Public

REV	00
Date	10/2025
Supersedes	/

Operating Manual
D-EOMHP01910-25_00EN

Air to water heat pump units with scroll compressors

EWYK~QZ

Original Instruction

List of graphs

1. SAFETY CONSIDERATIONS

1.1. General

Installation, start-up and servicing of equipment can be hazardous if certain factors particular to the installation are not considered: operating pressures, presence of electrical components and voltages and the installation site (elevated plinths and built-up up structures). Only properly qualified installation engineers and highly qualified installers and technicians, fully trained for the product, are authorized to install and start-up the equipment safely.
During all servicing operations, all instructions and recommendations, which appear in the installation and service instructions for the product, as well as on tags and labels fixed to the equipment and components and accompanying parts supplied separately, must be read, understood and followed.
Apply all standard safety codes and practices.
Wear safety glasses and gloves.

The emergency stop causes all motors to stop but does not switch off power to the unit.
Do not service or operate on the unit without having switched off the main switch.

1.2. Before switching the unit

Before switching on the unit read the following recommendations:

- When all the operations and all the settings have been carried out, close all the switchbox panels
- The switchbox panels can only be opened by trained personnel
- When the UC requires to be accessed frequently the installation of a remote interface is strongly recommended
- LCD display of the unit controller may be damaged by extremely low temperatures (see chapter 0). For this reason, it is strongly recommended to never power off the unit during winter, especially in cold climates.

Before switching the unit follow the unlocking procedure on the e-Care App.
Only authorized users are allowed to proceed with the unlock via e-Care.

1.3. Avoid electrocution

Only personnel qualified in accordance with IEC (International Electrotechnical Commission) recommendations may be permitted access to electrical components. It is particularly recommended that all sources of electricity to the unit be shut off before any work is begun. Shut off main power supply at the main circuit breaker or isolator.
IMPORTANT: This equipment uses and emits electromagnetic signals. Tests have shown that the equipment conforms to all applicable codes with respect to electromagnetic compatibility.

Direct intervention on the power supply can cause electrocution, burns or even death. This action must be performed only by trained persons.

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

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

In accordance with the operating conditions the fans can be cleaned periodically. A fan can start at any time, even if the unit has been shut down.

2. GENERAL DESCRIPTION

2.1. Basic Information

Microtech® IV is a system for controlling single or dual-circuit air/water-cooled liquid chillers. Microtech® IV controls compressor start-up necessary to maintain the desired heat exchanger leaving water temperature. In each unit mode it controls the operation of the condensers to maintain the proper condensation process in each circuit.
Safety devices are constantly monitored by Microtech® IV to ensure their safe operation. Microtech® IV also gives access to a Test routine covering all inputs and outputs.

2.2. Abbreviations used

In this manual, the refrigeration circuits are called circuit #1 and circuit #2. The compressor in circuit #1 is labelled Cmp1. The other in circuit #2 is labelled Cmp2. The following abbreviations are used:

A/C	Air Cooled	**ESRT**	Evaporating Saturated Refrigerant Temperature
CP	Condensing Pressure	**EXV**	Electronic Expansion Valve
CSRT	Condensing Saturated Refrigerant Temperature	**HMI**	Human Machine Interface
DSH	Discharge Superheat	**MOP**	Maximum operating pressure
DT	Discharge Temperature	**SSH**	Suction Super-Heat
EEWT	Evaporator Entering Water Temperature	**ST**	Suction Temperature
ELWT	Evaporator Leaving Water Temperature	**UC**	Unit controller (Microtech IV)
EP	Evaporating Pressure	**R/W**	Readable/Writable

2.3. Controller Operating Limits

Operation (IEC 721-3-3):

- Temperature -40...+70 °C
- Restriction LCD -20… +60 °C
- Restriction Process-Bus -25….+70 °C
- Humidity < 90 % r.h (no condensation)
- Air pressure min. 700 hPa, corresponding to max. 3,000 m above sea level

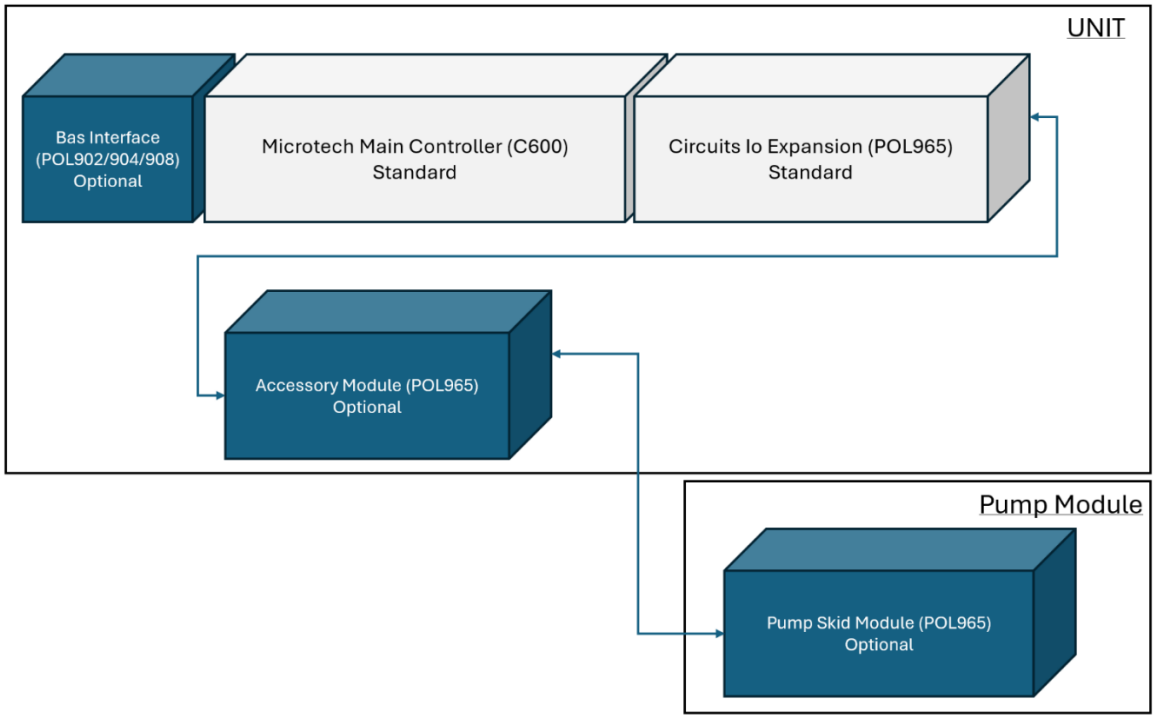
Transport (IEC 721-3-2):

- Temperature -40...+70 °C
- Humidity < 95 % r.h (no condensation)
- Air pressure min. 260 hPa, corresponding to max. 10,000 m above sea level.

2.4. Controller Architecture

The overall controller architecture is the following:

- One Microtech IV main controller
- I/O extensions as needed depending on the configuration of the unit
- Communications interface(s) as selected
- Peripheral Bus is used to connect I/O extensions to the main controller.



Maintain the correct polarity when connecting the power supply to the boards, otherwise the peripheral bus communication will not operate and the boards may be damaged.

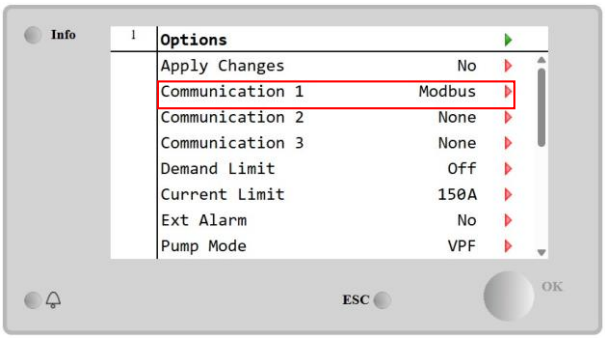
2.5. Communication Modules

Any of the following modules can be connected directly to the left side of the main controller to allow a BAS or other remote interface to function. The controller should automatically detect and configure itself for new modules after booting up. Removing modules from the unit will require manually changing the configuration.

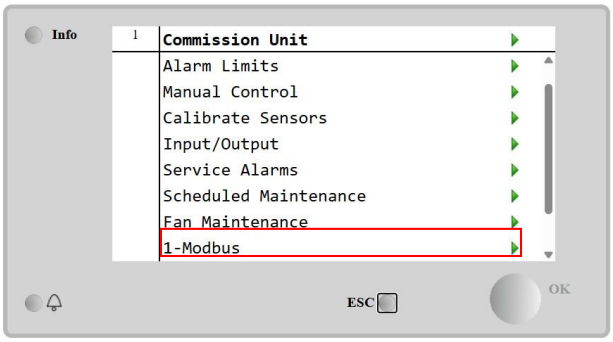
Module	Siemens Part Number	Usage
Modbus RTU	POL902.00/MCQ	Optional
BACnet/MSTP	POL904.00/MCQ	Optional
BacNet/IP	POL908.00/MCQ	Optional

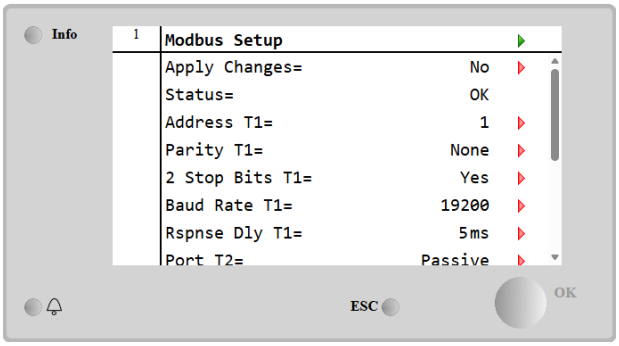
2.5.1. Modbus RTU

Connect the POL902.00/MCQ module to the controller that needs to be restarted. To verify that the connection is correct, ensure that the "**Communication 1**" setting is set to "**Modbus**" by following this path "**Main Menu → Commission Unit → Configuration → Options"**



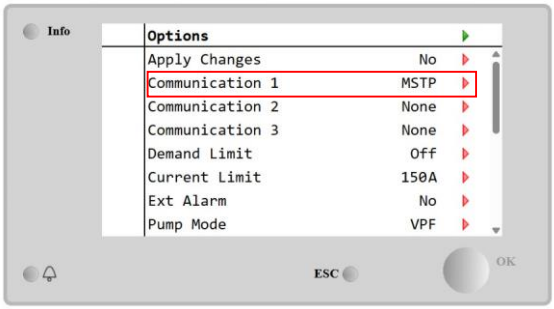
The communication protocol settings page can be accessed via the path "**Main Menu → Commission Unit → 1-Modbus":**



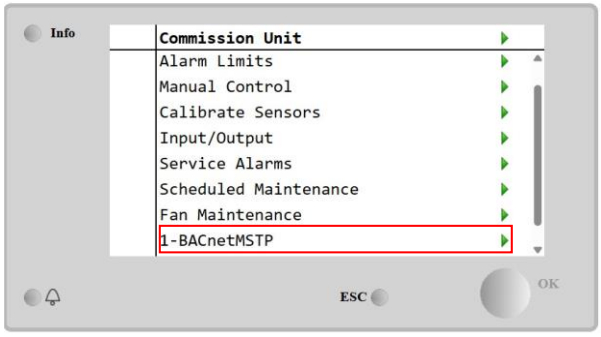


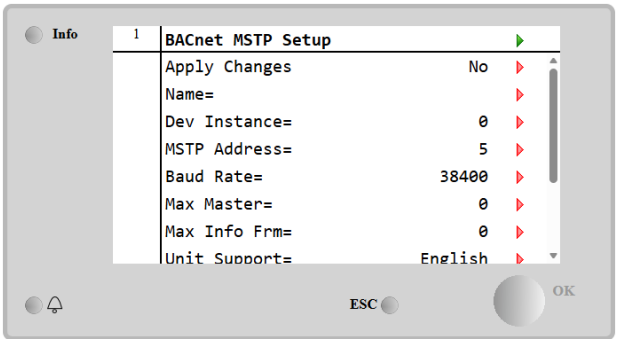
2.5.2. BACnet MSTP

Connect the POL904.00/MCQ module to the controller that needs to be restarted. To verify that the connection is correct, ensure that the "**Communication 1**" setting is set to "**MSTP**" by following this path "**Main Menu → Commission Unit → Configuration → Options"**



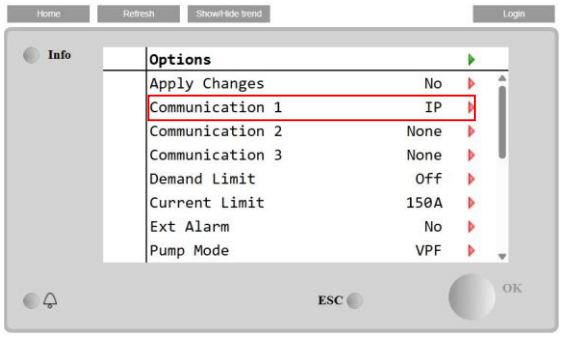
The communication protocol settings page can be accessed via the path "**Main Menu → Commission Unit → 1-BACnetMSTP":**



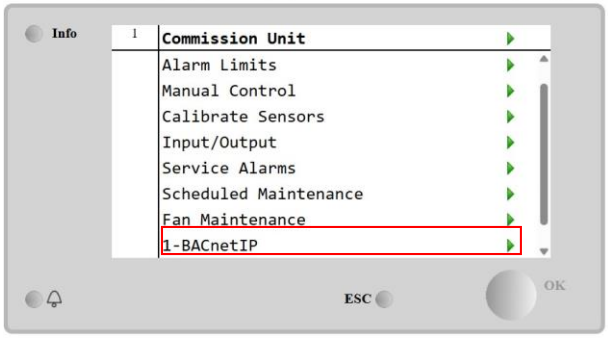


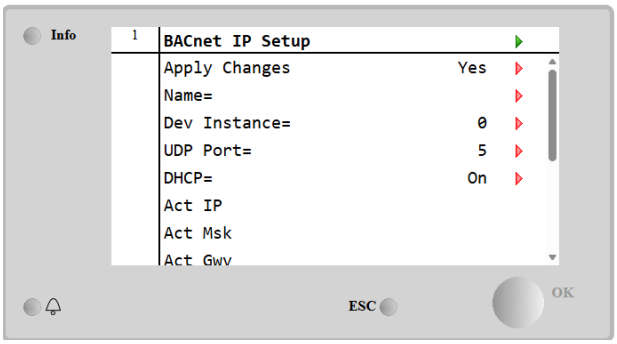
2.5.3. BACnet IP

Connect the POL908.00/MCQ module to the controller that needs to be restarted. To verify that the connection is correct, ensure that the "**Communication 1**" setting is set to "**IP**" by following this path "**`Main Menu` → `Commission Unit` → Configuration → `Options`"**



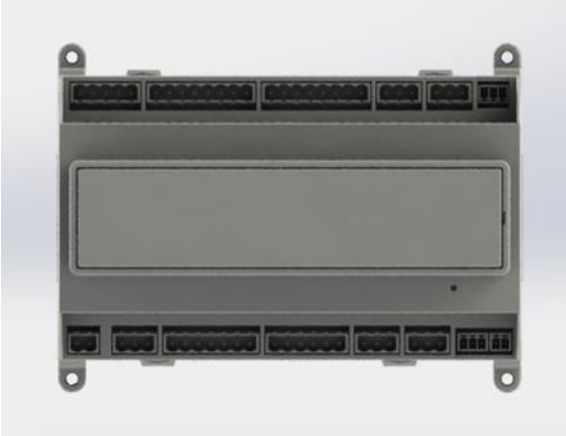
The communication protocol settings page can be accessed via the path "**`Main Menu` → `Commission Unit` → 1-BACnetIP":**





3. USING THE CONTROLLER

Microtech IV does not have an integrated HMI. The interaction with the controller can be done using a mobile app that can be download from the store (Playstore for Android devices and Apple Store for iOS devices).



3.1. Navigating

When power is applied to the control circuit, the controller screen will be active and display the Home screen, which can also be accessed by pressing the Menu Button.
An example of the HMI screens is shown in the following picture.

```
  Main Menu                                  1 / 11
Enter Password                                   ▶
Unit Status =
  Off: Unit SW
Active Setpt =                           7.0 °C
```

A bell ringing in the top right corner will indicate an active alarm. If the bell doesn't move it means that the alarm has been acknowledged but not cleared because the alarm condition hasn't been removed. A LED will also indicate where the alarm is located between the unit or circuits.

```
  Main Menu                                  1 / 🔔
Enter Password                                   ▶
Unit Status =
  Off: Unit SW
Active Setpt =                           7.0 °C
```

The active item is highlighted in contrast, in this example the item highlighted in Main Menu is a link to another page. By pressing the push'n'roll, the HMI will jump to a different page. In this case the HMI will jump to the Enter Password page.

```
  Enter Password                             2 / 2

Enter PW                                   * * * *
```

3.2. Passwords

The HMI structure is based on access levels that means that each password will disclose all the settings and parameters allowed to that password level. Basic informations about the status can be accessed without the need to enter the password. The user UC handles two level of passwords:

USER	5321
MAINTENANCE	2526

The following information will cover all data and settings accessible with the maintenance password.

In the Enter Password screen, the line with the password field will be highlighted to indicate that the field on the right can be changed. This represents a setpoint for the controller. Pressing the push'n'roll the individual field will be highlighted to allow an easy introduction of the numeric password.

```
  E n t e r   P a s s w o r d                    2 / 2

E n t e r   P W                                  5 * * *
```

The password will time out after 10 minutes and is cancelled if a new password is entered or the control powers down. Entering an invalid password has the same effect as continuing without a password.

3.3. Editing

The Editing Mode is entered by pressing the set button while the cursor is pointing to a line containing an editable field. Pressing the button again cause the new value to be saved and the keypad/display to leave the edit mode and return to the navigation mode.

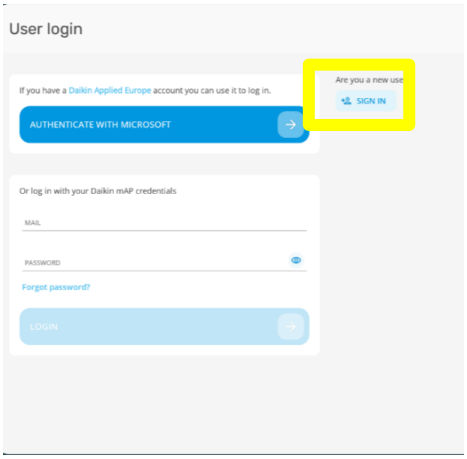
3.4. Mobile app HMI

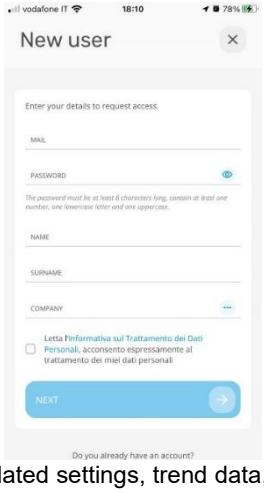
The Daikin mAP mobile app HMI is provided for free and aims to simplify the interaction with this Daikin product. The app can be downloaded from the official stores with the following links (scan the QR code to access directly the download pages on the stores).

iOS

Android

To use the app is needed to pre-register an account and gain access to the specific unit to access. The access will be granted per unit base. A user can access multiple units after the app-tenant authorize this access. The procedure to register an account is in app. It's necessary to follow the sign in link in the app:





The mobile app will allow you to monitor all the relevant data, change the user related settings, trend data, update chiller software and more to come.

For further information consult the Quick Guide Daikin Map 1.0 □ D-EPMAP00101-23_EN

3.5. Basic Control System Diagnostic

Microtech IV controller, extension modules and communication modules are equipped with two status LED (BSP and BUS) to indicate the operational status of the devices. The BUS LED indicates the status of the communication with the controller. The meaning of the two status LED is indicated below.

Main Controller (UC)

BSP LED	Mode
Solid Green	Application running
Solid Yellow	Application loaded but not running (*) or BSP Upgrade mode active
Solid Red	Hardware Error (*)
Flashing Green	BSP startup phase. The controller needs time for starting.
Flashing Yellow	Application not loaded (*)
Flashing Yellow/Red	Fail safe mode (in case that the BSP upgrade was interrupted)
Flashing Red	BSP Error (software error*)
Flashing Red/Green	Application/BSP update or initialization

(*) Contact Service.

Extension modules

BSP LED	Mode	BUS LED	Mode
Solid Green	BSP running	Solid Green	Communication running, I/O working
Solid Red	Hardware Error (*)	Solid Red	Communication down (*)
Flashing Red	BSP Error (*)	Solid Yellow	Communication running but parameter from the application wrong or missing, or uncorrect factory calibration
Flashing Red/Green	BSP upgrade mode		

Communication modules

BSP LED (same for all modules)

BSP LED	Mode
Solid Green	BPS running, communication with controller
Solid Yellow	BSP running, no communication with controller (*)
Solid Red	Hardware Error (*)
Flashing Red	BSP Error (*)
Flashing Red/Green	Application/BSP update

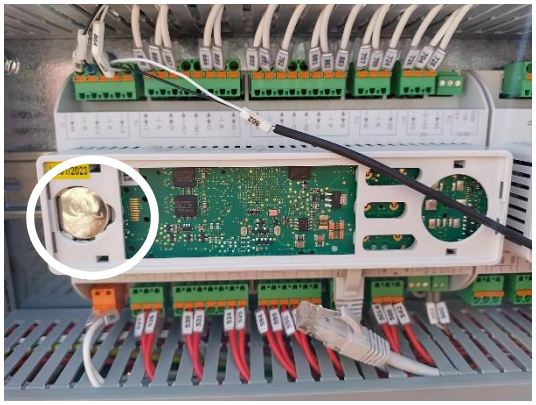
(*) Contact Service.

BUS LED

BUS LED	LON	Bacnet MSTP	Bacnet IP	Modbus
Solid Green	Ready for Communication. (All Parameter loaded, Neuron configured). Doesn't indicate a communication with other devices.	Ready for Communication. The BACnet Server is started. It doesn't indicate an active communication	Ready for Communication. The BACnet Server is started. It doesn't indicate an active communication	All Communication running
Solid Yellow	Startup	Startup	Startup. The LED stays yellow until the module receives a IP Address, therefore a link must be established.	Startup, or one configured channel not communicating to the Master
Solid Red	No Communication to Neuron (internal error, could be solved by downloading a new LON application)	BACnet Server down. Automatically a restart after 3 seconds are initiated.	BACnet Server down. Automatic restart after 3 seconds is initiated.	All configured Communications down. Means no communication to the Master. The timeout can be configured. In case that the timeout is zero the timeout is disabled.
Flashing Yellow	Communication not possible to the Neuron. The Neuron must be configured and set online over the LON Tool.			

3.6. Controller maintenance

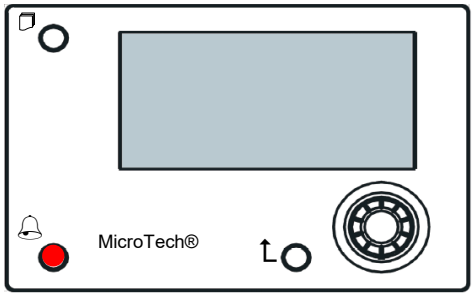
The controller requires to maintain the installed battery. Every two years it's required to replace the battery. Battery model is: BR2032 and it is produced by many different vendors.
To replace the battery remove the plastic cover of the controller display using a screw driver as shown in the following pictures:



Be careful to avoid damages to the plastic cover. The new battery shall be placed in the proper battery holder which is highlighted in the picture, respecting the polarities indicated into the holder itself.

