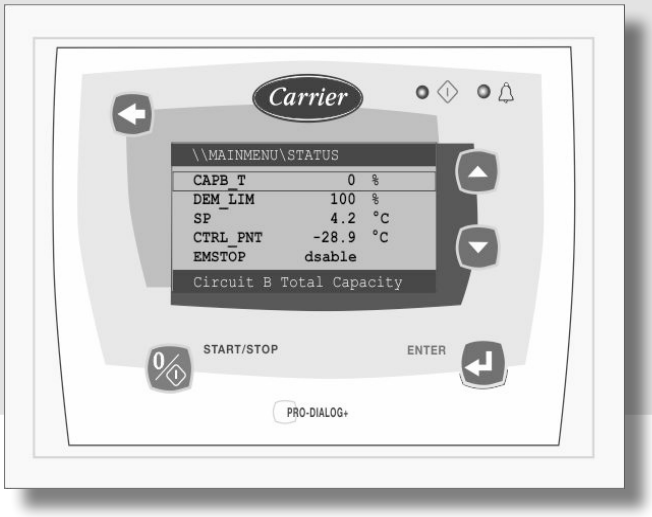
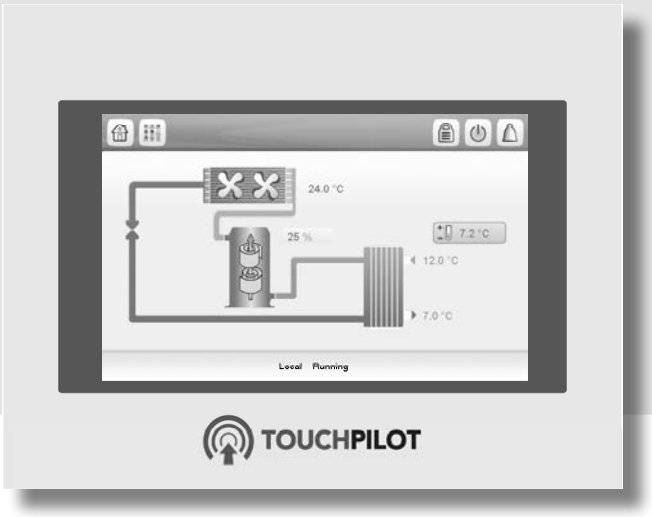
Carrier

United Technologies

CONTROLS MANUAL



Pro Dialog+ Control
Standard control



Touch Pilot Control
Advanced control features
Web access

Pro Dialog+ Control
Touch Pilot Control

30RBM/RBP (160-520)
30RQM/RQP (160-520)

TOUCHPILOT

PRO-DIALOG PLUS

Original document

CONTENTS

PREFACE

The goal of this document is to give a broad overview of the main functions of the control system used to control 30RBM/30RBP air-cooled liquid chillers and 30RQM/RQP heat pumps with 160 to 520 kW cooling/heating capacity.

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

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

CAUTION

Heating option! Heating option applies to cooling-only units fitted with a boiler and heat pumps.

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.

Acronyms/abbreviations

In this manual, the refrigeration circuits are called circuit A and circuit B. Compressors in circuit A are labelled A1, A2, A3, A4, whereas compressors in circuit B are labelled B1, B2, B3, B4.

BMS	Building Management System
CCN	Carrier Comfort Network
DGT	Discharge Gas Temperature
EMM	Energy Management Module
EXV	Electronic Expansion Valve
EHS	Electric Heater Stage
FC	Free Cooling
FCDC	Free Cooling Dry Cooler
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
VFD	Variable Frequency Drive
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
HSM	Hydronic System Manager

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, electrical components, voltages, and the installation site (elevated plinths and built-up structures).

Only qualified installation engineers and fully trained technicians are authorised to install and start the equipment.

All instructions and recommendations provided in the service guide, installation and operation manuals, as well as on tags and labels fixed to the equipment, components and other accompanying parts supplied separately must be read, understood and followed.

Failure to comply with the instructions provided by the manufacturer may result in injury or product damage.

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

CAUTION

Only qualified service technicians should be allowed to install and service the equipment.

1.2 - Safety precautions

Only personnel qualified in accordance with IEC (International Electrotechnical Commission) recommendations may be permitted access to electrical components.

It is particularly recommended that all sources of electricity to the unit should be shut off before any work is begun. Shut off the main power supply at the main circuit breaker or isolator.

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

CAUTION

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.

CAUTION

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

30RBM/RBP chillers are equipped with two types of controls that serve as the user interface and configuration tools for Carrier communicating devices. Chillers are fitted with standard *Pro Dialog+ Control* or the advanced *Touch Pilot Control* with web connectivity.

30RQM/RQP heat pumps are equipped with one type of control that serves as the user interface and configuration tool for Carrier communicating devices. Heat pumps are fitted with the advanced Touch Pilot Control with web connectivity.

30RBM/RQM units typically use fixed speed fans and 30RBP/RQP units use variable speed fans. Variable speed fans reduce the unit energy use during occupied and unoccupied periods, provide condensing or evaporating pressure control and smooth fan start.

For both 30RBM/RBP chillers and 30RQM/RQP heat pumps, the system may control fixed speed pumps or variable speed pumps with a hydronic module.

IMPORTANT: This document may refer to optional components and certain functions, options or accessories may not be available for the specific unit.

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 fans in order to maintain the correct refrigerant pressure in each circuit and monitors safety devices that protect the unit against failure and guarantee its optimal functioning.

2.3 - 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 (CCN or BACnet). Data communication cable is used to connect the unit to the CCN 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.

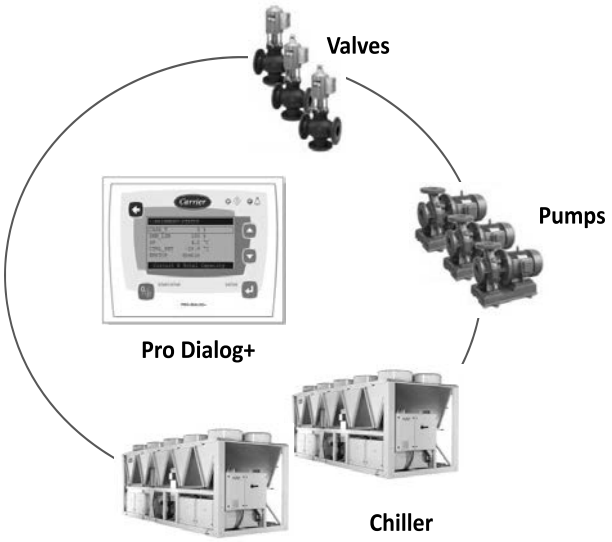
CAUTION

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

2.4 - Pro Dialog+ control

Pro Dialog+ control system:

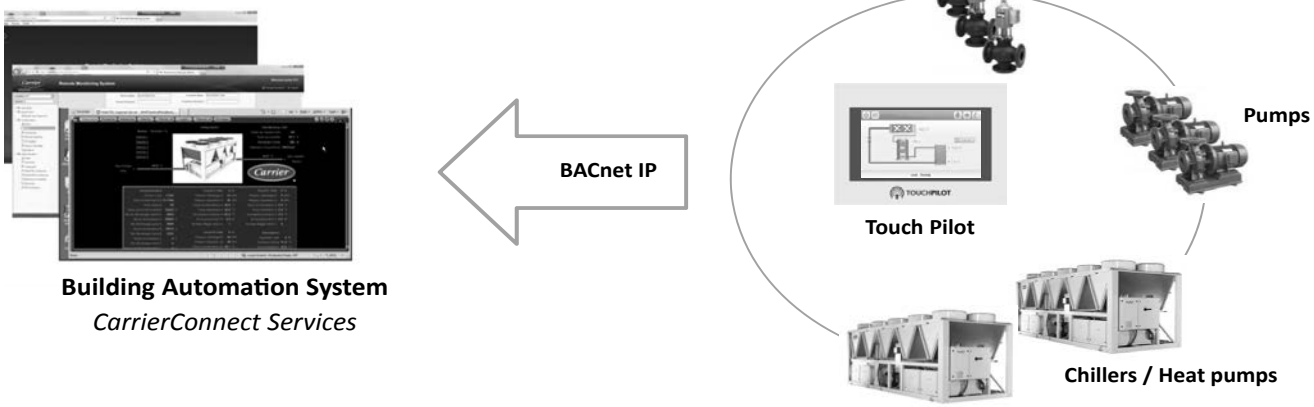
- Allows users to control the unit via the Pro Dialog+ user interface (see also section 6)
- Supports *Carrier Advanced Plant System Manager* for multiple chillers configuration
- Provides direct BMS integration capabilities (CCN RS485, JBUS RS485 option, LON option)



2.5 - Touch Pilot control

Touch Pilot control system:

- Allows users to control the unit via the Touch Pilot user interface (see also section 8)
- Provides web connectivity technology
- Includes the trending functionality
- Supports *Carrier Connect Services* (Remote connectivity, alarm notification, remote access, performance and operation automatic reporting, technical advice)
- Supports *Carrier Advanced Plant System Manager* for multiple chillers/heat pumps configuration.
- Provides direct BMS integration capabilities (CCN RS485, JBUS RS485 option, LON option, BACnet IP option)



3 - CONTROL COMPONENTS

3.1 - Chiller

Pro Dialog+ and Touch Pilot control compressors, fans (fixed or variable speed), pumps (fixed or variable speed) for evaporator/condenser, dry cooler, and more.

The control manages a number of mechanisms that allow the unit to operate effectively.

Figure 1: 30RBP unit with Touch Pilot control (picture for reference only)

Legend:
1 Low sound fan system
2 Integral hydronic package
3 User interface
4 Unit controls
5 Scroll compressors

3.2 - Features overview

Feature	Chillers (30RBM/RBP)		Heat pumps (RQM/RQP)	
	Standard	Option *	Standard	Option
7-line LCD screen (Pro Dialog+)	✓			
5" touch screen (Touch Pilot)		✓	✓	
Web connectivity		✓	✓	
E-mail transmission		✓	✓	
Carrier Connect Services		✓	✓	
Language packs	✓		✓	
Language pack customization		✓	✓	
Metric / Imperial unit display	✓		✓	
History trends		✓	✓	
BMS connection	✓		✓	
CCN communication	✓		✓	
BACnet IP communication		✓		✓
J-Bus RTU		✓		✓
LonTalk		✓		✓
Scroll compressor technology	✓		✓	
Fixed speed fans	✓ 30RBM only		✓ 30RQM only	
Variable speed fans	✓ 30RBP only		✓ 30RQP only	
High static fan		✓		✓
Water exchanger heater	✓		✓	
Fixed or variable speed pumps		✓		✓
Heating / Cooling control	✓ chiller + boiler		✓	
Boiler heating control		✓		✓
Electric heating control				✓
Free cooling		✓		
Free Cooling Dry Cooler		✓		✓
Heat reclaim		✓		
Desuperheater		✓		✓
Defrost mechanism			✓	
Diagnostics	✓		✓	

* Most of the optional features are available for chillers only when the unit is fitted with Touch Pilot control.

4.1 - Control boards

Each circuit is by default fitted with one SIOB board used to manage all major inputs and outputs of the controller.

Options, such as EMM, heat reclaim or free cooling, require the installation of additional SIOB boards. Units with seven or eight fixed speed fans are fitted with AUX2 board.

All boards communicate via an internal LEN bus.

4.2 - Electrical box

The electrical box includes all boards controlling the unit and the user interface (Pro Dialog+/ Touch Pilot).

4.3 - Power supply to boards

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

CAUTION

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

In the event of a power supply interrupt, the unit restarts automatically without the need for an external command. However, any faults active when the supply is interrupted are saved and may in certain cases prevent a given circuit or the unit from restarting.

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

Depending on the control system deployed on the unit, the unit is equipped with the Pro Dialog+ user interface (see section 6) or the Touch Pilot user interface (see section 8).

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

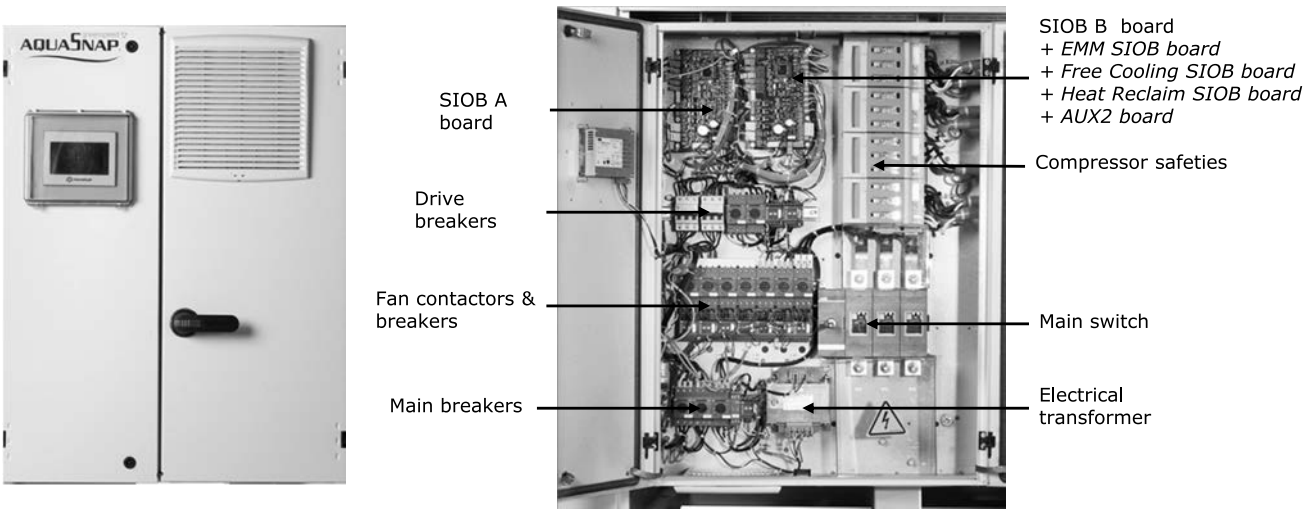


Figure 2: Electrical box with Touch Pilot control (picture for reference only)

4.4 - Light emitting diodes on boards

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

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

4.5 - Pressure transducers

Three types of transducers (high pressure, low pressure, water pressure) are used to measure various pressures in each circuit. These transducers deliver 0 to 5 VDC. They are connected to the SIOB board.

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

Suction pressure transducers (low pressure type)
These transducers measure the suction pressure in each circuit. They are used to control EXV, evaporating pressure (in heating mode) and monitor suction pressure safeties related to the compressor operating envelope. Suction pressure sensors are located on the common suction piping of each circuit.

Pump inlet/outlet water pressure transducers (water pressure type, hydronic kit option)
These transducers measure the hydronic kit pump water inlet/outlet water pressure and monitor the water flow. Pump inlet/outlet water pressure sensors are mounted on the optional hydronic kit.

Heat reclaim pump-down pressure transducers (Heat Reclaim option)
These transducers measure the pressure in the heat reclaim exchanger (water-cooled condenser) during the pump-down process. They are used to determine whether the refrigerant was successfully purged or not.

Pump inlet/outlet pressure transducers (Free Cooling option)
These transducers measure the free cooling refrigerant pump inlet and outlet pressure. They are used to control pump start-up and monitor pump pressure during the free cooling cycle.

4.6 - 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.

Outdoor air temperature sensor
This sensor measuring the outdoor air temperature is used for start-up, setpoint temperature reset and frost control.

Suction gas temperature sensors
These sensors measure the suction gas temperature. They are used for the EXV control. Suction gas temperature sensors are located at the suction side of each circuit.

Master/slave water sensor (optional)
This sensor measures the common water temperature in the master/slave system capacity control. It is installed only in the case of master/slave units.

Defrost temperature sensors (heat pumps)
These sensors are used to determine the end of the defrost cycle for a given circuit.

Condenser entering and leaving fluid temperature sensors (Heat Reclaim option)
These condenser entering and leaving fluid temperature sensors are used to control the condenser fluid temperature during the heat reclaim process.

Condenser sub-cooling temperature sensors (Heat Reclaim option)
These sensors monitor the subcooling temperature necessary to enable the heat reclaim process.

Temperature setpoint reset sensor (EMM option)
This sensor measures the space (room) temperature for the purpose of setpoint reset.

4.7 - Actuators

Electronic expansion valve
The electronic expansion valve (EXV) is used to adjust the refrigerant flow to changes in the operating conditions of the machine. The high degree of accuracy with which the piston is positioned provides precise control of the refrigerant flow and suction superheat.

Water flow switch
For units without internal pumps, the water flow switch configuration allows for the automatic control of the minimum water flow setpoint of the water flow switch. The configuration depends on the unit size and is made automatically at the start-up. If the flow switch fails, the alarm condition shuts off the unit.

Water heat exchanger pumps (optional)
The controller can regulate one or two fixed speed or variable speed water heat exchanger pumps and takes care of the automatic changeover between these pumps (see also section 11.5).

Heat reclaim pump (optional)
The controller regulates the water heat reclaim pump that comes with units fitted with the heat reclaim option. The pump is started when the heat reclaim cycle is active (see also section 11.16).

Free cooling refrigerant pump
Free cooling refrigerant pumps ensure the correct operation of the free cooling cycle.

Four-way valve (heat pumps)
The control actuates the four-way valve for cooling / heating mode and defrosts session.

Free cooling three-way valve
The control actuates the three-way valve in order to isolate compressors when the refrigerant pump is running (the refrigerant is cooled by the air exchanger).

4.8 - Terminal block connections

Connections available at the user terminal block may vary depending on the selected options. The following table summarizes the 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**	**Input/Output**	**Connector**	**Remarks**
On/Off switch	SIOB, circuit A	DI-01	J1	Used for the unit on/off control (Remote mode)
Heat/Cool switch	SIOB, circuit A	DI-04	J1	Used to switch between cooling and heating when the unit is in Remote mode (Heat pumps only)
Second setpoint switch	SIOB, circuit A	DI-02	J1	Used to switch between setpoints
Demand limit switch 1	SIOB, circuit A	DI-03	J1	Used to control demand limit. See section 4.8.3
Alarm relay	SIOB, circuit A	DO-05	J23	Indicates alarms
Running relay	SIOB, circuit A	DO-06	J22	Indicates if the unit is ready to start or operating
Variable speed pump command	SIOB, circuit A	AO-01	J10	Used to manage the customer variable speed pump (0 to 10V)
Lock switch	SIOB, circuit B	DI-02	J1	Used for the customer safety loops
Customer pump 1	SIOB, circuit B	DO-05	J23	The control can regulate one or two single speed evaporator pumps and automatically change over between the two pumps
Customer pump 2	SIOB, circuit B	DO-06	J22	The control can regulate one or two single speed evaporator pumps and automatically change over between the two pumps
Optional				
Setpoint reset control	SIOB, circuit A	AI-10	J9	Allows the user to reset the currently selected setpoint (only units with optional EMM)
Desuperheater demand	SIOB, circuit B	DI-04	J1	Heat recovery is allowed
Occupancy override	SIOB, EMM	DI-01	J1	Used to switch between occupied (closed contact) and unoccupied mode (open contact)
Demand limit switch 2	SIOB, EMM	DI-02	J1	Used to control demand limit. See section 4.8.3
Customer interlock	SIOB, EMM	DI-03	J1	Used for the customer safety loops
Ice done contact	SIOB, EMM	DI-04	J1	Used to control the setpoint according to the occupancy schedule
Capacity limit control	SIOB, EMM	AI-10	J9	Used for capacity limitation
Chiller partially shutdown	SIOB, EMM	DO-05	J23	Indicates the shutdown of one of the circuits
Chiller totally shutdown	SIOB, EMM	DO-06	J22	Indicates the unit shutdown
Chiller capacity running output (0 to 10 V)	SIOB, EMM	AO-01	J10	Reports the capacity percentage of the unit
Desuperheater customer pump	SIOB, EMM	DO-01	J2	The control can regulate a customer pump for heat recovery. The connection has to be done between the pin DO-01 of connector J2 and the pin IN-01 of connector J4
		IN-01	J4	
Heat Reclaim select switch	SIOB, Heat Reclaim	DI-01	J1	Used to switch between the air condenser (opened position) and the water condenser (closed position) when the unit is in Remote mode
Free Cooling disable switch	SIOB, Free Cooling	DI-01	J1	When the control is under remote operating type and this contact is opened, free cooling is allowed

4.8.1 - Volt-free contact (on/off and cooling/heating)

For chillers with a boiler or heat pumps, on/off contacts and cooling/heating contacts are as follows:

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

Off: Unit is stopped
Cooling: Unit is allowed to start in Cooling
Heating: Unit is allowed to start in Heating (chiller with boiler control or heat pump)
Auto: Unit can run in Cooling or Heating in accordance with the changeover values. If the automatic changeover is enabled (*Heat/Cool Select*, GENUNIT – General Parameters), the operating mode is selected based on OAT.

