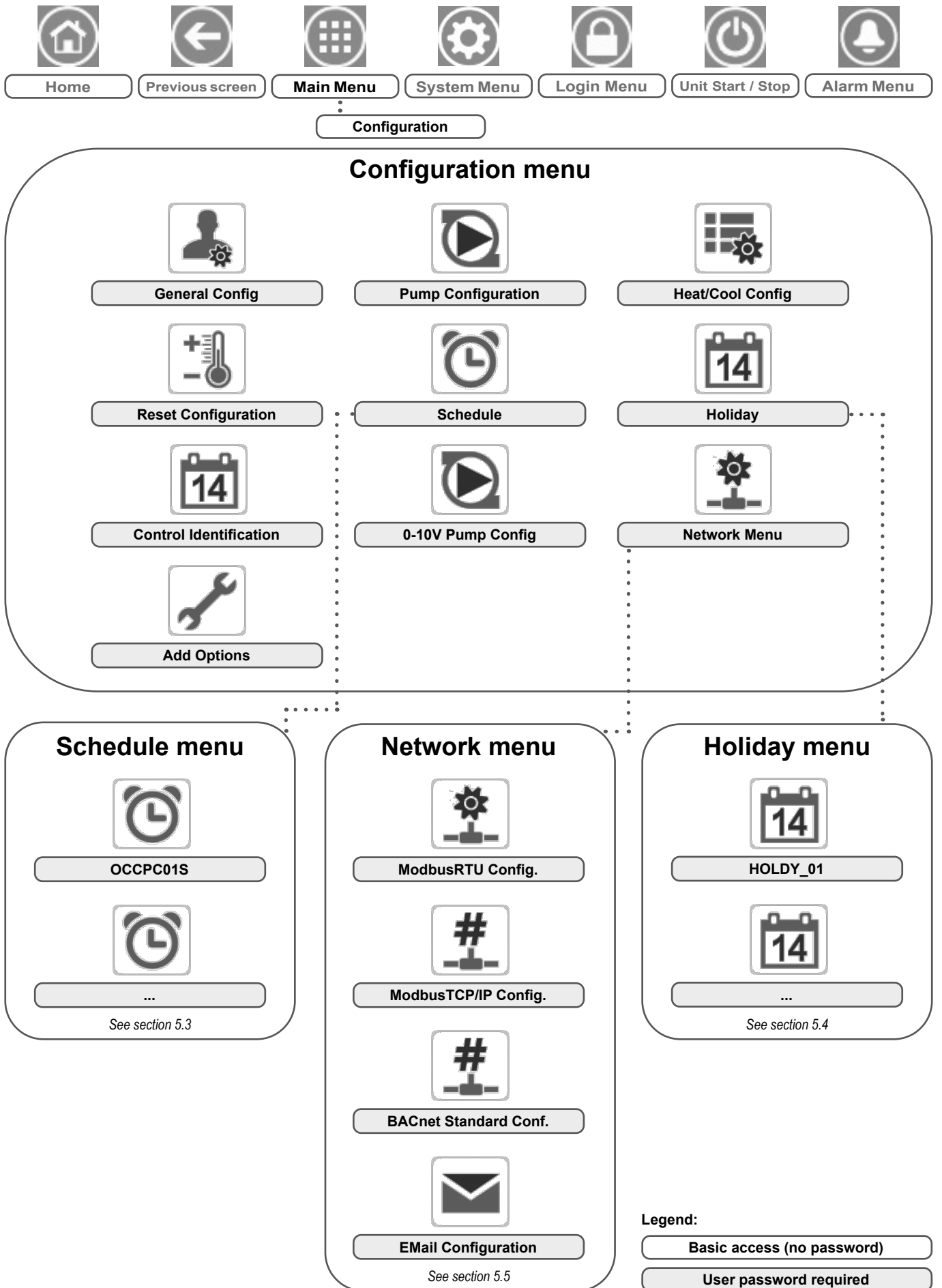
No.	Name	Status	Unit	Displayed text*	Description
1	opt149	no/yes	-	OPT149: BACnet	Parameter set to “yes” means that BACnet option which requires the Software Key is activated (see also section 6.11)
2	opt149B	no/yes	-	OPT149B: Modbus	Modbus option is provided as standard and it does not require the Software Activation Key (see also section 6.12)

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



# 5 - USER INTERFACE: MENU STRUCTURE

## 5.2 - Configuration menu



## 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 Config

No.	Name	Status	Default	Unit	Displayed text*	Description
1	ramp_sel	no/yes	no	-	Ramp Loading Select	Ramp loading sequence
2	off/on_d	1 to 15	1	min	Unit Off to On Delay	Unit OFF to ON delay

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



### PUMPCONF – Pump Configuration

No.	Name	Status	Default	Unit	Displayed text*	Description
1	pump_seq	no/yes	no	-	Exchanger Pump Enable	Water exchanger pump is enabled
2	pump_per	no/yes	no	-	Pump Sticking Protection	Pump anti-sticking protection
3	pump_loc	no/yes	yes	-	Flow Checked if Pump Off	Water flow is checked when the pump is off

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



### HCCONFIG – Heat/Cool Config

No.	Name	Status	Default	Unit	Displayed text*	Description
1	hr_sel	0 to 3	1	-	Heating Reset Select	Heating Reset Select
2					0=None, 1=OAT	0 = None, 1 = OAT
3					2=Delta T, 3=4-20mA	2 = Delta T (LWT-EWT) 3 = 4-20 mA control (external temperature sensor)
4	min_th	-25.0 to 0.0 -13.0 to 32.0	-20.0 -4.0	°C °F	Min Heating OAT Threshld	Minimum OAT threshold (used for unit protection control)
5	max_th	-100.0 to 100.0 -148.0 to 212.0	100.0 212.0	°C °F	Max Heating OAT Threshld	Maximum OAT threshold (used to define the Summer mode)
6	boil_th	-30.0 to 15.0 -22.0 to 59.0	-10.0 14.0	°C °F	Boiler OAT Threshold	Boiler OAT threshold
7	ehs_th	-5.0 to 21.1 23.0 to 70.0	5.0 41.0	°C °F	Elec Stage OAT Threshold	Electric heating stage, OAT threshold
8	ehs_back	no/yes	no	-	1 Elec Stage For Backup	One electric heating stage used for back-up
9	ehs_pull	0 to 60	0	min	Electrical Pulldown Time	Electrical pull-down time
10	ehs_defr	no/yes	no	-	Quick EHS For Defrost	Quick EHS for defrost enabled

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

## 5 - USER INTERFACE: MENU STRUCTURE



### RESETCFG – Reset Config

No.	Name	Status	Default	Unit	Displayed text*	Description
1	oathr_no	-20.0 to 51.7 -4.0 to 125.0	-10.0 14.0	°C °F	OAT No Reset Value	OAT, no reset value
2	oathr_fu	-20.0 to 51.7 -4.0 to 125.0	-20.0 -4.0	°C °F	OAT Full Reset Value	OAT, max. reset value
3	dt_hr_no	0 to 51.7 0 to 25.0	0 0	^C ^F	Delta T No Reset Value	Delta T, no reset value
4	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
5	l_hr_no	0 to 20	0	mA	Current No Reset Value	Current, no reset value
6	l_hr_fu	0 to 20	0	mA	Current Full Reset Value	Current, max. reset value
7	hr_deg	-30.0 to 30.0 -54.0 to 54.0	10.0 18.0	^C ^F	Heating Reset Deg. Value	Heating reset value

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



### CTRLID – Control Identification

No.	Status	Default	Displayed text*	Description
1	1-239	1	Element Number	Element number
2	0-239	0	Bus Number	Bus number
3	9600 / 19200 / 38400	9600	Baud Rate	Communication speed
4	-	TD	Device Description	Unit description
5	-	-	Location Description	Location description
6	-	-	Software Version	Software version
7	-	-	Serial Number	Serial number (MAC address)

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



### FLOWCONF – 0-10V Pump Config.

No.	Name	Status	Default	Unit	Displayed text*	Description
1	logictyp	0 to 2	0	-	Logic: 0=No,1=STEP,2=PID	Logic type: 0 = No 0-10V external pump 1 = 0-10V External Pump controlled by Step Logic 2 = 0-10V External Pump controlled by PID Logic
2	minspeed	0 to 45	10	%	Minimum Pump Speed	Minimum pump speed
3	maxspeed	55 to 100	100	%	Maximum Pump Speed	Maximum pump speed
4	step	1 to 20	5	-	Pump Speed Step	Pump speed step
5	dt_stp	2.0 to 20.0 3.6 to 36.0	5.0 9.0	^C ^F	Water Delta T Setpoint	Water delta T setpoint
6	deadband	0.5 to 2.0 0.9 to 3.6	1.0 1.8	^C ^F	Deadband (for Step ctrl)	Deadband for step control
7	dt_kp	-10 to 10	-2	-	PID Control Prop. Gain	PID control proportional gain
8	dt_ki	-10 to 10	-0.2	-	PID Control Integ. Gain	PID control integrative gain
9	dt_kd	-10 to 10	0	-	PID Control Deriv. Gain	PID control derivative gain
10	timer	1 to 60	10	sec	Reschedule Timer	Reschedule timer (delay before the new calculation is made – used for both Step and PID logic control)

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



### ADD\_OPT – Add Options

No.	Displayed text*	Description
1	MAC Address	Controller MAC address: This MAC address is requested by your local service representative when ordering any software-protected option (see also section 6.13)
2	Please Enter Your Software Activation Key	Software Activation Key provided by a service technician (see also section 6.13)
3	Unit must be Off	The unit should not be operating when installing the Software Activation Key

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

**NOTE: If you need to add an option, please contact your local service representative.**

## 5 - USER INTERFACE: MENU STRUCTURE

### 5.3 - Schedule menu

The Schedule menu includes four time schedules.