3.7. Optional Remote User Interface

As an option an external Remote HMI can be connected on the UC. The Remote HMI offers the same features as the inbuilt display plus the alarm indication done with a light emitting diode located below the bell button.
All viewing and setpoint adjustments available on the unit controller are available on the remote panel. Navigation is identical to the unit controller as described in this manual.



The Remote HMI can only be used after disconnecting the standard HMI (POL 871) installed on the unit. Recommended Standard net cable with 2 RJ45-plugs (8-wires, twisted pair).

4. WORKING WITH THIS UNIT

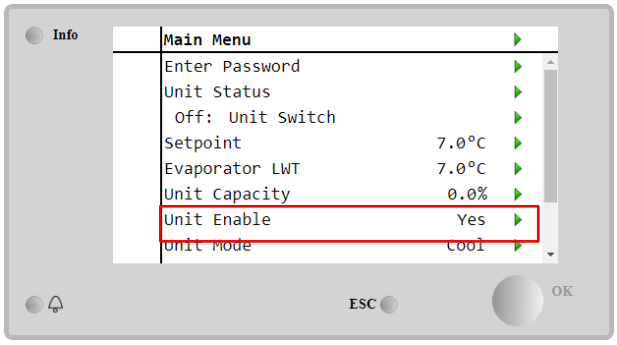
4.1. Chiller On/Off

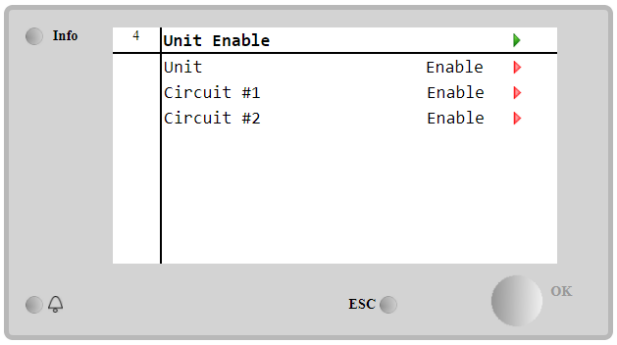
Unit controller provides several features to manage unit start/stop:

1. Keypad On/Off
2. Scheduler (Time programmed On/Off)
3. Network On/Off (optional with communication modules).
4. Unit On/Off Switch

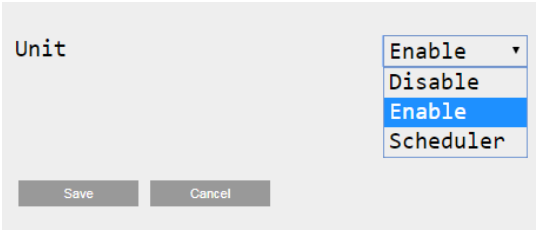
4.1.1. Keypad On/Off

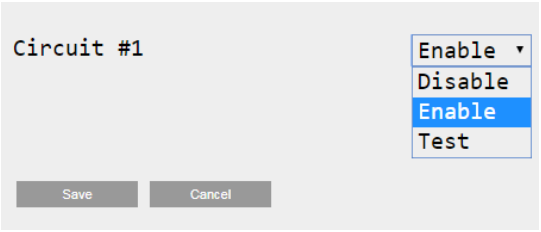
In the main page, scroll down until **Unit Enable** menu, where are available all settings to manage unit and circuits start/stop.





Parameter	Range	Description
Unit	Disable	Unit disabled
	Enable	Unit enabled
	Scheduler	Unit start/stop can be time programmed for each weekday
Circuit #X	Disable	Circuit #X disabled
	Enable	Circuit #X enabled
	Test	Circuit #X in test mode. This feature has to be used only from trained person or Daikin service

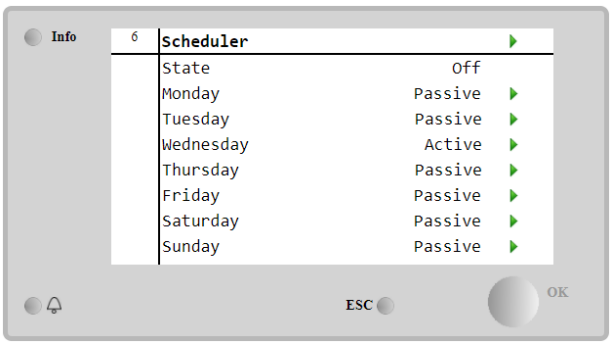


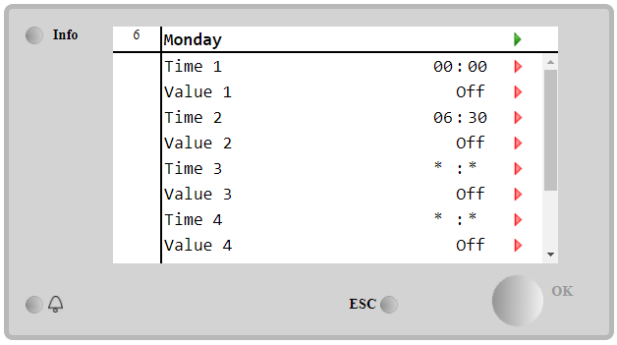


4.1.2. Scheduler

The Scheduler function can be used when an automatic chiller start/stop programming is required.
The activation / deactivation of the unit can be managed automatically through the Scheduler function, activated when the Unit Enable parameter is set to Schedule.

Scheduler programming is available going in **Main Page → View/Set Unit → Scheduler** menu





For each weekday can be programmed up to six time bands with a specific operating mode. First operating mode starts at Time 1, ends at Time 2 when will start the second operating mode and so on until the latest.

Depending on unit type, different operating modes are available:

Parameter	Range	Description
Value 1	Off	Unit disabled
	On 1	Unit enabled – Water setpoint 1 selected
	On 2	Unit enabled – Water setpoint 2 selected
	On 1 - Silent	Unit enabled – Water setpoint 1 selected – Fan silent mode enabled
	On 2 - Silent	Unit enabled – Water setpoint 2 selected – Fan silent mode enabled

When **Fan Silent Mode** function is enabled the chiller noise level is reduced decreasing the maximum speed allowed for fans according to Fan Silent Speed setpoint.

The Time slots can be set from in **"Hour:Minute":**

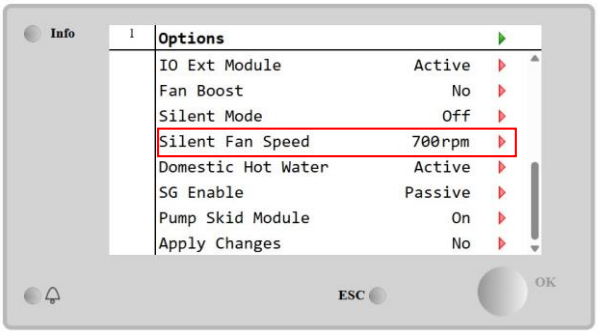
Parameter	Range	Description
Time 1	**"00:00-4:60"**	Time of the day can vary from 00:00 to 23:59. If Hour = 24 the HMI will display "An:Minute" as string and the Value# related to Time# is set for all hours of the associated day. If Minute = 60 the HMI will display "Hour:An" as string and the Value# related to Time# is set for all minutes of the selected hours of the day.

4.2. Silent Mode

Silent mode can be enabled through scheduler, keypad, digital input or network control.
If the unit is set in "**Silent Mode**" the maximum speed of fans is reduced according to "Fan Silent Speed" parameter for both chiller and heat pump mode.

Parameter	Range	Description
Silent Fan Speed	500-1100	This parameter sets the fan speed in **rpm** during silent mode. Default value for Fan Silent Speed is 650rpm.

The path in the HMI interface for Fan Silent Speed configuration is "**Main Menu → Commission Unit → Configuration → Options → Silent Fan Speed**".



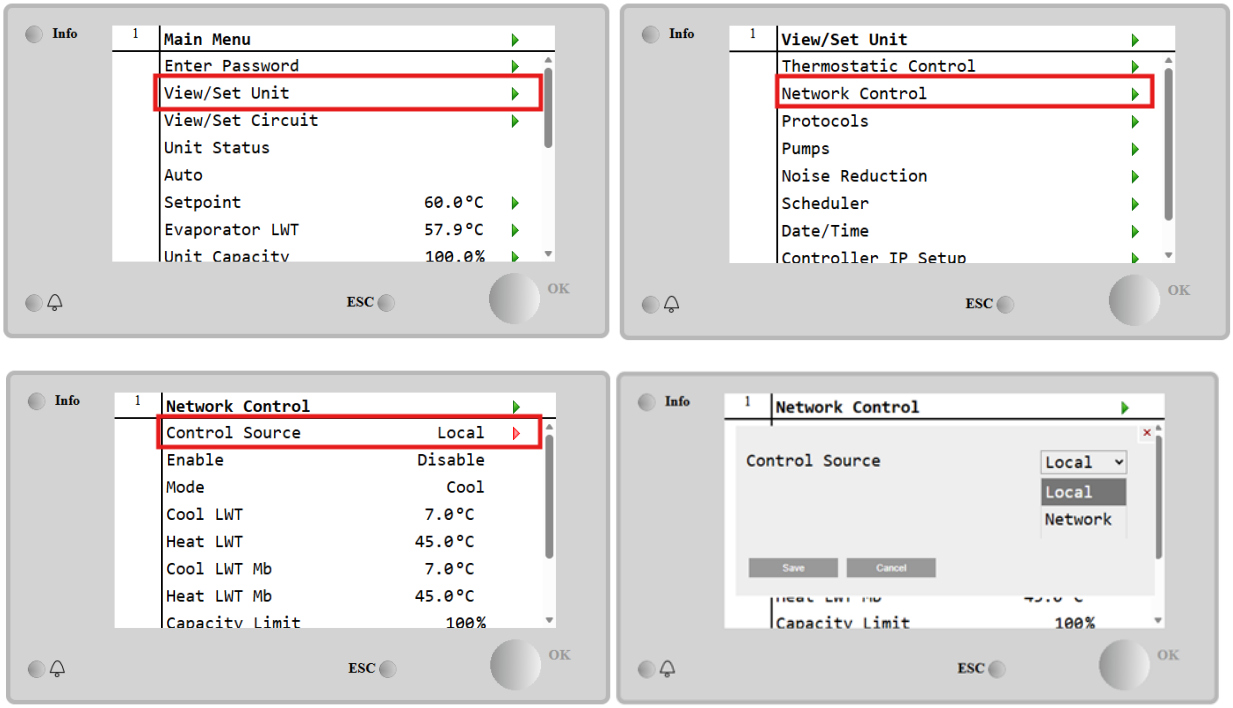
Notice that, regardless "Fan Silent Mode" enabling the fan speed will be increased in critical operating conditions like high condensation in chiller mode, low evaporating pressure in heat pump mode, etc to prevent alarms or unit damaging.

4.2.1. Network On/Off

Network On/Off can be managed also with BACnet or Modbus RTU communication protocol.
To control the unit over the network, follow below instructions:

1. Unit On/Off switch = closed
2. Unit Enable = Enable (refer to 4.1.1)
3. Control Source = 1 (refer to 0)

The path in the Web HMI interface for Network Control Source is "**Main Menu View/Set Unit → Network Control**".

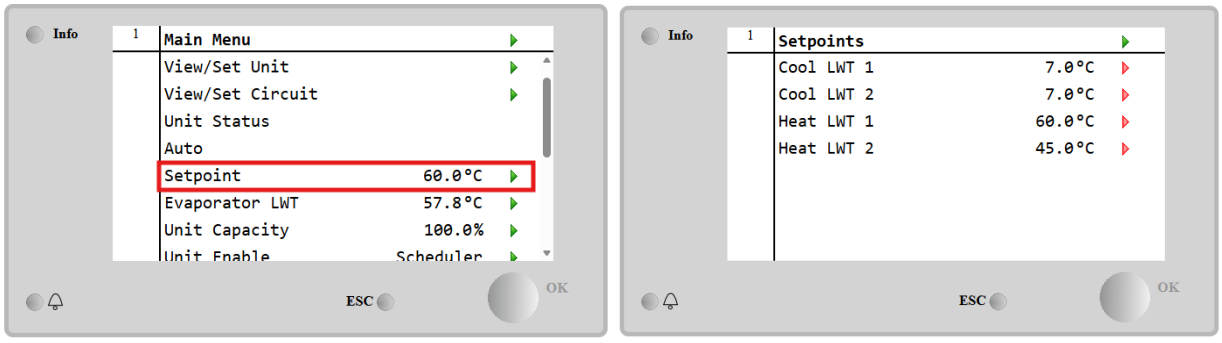


4.2.2. Unit On/Off Switch

For unit start up is mandatory to close the electrical contact (ON/OFF UNIT SWITCH). For more information, please refer to the unit wiring diagram.

4.3. Water Setpoints

Purpose of this unit is to cool or to heat (in case of heat pump version) the water, to the setpoint value defined by the user and displayed in the main page:



The unit can work with a primary or a secondary setpoint, that can be managed as indicated below:

1. Keypad selection + Double Setpoint digital contact
2. Keypad selection + Scheduler Configuration
3. Network
4. Setpoint Reset function

As first step the primary and secondary setpoints need to be defined:

Parameter	Range	Description
(Cool LWT 1)	With Glycol: -15°C … 18°C	Primary cooling setpoint.
(Cool LWT 2)	Without Glycol: +4°C … 18°C	Secondary cooling setpoint.
(Heat LWT 1)	20°C … 75°C	Primary heating setpoint.
(Heat LWT 1)	20°C … 75°C	Secondary heating setpoint.

The change between primary and secondary setpoint can be performed using the **Double setpoint** contact, available in the user terminal box or through the **Scheduler** function.

Double setpoint contact works as below:
- Contact opened, the primary setpoint is selected
- Contact closed, the secondary setpoint is selected

To change between primary and secondary setpoint with the Scheduler function, refer to the section 4.1.2.

When the Scheduler function is enabled, the Double setpoint contact is ignored.

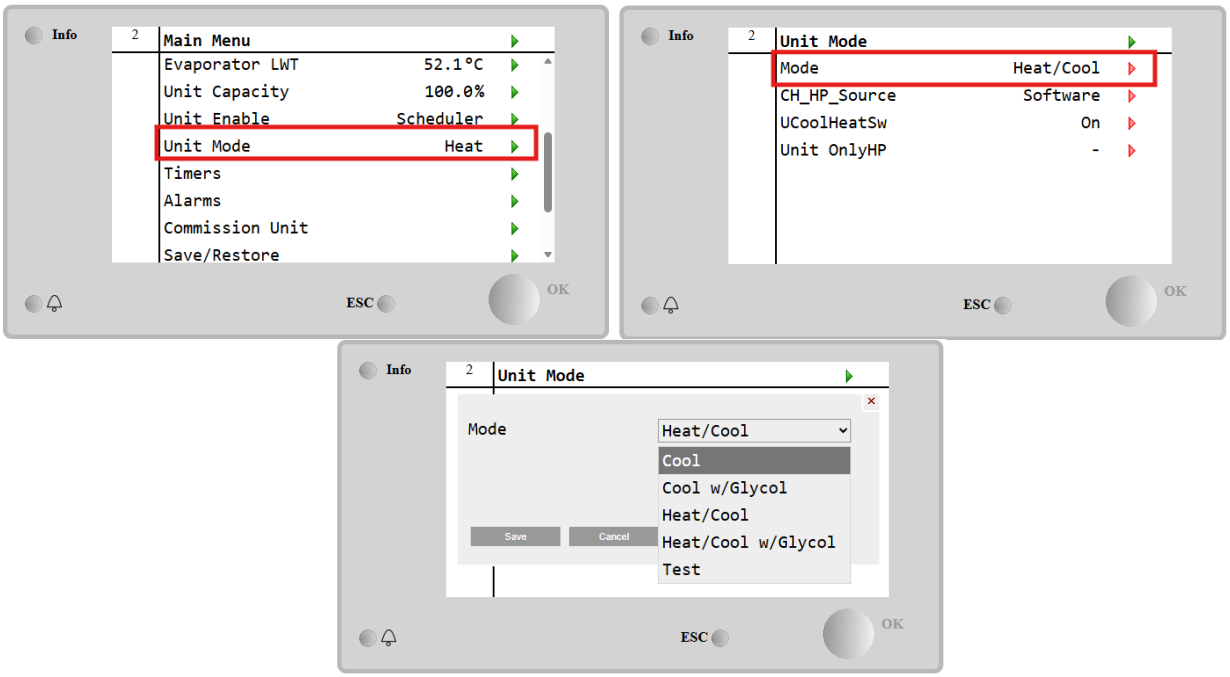
Based on the ambient temperature which unit is operating, maximum leaving water temperature will be automatically controlled to maintain the unit in the proper envelope.

To modify the active setpoint through network connection, refer to "Network control" section 0.

The active setpoint can be further modified using the "Setpoint Reset" function as explained in section 0.

4.4. Unit Mode

The Unit Mode is used to define if the chiller is configured to produce chilled or heated water. This parameter is related to the unit type and is set in factory or during commissioning operation.
Current mode is reported in the main page to the item Unit Mode.



Depending on the unit type, different operating modes can be selected entering, with maintenance password, in the **Unit Mode** menu. In the table below are listed and explained all modes.

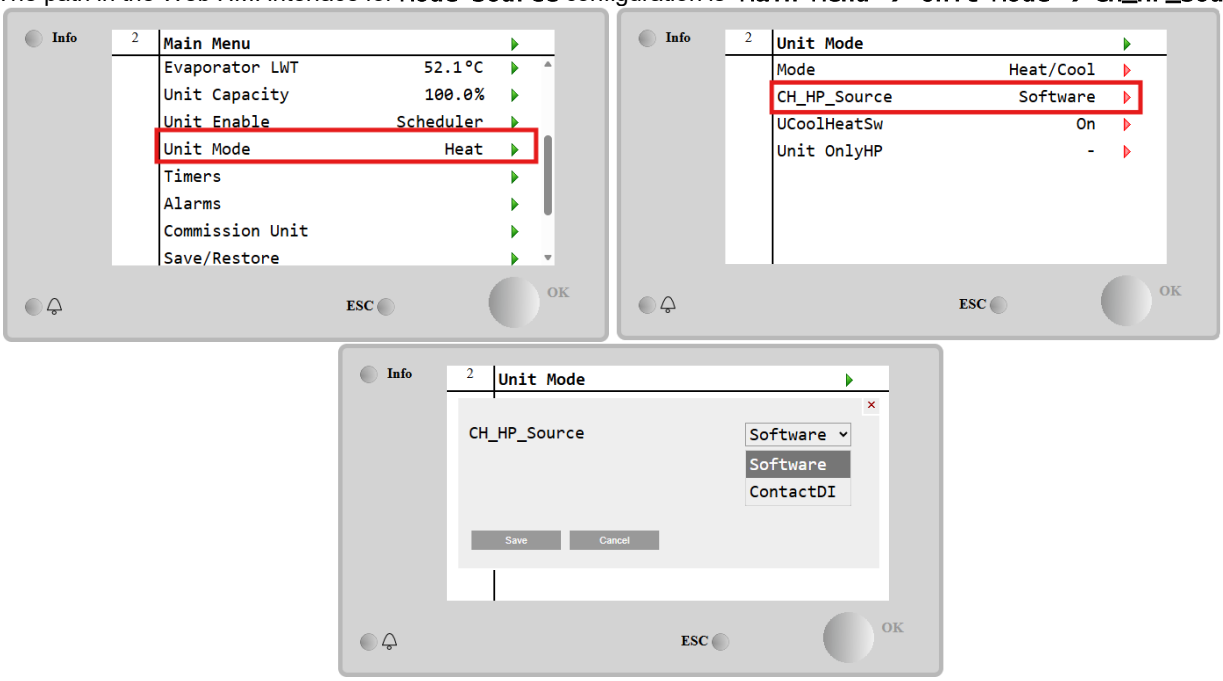
Parameter	Range	Description
Unit Mode	Cool	Set if chilled water temperature up to 4°C is required. No glycol is generally needed in the water circuit unless ambient temperature may reach low values. In case of required water lower than 4°C and water circuit with glycol is required, set mode “Cool with glycol”.
	Cool with glycol	Set if chilled water temperature below 4°C is required. This operation requires proper glycol/water mixture in the plate heat exchanger water circuit.
	Cool / Heat	Set in case a dual cool/heat mode is required. This setting implies an operation with double functioning which is activated through the physical switch or BMS control. • COOL: The unit will work in cooling mode with the Cool LWT as the Active Setpoint. • HEAT: The unit will work in heat pump mode with the Heat LWT as the Active Setpoint.
	Cool / Heat with glycol	Same behavior of “Cool / Heat” mode but Chilled water temperature below 4°C is required or glycol is present in the water circuit.
	Test	Enables the Manual Control of the unit. The manual test feature helps in debugging and checking the operational status of actuators. This feature is accessible only with the maintenance password in the main menu. To activate the test feature is required to disable the Unit and change the available mode to Test.

4.4.1. Heat/Cool set-up

Heat/Cool operating mode can be set using three different methods:

1. Digital input
2. Software parameter
3. Network control

The path in the Web HMI interface for **Mode Source** configuration is “**Main Menu → Unit Mode → CH_HP_Source**”.



In the table below are listed and explained all modes:

Parameter	Range	Description
Mode Source	Software	Cooling-Heating operation is defined following software parameter
	ContactDI	Cooling-Heating operation is defined following the status of digital input

To control the operating mode trough the **Network Control** refer to section 0

All settings related to Cooling-Heating operation will produce a real mode change only if Unit Mode parameter is set to:
- Heat/Cool
- Heat/Cool w/Glycol

In all other cases no mode switch will be allowed

Parameter	Range	Description
Unit Mode	Cool	Only cooling mode is permitted
	Cool with glycol	
	Cool / Heat	Both heating and cooling mode is permitted
	Cool / Heat with glycol	

4.4.1.1. Cooling-Heating mode by Digital input

When Digital input is selected as control method for cooling-heating switch, unit mode will be set according following table

Digital input reference	Digital input state	Description
Cool/Heat switch	Opened	Cooling mode is selected
	Closed	Heating mode is selected

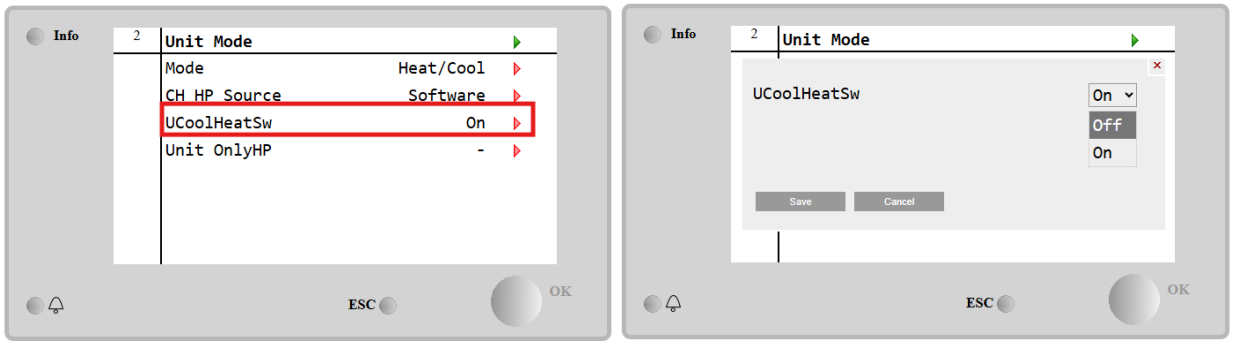
For more information, please refer to the unit's wiring diagram.

4.4.1.2. Cooling-Heating mode by Software parameter

When Software Parameter is selected, as control method for cooling-heating switch and parameter Unit Mode is set equal to 2 or 3, **Cool/Heat Mode** will be set according following table:

Parameter	Range	Description
UCoolHeatSw	Off	Cooling Mode
	On	Heating Mode

The path in the HMI interface for **Cool Heat Switch** configuration is "**Main Menu → Unit Mode → UCoolHeatSw**".