4.8.2 - Volt-free setpoint selection contact

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

	Cooling			**Heating**		
	Stp 1	**Stp 2**	**Auto**	**Stp 1**	**Stp 2**	**Auto**
Setpoint selection contact	open	closed	-	open	closed	-

4.8.3 - Volt-free demand limit selection contact

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

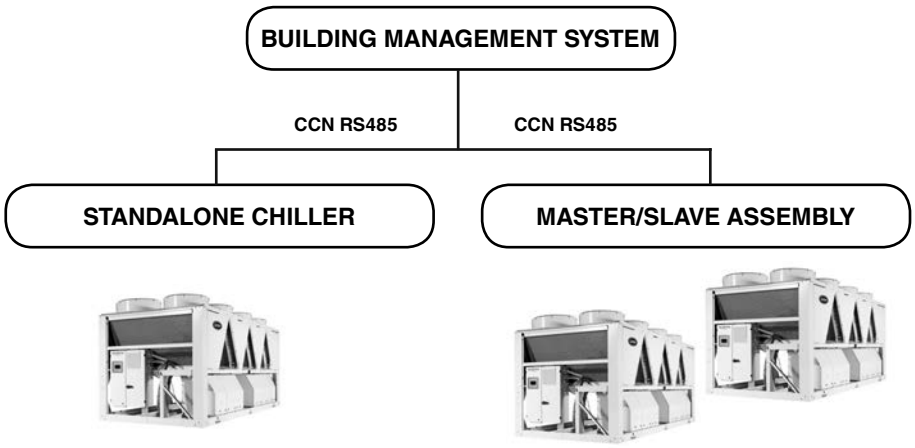
Capacity limitation with two contacts is as follows:

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

4.8.4 - Ice storage (EMM option)

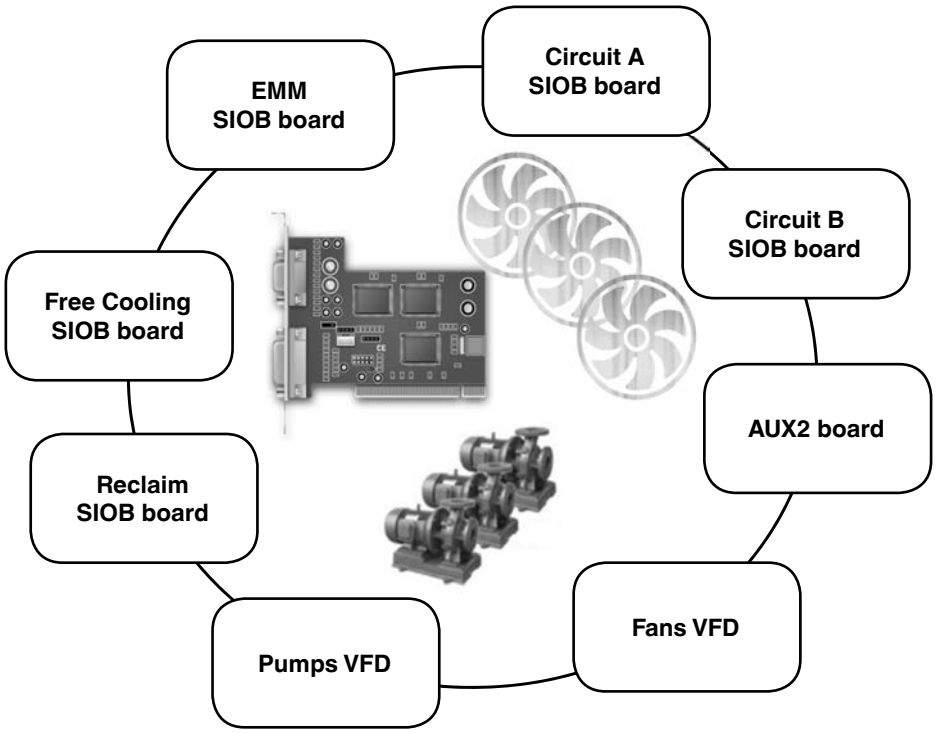
For units with EMM option, the control includes an additional setpoint (Ice setpoint) used for ice storage control.

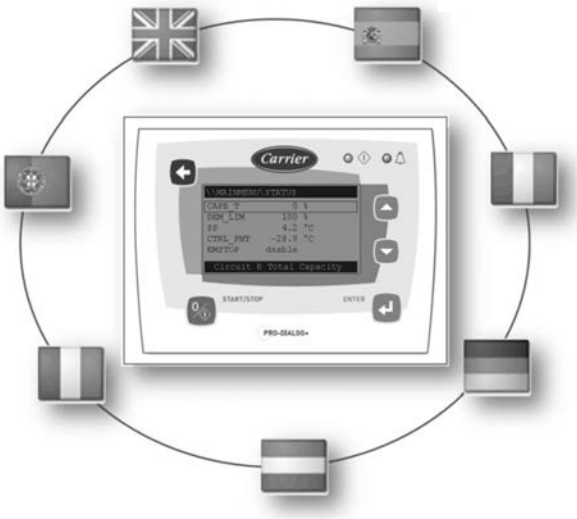
	Cooling setpoint		
	CSP1	**CSP2**	**ICE_STP**
Occupancy schedule	occupied	unoccupied	unoccupied
Ice done switch	open/closed	closed	open



Building Management System
Pro Dialog+ control may be connected to the building management system using CCN communication bus. It is also possible to use LON and J-Bus option.

Hardware
Circuit SIOB boards are used to control the main inputs and outputs of the controller. Optional functions require additional boards or drives.





Pro Dialog+ control
Pro Dialog+ is a control offering an alphanumeric seven-line display.

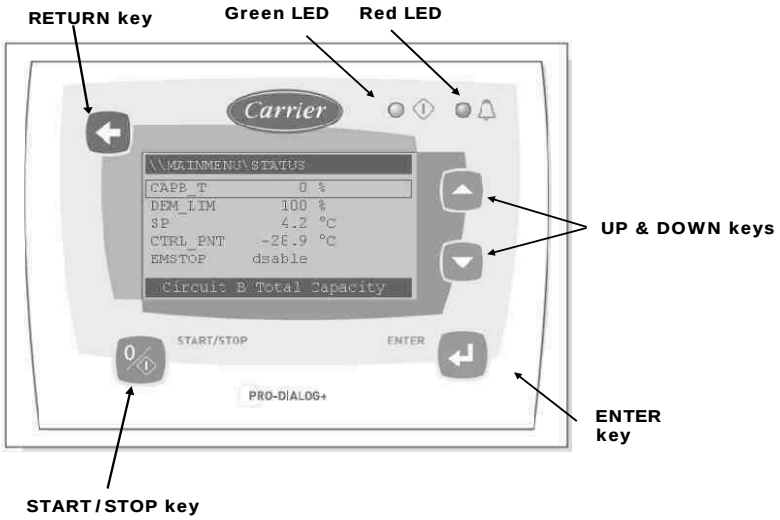


Figure 3: Pro Dialog+ user interface display

Features of Pro Dialog+ user interface

- Alphanumeric seven-line display
- Two LEDs signalling unit's status with green LED signalizing the correct operation of the unit and the red LED signalizing the alarm or alert condition
- Five navigation keys for easy navigation
- Contrast wheel at the back of the interface panel for control contrast

6.1 - Pro Dialog+ overview

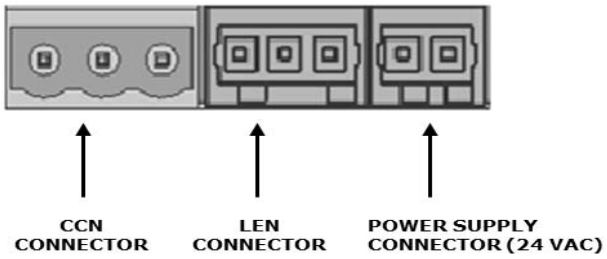
Pro Dialog+ provides access to the following screens:

- Default screens with direct display of the main parameters
- Operating mode selection screen
- Data/configuration screens
- Password entry and language selection screen
- Alarms menu
- Parameter modification screen

WARNING
If the user interface is not used for a long period, it will go blank. The control is always active and the operating mode remains unchanged. Press any key to reactivate the screen.

Connections

Connections are located on the back side of the controller.



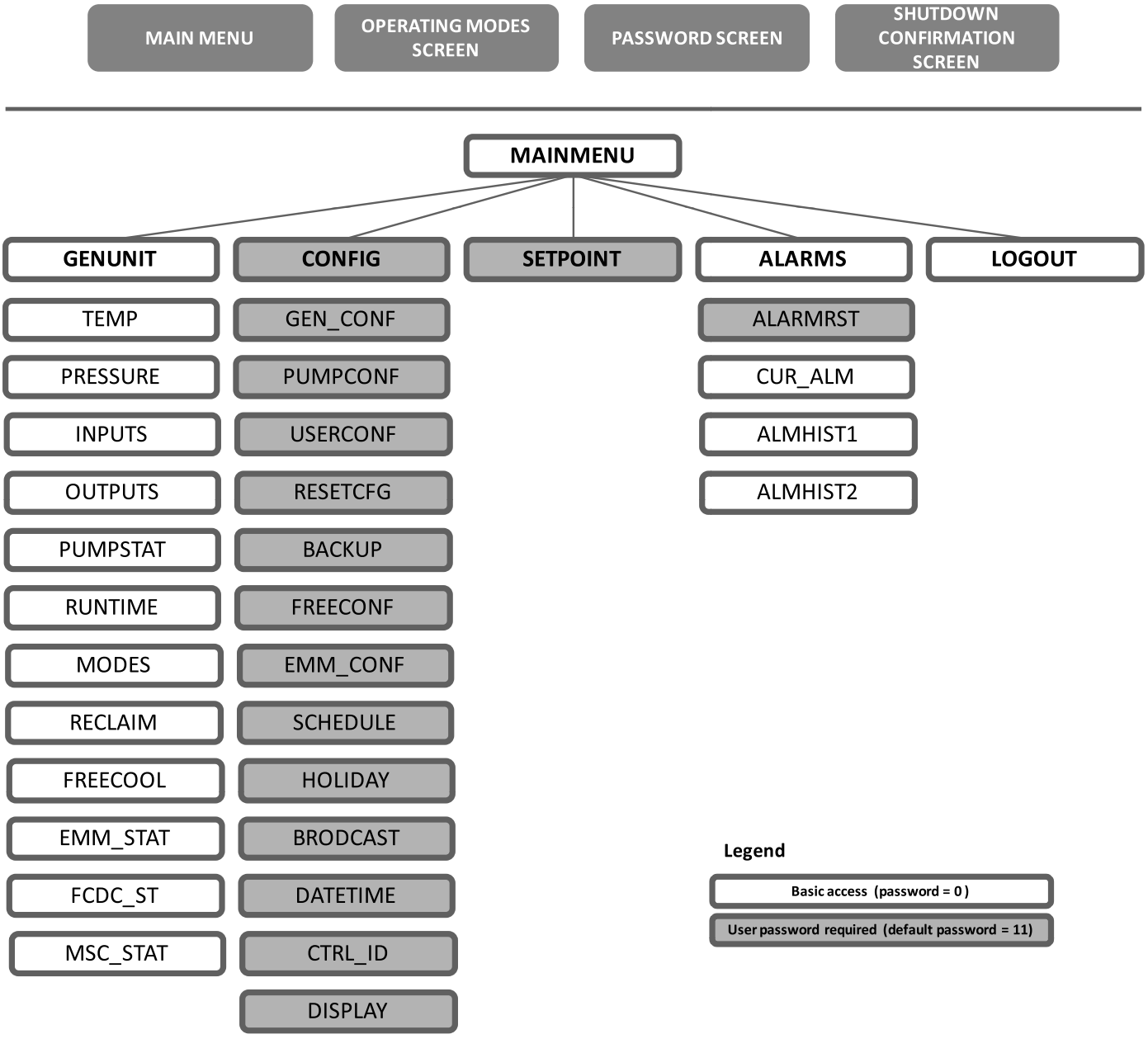
6.2 - Default screen characteristics

Each screen shows the unit status (the upper-left corner of the screen), the screen number (the upper-right corner of the screen) as well as three specific parameters.

LOCAL OFF	1	Status + screen number
Cooler Entering Fluid		
COOL_EWT	17.2°C	
Cooler Leaving Fluid		Point description
COOL_LWT	17.2°C	Point name, value and unit
Outdoor Air Temp		
OAT	21°C	

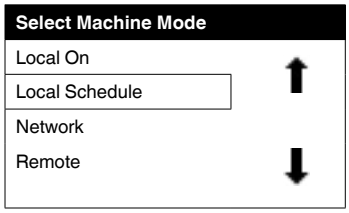
Up and **Down** keys are used to navigate between the screens.

6.3 - Pro Dialog+ menu structure



6.4 - Start the unit and set the mode

When the unit is in Local Off operating mode, pressing the **Start/Stop** key activates the operating mode screen.



Up and down arrows position the cursor on the selected operating mode. By default, four modes are displayed on the screen. Use the navigation keys (**Up** and **Down** keys) in order to see other operating modes available.

Once the operating mode has been selected, the new operating mode must be validated with **Enter**. The confirmation screen will be displayed.

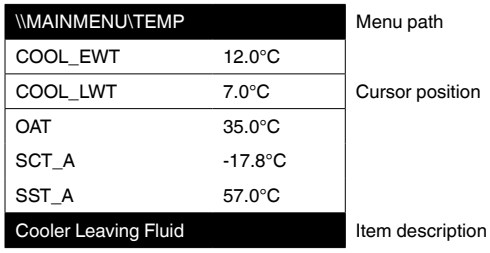
6.5 - Stop the unit

When the unit is running, pressing the **Start/Stop** key causes the unit to stop. The confirmation screen displayed protects the unit against inadvertent shutdowns. Press **Enter** to confirm the unit shutdown.

6.6 - Navigate across menus

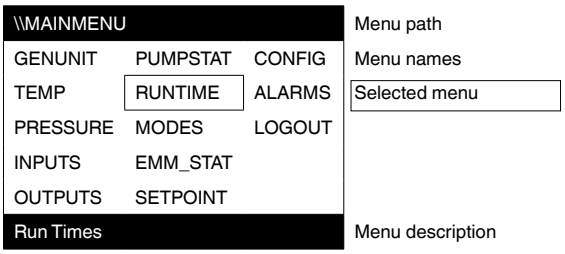
Up and **Down** keys are used to navigate between the items in the current menu.

Pressing **Enter** will enable the modification of a given parameter (if possible). Any non-pertinent modification will be blocked and the refusal screen will be displayed.



6.7 - Monitor unit parameters

The Main menu screen provides access to a number of parameters allowing the user to monitor the operation of the unit.



Each menu item defines access to categorised data. **Up** and **Down** keys are used to navigate between the items in the menu. Pressing **Enter** activates the display of the selected sub-menu.

Navigate to LOGOUT and press **Enter** to exit the Main menu screen. The access to the control panel will be password-protected. To exit the current screen without deactivating the password-protected access, press the **Return** key.

IMPORTANT: Some menus (CONFIG or SETPOINT) can be accessed only by logged-in users (see also section 6.8.1).

6.8 - Manage security settings

When the control panel is turned on, the user will be asked to provide a password. Basic access will allow users to monitor the main parameters of the unit, whereas advanced access will enable users to access user-configurable parameters.

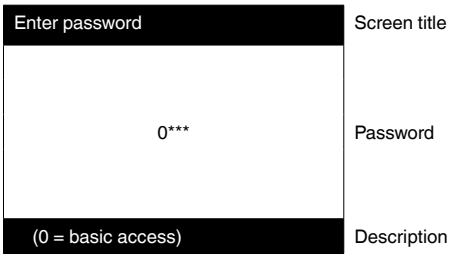
6.8.1 - User login

The password consists of digits that are entered one by one.

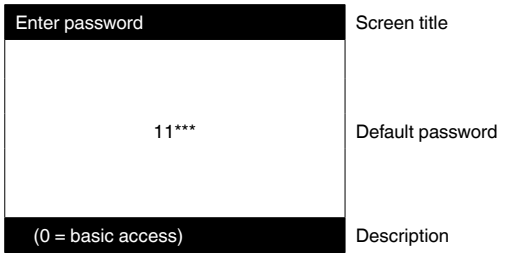
The cursor is shown at the current digit that is flashing. The arrow keys (**Up/Down**) are used to select the digit.

Once the password has been entered, please press **Enter**. Pressing **Enter** at a digit without the value will authorise the password. The screen will be refreshed with the menu list.

Basic access authentication:



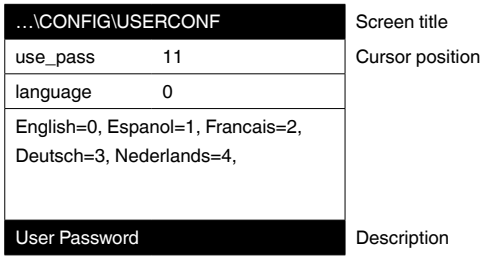
User access authentication:



If the password provided is invalid, the password screen will remain active. Pressing **Enter** twice in succession will enter the 0 (zero) password (0 = basic access).

6.8.2 - Password change

User password can be modified in the User Configuration menu. To access User Configuration, navigate to USERCONF in the Configuration menu (CONFIG) and modify the password.

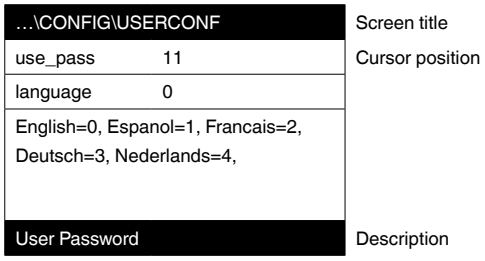


IMPORTANT: Only logged-in users can access the Configuration menu.

6.9 - Change a display language

It is possible to change the language that Pro Dialog+ control uses to display descriptions on the user interface.

Display language can be modified in the User Configuration menu. To access User Configuration, navigate to USERCONF in the Configuration menu (CONFIG) and select the language.



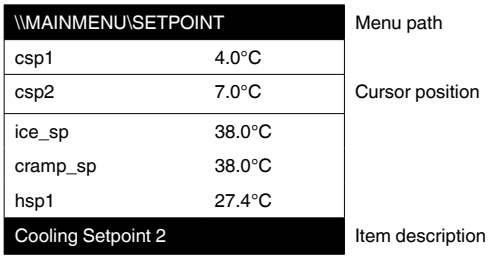
IMPORTANT: Only logged-in users can access the Configuration menu.

WARNING
Diacritical marks are not displayed, e.g. characters such as é, è, ê will be replaced with “e”.

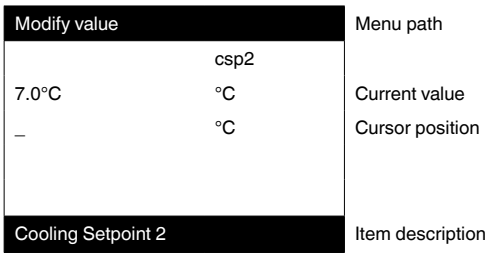
6.10 - Modify unit parameters

Configuration parameters can be modified by navigating the cursor to the relevant item and then pressing **Enter**.

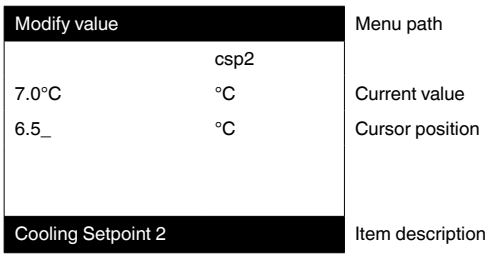
For example: In order to access Setpoint configuration, navigate to SETPOINT in the Main menu. (Note: Only logged-in users can access the Setpoint menu.)



The following screen allows for the modification of the specific parameter:

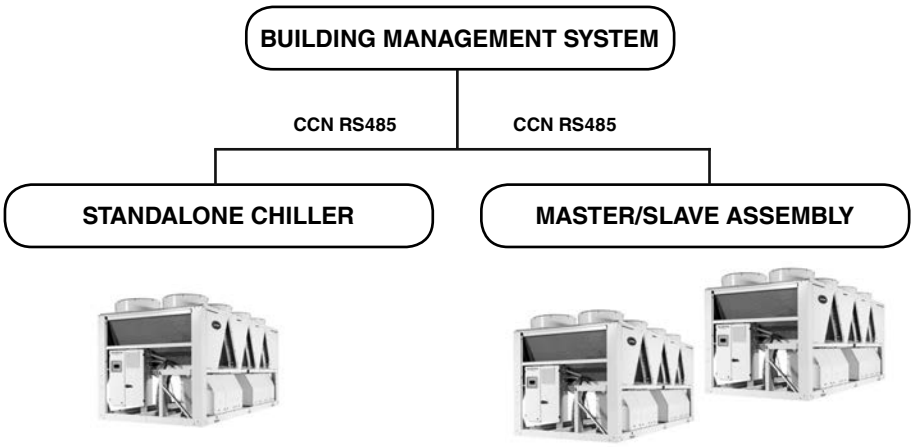


Up and **Down** keys are used to select the first digit to be modified. Pressing the **Up** key successively scrolls up the digits in the following sequence: 0, 1, 2, 3, etc. Likewise, pressing the **Down** key scrolls down the digits in the reverse order: 9, 8, 7, 6, etc. Each digit is validated with **Enter**. The underscore symbol indicates the character to be selected.



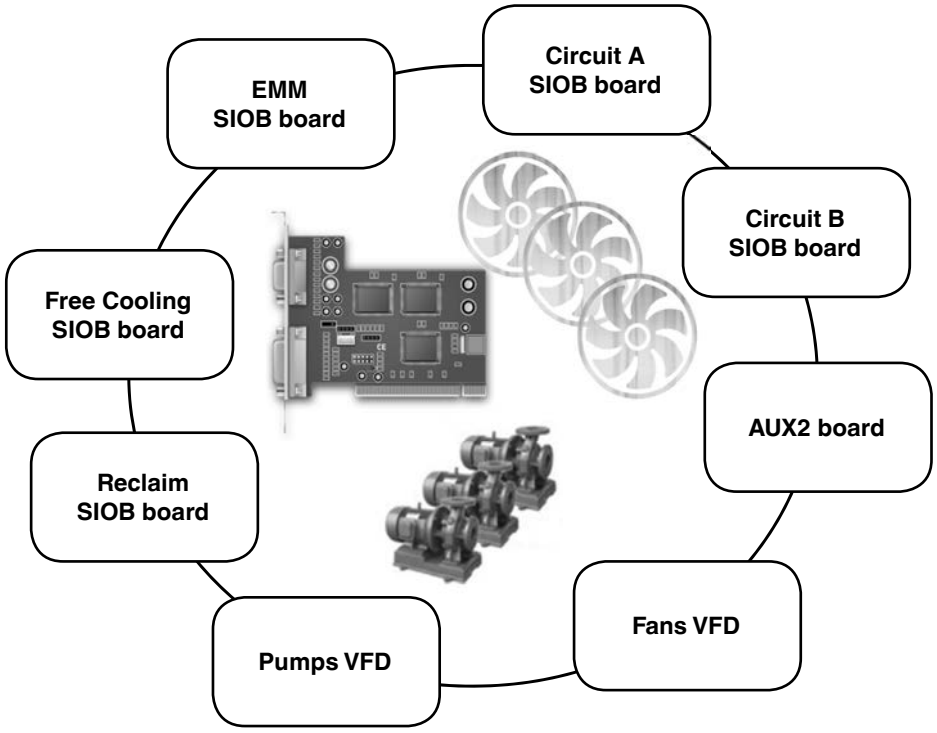
The value is validated with **Enter**.

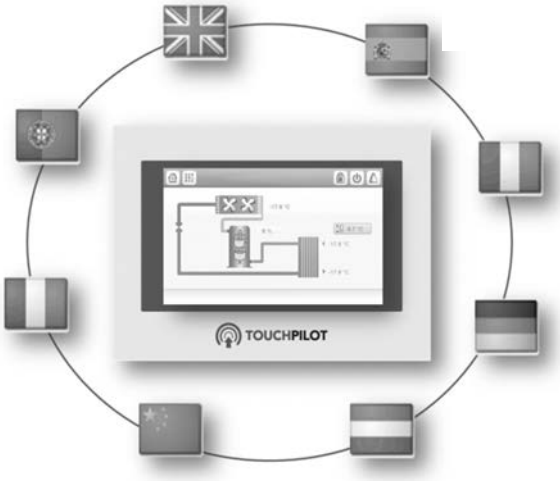
Press the **Return** key to cancel changes.



