

10199

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Instruction manual

**AQUACIAT<sup>CALEO</sup> (14-300)**

**CONNECT TOUCH**



## PREFACE

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 (014-300) 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 Manufacturer 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.

***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.

## Abbreviations

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

The following abbreviations are used frequently:

<b>BMS</b>	Building Management System
<b>DHW</b>	Domestic Hot Water
<b>EHS</b>	Electric Heating Stages
<b>EWT</b>	Entering Water Temperature
<b>EXV</b>	Electronic Expansion Valve
<b>LED</b>	Light Emitting Diode
<b>LEN</b>	Internal communication bus linking the controller and the boards
<b>LWT</b>	Leaving Water Temperature
<b>OAT</b>	Outdoor Air Temperature
<b>SHC</b>	Space Heating Control

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# 1 - SAFETY CONSIDERATIONS

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## 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

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## 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 controls:

- compressor start-up to control the water loop
- fixed or variable-speed pumps to optimise water loop operation

## 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

Connect Touch control may operate in three independent modes:

- **Local:** The unit is controlled by commands from the user interface.
- **Remote:** The unit is controlled by dry contacts.
- **Network:** The unit is controlled by network commands. Data communication cable is used to connect the unit to the RS485 communication bus or IP connection.

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

**IMPORTANT: 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 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 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 on boards

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

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

### 3.4 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).

### 3.5 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. The 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 7.6.3) or calculate the control point provided that the offset (reset) is based on the outdoor air temperature reading (see section 7.5.2).

#### 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.

### 3.6 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 7.8

#### 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 7.4

#### 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 - HARDWARE DESCRIPTION

### 3.7 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.

#### Terminal block connections

Description	Board	Connector	Remarks
On/Off Switch	SIOB	DI-01, 32-33	Used for the unit on/off control (Remote mode only): open = unit is Off closed = heating allowed
Setpoint Switch	SIOB	DI-02, 65-66	When the unit is under remote control, the volt-free contact is used to determine the active setpoint (see section 7.5.1): open = heating setpoint 1 is used closed = heating setpoint 2 is used
Limit Switch	SIOB	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 7.3)
Flow Switch / Interlock Switch	SIOB	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	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	DO-05, 37-38	Used to signal a running status (at least one compressor start)
Alarm Relay	SIOB	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

## 4 - HOW TO USE CONNECT TOUCH CONTROL

### 4.1 User interface

Connect Touch is a 4.3" colour touch screen with quick display of alarms, current unit operating status, etc. It allows for web connectivity and custom language support (control parameters displayed in the language selected by the user).



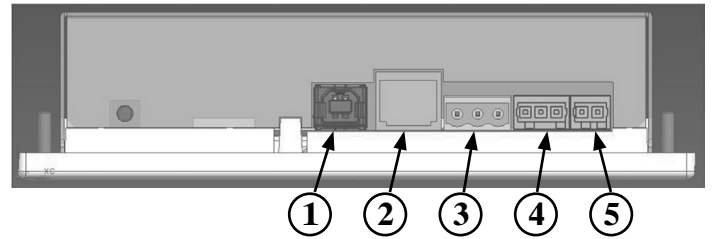
Connect Touch: Welcome screen for AQUACIAT<sup>CALEO</sup>

**If the touch screen is not used for a long period of time, the Welcome screen is displayed, and then it goes blank. The control is always active and the operating mode remains unchanged. Press anywhere on the screen and the Welcome screen will be displayed.**

### 4.2 Connections

Connections are located on the bottom side of the controller.

The controller comes with two RS485 ports, where the first port is used to connect to Modbus and the second RS485 port is used for internal communication. The Ethernet port allows for TCP/IP communication or BMS (Building Management System) connection thanks to BACnet/IP communication.






#### Legend:







1. USB connector
2. Ethernet connector
3. Modbus (RS485) connector \*
4. Internal bus (RS485)
5. Power supply connector (24 VAC)

\* This RS-485 bus can be used as a second internal bus for the connection of gateway. If it is the case, then Modbus RTU will NOT be available on this port.