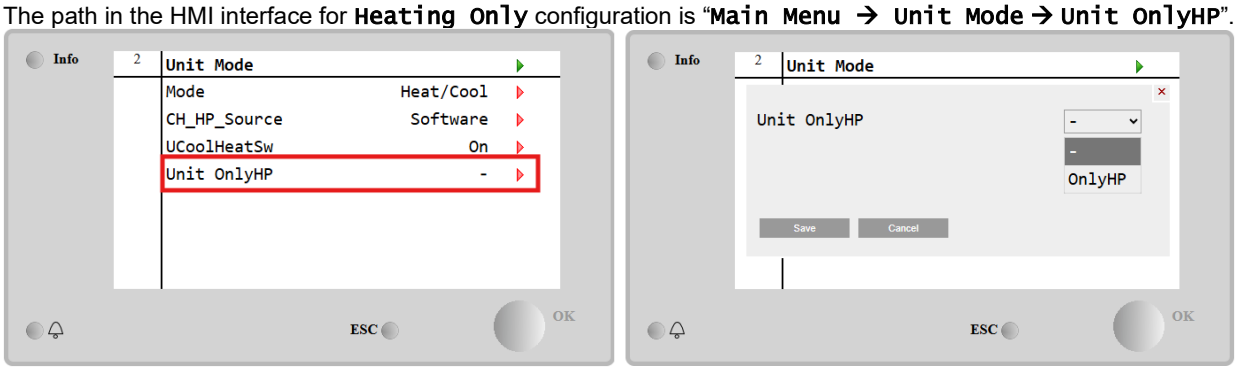


4.4.1.3. Heating Only Mode

When Heating Only is selected the unit will not be allowed to work in chiller mode except for safety measures like Defrost functionality. Heating only will be set according following table:

Parameter	Range	Description
OnlyHP	-	Normal CH/HP Mode
	On	Forced Heat Mode

The path in the HMI interface for **Heating Only** configuration is "**Main Menu → Unit Mode → Unit OnlyHP**".



Once Unit OnlyHP parameter set, other input configurations for operating mode control, like digital input, M/S and Software parameter, will not be considered

4.5. Unit Status

Unit controller provides in the main page some information about chiller status. All chiller states are listed and explained below:

Parameter	Overall status	Specific status	Description
Unit Status	Auto:		Unit is in Auto control. The pump is running and at least one compressor is running.
		Wait For Load	Unit is in standby because the thermostatic control satisfies the active setpoint.
		Evap Recirc	Water pump is running in order to equalize the water temperature in the evaporator.
		Wait For Evap Flow	Unit pump is running but the flow signal still indicates a lack of flow through the evaporator.
		Current Limit	Maximum current has been hit. Unit capacity will not further increase.
		Max Pulldn Rate	Unit thermostatic control is limiting the unit capacity as the water temperature is dropping too quickly.
		Max Pullup Rate	Unit thermostatic control is limiting the unit capacity as the water temperature is rising too quickly.
		Unit Cap Limit	Demand limit has been hit. Unit capacity will not further increase.
		Noise Reduction	Unit is running and Silent Mode is enabled
		DHW On	Unit is running in Domestic Hot Water circuit
		DHW AntiLeg On	Unit is running in Domestic Hot Water circuit for anti-legionella cycle
		Pumpdown	Unit is performing the pumpdown procedure and d it will stop within few minutes
	Off:	Scheduler Disable	Unit is disabled by Scheduler programming
		All Cir Disabled	No circuit is available to run. All circuits can be disabled by their individual enable switch or can be disabled by a component safety condition active or can be disabled by keypad or can be all in alarms. Check the individual circuit status for further details.
		Extraction Fan Routine	Extraction fan routine before the unit starts up
		Unit Alarm	A unit alarm is active. Check the alarm list to see what is the active alarm inhibiting the unit to start and check if the alarm can be cleared. Refer to section 5 before proceeding.
		Keypad Disable	The Unit has been disabled by keypad. Check with your local maintenance if it can be enabled.
		Master Disable	Unit is disabled by the Master Slave function

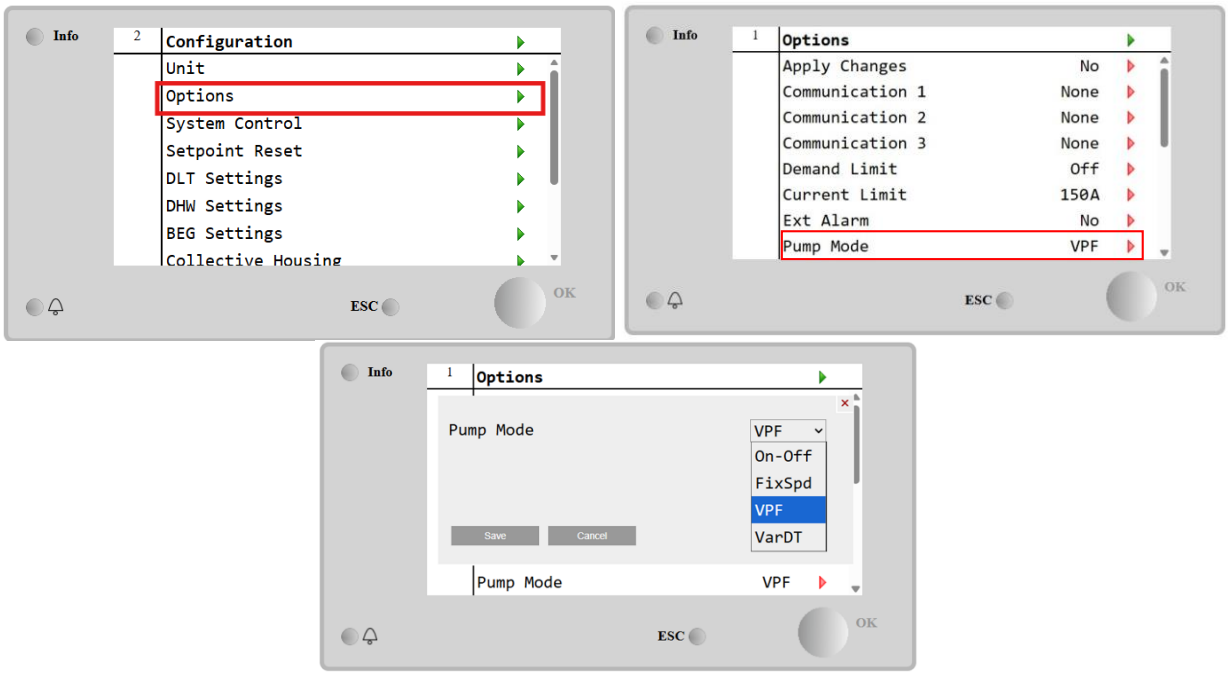
		BAS Disabled	Unit is disabled by Network.
		Unit Switch	Unit Switch On/Off contact is opened.
		Unit Not Configurated	Unit is not configurated
		Test Mode	Unit mode set to Test. This mode is activated to check operability of onboard actuators and sensors. Check with the local maintenance if the Mode can be reverted to the one compatible with unit application (View/Set Unit – Set-Up – Available Modes).
		Unit Locked	Unit is locked due to a refrigerant leak. Refer to section 4.29.

4.6. Pumps and Variable Flow

The UC can manage one water pump connected to the water plate heat exchanger. The pump control type can operate in three different ways:

1. Fixed Speed
2. Variable Primary Flow (VPF)
3. DeltaT

And it can be configured through "**Main Menu → Commission Unit → Configuration → Options → Pump Mode**".



4.6.1. Fixed Speed

First control mode, Fixed Speed, allows an automatic pump speed variation, between three different speed.
Settings:

1. Speed 1
2. Speed 2
3. Standby Speed

Unit controller switches the pump frequency on the basis of:

1. Actual unit capacity
2. Double Speed digital input state

If there are no active compressors (Unit Capacity = 0%) pump speed is set to Standby Speed, otherwise Speed 1 or Speed 2 is selected depending on the Double Speed input state.

4.6.2. Variable Primary Flow (VPF)

The second control mode is the VPF mode where the pump speed is controlled in order to maintain a minimum pressure drop in a remote location of the plant at a setpoint value determined to ensure the required chilled flow through any terminals or coils. When the system is enabled, unit controller reads the Load Pressure Drop at further terminal and provides a 0-10V signal as reference for variable speed drive.

Control signal is generated by a PI algorithm and it is always limited between a minimum and maximum value set by default to 0% and 100% while the Bypass 2 way valve is installed on a pipe near to the pumps in order to ensure a minimum evaporator water flow.

The VPF control mode is regulated by following settings:

- **LoadPD Setpoint**
- **EvapPD Setpoint**
- **LoadPD**
- **EvapPD**
- **Parameter Ti**

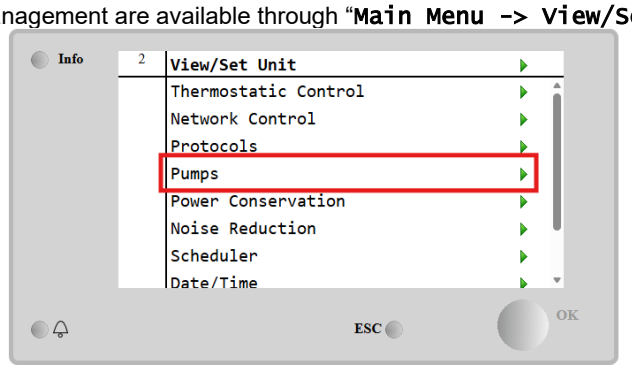
4.6.3. DeltaT

The third control mode is the DeltaT mode where the pump speed is modulated through a PID to ensure a constant difference between Evaporator Entering Water Temperature and Evaporator Leaving Water Temperature.

This mode is regulated by following setting:

- DeltaT

All settings related to pump management are available through "**Main Menu -> View/Set Unit -> Pumps**".

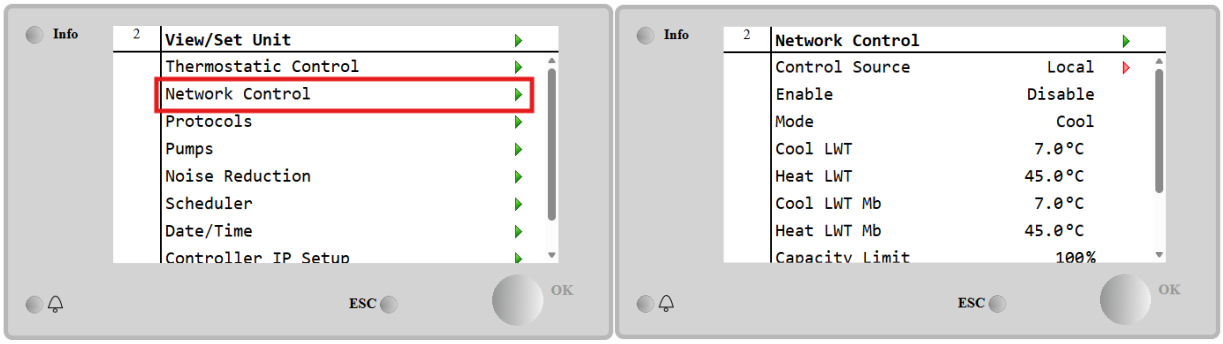


Parameter	Range	Description
Recirculation time	0-300	Minimum time required within flow switch has to be closed to allow unit startup.
Standby Speed	0-100	Pump speed with Unit Capacity = 0
Speed	0-100	Actual feedback pump speed.
Max Speed	0-100	Maximum value for pump speed.
Min Speed	0-100	Minimum value for pump speed.
Sp Speed1	0-100	First target value for pump speed in Fixed Speed control conditions.
Sp Speed2	0-100	Second target value for pump speed under Fixed Speed control conditions.
Setpoint kPa1	0-45	DeltaP target for the farthest terminal of the system.
Setpoint kPa2	0-45	Minimum allowed value for the Evaporator Pressure Drop.
BypassValveSt	Off	Evaporator Pressure Drop > Minimum Evaporator Pressure Drop Setpoint + Hysteresis
	On	Evaporator Pressure Drop < Minimum Evaporator Pressure Drop Setpoint.
LoadPD	0-1000	This value displays the actual pressure across the furthest Terminal.
EvapPD	0-1000	This value displays the actual pressure drop across the Evaporator.
Parameter-K	1-10	This value scales the PI algorithm parameters to obtain a faster response.
Setpoint DeltaT	0-10	Evaporator Water Temperature difference setpoint.
VPF Alarm Code	0-3	VPF's alarming related to pressure drop sensors.
Sensor Scale	0-2000	VPF's load pressure difference sensor scale
Pump On Limit	(Evaporator Freeze -1) - 10	Define the pump's activation limit in case of low water temperature at the exchanger.

4.7. Network Control

When the unit controller is equipped with one or more communication modules the **Network Control** feature can be enabled, which gives the possibility to control the unit via serial protocol (Modbus or BACNet).
To allow unit's control from network, follow below instruction:

- Go to "**Main Menu -> View/Set Unit -> Network Control**".



Network Control menu returns all main values received from serial protocol.

Parameter	Range	Description
Control Source	Local	Network control disabled
	Network	Network control enabled
Enable	Disable	On/Off command from network
	Enable	
Mode	-	Operating mode from network
Cool LWT	0..18°C	Cooling water temperature setpoint from network
Heat LWT	20..75°C	Heating water temperature setpoint from network
Capacity Limit	-	Capacity limitation from network
Current Limit	-	Capacity limitation level from network

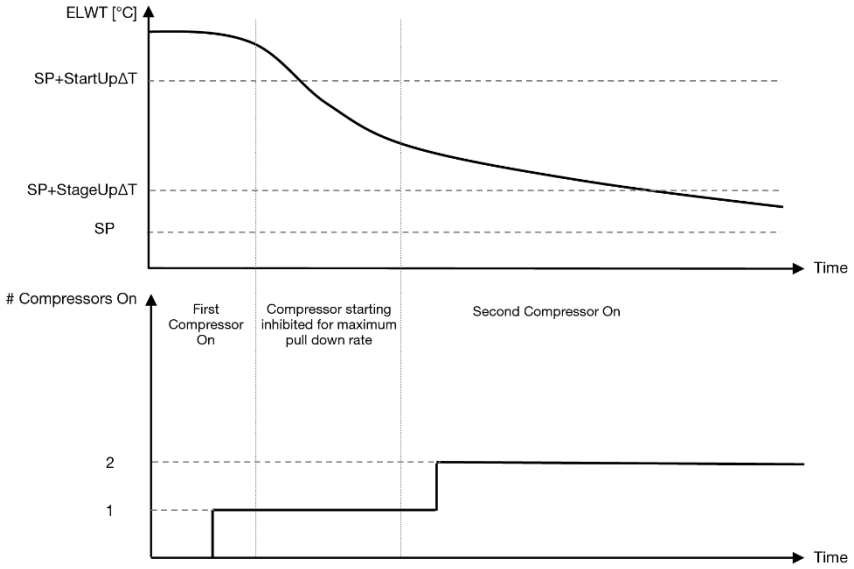
Refer to communication protocol documentation for specific registers addresses and the related read/write access level.

4.8. Thermostatic Control

Thermostatic control settings allow to set up the response to temperature variations. Default settings are valid for most application, however plant specific conditions may require adjustments to have a smooth control or a quicker response of the unit.
The unit controller will start the first compressor if the controlled temperature is higher (Cool Mode) or lower (Heat Mode) than the active setpoint of at least a Start Up DT value, whereas second compressor when available is started if the controlled temperature is higher (Cool Mode) or lower (Heat Mode) than the active setpoint (AS) of at least a Stage Up DT (SU) value. Compressors stop if performed following same procedure looking to the parameters Stage Down DT and Shut Down DT.

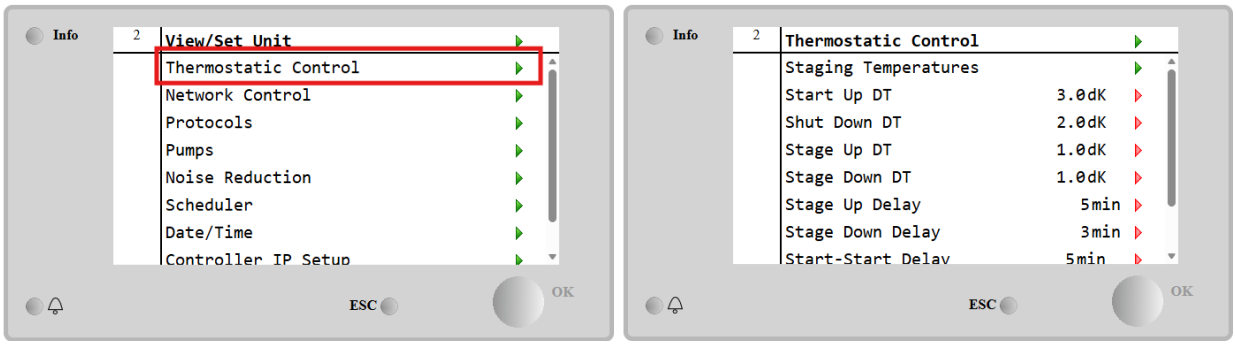
	Cool Mode	Heat Mode
First compressor start	Controlled Temperature > Setpoint + **Start Up DT**	Controlled Temperature < Setpoint - **Start Up DT**
Other compressors start	Controlled Temperature > Setpoint + **Stage Up DT**	Controlled Temperature < Setpoint - **Stage Up DT**
Last compressor stop	Controlled Temperature < Setpoint - **Shut Dn DT**	Controlled Temperature > Setpoint + **Shut Dn DT**
Other compressors stop	Controlled Temperature < Setpoint - **Stage Dn DT**	Controlled Temperature > Setpoint + **Stage Dn DT**

A qualitative example of compressors start-up sequence in cool mode operation is shown in the graph below.



Graph 1 – Compressors start-up sequence - Cool mode

Thermostatic control settings are accessible from "**Main Menu → View/Set Unit → Thermostatic Control**".



In the table below are listed and explained all values:

Parameter	Range	Description
Start Up DT	0-5	Delta temperature respect the active setpoint to start the unit (startup of first compressor)

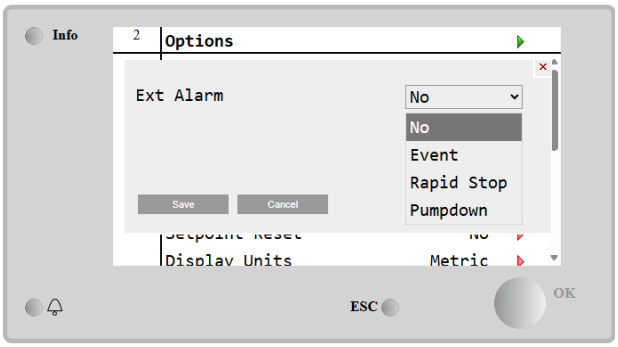
Parameter	Range	Description
Shut Down DT	0-5	Delta temperature respect the active setpoint to stop the unit (shutdown of latest compressor)
Stage Up DT	0-5	Delta temperature respect the active setpoint to start second compressor
Stage Down DT	0-5	Delta temperature respect the active setpoint second compressor
Stage Up Delay	1÷60 [min]	Minimum time between the compressor startup
Stage Down Delay	0÷30 [min]	Minimum time between the compressor shutdown

4.9. External Alarm

The External Alarm is a digital contact that can be used to communicate to the UC an abnormal condition, coming from an external device connected to the unit. This contact is in the customer terminal box and depending on the configuration can cause a simple event in the alarm log or also the unit stop. The alarm logic associated to the contact is the following:

Contact state	Alarm State	Note
Opened	Alarm	The alarm is generated if the contact remains opened for at least 5 seconds
Closed	No Alarm	The alarm is reset just the contact is closed

The configuration is performed from the "**Main Menu → Commission Unit → Configuration → Options** menu:

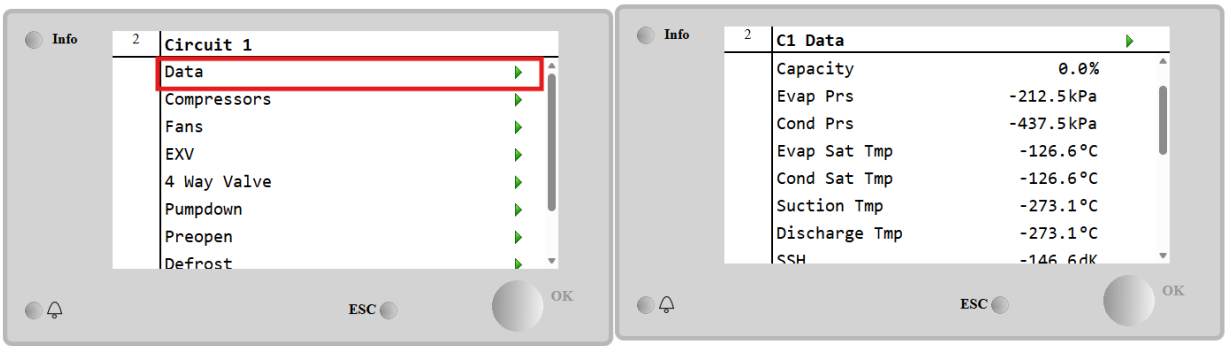


Parameter	Range	Description
Ext Alarm	No	External Alarm disabled
	Event	Event configuration generates an alarm in the controller but takes the unit running
	Rapid Stop	Rapid Stop configuration generates an alarm in the controller and performs a rapid stop of the unit
	Pumpdown	Pumpdown configuration generates an alarm in the controller and performs a pumpdown procedure to stop the unit.