#### SCHEDULE – Schedule Menu

Icon	Name	Displayed text*	Description
	OCCPC01S	OCCPC01S - Schedule	Unit on/off time schedule
	OCCPC02S	OCCPC02S - Schedule	Setpoint schedule
	OCCPC03S	OCCPC03S - Schedule	Domestic hot water schedule
	OCCPC04S	OCCPC04S - Schedule	Anti-legionella schedule

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

**IMPORTANT: For more information about schedule setting, please see section 6.14.**

### 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 (French by default).



#### HOLIDAY – HOLDY\_01 (...)

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

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

**IMPORTANT: For more information about holiday setting, please see section 6.15.**

## 5 - USER INTERFACE: MENU STRUCTURE





### 5.5 - Network menu

The Network menu allows the user to change network setting for BACnet/Modbus and define e-mail accounts used for alarm notifications (see section 8.3).

**NOTE: If you need to add an option (BACnet), please contact your local service representative. Modbus option is provided as standard.**



#### NETWORK – Network Menu

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

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



#### MODBUSRS – ModbusRTU Config.

No.	Name	Status	Default	Unit	Displayed text*	Description
1	modrt_en	no/yes	no	-	RTU Server Enable	RTU Server Enable
2	ser_UID	1 to 247	1	-	Server UID	Server UID
3	metric	no/yes	yes	-	Metric Unit	Metric Unit
4	swap_b	0 to 1	0	-	Swap Bytes	Swap Bytes
5					0 = Big Endian	0 = Big Endian
6					1 = Little Endian	1 = Little Endian
7	baudrate	0 to 2	0	-	Baudrate	Baudrate
8					0 = 9600	0 = 9600
9					1 = 19200	1 = 19200
10					2 = 38400	2 = 38400
11	parity	0 to 2	0	-	Parity	Parity
12					0 = No Parity	0 = No Parity
13					1 = Odd Parity	1 = Odd Parity
14					2 = Even Parity	2 = Even Parity
17	stop_bit	0 to 1	0	-	Stop bit	Stop bit
18					0 = One Stop Bit	0 = One Stop Bit
19					1 = Two Stop Bits	1 = Two Stop Bits
20	real_typ	0 to 1	1	-	Real type management	Real type management
21					0 = Float X10	0 = Float X10
22					1 = IEEE 754	1 = IEEE 754
23	reg32bit	0 to 1	1	-	Enable 32 bits registers	Enable 32 bits registers
24					0 = IR/HR in 16 bit mode	0 = IR/HR in 16 bit mode
25					1 = IR/HR in 32 bit mode	1 = IR/HR in 32 bit mode

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



#### MODBUSIP – ModbusTCP/IP Config.

No.	Name	Status	Default	Unit	Displayed text*	Description
1	modip_en	no/yes	no	-	TCP/IP Server Enable	TCP/IP Server Enable
2	ser_UID	1 to 247	1	-	Server UID	Server UID
3	port_nbr	0 to 65535	502	-	Port Number	Port Number
4	metric	no/yes	yes	-	Metric Unit	Metric Unit
5	swap_b	0 to 1	0	-	Swap Bytes	Swap Bytes
6					0 = Big Endian	0 = Big Endian
7					1 = Little Endian	1 = Little Endian

## 5 - USER INTERFACE: MENU STRUCTURE



### MODBUSIP – ModbusTCP/IP Config. (continued)

No.	Name	Status	Default	Unit	Displayed text*	Description
8	real_typ	0 to 1	1	-	Real type management	Real type management
9					0 = Float X10	0 = Float X10
10					1 = IEEE 754	1 = IEEE 754
11	reg32bit	0 to 1	1	-	Enable 32 bits registers	Enable 32 bits registers
12					0 = IR/HR in 16 bit mode	0 = IR/HR in 16 bit mode
13					1 = IR/HR in 32 bit mode	1 = IR/HR in 32 bit mode
14	conifnam	xxx	J5	-	IP port interface name	IP port interface name
15	timeout	0 to 600	120	sec	Com. timeout (s)	Com. timeout (s)
16	idle	0 to 30	10	sec	Keepalive idle delay(s)	Keepalive idle delay(s)
17	intrvl	0 to 2	1	sec	Keepalive interval(s)	Keepalive interval(s)
18	probes	0 to 10	10	-	Keepalive probes nb	Keepalive probes nb

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



### BACNET – BACnet Parameters

No.	Name	Status	Default	Unit	Displayed text*	Description
1	bacena	disable/enable	disable	-	BACnet Enable	BACnet Enable
2	bacunit	no/yes	yes	-	Metric Units?	Metric Units?
3	network	1 to 40000	1600	-	Network	Network
4	udpport	47808 to 47823	47808	-	UDP Port Number	UDP Port Number
5	bac_id	1 to 4194302	1600001	-	Device Id manual	Device Id manual
6	auid_opt	disable/enable	disable	-	Device Id Auto Option	Device Id Auto Option
7	balmena	disable/enable	enable	-	Alarm reporting	Alarm reporting
8	mng_occ	no/yes	no	-	BACnet Manage Occupancy	BACnet Manage Occupancy
9	conifnam	xxx	J5	-	IP port interface name	IP port interface name
10					0 = J5 / J15	0 = J5 / J15
11					1 = J16	1 = J16

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



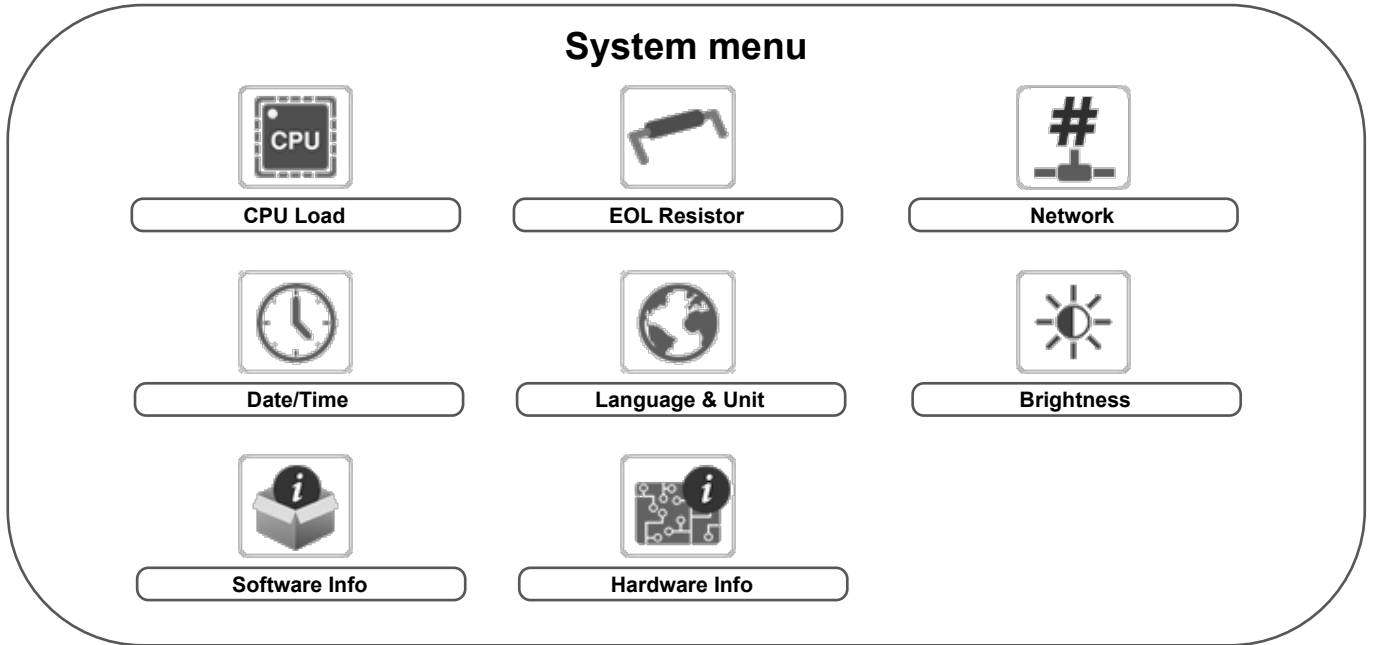
### EMAILCFG – EMail Configuration

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

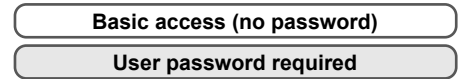
\*Depends on the selected language (French by default).