Building Management System
Touch Pilot control may be connected to the building management system using CCN communication bus or BACnet IP. It is also possible to use LON and J-Bus option.

Hardware
Circuit SIOB boards are used to control the main inputs and outputs of the controller. Optional functions require additional boards or drives.





Touch Pilot control
Touch Pilot is an advanced control offering a 5-inch touch screen. The control comes with web connectivity and remote monitoring service capabilities. It also allows the user to upload a new language to the control.

Web Connectivity

Remote Monitoring Service

Language Customization

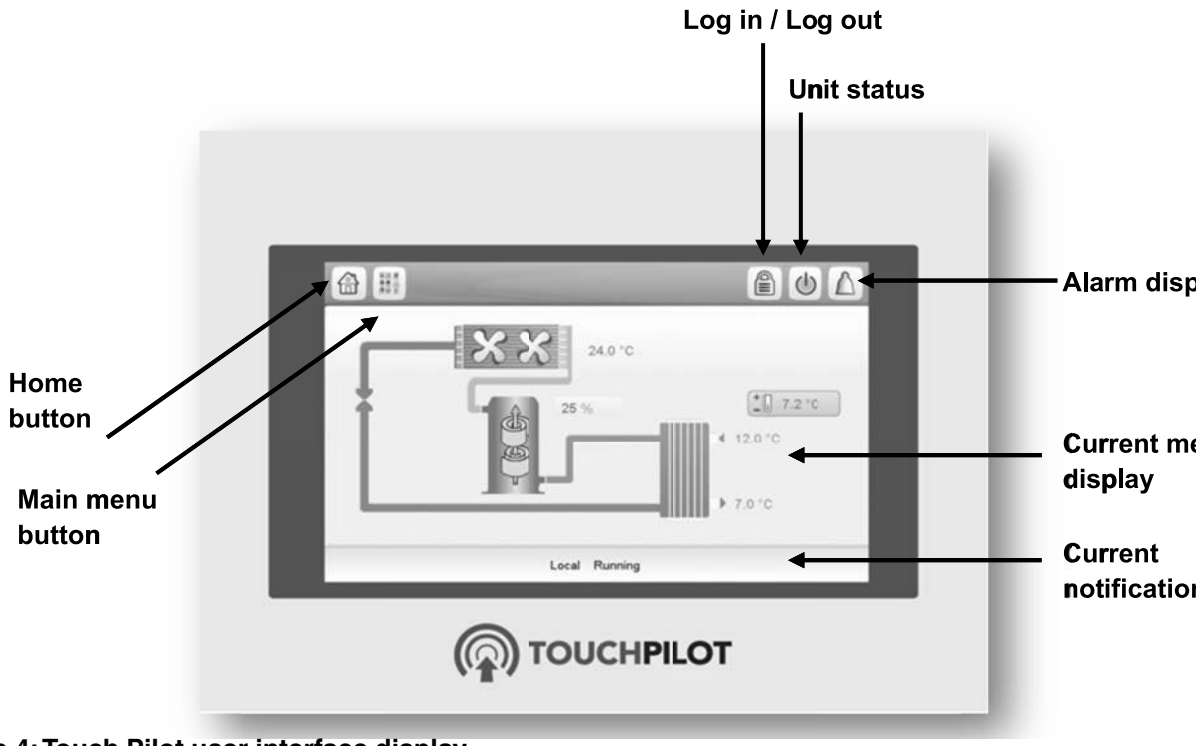


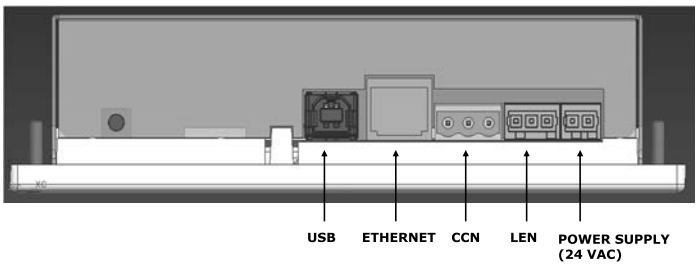
Figure 4: Touch Pilot user interface display

Features of Touch Pilot user interface

- 5" colour touch screen with quick display of alarms, current unit operating status, etc.
- Resistive touch screen technology
- Trending capability
- Web connectivity

Connections

Connections are located on the back side of the controller.



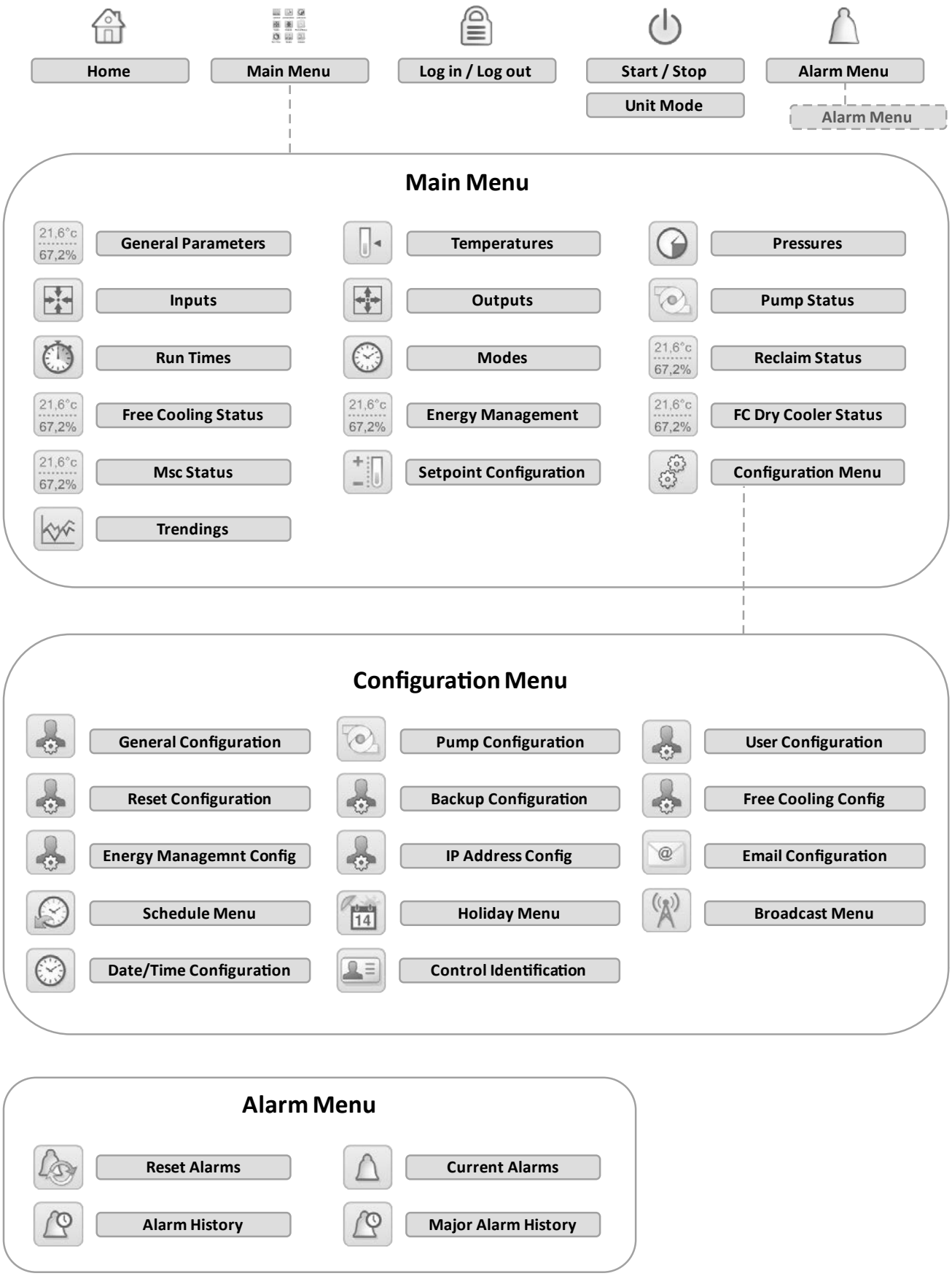
8.1 - Touch Pilot overview

Touch Pilot provides access to 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
- Trending visualisation screen

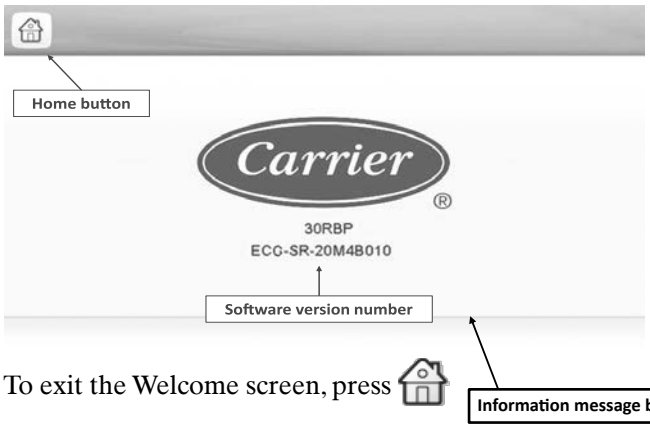
WARNING
If the Touch Pilot user interface is not used for a long period, the Welcome screen is displayed, and then it goes blank. The control is always active and the operating mode remains unchanged. Press anywhere on the screen and the Welcome screen will be displayed.

8.2 - Touch Pilot menu structure



8.3 - Read the welcome screen

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



To exit the Welcome screen, press

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

All screens presented further in this manual may display the following messages:

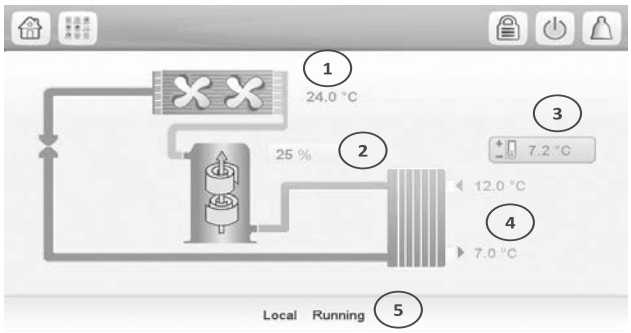
MESSAGE	STATUS
COMMUNICATION FAILURE!	Equipment controller did not respond while reading the table content.
ACCESS DENIED!	Equipment controller denies access to one of the tables.
LIMIT EXCEEDED!	The value entered exceeds the parameter limit.
Save changes?	Modifications have been made. The exit must be confirmed by pressing Save or Cancel.
HIGHER FORCE IN EFFECT!	Equipment controller rejects Force or Auto command.

8.4 - Explore the synoptic screen

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

The diagram indicates the current status of the unit, giving information on the unit capacity, the status of water heat exchanger pumps, and the pre-defined setpoint parameter.

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



1 Outdoor air temperature
2 Unit capacity percentage
3 Setpoint
4 Evaporator inlet and outlet water temperature
5 Status screen message

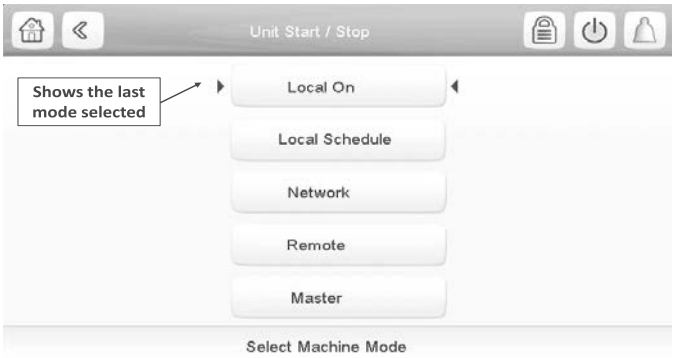
IMPORTANT: The synoptic screen display may vary depending on pumps configuration.

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

By default, the parameters are presented in metric units. For more information on how to change the system of measurement, see section 8.8.3.

8.5 - Start the unit

With the unit in the Local off mode, press the **Start/Stop** button  to display the list of operating modes and select the required mode.



Local On	Local On: The unit is in the local control mode and allowed to start.
Local Schedule	Local Schedule: The unit is in the local control mode and allowed to start if the period is occupied.
Network	Network: The unit is controlled by network commands and allowed to start if the period is occupied.
Remote	Remote: The unit is controlled by external commands and allowed to start if the period is occupied.
Master	Master: The unit operates as the master in the master/slave assembly and allowed to start if the period is occupied.

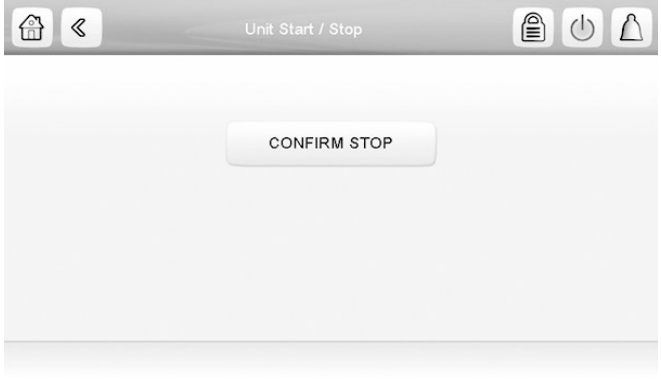
IMPORTANT: When entering the menu, please note that the currently selected item corresponds to the last running operating mode.

8.6 - Stop the unit

To stop the unit, press the **Start/Stop** button 

Confirm the unit shutdown by pressing **Confirm Stop** or cancel the unit shut-down by pressing the

Back button 



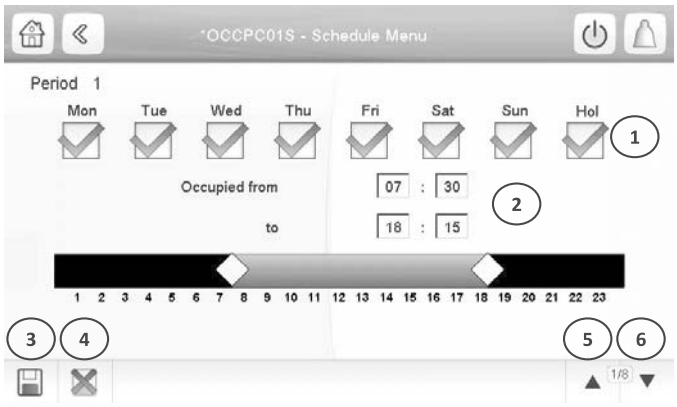
8.7 - Set the schedule

The control incorporates two time schedules, where the first one (OCCPC01S) is used for controlling the unit start/stop, whereas the second one (OCCPC02S) is used for controlling the dual setpoint (Setpoint 1 used in Occupied mode / Setpoint 2 used in Unoccupied mode).

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.

NOTE: Time override extension is available only with the optional Energy Management Module.

To set the unit start/stop schedule:
1. Navigate to the Configuration menu and select Schedule Menu (SCHEDULE).
2. Go to OCCPC01S.
3. Select appropriate check boxes to set the unit occupancy on specific days.
4. Define the time of occupancy.
5. When the time schedule is set, the selected period will be presented in the form of the green band on the timeline.
6. Press to confirm or to cancel changes.



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

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

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

Example: Schedule setting

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

Occupied
Unoccupied

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

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

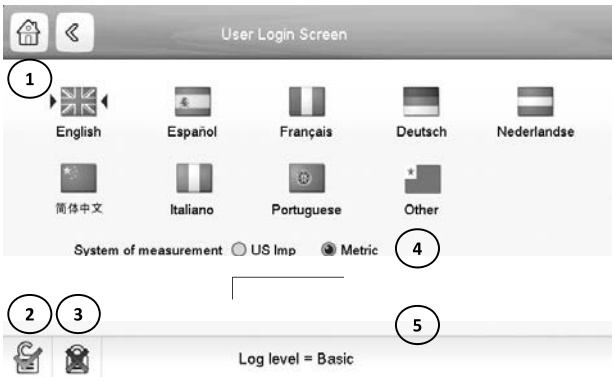
8.8 - Manage display settings

The User Login screen allows the user to select the language of the controller, change the system of measurement (imperial or metric) and enter a password to gain access to more control options.

To access the User Login screen, press the **Log** button in the upper-right corner of the screen (see also section 8.4).

8.8.1 - Security access settings

User-level security ensures that only authorised users are allowed to modify critical unit parameters.



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

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

WARNING

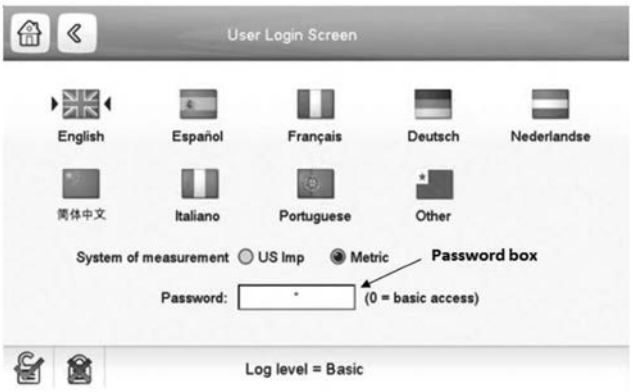
It is strongly recommended to change the default password of the user interface to exclude the possibility of changing any parameters by an unqualified person. Only people qualified to manage the unit should be familiarized with the password.

User login

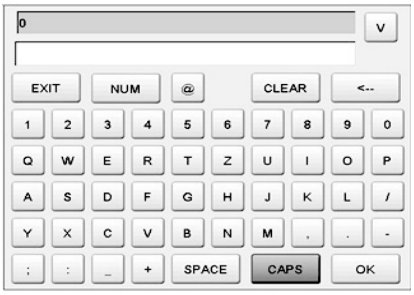
Only logged-in users can access configurable unit parameters. By default, user password is 11.

To log in as user:

1. Press the **Log** button to open User Login Screen.
2. Press the Password box.



3. A dialog box appears.



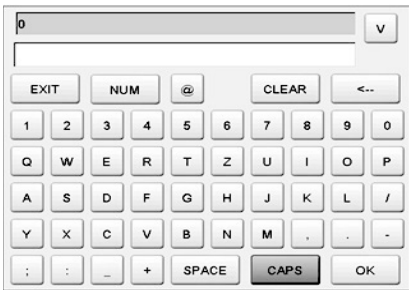
4. Provide the password (11) and press OK.
5. The User Login screen appears.
6. Press to save or to cancel changes.

Password change

User password can be modified in the User Configuration menu.

To change your password:

1. Navigate to the Configuration menu and select User Configuration (USERCONF).
2. Press the User Password box.
3. A dialog box appears.



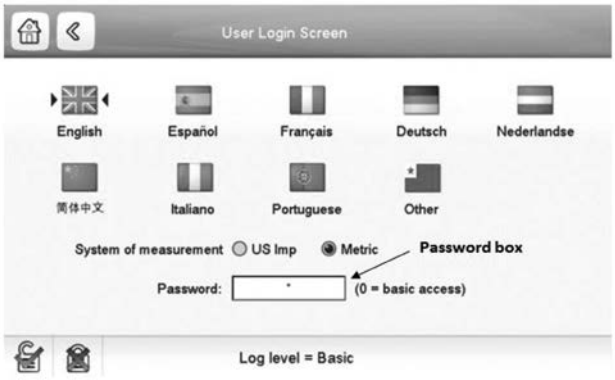
4. Enter your new password and press OK.
5. The User Configuration screen appears.
6. Press to save or to cancel changes.

8.8.2 - Display language

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

To change a display language:

1. Press the **Log** button to open User Login Screen.
2. Select the new language of the display.



3. Press to save or to cancel changes.

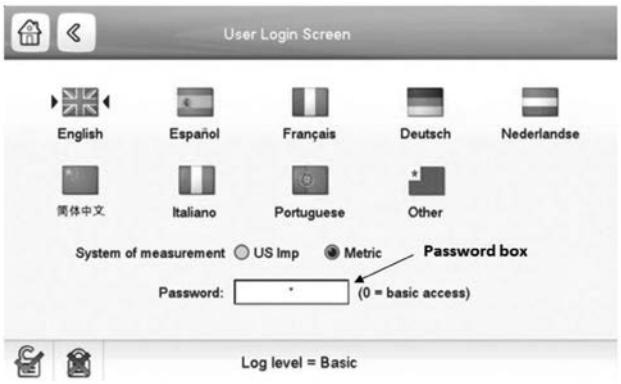
IMPORTANT: Touch Pilot allows users to add new languages to the control. To learn more about language customization, please contact your local Carrier representative.

8.8.3 - System of measurement

The control offers the possibility of selecting the system of measurement displayed on the user interface.

To change a system of measurement:

1. Press the **Log** button to open User Login Screen.
2. Select the new language.

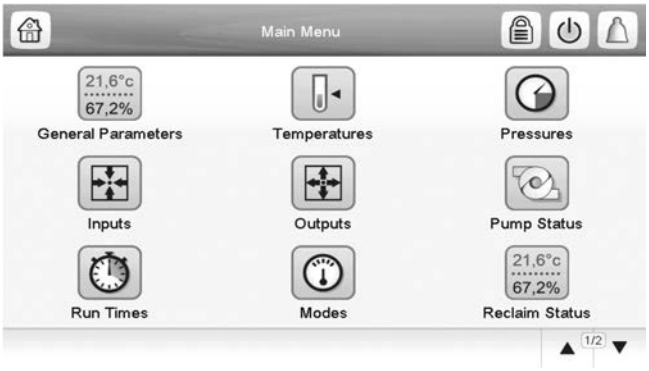


3. Press to save or to cancel changes.

8.9 - Monitor unit parameters

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 (see also section 8.4).

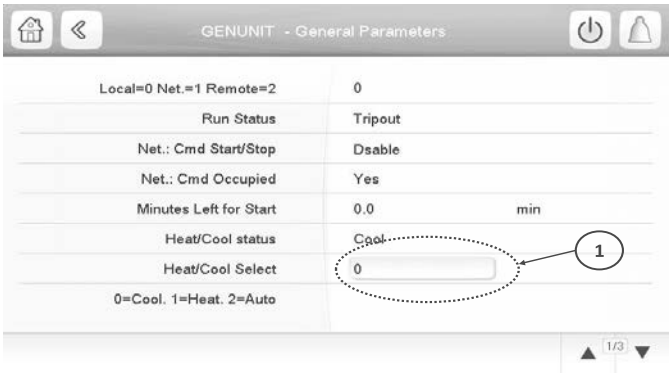


Specific unit parameters can be accessed by pressing the icon corresponding to the desired category.
To go back to the Synoptic screen, press .