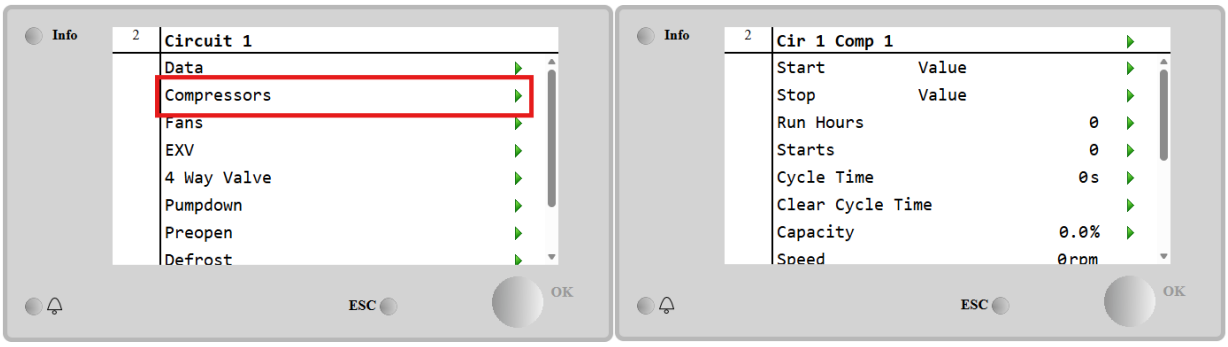
4.10. Unit Capacity

Information about the unit's current and individual circuit capacities can be accessed via:

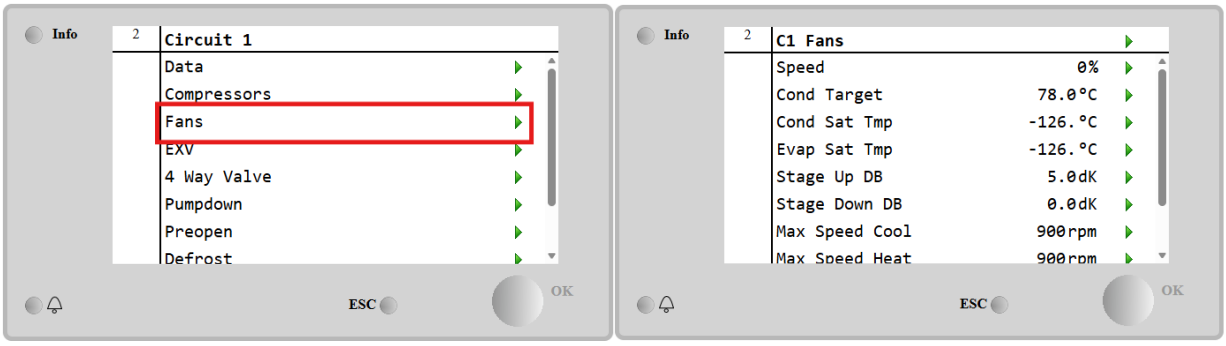
- Main Menu → View/Set Circuit → Circuit 1 (or Circuit 2) → Data



- Main Menu → View/Set Circuit → Circuit 1 (or Circuit 2) → Compressors



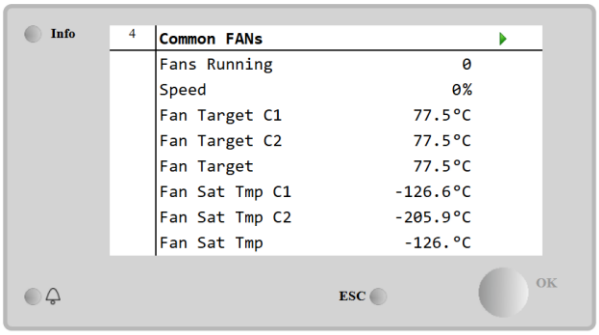
- Main Menu → View/Set Circuit → Circuit 1 (or Circuit 2) → Fans



Parameter	Range	Description
Circuit 1 Capacity	0-100%	Circuit 1 capacity in percentage
Circuit 1 Fan Stage	0..2	Number of Circuit 1 fans running
Circuit 1 Fan Speed	0-100%	Fan Speed of Circuit 1 in percentage
Circuit 2 Capacity	0-100%	Circuit 2 capacity in percentage
Circuit 2 Fan Stage	0..2	Number of Circuit 2 fans running
Circuit 2 Fan Speed	0-100%	Fan Speed of Circuit 2 in percentage
Total Unit Current	A	Sum of absorbed currents by the unit

4.10.1. Unit Common Coil

A summarized view of common coil management can be found in Cx Fans sub-page “Common FANs”:



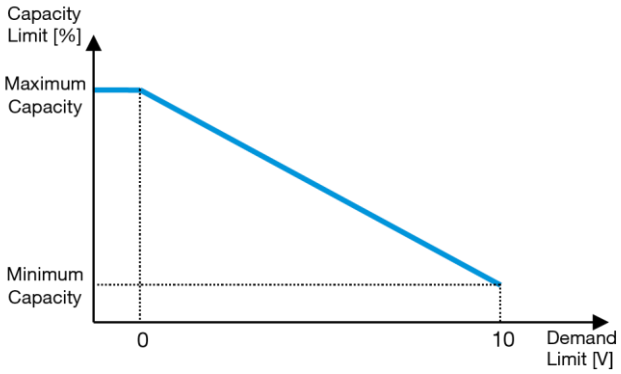
4.11. Power Conservation

In this chapters will be explained the functions used to reduce the unit power consumption:

1. Demand Limit
2. Current Limit
3. Setpoint Reset

4.11.1. Demand Limit

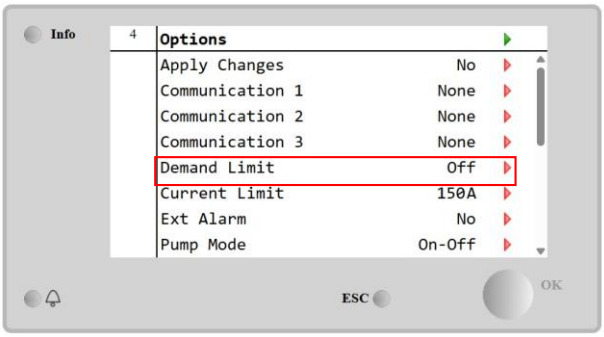
The “Demand limit” function allows the unit to be limited to a specified maximum load. Capacity limit level is regulated using an external 0-10 V signal with a linear relationship shown in the picture below. A signal of 0 V indicates the maximum capacity available whereas a signal of 10 V indicates the minimum capacity available.

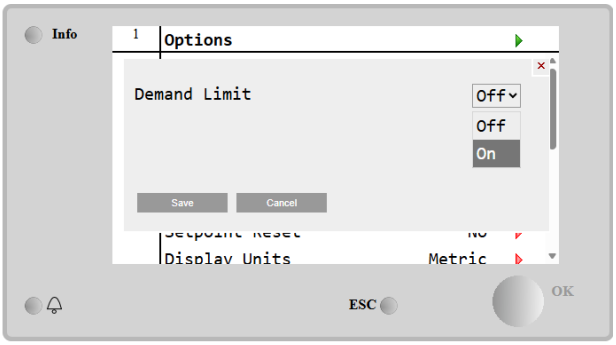


Graph 2 – Demand Limit[V] vs Capacity Limit[%]

It is worth pointing out that it is not possible to shut down the unit using the demand limit function, but only to unload it to its minimum capacity.

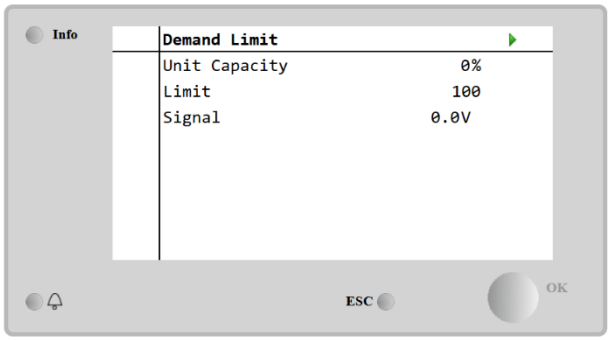
In order to enable this option, go to Main “**Menu → Commission Unit → Configuration → Options**” and set the **Demand Limit** parameter to **On**.





Parameter	Range	Description
Demand Limit	Off	Demand Limit Disabled
	On	Demand Limit Enabled

All info about this function are reported in the **Main Menu → View/Set Unit → Power Conservation → Demand Limit** page in the HMI Interface:

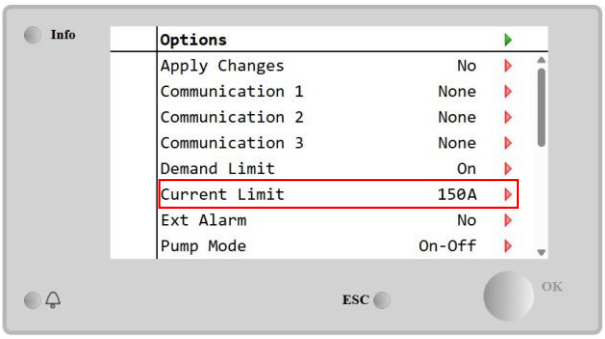


4.11.2. Current Limit

Current limit function allows to control unit power consumption taking current drawn below a specific limit.
To activate the function Current Limit, the user can set a Current Limit Setpoint lower than the Default value, defined through the HMI or BAS communication.

The current limit uses a deadband centered around the actual limit value, such that unit capacity increase is not allowed when current is within this deadband. If unit current is above the deadband, capacity is decreased until it is back within the deadband. The current limit deadband is 5% of the current limit.

The Current Limit setpoint is accessible through the HMI, go to **"Main Menu → Commission Unit → Configuration → Options"** and set the **Current Limit** parameter.



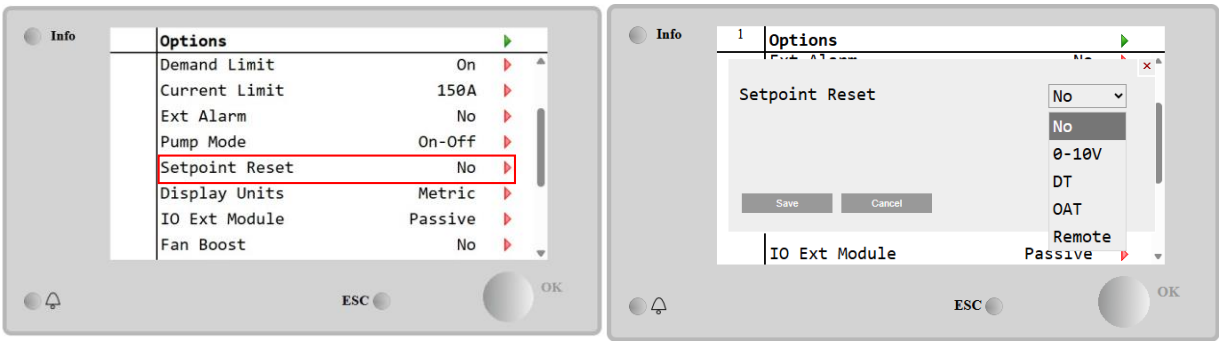
Parameter	Range	Description
Current Limit	0-200A	The maximum current limit that the unit can reach.

4.11.3. Setpoint Reset

The "`Setpoint Reset`" function can override the chiller water temperature active setpoint when certain circumstances occur. The aim of this function is to reduce the unit energy consumption whilst maintaining the same comfort level. To this purpose, four different control strategies are available:

- Setpoint Reset by Outside Air Temperature (OAT)
- Setpoint Reset by an external signal (0-10V)
- Setpoint Reset by Evaporator ΔT (EWT)
- Setpoint Remote by an external signal (0-10V)

In order to set the desired setpoint-reset strategy, go to "**Main Menu → Commission Unit → Configuration → Options** and modify the **Setpoint Reset** parameter, according to the following table:



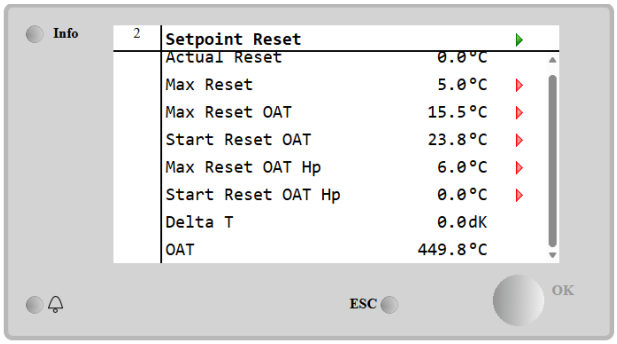
Parameter	Range	Description
`Setpoint Reset`	No	Setpoint reset not enabled
	0-10V	Setpoint reset enabled by an external signal between 0 and 10V
	DT	Setpoint reset enabled by Evaporator Water Temperature
	OAT	Setpoint reset enabled by Outside Air Temperature
	Remote	Setpoint value is forced by external signal between 0V and 10V

Each strategy needs to be configured (although a default configuration is available) and its parameters can be set navigating to "**`Main Menu -> View/Set Unit -> Power Conservation -> Setpoint Reset`**" in the HMI Web interface.

Note that the parameters corresponding to a specific strategy will be available only once the Setpoint Reset has been set to a specific value and the UC has been restarted.

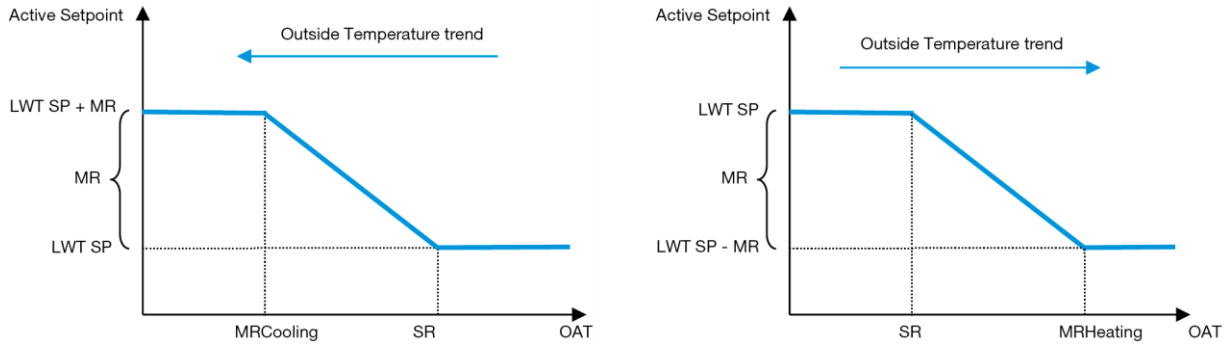
4.11.3.1. Setpoint Reset by OAT

When the **OAT** is selected as **`Setpoint Reset`** option, the LWT active setpoint (AS) is calculated applying a correction to the basic setpoint that depends on the ambient temperature (OAT) and on the current Unit Mode (Heating mode or Cooling mode). Several parameters can be configured, and they are accessible from the **`Setpoint Reset`** menu ("**`Main Menu -> View/Set Unit -> Power Conservation -> Setpoint Reset`**"), as shown below:



Parameter	Default	Range	Description
Actual Reset			Actual Reset shows which is the correction that will applied to the base setpoint
Max Reset (MR)	5.0°C	0..10 [°C]	Max Reset setpoint. It represents the maximum temperature variation that the selection of the Setpoint Reset logic can cause on the LWT.
Max Reset OAT CH (MROAT)	15.5°C	10..30 [°C]	Max Reset possible for the ELWT Setpoint in Cooling Mode.
Start Reset OAT CH (SROAT)	23.8°C	10..30 [°C]	It represents the "threshold temperature" of the OAT to activate the LWT setpoint reset, in cooling mode, i.e. the LWT setpoint is overwritten only if the OAT reaches/overpasses the SRCooling.
Max Reset OAT HP (MROAT)	6.0°C	-10..10 [°C]	Max Reset possible for the ELWT Setpoint in Heating Mode.
Start Reset OAT HP (SROAT)	0.0°C	-10..10 [°C]	It represents the "threshold temperature" of the OAT to activate the LWT setpoint reset, in Heating mode, i.e. the LWT setpoint is overwritten only if the OAT reaches/overpasses the SRHeating.
Delta T			Is the actual evaporator delta temperature. Entering – Leaving water temperature
OAT			Actual outside ambient temperature

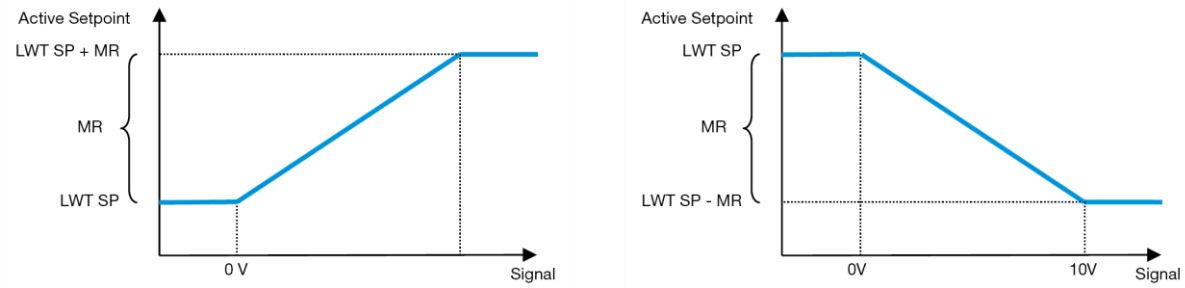
Provided the unit is set in Cooling mode (Heating mode), the more the ambient temperature drops below (goes beyond) the SROAT, the more the LWT active setpoint (AS) is increased(decreased), until the OAT reaches the Max Reset (MR) limit. When the OAT overpasses the MROAT, the active setpoint does not increase(decrease) anymore, and it remains stable to its maximum(minimum) value, i.e. AS = LWT + MR(-MR).



Graph 3 – Outside Ambient Temperature vs Active Setpoint - Cooling mode(left)/ Heating mode(right)

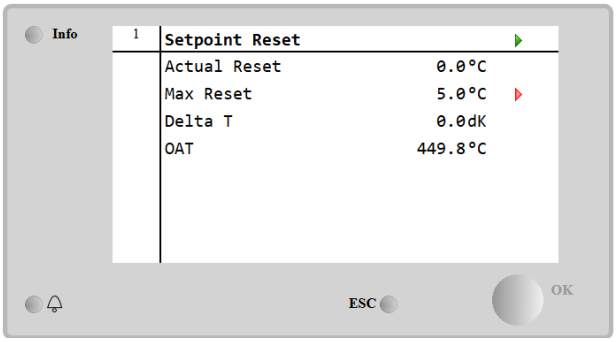
4.11.3.2. Setpoint Reset by 0-10V signal

When the **0-10V** is selected as **Setpoint Reset** option, the LWT active setpoint(AS) is calculated applying a correction based on an external 0-10V signal: 0 V corresponds to 0°C correction, i.e. AS = LWT setpoint, whereas 10 V corresponds to a correction of the Max Reset (MR) quantity, i.e. AS = LWT setpoint + MR(-MR) as shown in the following picture:



Graph 4 – External signal 0-10V vs Active Setpoint - Cooling mode(left)/ Heating mode(right)

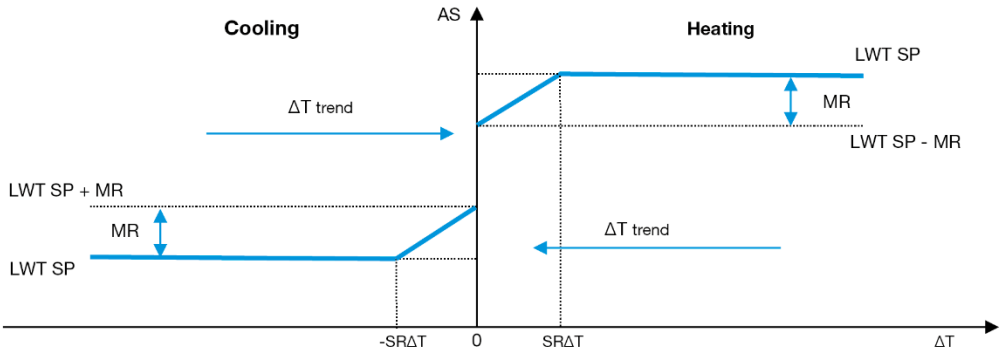
Several parameters can be configured, and they are accessible from the **Setpoint Reset** menu ("**Main Menu -> View/Set Unit -> Power Conservation -> Setpoint Reset**"), according to the following table:



Parameter	Default	Range	Description
Actual Reset			Actual Reset shows which is the correction that will applied to the base setpoint
Max Reset (MR)	5.0°C	0.0°C÷10.0° C	Max Reset setpoint. It represents the maximum temperature variation that the selection of the OAT option can cause on the LWT.
Delta T			Is the actual evaporator delta temperature. Entering – Leaving water temperature
OAT			Actual outside ambient temperature

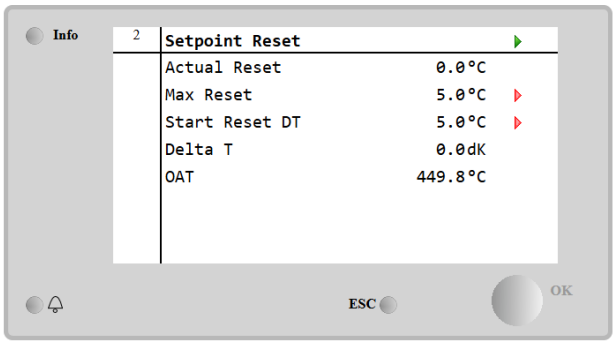
4.11.3.3. Setpoint Reset by DT

When the **DT** is selected as **Setpoint Reset** option, the LWT active setpoint(AS) is calculated applying a correction based on the temperature difference ΔT between the leaving water temperature(LWT) and the evaporator entering(returning) water temperature (EWT). When the |ΔT| becomes smaller than the Start Reset ΔT setpoint(SRΔT), the LWT active setpoint is proportionally increased (if Cooling mode set) or decreased (if Heating mode is set) of a maximum value equal to the Max Reset(MR) parameter.



Graph 5 – Evap ΔT vs Active Setpoint - Cooling mode(left)/ Heating mode(right)

Several parameters can be configured, and they are accessible from the **Setpoint Reset** menu("`Main Menu -> View/Set Unit -> Power Conservation -> Setpoint Reset`"), as shown below:



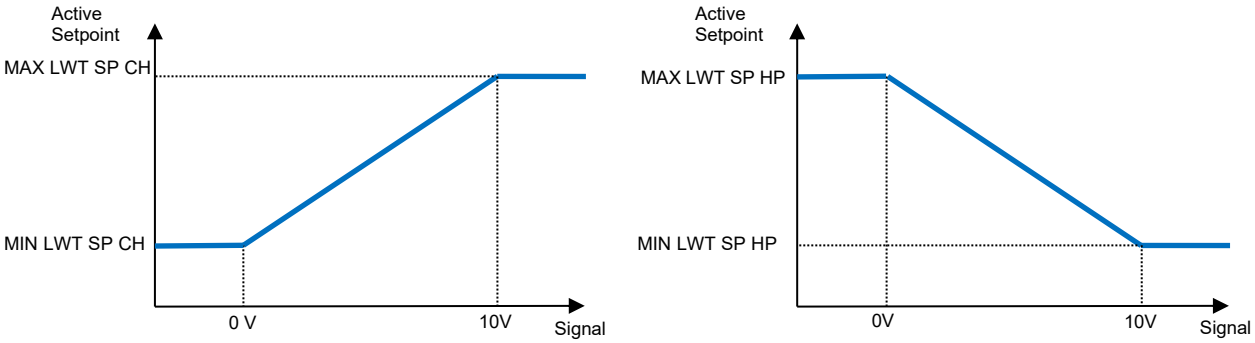
Parameter	Default	Range	Description
Actual Reset			Actual Reset shows which is the correction that will applied to the base setpoint
Max Reset (MR)	5.0°C	0.0°C÷10.0°C	Max Reset setpoint. It represents the maximum temperature variation that the selection of the OAT option can cause on the LWT.
Start Reset DT (SRΔT)	5.0°C	0.0°C÷10.0°C	It represents the "threshold temperature" of the DT to activate the LWT setpoint reset, i.e. the LWT setpoint is overwritten only if the DT reaches/overpasses the SRΔT.
Delta T			Is the actual evaporator delta temperature. Entering – Leaving water temperature
OAT			Actual outside ambient temperature

4.11.3.4. Remote Lwt setpoint

If **Remote** is selected for the **Setpoint Reset** option, the value of unit's target (**Lwt Setpoint**) is overwritten by a linear interpolation that spans the entire operating range of the unit envelope in the current operating mode.

In particular, we have the following condition:

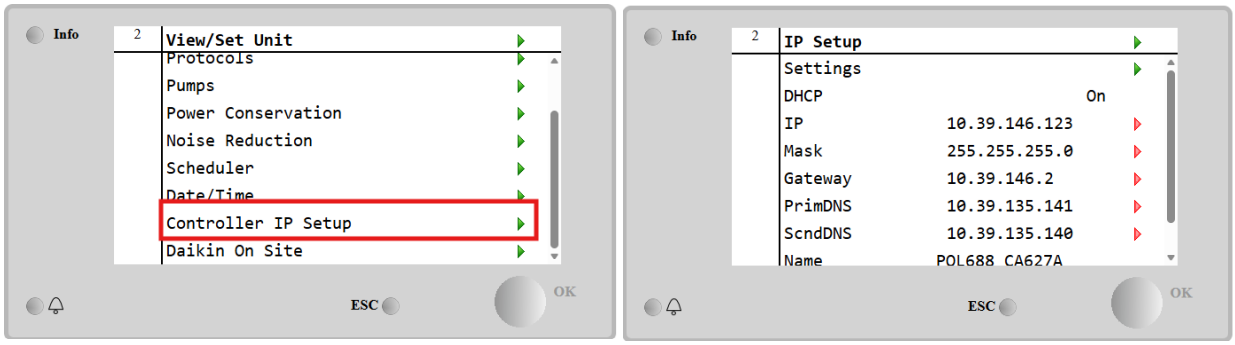
External Signal	Chiller	Heat Pump
0V	Without Glycol: Minimum Setpoit CH [4°C] With Glycol: Minimum Setpoint CH [-15°C]	Maximum Setpoint HP [75°C]
10V	Maximum Setpoint CH [18°C]	Minumum Setpoint in HP [18°C]



Graph 6 – 0-10V External Signal vs Lwt Target overwritten in Cooling Mode (Left) and Heating Mode (Right)

4.12. Controller IP Setup

The Controller IP Setup page is located at the path "**Main Menu → View/Set Unit → Controller IP Setup**", where is possible to choose between the static or dynamic IP and manually set IP and network Mask.