## 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.

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

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

## 5 - USER INTERFACE: MENU STRUCTURE



### CPU Load

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

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



### EOLRES – EOL Resistor

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

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



### Network

No.	Status	Default	Unit	Displayed text*	Description
1				IP Network Interface J5 (eth0):	IP Network Interface J5 (Ethernet 0):
2	-	xx:xx:xx:xx:xx:xx	-	MAC Address	MAC Address
3	-	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).
4	-	255.255.255.0	-	Subnet Mask	Subnet Mask
5	-	169.254.1.3	-	Default Gateway	Default Gateway
6	-	255.255.0.0	-	Gateway Mask	Gateway Mask
7	-	169.254.1.3	-	Domain Name Server (DNS)	Domain Name Server (DNS)
8	-	169.254.1.4			

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



### Date/Time

No.	Status	Displayed text*	Description
1	on/off	Daylight Saving Time	Summer/winter time activation
2	Greenwich Mean Time (UTC)	Location	Time zone
3	YYYY/MM/DD, HH:MM:SS	Date/Time	Current date and time (must be set manually)
4	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)
5	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)

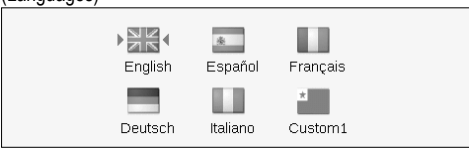
\*Depends on the selected language (French by default).



## 5 - USER INTERFACE: MENU STRUCTURE



### Language & Unit

No.	Displayed text*	Description
1	(Languages) 	<b>Display languages:</b> English, Spanish, French, German, Italian, custom language. <b>Custom language (Custom1):</b> The control system allows users to add new languages to the control. To learn more about language customization, please contact your local service representative. Custom languages can be uploaded only by a service representative.
2	System of measurement: US Imp/Metric	US Imp = Parameters displayed in US Imperial units Metric = Parameters displayed in metric units

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



### Brightness

No.	Status	Default	Unit	Displayed text*	Description
1	0 to 100	80	%	Brightness	Screen brightness

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



### Software Info

No.	Status	Displayed text*	Description
1	ECG-SR-20VF1100	Software Version	Software version number
2	N.NNN.N	SDK Version	SDK version number
3	NN	UI Version	User interface version
4	CIAT	Brand	Brand

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



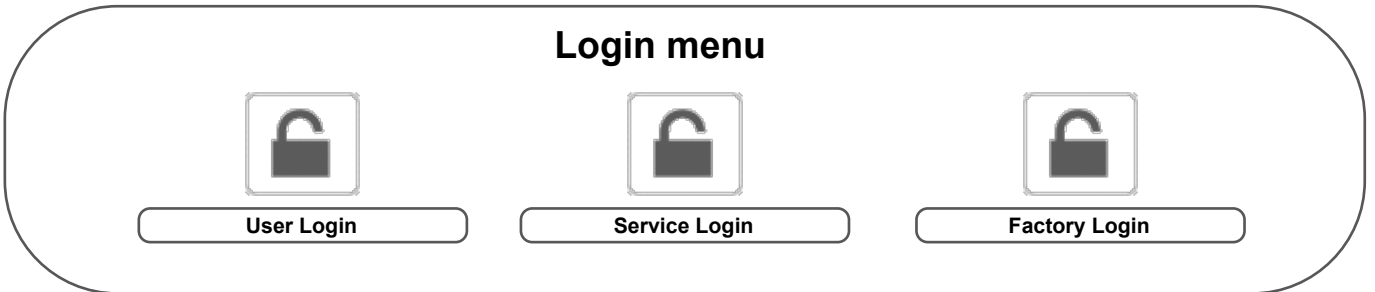
### Hardware Info

No.	Status	Displayed text*	Description
1	-	Board Variant	Board variant
2	-	Board Revision	Board revision
3	43	Screen size	Screen size in inches (4.3-inch controller)

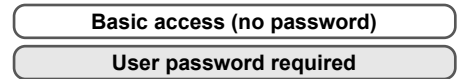
\*Depends on the selected language (French by default).

## 5 - USER INTERFACE: MENU STRUCTURE

### 5.7 - Login menu



**Legend:**



#### 5.7.1 - Access control

- The 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.



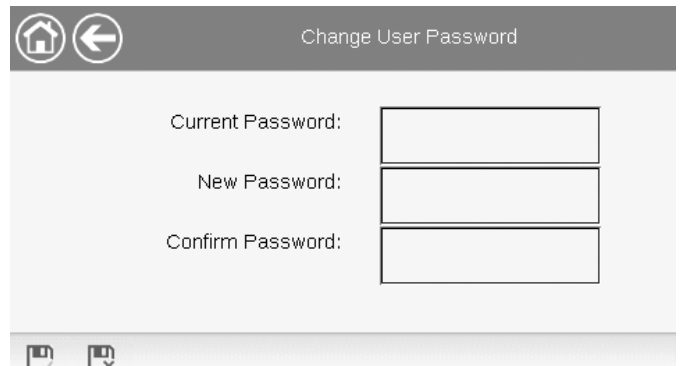
4. The User Login screen appears.

#### 5.7.3 - User password

User password can be modified in the User Login menu.

**To change your password**

1. Press the **Login** button, and then select *User Login*.
2. Press the **Change User Password** button.



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

#### 5.7.4 - Service & Factory login

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

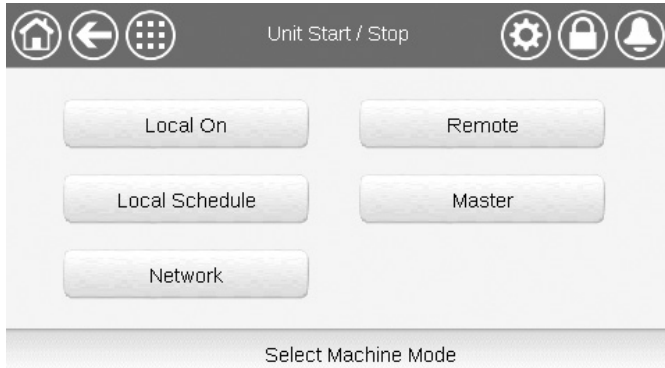
## 5 - USER INTERFACE: MENU STRUCTURE

### 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)	
<b>Local On</b>	Local On: The unit is in the local control mode and allowed to start.
<b>Local Schedule</b>	Local Schedule: The unit is in the local control mode and allowed to start if the period is occupied.
<b>Network</b>	Network: The unit is controlled by network commands and allowed to start if the period is occupied.
<b>Remote</b>	Remote: The unit is controlled by external commands and allowed to start if the period is occupied.
<b>Master</b>	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 (Master button is displayed if Master/Slave is enabled)
3. The Home screen will be displayed.

#### 5.8.3 - Unit stop

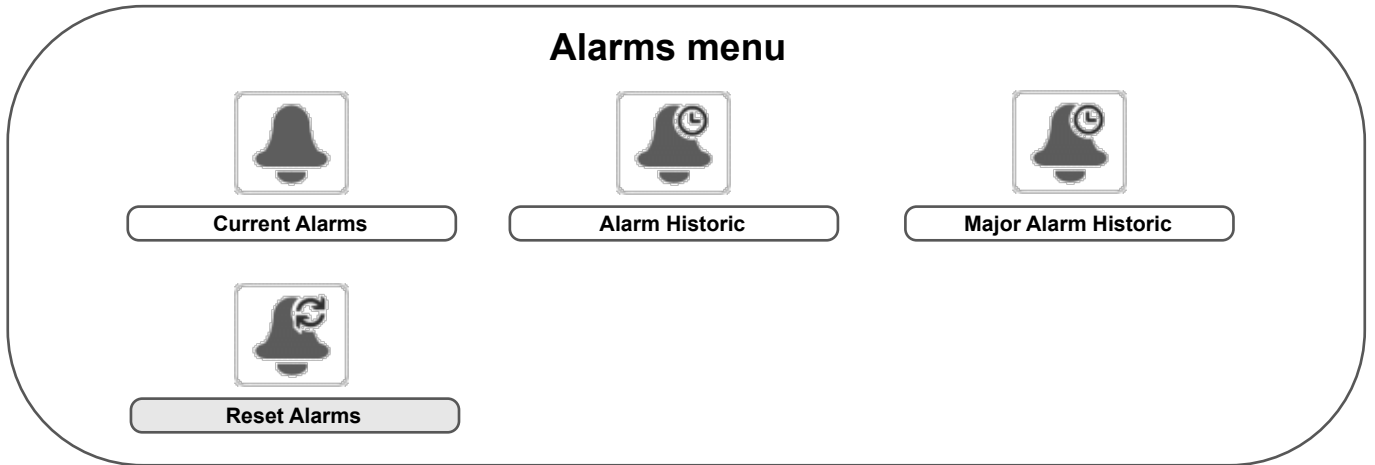
**To stop the unit**

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.