General unit parameters

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

To access the General parameters screen, go to the Main menu and select **General Parameters** 21,6°c 67,2%

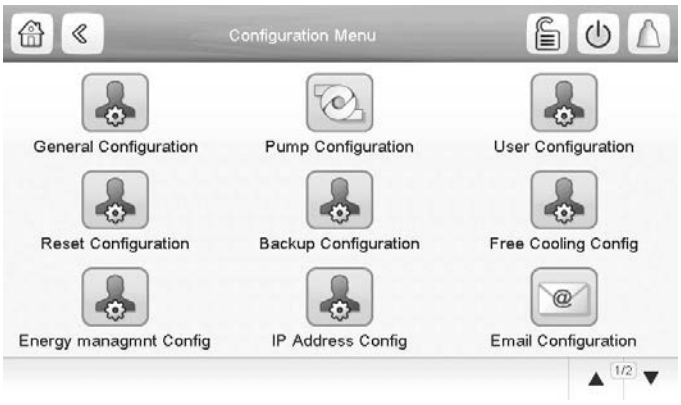


1. Forceable point

Press the **Up/Down** buttons ▲ ▼ to navigate between the screens.

8.10 - Modify unit parameters

The Configuration menu gives access to a number of user-modifiable parameters such as pump configuration, schedule menu, etc. The Configuration menu is password-protected (see also section 8.8.1).



Press the field corresponding to the parameter to be modified and introduce all the necessary changes.

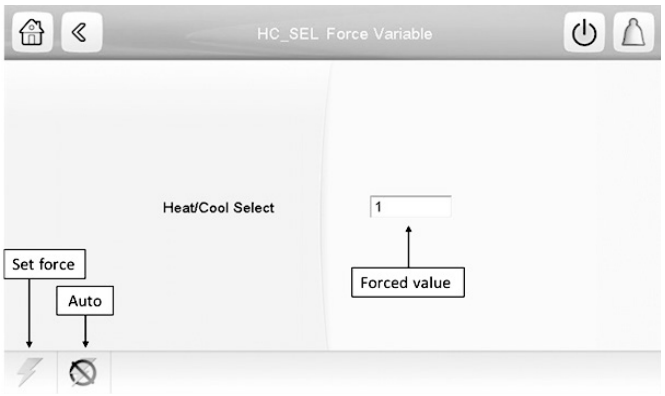
Press the **Up/Down** buttons ▲ ▼ to navigate between the screens.

Once all the necessary modifications have been made, press to confirm or to cancel changes.

8.11 - Override system configuration

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

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

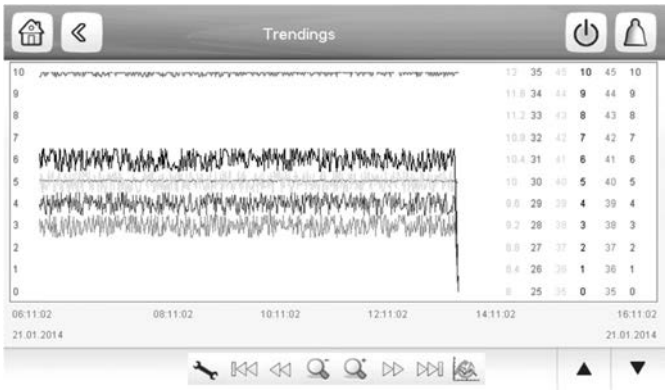


8.12 - Analyse history trends

The Trendings screen allows for easy monitoring of parameters selected by the user.

To access the Trendings screen, navigate to the Main menu and select **Trendings**

Select the parameters to be displayed and press
Press the **Up/Down** buttons to see the graph showing the performance of the unit within a selected period of time.



Press the **Settings** button to adjust time and date settings for the Trendings display.

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.

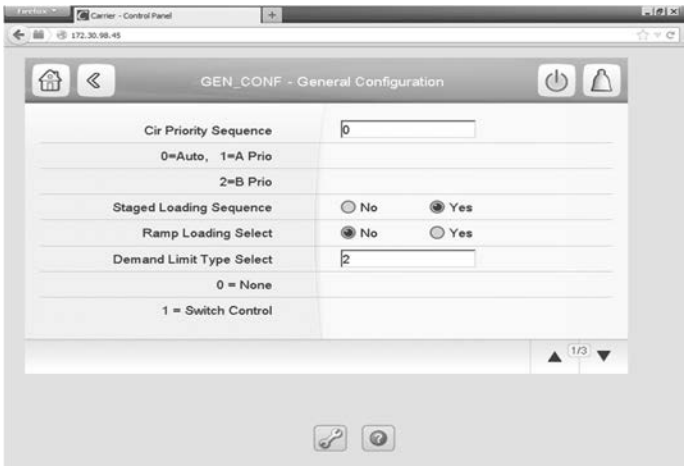
9.1 - Web interface

The Touch Pilot 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.

9.2 - Open the web interface

To access Touch Pilot, enter 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 may 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.

Web connection features

- Technical documentation
- Two users controlling the unit simultaneously

9.3 - Manage web browser settings

Minimum web browser configuration:

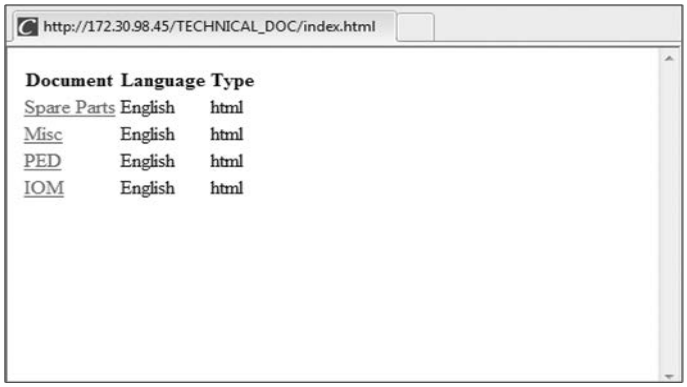
- Internet Explorer (version 8 or higher) or Mozilla Firefox (version 26 or higher). In the advanced connection options add the unit IP address to the exceptions list. Do not use a proxy server.
- Java platform (version 6 or higher). In the control panel, clear the **Keep temporary files on my computer**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

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

9.4 - Access technical documentation

When the Touch Pilot control is used via a PC web browser, the controller allows the user to access the technical documentation for the product.

Press the **Technical document** button  to access a list of documents related to the unit and its components.



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.

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 safely and may be accessed at any time.

10.1 - Main menu

TOUCH PILOT USER INTERFACE

Icon	Displayed text*	Description
	General Parameters	General parameters
	Temperatures	Temperatures
	Pressures	Pressures
	Inputs	Inputs status
	Outputs	Outputs status
	Pump Status	Pump status
	Run Times	Run times
	Modes	Modes
	Reclaim Status	Reclaim Status
	Free Cooling Status	Free Cooling Status
	Energy Management	Energy management
	FC Dry Cooler Status	Free Cooling Dry Cooler Status
	Msc Status	Miscellaneous parameters status
	Setpoint Configuration	Setpoint table
	Trendings	Trendings
	Configuration Menu	Configuration menu

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

PRO DIALOG+ USER INTERFACE

Menu name	Displayed text*	Description
GENUNIT	General Parameters	General parameters
TEMP	Temperatures	Temperatures
PRESSURE	Pressures	Pressures
INPUTS	Inputs	Inputs status
OUTPUTS	Outputs	Outputs status
PUMPSTAT	Pump Status	Pump status
RUNTIME	Run Times	Run times
MODES	Modes	Modes
RECLAIM	Reclaim Status	Reclaim Status
FREECOOL	Free Cooling Status	Free Cooling Status
EMM_STAT	Energy Management	Energy management
FCDC_ST	FC Dry Cooler Status	Free Cooling Dry Cooler Status
MSC_STAT	Msc Status	Miscellaneous parameters status
SETPOINT	Setpoint Configuration	Setpoint table
CONFIG	Configuration Menu	Configuration menu
ALARMS	Alarm Menu	Alarm menu

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

CAUTION

Since specific units may not include certain options, some tables may contain parameters that cannot be configured for a given unit.

General Parameters – GENUNIT

Name	Status	Default	Unit	Displayed text*	Description
CTRL_TYP	0 to 2	-	-	Local=0 Net.=1 Remote=2	Operating mode: 0 = Local 1 = Network 2 = Remote
STATUS				Run Status	Unit running status: Off, Stopping, Delay, Running, Ready, Override, Tripout, Test, Runtest
CHIL_S_S	disable/enable		-	Net.: Cmd Start/Stop	Unit start/stop via Network: When the unit is in Network mode, start/stop command can be forced
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
min_left	-		min	Minutes Left for Start	Minutes before the unit start-up
HEATCOOL				Heat/Cool status	Heating/cooling status
HC_SEL	0 to 2		-	Heat/Cool Select	Heating/cooling selection
			-	0=Cool. 1=Heat. 2=Auto	0 = Cooling 1 = Heating 2 = Automatic heating/cooling control
SP_SEL	0 to 2		-	Setpoint Select	Setpoint selection
			-	0=Auto. 1=Spt1. 2=Spt2	0 = Automatic setpoint selection 1 = Setpoint 1 (active during occupied period) 2 = Setpoint 2 (active during unoccupied period)
SP_OCC	no/yes	yes	-	Setpoint Occupied?	Setpoint status: 0 = Unoccupied 1 = Occupied
CAP_T	-		%	Unit Total Capacity	Total unit capacity
CAPA_T	-		%	Cir A Total Capacity	Total capacity, circuit A
CAPB_T	-		%	Cir B Total Capacity	Total capacity, circuit B
SP	-		°C / °F	Current setpoint	Current setpoint
CTRL_PNT	-20 to 67		°C	Control Point	Control point: Water temperature that the unit must produce
	-4 to 153		°F		
CTRL_WT	-20 to 67		°C	Control Water Temp	Controlled water temperature
	-4 to 153		°F		
OAT	-20 to 67		°C	Outdoor Air Temp	Outdoor air temperature
	-4 to 153		°F		
EMSTOP	disable/enable		-	Emergency Stop	Emergency stop: Used to stop the unit regardless of its active operating type
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
LAG_LIM	0 to 100		%	Lag Capacity Limit Value	Lag capacity limit value: Value that is forced by the master chiller (master/slave assembly)

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

Temperatures – TEMP

Name	Status	Unit	Displayed text*	Description
EWT	-	°C / °F	Entering Fluid Temp	Evaporator entering water temperature: Used for capacity control
LWT	-	°C / °F	Leaving Fluid Temp	Evaporator leaving water temperature: Used for capacity control
OAT	-	°C / °F	Outdoor Air Temp	Outdoor air temperature: Used to determine a number of control mechanisms such as heat/cool changeover, water exchanger heater operation, defrost cycle, free cooling option, and more
SCT_A	-	°C / °F	Saturated Cond Tmp cir A	Saturated condensing temperature, circuit A
SST_A	-	°C / °F	Saturated Suction Temp A	Saturated suction temperature, circuit A
SUCT_A	-	°C / °F	Compressor Suction Tmp A	Compressor suction temperature, circuit A
SH_A	-	^C / ^F	Suction Superheat Tmp A	Suction superheat temperature, circuit A
DEFRT_A	-	°C / °F	Defrost Temperature A	Defrost temperature, circuit A (heat pumps)
SCT_B	-	°C / °F	Saturated Cond Tmp cir B	Saturated condensing temperature, circuit B
SST_B	-	°C / °F	Saturated Suction Temp B	Saturated suction temperature, circuit B
SUCT_B	-	°C / °F	Compressor Suction Tmp B	Compressor suction temperature, circuit B
SH_B	-	^C / ^F	Suction Superheat Tmp B	Suction superheat temperature, circuit B
DEFRT_B	-	°C / °F	Defrost Temperature B	Defrost temperature, circuit B (heat pumps)
SPACETMP	-	°C / °F	Optional Space Temp	Space (room) temperature: Applies to units with Energy Management Module
CHWSTEMP	-	°C / °F	Cold Water System Temp	Cold water system temperature

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

Pressures – PRESSURE

Name	Status	Unit	Displayed text*	Description
DP_A	-	kPa / PSI	Discharge Pressure A	Compressor discharge pressure, circuit A
SP_A	-	kPa / PSI	Main Suction Pressure A	Compressor suction pressure, circuit A
DP_B	-	kPa / PSI	Discharge Pressure B	Compressor discharge pressure, circuit B
SP_B	-	kPa / PSI	Main Suction Pressure B	Compressor suction pressure, circuit B
PUMP_EWP	-	kPa / PSI	Inlet unit water press.	Pump entering water pressure
PUMP_LWP	-	kPa / PSI	Outlet unit water pres.	Pump leaving water pressure

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

Inputs – INPUTS

Name	Status	Unit	Displayed text*	Description
ONOFF_SW	open/close	-	Remote On/Off Switch	Remote on/off switch
HC_SW	open/close	-	Remote HeatCool Switch	Remote heating/cooling selection switch
SETP_SW	open/close	-	Remote Setpoint Switch	Remote setpoint selection switch
LIM_SW1	open/close	-	Limit Switch 1	Demand limit switch 1
LIM_SW2	open/close	-	Limit Switch 2	Demand limit switch 2 (EMM option)
LOCK_SW	open/close	-	Customer Interlock	Customer interlock: When the contact is closed, the unit will be stopped with no delay. The switch is provided on the customer's terminal block of the optional EMM.
FLOW_SW	open/close	-	Flow Switch Status	Flow switch status
DSHTR_SW	open/close	-	Desuper heater demand	Desuperheater status
REM_LOCK	open/close	-	Remote Interlock Status	Remote interlock status
REVPH_SW	open/close	-	Reverse Phase Detection	Reverse phase detection
cp_a1_f	open/close	-	Compressor A1 failure	Compressor A1 failure
cp_a2_f	open/close	-	Compressor A2 failure	Compressor A2 failure
cp_a3_f	open/close	-	Compressor A3 failure	Compressor A3 failure
cp_a4_f	open/close	-	Compressor A4 failure	Compressor A4 failure
HP_SW_A	open/close	-	High Pressure Switch A	High pressure switch, circuit A (Touch Pilot)
LEAK_A	0 to 10	V	Leakage Detector Val A	Leakage detector value, circuit A
cp_b1_f	open/close	-	Compressor B1 failure	Compressor B1 failure
cp_b2_f	open/close	-	Compressor B2 failure	Compressor B2 failure
cp_b3_f	open/close	-	Compressor B3 failure	Compressor B3 failure
cp_b4_f	open/close	-	Compressor B4 failure	Compressor B4 failure
HP_SW_B	open/close	-	High Pressure Switch B	High pressure switch, circuit B (Touch Pilot)
LEAK_B	0 to 10	V	Leakage Detector Val B	Leakage detector value, circuit B
bacdongl	no/yes	-	BACnet Dongle	BACnet dongle: Used when the unit is incorporated into the BACnet network

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

Outputs – OUTPUTS

Name	Status	Unit	Displayed text*	Description
CP_A1	off/on	-	Compressor A1	Compressor A1 command
CP_A2	off/on	-	Compressor A2	Compressor A2 command
CP_A3	off/on	-	Compressor A3	Compressor A3 command
CP_A4	off/on	-	Compressor A4	Compressor A4 command
FAN_A1_0	off/on	-	Fan A1 Low Speed	Fan A1 low speed (optional)
FAN_A1_1	off/on	-	Fan A1 High Speed	Fan A1 command
FAN_A2	off/on	-	Fan A2	Fan A2 command
FAN_A3	off/on	-	Fan A3	Fan A3 command
FAN_A4	off/on	-	Fan A4	Fan A4 command
FAN_ST_A	0 to 6	-	Fan Staging Number Cir A	Current fan stage of circuit A
VARFAN_A		Variable fan A command	Variable fan A command	Variable fan A command
EXV_A	0 to 100	%	EXV position Circuit A	EXV position, circuit A
REV_A	off/on	-	4-way Refrig. Valve A	4-way refrigerant valve, circuit A: Used to manage cooling/heating/defrost operation (heat pumps)
HD_HTR_A	off/on	-	Compressor Head Heater A	Compressor head heater, circuit A: Applies only to 30RQP units
CP_B1	off/on	-	Compressor B1	Compressor B1 command
CP_B2	off/on	-	Compressor B2	Compressor B2 command
CP_B3	off/on	-	Compressor B3	Compressor B3 command
CP_B4	off/on	-	Compressor B4	Compressor B4 command
FAN_B1_0	off/on	-	Fan B1 Low Speed	Fan B1 low speed (optional)
FAN_B1_1	off/on	-	Fan B1 High Speed	Fan B1 command
FAN_B2	off/on	-	Fan B2	Fan B2 status
FAN_B3	off/on	-	Fan B3	Fan B3 status

Name	Status	Unit	Displayed text*	Description
FAN_B4	off/on	-	Fan B4	Fan B4 status
FAN_ST_B	0 to 6	-	Fan Staging Number Cir B	Current fan stage of circuit B
VARFAN_B		Variable fan B command	Variable fan B command	EXV position, circuit B
EXV_B	0 to 100	%	EXV position Circuit B	EXV position, circuit B
REV_B	off/on	-	4-way Refrig. Valve B	4-way refrigerant valve, circuit B: Used to manage cooling/heating/defrost operation (heat pumps)
ALARM	off/on	-	Alarm Relay Status	Alarm relay status
HD_HTR_B	off/on	-	Compressor Head Heater B	Compressor head heater, circuit B: Applies only to 30RQP units
RUNNING	off/on	-	Running Relay Status	Running relay status
ALERT	off/on	-	Alert Relay State	Alert relay state
SHUTDOWN	off/on	-	Shutdown Indicator State	Shutdown indicator state
EXCH_HTR	off/on	-	Exchanger heater	Evaporator heater
SET_FLOW	off/on	-	Flow Switch Setpoint cfg	Flow switch setpoint configuration

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

Pump Status – PUMPSTAT

Name	Status	Unit	Displayed text*	Description
ROTWPUMP	no/yes	-	Rotate Water Pumps Now?	Water pumps rotation
CPUMP_1	off/on	-	Water Pump #1 Command	Water pump 1 control
CPUMP_2	off/on	-	Water Pump #2 Command	Water pump 2 control
wp_out	-	kPa / PSI	Outlet Water Pres.(cor)	Outlet water pressure (corrected by temperature) Applies to units with the hydronic kit option
wp_in	-	kPa / PSI	Inlet Water Pres.(cor)	Inlet water pressure (corrected by temperature) Applies to units with the hydronic kit option
WP_CAL	no/yes	-	Water Pres. Calibration?	Water pressure calibration
wp_off	-	kPa / PSI	Water Pressure Offset	Water pressure offset
wp_filt	-	kPa / PSI	Delta Pressure Filter	Delta pressure filter
wp_min	-	kPa / PSI	Minimum Water Pressure	Minimum water pressure
flow	-	l/s / GPS	Water Flow	Water flow rate
dt_stp	-	^C / ^F	Water Delta T Setpoint	Water delta temperature setpoint
delta_t	-	^C / ^F	Current Water Delta T	Current water delta temperature
dp_stp	-	kPa / PSI	Water Delta P Setpoint	Water delta pressure setpoint
delta_p	-	kPa / PSI	Current Water Delta P	Current water delta pressure
DRV_OUT	0 to 100	%	Drive Output	Drive output

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

Run Times – RUNTIME

Name	Status	Unit	Displayed text*	Description
hr_mach	-	hour	Machine Operating Hours	Unit operating hours
st_mach	-	-	Machine Starts Number	Number of unit starts
hr_cp_a1	-	hour	Compressor A1 Hours	Operating hours, compressor A1
hr_cp_a2	-	hour	Compressor A2 Hours	Operating hours, compressor A2
hr_cp_a3	-	hour	Compressor A3 Hours	Operating hours, compressor A3
hr_cp_a4	-	hour	Compressor A4 Hours	Operating hours, compressor A4
hr_cp_b1	-	hour	Compressor B1 Hours	Operating hours, compressor B1
hr_cp_b2	-	hour	Compressor B2 Hours	Operating hours, compressor B2
hr_cp_b3	-	hour	Compressor B3 Hours	Operating hours, compressor B3
hr_cp_b4	-	hour	Compressor B4 Hours	Operating hours, compressor B4
st_cp_a1	-	-	Compressor A1 Starts	Number of starts, compressor A1
st_cp_a2	-	-	Compressor A2 Starts	Number of starts, compressor A2
st_cp_a3	-	-	Compressor A3 Starts	Number of starts, compressor A3
st_cp_a4	-	-	Compressor A4 Starts	Number of starts, compressor A4
st_cp_b1	-	-	Compressor B1 Starts	Number of starts, compressor B1
st_cp_b2	-	-	Compressor B2 Starts	Number of starts, compressor B2
st_cp_b3	-	-	Compressor B3 Starts	Number of starts, compressor B3
st_cp_b4	-	-	Compressor B4 Starts	Number of starts, compressor B4
hr_fana1	-	hour	Fan A1 Hours	Operating hours, fan A1
hr_fana2	-	hour	Fan A2 Hours	Operating hours, fan A2
hr_fana3	-	hour	Fan A3 Hours	Operating hours, fan A3
hr_fana4	-	hour	Fan A4 Hours	Operating hours, fan A4
hr_fanb1	-	hour	Fan B1 Hours	Operating hours, fan B1
hr_fanb2	-	hour	Fan B2 Hours	Operating hours, fan B2
hr_fanb3	-	hour	Fan B3 Hours	Operating hours, fan B3
hr_fanb4	-	hour	Fan B4 Hours	Operating hours, fan B4
hr_pump1	-	hour	Water Pump #1 Hours	Operating hours, water pump 1
hr_pump2	-	hour	Water Pump #2 Hours	Operating hours, water pump 2
hr_hrpmp	-	hour	Reclaim Pump Hours	Operating hours, reclaim pump
hrfcpmpa	-	hour	Refrig. Pump Cir A Hours	Operating hours, refrigerant pump, circuit A
hrfcpmpb	-	hour	Refrig. Pump Cir B Hours	Operating hours, refrigerant pump, circuit B
nb_defra	-	-	Circuit A Defrost Number	Number of defrost sessions that occurred on circuit A
nb_defrb	-	-	Circuit B Defrost Number	Number of defrost sessions that occurred on circuit B