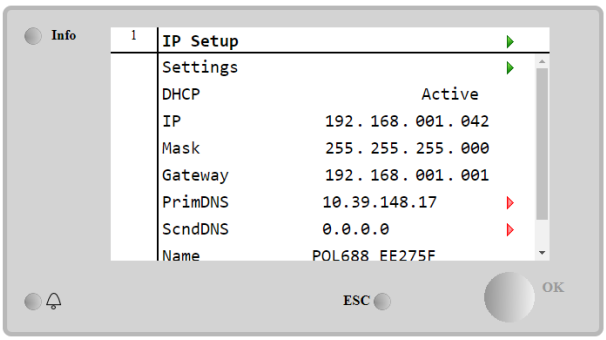
All of the information about current MT4 IP Network settings is reported in this page, as shown in the following table:

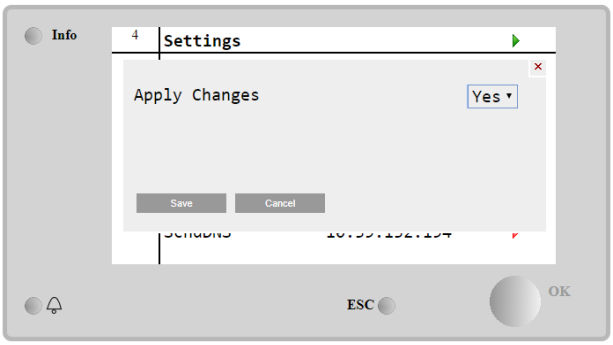
Parameter	Range	Description
DHCP	Off	The DHCP option is disabled.
	On	The DHCP option is enabled.
IP	xxx.xxx.xxx.xxx	The current IP address
Mask	xxx.xxx.xxx.xxx	The current Subnet Mask address.
Gateway	xxx.xxx.xxx.xxx	The current Gateway address.
PrimDNS	xxx.xxx.xxx.xxx	The current Primary DNS address.
ScndDNS	xxx.xxx.xxx.xxx	The current Secondary DNS address.
Name	POLxxx_xxxxxx	The Host Name of the MT4 controller.
MAC	xx-xx-xx-xx-xx-xx	The MAC address of the MT4 controller.

In order to modify the MT4 IP Network configuration, do the following operations:

- access the **Settings** menu
- set the DHCP option to Passive

- modify the IP, Mask, Gateway, PrimDNS and ScndDNS addresses, if needed, taking care of the current network settings
- set **Apply changes** parameter to **Yes** to save the configuration and restart the MT4 controller.





The default internet configuration is:

Parameter	Default Value
IP	192.168.1.42
Mask	255.255.255.0
Gateway	192.168.1.1
PrimDNS	0.0.0.0
ScndDNS	0.0.0.0

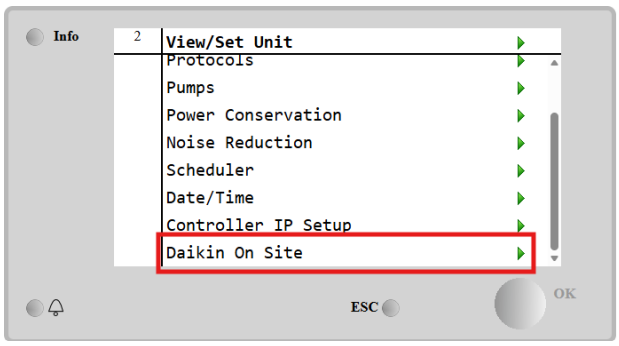
Note that if the DHCP is set to On and the MT4 internet configurations shows the following parameter values

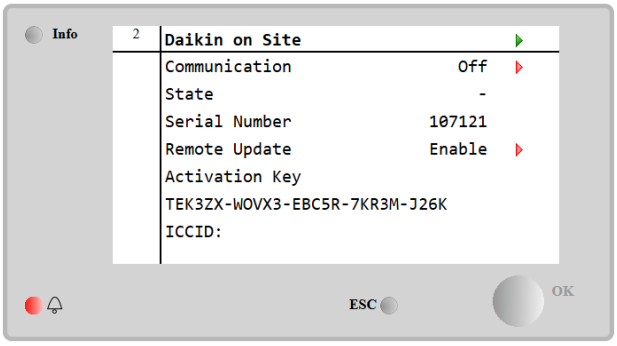
Parameter	Value
IP	169.254.252.246
Mask	255.255.0.0
Gateway	0.0.0.0
PrimDNS	0.0.0.0
ScndDNS	0.0.0.0

then an internet connection problem occurred (probably due to a physical problem, like the Ethernet cable breaking).

4.13. Daikin On Site

The Daikin on Site (DoS) page can be accessed navigating through **`Main Menu`** → **`View/Set Unit`** → **`Daikin On Site`**.





In order to use the DoS utility, the customer has to communicate the **Serial Number** to Daikin company and subscribe to the DoS service. Then, from this page, it is possible to:

- Start/Stop the DoS connectivity
- Check the connection status to DoS service
- Enable/Disable the remote update option

according to the parameters shown into the table below.

Parameter	Range	Description
Communication	Off	Stop the connection to DoS
	On	Start the connection to DoS
State	-	Connection to DoS is off
	IPErr	Connection to DoS cannot be established
	OK	Connection to DoS is established and working
Remote Update	Enable	Enable the Remote update option
	Disable	Disable the Remote update option

Among all the services provided by DoS, the **Remote Update** option allows us to remotely update the software currently running on the PLC controller, avoiding an in-situ intervention of maintenance personnel. To this purpose, just set the Remote Update parameter to **Enable**. Otherwise, keep the parameter set to **Disable**.

For a successful remote software update, local service support is required, and a strong internet connection must be guaranteed.
Please refer to specific documentation.

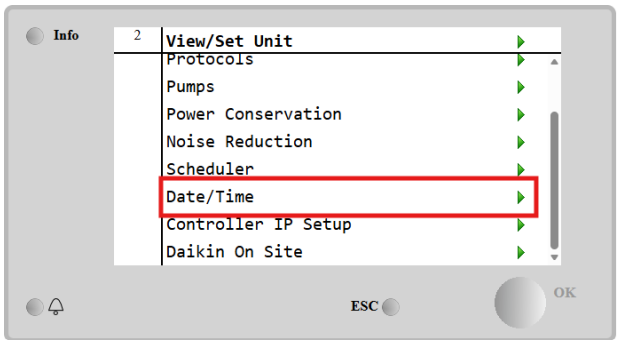
In the unlikely event of PLC replacement, the DoS connectivity can be switched from the old PLC to the new one just communicating the current **Activation Key** to Daikin company.

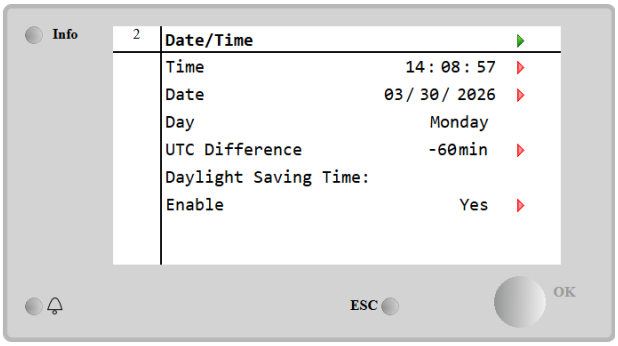
4.14. Date/Time

The unit controller is able to take stored the actual date and time, that are used for:

1. Scheduler
2. Cycling of standby chiller with Master Slave configuration
3. Alarms Log

Date and time can be modified going in "**Main Menu → View/Set Unit → Date/Time**".





Parameter	Range	Description
Time		Actual date. Press to modify. Format is hh:mm:ss
Date		Actual time. Press to modify. Format is mm/dd/yy
Day		Returns the day of the week.
UTC Difference		Coordinated universal time.
Daylight Saving Time:		
Enable	No, Yes	It is used to enable/disable the automatic switch of the Daylight Saving Time

Remember to check periodically the controller battery in order to maintain updated date and time even when there is no electrical power. Refer to controller maintenance section

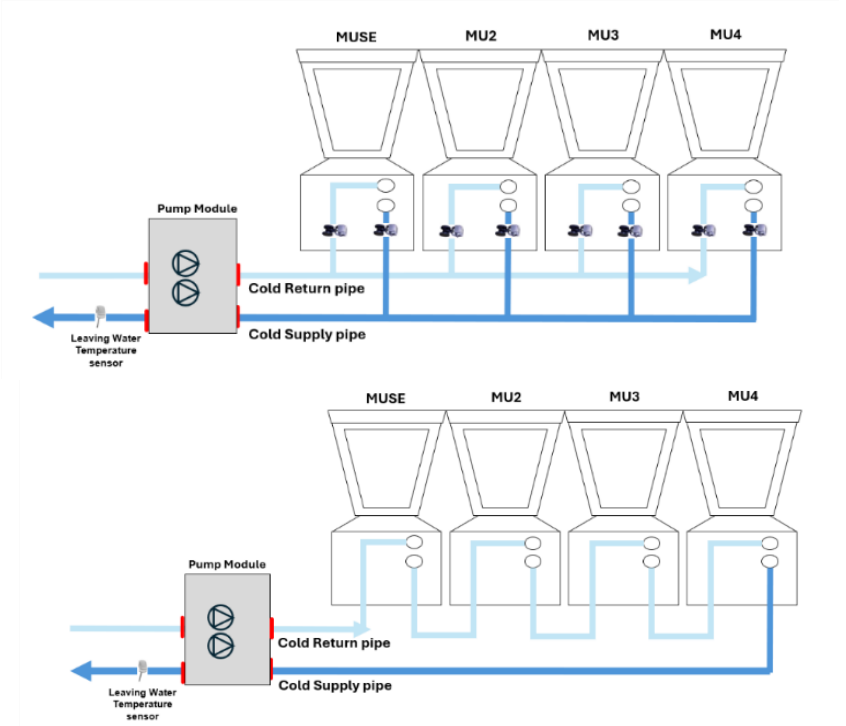
4.15. Multi Unit Management

The EWYQ-QZ series units can work together, forming modular arrays of up to 4 units in series or parallel, using the internal MUSE protocol available as standard.

In addition, it is possible to manage multiple arrays at the same time through the internal iCM protocol briefly described in the following paragraphs and for which we leave a more in-depth description in the respective reference product manual.

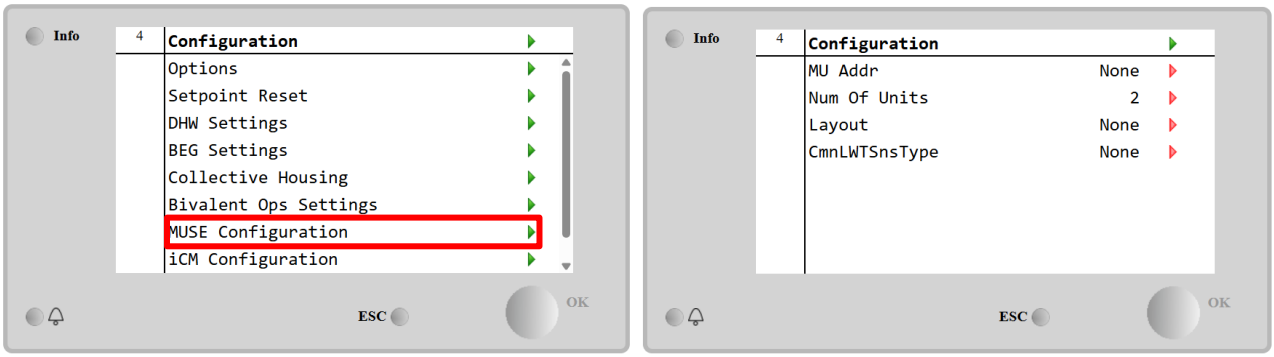
4.15.1. MUSE

The MUSE configuration allows the use of 1 to 4 modular units, whether in series or parallel layouts, as if they were a single machine.



MUSE Parallel Vs Series Configuration schemes

In a MUSE configuration the units will work together to provide the same leaving water setpoint and unit management operations such as staging, defrosting, etc. will be coordinated by the MUSE Master.

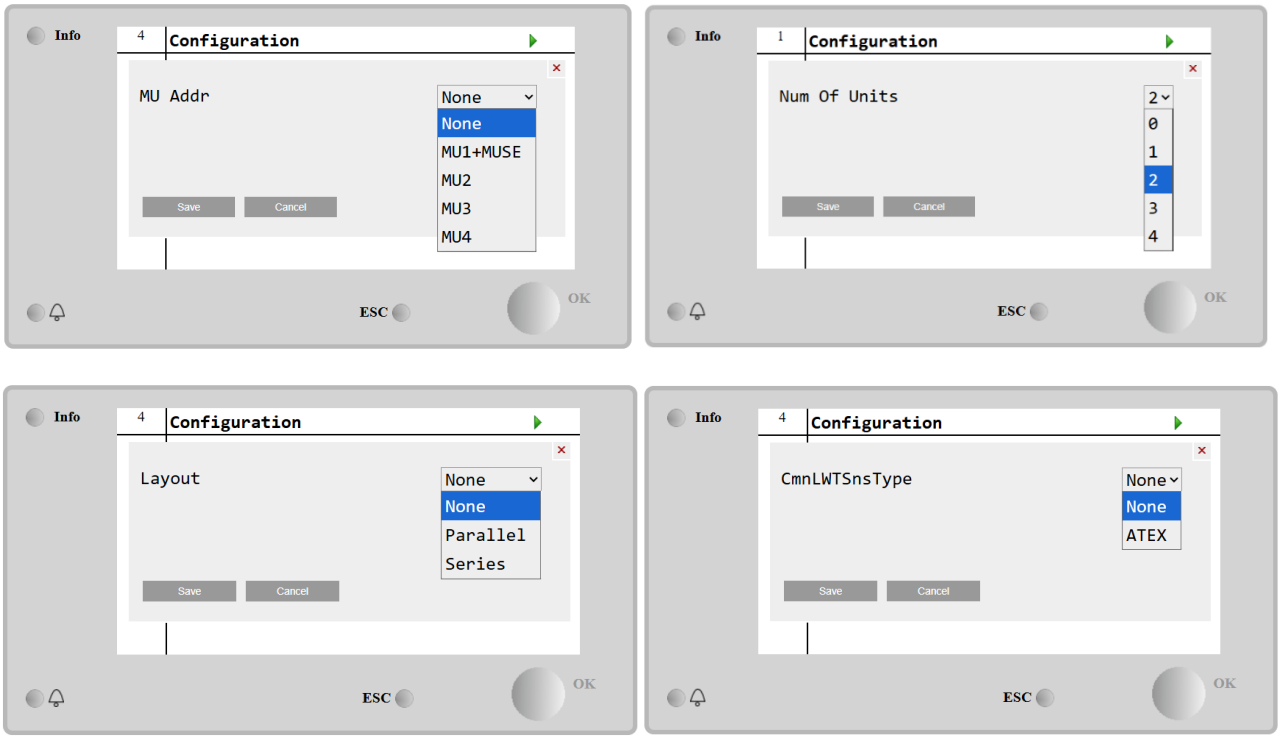


MUSE parameters are available in all units of the array and can be set through "**`Main Menu → Commission Unit → Configuration → MUSE Configuration`**".

MUSE system configuration parameters to be set are:

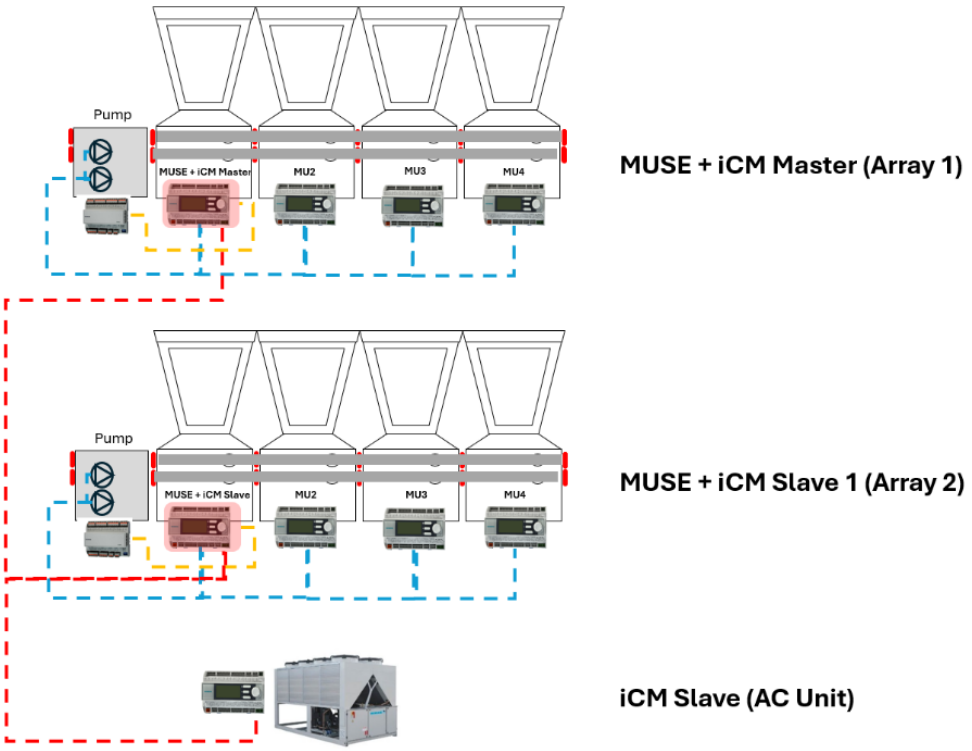
1. MUSE Address
2. Number Of Units
3. Layout
4. Common Leaving Water Sensor Type

As shown in the following images.



4.15.2. iCM

iCM protocol integration requires the selection of the address for each unit that we want to control. In each system we can have only one master and a maximum of 7 slaves and it's necessary to indicate the correct number of slaves.



MUSE + iCM Configuration scheme

To use iCM you need the option "184 iCM Standard" otherwise the master unit will be stopped with alarm "+iCM ConfigAlarm:MultiStateFault"

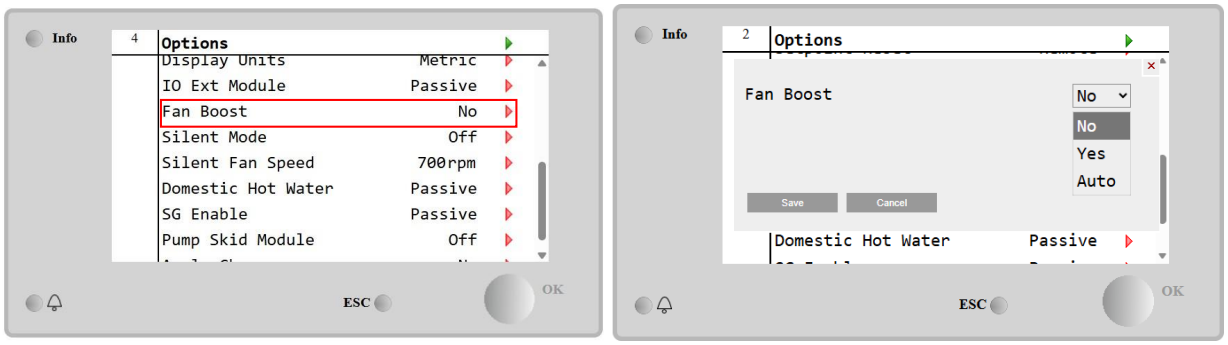
4.16. Fan Boost

Fans maximum speed is typically fixed at its nominal value. When the `Fan Boost` is enabled, the maximum speed of all fans is increased. The ways fan boost can interact with modulation range of fans are:

- `Fan Boost – Fixed`
  The upper limit of fans' modulation range is increased independently by the operating condition of the unit. This fan boost mode is available for both chiller and heat pump mode.

- `Fan Boost – Automatic`
  The fans' maximum speed is increased only in certain condition to reduce the condensing pressure in critical operating conditions. This is the reason why the automatic mode of fan boost option is available only in chiller mode.

The path in the HMI interface for Fan Boost is "**`Main Menu → Commission Unit → Options → Fan Boost`**"



Parameter	Range	Description
`Fan Boost`	`No`	Fan Not Boosted
	`Yes`	Fan Boosted - Fixed
	`Active`	Fan Boosted - Automatic mode

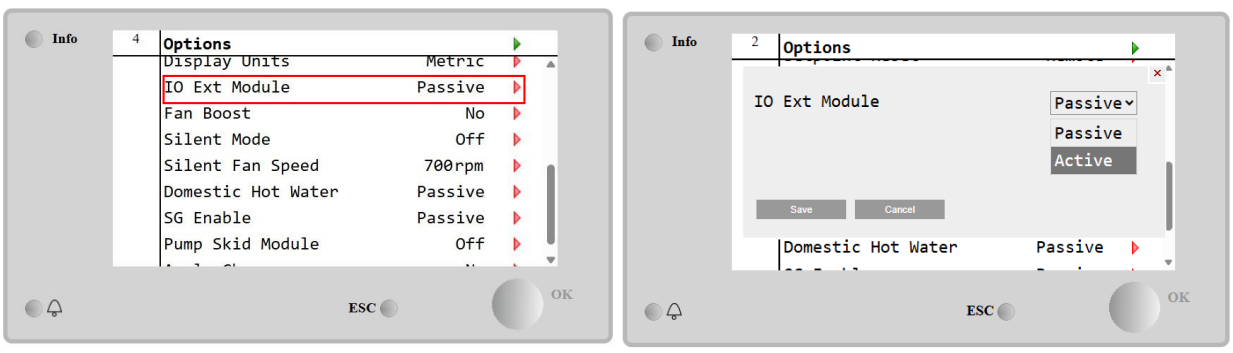
Fan Boost function can be useful to manage very critical working condition, but lifespan of fans can be reduced if used extensively. Activation is recommended only if strictly required for unit operation.

4.17. IO Ext Module

Options like Domestic Hot Water, Bivalent Operation, Collective Housing require an IO Extension Module to be integrated in the unit. To allow the UC to properly communicate with this other module and recognize a communication failure the parameter **`IO Ext Module`** needs to be set as shown above.

Parameter	Range	Description
`IO Ext Module`	`Passive`	Extension Module Disabled
	`Active`	Extension Module Enabled

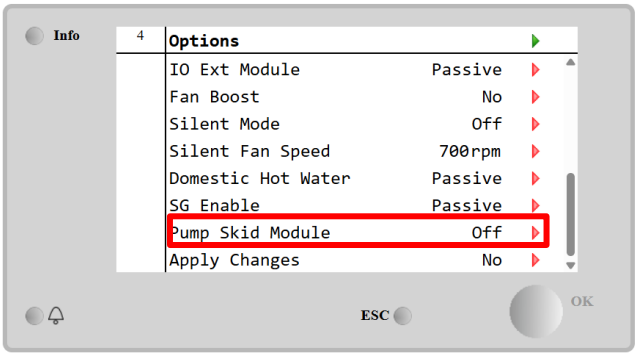
The path in the HMI interface for IO Ext Module is "**`Main Menu → Commission Unit → Options → IO Ext Module`**".