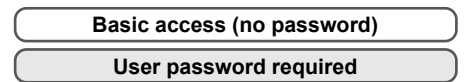


## 5 - USER INTERFACE: MENU STRUCTURE

### 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.
- Alarm Major 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 8.6.**



**CUR\_ALM – Current Alarms**

No.	Name	Date	Hour	Alarm text
1	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)
...	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)
10	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)

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



**ALMHIST1 – Alarm Historic**

No.	Name	Date	Hour	Alarm text
1	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)
...	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)
50	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)

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

## 5 - USER INTERFACE: MENU STRUCTURE



### ALMHIST2 – Major Alarm Historic

No.	Name	Date	Hour	Alarm text
1	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)
...	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)
50	Alarm	YYYY/MM/DD	HH:MM	Alarm text (see section 8.6)

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



### ALARMRST – Reset Alarms

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

\*Depends on the selected language (French 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 - STANDARD CONTROL OPERATIONS AND OPTIONS

### 6.1 - Unit 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 summarizes the unit control type [ctrl\_typ] and its running status with regard to the following parameters:

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

LOFF	Local off
L-C	Local on
L-SC	Local schedule
Rem	Remote
Net	Network
Mast	Master unit

- **Start/stop force command [CHIL\_S\_S]:** Chiller start/stop force command can be used to control the chiller state in the Network mode.
  - Command set to stop: The unit is halted.
  - Command set to start: The unit runs in accordance with schedule 1.
- **Remote start/stop contact status [Onoff\_sw]:** Start/stop contact status can be used to control the chiller state in the Remote operating type.
- **Master control type [ms\_ctrl]:** When the unit is the master unit in a two-chiller master/slave arrangement, the master unit may be set to be controlled locally, remotely or via network.
- **Start/stop schedule [chil\_occ]:** Occupied or unoccupied status of the unit.
- **Network emergency stop command [EMSTOP]:** If activated, the unit shuts down regardless of the active operating type.
- **General alarm:** The unit shuts down due to failure.

### 6.2 - Capacity control

The Connect Touch control adjusts the number of active compressors to keep the heat exchanger temperature at its setpoint. The precision with which this is achieved depends on the capacity of the water loop, the flow rate, and the load.

### 6.3 - Demand limit

The demand limit functionality is used to limit the unit power consumption whenever possible.

**Connect Touch control allows for limiting unit capacity:**

- By means of a user-controlled volt-free contact. The unit capacity can never exceed the switch limit setpoint activated by this contact. The limit setpoint can be modified in the SETPOINT menu.
- By setting the DEM\_LIM value when the unit is in Network mode.
- By lag limit set by the master unit (master/slave assembly). If the unit is not in the Master/Slave assembly, the lag limit value is equal to 100%.

Capacity limitation is expressed in percentage, where a limit value of 100% means that the unit may run with its full capacity (no limitation is implemented).

**Example: Switch-controlled demand limitation (Switch Limit Setpoint in the Setpoint menu)**

Switch Limit Setpoint [lim_sp1]		Compressor control
100%	$1 \times 2 = 2$ compressors	Two compressors can be started
75%	$0.75 \times 2 = 1.5$ compressor	One compressor can be started
50%	$0.5 \times 2 = 1$ compressor	One compressor can be started
25%	$0.25 \times 2 = 0.5$ compressor	No compressor can be started

Active operating type						Parameter status						Result	
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	Control type	Unit state
-	-	-	-	-	-	-	-	-	-	enable	-	-	off
-	-	-	-	-	-	-	-	-	-	-	yes	-	off
active	-	-	-	-	-	-	-	-	-	-	-	local	off
-	-	active	-	-	-	-	-	-	unoccupied	-	-	local	off
-	-	-	active	-	-	-	open	-	-	-	-	remote	off
-	-	-	active	-	-	-	-	-	unoccupied	-	-	remote	off
-	-	-	-	active	-	disable	-	-	-	-	-	network	off
-	-	-	-	active	-	-	-	-	unoccupied	-	-	network	off
-	-	-	-	-	active	-	-	local	unoccupied	-	-	local	off
-	-	-	-	-	active	-	open	remote	-	-	-	remote	off
-	-	-	-	-	active	-	-	remote	unoccupied	-	-	remote	off
-	-	-	-	-	active	disable	-	network	-	-	-	network	off
-	-	-	-	-	active	-	-	network	unoccupied	-	-	network	off
-	active	-	-	-	-	-	-	-	-	disable	no	local	on
-	-	active	-	-	-	-	-	-	occupied	disable	no	local	on
-	-	-	active	-	-	-	closed	-	occupied	disable	no	remote	on
-	-	-	-	active	-	enable	-	-	occupied	disable	no	network	on
-	-	-	-	-	active	-	-	local	occupied	disable	no	local	on
-	-	-	-	-	active	-	closed	remote	occupied	disable	no	remote	on
-	-	-	-	-	active	enable	-	network	occupied	disable	no	network	on

**IMPORTANT: When the unit is stopping or there is a demand to stop the unit, compressors are stopped consecutively.**

**In case of emergency stop, all compressors are stopped at the same time.**

## 6 - STANDARD CONTROL OPERATIONS AND OPTIONS

### 6.4 - Water pump control

The unit can control one water exchanger pump which can be either a fixed speed pump or a variable speed pump.

The pump can be factory-installed ("internal pump") or it can be supplied by the customer ("external pump").

Pump control logic	Internal pump	External pump
Constant speed control	yes	-
Variable speed control	yes	yes

The pump is normally turned on when the unit is running in Heating mode. The pump control method may vary depending on the type of the pump (internal or external) and the pump control logic set by service technicians. When the unit is "Off", the pump is stopped; however, the pump can be started in particular operating conditions when freeze protection of the heat exchanger is active (see section 6.5).

#### 6.4.1 - Constant speed control

Fixed speed pump can be controlled through the "Pump 1 Output" parameter in the Outputs menu. Fixed speed pump control applies only to internal pumps.

#### 6.4.2 - Variable speed control

The water flow is controlled based on Delta T (differential temperature) on the water exchanger; however, the control logic may differ depending on the type of the pump (internal/external).

Variable speed control	Internal pump	External pump
LEN drive	yes	-
0-10V drive: Step control	-	yes
0-10V drive: PID control	optional	yes

##### 6.4.2.1 - Internal pump control

The speed of the internal pump may vary depending on the current unit capacity and service configuration. For example, in defrost mode higher pump speed equals better efficiency; therefore, during defrost the pump speed will be set to the maximum speed that is allowed. At the same time, when the unit is running, but there is no heating demand, the pump speed will be low. Under normal operating conditions, the unit's nominal water flow should correspond to the minimum pump speed.

Depending on factory installation, the internal pump can be controlled either through the standard LEN drive or the optional 0-10V drive. The internal pump control can be set only by service technicians.

##### When controlled through the LEN drive:

- The status of the internal pump is displayed in the Pump Status menu under "Drive pump status".
- "External Pump Output" (PUMP\_EXT, Pump Status menu) and "External Pump Output" (PUMP\_EXT, Outputs menu) will be set to "0".

##### When controlled through the 0-10V drive:

- The drive output is controlled through 0-10V output, i.e. "External Pump Output" (PUMP\_EXT, Outputs menu).
- "External Pump Output" (PUMP\_EXT, Pump Status menu) displays its value in %.
- The output is controlled by a PID to satisfy the Water Delta T Setpoint defined by service technicians. When the unit is ready, the pump speed is set to pump saving speed (minimum pump speed). When the unit is running, water pump speed is clamped between the minimum and maximum pump speed.

##### 6.4.2.2 - External (customer) pump control

The control allows for managing the external 0-10V pump via the 0-10V Pump Config menu (FLOWCONF).

##### When controlled through the 0-10V drive:

- The pump is controlled through 0-10V output, i.e. "External Pump Output" (PUMP\_EXT, Outputs menu).
- "External Pump Output" (PUMP\_EXT, Pump Status menu) displays its value in %.

##### The customer pump can be controlled by:

- Step control logic.
  - a step value is added to the output each time the "Reschedule timer" has elapsed and  $\Delta T > \text{Water } \Delta T \text{ Setpoint} [\text{dt\_stp}] + \text{Deadband}$
  - a step value is removed from the output each time the "Reschedule timer" has elapsed and  $\Delta T < \text{Water } \Delta T \text{ Setpoint} [\text{dt\_stp}] - \text{Deadband}$
- PID control logic. The output is controlled by a PID to satisfy Water Delta T Setpoint.