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

Modes – MODES

Name	Status	Unit	Displayed text*	Description
m_delay	no/yes	-	Start Up Delay In Effect	Start-up delay in effect
m_2stpt	no/yes	-	Second Setpoint In Use	Second setpoint in use: The setpoint used during unoccupied periods
m_reset	no/yes	-	Reset In Effect	Setpoint reset active
m_demlim	no/yes	-	Demand limit active	Demand limit active
m_rpload	no/yes	-	Ramp Loading Active	Ramp loading active
m_whtr	no/yes	-	Water Exchanger Heater	Water exchanger heater active
m_pmprot	no/yes	-	Water Pump Rotation	Water pump rotation
m_pmpper	no/yes	-	Pump Periodic Start	Pump periodic start
m_lowsca	no/yes	-	Low Suction Circuit A	Low suction, circuit A
m_lowscb	no/yes	-	Low Suction Circuit B	Low suction, circuit B
m_hidgta	no/yes	-	High DGT Circuit A	High DGT, circuit A
m_hidgtb	no/yes	-	High DGT Circuit B	High DGT, circuit B
m_hiprsa	no/yes	-	High Press Override CirA	High pressure override, circuit A
m_hiprsb	no/yes	-	High Press Override CirB	High pressure override, circuit B
m_lowsha	no/yes	-	Superheat Override Cir A	Superheat override, circuit A
m_lowshb	no/yes	-	Superheat Override Cir B	Superheat override, circuit B
m_dltp_a	no/yes	-	Low Delta Press Cir A	Low delta pressure, circuit A
m_dltp_b	no/yes	-	Low Delta Press Cir B	Low delta pressure, circuit B
m_night	no/yes	-	Night Low Noise Active	Night low noise active
m_hsm	no/yes	-	System Manager Active	System Manager active
m_slave	no/yes	-	Master Slave Active	Master/slave mode active
m_autoch	no/yes	-	Auto Changeover Active	Automatic changeover active
m_defr_a	no/yes	-	Defrost Active Circuit A	Defrost mode active, circuit A (heat pumps)
m_defr_b	no/yes	-	Defrost Active Circuit B	Defrost mode active, circuit B (heat pumps)
m_recl_a	no/yes	-	Reclaim Active Circuit A	Reclaim mode active, circuit A
m_recl_b	no/yes	-	Reclaim Active Circuit B	Reclaim mode active, circuit B
m_free_a	no/yes	-	Free Cooling Active A	Free cooling mode active, circuit A
m_free_b	no/yes	-	Free Cooling Active B	Free cooling mode active, circuit B
m_boiler	no/yes	-	Boiler Active	Boiler active
m_ehs	no/yes	-	Electric Heater Active	Electric heater active
m_ewtlck	no/yes	-	Heating Low EWT Lockout	Heating low EWT lockout
m_ice	no/yes	-	Ice Mode In Effect	Ice mode active

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

Reclaim Status – RECLAIM

Name	Status	Unit	Displayed text*	Description
HR_SW	open/close	-	Heat Reclaim Select Sw	Heat reclaim switch enabling switching between air condenser (opened) and water condenser (closed)
HR_PUMP	off/on	-	Condenser Pump	Condenser pump status
hr_flow	off/on	-	Condenser Flow Switch	Condenser flow switch status
hr_htr	off/on	-	Condenser Heater	Condenser heater status
hr_ewt		°C / °F	Reclaim Entering Fluid	Reclaim entering fluid temperature
hr_lwt		°C / °F	Reclaim Leaving Fluid	Reclaim leaving fluid temperature
HR_STP		°C / °F	Reclaim Fluid Setpoint	Reclaim fluid setpoint temperature
hr_w_vlv	0 to 100	%	Reclaim Valve Output	Reclaim valve output status
hr_v_pos	0 to 100	%	Reclaim Valve Position	Reclaim valve position status
			CIRCUIT A	CIRCUIT A
hrstat_a	0 to 7	-	Reclaim Status	Reclaim status: 0 = Air-cooled mode 1 = Reclaim mode request 2 = Reclaim pump-down 3 = Reclaim operating 4 = Air-cooled mode request 5 = Reclaim pump-down failed 6 = Reclaim start failed 7 = Reclaim operation failed
hr_pdp_a		kPa / PSI	Pumpdown Pressure	Pump-down pressure
hr_subta		°C / °F	Sub Condenser Temp	Subcooling condenser temperature
hr_sat_a		°C / °F	Pumpdown Saturated Temp	Pump-down saturated temperature
hrsubc_a		°C / °F	Subcooling Temperature	Subcooling temperature
hr_ea_a	off/on	-	Cond Entering Air Valve	Condenser entering air valve status
hr_la_a	off/on	-	Cond Leaving Air Valve	Condenser leaving air valve status
hr_ew_a	off/on	-	Cond Entering Water Vlv	Condenser entering water valve status
hr_lw_a	off/on	-	Cond Leaving Water Vlv	Condenser leaving water valve status

Name	Status	Unit	Displayed text*	Description
			CIRCUIT B	CIRCUIT B
hrstat_b	0 to 7	-	Reclaim Status	Reclaim status: 0 = Air-cooled mode 1 = Reclaim mode request 2 = Reclaim pump-down 3 = Reclaim operating 4 = Air-cooled mode request 5 = Reclaim pump-down failed 6 = Reclaim start failed 7 = Reclaim operation failed
hr_pdp_b		kPa / PSI	Pumpdown Pressure	Pump-down pressure
hr_subtb		°C / °F	Sub Condenser Temp	Subcooling condenser temperature
hr_sat_b		°C / °F	Pumpdown Saturated Temp	Pump-down saturated temperature
hrsubc_b		°C / °F	Subcooling Temperature	Subcooling temperature
hr_ea_b	off/on	-	Cond Entering Air Valve	Condenser entering air valve status
hr_la_b	off/on	-	Cond Leaving Air Valve	Condenser leaving air valve status
hr_ew_b	off/on	-	Cond Entering Water Vlv	Condenser entering water valve status
hr_lw_b	off/on	-	Cond Leaving Water Vlv	Condenser leaving water valve status

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

Free Cooling Status – FREECOOL

Name	Status	Unit	Displayed text*	Description
FC_SW	open/close	-	FreeCool Disable Switch	Free cooling disable switch. The contact is normally open (if the switch is closed when the unit is in Remote mode, free cooling cycle cannot be started)
FC_DSBLE	no/yes	no	Free Cooling Disable ?	Free Cooling enable/disable option (if this parameter is set to “no” when the unit is in Network mode, free cooling cycle cannot be started)
fc_delta		^C / ^F	Free Cooling Delta T	Free cooling delta T
		-	CIRCUIT A	Circuit A
mc_pwr_a		kW	Mecha. Cooling Power A	Mechanical cooling power (circuit A)
fc_pwr_a		kW	Free Cool Maxi Power A	Max. free cooling power (circuit A)
fc_nxt_a		min	Next Session A In	Next free cooling session allowed in (circuit A)
fc_tmr_a		min	FreeCool Timeout A	Free cooling timeout (circuit A)
fc_ok_a	no/yes	-	Free Cool Conditions A ?	Free cooling conditions status (circuit A)
fc_on_a	no/yes	-	Free Cooling Active A	Free cooling active status (circuit A)
fc_ovr_a		-	Free Cooling Override A	Free cooling override (circuit A)
fan_st_a		-	Fan Staging Number A	Fan stage (circuit A)
fc_v_p_a		%	3-Way Valve Position A	3-way valve position
fc_vlv_a	0 to 6	-	3-Way Valve Status A	3-way valve status: 0 = Stopped, 1 = Closed, 2 = Opening, 3 = Closing, 4 = Opened, 5/6 = Failed
fc_pmp_a	off/on	-	Refrigerant Pump Out A	Refrigerant pump output status (circuit A)
fcPmpS_a		-	Pump Status A	Pump status (circuit A)
fc_oup_a		kPa / PSI	Pump Outlet Pressure A	Pump outlet pressure (circuit A)
fc_inp_a		kPa / PSI	Pump Inlet Pressure A	Pump inlet pressure (circuit A)
fc_dp_a		kPa / PSI	Pump Pressure Delta A	Pump pressure delta (circuit A)
		-	CIRCUIT B	CIRCUIT B
mc_pwr_b		kW	Mecha. Cooling Power B	Mechanical cooling power (circuit B)
fc_pwr_b		kW	Free Cool Maxi Power B	Max. free cooling power (circuit B)
fc_nxt_b		min	Next Session B In	Next free cooling session allowed in (circuit B)
fc_tmr_b		min	FreeCool Timeout B	Free cooling timeout (circuit B)
fc_ok_b	no/yes	-	Free Cool Conditions B ?	Free cooling conditions status (circuit B)
fc_on_b	no/yes	-	Free Cooling Active B	Free cooling active status (circuit B)
fc_ovr_b		-	Free Cooling Override B	Free cooling override (circuit B)
fan_st_b		-	Fan Staging Number B	Fan stage (circuit B)
fc_v_p_b		%	3-Way Valve Position B	3-way valve position
fc_vlv_b	0 to 6	-	3-Way Valve Status B	3-way valve status: 0 = Stopped, 1 = Closed, 2 = Opening, 3 = Closing, 4 = Opened, 5/6 = Failed
fc_pmp_b	off/on	-	Refrigerant Pump Out B	Refrigerant pump output status (circuit B)
fcPmpS_b		-	Pump Status B	Pump status (circuit B)
fc_oup_b		kPa / PSI	Pump Outlet Pressure B	Pump outlet pressure (circuit B)
fc_inp_b		kPa / PSI	Pump Inlet Pressure B	Pump inlet pressure (circuit B)
fc_dp_b		kPa / PSI	Pump Pressure Delta B	Pump pressure delta (circuit B)

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

Energy Management – EMM_STAT

Name	Status	Unit	Displayed text*	Description
OCC_OVSW	open/close	-	Occupied Override Switch	Occupied override switch status
ICE_SW	open/close	-	Ice Done Storage Switch	Ice done storage switch status
SP_RESET	4 to 20	mA	Setpoint Reset Signal	Setpoint reset signal
LIM_4_20	4 to 20	mA	Limit 4-20mA Signal	Limit 4-20 mA signal
COOL_NRG	-	kWh	Energy consumed in Cool	Energy consumed in cooling mode
HEAT_NRG	-	kWh	Energy consumed in Heat	Energy consumed in heating mode
CAPT_010	-	V	Chiller Capacity Running	Chiller capacity running: 0 to10 VDC signal corresponding to 0-100% capacity
BOILER	off/on	-	Boiler Output	Boiler output
EHS1	off/on	-	Electrical Heat Stage 1	Electric heater stage 1 (heat pumps)
EHS2	off/on	-	Electrical Heat Stage 2	Electric heater stage 2 (heat pumps)
EHS3	off/on	-	Electrical Heat Stage 3	Electric heater stage 3 (heat pumps)
EHS4	off/on	-	Electrical Heat Stage 4	Electric heater stage 4 (heat pumps)
ALERT	off/on	-	Alert Relay Status	Alert relay status
DSH_PUMP	off/on	-	Desuperheater Pump	Desuperheater pump status

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

Free Cooling Dry Cooler Status – FCDC_ST

Name	Status	Unit	Displayed text*	Description
fdc_oat	-	°C / °F	FC Dry Cooler OAT	Free Cooling / Dry cooler: OAT
fdc_lwt	-	°C / °F	FCDC Leaving Water Temp	Free Cooling / Dry Cooler: Leaving water temperature
fdcWloop	-	°C / °F	FCDC Water Loop Temp	Free Cooling / Dry Cooler: Water loop temperature
m_fcdc	no/yes	-	FC Dry Cooler Active	Free Cooling / Dry Cooler status
fdc_cap	0 to 100	%	FC Dry Cooler Capacity	Free Cooling / Dry Cooler capacity
fdcFanSt	0 to 10	-	FC Dry Cooler Fan Stage	Free Cooling / Dry Cooler fan stage
fdcFanSp	0 to 100	%	FCDC VFD Speed	Free Cooling / Dry Cooler variable speed
fdc_hour	-	hour	FCDC Operating Hours	Free Cooling / Dry cooler: Number of operating hours
fdcFan1s	-	-	FCDC Fan Stage 1 Start	FCDC / Fan stage 1: Number of starts
fdcFan1h	-	-	FCDC Fan Stage 1 Hours	FCDC / Fan stage 1: Number of operating hours
fdcFan2s	-	-	FCDC Fan Stage 2 Start	FCDC / Fan stage 2: Number of starts
fdcFan2h	-	-	FCDC Fan Stage 2 Hours	FCDC / Fan stage 2: Number of operating hours
fdcFan3s	-	-	FCDC Fan Stage 3 Start	FCDC / Fan stage 3: Number of starts
fdcFan3h	-	-	FCDC Fan Stage 3 Hours	FCDC / Fan stage 3: Number of operating hours
fdcFan4s	-	-	FCDC Fan Stage 4 Start	FCDC / Fan stage 4: Number of starts
fdcFan4h	-	-	FCDC Fan Stage 4 Hours	FCDC / Fan stage 4: Number of operating hours
fdcFan5s	-	-	FCDC Fan Stage 5 Start	FCDC / Fan stage 5: Number of starts
fdcFan5h	-	-	FCDC Fan Stage 5 Hours	FCDC / Fan stage 5: Number of operating hours
fdcFan6s	-	-	FCDC Fan Stage 6 Start	FCDC / Fan stage 6: Number of starts
fdcFan6h	-	-	FCDC Fan Stage 6 Hours	FCDC / Fan stage 6: Number of operating hours
fdcFan7s	-	-	FCDC Fan Stage 7 Start	FCDC / Fan stage 7: Number of starts
fdcFan7h	-	-	FCDC Fan Stage 7 Hours	FCDC / Fan stage 7: Number of operating hours

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

Msc Status – MSC_STAT

Name	Status	Unit	Displayed text*	Description
m_ecopmp	no/yes	-	Eco Pump Mode Active	Eco pump mode status: When this mode is active, the pump is stopped periodically when the unit is in Standby

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

Setpoint Configuration – SETPOINT

Name	Status*	Default	Unit	Displayed text**	Description
csp1	-28.9 to 26	6.7	°C	Cooling Setpoint 1	Cooling setpoint 1
	-20.0 to 78.8	44	°F		
csp2	-28.9 to 26	6.7	°C	Cooling Setpoint 2	Cooling setpoint 2
	-20.0 to 78.8	44	°F		
ice_sp	-28.9 to 26	6.7	°C	Cooling Ice Setpoint	Ice storage setpoint
	-20.0 to 78.8	44	°F		
cramp_sp	0.1 to 1.1	0.6	^C	Cooling Ramp Loading	Cooling ramp loading setpoint
	0.2 to 2.0	1	^F		
hsp1	26.7 to 63	37.8	°C	Heating Setpoint 1	Heating setpoint 1
	80.0 to 145.4	100	°F		
hsp2	26.7 to 63	37.8	°C	Heating Setpoint 2	Heating setpoint 2
	80.0 to 145.4	100	°F		
hramp_sp	0.1 to 1.1	0.6	^C	Heating Ramp Loading	Heating ramp loading setpoint
	0.2 to 2.0	1	^F		
cauto_sp	3.9 to 50	23.9	°C	Cool Changeover Setpt	Cooling changeover setpoint
	39.0 to 122.0	75	°F		
hauto_sp	0 to 46.1	17.8	°C	Heat Changeover Setpt	Heating changeover setpoint
	32.0 to 115.0	64	°F		
lim_sp1	0 to 100	100	%	Switch Limit Setpoint 1	Switch limit setpoint 1
lim_sp2	0 to 100	100	%	Switch Limit Setpoint 2	Switch limit setpoint 2
lim_sp3	0 to 100	100	%	Switch Limit Setpoint 3	Switch limit setpoint 3
hr_stp	35 to 50	50	°C	Heat Reclaim Setpoint	Heat reclaim setpoint
	95 to 122	122	°F		
hr_deadb	2.8 to 15	5	^C	Heat Reclaim Deadband	Heat reclaim deadband
	5 to 27	9	^F		
min_sct	23.9 to 50	40	°C	Desuperheat Min SCT	Minimum SCT when desuperheater enabled
	75 to 122	104	°F		

*The range may vary depending on the unit configuration, e.g. fluid type.
**Depends on the selected language (English by default).

Trendings

Name	Status	Unit	Displayed text*	Description**
CAPA_T	0 to 100	%	Cir A Total Capacity	Total capacity, circuit A
CAPB_T	0 to 100	%	Cir B Total Capacity	Total capacity, circuit B
CTRL_PNT	-	°C / °F	Control Point	Control point
OAT	-	°C / °F	Outdoor Air Temp	Outdoor air temperature
COOL_EWT	-	°C / °F	Cooler Entering Fluid	Evaporator entering water temperature
COOL_LWT	-	°C / °F	Cooler Leaving Fluid	Evaporator leaving water temperature
SCT_A	-	°C / °F	Saturated Cond Tmp cir A	Saturated condensing temperature, circuit A
SCT_B	-	°C / °F	Saturated Cond Tmp cir B	Saturated condensing temperature, circuit B
SST_A	-	°C / °F	Saturated Suction Temp A	Saturated suction temperature, circuit A
SST_B	-	°C / °F	Saturated Suction Temp B	Saturated suction temperature, circuit B

*Depends on the selected language (English by default).
**The list of trending points cannot be modified. Trending points can only be enabled or disabled.

IMPORTANT: This menu applies only to the Touch Pilot control.

10.2 - Configuration menu

TOUCH PILOT USER INTERFACE

Icon	Displayed text*	Description
	General Configuration	General configuration
	Pump Configuration	Pump configuration
	User Configuration	User configuration
	Reset Configuration	Reset configuration
	Backup Configuration	Backup configuration
	Free Cooling Config	Free cooling configuration
	Energy managmnt Config	Energy management configuration
	IP Address Config	IP address configuration
	Email Configuration	Email configuration
	Schedule Menu	Schedule menu
	Holiday Menu	Holiday menu
	Broadcast Menu	Broadcast menu
	Date/Time configuration	Date/time configuration
	Control Identification	Control identification

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

PRO DIALOG+ USER INTERFACE

Menu name	Displayed text*	Description
GEN_CONF	General Configuration	General configuration
PUMPCONF	Pump Configuration	Pump configuration
USERCONF	User Configuration	User configuration
RESETCFG	Reset Configuration	Reset configuration
BACKUP	Backup Configuration	Backup configuration
FREECONF	Free Cooling Config	Free cooling configuration
EMM_CONF	Energy managmnt Config	Energy management configuration
SCHEDULE	Schedule Menu	Schedule menu
HOLIDAY	Holiday Menu	Holiday menu
BRODCAST	Broadcast Menu	Broadcast menu
DATETIME	Date/Time configuration	Date/time configuration
CTRL_ID	Control Identification	Control identification
DISPLAY	HMI Configuration	Display configuration

*Depends on the selected language (English 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 Configuration – GEN_CONF

Name	Status	Default	Unit	Displayed text*	Description
prio_cir	0 to 2	0	-	Cir Priority Sequence	Circuit priority
				0=Auto	0 = Automatic circuit selection
				1=A Prio	1 = Circuit A priority
				2=B Prio	2 = Circuit B priority
seq_typ	no/yes	no	-	Staged Loading Sequence	Staged loading sequence
ramp_sel	no/yes	no	-	Ramp Loading Select	Ramp loading selection
lim_sel	0 to 2	0	-	Demand Limit Type Select	Demand limit selection
				0 = None	0 = None
				1 = Switch Control	1 = Switch control
				2 = 4-20mA Control	2 = 4-20 mA control
off_on_d	1 to 15	1	min	Unit Off to On Delay	Unit Off to On delay
heat_th	-12 to 0	-12	°C	Heating OAT Threshold	Heating OAT threshold
	10.4 to 32.0	10.4	°F		
nh_start	-	-	-	Night Mode Start Hour	Night mode start hour
nh_end	-	-	-	Night Mode End Hour	Night mode end hour
nh_limit	0 to 100	100	%	Night Capacity Limit	Night capacity limit
ice_cnfg	no/yes	no	-	Ice Mode Enable	Ice mode enabled (EMM)
both_sel	no/yes	no	-	Both Command Sel (HSM)	Both command selection (HSM)
auto_sel	no/yes	no	-	Auto Changeover Select	Automatic changeover selection

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

Pump Configuration – PUMPCONF

Name	Status	Default	Unit	Displayed text*	Description
pump_seq	0 to 4	0	-	Pumps Sequence	Pumps sequence
				0 = No Pump	0 = No pump
				1 = One Pump Only	1 = One pump only (units with one pump)
				2 = Two Pumps Auto	2 = Two pumps automatic control
				3 = Pump#1 Manual	3 = Pump 1 selected (units with two pumps)
				4 = Pump#2 Manual	4 = Pump 2 selected (units with two pumps)
pump_del	24 to 3000	48	hour	Pump Auto Rotation Delay	Pump automatic rotation delay
pump_per	no/yes	no	-	Pump Sticking Protection	Pump sticking protection
pump_sby	no/yes	no	-	Stop Pump During Standby	Pump stop when the unit is in standby
pump_loc	no/yes	yes	-	Flow Checked If Pump Off	Flow checked if pump is off

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

User Configuration – USERCONF

Name	Status	Default	Unit	Displayed text*	Description
use_pass	1 to 9999	11	-	User Password	User password
language	0 to 7		-	Language Selection**	Language selection
				English=0, Espanol=1	0 = English, 1 = Spanish
				Francais=2, Deutsch=3	2 = French, 3 = German
				Nederlands=4, Chinese=5	4 = Dutch, 5 = Chinese
				Italiano=6, Portuguese=7	6 = Italian, 7 = Portuguese

*Depends on the selected language (English by default).
**Chinese applies only to the Touch Pilot control.