`I/O Extension Module` enabling is required for EKIODHW accessory

4.18. Pump Skid Module

The Pump Skid option allows the use of an external pump module as well as access to features such as variable speed pump control based on the farthest load pressure drop (VPF) and Absolute Pressure management.



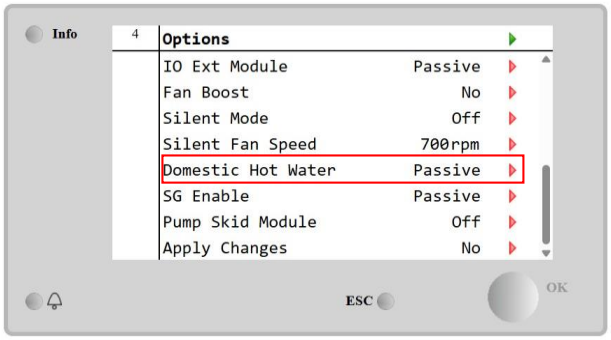
"Pump Skid" related functionalities can be enabled by following the path "**Main Menu → Commission Unit → Configuration → Options**" and set the **Pump Skid Module** parameter to "**Active**".

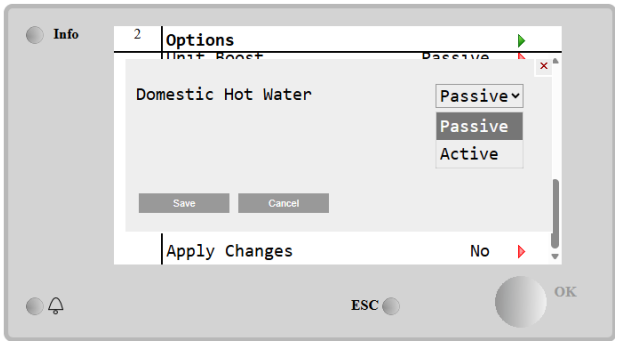
4.19. Domestic Hot Water

This function can be used to alternate normal unit operation with generation of domestic hot water. During "DHW" operation the unit is stopped, the water circuit is deviated by a 3WV and unit started on again to heat up a tank, containing the domestic hot water, until a the setpoint temperature is reached. At this point unit is switched back to normal operation.

This function expects a proper plant configuration and unit settings, please refer to specific documentation.

"Domestic Hot Water" function can be enabled by following the path "**Main Menu → Commission Unit → Configuration → Options**" and set the **DHW Enable** parameter to "**Active**".

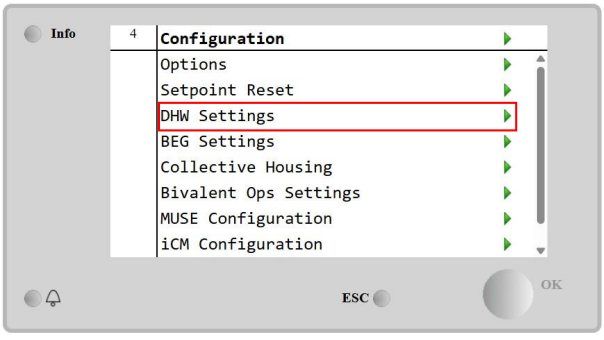


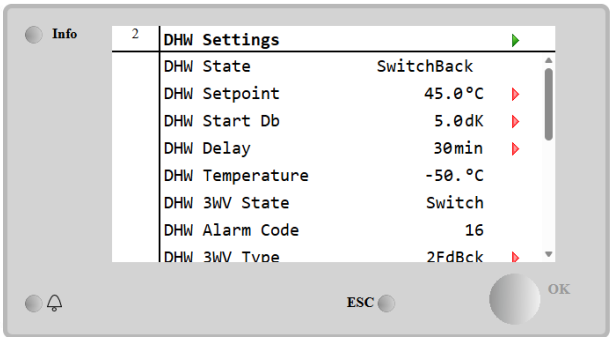


Notice that DHW is not compatible with Pump Control Mode VPF, DT and On-Off, Collective Housing and Bivalent Operation.

DHW is not compatible with Pump Control Mode VPF, DT and On-Off, Collective Housing and Bivalent Operation

Domestic Hot Water parameters can be configured in "**Main Menu → Commision Unit → Configuration → DHW Settings**"





Setpoint/Sub Menu	Default	Range	R/W	Description
DHW State	-	Disabled Start Switch To Regulation SwitchBack	R	DHW state of operation
DHW Setpoint	45 °C	20..75 °C	W	DHW setpoint request
DHW Start Db	5 °C	0..20 °C	W	DHW deadband for the request
DHW Delay	30 min	0..1440min	W	Delay for reactivation of the DHW after returning to the primary circuit
DHW Temperature		°C	R	DHW tank water temperature
DHW 3WV State		Start Switch End Error	R	DHW 3WV state of operation
DHW Alarm Code		0..3	R	DHW alarm code
DHW 3WV Type	2Fdbck	2Fdbck Temporized	W	DHW type of 3WV
DHW 3WV Switch time	300 s	0...900 s	W	DHW 3WV temporized time of switching
DHW Max Time	30 min	0..1440min	W	DHW max time of regulation in secondary circuit
DHW Standby Mode	Off	Off On	W	With standby mode On the 3WV is always connected in the secondary circuit.
DHW Remote En	Off	Off On	W	DHW remote enable
DHW Lwt Ctrl Target	Off	Off On	W	DHW lwt control target based on tank temperature
DHW Secondary FixSpd	Off	Off On	W	DHW secondary fixed speed for DHW water loop to guarantee proper flow in the DHW loop.
DHW Booster Heater	Off	Off On	R	DHW Booster Heater Activation

Domestic Hot Water Function
This function is only available with EKIODHW accessory's module

4.19.1. Domestic Hot Water Anti Legionella Cycle

Thie anti legionella cycle functionality let the unit periodically increase his setpoint up to 75°C in order to provide maximum temperature of the domestic hot water tank to prevent the formation of legionella bacteria.
If the anti-legionella cycle does not start on the appointed day, an alarm will be displayed on the interface. This alarm does not switch off the unit.

These functionalities can be activated via "**Main Menu → Commision Unit → Configuration → DHW Settings**"

Setpoint/Sub Menu	Default	Range	R/W	Description
DHW Anti Leg Period	7 days	1..31 days	W	Defines the number of days to elapse between one cycle and the next
DHW Anti Leg Time Start	00:00	00:00...23:59	W	Defines the start time of the cycle
DHW Anti Leg Set Time	Off	Off On	W	DHW deadband for the request
DHW Anti Leg Day Start	0 day	0..31 days	R	Defines the number of days that must elapse for the cycle start
DHW Anti Leg Tank Sp	75.0 °C	0..75 °C	W	Defines temperature target for tank water during anti legionella cycle
DHW Anti Leg Cycle Time	15 min	0..60 min	W	Defines maximum time during which DHW Tank Temperature is greater than or equal to Anti Leg Tank Sp

4.20. Customer Unit Configuration

Except for factory configurations, the client can custom the unit depending on his needs and options acquired. The allowed modifications regard Fan Boost, IO Ext Module, Pump Mode, External Alarm, Fan Silent Speed, Domestic Hot Water, Pump Skid and SG Enable.

All these customer configurations for the unit can be set via "**Main Menu → Commission Unit → Options**".

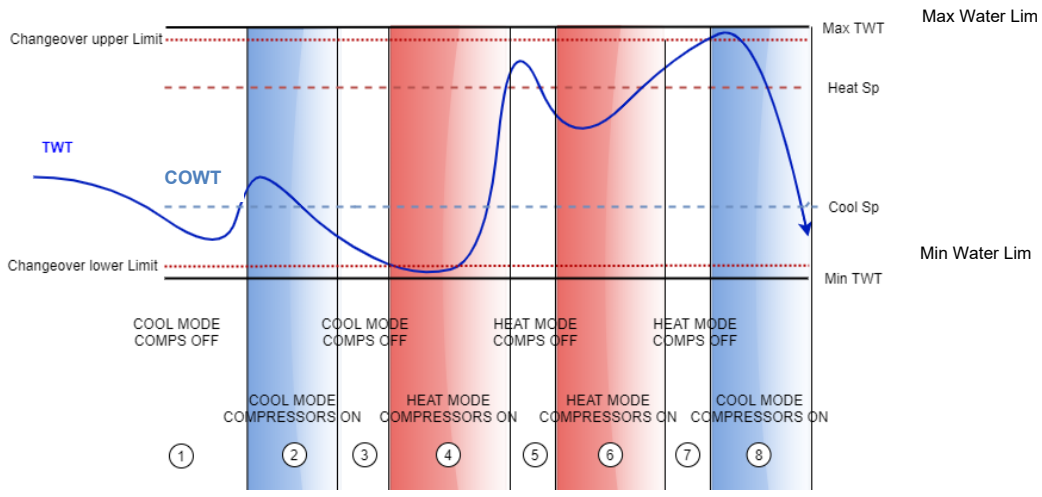
Parameter	Range	Description
Pump Mode	On-Off	Pump can only start and stop without modulation
	FixSpd	Pump Speed can be set at any value inside motor working range
	VPF	Pump speed modulates based on load pressure drop
	VarDT	Pump Speed modulates based on water temperature difference
Fan Boost	No	Fan Not Boosted
	Yes	Fan Boosted - Fixed
	Auto	Fan Boosted - Automatic mode
IO Ext Module	Passive	Accessory Extension Module Disabled
	Active	Accessory Extension Module Enabled
Ext Alarm	No	External Alarm Disabled
	Event	External Alarm like Event
	Rapid Stop	External Alarm like Rapid Stop
	Pumpdown	External Alarm like Pumpdown
Silent Fan Speed	500-900	Defines fan maximum speed during Silent Mode
Domestic Hot Water	Passive	DHW Disabled
	Active	DHW Enabled
SG Enable	Passive	Smart Grid Disabled
	Active	Smart Grid Enabled

4.21. Collective Housing

It is requested the introduction of a feature that allows the automatic change of the operating mode of the unit, between heat-pump and chiller, depending on the temperature value read by a probe, that can be called "Changeover Probe", placed in the plant. For the "ChangeOver Probe", it will be used the Master Slave probe for the Common LWT, so the same input in the IO Map.

The scope of the Changeover function is to maintain the water temperature inside a specific range, between Changeover Upper Lim and Changeover Lower Lim, desired for the plant, for example between 30°C max and 20°C minimum.
If this temperature goes above 30°C, the unit must change its operating mode in Cool and cool the water under that value; the same if the temperature goes below 20 °C the unit must turn into Heat Pump in order to heat the water in the loop.

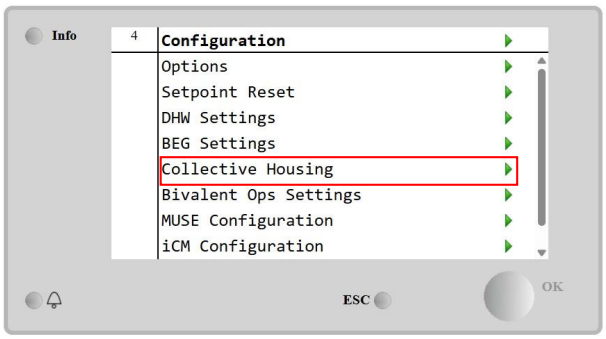
The thermoregulation logic follows the standard one on the ELWT probe, with also the StageUp, StageDn, StartUp and StopDn temperatures. But, for the Changeover function the software will look at the Changeover probe, to change the operating mode of the unit.
Called COWT = Changeover Water Temperature.



In order to mantain the normal logic of thermoregulation, in phases 1-2-3 the value of Start-Up permits the chiller to turn on in cool mode and cool the water till the Shut-dn temperature, where the unit shuts off the compressor and wait the load to turn on again.

Then, **if the** COWT < ChangeoverLowerLimit, the unit switches its operating mode into heat pump and heat the water up to *Shut-Dn temperature Heat* (Heat Sp + ShutDnDt), as in the phase 4. For thermoregulation, the unit switched to off and wait till the water goes below StartUp HeatValue to turn on again the compressor, as in phase 6.

The path in the HMI interface for Customer Configuration settings is **"HMI Path: Main Menu → Commission Unit → Configuration → Collective Housing"**



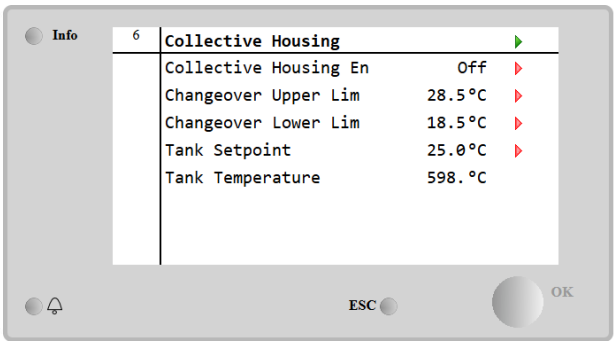


Table below reports all parameters available in Collective Housing menu when option is enabled.

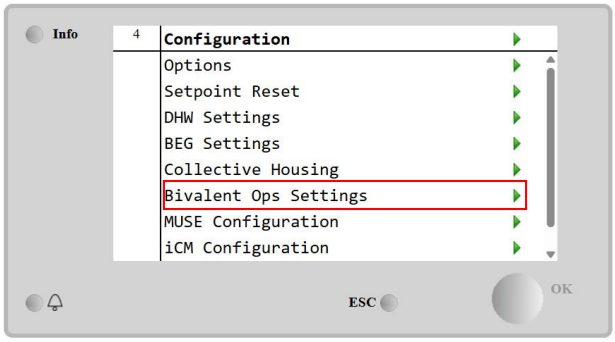
Setpoint/Sub Menu	Default	Range	Description
CollectiveHsng En	No	No-Yes	Enabling the changeover option
CngOver Upper Lim	28.5°C	[CngOver Lower Lim, Max HP Sp] See *Figure*	Value for the Changeover Upper Limit, when the Unit switches to Cool
CngOver Lower Lim	18.5°C	[MinLwt Sp, CngOver Upper Lim]	Value for the Changeover Lower Limit, when the Unit switches to Heat
Tank Setpoint	25.0°C		Setpoint that decided the starting condition of the unit when is switched ON, dependig on the COWT
Tank Temperature	-	-	Collective Housing water tank temperature

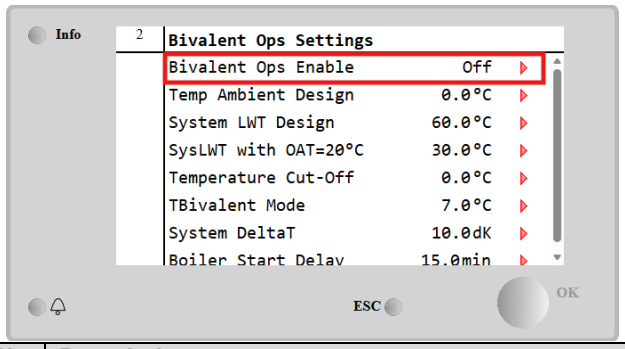
Collective Housing Function
This function needs EKIODHW accessory's module to be enabled

4.22. Bivalent Operations

The Bivalent Operation function allows the unit to manage the activation of a boiler with enabling/disabling as a function of the climatic curve of the system, set on the UC in an identical manner to the curve of the system present in the boiler, and of the outside ambient temperature.

"Bivalent Operation" function can be enabled by following the path **Main Menu → Commission Unit → Configuration → Bivalent Ops Settings** and set the **Bivalent Ops Enable** parameter to **On**.





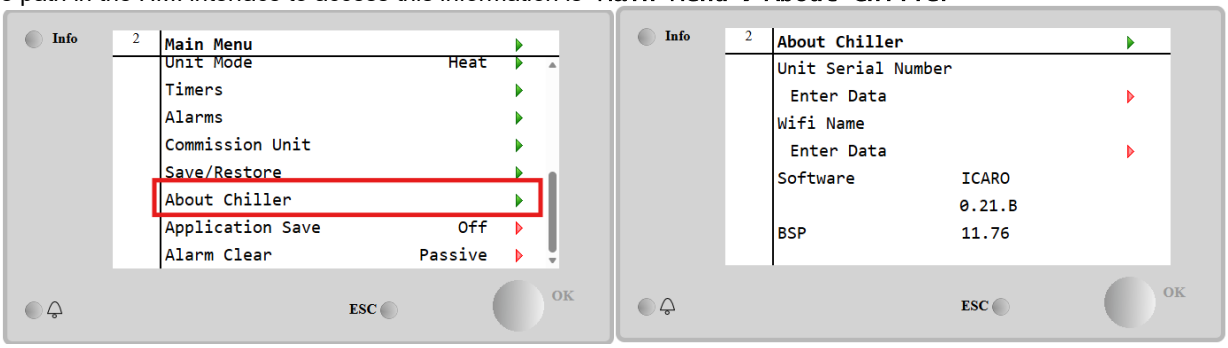
Setpoint/Sub Menu	Default	Range	R/W	Description
Bivalent Ops Enable	Off	Off/On	W	Allows bivalent operation mode to start.
Temp Ambient Design	0°C	-20…60°C	W	Defines design ambient temperature for the system.
System Lwt Design	60°C	20…75°C	W	Defines system leaving water temperature target for the system at design ambient temperature.
SysLWT with OAT=20°C	30°C	20…75°C	W	Defines system leaving water temperature target for the system at 20°C ambient temperature.
Temp cut-off	0°C	-7…7°C	W	Defines lower limit for bivalent operation under which only boiler is enabled.
TBivalent Mode	7°C	0…20°C	W	Defines higher limit for bivalent operation over which only heat-pump is enabled. Is it possible to have transition with boiler active even if OAT > Tambient.
System DeltaT	10°C	0…50°C	W	This parameter shall match the exact delta temperature drop due to system load.
Boiler Start Delay	15 min	0…60 min	W	Defines activation delay between heat-pump and boiler in bivalent operation OAT range.

Bivalent Operation plants
Due to the boiler capability to deliver water temperatures out of maximum unit envelope it's necessary to pay attention to water loop realization in order to guarantee entering temperatures inside the limit and use the heat pump safely and prevent any component damaging.

Bivalent Operation Function
This function is only available with EKIODHWM accessory's module for heating application

4.23. About Chiller

The application version and the BSP version represent the core of software installed on the controller.
The path in the HMI interface to access this information is "**Main Menu → About Chiller**"

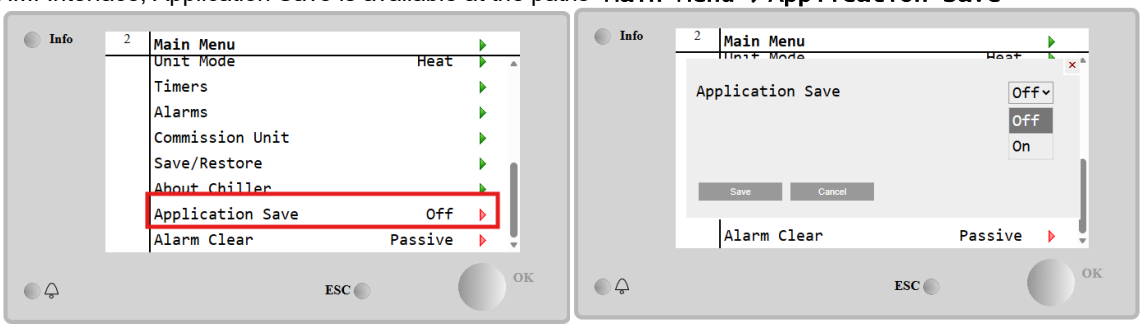


Parameter	Description
Software	Actual application version
BSP	Actual BSP version
Unit Serial Number	Unit Production serial number of the unit
Wifi Name	Actual name of the wifi generated via stick

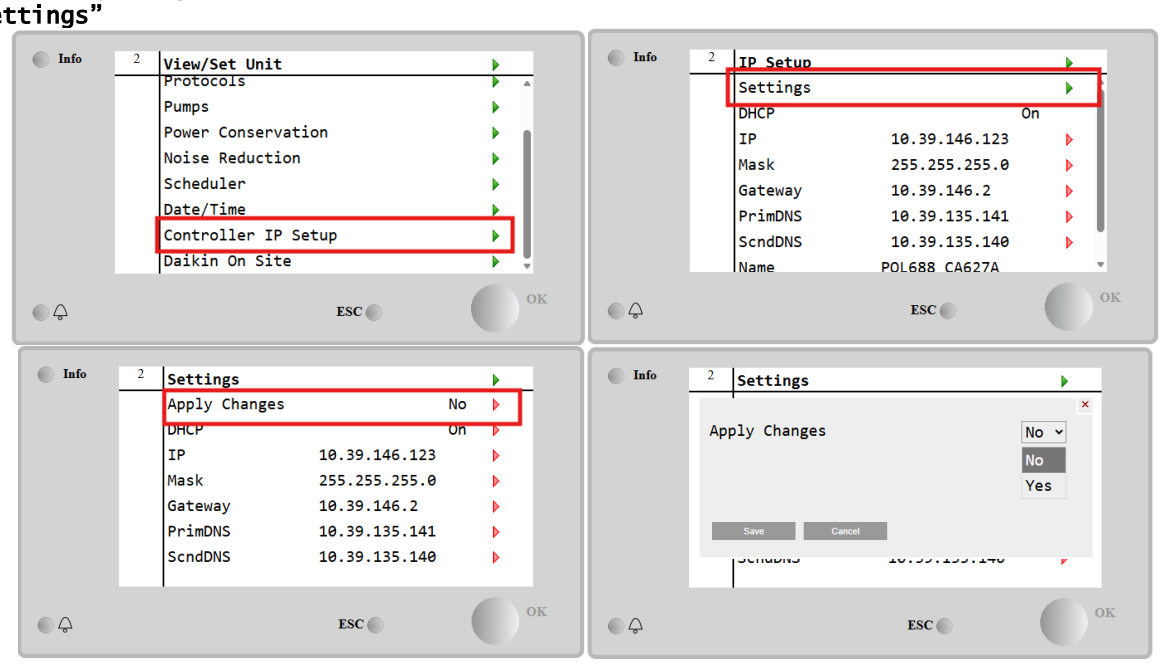
4.24. Generic Controller Operation

The main controller operations available are "Application Save" and "Apply Changes". The first one is used to save the current configuration of parameters in the UC in order to avoid losing it if a power fail happens while the second one is used for some parameters which require an UC reboot to become effective.