##### To set 0-10V pump control method

1. Navigate to the Configuration menu.
2. Select *0-10V Pump Config* (FLOWCONF).
3. Set the pump control logic [logictyp].

##### Logic: 0=No,1=STEP,2=PID [logictyp]

0 = no (no external pump)

1 = Step control logic

2 = PID control logic

#### 6.4.3 - Pump protection (pump anti-stick function)

The control provides a means to automatically start the pump each day at 14:00 for 2 seconds when the unit is off.

Starting the pump periodically for a few seconds extends the lifetime of the pump bearings and the tightness of the pump seal.

##### To set pump sticking protection

1. Navigate to the Configuration menu.
2. Select *Pump Configuration* (PUMPCONF).
3. Set *Pump Sticking Protection* [pump\_per] to "yes".

##### Pump Sticking Protection [pump\_per]

no/yes

yes

### 6.5 - Heat exchanger anti-freeze protection

When the outside air temperature is low, the risk of heat exchanger freezing is increased. In systems without the anti-freeze protection, the water inside the heat exchanger would freeze and cause heat exchanger damage.

The control system comes with two solutions to protect the heat exchanger from freezing:

##### ■ Quick pump start algorithm

As standard, the automatic pump start-up algorithm protects the heat exchanger and the hydraulic module piping from freezing when the outside air temperature is down to -10°C. Forcing water circulation will protect the water from freezing.

- No additional configuration is required.

##### ■ Electric heater (optional) + quick pump start algorithm

The installation of this optional electric heater will protect the heat exchanger and the hydraulic module piping from freezing when the outdoor temperature goes down to -20°C.

- The cooler heater option requires service configuration.
- The status of the electric heater "Cooler Heater Active" can be verified by the user (MODES, m\_cooler).

# 6 - STANDARD CONTROL OPERATIONS AND OPTIONS

## 6.6 - Control point

The control point represents the water temperature that the unit must produce. The required capacity can be decreased 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.

### To verify the control point

1. Navigate to the Main menu.
2. Select *General Parameters* (GENUNIT).
3. Verify *Control Point* [CTRL\_PNT].

<b>Control Point [CTRL_PNT]</b>
26.7 to 65.0°C
80.0 to 149.0°F

### 6.6.1 - Active setpoint

Two setpoints can be selected, where the first setpoint is used during occupied periods, whereas the second one is used during unoccupied periods.

Depending on the current operation type, the active setpoint can be selected manually via the Main menu on the user interface, with the volt-free user contacts, with network commands (Proprietary Protocol, BACnet, Modbus) or automatically with the setpoint time schedule (schedule 2).

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

- **Setpoint selection [sp\_sel]:** Setpoint select permits selection of the active setpoint if the unit is in the Local operating type (GENUNIT – General Parameters).
- **Setpoint switch status [SETP\_SW]:** Remote Setpoint Switch (INPUTS – Inputs).
- **Occupied state of dual setpoint time schedule [SP\_OCC]:** Schedule for setpoint selection.

Local operating type			
Setpoint Select [SP_SEL]	Setpoint occupancy [SP_OCC]	Active setpoint	
1	sp 1	-	heating setpoint 1
2	sp 2	-	heating setpoint 2
0	auto	occupied	heating setpoint 1
0	auto	unoccupied	heating setpoint 2

Remote operating type	
Remote Setpoint Switch [SETP_SW]	Active setpoint
open	heating setpoint 1
closed	heating setpoint 2

Network operating type			
Setpoint Select [SP_SEL]	Setpoint occupancy [SP_OCC]	Active setpoint	
0	auto	occupied	heating setpoint 1
0	auto	unoccupied	heating setpoint 2

## 6.6.2 - Reset

Reset means that the active control point is modified so that the machine capacity required is adjusted to be as close as possible to the demand.

### The reset can be based on the following possibilities:

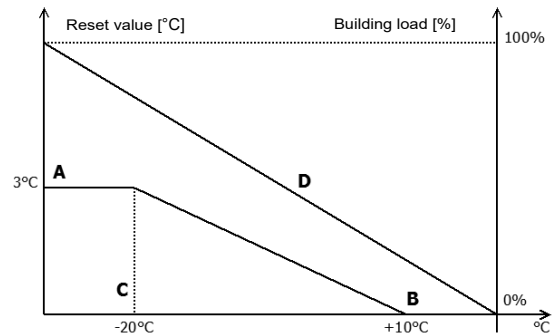
- OAT that gives the measure of the load trends for the building.
- Return water temperature ( $\Delta T$  provides the average building load).
- Dedicated 4-20 mA input.

The reset source and the reset parameters can be configured in the Main menu (RESETCFG – Reset Config). In response to a change in the reset source (e.g. OAT), the setpoint is normally reset 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.

### Reset example in Heating mode



-20	Reset based on OAT	10
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

### To select the type of reset

1. Navigate to the Configuration menu.
2. Select *Heat/Cool Config* (HCCONFIG).
3. Set *Heating Reset Select* [hr\_sel].

Heating Reset Select [hr_sel]	
0	None
1	OAT
2	DeltaT
3	4-20 mA



## 6 - STANDARD CONTROL OPERATIONS AND OPTIONS

### 6.7 - Built-in DHW and space heating control

Aquaciat<sup>Caleo</sup> heat pumps are specially designed to optimise the operation of heating installations that require hot-water production for traditional heating (SHC) and domestic hot water (DHW) requirements.

**Connect Touch permits constant and automatic optimization of the unit:**

- Control of a three-way directional on/off valve based on the heating or domestic hot water requirements (3-way valve used to switch between Space Heating Control and Domestic Hot Water). By default, the unit is operating in Space Heating mode.
- Control of the electric heater stages can complement the heating loop (1 to 4 electric heating stages). See section 6.8.2.

#### 6.7.1 - Heating of domestic hot water mode

The three-way valve permits switching the heating capacity to a heating circuit (fan coil units, radiators or floor heating), or to a domestic hot water tank. If the unit is in domestic hot water production mode, a "DHW" message is displayed on the user interface next to the current operating mode.

**The unit requests changeover to DHW mode provided that both water tank conditions and unit conditions are met:**

- Water tank conditions
  - "DHW Request Input" volt-free contact is closed or "DHW Tank Temperature" is below "DHW Setpoint" AND
  - The third timer program (schedule 3) is set to occupied (DHW mode requested) and the anti-legionella program is not requested (see section 6.14).
- Unit conditions
  - Summer mode is active (space heating is not required) OR
  - Summer mode is NOT active and the minimum SHC operating time and the maximum DHW operating time parameters allow for that (service-configured parameters).

**NOTE: Domestic Hot Water schedule can be activated regardless of the current operating mode (Local/Remote/Network).**

Based on the operating mode (SHC or DHW) the water setpoint is adjusted:

- In heating mode, hsp1 and hsp2 are used. They can be modified by user reset (see section 6.6.2).
- In domestic hot water production mode, DHW setpoint is used. No setpoint reset is used.

The unit requests changeover to the heating mode if at least one of the following conditions applies:

- The volt-free tank request contact is open.
- The maximum operating time for the DHW mode has elapsed.
- Time schedule 3 is in an unoccupied period (DHW mode not requested).

If a mode change is requested while a compressor is operating, it is stopped before the three-way valve changes to the new mode, and then the unit is restarted.

### 6.7.2 - Anti-legionella

Water storage tanks where the water may stagnate for some time could create the environment allowing for the growth of legionella bacteria. To prevent the risk of legionella growth in the hot water tank, the control performs the anti-legionella treatment which means that water temperature is increased until it reaches the Anti-Legionella setpoint (legionella bacteria do not survive in temperature at 60°C).

The anti-legionella program can be activated automatically via the schedule setting. To activate the anti-legionella program, the installer should set the fourth timer program (schedule 4). The water tank temperature is increased until the anti-legionella setpoint [leg\_sp] is reached or a 6-hour period has elapsed. The program cannot be activated more than once within 6 hours. For more information about setting the anti-legionella schedule, see section 6.14.

### 6.7.3 - Summer mode

The Summer mode is used to control Domestic Hot Water mode. When the Summer mode is active, space heating is not required, and the unit can increase the water temperature in the water tank in order to provide hot domestic water.

The Summer mode can be activated only when the outdoor air temperature exceeds the predefined Summer OAT threshold ("Maximum OAT Threshold").

**To set Summer OAT threshold**

1. Navigate to the Configuration menu.
2. Select *Heat/Cool Config* (HCCONFIG).
3. Set *Max Heating OAT Threshold* [max\_th].

**Maximum Heating OAT Threshold [max\_th]**

-100 to 100°C	100°C
-148 to 212°F	212°F

The Summer mode will end when the outdoor air temperature drops below the predefined Summer OAT threshold - 2K, e.g. if the Summer OAT threshold is set to 20°C, the Summer mode will end as soon as the outdoor air temperature reaches the temperature of 18°C.