Reset Configuration – RESETCFG

Name	Status	Default	Unit	Displayed text*	Description
cr_sel	0 to 4	0	-	Cooling Reset Select	Cooling reset selection
hr_sel	0 to 4	0	-	Heating Reset Select	Heating reset selection
				0=None, 1=OAT, 2=Delta T	0 = None, 1 = OAT, 2 = Delta T
				3=4-20mA control	3 = 4-20 mA control
				4=Space Temp	4 = Space temperature
				Cooling	**Cooling**
oat_crno	-10 to 51.7	-10	°C	OAT No Reset Value	OAT, no reset value
	14 to 125	14	°F		
oat_crfu	-10 to 51.7	-10	°C	OAT Full Reset Value	OAT, max. reset value
	14 to 125	14	°F		
dt_cr_no	0 to 13.9	0	^C	Delta T No Reset Value	Delta T, no reset value
	0 to 25	0	^F		
dt_cr_fu	0 to 13.9	0	^C	Delta T Full Reset Value	Delta T, max. reset value
	0 to 25	0	^F		
I_cr_no	0 to 20	0	mA	Current No Reset Value	Current, no reset value
I_cr_fu	0 to 20	0	mA	Current Full Reset Value	Current, max. reset value
spacr_no	-10 to 51.7	-10	°C	Space T No Reset Value	Space temperature, no reset value
	14 to 125	14	°F		

Name	Status	Default	Unit	Displayed text*	Description
spacr_fu	-10 to 51.7	-10	°C	Space T Full Reset Value	Space temperature, max. reset value
	14 to 125	14	°F		
cr_deg	-16.7 to 16.7	0	^C	Cooling Reset Deg. Value	Maximum cooling reset value
	-30 to 30	0	^F		
				Heating	**Heating**
oat_hrno	-10 to 51.7	-10	°C	OAT No Reset Value	OAT, no reset value
	14 to 125	14	°F		
oat_hrfu	-10 to 51.7	-10	°C	OAT Full Reset Value	OAT, max. reset value
	14 to 125	14	°F		
dt_hr_no	0 to 13.9	0	^C	Delta T No Reset Value	Delta T, no reset value
	0 to 25	0	^F		
dt_hr_fu	0 to 13.9	0	^C	Delta T Full Reset Value	Delta T, max. reset value
	0 to 25	0	^F		
I_hr_no	0 to 20	0	mA	Current No Reset Value	Current, no reset value
I_hr_fu	0 to 20	0	mA	Current Full Reset Value	Current, max. reset value
spahr_no	-10 to 51.7	-10	°C	Space T No Reset Value	Space T, no reset value
	14 to 125	14	°F		
spahr_fu	-10 to 51.7	-10	°C	Space T Full Reset Value	Space T, max. reset value
	14 to 125	14	°F		
hr_deg	-16.7 to 16.7	0	^C	Heating Reset Deg. Value	Maximum heating reset value
	-30 to 30	0	^F		

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

Backup Configuration – BACKUP

Name	Status	Default	Unit	Displayed text*	Description
boil_th	-15 to 15	-10	°C	Boiler OAT Threshold	Boiler OAT threshold
	5 to 59	14	°F		
ehs_th	-5 to 21	5	°C	Elec Stage OAT Threshold	Electric heater stage OAT threshold
	23 to 70	41	°F		
ehs_pull	0 to 60	0	min	Electrical Pulldown Time	Electrical pulldown time
ehs_back	no/yes	no	-	Elec Stage 1 for backup	Electric heater stage 1 (backup)
ehs_defr	no/yes	no	-	Quick EHS for defrost	Quick EHS for defrost
ehs_kp	-20 to 20	2	-	EHS Proportional Gain	EHS proportional gain
ehs_ki	-5 to 5	0	-	EHS Integral Gain	EHS integral gain
ehs_kd	-20 to 20	0	-	EHS Derivative Gain	EHS derivative gain

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

Free Cooling Config – FREECONF

Name	Status	Default	Unit	Displayed text*	Description
free_th	-35 to 30	0	°C	OAT Threshold	Free cooling OAT threshold
	-31 to 86	32	°F		
fcdeltat	5 to 10	8	^C	Minimum Delta T	Minimum delta T (min difference between the control point and OAT)
	9 to 18	14.4	^F		
timeout	5 to 60	10	min	Full Load Timeout	Full load timeout
pre_cool	no/yes	no	-	Pre-Cooling Select	Pre-cooling selection

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

Energy managmnt Config – EMM_CONF

Name	Status	Default	Unit	Displayed text*	Description
pulsewgt	0.001 to 1.000	0.001	kWh	Energy Pulse Weight	Energy pulse weight

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

IP Address Config

Name	Status	Default	Unit	Displayed text*	Description
				IP address	IP address
ipadd1	0 to 255	169	-	IP add, 1st byte	IP address, 1st byte
ipadd2	0 to 255	254	-	IP add, 2d byte	IP address, 2nd byte
ipadd3	0 to 255	0	-	IP add, 3rd byte	IP address, 3rd byte
ipadd4	0 to 255	1	-	IP add, 4th byte	IP address, 4th byte
				Sub network mask	Sub network mask
subnet1	0 to 255	255	-	Subnet mask 1st byte	Subnet mask, 1st byte
subnet2	0 to 255	255	-	Subnet mask 2d byte	Subnet mask, 2nd byte
subnet3	0 to 255	0	-	Subnet mask 3rd byte	Subnet mask, 3rd byte
subnet4	0 to 255	0	-	Subnet mask 4th byte	Subnet mask, 4th byte
				Gateway address	Gateway address

Name	Status	Default	Unit	Displayed text*	Description
gateway1	0 to 255	0	-	Default gateway 1st byte	Default gateway, 1st byte
gateway2	0 to 255	0	-	Default gateway 2d byte	Default gateway, 2nd byte
gateway3	0 to 255	0	-	Default gateway 3rd byte	Default gateway, 3rd byte
gateway4	0 to 255	0	-	Default gateway 4th byte	Default gateway, 4th byte

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

IMPORTANT: This menu applies only to the Touch Pilot control.

E-mail Configuration

Name	Status	Default	Unit	Displayed text*	Description
senderP1			-	Sender E-mail Part1	Sender e-mail, identifier part
				@	@
senderP2			-	Sender E-mail Part2	Sender e-mail, domain part
recip1P1			-	Recip1 E-mail Part1	Recipient 1,identifier part
				@	@
recip1P2			-	Recip1 E-mail Part2	Recipient 1,domain part
recip2P1			-	Recip2 E-mail Part1	Recipient 2,identifier part
				@	@
recip2P2			-	Recip2 E-mail Part2	Recipient 2,domain part
smtpP1	0 to 255	0	-	SMTP IP Addr Part 1	SMTP IP address part 1
smtpP2	0 to 255	0	-	SMTP IP Addr Part 2	SMTP IP address part 2
smtpP3	0 to 255	0	-	SMTP IP Addr Part 3	SMTP IP address part 3
smtpP4	0 to 255	0	-	SMTP IP Addr Part 4	SMTP IP address part 4
accP1			-	Account E-mail Part1	Account e-mail, identifier part
				@	@
accP2			-	Account E-mail Part2	Account e-mail, domain part
accPass			-	Account Password	Account password
portNbr	0 to 255	25	-	Port Number	Port number
srvTim	0 to 255	30	sec	Server Timeout	Server timeout
srvAut	0 to 1	0	-	Server Authentication	Server authentication

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

IMPORTANT: This menu applies only to the Touch Pilot control.

Schedule Menu – SCHEDULE

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

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

Holiday Menu – HOLIDAY

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

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

Broadcast Menu – BRODCAST

Name	Status	Default	Displayed text*	Description
Ccnbroad	0 to 2	2	Activate	Not applicable
OAT Broadcast				
oatbusnm	0 to 239	0	Bus	Bus number of the unit with the outdoor temperature sensor
oatlocad	0 to 239	0	Element	Element number of the unit with outdoor temperature
dayl_sel	disable/enable	disable	Daylight Savings Select	Summer/winter time activation (Daylight saving selection)
Daylight Savings Select – Summer time (entering)				
Startmon	1 to 12	3	Month	Month
Startdow	1 to 7	7	Day of Week (1=Monday)	Day of the week (1 = Monday)
Startwom	1 to 5	5	Week Number of Month	Week of the month
Daylight Savings Select – Winter time (leaving)				
Stopmon	1 to 12	10	Month	Month
Stopdow	1 to 7	7	Day of Week (1=Monday)	Day of the week (1 = Monday)
Stopwom	1 to 5	5	Week Number of Month	Week of the month

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

Date/Time configuration – DATETIME

Name	Status	Unit	Displayed text*	Description
Date (DD/MM/YY)				
d_of_m	1 to 31	-	Day of month	Day of the month
month	1 to 12	-	Month of year	Month
year	0 to 99	-	Year	Year
dow	Monday-Sunday**	-	Day of Week	Day of the week
Time (HH:MM)				
hour	0 to 24	hour	Hour	Hour
minute	0 to 59	min	Minute	Minutes
Daylight Saving Time				
dlig_on	no/yes	-	Daylight sav. time on	Daylight saving time active
dlig_off	no/yes	-	Daylight sav. time off	Daylight saving time inactive
tom_hol	no/yes	-	Tomorrow is a holiday	The following day is a holiday
tod_hol	no/yes	-	Today is a holiday	The present day is a holiday

*Depends on the selected language (English by default).
**For Pro Dialog+ the status is numerical (1 to 7), where 1 stands for Monday.

Control Identification – CTRL_ID

Name	Status	Default	Displayed text*	Description
elemt_nb	0 to 239	1	CCN Element Number	Element number
Bus_nb	0 to 239	0	CCN Bus Number	Bus number
Baudrate	9600/19200/38400	9600	CCN Baud Rate	Communication speed
Device description	-	30RBM/30RBP 30RQM/30RQP	Device Description	Device description
Location Description	-		Location Description	Location description: The number corresponds to the country
Software Part Number	-	ECG-SR-20M4B010	Software Part Number	Software version
Serial Number	-		Serial Number	Serial number (MAC address)

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

HMI Configuration – DISPLAY

Name	Status	Default	Displayed text*	Description
hmi_sw	-	2.1	CSA-SR-20GE5021	Software version
mode	Local / CCN	Local	HMI Local or CCN mode	HMI Local or CCN mode
units	US Imp / Metric	US Imp	HMI conversion units	Pro Dialog+ display unit
hmi_addr		116	HMI LEN or CCN address	Pro Dialog+ display LEN or CCN address

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

IMPORTANT: This menu applies only to the Pro Dialog+ control.

10.3 - Alarms menu

Icon	Displayed text*	Description	Menu name
	Reset Alarms	Alarm reset	ALARMRST
	Current Alarms	Current alarms	CUR_ALM
	Alarm History	Alarm history	ALMHIST1
	Major Alarm History	Major alarm history	ALMHIST2

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

11.1 - 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 summarises 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.

Active operating type						Parameters 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**
-	-	-	-	-	-	-	-	-	-	enabled	-	-	off
-	-	-	-	-	-	-	-	-	-	-	yes	-	off
active	-	-	-	-	-	-	-	-	-	-	-	local	off
-	-	active	-	-	-	-	-	-	unoccupied	-	-	local	off
-	-	-	active	-	-	-	open	-	-	-	-	remote	off
-	-	-	active	-	-	-	-	-	unoccupied	-	-	remote	off
-	-	-	-	active	-	disabled	-	-	-	-	-	network	off
-	-	-	-	active	-	-	-	-	unoccupied	-	-	network	off
-	-	-	-	-	active	-	-	local	unoccupied	-	-	local	off
-	-	-	-	-	active	-	open	remote	-	-	-	remote	off
-	-	-	-	-	active	-	-	remote	unoccupied	-	-	remote	off
-	-	-	-	-	active	disabled	-	network	-	-	-	network	off
-	-	-	-	-	active	-	-	network	unoccupied	-	-	network	off
-	active	-	-	-	-	-	-	-	-	disabled	no	local	on
-	-	active	-	-	-	-	-	-	occupied	disabled	no	local	on
-	-	-	active	-	-	-	closed	-	occupied	disabled	no	remote	on
-	-	-	-	active	-	enabled	-	-	occupied	disabled	no	network	on
-	-	-	-	-	active	-	-	local	occupied	disabled	no	local	on
-	-	-	-	-	active	-	closed	remote	occupied	disabled	no	remote	on
-	-	-	-	-	active	enabled	-	network	occupied	disabled	no	network	on

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.

11.2 - Heating/Cooling/Standby

The control determines the heat/cool state of the unit. Chillers fitted with a boiler may operate in cooling or heating mode. Without a boiler, the unit remains in Cooling mode. Heat pumps may operate in cooling or heating mode.

When the chiller is in **Heating mode**, the control utilises the boiler to satisfy the heating demand. For heat pumps, the boiler is used when mechanical heating is impossible or insufficient. Additionally, when the outside air temperature is very low, electric heaters can be used as a form of supplemental heating.

When **Cooling mode** is selected, the unit will operate in the Cooling mode and, as a result, the boiler or electric heating will not be activated.

If the unit is in **Standby mode**, it does not cool or heat and compressors are stopped. The pump is running with no mechanical cooling or heating unless configured otherwise. The pump may be stopped depending on pumps configuration (PUMPCONF – Pump Configuration).

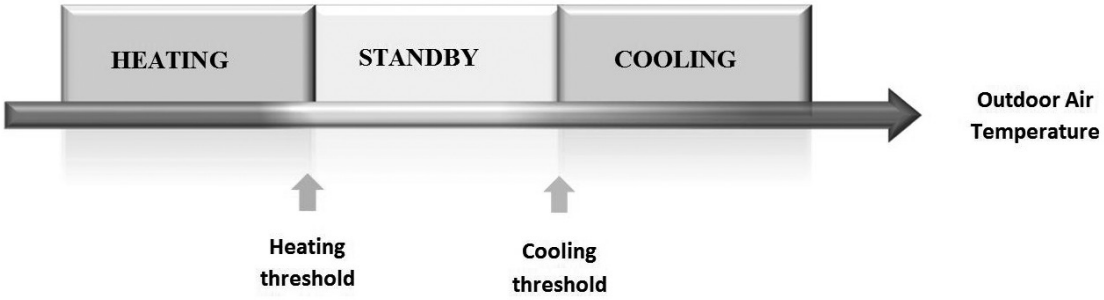


Figure 5: Heating /Cooling changeover for heat pumps and chillers fitted with a boiler

11.2.1 - Operating mode control

The operating mode, i.e. cooling or heating, is determined based on the following parameters:

- **Unit on/off status [status]:** Unit running status.
- **Control type [ctrl_typ]:** Local, Remote or Network.
- **Local heat/cool selection [hc_sel]:** Heat/Cool selection when the unit is running in Local mode.
- **Remote heat/cool selection [onsw_cr]:** Heat/Cool selection when the unit is running in Remote mode.
- **Network heat/cool selection [HC_SEL]:** Heat/Cool selection when the unit is running in Network mode.
- **Outdoor air temperature [OAT]:** Heat/Cool setpoint selection when the automatic changeover has been enabled.

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

11.3 - Heating/Cooling selection

Heating/Cooling selection applies to chillers with the boiler and heat pumps. Heating/cooling selection can be controlled in various ways, depending on the active operating type. By default, the cooling mode is selected.

Heating/Cooling selection can be determined:

- Locally at the unit using the HC_SEL item in the GENUNIT menu
- Remotely via the heating/cooling selection contact, if the unit is in the Remote mode
- Via a network command if the unit is in the Network mode

Heating/Cooling mode can be set manually by the user or automatically by the control. When heating/cooling is automatic, the outdoor air temperature determines the heat/cool/standby changeover (see the SETPOINT menu for cooling and heating mode changeover thresholds). The automatic changeover is optional and requires user configuration (GENUNIT – General Parameters).

To set cooling / heating / auto changeover
1. Navigate to the Main menu.
2. Select *General Parameters* (GENUNIT).
3. Set *Heat/Cool Select* [HC_SEL].

Heat/Cool Select [HC_SEL]	
0	Cooling
1	Heating
2	Automatic changeover

To set cool / heat changeover setpoint
1. Navigate to the Main menu.
2. Select *Setpoint Configuration* (SETPOINT).
3. Set *Cool Changeover Setpt* [cauto_sp] or *Heat Changeover Setpt* [hauto_sp].

Cool Changeover Setpt [cauto_sp]	
3.9 to 50°C	23.9°C
39 to 122°F	75°F
Heat Changeover Setpt [hauto_sp]	
0 to 46.1°C	17.8°C
32 to 115°F	64°F

11.4 - Supplementary heating

30RBM/RBP units may be fitted with a boiler that allows the unit to run in heating mode if required. The boiler is active only when the unit is in Heating mode.

30RQM/RQP heat pumps may be fitted with a boiler or electric heaters. The boiler is used as heating replacement when mechanical heating is not possible due to low outside air temperature. Electric heaters can be turned on to satisfy the heating demand when mechanical heating is insufficient.

11.4.1 - Boiler control
Boiler is activated when the outside air temperature is below the user-configured boiler outdoor temperature threshold which is by default set to -10°C (14°F).

To set boiler OAT threshold
1. Navigate to the Configuration menu.
2. Select *Backup Configuration* (BACKUP).
3. Set *Boiler OAT Threshold* [boil_th].

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

11.4.2 - Electric heating control
Electric heating stages can be activated as additional heating when OAT is below the user-configured electric heating OAT threshold which is by default set to 5°C (41°F).

Electric heating is allowed when:
- Unit is running at 100% capacity.
- Electric pull-down time elapsed [ehs_pull].
- OAT is below the OAT threshold [ehs_th].

There are four electric heating stages, where the last electric heating stage is used for back-up when the unit is down due to a detected fault.

To set electric heating OAT threshold
1. Navigate to the Configuration menu.
2. Select *Backup Configuration* (BACKUP).
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

IMPORTANT: Electric heating is not allowed when the demand limit is active on the unit.

11.5 - Pumps control

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

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

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

Configuration options may differ depending on the number and type of pumps available (single speed pumps or variable speed pumps).

11.5.1 - Variable speed pumps control
30RBM/30RBP chillers and 30RQM/RQP heat pumps may be fitted with one or two variable speed pumps.

Variable speed pumps give the possibility of saving the pumping energy cost, providing precise water flow control and improving the overall performance of the system. The frequency inverter continuously regulates the flow rate to minimise the pump power consumption at full load and part load.

Water flow management methods are as follows:
1) Fixed speed control (the control ensures a constant pump speed based on compressor capacity).
2) Water flow control based on constant water delta pressure (the control continuously acts on the pump speed to ensure a constant delta pressure).
3) Water flow control based on constant delta T on the water exchanger.

Fixed speed pumps can be either low or high pressure, whereas variable speed pumps are always high pressure pumps.

IMPORTANT: Units with customer pump may have only one variable speed pump, whereas units with internal pumps may have one or two variable speed pumps.

11.5.2 - Pumps configuration

The control can command internal fixed speed or variable speed pumps as well as customer pumps. Variable speed pumps may also be configured as fixed speed pumps (see also section 11.5.1).

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

IMPORTANT: Pump speed configuration can be performed only by Carrier service.

To set pumps sequence

1. Navigate to the Configuration menu.
2. Select *Pump Configuration* (PUMPCONF).
3. Set *Pumps Sequence* [pump_seq].

Pumps Sequence [pump_seq]	
0	No Pump
1	One Pump Only
2	Two Pumps Auto
3	Pump#1 Manual
4	Pump#2 Manual

11.5.3 - Automatic pump selection

If two pumps are controlled and the reversing function has been selected (PUMPCONF – Pump Configuration), the control balances the pump run time to match the configured pump changeover delay.

If this delay has elapsed, the pump reversing function is activated.

To set pump automatic rotation delay

1. Navigate to the Configuration menu.
2. Select *Pump Configuration* (PUMPCONF).
3. Set *Pump Auto Rotation Delay* [pump_del].

Pump Auto Rotation Delay [pump_del]	
24 to 3000h	48h

11.5.4 - Customer pumps configuration

Contrary to units with internal pumps, units with customer pumps may have only variable speed pump.

Customer pumps may be configured as follows:

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

Units with customer pumps are fitted with the flow switch, allowing for the water flow control.
For more information about actuators, see *Water flow switch* in section 4.7.

IMPORTANT: The variable speed pump can be set only by Carrier service.

11.5.5 - Pumps protection

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

If the unit is fitted with two pumps, the first pump is started on even days and the second pump is started on odd days. Starting the pump periodically for a few seconds extends the lifetime of the pump bearings and the tightness of the pump seal.

Periodical pump quick start can be selected via the Configuration menu (*Pump Sticking Protection*, PUMPCONF – Pump Configuration).

To set periodical pump quick start

1. Navigate to the Configuration menu.
2. Select *Pump Configuration* (PUMPCONF).
3. Set *Pump Sticking Protection* [pump_per].

Pump Sticking Protection [pump_per]	
No/Yes	Yes

11.5.6 - ECO pump mode

When the unit is in Standby mode (heating or cooling demand is satisfied), the Touch Pilot control may be configured to stop the pump periodically in order to save energy.

This option can be configured only by service technicians.

To verify the Eco Pump configuration

1. Navigate to the Main menu.
2. Select *Miscellaneous Status* (MSC_STAT).
3. Verify *Eco Pump Mode Active* [m_ecopmp].

Eco Pump Mode Active [m_ecopmp]
No/Yes

11.6 - Hydronic kit option

The hydronic kit option allows for continuous monitoring of the water flow rate (PUMPSTAT – Pump Status).
The hydronic kit provides the option to measure the following parameters:

- Inlet and outlet water pressure.
- Water exchanger flow rate.

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

Hydronic kit option with variable speed pumps
For units with variable speed pumps, this option allows for the automatic adjustment of the pump speed necessary to maintain the correct water flow rate. Water flow control can be based on compressor usage, constant delta pressure or constant temperature difference.

For more information on Variable speed pumps control, see also section 11.5.1.

11.7 - 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.

11.7.1 - Active setpoint

Two setpoints can be selected. Depending on the current operation type, the active setpoint can be selected manually via the Main menu (GENUNIT – General Parameters), with the volt-free user contacts, with network commands (CCN or BACnet) 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:

- **Heating or Cooling operating mode [hc_sel]**: *Heat/Cool select* (GENUNIT menu)
- **Setpoint selection [sp_sel]**: *Setpoint select* permits selection of the active setpoint if the unit is in the Local operating type (GENUNIT menu)
- **Setpoint switch status [SETP_SW]**: *Remote Setpoint Switch* (INPUTS menu)
- **Schedule 2 status [SP_OCC]**: Schedule for setpoint selection.

LOCAL OPERATING TYPE						
Parameter status						**Active setpoint**
Heating/cooling operating mode	**Setpoint selection**	**Ice storage configuration**	**Ice done contact**	**Setpoint switch**	**Schedule 2 status**	
cooling	sp-1	-	*	*	-	cooling setpoint 1 (csp1)
cooling	sp-2	-	*	*	-	cooling setpoint 2 (csp2)
cooling	*	enabled	open	closed	-	cooling ice setpoint (Ice_sp)
cooling	*	enabled	closed	closed	-	cooling setpoint 2 (csp2)
cooling	*	-	*	open	-	cooling setpoint 1 (csp1)
cooling	auto	-	*	*	occupied	cooling setpoint 1 (csp1)
cooling	auto	-	*	*	unoccupied	cooling setpoint 2 (csp2)
cooling	auto	enabled	open	*	unoccupied	cooling ice setpoint (Ice_sp)
heating	sp-1	-	*	*	-	heating setpoint 1 (hsp1)
heating	sp-2	-	*	*	-	heating setpoint 2 (hsp2)
heating	auto	-	*	*	occupied	heating setpoint 1 (hsp1)
heating	auto	-	*	*	unoccupied	heating setpoint 2 (hsp2)

*Any configuration, (-) default configuration.