In the HMI Interface, Application Save is available at the paths "**Main Menu → Application Save**"

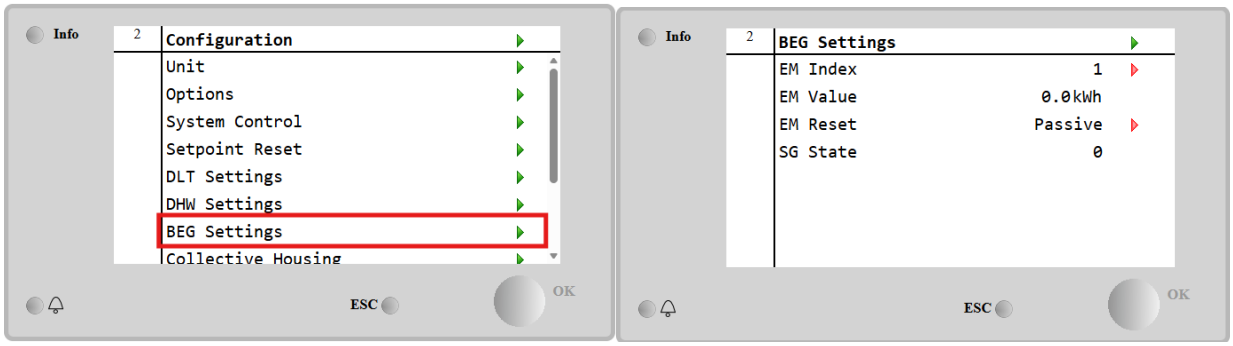


While the Apply Changes setpoint can be set at the path "**Main Menu → View/Set Unit → Controller IP setup → Settings**"



4.25. BEG – SG Ready & Energy Monitoring

In BEG page as described above, it's possible to navigate and reset the internal database storing monitored energies of last 24 month.
In case of Smart Grid operations (SG Box connected and smart grid functionalities enabled) actual state read by the gateway is available too, otherwise SG State value is fixed at zero.
The BEG page can be accessed navigating through **"Main Menu → Commission Unit → Configuration → BEG Settings"**



Parameter	Range	Description
EM Index	0..72	The index selected defines the actual value displayed I "[28.01] (EM Value)" parameter. Cool Energy, Heat Energy e Power Input values are continuously added to actual month value. Last 24 energies value are available. In particular: 1-8 = CoolEnergy [month 1-8] 9-16 = ElectEnergy [month 1-8] 17-24 = CoolEnergy [month 9-16] 25-32 = ElectEnergy [month 9-16] 33-40 = CoolEnergy [month 17-24] 41-48 = ElectEnergy [month 17-24] 49-64 =HeatEnergy [month 1-16] 65-72 = HeatEnergy [month 17-24]
EM Value	0.0…9999	The value displayed match with the description of value associated to parameter "[28.00] (EM Index)".
EM Reset	Off = Passive On = Active	Command reset for energy monitoring database. Resets all stored values to zero and sets actual date as reference for "month 1" values. After a reset month 1's CoolEnergy, HeatEnergy and ElectEnergy will start to be updated depending on actual unite operations.
SG State	0…4	The value represents the actual state sent by SG Gateway: 0 = SG Disabled/SG Box Communication Error 1 = (Bypass scheduler to force off) 2 = (Normal Operation) 3 = (Force Setpoint2) 4 = (Bypass scheduler to enable) & (Force setpoint2)

First start
For correct initialization of the Energy Monitoring function, a Reset command shall be done immediately before the first start-up of the unit; otherwise, database will be populated with values that do not respect the expected order.

Date reference
A reset command set the reference date for database. Changing data backward will cause and invalid state and database won't be updated until reference date it reached again. Changing data forward will cause a non-reversible shift of reference date and every database's cell from old reference date to actual one will be filled with a 0-value.

For M/S Multi-Units case configuration notes can be found in Smart Grid Ready Box Installation & Operating Manual D–EIOCP00301-23

4.26. Unit Locked

Daikin Applied products R290 based units include a new software protection, developed to prevent unskilled users to perform unauthorized actions.
his protection consists in locking the unit compressor in case “R290 relevant errors” are detected from the unit controller.

These “R290 relevant errors” are triggered in the case of:

- First start of unit (commissioning)
- Service intervention required after a leak detection alarm

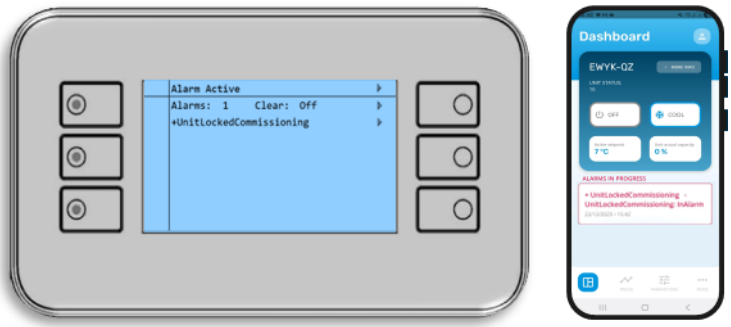
To unlock the unit are required:

- E-Care account
- Wi-Fi stick connected and correctly configured (provided with the unit)

For more information on Wi-Fi Status check the Wi-Fi Status.

4.26.1. In case of commissioning

This error screen indicates that the compressor cannot be unlocked due to a pending commissioning process:

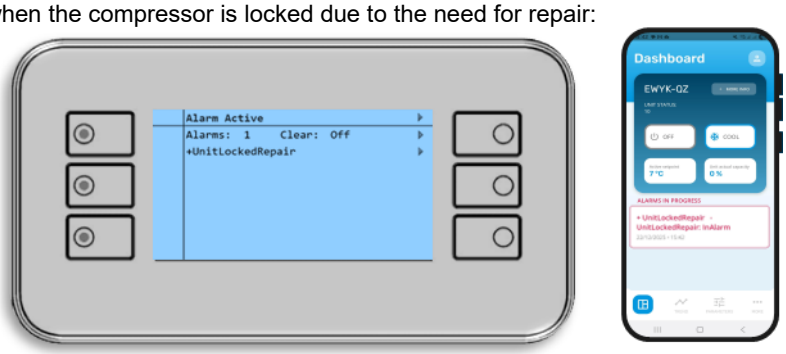


POL 871 and Daikin Map with commissioning alarm

Without unlocking, it will not be possible to start the compressors under any circumstances. The only way to proceed is by using the E-Care App and following the on-screen instructions. Once the E-Care procedure is successfully completed, you must manually clear the alarms.

4.26.2. In case of repair

This error screen appears when the compressor is locked due to the need for repair:



POL 871 and Daikin Map Repair alarm

Without unlocking the unit, it will not be possible to start the compressors under any circumstances. The only way to proceed is by using the E-Care App and following the on-screen instructions.

Once the E-Care procedure is successfully completed, you must manually clear the alarms. If the repair operation was not carried out correctly, the unit will remain locked. In this case, verify whether the repair was properly performed and then retry the unlocking procedure.

4.26.3. In case of controller replacement

Without unlocking, it will not be possible to start the compressors under any circumstances. The only way to proceed is by using the E-Care App and following the on-screen instructions. When both alarms are active, an authorized repair E-Care profile is required. Once the E-Care procedure is successfully completed, you must manually clear the alarms.

4.26.4. In case of old BSP alarm

Unlock is not possible due to an outdated BSP version of the controller. To clear this alarm, update the PLC firmware to version 11.73 or later.

4.26.5. E-Care – starting of the procedure (user authorization)

Before switching the unit follow the unlocking procedure on the e-Care App.
Only authorized users are allowed to proceed with the unlock via e-Care.

In particular:

- Stand By Me user profile (at single user level, not at company level) should have as a minimum:
- Applied as application
- Installation and commissioning OR maintenance as activity
- R290 as competence (L1 training completed online via Stand By Me professional portal)

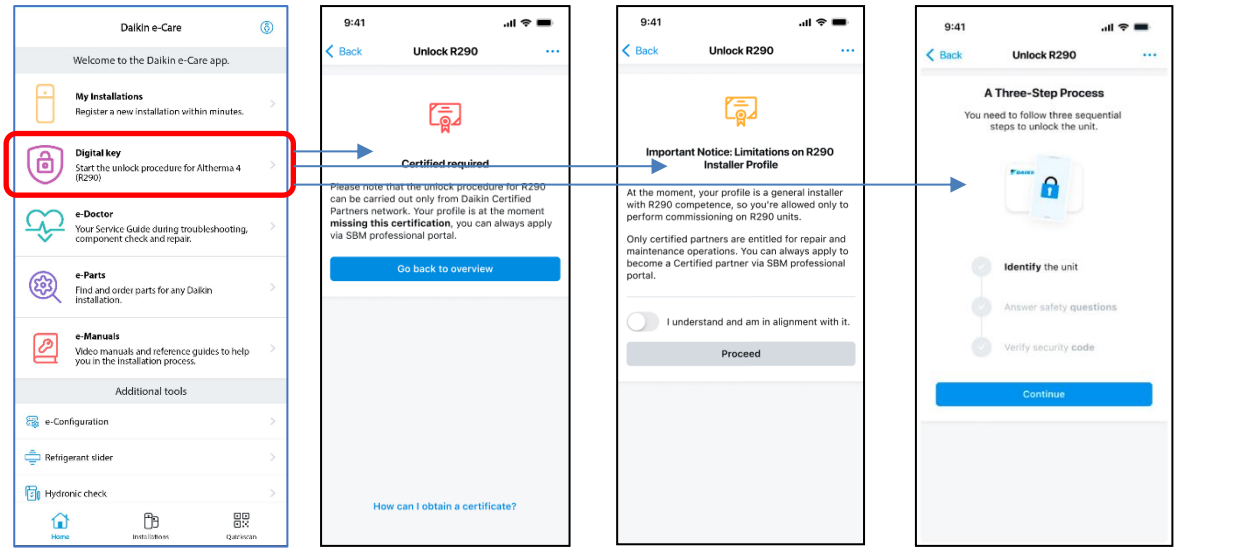
The user should have followed the full certified partner training for Modular or Small inverter chiller R290 license (depending on the product in scope) *

Stand By Me company profile should be approved as a Certified Partner Programme 3 – Daikin R290 Air to Water Modular Heat Pump or Program 4 - Daikin R290 Small Inverter Chiller & Heat Pump license (depending on the product in scope) *

**Always required for repair operations but might be optional for commissioning depending on country settings (in this case the user will be allowed to proceed but with a warning, informing on restricted actions – see Warning screen below)*

In case one of these checks is missing, the user won't be authorized to start the procedure and error screens will show (see Error screen below).

If an error screen is showing when it's not supposed to, please reach out Daikin technical support to verify that your profile is correctly set in Stand By Me.



e-Care app homepage *Error screen* *Warning screen* *Start page without error or warnings*

5. ALARMS AND TROUBLE SHOOTING

The UC protects the unit and the components from damaging in abnormal conditions. Alarms can be divided in pump-down and rapid stop alarms. Pump-down alarms are activated when the system or sub-system can perform a normal shutdown in spite of the abnormal running conditions. Rapid stop alarms are activated when the abnormal running conditions require an immediate stop of the whole system or sub-system to prevent potential damages.

The UC displays the active alarms in a dedicated page and keep an history of the last 50 entries divided between alarms and acknowledges occurred. Time and date for each alarm event and of each alarm acknowledge are stored.

Please notice that:

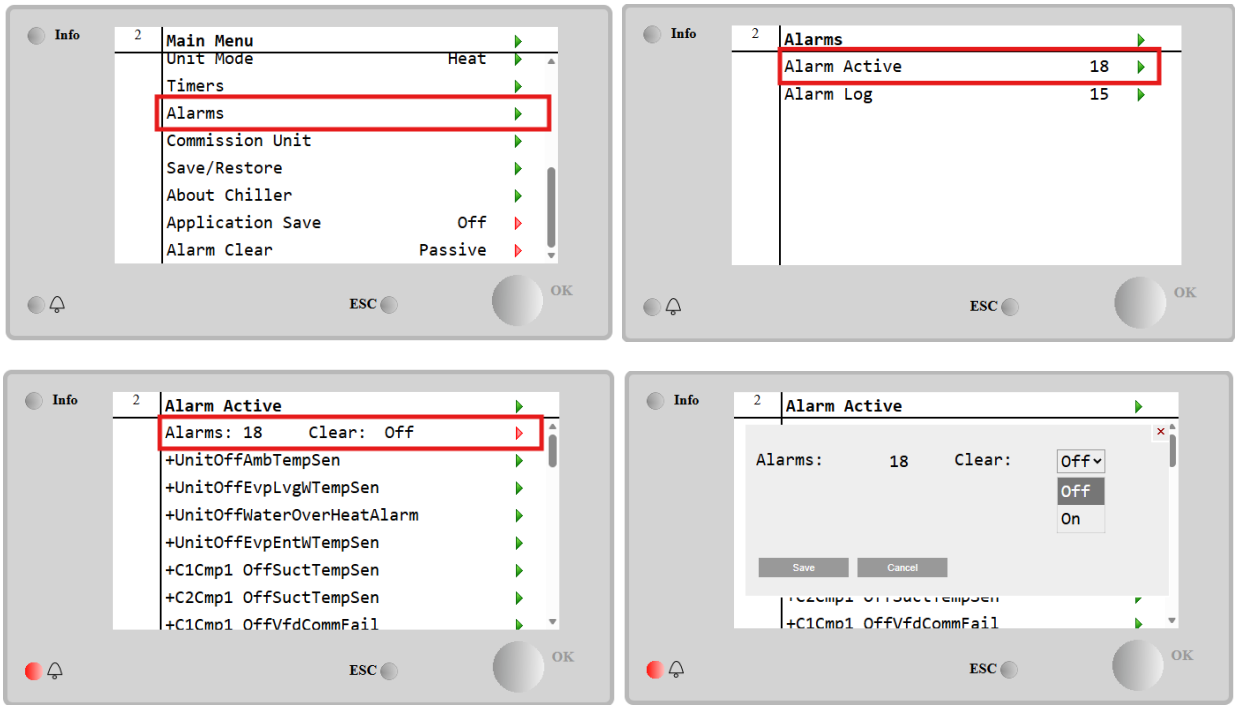
- If alarm persist refer to table in chapter “Alarm List: Overview” for possible solutions.
- If alarm continue to occur after manual resets contact your local dealer.

If an alarm code is displayed, be sure to remove the cause before restarting operation. Repeatedly resetting the error and restarting operation without removing the cause may result in a serious malfunction.

In the following sections it will also be indicated how each alarm can be cleared between local HMI, Network (by any of the high-level interfaces Modbus or Bacnet) or if the specific alarm will clear automatically.

5.1. Alarms List: Overview

The HMI displays the active alarms in the dedicated page via **“Main Menu → Alarm”.**
Once entered this page the number of actual active alarms is displayed. In this page will be possible to scroll the complete list of active alarms and apply the “Alarm Clear” too.



Parameter	Description	R/W
Alarm List	Alarm Mapping HMI	R
Alarm Clear	Off = Maintain alarms On = Execute alarms reset	W

5.2. Unit Alerts

All events reported in this section does not produce a unit stop, but only a visual information and an item in the alarm log

5.2.1. UnitExternalEvent - External Event

This alarm indicates that a device, whose operation is linked with this machine, is reporting a problem on the dedicated input.

Symptom	Cause	Solution

Unit status is Run.
Bell icon is moving on controller's display.
String in the alarm list:
`External Event`
String in the alarm log:
`±ExternalEvent`
	There is an external event that has caused the opening, for at least 5 seconds, of the digital input on the controller board.	Check for reasons of external event and if it can be a potential problem for a correct chiller operation.
		Check customer external signal source

Reset		
Local HMI Network Auto	☐ ☐ ☑	

5.2.2. BadDemandLimitInput - Bad Demand Limit Input

This alarm is generated when the Demand Limit option has been enabled and the input to the controller is out of the admitted range.

Symptom	Cause	Solution

Unit status is Run.
Bell icon is moving on controller's display.
Demand Limit function cannot be used.
String in the alarm list:
`BadDemandLimitInput`
String in the alarm log:
`±BadDemandLimitInput`
	Demand limit input out of range. For this warning out of range is considered to be a signal less than -0.5V or more than 10.5V.	Check for values of input signal to the unit controller. It has to be in the allowed mA range.
		Check for electrical shielding of wirings.
		Check for right value of the unit's controller output in case input signal is into allowed range.

Reset		
Local HMI Network Auto	☐ ☐ ☑	Automatically clears when the signal returns in the allowed range.

5.2.3. BadSetPtOverrideInput - Bad Leaving Water Temperature Reset Input

This alarm is generated when the Setpoint Reset option has been enabled and the input to the controller is out of the admitted range.

Symptom	Cause	Solution
Unit status is Run. Bell icon is moving on controller's display. LWT Reset function cannot be used. String in the alarm list: `± UnitExternalEvent` String in the alarm log: `± UnitExternalEvent`	LWT reset input signal is out of range. For this warning out of range is considered to be a signal less than 3mA or more than 21mA.	Check for values of input signal to the unit controller. It has to be in the allowed mA range. Check for electrical shielding of wirings. Check for right value of the unit's controller output in case input signal is into allowed range.
Reset		
Local HMI Network Auto	☐ ☐ ☑	

5.2.4. EvapPump1Fault - Evaporator Pump #1 Failure

This alarm is generated if the pump is started but the flow switch is not able to close within the recirculate time. This can be a temporary condition or may be due to a broken flowswitch, the activation of circuit breakers, fuses or to a pump breakdown.

Symptom	Cause	Solution
Unit could be ON. Bell icon is moving on controller's display. Backup pump is used or stop of all circuits in case of pump #2 failure. String in the alarm list: `EvapPump1Fault` String in the alarm log: ± `EvapPump1Fault`	Pump #1 may not be operating.	Check for problem in electrical wiring of the pump #1.
		Check that electrical breaker of pump #1 is tripped.
		If fuses are used to protect the pump, check the integrity of fuses.
		Check for problem in wiring connection between pump starter and unit controller.
		Check the water pump filter and the water circuit for obstructions.
	Flow Switch doesn't operate properly	Check flow switch connection and calibration.
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.2.5. Anti Leg Cycle Fail - DHW Anti Legionella Cycle Fail

This alarm indicates that DHW Anti-Legionella cycle was unsuccessful

Symptom	Cause	Solution
Unit status is Run. Bell icon is moving on controller's display. String in the alarm list: Anti Leg Cycle Fail String in the alarm log: ±Anti Leg Cycle Fail	Anti Legionella Cycle Fail	Contact your local dealer
Reset		
Local HMI Network Auto	☐ ☐ ☑	

5.3. Unit Pumpdown Alarms

All alarms reported in this section produce a unit stop performed following normal pumpdown procedure.

5.3.1. UnitOff EvpEntWTempSen - Evaporator Entering Water Temperature (EWT) sensor fault

This alarm is generated any time the input resistance is out of an acceptable range.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped with a normal shutdown procedure. Bell icon is moving on controller's display. String in the alarm list: `UnitOff EvpEntWTempSen` String in the alarm log: ± `UnitOff EvpEntWTempSen`	Sensor is broken.	Check for sensor integrity according table and allowed kOhm (kΩ) range.
		Check correct sensors operation
	Sensor is shorted.	Check if sensor is shorted with a resistance measurement.
	Sensor is not properly connected (open).	Check for absence of water or humidity on electrical contacts.
		Check for correct plug-in of the electrical connectors.
		Check for correct sensors wiring also according electrical scheme.
Reset		
Local HMI Network Auto	☑ ☑ ☑	

5.3.2. UnitOffEvpLvgWTempSen - Evaporator Leaving Water Temperature (LWT) sensor fault

This alarm is generated any time that the input resistance is out of an acceptable range.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped with a normal shutdown procedure. Bell icon is moving on controller's display. String in the alarm list: `UnitOffLvgEntWTempSen` String in the alarm log: ± `UnitOffLvgEntWTempSen`	Sensor is broken.	Check for sensor integrity according table and allowed kOhm (kΩ) range.
		Check correct sensors operation
	Sensor is shorted.	Check if sensor is shorted with a resistance measurement.
	Sensor is not properly connected (open).	Check for absence of water or humidity on electrical contacts.
		Check for correct plug-in of the electrical connectors.
		Check for correct sensors wiring also according electrical scheme.
Reset		
Local HMI Network Auto	☑ ☑ ☑	

5.3.3. UnitOffAmbTempSen - Outside Air Temperature sensor fault

This alarm is generated any time the input resistance is out of an acceptable range.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped with a normal shutdown precedure. Bell icon is moving on controller's display. String in the alarm list: `UnitOffAmbTempSen` String in the alarm log: ± `UnitOffAmbTempSen`	Sensor is broken.	Check for sensor integrity.
		Check correct sensors operation according table and allowed kOhm (kΩ) range.
	Sensor is shorted.	Check if sensor is shorted with a resistance measurement.
	Sensor is not properly connected (open).	Check for absence of water or humidity on electrical contacts.
		Check for correct plug-in of the electrical connectors.
		Check for correct sensors wiring also according electrical scheme.
Reset		
Local HMI Network Auto	☑ ☑ ☑	

5.3.4. UnitOff TimeNotValid

This alarm indicates that UC's date and time setting are not properly configured.

Symptom	Cause	Solution
Unit status is Run. Bell icon is moving on controller's display. String in the alarm list: `External Event` String in the alarm log: ±`UnitOff TimeNotValid`	UC's date and time setting are not properly configured.	Check date and time configuration Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.3.5. PumpInvMbCommFail– Inverter Pump communication fail

This alarm is generated in case of communication problems with inverter pump.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: PumpInvMbCommFail String in the alarm log: ±PumpInvMbCommFail	Bad Inverter pump communication	Communication Check alarm/warning LEDs on inverter pump
		Check pump inverter wiring connection
		Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.3.6. UnitOffTankWatTempSen – Collective Housing Water Temperature (LWT) sensor fault (Heat Pump Only)

This alarm is generated any time that the input resistance is out of an acceptable range. This sensor is present only when the Collective Housing option is enabled, and when the plant hasn't an iCM or Master/Slave control.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped with a normal shutdown procedure. Bell icon is moving on controller's display. String in the alarm list: UnitOffTankWatTempSen String in the alarm log: ± UnitOffTankWatTempSen	Sensor is broken.	Check for sensor integrity according table and allowed kOhm (kΩ) range.
		Check correct sensors operation
	Sensor is shorted.	Check if sensor is shorted with a resistance measurement.
	Sensor is not properly connected (open).	Check for absence of water or humidity on electrical contacts.
		Check for correct plug-in of the electrical connectors.
		Check for correct sensors wiring also according electrical scheme.
Reset		
Local HMI Network Auto	☑ ☑ ☑	

5.3.7. UnitOffCoolFanFault – Cooling Fan Fault Alarm

This alarm is generated in case of cooling fan fault.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffCoolFanFault String in the alarm log: ± UnitOffCoolFanFault	Cooling fan is not working properly or wiring is incorrect	Check connection in the wiring diagram
		Check if cooling fan is damaged
		Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4. Unit Rapid Stop Alarms

All alarms reported in this section produce an instantaneous stop of the unit.

5.4.1. UnitOffEvapWaterFlow - Evaporator Water Flow Loss alarm

This alarm is generated in case of flow loss to the chiller to protect the machine against freezing.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: `UnitOff EvapWaterFlow` String in the alarm log: ± `UnitOff EvapWaterFlow`	No water flow sensed for 3 minutes continuously or water flow too low.	Check the water pump filler and the water circuit for obstructions.
		Check the flow switch calibration and adapt to minimum water flow.
		Check if pump impeller can rotate freely and has no damages.
		Check pumps protection devices (circuit breakers, fuses, inverters, etc.)
		Check if water filter is clogged.
		Check flow switch connections.
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.2. UnitOffEvapWaterTmpLo - Evaporator Water Temperature Low alarm

This alarm is generated to indicate that the water temperature (entering or leaving) has dropped below a safety limit. Control tries to protect the heat exchanger by starting the pump and letting the water circulate.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: `UnitOffEvapWaterTmpLow` String in the alarm log: ± `UnitOffEvapWaterTmpLow`	Water flow too low.	Increase the water flow.
	Inlet temperature to the evaporator is too low.	Increase the inlet water temperature.
	Flow switch is not working or no water flow.	Check the flow switch and the water pump.
	Sensor's readings (entering or leaving) are not properly calibrated.	Check the water temperatures with a proper instrument and adjust the offsets
	Wrong freeze limit setpoint.	The freeze limit has not been changed as a function of glycol percentage.
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.3. UnitOffExternalAlarm - External alarm

This alarm is generated to indicate that an external device whose operation is linked with this unit operation. This external device could be a pump or an inverter.