**NOTE: When the Maximum OAT Threshold parameter is set to an unreachable value, e.g. 100°C, then the Summer mode will be disabled.**

## 6 - STANDARD CONTROL OPERATIONS AND OPTIONS

### 6.8 - Additional space heating control

The control provides additional heating control by means of the optional boiler or standard electric heating management.

#### 6.8.1 - Boiler control (optional)

The boiler can be activated as a heating replacement of a heat pump when the operating conditions are not suitable for mechanical heating. The unit and the boiler cannot operate together at the same time.

**The boiler is running under the following conditions:**

- The unit is in heating mode, but a fault prevents the use of the heat pump capacity.
- The unit is in heating mode, but works at a very low outdoor temperature, making the heat pump capacity insufficient. It is possible to adjust the boiler start-up based on the outside temperature. By default, the boiler is started when the outside air temperature is -10°C. This threshold can be modified by logged-in users in the Heat/Cool Config menu (HCCONFIG).

**To set boiler OAT threshold**

1. Navigate to the Configuration menu.
2. Select *Heat/Cool Config* (HCCONFIG).
3. Set *Boiler OAT Threshold* [boil\_th].

Boiler OAT Threshold [boil_th]	
-30 to 15°C	-10°C
-22 to 59°F	14°F

#### 6.8.2 - Electric heating control

Up to 4 stages of electric heating can be activated as supplemental or replacement heating when the operating conditions are not suitable for the mechanical heating.

**Electric heating is used to supplement mechanical heating under the following conditions:**

- The unit uses 100% of its available heating capacity.
  - The outside temperature is below a configurable threshold, i.e. "Elec Stage OAT Threshold" [ehs\_th].
  - The electrical pulldown time elapsed, i.e. "Electrical Pulldown Time" [ehs\_pull].
- The unit cannot fully satisfy current heating demand due to the protection mode, e.g. low entering water temperature.

**To set Electric heating stage OAT threshold**

1. Navigate to the Configuration menu.
2. Select *Heat/Cool Config* (HCCONFIG).
3. Set *Elec Stage OAT Threshold* [ehs\_th].

Elec Stage OAT Threshold [ehs_th]	
-5 to 21°C	5°C
23 to 70°F	41°F

**To set Electrical Pulldown Time**

1. Navigate to the Configuration menu.
2. Select *Heat/Cool Config* (HCCONFIG).
3. Set *Electrical Pulldown Time* [ehs\_pull].

Electrical Pulldown Time [ehs_pull]
0 to 60 min

Depending on user configuration, the last electric heating stage can be used for back-up when the unit is shut down because of the unit failure or operating envelope protection. Otherwise, this electric heating stage will not be used even if the heating demand cannot be satisfied. This electric heating backup option can be enabled by setting "1 Elec Stage For Backup" [ehs\_back] to "yes" in the Heat/Cool Config menu (HCCONFIG).

### 6.9 - Defrost control

When the outside air temperature is low and the ambient humidity is high, the probability of frost forming on the surface of the outdoor coil increases. The frost covering the outdoor coil may decrease the air flow across the coil and lead to lower performance of the unit. To remove the frost from the coil, the control initiates the defrost cycle when necessary.

#### 6.9.1 - Standard defrost

During the defrost cycle, the circuit is forced into the cooling mode. The heat (energy) is extracted from the water circuit by using compressors and reversing the 4-way valve. To prevent the water loop from cooling down, optional electric heating may be started. The defrost cycle lasts until the end of defrost temperature is achieved.

#### 6.9.2 - Free defrost

Free defrost is used in order to eliminate a relatively small amount of frost that has formed on the surface of the coil. Contrary to the standard defrost session; in the case of the free defrost session the heat (energy) is absorbed from the air. When running the free defrost, fans are activated and compressors are turned off. The free defrost is most efficient when the outside air temperature is above 1°C.

**IMPORTANT: In the case of a large amount of frost covering the coil, the standard defrost cycle will be started.**

### 6.10 - Master/Slave control

The control system allows for master/slave control of two units linked by the network. The master unit can be controlled locally, remotely or by network commands, while the slave unit remains in Network mode.

All control commands to the master/slave assembly (start/stop, setpoint selection, heating control, 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 ensure that the run times of the two units are equalised.

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.

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

#### 6.11 - BACnet (option 149)

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

**NOTE: This option requires the Software Activation Key (see section 6.13).**

#### 6.12 - Modbus (option 149B)

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

**NOTE: Modbus option is provided as standard.**

## 6 - STANDARD CONTROL OPERATIONS AND OPTIONS

### 6.13 - Software Activation Key(s)

Aquaciat<sup>Caleo</sup> units with Connect Touch offer some additional options which require Software Activation Keys (excluding Modbus):

- **BACnet** communication (option 149)
- **Modbus** communication (option 149B) - Modbus option is provided as standard.

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

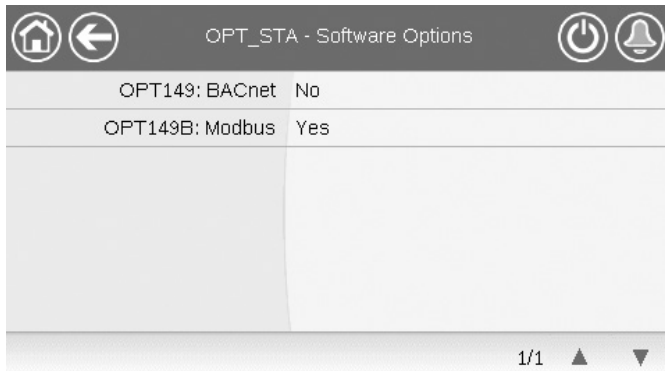
**Each option requires an individual software activation key.** To obtain the Software Activation Key, please contact your local service representative.

#### 6.13.1 - 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.



**IMPORTANT: In case the controller is replaced, the NEW Software Activation Key(s) based on the new MAC address must be installed again (see also section 6.13.2).**

#### 6.13.2 - Replacement mode

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

- When replacing the controller, it is necessary to install NEW Software Activation Key(s).
- Please contact your local service representative immediately to request NEW Software Activation Key(s).

##### In the Replacement mode:

- Software option(s) will be unlocked for a limited period of time (7 days since the first start of the compressor). Only options that have been installed on the unit before will be active in the Replacement mode!
- The list of available software options can be verified via the Main menu (OPT\_STA – Software Options).
- Alarm 10122 will be triggered. If the NEW Software Activation Key is not installed during the Replacement mode, the alarm will be reset automatically and software option(s) will be blocked.

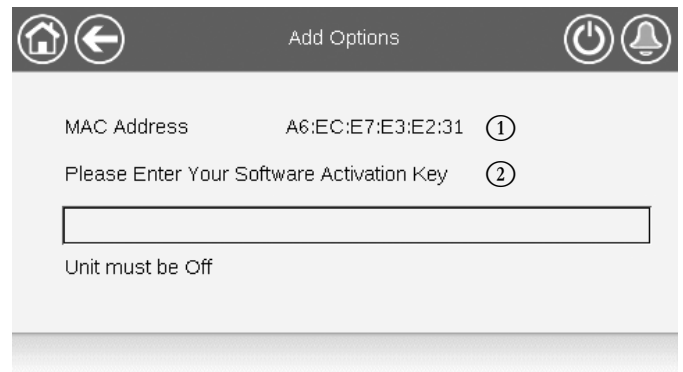
The Replacement mode ends when the Software Activation Key is installed or the period of 7 days elapsed (7 days since the first start of the compressor).

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

#### 6.13.3 - Software key installation

##### To install the Software Activation Key via Connect Touch display

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



##### Legend

1. Controller MAC address
2. Software Activation Key

3. 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.
4. Once the Software Activation Key is provided in the Keyboard screen, press **OK**.
5. Once the Software Activation Key is validated, the following message will be displayed: “**Software Activation Key Added**”.
6. 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 - STANDARD CONTROL OPERATIONS AND OPTIONS

### 6.14 - Schedule setting

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: heating setpoint 1 is used during occupied periods and heating setpoint 2 during unoccupied periods.

The **third timer program** (schedule 3, OCCPC03S) allows the unit to switch to the domestic hot water production mode. The mode is allowed during occupied periods.

The **fourth timer program** (schedule 4, OCCPC04S) is used to manage the anti-legionella treatment. The anti-legionella program can be started during occupied periods. The program can be activated not more than once within 6 hours. To learn more about anti-legionella treatment, see section 6.7.2.