### 4.3 Connect Touch buttons





#### HOME SCREEN

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

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

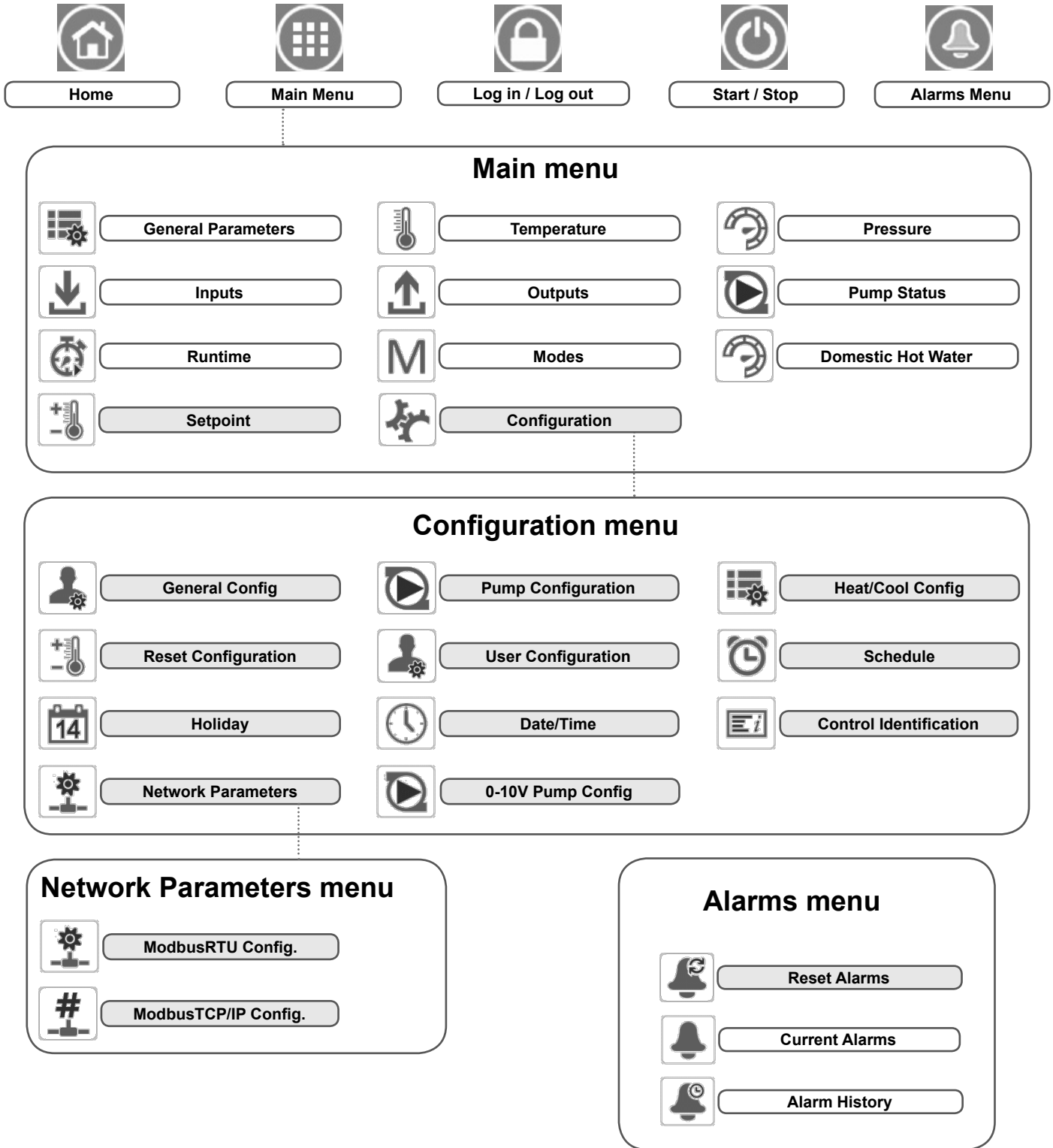
#### OTHER SCREENS

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

Force screen (override)	Navigation buttons
 Set force: Override the current command (if possible)	 4/ Displayed when the menu includes more than one page: Go to the previous page
 Remove force: Remove the forced command	 4/ Displayed when the menu includes more than one page: Go to the next page

# 4 - HOW TO USE CONNECT TOUCH CONTROL

## 4.4 Menu structure





## 5 - SETTING UP CONNECT TOUCH CONTROL

### 5.1 General description

Connect Touch includes the 4.3 in. touch screen allowing for easy system control. Navigation through the Connect Touch control is either using the touch screen interface or by connecting to the web interface.

The navigation menus are the same for both connection methods (Connect Touch user interface and web browser). It is recommended to use a pen for the navigation via the touch screen.

**NOTE: Some functions are unavailable when using the web browser interface.**

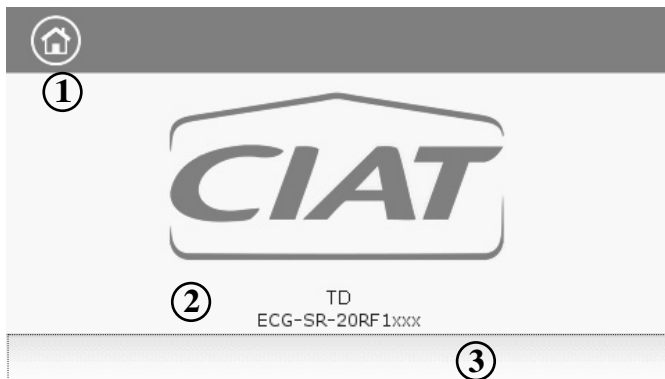
The Connect Touch interface includes the following screens:

- Welcome screen
- Synoptic screen
- Operating mode selection screen
- Data/configuration screens
- Password entry and language selection screen
- Alarms screen
- Parameter modification screen
- Time schedule screen

### 5.2 Welcome screen

The Welcome screen is the first screen shown after starting the user interface. It displays the application name as well as the current software version number.

- To exit the Welcome screen and go to the Home screen (see section 5.3), press the **Home** button.



1. Home button
2. Software version number
3. Information message box

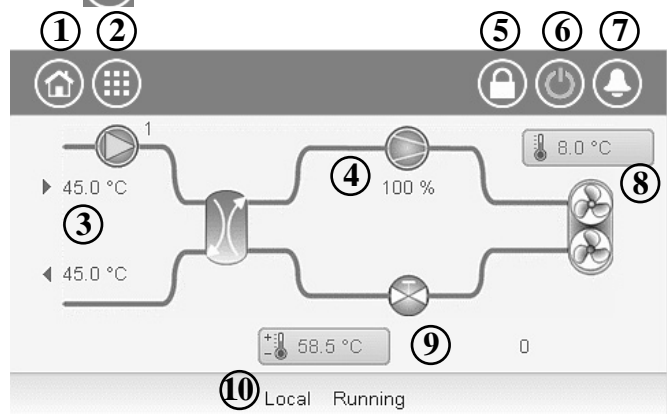
**Information message box:** The information displayed in the status bar at the bottom of the screen includes relevant messages regarding the current user action.

MESSAGE	STATUS
COMMUNICATION FAILURE!	Equipment controller did not respond while reading the table content.
ACCESS DENIED!	Equipment controller denies access to one of the tables.
LIMIT EXCEEDED!	The value entered exceeds the parameter limit.
Save changes?	Modifications have been made. The exit must be confirmed by pressing Save or Cancel.
HIGHER FORCE IN EFFECT!	Equipment controller rejects Force or Auto command.
Too many users connected ! Please try again later ...	Too many users connected at the same time (WEB INTERFACE ONLY)

### 5.3 Synoptic screen

The Synoptic screen allows you to monitor the vapour-refrigeration cycle. The diagram indicates the current status of the unit, giving information on the unit capacity, the status of water heat exchanger pumps, and the pre-defined setpoint parameter.

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



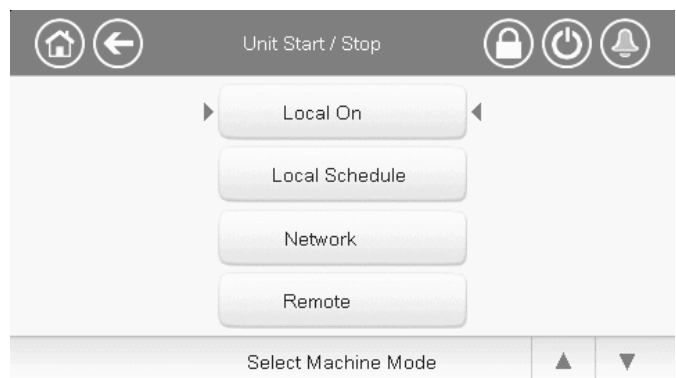
Example: Synoptic view. This picture is for information only. It may differ from the actual look, depending on pumps and OAT sensor availability.