REMOTE OPERATING TYPE						
Parameter status						**Active setpoint**
Heating/cooling operating mode	**Setpoint selection**	**Ice storage configuration**	**Ice done contact**	**Setpoint switch**	**Schedule 2 status**	
cooling	*	enabled	open	closed	-	cooling ice setpoint (Ice_sp)
cooling	*	-	*	open	-	cooling setpoint 1 (csp1)
cooling	-	-	*	open	-	cooling setpoint 1 (csp1)
cooling	-	-	*	closed	-	cooling setpoint 2 (csp2)
heating	-	-	*	open	-	heating setpoint 1 (hsp1)
heating	-	-	*	closed	-	heating setpoint 2 (hsp2)

*Any configuration, (-) default configuration.

NETWORK OPERATING TYPE						
Parameter status						**Active setpoint**
Heating/cooling operating mode	**Setpoint selection**	**Ice storage configuration**	**Ice done contact**	**Setpoint switch**	**Schedule 2 status**	
cooling	-	-	*	*	occupied	cooling setpoint 1 (csp1)
cooling	-	-	*	*	unoccupied	cooling setpoint 2 (csp2)
heating	-	-	*	*	occupied	heating setpoint 1 (hsp1)
heating	-	-	*	*	unoccupied	heating setpoint 2 (hsp2)

*Any configuration, (-) default configuration.

IMPORTANT: Ice storage configuration [ice_cnfg] and ice done contact [ice_done] apply only to units with EMM.

11.7.2 - Reset

Reset means the active setpoint is modified so that less machine capacity is required. In the cooling mode the setpoint is increased, whereas in the heating mode it is decreased.

The reset can be based on the following possibilities:

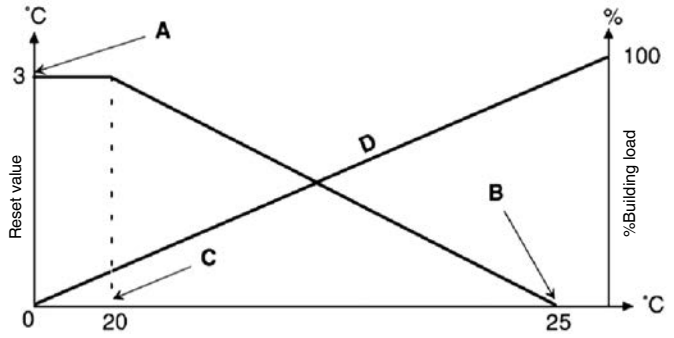
- OAT that gives the measure of the load trends for the building.
- Return water temperature (ΔT provides the average building load).
- Space temperature (EMM option).
- Dedicated 4-20 mA input (EMM option).

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

The amount of reset is determined by linear interpolation based on the following parameters:

- A reference at which reset is zero (no reset value).
- A reference at which reset is maximum (full reset value).
- The maximum reset value.

Reset example in Cooling mode:



20	Reset based on OAT	25
0	Reset based on delta T	3
4	Reset based on analog input	20
no_reset	Selection	full_reset

Legend
A: Maximum reset value
B: Reference for zero reset
C: Reference for maximum reset
D: Building load

11.8 - Capacity limitation

Pro Dialog+ and Touch Pilot allow for the constant control of the unit capacity by setting its maximum allowable capacity.

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).

The unit capacity can be limited:

- By means of user-controlled volt-free contacts. Units without the energy management module have one contact. Units with the energy management module permit three capacity limitation levels (see also section 4.8.3). The unit capacity can never exceed the limit setpoint activated by these contacts. The limit setpoints can be modified in the SETPOINT menu.
- By lag limit set by the master unit (master/slave assembly). If the unit is not in the Master/Slave assembly, the lag limit value is equal to 100%.
- By night mode limitation control. The demand limit value in the night mode is selectable if the value is below the selected limit.

To set limit setpoints

1. Navigate to the Main menu.
2. Select *Setpoint Configuration* (SETPOINT).
3. Set *Switch Limit Setpoint* 1 / 2 / 3 [lim_sp1 /2/ 3].

Switch Limit Setpoint 1 / 2 / 3 [lim_sp1 /2 / 3]	
0 to 100%	100%

To verify lag limit set by the master unit

1. Navigate to the Main menu.
2. Select *General Parameters* (GENUNIT).
3. Verify *Lag Capacity Limit Value* [LAG_LIM].

Lag Capacity Limit Value [LAG_LIM]	
0 to 100%	100%

To set the night mode limit

1. Navigate to the Configuration menu.
2. Select *General Configuration* (GEN_CONF).
3. Set *Night Capacity Limit* [nh_limit].

Night Capacity Limit [nh_limit]	
0 to 100%	100%

Based on the limit source, the active demand limit value (DEM_LIM) is set to the lowest possible value. DEM_LIM can be forced by Network.

To verify active demand limit value

1. Navigate to the Main menu.
2. Select *General Parameters* (GENUNIT).
3. Verify *Active Demand Limit* Val [DEM_LIM].

Active Demand Limit Val [DEM_LIM]	
0 to 100%	-

11.9 - Capacity control

The control adjusts the capacity to keep the water exchanger temperature at its setpoint. Compressors are started and stopped in a sequence designed to equalise the number of start-ups (value weighted by their operating time).

11.9.1 - Circuit loading sequence

This function determines in which order the circuit capacity is changed. Compressor loading is managed by starting/stopping the compressors. Two types of sequencing, i.e. balanced and staged loading sequence, are available and can be configured by the user via the user interface (GEN_CONF – General Configuration).

Balanced loading sequence:
The control maintains equal capacity between all circuits as the machine loads and unloads. Balanced loading sequence is the default sequence employed by the control.

Staged loading sequence:
The control loads the lead circuit completely before the lag circuits are started. When the load is decreasing, the lag circuit is unloaded first. Staged loading sequence is active when one of the circuits is shut down due to its failure; the circuit is in capacity override mode; or the remaining circuits are shut down or fully charged.

To set the circuit loading sequence
1. Navigate to the Configuration menu.
2. Select *General Configuration* (GEN_CONF).
3. Set *Staged loading sequence* [seq_typ].

Staged loading sequence [seq_typ]	
No/Yes	No

11.9.2 - Capacity for multi-circuit unit

The circuit lead/lag function determines the lead and lag circuit of the unit. This function controls the start/stop sequence of two refrigeration circuits called circuit A and circuit B.

The circuit authorised to start first is the lead circuit. Lead circuit is used first for capacity increases and at the same time should be decreased first when decreasing capacity. The lead/lag circuits can be selected manually or automatically (*Cir Priority Sequence*, GEN_CONF – General Configuration).

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

To set circuit priority
1. Navigate to the Configuration menu.
2. Select *General Configuration* (GEN_CONF).
3. Set *Cir Priority Sequence* [prio_cir].

Cir Priority Sequence [prio_cir]	
0	Auto
1	Circuit A priority
2	Circuit B priority

11.10 - Night mode

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

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

To set the night mode
1. Navigate to the Configuration menu (logged-in users only).
2. Select *General Configuration* (GEN_CONF).
2. Set parameters corresponding to the night mode.

Night Mode Start Hour [nh_start]	
00:00 to 24:00	
Night Mode End Hour [nh_end]	
00:00 to 24:00	
Night Capacity Limit [nh_limit]	
0 to 100%	100%

11.11 - Coil pressure control

The coil pressure of each circuit is managed by four fans maximum. 30RBM/RQM units are fitted with fixed speed fans and 30RBP/RQP units are fitted with variable speed fans providing higher part load efficiency and reduced acoustic levels.

In cooling mode, the condensing pressure is controlled independently in each circuit based on the saturated condensing temperature. The control permanently adjusts its setpoint to guarantee optimal performance and ensure anti-short-cycle protection of the fans.

In heating mode, the evaporating pressure is controlled independently on each circuit based on the saturated suction temperature. The control permanently adjusts its setpoint to guarantee optimal performance, delay and limit frost accumulation on coils.

11.12 - Holidays

This function is used to define 16 holiday periods. 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 (HOLIDAY – Holiday Menu).

To modify holiday periods
1. Navigate to the Configuration menu.
2. Select *Holiday Menu* (HOLIDAY).
3. Choose the holiday period, e.g. HOLDY_01.
4. Set *Holiday Start Month* [HOL_MON], *Start Day* [HOL_DAY], *Duration (days)* [HOL_LEN].

Holiday Start Month [HOL_MON]	
0-12	0
Start Day [HOL_DAY]	
0-31	0
Duration (days) [HOL_LEN]	
0-99	0

11.13 - Energy management module

The optional Energy Management Module is used to control the level of energy consumption, providing users with information such as current unit status, compressors operating status, etc.

For more information about connections associated with the energy management module, see *Terminal block connections* in section 4.8.

11.14 - Free cooling option

Free cooling is a method of using low outside air temperature as an aid to chilling water that is later used in the air-conditioning system. Thanks to this option, the energy consumed by the unit can be reduced depending on the external air temperature, with the system being most effective when the outdoor air temperature is below 0°C (32°F).

The outdoor air temperature threshold that triggers the free cooling cycle can be set by the user in the Configuration menu (FREECONF – Free Cooling).

The free cooling option requires an additional SIOB board to be installed.

Free Cooling can be disabled using one of the following methods:

- By forcing the *Free Cooling Disable?* parameter to "yes" via the user interface (FC_DSBLE in FREECOOL menu).
- By forcing the parameter FREECOOL.FC_DSBLE to "yes" through the Network in Network mode.
- By switching to "close" the FC_SW input on the FC SIOB board in Remote mode.

11.14.1 - Free cooling cycle (30RBM/30RQM only)

When operating conditions allow for free cooling, the compressors are stopped and the 3-way valve is used to prevent the fluid from entering the compressor when the refrigerant pump is running. The cooling capacity is controlled by opening the electronic expansion valve (EXV).

The changeover from mechanical cooling to free cooling is controlled automatically by the control.

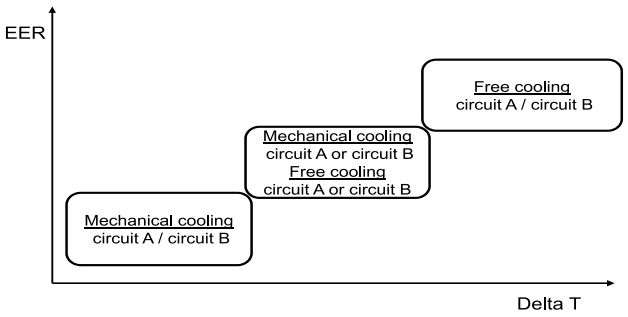
The free cooling session may be performed independently on two circuits at the same time. In case of 30RBP units (only units without common V-coil for both circuits), it is also possible for one circuit to operate in mechanical cooling, whereas another one may be in the free cooling mode. Such a solution helps to optimize the free cooling operation and ensures that the cooling demand is satisfied at any time.

CAUTION

If the unit is in the Free Cooling alarm, the control will switch back to compressor cooling (mechanical cooling) and another free cooling session will not be allowed within the next hour.

11.14.2 - Free cooling mode

The free cooling mode depends on the OAT threshold and Delta T (minimum difference between the control point and OAT). Higher Delta T implies higher Energy Efficiency Ratio (EER).



EER: Energy Efficiency Ratio
Delta T: Minimum difference between the control point and OAT

To set free cooling OAT threshold

1. Navigate to the Configuration menu.
2. Select *Free Cooling Config* (FREECONF).
3. Set *OAT Threshold* [free_th].

OAT Threshold [free_th]	
-35 to 30°C	0°C
-31 to 86°F	32°F

To set minimum Delta T

1. Navigate to the Configuration menu.
2. Select *Free Cooling Config* (FREECONF).
3. Set *Minimum Delta T* [fcdeltat].

Minimum Delta T [fcdeltat]	
5 to 10^C	8^C
9 to 18^F	14.4^F

Additionally, the control allows for pre-cooling which means that free cooling is allowed only when the difference between OAT and LWT is greater than the minimum Delta T.

To set pre-cooling

1. Navigate to the Configuration menu.
2. Select *Free Cooling Config* (FREECONF).
3. Set *Pre-Cooling Select* [pre_cool].

Pre-Cooling Select [pre_cool]	
No/Yes	Yes

11.15 - Free Cooling Dry Cooler (FCDC)

30RBM/RBP chillers and 30RQMP/RQP heat pumps may be fitted with a dry cooler that enables power consumption reduction which amounts to energy and cost savings.
The installation of a dry cooler allows for "free cooling" – a method of using low outdoor air temperature as an aid to chilling water that is later used in the air-conditioning system. The system is the most effective when the outdoor air temperature is below 0°C (32°F).

Starting free cooling

The free cooling mode is ENABLED when the free cooling / dry cooler OAT [fdc_oat] is below the water loop temperature and the start threshold:

fdc_oat < fdcWloop - fdc_start

fdc_oat: Free Cooling Dry Cooler OAT
fdcWloop: Free Cooling Dry Cooler Water Temperature
fdc_start: Free Cooling Dry Cooler Start Valve Threshold (service access only)

Note: [fdcWloop] and [fdc_oat] temperatures measured by the control are read-only values that can be verified in the FC Dry Cooler Status menu (FCDC_ST).

To verify Dry Cooler water loop temp.
1. Navigate to the Main menu.
2. Select *FC Dry Cooler Status* (FCDC_ST).
3. Verify *FCDC Water Loop Temp* [fdcWloop].

FCDC Water Loop Temp [fdcWloop]
°C / °F

To verify Free Cooling OAT
1. Navigate to the Main menu.
2. Select *FC Dry Cooler Status* (FCDC_ST).
3. Verify *FC Dry Cooler OAT* [fdc_oat].

FC Dry Cooler OAT [fdc_oat]
°C / °F

Stopping free cooling

If it turns out that the cooling power of the dry cooler is not enough in order to reach the cooling setpoint, then the mechanical cooling will be started.

Free Cooling is normally stopped when the free cooling / dry cooler OAT [fdc_oat] is above the water loop temperature and the start/stop threshold:

fdc_oat > fdcWloop - fdc_start + fdc_stop

fdc_oat: Free Cooling Dry Cooler OAT
fdcWloop: Free Cooling Dry Cooler Water Temperature
fdc_start: Free Cooling Dry Cooler Start Valve Threshold (service access only)
fdc_stop: Free Cooling Dry Cooler Stop Valve Threshold (service access only)

When FC capacity is at 100%, then mechanical cooling can be started.

11.16 - Heat reclaim option

Heat reclaim is a method of using energy that normally leaves the system in the form of the waste heat at the condenser site. Heat reclaim chiller generates high pressure refrigerant within the condenser that can be used to produce higher temperature condenser water.

11.16.1 - Heat reclaim process

Units with the heat reclaim option are fitted with two condensers (air-cooled condenser which is set as standard and water-cooled condenser which is used for heat reclaim). Adding the heat reclaim condenser to the unit may significantly reduce unit energy consumption and lead to lower greenhouse generation with maximized chiller plant efficiency.

11.16.2 - Heat reclaim mode

The reclaim mode is active when the reclaim entering water temperature is below the Reclaim setpoint (SETPOINT – Setpoint Configuration). Depending on the difference between the reclaim entering water temperature and the reclaim setpoint, the control decides how many circuits must be started to provide heat reclaim operation (one or two circuits). The number of circuits with the heat reclaim option is factory-configured.

To set reclaim setpoint
1. Navigate to the Main menu.
2. Select *Setpoint Configuration* (SETPOINT).
3. Set *Heat Reclaim Setpoint* [hr_stp].

Heat Reclaim Setpoint [hr_stp]	
35 to 50°C	50°C
95 to 122°F	122°F

11.17 - Desuperheater option

30RBM/RQM/RBP/RQP units may be fitted with a desuperheater that allows for better energy management. The desuperheater is used to extract the high pressure, high temperature heat from the refrigerant to “desuperheat” it to a lower pressure refrigerant. The vapour that goes into the desuperheater is not fully condensed; therefore, the refrigerant vapour must be channelled to a separate heat exchanger where the condensing process occurs.

Note that the desuperheater is enabled when the Desuperheater demand contact is closed. For units with EMM option, there is also an output used to command a desuperheater pump.

To set minimal condensing setpoint
1. Navigate to the Main menu.
2. Select *Setpoint Configuration* (SETPOINT).
3. Set *Desuperheat Min SCT* [min_sct].

Desuperheat Min SCT [min_sct]	
24 to 50°C	40°C
75 to 122°F	104°F

11.18 - Defrost cycle for heat pumps

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.

During the defrost cycle, the circuit is forced into the cooling mode. 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.

11.19 - Master/slave assembly

The control system allows for master/slave control of two units linked by the CCN network. The master unit can be controlled locally, remotely or by network commands (CCN), while the slave unit remains in Network mode.
All control commands to the master/slave assembly (start/stop, setpoint selection, heating/cooling operation, load shedding, etc.) are handled by the unit which is configured as the master. The commands are transmitted automatically to the slave unit.

If the master chiller is turned off, while the master/slave function is active, then the slave chiller will be stopped. Under certain circumstances, the slave unit may be started first to 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 Carrier service.

11.20 - BACnet option

The BACnet/IP communication protocol is used by BMS or the programmable controllers to communicate with the control.

IMPORTANT: BACnet option can be installed only by Carrier service.

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 (Pro Dialog+ or Touch Pilot) gives quick access to monitor all unit operating conditions. If an operating fault is detected, the alarm is triggered.

12.1 - Pro Dialog+ control diagnostics

The Pro Dialog+ user interface allows the quick display of the unit status.

- The flashing red LED shows that a circuit is operating but there is an alert.
- The steady red LED shows that the circuit has been shut down due to a detected fault.

12.1.1 - Current alarms (Pro Dialog+)

All currently active alarms can be found in the Current Alarms menu. In addition to the description of the alarm, the control provides information such as date, time the alarm occurred. The control may display up to 10 current alarms.

To access the list of currently active alarms

1. Navigate to ALARMS in the Main menu.
2. Select CUR_ALM (Current Alarms).
3. The list of active alarms will be displayed.

12.1.2 - Alarms reset (Pro Dialog+)

Only logged-in users can reset alarms (see also section 6.8). The alarm can be reset either automatically or manually through the Pro Dialog+ user interface (ALARMRST). Note that the ALARMRST menu displays up to five alarm codes which are currently active on the unit.

To reset alarms manually

1. Go to ALARMS in the Main menu.
2. Select ALARMRST (Reset Alarms).
3. In the Reset Alarms menu navigate to the RST_ALM parameters and press Enter.
4. Press the **Up** or **Down** key to 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 (see also section 12.3).

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.

12.1.3 - Alarm history (Pro Dialog+)

Information regarding resolved alarms is stored in the Alarm history menu which is divided into 50 recent alarms and 50 recent major alarms.

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

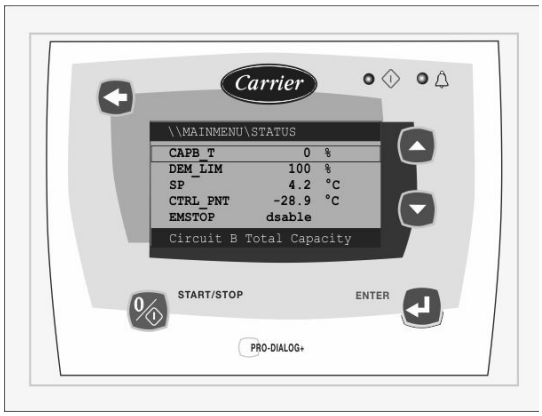
To access alarms history

1. Go to ALARMS in the Main menu.
2. Select ALMHIST1 (Alarm History) for general alarms or ALMHIST2 (Major Alarm History) for major alarms.

12.1.4 - Alarm codes (Pro Dialog+)

The alarm codes are displayed in the Reset Alarms menu (ALARMRST), while the Current Alarms menu (CUR_ALM) and alarm histories (ALMHIST1, ALMHIST2) include the description of the alarm.

For more information about alarm codes, please refer to section 12.3.



12.2 - Touch Pilot control diagnostics

The Touch Pilot user interface allows 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.

12.2.1 - Current alarms (Touch Pilot)

All currently active alarms can be found in the Current Alarms menu. In addition to the description of the alarm, the control provides information such as date, time the alarm occurred. The control 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.

12.2.2 - Alarms reset (Touch Pilot)

Alarm can be reset without stopping the machine. Only logged-in users can reset alarms (see also section 8.8.1). The alarm can be reset either automatically or manually through the Touch Pilot user interface or the web interface (Reset Alarms menu). Note that the Reset Alarms menu displays up to five alarm codes which are currently active on the unit.

To reset alarms 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 (see also section 12.3).

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.

12.2.3 - Alarm history (Touch Pilot)

Information regarding resolved alarms is stored in the Alarm history menu which is divided into 50 recent alarms and 50 recent major alarms.

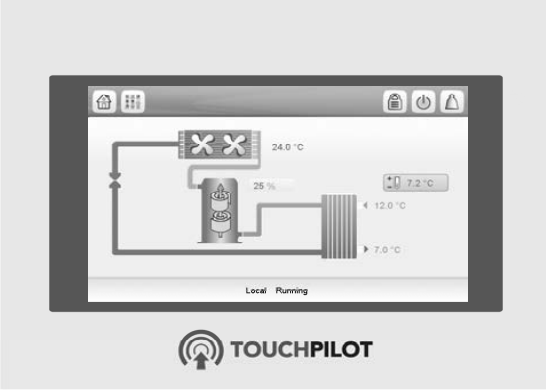
- **General alarms** are used to indicate pumps failure, transducers faults, network connection problems, etc.
- **Major alarms** are used to indicate process failure.

To access alarms history

1. Press the **Alarm** button in the upper-right part of the screen.
2. Select **Alarm History** or **Major Alarm History**

12.2.4 - Alarm codes

The alarm codes are displayed in the **Reset Alarms** menu, while the **Current Alarms** menu as well as **Alarm History** and **Major Alarm History** include the description of the alarm.



12.2.5 - 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. Only logged-in users can set and modify e-mail notifications (see also section 8.8.1).

To define recipients

1. Navigate to the Configuration menu.
2. Select **Email Configuration**
3. Define user e-mails.
4. Press to save changes.