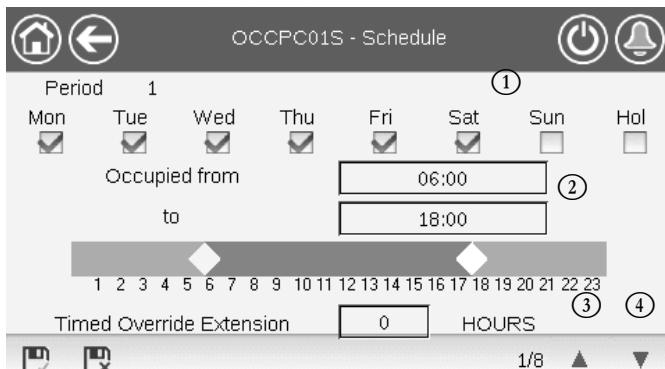
#### Occupancy periods

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. 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* (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								

	Occupied
	Unoccupied

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

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

### 6.15 - 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).

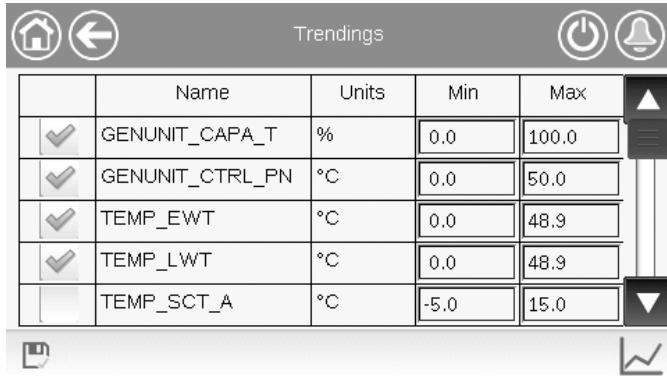
## 6 - STANDARD CONTROL OPERATIONS AND OPTIONS

### 6.16 - Trending

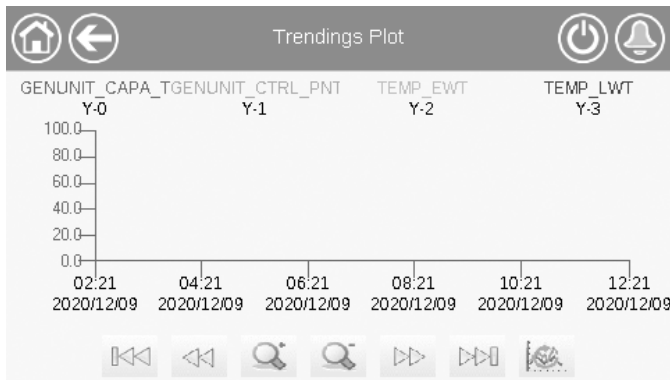
This function enables to visualise the operations of the unit and monitor a set of selected parameters.

#### 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.



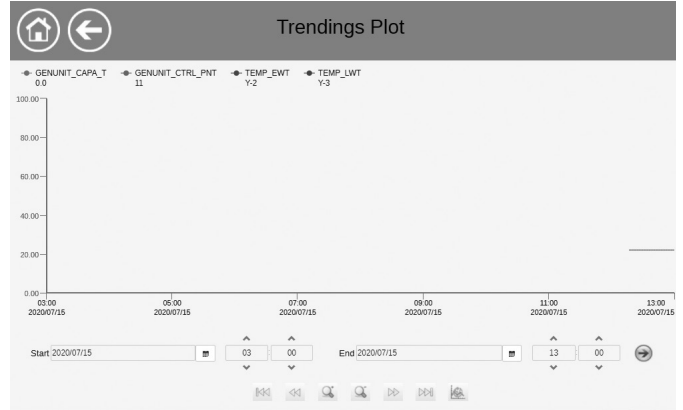
4. Press the **Trending** button to display the graph showing trends for the set of selected parameters.



- 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.

#### For web interface only:

- Set the time range (start/end dates and time) at the bottom of the Trendings Plot screen and press the **Arrow** button on the right side to display the graph showing the performance of the unit within a selected period of time.



# 7 - WEB CONNECTION

## 7.1 - Web interface

The Connect Touch 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.

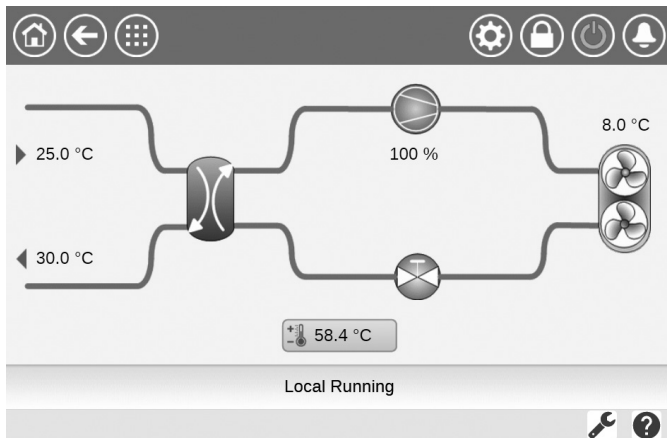
### To verify unit IP address

1. Go to the System menu.
2. Select *Network* (NETWORK).
3. Verify *TCP/IP Address for "IP Network Interface J5 (eth0)"*
  - **Unit default address:** 169.254.1.1 (J5, eth0)
  - The unit IP address can be changed in the Network table in the System menu (see section 5.6).

### To access Connect Touch 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)

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. The Manufacturer does not hold any responsibility or liability for damage caused by security breach.**


## 7.2 - Technical documentation

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

Once you connect to the Connect Touch 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 Connect Touch.

Document	Language	Type
<a href="#">BACnet User's guide</a>	English	PDF
<a href="#">BACnet Guide utilisateur</a>	French	PDF
<a href="#">ModBus User's guide</a>	English	PDF
<a href="#">ModBus Guide utilisateur</a>	French	PDF
<a href="#">License information</a>	English	PDF

**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 Connect Touch user interface starts “ringing”.



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



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

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

#### Connect Touch control distinguishes between two types of alarms:

- General alarms are used to indicate pumps failure, transducers faults, network connection problems, etc.
- Major alarms are used to indicate process failure.

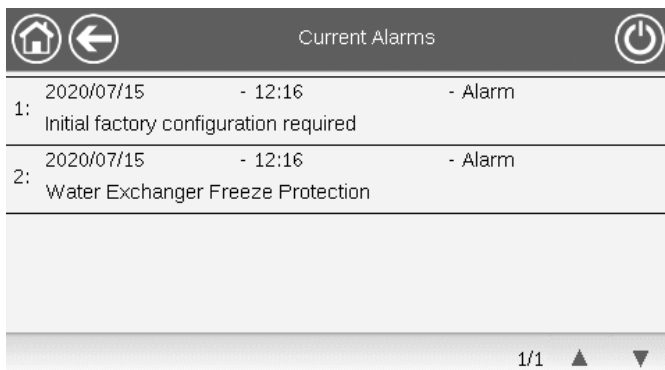
**IMPORTANT: All information regarding alarms (current and past alarms) can be found in the Alarms menu.**

### 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.

#### To define e-mail recipients

1. Press the **Main menu** button and navigate to the Configuration menu.
2. Go to the Network menu.
3. Select *EMail Configuration* (EMAILCFG).
4. Define user e-mail(s).

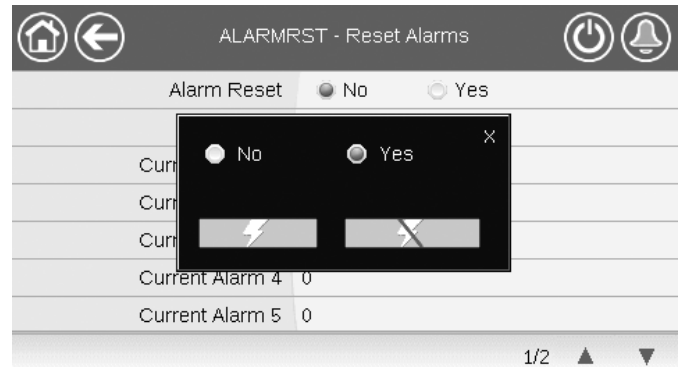
### 8.4 - Resetting alarms

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.