1. Home button
2. Main menu button
3. LWT and EWT (condenser)
4. Compressor + unit capacity
5. Login button (restricted access to menus)
6. Start/Stop button
7. Alarm button
8. Outdoor air temperature
9. Setpoint
10. Unit running status

### 5.4 Unit start/stop

**With the unit in the Local off mode:**

To display the list of operating modes and select the required mode, press the **Start/Stop** button in the upper-right corner of the Synoptic screen.



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

Press the Navigation button ( or ) to go to the next page.

## 5 - SETTING UP CONNECT TOUCH CONTROL

### 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 allowed to start if the period is occupied.

### To start the unit

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

### To stop the unit

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




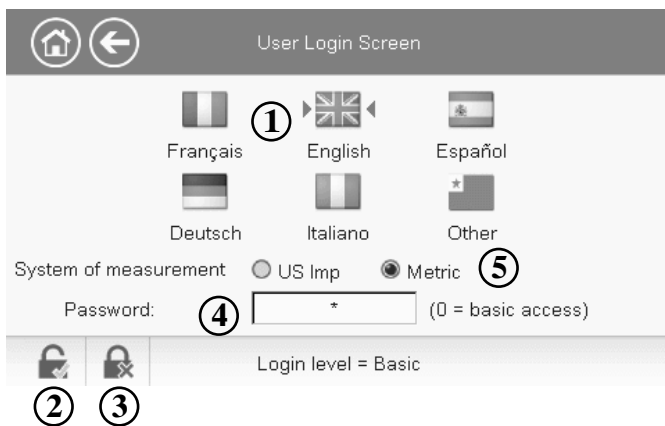
The bell located in the upper-right part of the screen lights when any fault is detected.

## 5.5 Display settings

The User Login screen allows the user to do any of the following:

- Select the language of the controller.
- Change the system of measurement (imperial or metric).
- Gain access to more control options.

To access the User Login screen, press the **Login** button  in the upper-right corner of the Synoptic screen.



1. Cursor indicating the selected language
2. Logged-in button
3. Logged-off button
4. Password dialog box
5. System of measurement: Metric/Imperial

### 5.5.1 Display language

Display language can be modified in the User Login Screen on the user interface.

#### To change a display language

1. Press the **Login** button to open User Login Screen.
2. Select the new language of the display.
3. Press the **Logged-in** button to save your changes or the **Logged-off** button to exit the screen without making modifications.

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

### 5.5.2 System of measurement

The control offers the possibility of selecting the system of measurement displayed on the user interface (metric / imperial).

#### To change a system of measurement

1. Press the **Login** button to open User Login Screen.
2. Select the system of measurement (metric or imperial).
3. Press the **Logged-in** button to save your changes or the **Logged-off** button to exit the screen without making modifications.

### 5.5.3 User login

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

#### To log in as user

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

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

#### Security access settings

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

### 5.5.4 Password change

User password can be modified in the User Configuration menu.

#### To change your password

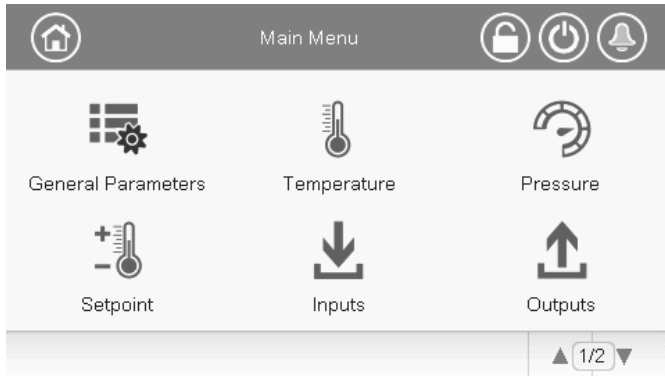
1. Go to the Main Menu.
2. Navigate to the Configuration menu (logged-in users only) and select **User Configuration (USERCONF)**.
3. Select the User Password box and provide the new password.
4. Press **OK**. The User Configuration screen appears.
5. Press the **Save** button to save your changes or the **Cancel** button to exit the screen without making modifications.

## 5 - SETTING UP CONNECT TOUCH CONTROL

### 5.6 Main menu

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

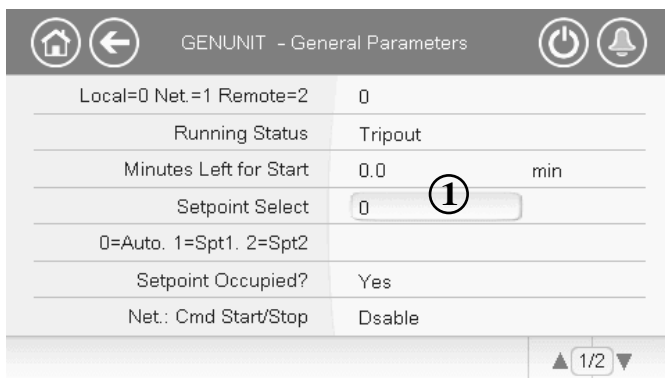
- To access the menu, press the **Main menu** button located in the upper-left part of the Synoptic screen.
- Specific unit parameters can be accessed by pressing the icon corresponding to the desired category.
- To go back to the Synoptic screen, press the **Home** button.



### General parameters screen

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

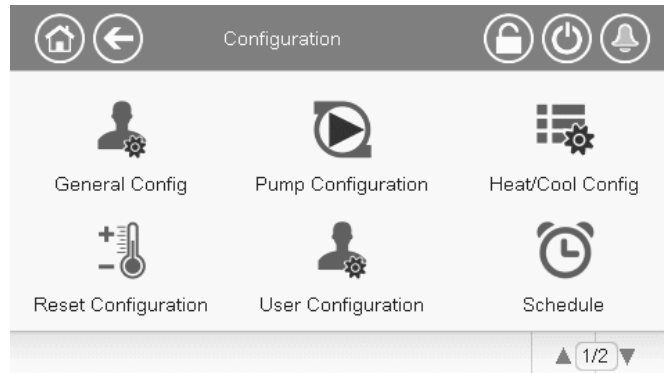
- To access the General parameters screen, go to the Main menu and select **General Parameters (GENUNIT)**.
- Press the **Up/Down** buttons to navigate between the screens.