12.3 - Alarm description

12.3.1 - Alarms

Code	Alarm description	Reset type	Action taken	Possible cause
THERMISTOR FAILURE				
15001	WATER EXCHANGER ENTERING FLUID THERMISTOR	Automatic, if thermistor reading returns to normal	Unit shuts down	Defective thermistor or connection
15002	WATER EXCHANGER LEAVING FLUID THERMISTOR	As above	Unit shuts down	As above
15003	CIRCUIT A DEFROST THERMISTOR	As above	Cooling mode: Unit continues to operate Heating mode: Circuit A shuts down	As above
15004	CIRCUIT B DEFROST THERMISTOR	As above	Cooling mode: Unit continues to operate Heating mode: Circuit B shuts down	As above
15008	RECLAIM CONDENSER ENTERING THERMISTOR FAILURE	As above	None	As above
15009	RECLAIM CONDENSER LEAVING THERMISTOR FAILURE	As above	None	As above
15010	OAT THERMISTOR FAILURE	As above	Unit shuts down	As above
15011	MASTER/SLAVE COMMON LEAVING FLUID THERMISTOR	As above	Master/slave operation is disabled and the unit returns to the stand-alone mode	As above
15012	CIRCUIT A SUCTION GAS THERMISTOR	As above	None	As above
15013	CIRCUIT B SUCTION GAS THERMISTOR	As above	None	As above
15018	CIRCUIT A CONDENSER SUBCOOLING LIQUID THERMISTOR FAILURE	As above	Unit returns to the air-cooled mode	As above
15019	CIRCUIT B CONDENSER SUBCOOLING LIQUID THERMISTOR FAILURE	As above	Unit returns to the air-cooled mode	As above
15021	SPACE TEMPERATURE THERMISTOR	As above	Unit continues to operate, but the setpoint reset is cancelled	As above
15046	FC DRY COOLER WATER LOOP THERMISTOR FAILURE	As above	FC dry cooler mode is stopped	As above
15047	FC DRY COOLER LEAVING WATER THERMISTOR FAILURE	As above	FC dry cooler mode is stopped	As above
15048	FC DRY COOLER OAT THERMISTOR FAILURE	As above	OAT sensor reading is used instead of Dry Cooler OAT	As above
TRANSDUCER FAILURE				
12001	CIRCUIT A DISCHARGE TRANSDUCER	Automatic, if sensor voltage reading returns to normal	Circuit A shuts down	Defective transducer or connection
12002	CIRCUIT B DISCHARGE TRANSDUCER	As above	Circuit B shuts down	As above
12004	CIRCUIT A SUCTION TRANSDUCER	Null voltage: Automatic (three alarms in the last 24 hours) or Manual Impossible value: Manual	Circuit A shuts down	As above
12005	CIRCUIT B SUCTION TRANSDUCER	As above	Circuit B shuts down	As above
12007	CIRCUIT A RECLAIM PUMPDOWN PRESSURE TRANSDUCER	Automatic, if sensor reading returns to normal	Circuit A returns to the air-cooled mode	As above
12008	CIRCUIT B RECLAIM PUMPDOWN PRESSURE TRANSDUCER	As above	Circuit B returns to the air-cooled mode	As above
12016	CIRCUIT A FREE COOLING PUMP INLET PRESSURE TRANSDUCER	As above	Free cooling cycle is stopped. Unit returns to mechanical cooling	As above
12018	CIRCUIT B FREE COOLING PUMP INLET PRESSURE TRANSDUCER	As above	As above	As above
12017	CIRCUIT A FREE COOLING PUMP OUTLET PRESSURE TRANSDUCER	As above	As above	As above
12019	CIRCUIT B FREE COOLING PUMP OUTLET PRESSURE TRANSDUCER	As above	As above	As above
12024	WATER EXCHANGER ENTERING FLUID TRANSDUCER FAILURE	Automatic, if sensor voltage reading returns to normal	Unit shuts down, water pressure calibration erased	As above
12025	WATER EXCHANGER LEAVING FLUID TRANSDUCER FAILURE	As above	Unit shuts down, water pressure calibration erased	As above
COMMUNICATION FAILURE				
4901	LOSS OF COMMUNICATION WITH CIRCUIT A SIOB BOARD	Automatic, if communication is re-established	Unit shuts down	Bus installation fault, communication error
4902	LOSS OF COMMUNICATION WITH CIRCUIT B SIOB BOARD	As above	Unit shuts down	As above
4904	LOSS OF COMMUNICATION WITH FREE COOLING SIOB BOARD	As above	Free cooling is stopped. Unit returns to mechanical cooling	As above
4905	LOSS OF COMMUNICATION WITH HEAT RECLAIM SIOB BOARD	As above	Heat reclaim process is stopped	As above
4906	LOSS OF COMMUNICATION WITH ENERGY MANAGEMENT SIOB BOARD	As above	None	As above
4501	LOSS OF COMMUNICATION WITH FAN BOARD NUMBER 1	As above	Unit shuts down	As above
4601	LOSS OF COMMUNICATION WITH FC DRY COOLER BOARD	As above	None	As above
4701	LOSS OF COMMUNICATION WITH VFD FAN DRIVE BOARD CIRCUIT A	As above	Unit shuts down	As above
4702	LOSS OF COMMUNICATION WITH VFD FAN DRIVE BOARD CIRCUIT B	As above	Unit shuts down	As above
4703	LOSS OF COMMUNICATION WITH VFD PUMP DRIVE BOARD NUMBER 1	As above	Unit is restarted with another pump running. If no pumps are available, the unit shuts down	As above
4704	LOSS OF COMMUNICATION WITH VFD PUMP DRIVE BOARD NUMBER 2	As above	As above	As above

Code	Alarm description	Reset type	Action taken	Possible cause
PROCESS FAILURE				
10001	WATER EXCHANGER FREEZE PROTECTION	Automatic (the first alarm in the last 24 hours) or Manual	Unit shuts down, but the pump continues to run	No water flow, defective thermistor
10005	CIRCUIT A LOW SATURATED SUCTION TEMPERATURE	As above	Unit shuts down	Pressure transducer defective, EXV blocked or lack of refrigerant
10006	CIRCUIT B LOW SATURATED SUCTION TEMPERATURE	As above	Unit shuts down	As above
10008	CIRCUIT A HIGH SUPERHEAT	Manual	Circuit A shuts down	Pressure transducer defective, temperature sensor defective, EXV blocked or lack of refrigerant
10009	CIRCUIT B HIGH SUPERHEAT	Manual	Circuit B shuts down	As above
10011	CIRCUIT A LOW SUPERHEAT	Manual	Circuit A shuts down	As above
10012	CIRCUIT B LOW SUPERHEAT	Manual	Circuit B shuts down	As above
10014	CUSTOMER INTERLOCK FAILURE	Automatic (the unit is OFF) or Manual	Unit shuts down	Customer interlock input set on
10016	COMPRESSOR A1 NOT STARTED OR PRESSURE INCREASE NOT ESTABLISHED	Manual	Compressor A1 shuts down	Compressor breaker or fuse fault, compressor switch open
10017	COMPRESSOR A2 NOT STARTED OR PRESSURE INCREASE NOT ESTABLISHED	Manual	Compressor A2 shuts down	As above
10018	COMPRESSOR A3 NOT STARTED OR PRESSURE INCREASE NOT ESTABLISHED	Manual	Compressor A3 shuts down	As above
10019	COMPRESSOR A4 NOT STARTED OR PRESSURE INCREASE NOT ESTABLISHED	Manual	Compressor A4 shuts down	As above
10020	COMPRESSOR B1 NOT STARTED OR PRESSURE INCREASE NOT ESTABLISHED	Manual	Compressor B1 shuts down	As above
10021	COMPRESSOR B2 NOT STARTED OR PRESSURE INCREASE NOT ESTABLISHED	Manual	Compressor B2 shuts down	As above
10022	COMPRESSOR B3 NOT STARTED OR PRESSURE INCREASE NOT ESTABLISHED	Manual	Compressor B3 shuts down	As above
10023	COMPRESSOR B4 NOT STARTED OR PRESSURE INCREASE NOT ESTABLISHED	Manual	Compressor B4 shuts down	As above
10028	MAIN POWER SUPPLY FAULT	Automatic	Unit shuts down	Main power supply fault or high temperature in the control box (units with high ambient temperature option)
10030	MASTER/SLAVE COMMUNICATION FAILURE	As above	Master/slave operation is disabled and the unit returns to the stand-alone mode	As above
10031	UNIT IS IN NETWORK EMERGENCY STOP	Automatic, if emergency stop is deactivated	Unit shuts down	Network emergency stop command
10032	COOLER PUMP #1 FAULT	Manual	Unit is restarted with another pump running. If no pumps are available, the unit shuts down	Evaporator flow switch or evaporator pump fault
10033	COOLER PUMP #2 FAULT	Manual	As above	As above
10034	CIRCUIT A RECLAIM OPERATION FAILURE	Manual	Unit returns to the air-cooled mode	Sensor defective or low condenser water flow rate
10035	CIRCUIT B RECLAIM OPERATION FAILURE	Manual	Unit returns to the air-cooled mode	As above
10037	CIRCUIT A - REPEATED HIGH DISCHARGE GAS OVERRIDES	Automatic (no discharge gas override within 30 min) or Manual (the counter forced to 0)	None	Repetitive capacity decreases
10038	CIRCUIT B - REPEATED HIGH DISCHARGE GAS OVERRIDES	As above	None	As above
10040	CIRCUIT A - REPEATED LOW SUCTION TEMP OVERRIDES	Manual (the counter forced to 0)	Circuit A shuts down	Repetitive capacity decreases
10041	CIRCUIT B - REPEATED LOW SUCTION TEMP OVERRIDES	As above	Circuit B shuts down	As above
10043	LOW ENTERING WATER TEMPERATURE IN HEATING	Automatic (EWT returns to normal or Heating mode is disabled)	None	Low entering fluid temperature in Heating mode
10051	WATER EXCHANGER FLOW SWITCH FAILURE	Manual	Unit shuts down	Flow switch fault
10052	HEAT RECLAIM FLOW SWITCH FAILURE	Manual	Unit returns to the air-cooled mode	Flow switch fault
10063	CIRCUIT A HIGH PRESSURE SWITCH FAILURE	Manual	Circuit A shuts down	Switch fault
10064	CIRCUIT B HIGH PRESSURE SWITCH FAILURE	Manual	Circuit B shuts down	As above
10090	WATER EXCHANGER FLOW SWITCH SETPOINT CONFIGURATION FAILURE	Manual	Unit cannot be started	Defective or incorrectly wired flow controller
10091	CIRCUIT A FREE COOLING VALVE INCOHERENT POSITION	Manual	Circuit A shuts down	The valve has not reached the expected position in the assigned time
10092	CIRCUIT B FREE COOLING VALVE INCOHERENT POSITION	Manual	Circuit B shuts down	As above
10093	CIRCUIT A FREE COOLING OPERATION FAILURE	Automatic	Free cooling cycle stopped. Unit returns to mechanical cooling	The refrigerant pump has not started correctly or it has cavitated

Code	Alarm description	Reset type	Action taken	Possible cause
10094	CIRCUIT B FREE COOLING OPERATION FAILURE	Automatic	As above	As above
10097	WATER EXCHANGER TEMPERATURE SENSORS SWAPPED	Manual	Unit shuts down	Input and output temperature reversed
10099	REFRIGERANT LEAKAGE DETECTION	Automatic	None	Refrigerant leak or leak detector defective
10101	FREE COOLING DRY COOLER PROCESS FAILURE	Automatic	None	Fan fault, dirty beam
10210	CIRCUIT A LOW DELTA PRESSURE OPERATION FAILURE	Manual	Circuit A shuts down	Circuit running in part load with all available compressors and low delta pressure during operation. Not enough capacity available / failed or disabled due to compressor(s)
10211	CIRCUIT B LOW DELTA PRESSURE OPERATION FAILURE	Manual	Circuit B shuts down	As above
11202	WATER LOOP: DELTA PRESSURE ERROR	Automatic, if water pressure delta returns to normal	Unit shuts down	Too low or high water pressure reading
11203	WATER LOOP: PRESSURE TOO LOW	Automatic, if water pressure reading returns to normal and the alarm occurred not more than 6 times in the last 24 hours (otherwise manual)	Unit shuts down	Low pump inlet pressure is below 60 kPa
11204	WATER LOOP: PUMP NOT STARTED	Automatic	Pump is stopped	Too low or high water pressure reading
11206	WATER LOOP: PUMP OVERLOAD	Automatic	None	Water loop pressure drop too low
11207	WATER LOOP: FLOW TOO LOW	Automatic, when water flow reading returns to normal	Pump is stopped	Water loop pressure drop too high
11208	COOLER WATER LOOP: PRESSURE SENSORS CROSSED	Automatic, if water pressure reading returns to normal and the alarm occurred not more than 6 times in the last 24 hours	Unit shuts down	Pressure sensors crossed
11209	COOLER WATER LOOP: LOW PRESSURE WARNING	Automatic, if water pressure reading returns to normal	None	Evaporator water pressure is below 100 kPa
COMPRESSOR FAILURE				
1199	COMPRESSOR A1 FAILURE	Manual	Compressor A1 shuts down	Compressor temperature too high, high pressure switch opened, compressor not started
1299	COMPRESSOR A2 FAILURE	Manual	Compressor A2 shuts down	As above
1399	COMPRESSOR A3 FAILURE	Manual	Compressor A3 shuts down	As above
1499	COMPRESSOR A4 FAILURE	Manual	Compressor A4 shuts down	As above
2199	COMPRESSOR B1 FAILURE	Manual	Compressor B1 shuts down	As above
2299	COMPRESSOR B2 FAILURE	Manual	Compressor B2 shuts down	As above
2399	COMPRESSOR B3 FAILURE	Manual	Compressor B3 shuts down	As above
2499	COMPRESSOR B4 FAILURE	Manual	Compressor B4 shuts down	As above
6001	CIRCUIT A WELDED CONTACTOR FAILURE	Automatic in the case of cooler flow switch failure, high pressure trip or cooler freeze alarm	Unit shuts down, but the evaporator pump continues to operate	Welded contactor of a compressor
6002	CIRCUIT B WELDED CONTACTOR FAILURE	As above	As above	As above
SOFTWARE FAILURE				
55001	DATABASE MODULE FAILURE	Manual	Unit shuts down	Software problem. Contact Carrier service
56001	LENSCAN MODULE FAILURE	Manual	Unit shuts down	Software problem. Contact Carrier service
COMMUNICATION FAILURES				
10029	LOSS OF COMMUNICATION WITH SYSTEM MANAGER	Communication error	Unit returns to the standalone mode	Automatic, if communication with System Manager is restored
SERVICE AND FACTORY				
70nn	ILLEGAL CONFIGURATION	Incorrect unit configuration	Unit cannot be started	Automatic, if configuration is corrected
8000	INITIAL FACTORY CONFIGURATION REQUIRED	No factory configuration	Unit cannot be started	Automatic, if configuration is provided
90nn	MASTER CHILLER CONFIGURATION ERROR NUMBER #1 TO NN	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
SERVICE MAINTENANCE WARNING				
130nn	SERVICE MAINTENANCE ALERT NUMBER #NN	Servicing action required. Contact Carrier service	Depending on the severity of the alarm, the unit may continue to operate or the unit shuts down	Manual
130-	001: CIRCUIT A LOSS OF CHARGE 002: CIRCUIT B LOSS OF CHARGE 003: WATER LOOP SIZE WARNING 004: MAINTENANCE SERVICING REQUIRED 005: F-GAS SCHEDULED CHECK REQUIRED	As above	As above	Manual

Code	Alarm description	Reset type	Action taken	Possible cause
VFD DRIVE FAILURE				
170nn	CIRCUIT A VFD FAN DRIVE FAILURE	Automatic or Manual (motor overload)	Circuit A shuts down	Speed controller fault (see also section 12.3.2)
180nn	CIRCUIT B VFD FAN DRIVE FAILURE	As above	Circuit B shuts down	As above
350nn	CIRCUIT A VFD FAN DRIVE ALERT	Automatic	None	As above
360nn	CIRCUIT B VFD FAN DRIVE ALERT	Automatic	None	As above
190nn	VFD PUMP 1 DRIVE FAILURE	As above	Unit is restarted with another pump running. If no pumps are available, the unit shuts down	As above
200nn	VFD PUMP 2 DRIVE FAILURE	As above	As above	As above
370nn	VFD PUMP 1 DRIVE ALERT	Automatic	None	As above
380nn	VFD PUMP 2 DRIVE ALERT	Automatic	None	As above
SIOB BOARD FAILURE				
57001	CIRCUIT A SIOB LOW VOLTAGE FAILURE	Automatic, if the alarm occurred not more than 6 times in the last 24 hours (otherwise manual)	Unit shuts down	Unstable electrical supply or electrical issue
57002	CIRCUIT B SIOB LOW VOLTAGE FAILURE	As above	Unit shuts down	As above
57004	FREE COOLING SIOB LOW VOLTAGE FAILURE	As above	Unit shuts down	As above
57005	HEAT RECLAIM SIOB LOW VOLTAGE FAILURE	As above	Unit shuts down	As above
57006	EMM SIOB LOW VOLTAGE FAILURE	As above	Unit shuts down	As above
57020	MAIN EXV STEPPER MOTOR FAILURE - CIR A	As above	Circuit A shuts down	EXV motor fault
57021	MAIN EXV STEPPER MOTOR FAILURE - CIR B	As above	Circuit B shuts down	As above

12.3.2 - Drive alarms

Drive alarms or alerts for VFD drive failure are displayed based on the following formulas:
16000+X*1000+YYY for alarms
34000+X*1000+YYY for alerts

X stands for the drive number and YYY is the alarm/alert code.

Drive number	Drive assignment
1	Drive for fan(s) of circuit A
2	Drive for fan(s) of circuit B
3	Drive for water pump #1
4	Drive for water pump #2

Code	Alarm/Alert	Description	Action to be taken
Variator alarms			
2	Alarm	Live zero fault	Contact Carrier Service
4	Alarm	Mains phase loss	Check the VFD supply voltage and the phase balance (±3%)
7	Alarm	Overvoltage	Contact Carrier Service
8	Alarm	Undervoltage	Contact Carrier Service
9	Alarm	Inverter overloaded	Check the VFD output current
10	Alarm	Motor overtemperature	Check the motor temperature
11	Alarm	Motor thermistor	Contact Carrier Service
12	Alarm	Torque limit exceeded	Check the VFD output current
13	Alarm	Overcurrent	Check the VFD output current
14	Alarm	Earth fault	Check if an earth fault exists
16	Alarm	Motor short-circuit	Check if there is a short-circuit at the VFD terminals
17	Alarm	Serial communication timeout	Check the connections and the shielding of the serial communication cable
23*	Alarm	Internal fan fault	Check the internal fan rotation
25	Alarm	Brake resistor short-circuited	Contact Carrier Service
26	Alarm	Brake resistor power limit	Contact Carrier Service
28	Alarm	Brake verification	Contact Carrier Service
29	Alarm	VFD temperature too high	Space temperature too high or VFD ventilation obstructed or damaged
30	Alarm	Motor phase U missing	Check wiring of phase U
31	Alarm	Motor phase V missing	Check wiring of phase V
32	Alarm	Motor phase W missing	Check wiring of phase W
33	Alarm	Inrush fault	Current demand too high: Let the VFD cool down for 20 minutes before starting it again
34	Alarm	Fieldbus communication fault	Check the connections and the shielding of the serial communication cable
36	Alarm	Mains failure	Check the VFD supply voltage and the phase balance (±3%)
38	Alarm	Internal fault	Contact Carrier Service
47	Alarm	24 V supply low	Contact Carrier Service
48	Alarm	1.8 V supply low	Contact Carrier Service
57**	Alarm	AMA timeout	Contact Carrier Service
65	Alarm	Control board overtemperature	Check the space temperature and the VFD fan
67	Alarm	Option configuration has changed	Contact Carrier Service
68	Alarm	Emergency stop	Contact Carrier Service
71	Alarm	PTC 1 emergency stop	Contact Carrier Service
72	Alarm	Emergency stop	Contact Carrier Service
80	Alarm	Drive initialized to default value	Contact Carrier Service
94	Alarm	End of curve	Contact Carrier Service
95	Alarm	Torque loss	Contact Carrier Service
243	Alarm	IGBT defective	Contact Carrier Service
251***	Alarm	New parts detached	Contact Carrier Service

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

Code	Alarm/Alert	Description	Action to be taken
Variator alerts			
1	Alert	10 V low	Contact Carrier Service
2	Alert	Live zero error	Contact Carrier Service
3	Alert	No motor	Check the motor connections
4	Alert	Mains phase loss	Check the VFD supply voltage and the phase balance (±3%)
5	Alert	DC link voltage high	Check the VFD supply voltage and the phase balance (±3%)
6	Alert	DC link voltage low	Check the VFD supply voltage and the phase balance (±3%)
7	Alert	DC overvoltage	Contact Carrier Service
8	Alert	DC undervoltage	Contact Carrier Service
9	Alert	Inverter overloaded	Check the VFD output current
10	Alert	Motor overtemperature	Check the motor temperature
11	Alert	Motor thermistor	Contact Carrier Service
12	Alert	Torque limit exceeded	Check the VFD output current
13	Alert	Overcurrent	Check the VFD output current
14	Alert	Earth fault	Check if an earth fault exists
17	Alert	Control word timeout	Check the connections and the shielding of the serial communication cable
23*	Alert	Internal fan fault	Check the internal fan rotation
25	Alert	Brake resistor short-circuited	Contact Carrier Service
26	Alert	Brake resistor power limit	Contact Carrier Service
28	Alert	Brake verification	Contact Carrier Service
34	Alert	Fieldbus communication fault	Check the connections and the shielding of the serial communication cable
36	Alert	Mains failure	Check the VFD supply voltage and the phase balance (±3%)
47	Alert	24 V supply low	Contact Carrier Service
49	Alert	Motor speed limit exceeded	Contact Carrier Service
59	Alert	Current limit exceeded	Check the VFD output current
62	Alert	Output frequency at maximum limit	Check the VFD output current
64	Alert	Voltage limit	Supply voltage too low
65	Alert	Control board overtemperature	Check the space temperature and the VFD fan
66	Alert	Heat sink temperature low	Space temperature too low
71	Alert	PTC1 emergency stop	Contact Carrier Service
72	Alert	Emergency stop	Contact Carrier Service
90†	Alert	Encoder loss	Contact Carrier Service
94	Alert	End of curve	Contact Carrier Service
95	Alert	Torque loss	Contact Carrier Service
96	Alert	Start delayed	Contact Carrier Service
97	Alert	Stop delayed	Contact Carrier Service
98	Alert	Clock fault	Contact Carrier Service
243	Alert	IGBT defective	Contact Carrier Service
247	Alert	Capacity board temperature	Contact Carrier Service

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

13 - MAINTENANCE

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

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

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

Order No. 13540, 06.2016. Supersedes order No.: 13540, 03.2015.
Manufacturer reserves the right to change any product specifications without notice.

Manufacturer: Carrier SCS, Montluel, France.
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