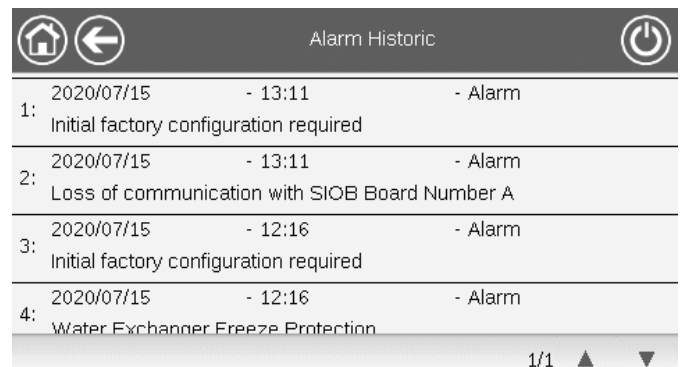
**IMPORTANT: Not all alarms can be reset by the user. Some alarms are reset automatically when operating conditions return to normal.**

### 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 - Alarms description

#### 8.6.1 - Alarms list

No.	Code	Description	Possible cause	Action taken	Reset
<b>Thermistor failure</b>					
1	15001	Water Exchanger Entering Fluid Thermistor Failure	Defective thermistor	Unit shuts down	Automatic, if thermistor reading returns to normal
2	15002	Water Exchanger Leaving Fluid Thermistor Failure	As above	As above	As above
3	15003	Circuit A Defrost Thermistor Failure	As above	As above	As above
4	15004	2d Coil Defrost Thermistor Failure	As above	As above	As above
5	15010	OAT Thermistor Failure	As above	As above	As above
6	15011	MASTER/Slave Common Fluid Thermistor Failure	As above	Master/Slave assembly is disabled	As above
7	15012	Circuit A Suction Gas Thermistor Failure	As above	Unit shuts down	As above
8	15024	Circuit A Economizer Gas Thermistor Failure	As above	As above	As above
9	15025	Domestic Hot Water Tank Thermistor Failure	As above	DHW mode is disabled	As above
<b>Transducer failure</b>					
10	12001	Circuit A Discharge Pressure Transducer Failure	Defective transducer	Unit shuts down	Automatic, if sensor voltage reading returns to normal
11	12004	Circuit A Suction Pressure Transducer Failure	As above	As above	Automatic, if sensor voltage reading returns to normal (up to 3 alarms within 24 hours); otherwise, Manual
12	12013	Circuit A Economizer Pressure Transducer	As above	As above	Automatic, if sensor voltage reading returns to normal
13	12024	Water Exchanger Entering Fluid Transducer Failure	As above	As above	As above
<b>Drive failure</b>					
14	190nn	Variable Speed Water Pump Failure	Speed controller fault, see section 8.6.2	Unit shuts down	Automatic, if operating conditions return to normal
<b>Communication failure</b>					
15	4901	Loss of communication with SIOB/CIOB Board Number A	Bus installation fault, communication error	Unit shuts down	Automatic, if communication is re-established
16	4601	Loss of communication with AUX1 Board	As above	Unit shuts down	As above
<b>Compressor failure</b>					
17	1101	Comp. A1 failed: Motor protection Kriwan Safety Opened	Compressor overheating	Unit shuts down	Manual
18	1201	Comp. A2 failed: Motor protection Kriwan Safety Opened	As above	Unit shuts down	Manual
<b>Process failure and others</b>					
19	10001	Water Exchanger Freeze Protection	No water flow, defective thermistor	Unit shuts down but the pump continues to run	Automatic (the first alarm within 24 hours); otherwise, Manual
20	10005	Circuit A Low Saturated Suction Temperature	Pressure transducer defective, EXV blocked or lack of refrigerant	Unit shuts down	As above
21	10008	Circuit A High Superheat	Pressure transducer defective, temperature sensor defective, EXV blocked or lack of refrigerant	Unit shuts down	Manual
22	10011	Circuit A Low Superheat	As above	Unit shuts down	Automatic (up to 3 alarms within 24 hours); otherwise, Manual
23	10014	Cooler Interlock Failure	Interlock input set on	Unit shuts down	Automatic (if the unit was stopped); otherwise, Manual
24	10016	Compressor A1 Not Started Or Pressure Increase not Established	Compressor breaker or fuse fault, compressor switch open	Compressor shuts down	Manual
25	10017	Compressor A2 Not Started Or Pressure Increase not Established	As above	Compressor shuts down	Manual
26	10030	Master/Slave communication Failure	Bus installation fault, communication error	Master/Slave assembly is disabled	Automatic, if communication is re-established



## 8 - DIAGNOSTICS

No.	Code	Description	Possible cause	Action taken	Reset
27	10031	Unit is in Network emergency stop	Network emergency stop command	Unit shuts down	Automatic, if emergency stop is deactivated
28	10032	Water Pump #1 Fault	Water pump fault	Unit shuts down	Manual
29	10037	Circuit A Repeated High Discharge Gas Overrides	Repetitive capacity decreases	No action (alert)	Automatic (no discharge gas overrides within 30 min) or Manual
30	10040	Circuit A Repeated Low Suction Temp Overrides	As above	As above	As above
31	10043	Low Entering Water Temperature In Heating	Low entering fluid temperature in Heating mode	No action (alert)	Automatic, if water temperature returns to normal or heating mode is stopped
32	10063	Circuit A High pressure switch Failure	High pressure switch failure	No action (alert)	Manual
33	10097	Water Exchanger Temperature Sensors Swapped	Inlet and outlet temperature reversed	Unit shuts down	Manual
40	10122	Replacement Mode: please contact Service Representative to activate options	Replacement Mode: Please contact your local service representative to obtain activation key(s) to retrieve (or activate) software options	Replacement Mode: Please contact your local service representative to obtain activation key(s) to retrieve (or activate) software 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)
41	57001	Circuit A SIOB/CIOB Low Voltage Failure	Supply fault	Unit shuts down	Automatic, if supply voltage returns to normal (up to 6 alarms within 24 hours); otherwise, Manual
42	10215	DHW Antilegionella Setpoint Not Achieved	Low OAT	No action (alert)	Automatic
<b>Master/Slave configuration failure</b>					
36	9001	Master Chiller Configuration Error	Configuration failure	Master/slave operation is disabled and the unit returns to the stand-alone mode	Automatic, if master/slave configuration returns to normal or the unit returns to the standalone mode
<b>Service and factory</b>					
34	130nn	Service Maintenance Alert 01: Service Maintenance Alert 02: Water loop size is low 03: Pump service is required 04: Water filter service 05: Scheduled Service Maintenance date is near or reached	Servicing action required / Contact Manufacturer Service Agency	Depending on the severity of the alarm, the unit may continue to operate or the unit shuts down	Manual (13001-13004) or Automatic (13005, if the new maintenance date is set)
35	13006	Fgas check needed, call your maintenance company	Maintenance date passed	No action (alert)	Automatic, if the new maintenance date is set
37	7001	Illegal Configuration	Incorrect unit configuration	Unit cannot be started	Automatic, if configuration is corrected
38	8000	Initial Factory Configuration Required	No factory configuration	Unit cannot be started	Automatic, if configuration is provided
39	8001	Illegal Brand Identifier	Incorrect unit configuration	Unit not allowed to start	Automatic, if configuration is corrected

## 8 - DIAGNOSTICS

### 8.6.2 - Drive alarms

The table given below presents the most common alarms associated with the variator malfunction (pump drive).

**Pump drive alarms are displayed based on the following formula:**

- 190-YY (YY stands for the alarm code)

Alarm code	Description	Action to be taken
01	over current during motor speed increase	Contact service technicians for more information
02	over current during motor speed decrease	As above
03	over current during motor speed hold	As above
04	over current in drive load	As above
05	over current in arm	As above
08	drive inlet phase loss	As above
09	drive outlet phase loss	As above
10	over voltage during motor speed increase	As above
11	over voltage during motor speed decrease	As above
12	over voltage during motor speed hold	As above
13	drive overload	As above
14	motor overload	As above
16	drive over heat	As above
17	emergency stop	As above
18	eprom #1 alarm	As above
19	eprom #2 alarm	As above
20	eprom #3 alarm	As above
21	RAM alarm	As above
22	ROM alarm	As above
23	micro-processor alarm	As above
24	communication failure alarm	As above
26	current sensor failure	As above
27	option board alarm	As above
29	low current drive operation alarm	As above
30	low voltage in power module alarm	As above
32	over torque alarm	As above
34	ground fault alarm	As above
37	over current during product speed increase	As above
38	over current during product speed decrease	As above
39	over current during product speed hold	As above
41	drive type error alarm	As above
46	external thermic sensor alarm	As above
47	analog input voltage signal error	As above
50	analog input signal error	As above
51	micro-processor alarm	As above
52	torque boost to high alarm	As above
53	micro-processor alarm	As above
84	auto setting alarm	As above
90	drive communication failure	As above
91	drive board reset	As above
92	drive configuration #1 invalid	As above
93	drive configuration #2 invalid	As above
94	drive configuration #3 invalid	As above
95	drive alert	As above

## 9 - MAINTENANCE

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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 Service Agency.

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

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

The quality management system of this product's assembly site has been certified in accordance with the requirements of the ISO 9001 standard (latest current version) after an assessment conducted by an authorized independent third party.  
The environmental management system of this product's assembly site has been certified in accordance with the requirements of the ISO 14001 standard (latest current version) after an assessment conducted by an authorized independent third party.  
The occupational health and safety management system of this product's assembly site has been certified in accordance with the requirements of the ISO 45001 standard (latest current version) after an assessment conducted by an authorized independent third party.  
Please contact your sales representative for more information.

Carrier SCS, Montluel, France.  
Manufacturer reserves the right to change any product specifications without notice.

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