1. Forceable point (see section 5.8)

### 5.7 Configuration menu

The Configuration menu gives access to a number of user-modifiable parameters such as pump configuration, schedule menu, etc. The Configuration menu is password-protected.



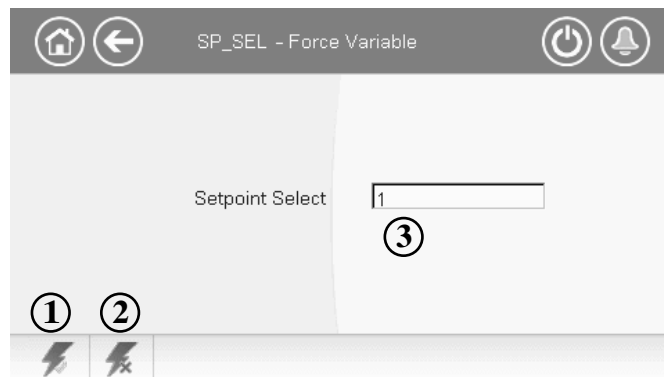
- To access the Configuration menu, press the **Main menu** button located in the upper-left part of the Synoptic screen, and then find and press **Configuration**.
- Press the field corresponding to the parameter to be modified and introduce all the necessary changes.
- Press the **Up/Down** buttons to navigate between the screens.

Once all the necessary modifications have been made, press the **Save** button to save your changes or the **Cancel** button to exit the screen without making modifications.

### 5.8 System configuration override

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

To access the override screen, press the forceable point of the data screen. Note that not all parameters can be overridden by the control.



1. Set force
2. Auto (force removed)
3. Forced value

## 5 - SETTING UP CONNECT TOUCH CONTROL

### 5.9 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 DHW 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 7.6.2.

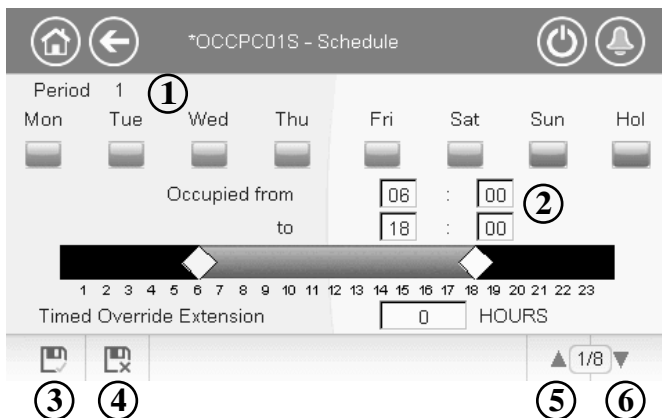
#### Occupancy periods

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.

#### 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.



1. Selection of days for the time schedule
2. Start/end of the schedule
3. Save
4. Cancel
5. Previous time period
6. 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		

#### 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 section 6.2).

## 5 - SETTING UP CONNECT TOUCH CONTROL

### 5.10 Web connection

The Connect Touch control can be accessed via a web browser (Internet Explorer, Mozilla Firefox, etc.).

Connection is from a PC using a web browser with Java.

**CAUTION: Use firewalls and VPN for secure connection.**

#### 5.10.1 Web interface

To access the control, provide the IP address of the unit in the address bar of the web browser.



Unit default address: 169.254.0.1. This address can be changed.

**IMPORTANT: Only two web connections can be authorised at the same time.**

#### **CAUTION**

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.

#### 5.10.2 Web browser settings












Minimum web browser configuration:

- Internet Explorer (version 8 or higher) or Mozilla Firefox (version 26 or higher). In the advanced connection options add the unit IP address to the exceptions list. Do not use a proxy server.
- Java platform (version 6 or higher). In the control panel, clear the Keep temporary files on my computer check box and use a direct connection.

**IMPORTANT: Two users can be connected simultaneously with no priority between them. Note that the last modification is always taken into account.**

## 6 - CONNECT TOUCH CONTROL: DETAILED MENU STRUCTURE

### 6.1 Main menu

Icon	Displayed text *	Description	Name
	General Parameters	General parameters	GENUNIT
	Temperature	Temperatures	TEMP
	Pressure	Pressures	PRESSURE
	Setpoint	Setpoints configuration	SETPOINT
	Inputs	Inputs status	INPUTS
	Outputs	Outputs status	OUTPUTS
	Pump Status	Pump status	PUMPSTAT
	Runtime	Run times	RUNTIME
	Modes	Modes	MODES
	Domestic Hot Water	Domestic Hot Water	DHW_STAT
	Configuration	Configuration menu	CONFIG1

\* Displayed in French by default.

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



#### General Parameters Menu – GENUNIT

No.	Name	Status	Default	Unit	Displayed text *	Description
1	CTRL_TYP	0 to 2	-	-	Local=0 Net.=1 Remote=2	Operating mode: 0 = Local 1 = Network 2 = Remote
2	STATUS	-	-	-	Running Status	Off, Running, Stopping, Delay, Trip out, Ready, Override, etc.
3	min_left	0 to 0	-	min	Minutes Left for Start	Minutes before the unit start-up
4	SP_SEL	0 to 2	-	-	Setpoint Select	Setpoint selection
5					0=Auto. 1=Spt1. 2=Spt2	0 = Auto (schedule control) 1 = Heating setpoint 1 2 = Heating setpoint 2
6	SP_OCC	no / yes	-	-	Setpoint Occupied?	Setpoint occupancy status
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 in Network mode, the minimum value will be used compared to the status of the external limit switch contact and the demand limit switch setpoint
11	SP	-	-	°C	Current Setpoint	Current setpoint
12	CTRL_PNT	26.7 to 65.0	-	°C	Control Point	Control point: Water temperature that the unit must produce
13	EMSTOP	disable / enable	-	-	Emergency Stop	Emergency stop: Used to stop the unit regardless of its active operating type
14	ALM	-	-	-	Alarm	Alarm state: Normal, Partial, Shutdown

\*Displayed in French by default.

## 6 - CONNECT TOUCH CONTROL: DETAILED MENU STRUCTURE



### Temperature Menu – TEMP

No.	Name	Status	Default	Unit	Displayed text *	Description
1	EWT	-	-	°C	Entering Water Temp.	Evaporator entering water temperature
2	LWT	-	-	°C	Leaving Water Temp.	Evaporator leaving water temperature
3	OAT	-	-	°C	Outside Air Temperature	Outdoor air temperature
4	CHWSTEMP	-	-	°C	Master/Slave Temperature	Hot water system temperature (used for master/slave assembly control when heating)
5	SCT_A	-	-	°C	Saturated Condensing Tp	Saturated condensing temperature
6	SST_A	-	-	°C	Saturated Suction Temp.	Saturated suction temperature
7	SUCT_A	-	-	°C	Suction Gas Temperature	Suction gas temperature
8	ECO_SST	-	-	°C	Eco. Saturated Suction T	Economizer suction temperature
9	ECO_SUCT	-	-	°C	Economizer Suction Gas T	Economizer suction gas temperature
10	DEFRT_A	-	-	°C	Defrost Temperature A	Defrost temperature 1 – sensor linked to the first fan
11	DEFRT_2	-	-	°C	Defrost Temp Second Coil	Defrost temperature 2 – sensor linked to the second fan (only for unit size 14, 19, 200, 300)
12	DHW_TT	-	-	°C	DHW Tank Temperature	Domestic hot water tank temperature

\*Displayed in French by default.



### Pressure Menu – PRESSURE

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

\*Displayed in French by default.



### Setpoint Menu – SETPOINT

No.	Name	Status	Default	Unit	Displayed text *	Description
1	hsp1	26.7 to 65.0	65.0	°C	Heating Setpoint 1	Heating setpoint 1 (used during occupied periods)
2	hsp2	26.7 to 65.0	65.0	°C	Heating Setpoint 2	Heating setpoint 2 (used during unoccupied periods)
3	hramp_sp	0.1 to 1.1	0.5	K	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

\*Displayed in French by default.



### Inputs Menu – INPUTS

No.	Name	Status	Default	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
3	LIM_SW1	open / close	-	-	Limit Switch	Demand limit switch
4	LIM_ANAL	-	-	mA	Limit Analog Input	Limit analogue input status
5	FLOW_SW	open / close	-	-	Flow Switch	Flow switch status
6	HP_SW_A	open / close	-	-	HP Switch Circuit A	High pressure switch
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)

\*Displayed in French by default.

## 6 - CONNECT TOUCH CONTROL: DETAILED MENU STRUCTURE



### Outputs Menu – OUTPUTS

No.	Name	Status	Default	Unit	Displayed text *	Description
1	CP_A1	off / on	-	-	Compressor 1 Output	Compressor A1 command
2	CP_A2	off / on	-	-	Compressor 2 Output	Compressor A2 command
3	FAN_A1LS	off / on	-	-	Fan A1LS Output	Compressor fan A1 low speed output
4	FAN_A1HS	off / on	-	-	Fan A1HS Output	Compressor fan A1 high speed output
5	FAN_A2LS	off / on	-	-	Fan A2LS Output	Compressor fan A2 low speed output
6	FAN_A2HS	off / on	-	-	Fan A2HS Output	Compressor fan A2 high speed output
7	EXV_A	0 to 100	-	%	Main EXV Position	Main EXV position
8	EXV_ECO	0 to 100	-	%	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 Valve	4-way refrigerant valve
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)
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	-	-	DHW 3 Way Water Valve	DHW 3-way water valve

\*Displayed in French by default.



### Pump Status Menu – PUMPSTAT

No.	Name	Status	Default	Unit	Displayed text *	Description
1					DRIVE PUMP STATUS	Pump drive status
2	drvp_pct	-	-	%	Pump Drive Percent	Pump drive percent
3	drvp_pwr	-	-	kW	Pump Drive Power	Pump drive power
4	drvp_i	-	-	A	Pump Drive Amps	Pump drive amps
5	drvp_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

\*Displayed in French by default.



### Runtime Menu – RUNTIME

No.	Name	Status	Default	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

\*Displayed in French by default.



## 6 - CONNECT TOUCH CONTROL: DETAILED MENU STRUCTURE



### Modes Menu – MODES

No.	Name	Status	Default	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)

\*Displayed in French by default.














### Domestic Hot Water Menu – DHW\_STAT

No.	Name	Status	Default	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 status: -1 = DHW not configured (DHW disabled) 0 = Unit is running in DHW 1 = Unit is running in SHC 2 = DHW diverting valve is moving 100 = DHW or unit failure (DHW disabled)
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 Mode	Yes = Summer mode active No = Summer mode not active
8	ctrl_pnt	-	-	°C	Control Point	Current control point
9	DHW_TT	-40 to 115	-	°C	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

\*Displayed in French by default.

## 6 - CONNECT TOUCH CONTROL: DETAILED MENU STRUCTURE

### 6.2 Configuration menu

Icon	Displayed text *	Description	Name
	General Config	General configuration parameters	GENCONF
	Pump Configuration	Pump configuration	PUMPCONF
	Heat/Cool Config	Heat/Cool configuration	HCCONFIG
	Reset Configuration	Reset configuration	RESETCFG
	User Configuration	User configuration	USERCONF
	Schedule	Schedule settings	SCHEDULE
	Holiday	Holiday settings	HOLIDAY
	Date/Time	Date/Time settings	DATETIME
	Control Identification	Control identification settings	CTRL_ID
	Network Parameters	Network parameters settings	NETWORKS
	0-10V Pump Config	Pump configuration	FLOWCONF

\* Displayed in French by default.

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



#### General Config Menu – GENCONF

No.	Name	Status	Default	Unit	Displayed text *	Description
1	ramp_sel	no / yes	no	-	Ramp Loading Select	Ramp loading selection
2	off_on_d	1 to 15	1	min	Unit Off to On Delay	Unit Off to On delay applied when the unit is started after being stopped manually or due to an alarm

\*Displayed in French by default.



#### Pump Configuration Menu – PUMPCONF

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

\*Displayed in French by default.

## 6 - CONNECT TOUCH CONTROL: DETAILED MENU STRUCTURE



### Heat/Cool Config Menu – HCCONFIG

No.	Name	Status	Default	Unit	Displayed text *	Description
1	hr_sel	0 to 3	1	-	Heating Reset Select	Heating reset selection
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 to 0	-20	°C	Minimum OAT Threshold	Minimum OAT threshold (used for unit protection control)
5	max_th	5 to 100	100	°C	Maximum OAT Threshold	Maximum OAT threshold (used to define the Summer mode)
6	boil_th	-30 to 15	-10	°C	Boiler OAT Threshold	Boiler OAT threshold
7	ehs_th	-5 to 21	5	°C	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

\*Displayed in French by default.



### Reset Configuration Menu – RESETCFG

No.	Name	Status	Default	Unit	Displayed text *	Description
1	oathr_no	-20 to 52	-10	°C	OAT No Reset Value	OAT, no reset value
2	oathr_fu	-20 to 52	-20	°C	OAT Full Reset Value	OAT, max. reset value
3	dt_hr_no	0 to 14	0	K	Delta T No Reset Value	Delta T, no reset value
4	dt_hr_fu	0 to 14	0	K	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 to 30	10	K	Heating Reset Deg. Value	Heating reset value

\*Displayed in French by default.



### User Configuration Menu – USERCONF

No.	Name	Status	Default	Unit	Displayed text *	Description
1	use_pass	0 to 9999	11	-	User Password	User password: The user password can be modified by changing the value in this line

\*Displayed in French by default.



### Schedule Menu – SCHEDULE

No.	Name	Status	Default	Unit	Displayed text *	Description
1	OCCPC01S	-	-	-	OCCPC01S - Schedule Menu	Unit on/off time schedule
2	OCCPC02S	-	-	-	OCCPC02S - Schedule Menu	Unit setpoint selection time schedule
3	OCCPC03S	-	-	-	OCCPC03S - Schedule Menu	Domestic hot water production schedule
4	OCCPC04S	-	-	-	OCCPC04S - Schedule Menu	Anti-legionella treatment schedule

\*Displayed in French by default.



### Holiday Menu – HOLIDAY

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

\*Displayed in French by default.

## 6 - CONNECT TOUCH CONTROL: DETAILED MENU STRUCTURE



### Date/Time Menu – DATETIME

No.	Name	Status	Default	Unit	Displayed text *	Description
<b>Date (DD/MM/YYYY)</b>						
1	d_of_m	1 to 31	-	-	Day of month	Day of the month
2	month	1 to 12	-	-	Month of year	Month
3	year	20nn	-	-	Year	Year
4	dow	Monday-Sunday	-	-	Day of Week	Day of the week
<b>Time (HH:MM)</b>						
5	hour	0 to 24	-	h	Hour	Hour
6	minute	0 to 59	-	min	Minute	Minutes
<b>Daylight Saving Time</b>						
7	dlig_on	no/yes	-	-	Daylight sav. time on	Daylight saving time active
8	dlig_off	no/yes	-	-	Daylight sav. time off	Daylight saving time inactive
9	tom_hol	no/yes	-	-	Tomorrow is a holiday	The following day is a holiday
10	tod_hol	no/yes	-	-	Today is a holiday	The present day is a holiday

\*Displayed in French by default.



### Control Identification Menu – CTRL\_ID

No.	Name	Status	Default	Unit	Displayed text *	Description
1	-	"xx chars"	TD	-	Device Description	Device description
2	-	"xx chars"		-	Location Description	Location description: The number corresponds to the country
3	-	"xx chars"	ECG-SR-20RF1-xxx	-	Software Part Number	Software version
4	-	"xx chars"	MAC address	-	Serial Number	Serial number (MAC address)

\*Displayed in French by default.





### 0-10V Pump Config Menu – FLOWCONF

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 to 20	5	K	Water Delta T Setpoint	Water delta T setpoint
6	deadband	0.5 to 2	1	K	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)

\*Displayed in French by default.

## 6 - CONNECT TOUCH CONTROL: DETAILED MENU STRUCTURE

### 6.3 Network parameters

Icon	Displayed text *	Description	Name
	Modbus RTU Config.	Modbus RTU Configuration	MODBUSRS
	Modbus TCP/IP Config.	Modbus TCP/IP Configuration	MODBUSIP

\* Displayed in French by default.



#### Modbus RTU Config. Menu – MODBUSRS

No.	Name	Status	Default	Unit	Displayed text *	Description
1	modrt_en	no / yes	no	-	RTU Server Enable	Enabling RTU Server: Modbus RS [modrt_en] and Modbus IP [modip_en] cannot be enabled at the same time. If both are set to 'yes', Modbus IP will be automatically disabled.
2	ser_UID	1 to 247	1	-	Server UID	Server unique identifier
3	metric	no / yes	yes	-	Metric Unit	Metric unit
4	swap_b	0 to 1	0	-	Swap Bytes	Swap bytes
5					0 = Big Endian	0 = Big Endian
6					1 = Little Endian	1 = Little Endian
7	baudrate	9600 to 38400	9600	-	Baudrate	Baud rate
8					0 = 9600	0 = 9600
9					1 = 19200	1 = 19200
10					2 = 38400	2 = 38400
11	parity	0 to 4	0	-	Parity	Parity
12					0 = No Parity	0 = No Parity
13					1 = Odd Parity	1 = Odd Parity
14					2 = Even Parity	2 = Even Parity
15					3 = Force Parity Low	3 = Force Parity Low
16					4 = Force Parity High	4 = Force Parity High
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

\*Displayed in French by default.






#### Modbus TCP/IP Config. Menu – MODBUSIP

No.	Name	Status	Default	Unit	Displayed text *	Description
1	modip_en	no / yes	no	-	TCP/IP Server Enable	Enabling Modbus IP Server: Modbus IP [modip_en] and Modbus RS [modrt_en] cannot be enabled at the same time. If both are set to 'yes', Modbus IP will be automatically disabled.
2	ser_UID	1 to 247	1	-	Server UID	Server unique identifier
3	port_nbr	0 to 65535	502	-	Port Number	Port number
4	metric	no / yes	yes	-	Metric Unit	Metric unit
5	swap_b	0 to 1	0	-	Swap Bytes	Swap bytes
6					0 = Big Endian	0 = Big Endian
7					1 = Little Endian	1 = Little Endian
8	real_typ	0 to 1	0	-	Real type management	Real type management (floating point)
9					0 = Float X10	0 = Float X10
10					1 = IEEE 754	1 = IEEE 754

\*Displayed in French by default.

### 6.4 Alarms menu

Icon	Displayed text *	Description	Name
	Reset Alarms	Reset Alarm(s)	ALARMRST
	Current Alarms	Current Alarm(s)	CUR_ALRM
	Alarm History	Alarm History	ALMHIST1

\* Displayed in French by default.

# 7 - STANDARD CONTROL OPERATIONS AND OPTIONS

## 7.1 Start/stop control

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

The table given below summarizes the unit control type [ctrl\_typ] and its running status with regard to the following parameters:

- **Operating type:** This operation 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]: 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 according to 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.

## 7.2 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.

## 7.3 Demand limit

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

**The control allows limitation of the unit capacity:**

- By means of user-controlled volt-free contacts: The unit capacity can never exceed the limit setpoint activated by these contacts. The limit setpoints can be modified in the SETPOINT menu.
- By setting DEM\_LIM 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 × 2 = 2 compressors	Two compressors can be started
75%	0.75 × 2 = 1.5 compressor	One compressor can be started
50%	0.5 × 2 = 1 compressor	One compressor can be started
25%	0.25 × 2 = 0.5 compressor	No compressor can be started

Active operating type						Parameters status						Control type	Unit state	
LOFF	L-C	L-SC	Rem	Net	Mast	Start/stop force command	Remote start/stop contact	Master control type	Start/stop schedule	Network Emergency Shutdown	Alarm shutdown			
										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.

## 7 - STANDARD CONTROL OPERATIONS AND OPTIONS

### 7.4 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 7.4.3).

#### 7.4.1 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.

#### 7.4.2 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

#### 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.

#### 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  $\Delta T > \text{Water Delta T Setpoint} [dt\_stp] + \text{Deadband}$
  - a step value is removed from the output each time the “Reschedule timer” has elapsed and  $\Delta T < \text{Water Delta T Setpoint} [dt\_stp] - \text{Deadband}$
- 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

#### 7.4.3 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 automatic rotation delay

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

# 7 - STANDARD CONTROL OPERATIONS AND OPTIONS

## 7.5 Control point

The control point represents the water temperature that the unit must produce. The control point calculation is based on the active setpoint and its reset.

**control point = active setpoint + reset**

### 7.5.1 Active setpoint

The control can manage two heating setpoints. The **first heating setpoint** is normally used during occupied periods, whereas the **second heating setpoint** is used during unoccupied periods.

Depending on the current operating type, the active setpoint can be selected:

- By choosing the active setpoint in the General Parameters menu (Setpoint Select, GENUKIT).
- Via the volt-free contacts (see section 3.7).
- Via network commands [SP\_SEL].
- Via the schedule setting – schedule 2 (OCCPC02S). See also section 5.9

Mode	Setpoint control
Local	Regardless of the current setpoint schedule, the user can select the setpoint manually via the control interface (Setpoint Select, GENUKIT).
Remote	If the setpoint switch is used once, the setpoint schedule control will be cancelled (setpoint control will be based on setpoint switch selection only).
Network	Regardless of the current setpoint schedule, the user can select the setpoint manually via the control interface (Setpoint Select, GENUKIT) or the service tool. Once the forced selection is deactivated, the setpoint schedule will be used again.

The following tables summarise the possible setpoint selections based on the control type (local, remote, network) and the following parameters:

- Setpoint select.
- Setpoint selection contact status.
- Schedule 2 status 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

### 7.5.2 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 source can be provided by one of the following:

- Outdoor air temperature that gives a measure of the load trends for the building. When the outdoor air temperature increases, the heating demand normally decreases and the active setpoint will be decreased thanks to the applied reset.
- Return water temperature (heat exchanger  $\Delta T$  gives an average building load). Delta T ( $\Delta T$ ) is the difference between leaving and entering fluid temperatures (LWT minus EWT). When the load is light, temperature difference across the exchanger will be relatively small. The reset value should be configured by the user and its configuration may differ depending on the size of the water exchanger.
- 4-20 mA reset signal provided by an active sensor connected to the input: If the reading of the 4-20 mA signal/ external temperature value increases (load is lighter), then the current setpoint will be lowered.

In response to a change in the outside air temperature, Delta T, or 4-20 mA reset signal reading, the control point is reset in order to optimise unit performance. The source of the reset (OAT,  $\Delta T$ , 4-20 mA signal) can be configured by the user.

To set the source of the reset

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

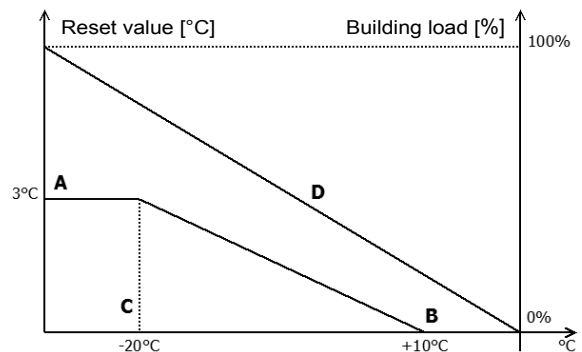
Heating Reset Select [hr_sel]	
0 = none	2 = delta T
1 = OAT	3 = 4-20mA

Reset is a linear interpolation function based on the following three parameters:

- A reference at which reset is zero (no reset value).
- A reference at which reset is maximum (full reset value).
- The maximum possible reset value: The difference between the lowest reset value (no reset value) and the highest possible reset value (full reset value). "Heating Reset Deg. Value" [hr\_deg] represents the maximum possible reset.

Reset source	No reset parameter	Full reset parameter
OAT	oathr_no	oathr_fu
delta T ( $\Delta T$ )	dt_hr_no	dt_hr_fu
4-20 mA signal	l_hr_no	l_hr_fu

### Reset example in Heating mode



-20°C	Reset based on OAT	+10°C
0 K	Reset based on delta T	3 K
4 mA	Reset based on analogue input selection	20 mA
no reset		full reset

Legend:

- A: Maximum reset value
- B: OAT / delta T / 4-20 mA for no reset
- C: OAT / delta T / 4-20 mA for full reset
- D: Building load



## 7 - STANDARD CONTROL OPERATIONS AND OPTIONS

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

AQUACIAT<sup>CALEO</sup> units 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 optimisation 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 7.7.2

#### 7.6.1 Heating or 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) or the anti-legionella program is requested (see section 5.9).
- 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/Net).**

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 7.5.2).
- 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 re-started.

### 7.6.2 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 5.9.

**IMPORTANT: The anti-legionella program is available only for units with the water tank temperature sensor.**

### 7.6.3 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 Configuration* (HCCONFIG).
3. Set *Maximum OAT Threshold* [max\_th].

Maximum OAT Threshold [max_th]	
5 to 100°C	100°C

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.**

## 7 - STANDARD CONTROL OPERATIONS AND OPTIONS

### 7.7 Additional space heating control

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

#### 7.7.1 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  $-10^{\circ}\text{C}$ . 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 $15^{\circ}\text{C}$	$-10^{\circ}\text{C}$

#### 7.7.2 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: "Elec Stage OAT Threshold" [ehs\_th].
  - The electrical pulldown time elapsed: "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 Configuration* (HCCONFIG).
3. Set *Elec Stage OAT Threshold* [ehs\_th].

Elec Stage OAT Threshold [ehs_th]	
-5 to $21^{\circ}\text{C}$	$5^{\circ}\text{C}$

**To set Electric Pulldown Time**

1. Navigate to the Configuration menu.
2. Select *Heat/Cool Configuration* (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 Configuration menu (HCCONFIG).

### 7.8 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.

#### 7.8.1 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.

#### 7.8.2 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  $1^{\circ}\text{C}$ .

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

### 7.9 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.**

## 8 - DIAGNOSTICS

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

### 8.1 Control diagnostics

The user interface enables the quick display of the unit status:






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



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

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

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

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

### 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 **Alarm** button in the upper-right part of the screen.
2. Select *Current Alarms*.
3. The list of active alarms will be displayed.

### 8.3 Resetting alarms

The alarm can be reset either automatically by the control or manually through the touch panel display or the web interface (in the Reset Alarms menu). See also section 8.5.

- 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 **Alarm** button in the upper-right part of the screen.
2. Select *Reset Alarms*.
3. Set “Alarm Reset” to Yes.

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

**CAUTION: 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.**

### 8.4 E-mail notifications

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

**IMPORTANT: E-mail notifications can be set only by service technicians.**

## 8 - DIAGNOSTICS

### 8.5 Alarms description

The following tables include all general alarms/alerts associated with the operation of the unit as well as drive alarms.

#### General alarms

JBus code	Alarm code	Description	Possible cause	Action taken	Reset type
<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	19001	Variable Speed Water Pump Failure	Speed controller fault, see "Drive alarms (variable speed water pump)" on page 27	Unit shuts down	Automatic, if operating conditions return to normal
<b>Communication failure</b>					
15	4901	Loss of communication with SIOB 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	As above	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
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); otherwise, Manual

## 8 - DIAGNOSTICS

JBus code	Alarm code	Description	Possible cause	Action taken	Reset type
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
39	57001	Circuit A SIOB Low Voltage Failure	Supply fault	Unit shuts down	Automatic, if supply voltage returns to normal (up to 6 alarms within 24 hours); otherwise, Manual
40	10215	DHW Antilegionella Setpoint Not Achieved	Low OAT	No action (alert)	Automatic

### Master/Slave configuration failure

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
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### Service and factory

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	8000	Initial Factory Configuration Required	No factory configuration	Unit cannot be started	Automatic, if configuration is provided

JBus code	Alarm code	Description	Possible cause	Action taken	Reset type
38	7001	Illegal Configuration	Incorrect unit configuration	Unit cannot be started	Automatic, if configuration is corrected

### Drive alarms (variable speed water pump)

Drive alarms for pump drive failure are displayed as 190nn, where “nn” is the alarm code.

The table given below presents the most common alarms associated with the variator malfunction.

Alarm code	Description	Action to be taken
01	over current during motor speed increase	Contact Manufacturer Agency
02	over current during motor speed decrease	Contact Manufacturer Agency
03	over current during motor speed hold	Contact Manufacturer Agency
04	over current in drive load	Contact Manufacturer Agency
05	over current in arm	Contact Manufacturer Agency
08	drive inlet phase loss	Contact Manufacturer Agency
09	drive outlet phase loss	Contact Manufacturer Agency
10	over voltage during motor speed increase	Contact Manufacturer Agency
11	over voltage during motor speed decrease	Contact Manufacturer Agency
12	over voltage during motor speed hold	Contact Manufacturer Agency
13	drive overload	Contact Manufacturer Agency
14	motor overload	Contact Manufacturer Agency
16	drive over heat	Contact Manufacturer Agency
17	emergency stop	Contact Manufacturer Agency
18	eeeprom #1 alarm	Contact Manufacturer Agency
19	eeeprom #2 alarm	Contact Manufacturer Agency
20	eeeprom #3 alarm	Contact Manufacturer Agency
21	RAM alarm	Contact Manufacturer Agency
22	ROM alarm	Contact Manufacturer Agency
23	micro-processor alarm	Contact Manufacturer Agency

## 8 - DIAGNOSTICS

Alarm code	Description	Action to be taken
24	communication failure alarm	Contact Manufacturer Agency
26	current sensor failure	Contact Manufacturer Agency
27	option board alarm	Contact Manufacturer Agency
29	low current drive operation alarm	Contact Manufacturer Agency
30	low voltage in power module alarm	Contact Manufacturer Agency
32	over torque alarm	Contact Manufacturer Agency
34	ground fault alarm	Contact Manufacturer Agency
37	over current during product speed increase	Contact Manufacturer Agency
38	over current during product speed decrease	Contact Manufacturer Agency
39	over current during product speed hold	Contact Manufacturer Agency
41	drive type error alarm	Contact Manufacturer Agency
46	external thermic sensor alarm	Contact Manufacturer Agency
47	analog input voltage signal error	Contact Manufacturer Agency
50	analog input signal error	Contact Manufacturer Agency
51	micro-processor alarm	Contact Manufacturer Agency
52	torque boost to high alarm	Contact Manufacturer Agency
53	micro-processor alarm	Contact Manufacturer Agency
84	auto setting alarm	Contact Manufacturer Agency

## 9 - MAINTENANCE

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In order to ensure the optimal operation of the equipment as well as the optimization of all the available functionalities, it is recommended to activate a Maintenance Contract with your local Manufacturer 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 Manufacturer provides a wide range of service contracts which embrace the assistance of highly qualified HVAC engineering professionals ready to help if needed. The Maintenance contracts represent not only the best way to ensure the maximum operating life of your equipment, but also, through the expertise of qualified personnel, the optimal tool to manage your system in a cost-effective manner.

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



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