Symptom	Cause	Solution
Unit status is Off. All circuits are switched off with the normal shutdown procedure. Bell icon is moving on controller's display. String in the alarm list: `UnitOff ExternalAlarm` String in the alarm log: ± `UnitOff ExternalAlarm`	There is an external event that has caused the opening, for at least 5 seconds, of the port on the controller board.	Check causes of the external event or alarm.
		Check electrical wiring from unit controller to the external equipment in case of any external events or alarms have been occurred.
Reset		
Local HMI Network Auto	☐ ☐ ☑	

5.4.4. OptionCtrlrCommFail – Optional board communication fail

This alarm is generated in case of communication problems with one of the circuits' standard POL985, POL965 optional or POL065 accessory connected modules

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: OptionCtrlrCommFail String in the alarm log: ±OptionCtrlrCommFail	Module has no power supply	Check the power supply from the connector on the side of the module.
		Check if LEDs are both green.
		Check if the connector on the side is tightly inserted in the module
	Module address is not properly set	Check if module's address is correct referring to the wiring diagram.
	Module is broken	Check if LED are on and both green. If BSP LED is solid red replace the module
		Check if power supply is ok but LEDs are both off. In this case replace the module
		Check correspondence between the connected module and the enabled EKIODHW accessory or PumpSkid module
Reset		
Local HMI Network Auto	☐ ☐ ☑	

5.4.5. UnitOffOverHeatAlarm – Water Over Temperature Alarm

This alarm is generated if the EWT is over unit envelop limit.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffOverHeatAlarm String in the alarm log: ± UnitOffOverHeatAlarm	Entering water temperature over unit envelope limit.	Check if Unit is working inside allowed envelope
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.6. UnitOffDHWAlarm – Domestic Hot Water Alarm

This alarm is generated if the EWT for DHW is fault or damaged. The 3WV is not able to do the changeover to the secondary or primary loop. A 3WV fault can be related to connection/wiring issue or to component break up and are available only in temporized valve configuration.

Symptom	Cause	Solution
Unit could be ON. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffDHWAlarm String in the alarm log: ± UnitOffDHWAlarm	Domestic Hot Water Alarms	Check DHW Alarm Code value
		▪ Check Domestic Hot Water 3WV status
		▪ Check 3WV wiring connection
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.7. UnitOffExtFanFault – Extraction Fan Fault

This alarm is triggered if the extraction fans fail to start.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffExtFanFault String in the alarm log: UnitOffExtFanFault	Extraction fans aren't working	Check extraction fan wiring connection
		Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.8. UnitOffGroundFaultRelayAlarm– Ground Fault Relay Alarm

This alarm is triggered due to fault of ground fault relay.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffGroundFaultRelayAlarm String in the alarm log: UnitOffGroundFaultRelayAlarm	Ground Fault Relay Alarms	Check that the GFR is properly connected. Please refer to wiring diagram
		Check communication with compressor inverter
		Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.9. UnitOffLeakDet50CommFail – Compressor Box Leak Detector Communication fail

This alarm is generated in case of communication problems with compressor box leak detector.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffLeakDet50CommFail String in the alarm log: ±UnitOffLeakDet50CommFail	Bad compressor box leak detector Communication	Check wiring connection
		Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.10. UnitOffLeakDet51CommFail – Control Panel Leak Detector Communication fail

This alarm is generated in case of communication problems with control panel leak detector.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffLeakDet51CommFail String in the alarm log: ±UnitOffLeakDet51CommFail	Bad control panel leak detector Communication	Check wiring connection Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.11. UnitOffLeakDet52CommFail – Water Leak Box Detector Communication fail

This alarm is generated in case of communication problems with water box leak detector.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffLeakDet52CommFail String in the alarm log: ±UnitOffLeakDet52CommFail	Bad water box leak detector Communication	Check wiring connection Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.12. UnitOffGasLeakage50 – Compressor Box Gas Leakage Alarm

This alarm is generated in case of PLC restart, no more gas detection active, after a compressor box gas leakage event.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffGasLeakage50 String in the alarm log: ±UnitOffGasLeakage50	Compressor box gas leakage event happened	Check wiring connection Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.13. UnitOffGasLeakage51 – Control Panel Gas Leakage Alarm

This alarm is generated in case of PLC restart, no more gas detection active, after a control panel gas leakage event.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffGasLeakage51 String in the alarm log: ±UnitOffGasLeakage51	Control Panel gas leakage event happened	Check wiring connection Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.14. UnitOffGasLeakage52 – Water Leak Gas Leakage Alarm

This alarm is generated in case of PLC restart, no more gas detection active, after a water box gas leakage event.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffGasLeakage52 String in the alarm log: ±UnitOffGasLeakage52	Water box gas leakage event happened	Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.15. UnitOffShtoffVlvFault – Shut-off valve Fault Alarm

This alarm is generated in case of shutoff valve feedback not corresponding to the expected one.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffShtoffVlvFault String in the alarm log: ± UnitOffShtoffVlvFault	Shutoff valve is not working properly or wiring is incorrect	Check connection in the wiring diagram Check if valve is damaged Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.4.16. UnitOffFanC1CommunFault – Fan 1 Communication Fault Alarm

This alarm is generated in case of missing communication with fan VFD.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffFanC1CommunFault String in the alarm log: ± UnitOffFanC1CommunFault	Bad communication between PLC and fan VFD	Check connection in the wiring diagram
		Contact your local dealer
Reset		
Local HMI Network Auto	☐ ☐ ☑	

5.4.17. UnitOffFanC2CommunFault – Fan 2 Communication Fault Alarm

This alarm is generated in case of missing communication with fan VFD.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffFanC2CommunFault String in the alarm log: ± UnitOffFanC2CommunFault	Bad communication between PLC and fan VFD	Check connection in the wiring diagram
		Contact your local dealer
Reset		
Local HMI Network Auto	☐ ☐ ☑	

5.4.18. UnitOffFanC1Damaged – Fan 1 Damaged

This alarm is generated in case fan VFD reports a motor damaged alarm to the PLC.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffFanC1Damaged String in the alarm log: ± UnitOffFanC1Damaged	Fan is damaged	Check if fan motor is damaged
		Contact your local dealer
Reset		
Local HMI Network Auto	☐ ☐ ☑	

5.4.19. UnitOffFanC2Damaged – Fan 2 Damaged

generated in case fan VFD reports a motor damaged alarm to the PLC.

Symptom	Cause	Solution
Unit status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: UnitOffFanC2Damaged String in the alarm log: ± UnitOffFanC2Damaged	Fan is damaged	Check if fan motor is damaged
		Contact your local dealer
Reset		
Local HMI Network Auto	☐ ☐ ☑	

5.5. Circuit Pumpdown Stop Alarms

All alarms reported in this section produce a circuit stop performed following normal pumpdown procedure.

5.5.1. CxCmp1 OffSuctTempSen- Suction Temperature Sensor fault

This alarm is generated to indicate that the sensor is not reading properly.

Symptom	Cause	Solution
Circuit status is Off. The circuit is switched off with the normal shutdown procedure. Bell icon is moving on controller's display. String in the alarm list: CxCmp1 OffSuctTempSen String in the alarm log: ± CxCmp1 OffSuctTempSen	Sensor is shorted.	Check for sensor integrity.
		Check correct sensors operation according information about kOhm (kΩ) range related to temperature values.
	Sensor is broken.	Check if sensor is shorted with a resistance measurement.
	Sensor is not good connected (open).	Check for correct installation of the sensor on refrigerant circuit pipe.
		Check for absence of water or humidity on sensor electrical contacts.
		Check for correct plug-in of the electrical connectors.
		Check for correct sensors wiring also according with electrical scheme.
Reset		
Local HMI Network Auto	☑ ☑ ☑	

5.5.2. CxCmp1 OffDischTmpSen - Discharge Temperature Sensor fault

This alarm is generated to indicate that the sensor is not reading properly.

Symptom	Cause	Solution
Circuit status is Off. The circuit is switched off with the normal shutdown procedure. Bell icon is moving on controller's display. String in the alarm list: CxCmp1 OffDischTmpSen String in the alarm log: ± CxCmp1 OffDischTmpSen	Sensor is shorted.	Check for sensor integrity.
		Check correct sensors operation according information about kOhm (kΩ) range related to temperature values.
	Sensor is broken.	Check if sensor is shorted with a resistance measurement.
	Sensor is not properly connected (open).	Check for correct installation of the sensor on refrigerant circuit pipe.
		Check for absence of water or humidity on sensor electrical contacts.
		Check for correct plug-in of the electrical connectors.
		Check for correct sensors wiring also according with electrical scheme.
Reset		
Local HMI Network Auto	☑ ☑ ☑	

5.6. Circuit Rapid Stop alarms

All alarms reported in this section produce an instantaneous stop of the circuit.

5.6.1. CxOff LowPrRatio - Low Pressure Ratio Alarm

This alarm indicates that the ratio between evaporating and condensing pressure is below a limit that guarantees the proper lubrication to compressor.

Symptom	Cause	Solution
Circuit status is Off. The circuit is stopped. Bell icon is moving on controller's display. String in the alarm list: CxCmp1 LowPrRatio String in the alarm log: ±CxCmp1 LowPrRatio	Compressor is not able to develop minimum compression.	Check fan setpoint and settings, it could be too low (A/C units).
		Check compressor absorbed current and discharge superheat. Compressor can be damaged.
		Check the correct operation of suction / delivery pressure sensors.
		Check the internal relief valve didn't opened during previous operation (check the unit history). Note: If the difference between delivery and suction pressure exceed 22bar, the internal relief valve open and need to be replaced.
		Inspect the gate rotors / screw rotor for possible damages.
		Check if the cooling tower or three way valves are operating correctly and properly set.
Reset		**Notes**
Local HMI Network Auto	☑ ☑ ☐	

5.6.2. Cx OffNoPressChgStart - No Pressure Change At Start Alarm

This alarm indicates that the compressor is not able to start or to create a certain minimum variation of the evaporating or condensing pressures after start.

Symptom	Cause	Solution
Circuit status is Off. The circuit is stopped. Bell icon is moving on controller's display. String in the alarm list: Cxoff OffNoPressChgStart String in the alarm log: ± Cx OffNoPressChgStart	Compressor cannot start	Check if the start signal is properly connected to the inverter.
	Compressor is turning in wrong direction.	Check correct phases sequence to the compressor (L1, L2, L3) according to the electrical scheme.
		Inverter is not properly programmed with the right direction of rotation
	Refrigerant circuit is empty of refrigerant.	Check circuit pressure and presence of refrigerant.
	Not proper operation of evaporating or condensing pressure transducers.	Check proper operation of evaporating or condensing pressure transducers.
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.6.3. CxCmp1 OffEvpPressLo - Low Pressure alarm

This alarm is generated in case the evaporating pressure drops below the Low Pressure Unload and the control is not able to compensate to this condition.

Symptom	Cause	Solution
Circuit status is Off. The compressor does not load anymore or even unload, circuit is stopped immediately. Bell icon is moving on controller's display. String in the alarm list: CxCmp1 OffEvpPressLo String in the alarm log: ± CxCmp1 OffEvpPressLo	Transitory condition like a fan staging (A/C units).	Wait until the condition is recovered by EXV control
	Refrigerant charge is low.	Check sight glass on liquid line to see if there is flash gas.
		Measure sub-cooling to see if the charge is correct.
	Protection limit not set to fit customer application.	Check the evaporator approach and the corresponding water temperature to evaluate the low pressure hold limit.
	High Evaporator Approach.	Clean the evaporator
		Check the quality of the fluid that flows into heat exchanger.
		Check the glycol percentage and type (ethilenic or propilenic)
	Water flow into water heat exchanger is too low.	Increase the water flow.
		Check that evaporator water pump is operating correctly providing the required water flow.
	Evaporating pressure transducer is not working properly.	Check the sensor for proper operation and calibrate the readings with a gauge.
	EEXV is not working correctly. It's not opening enough or it's moving in the opposite direction.	Check if pump-down can be finished for pressure limit reached;
		Check expansion valve movements.
		Check connection to the valve driver on the wiring diagram.
		Measure the resistance of each winding, it has to be different from 0 Ohm.
	Water temperature is low	Increase inlet water temperature. Check the low pressure safeties settings.
Reset		
Local HMI Network Auto	☑ ☑ ☑	

5.6.4. CxCmp1 OffCndPressHi – High Condensing Pressure alarm

This alarm is generated in case the Condensing saturated temperature rise above the Maximum condensing saturated temperature and the control is not able to compensate to this condition.
In case of water cooled chillers operating at high condenser water temperature, if the Condensing saturated temperature exceeds the Maximum condenser saturated temperature, the circuit is only switched off without any notification on the screen as this condition is considered acceptable in this range of operation.

Symptom	Cause	Solution
Circuit status is Off. The compressor does not load anymore or even unload, circuit is stopped. Bell icon is moving on controller's display. String in the alarm list: CxCmp1 OffCndPressHi String in the alarm log: ± CxCmp1 OffCndPressHi	One or more condenser fans do not operate properly (A/C units).	Check if fans protections have been activated.
		Check that the fans can turn freely.
		Check that there is not any obstacle to the free ejection of the air blown.
	Dirty or partially blocked condenser coil (A/C units).	Remove any obstacle. Clean the condenser coil using soft brush and blower.
	Inlet air temperature of the condenser is too high (A/C units).	The air temperature measured at the inlet of the condenser may not exceed the limit indicated in the operational range (working envelope) of the chiller.

		Check the location where the unit is installed and check that there are no any short circuit of the hot-air blown from the fans of the same unit, or even from fans of next chillers (Check IOM for proper installation).
	One or more condenser fan turning in wrong direction (A/C units).	Check for correct phases sequence (L1, L2, L3) in the electrical connection of the fans.
	Excessive charge of refrigerant into the unit.	Check liquid sub-cooling and suction super-heat to control indirectly the correct charge of refrigerant. If necessary recover all the refrigerant to weight the entire charge and to control if the value is in line with kg indication on unit label.
	Condensing pressure transducer could not operate properly.	Check for proper operation of the high pressure sensor.
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.6.5. CxCmp1 OffDischTmpHi - High Discharge Temperature Alarm

This alarm indicates that the temperature at the discharge port of the compressor exceeded a maximum limit which may cause damages to the mechanical parts of the compressor.

When this alarm occurs compressor's crankcase and discharge pipes may become very hot. Be careful when getting in contact with the compressor and discharge pipes in this condition.

Symptom	**Cause**	**Solution**
Discharge Temperature > High Discharge Temperature alarm value. Circuit x status is off Alarm cannot trigger if discharge temperature sensor fault is active. Bell icon is moving on controller's display. String in the alarm list: CxCmp1 OffDischTmpHi String in the alarm log: ± CxCmp1 OffDischTmpHi	The circuit is working outside the compressor envelope.	Check the working conditions, if the unit is working inside the unit envelope, and if the expansion valve is working well.
	One of the compressors is damaged.	Check if the compressors are working properly, in normal conditions and without noises.
		Check for proper operation of the discharge temperature
	Discharge temperature sensor could not operate properly.	Check for proper operation of the discharge temperature
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.6.6. CxCmp1 OffMtrAmpsHi - High Discharge Temperature Alarm

This alarm indicates that the compressor is drawing more current than the maximum allowed value.

Symptom	**Cause**	**Solution**
Inverter current > High Current limit Circuit x status is off Bell icon is moving on controller's display. String in the alarm list: CxCmp1 OffMtrAmpsHi String in the alarm log: ± CxCmp1 OffMtrAmpsHi	Compressor is drawing more current than the maximum allowed value	Check for correct phases sequence (L1, L2, L3) in the electrical connection of the fans.
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.6.7. Cx OffStartFailEvpLo - Start Fail for low evaporating pressure

This alarm is generated with a low evaporating pressure and a low saturated condensing temperature at the starting of the circuit. At the third occurrence of this failure a Restart Fault Alarm is generated.

Symptom	Cause	Solution
Circuit status is Off. The circuit is stopped. Bell icon is moving on controller's display. Led on the button 2 of External HMI is blinking String in the event list: Cx OffStartFailEvpPrLo String in the event log: ± Cx OffStartFailEvpPrLo	Low outside ambient temperature	Check the operating condition of the condenser-less unit
	Refrigerant charge low.	Check sight glass on liquid line to see if there is flash gas.
		Measure sub-cooling to see if the refrigerant charge is correct.
	Condensing Setpoint not correct for the application	Check if is necessary to increase the condensing saturated temperature setpoint
	Evaporator or condensing sensor pressure broken or not correctly installed	Check the proper operation of the pressure transducers.
Reset		
Local HMI Network Auto	☑ ☐ ☑	

5.6.8. CxCmp1 EvapPressSen - Evaporating Pressure sensor fault

This alarm indicates that the evaporating pressure transducer is not operating properly.

Symptom	Cause	Solution
Circuit status is Off. The circuit is stopped. Bell icon is moving on controller's display. String in the alarm list: CxCmp1 EvapPressSen String in the alarm log: ± CxCmp1 EvapPressSen	Sensor is broken.	Check for sensor integrity. Check correct sensors operation according information about mVolt (mV) range related to pressure values in kPa.
	Sensor is shorted.	Check if sensor is shorted with a resistance measurement.
	Sensor is not properly connected (open).	Check for correct installation of the sensor on refrigerant circuit pipe. The transducer must be able to sense the pressure through the valve's needle.
		Check for absence of water or humidity on sensor electrical contacts.
		Check for correct plug-in of the electrical connectors.
		Check for correct sensors wiring also according electrical scheme.
Reset		
Local HMI Network Auto	☑ ☑ ☑	

5.6.9. CxCmp1 CondPressSen - Condensing Pressure sensor fault

This alarm indicates that the condensing pressure transducer is not operating properly.

Symptom	Cause	Solution
Circuit status is Off. The circuit is stopped. Bell icon is moving on controller's display. String in the alarm list: CxCmp1 CondPressSen String in the alarm log: ± CxCmp1 CondPressSen	Sensor is broken.	Check for sensor integrity. Check correct sensors operation according information about mVolt (mV) range related to pressure values in kPa.
	Sensor is shorted.	Check if sensor is shorted with a resistance measurement.
	Sensor is not properly connected (open).	Check for correct installation of the sensor on refrigerant circuit pipe. The transducer must be able to sense the pressure through the valve's needle.
		Check for absence of water or humidity on sensor electrical contacts.
		Check for correct plug-in of the electrical connectors.
		Check for correct sensors wiring also according electrical scheme.
Reset		
Local HMI Network Auto	☑ ☑ ☑	

5.6.10. Cx FailedPumpdown - Failed Pumpdown procedure

This alarm is generated to indicate that the circuit hadn't been able to remove all the refrigerant from the evaporator. It automatically clear as soon as the compressor stops just to be logged in the alarm history. It may not be recognized from BMS because the communication latency can give enough time for the reset. It may not even be seen on the local HMI.

Symptom	Cause	Solution
Circuit status is Off. No indications on the screen String in the alarm list: -- String in the alarm log: ± Cx FailedPumpdown String in the alarm snapshot Cx FailedPumpdown	EEXV is not closing completely, therefore there's "short-circuit" between high pressure side with low pressure side of the circuit.	Check for proper operation and full closing position of EEXV. Sight glass should not show refrigerant flow after the valve is closed.
		Check LED on the top of the valve, C LED should be solid green. If both LED are blinking alternately the valve motor is not properly connected.
	Evaporating pressure sensor is not working properly.	Check for proper operation of evaporating pressure sensor.
	Compressor on circuit is internally damaged with a mechanical problems for example on internal check-valve, or on internal spirals or vanes.	Check compressors on circuits.
Reset		
Local HMI Network Auto	☐ ☐ ☑	

5.6.11. CxCmp1 OffVfdCommFail – Compressor inverter communication fail

This alarm is generated in case of communication problems with compressor and fan inverter.

Symptom	Cause	Solution
Circuit x status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: CxCmp1 OffVfdCommFail String in the alarm log: ± CxCmp1 OffVfdCommFail	Bad Compressor inverter Communication	Check alarm/warning LEDs on inverter
		Check wiring connection
		Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.6.12. CxCmp1 OffVfdCompressorAlm – Compressor inverter alarm

This alarm is generated due to compressor inverter alarms.

Symptom	Cause	Solution
Circuit x status is Off. All circuits are stopped immediately. Bell icon is moving on controller's display. String in the alarm list: CxCmp1 OffVfdFault String in the alarm log: ± CxCmp1 OffVfdFault	Compressor inverter alarm	Check alarm/warning LEDs on inverter
		Check Alarm List
		Check wiring connection
		Contact your local dealer
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.6.13. CxCmp1 OffLowDiscSH – DSH too low

This alarm is generated when the circuit is running with a DSH too low for a certain amount of time.

Symptom	Cause	Solution
Circuit x status is Off Bell icon is moving on controller's display. String in the alarm list: CxCmp1 OffLowDiscSH String in the alarm log: ± CxCmp1 OffLowDiscSH	EEXV is not working correctly. It's not opening enough or it's moving in the opposite direction.	Check if pump-down can be finished for pressure limit reached;
		Check expansion valve movements.
	Too much oil in the refrigerant circuit	Check connection to the valve driver on the wiring diagram.
	Incorrect temperature sensor reading	Measure the resistance of each winding, it must be different from 0 Ohm.
Reset		
Local HMI Network Auto	☑ ☑ ☐	

5.6.14. CxCmp1 OffMechPressHi - Mechanical High Pressure Alarm

This alarm is generated when the condenser pressure rises above the mechanical high pressure limit causing this device to open the power supply to all the auxiliary relays. This causes an immediate shutdown of compressor and all the other actuators in this circuit.

Symptom	Cause	Solution
Circuit status is Off. The compressor does not load anymore or even unload, circuit is stopped. Bell icon is moving on controller's display. String in the alarm list: CxCmp1 OffMechPressHi String in the alarm log: ± CxCmp1 OffMechPressHi	One or more condenser fans do not operate properly (A/C units).	Check if fans protections have been activated.
		Check that the fans can turn freely.
		Check that there is not any obstacle to the free ejection of the air blown.
	Dirty or partially blocked condenser coil (A/C units).	Remove any obstacle. Clean the condenser coil using soft brush and blower.
	Inlet air temperature of the condenser is too high (A/C units).	The air temperature measured at the inlet of the condenser may not exceed the limit indicated in the operational range (working envelope) of the chiller (A/C units).
		Check the location where the unit is installed and check that there are no any short circuit of the hot-air blown from the fans of the same unit, or even from fans of next chillers (Check IOM for proper installation).
	One or more condenser fan turning in wrong direction.	Check for correct phases sequence (L1, L2, L3) in the electrical connection of the fans.
	Mechanical high pressure switch is damaged or not calibrated.	Check for proper operation of the high pressure switch.
Reset		
Local HMI Network Auto	☑ ☐ ☐	

5.7. Troubleshooting

If one of the following malfunctions occur, take the measures shown below and contact your dealer.

Stop operation and shut off the power if anything unusual occurs (burning smells etc.).

Leaving the unit running under such circumstances may cause breakage, electric shock or fire. Contact your dealer.

The system must be repaired by a qualified service person:

Malfunction	Measure
If a safety device such as a fuse, a breaker or an earth leakage breaker frequently actuates or the ON/OFF switch does not properly work.	Turn off the main power switch.
If water leaks from the unit.	Stop the operation.
The operation switch does not workwell.	Turn off the power.
If the operation lamp flashes and the malfunction code appears on the user interface display.	Notify your installer and report the malfunction code.

If the system does not properly operate except for the abovementioned cases and none of the abovementioned malfunctions is evident, investigate the system according to the following procedures.

Malfunction	Measure
The remote controller display is off.	• Check if there is no power failure. Wait until power is restored. If power failure occurs during operation, the system automatically restarts immediately after power is restored. • Check if no fuse has blown or breaker is activated. Change the fuse or reset the breaker if necessary. • Check if the benefit kWh rate power supply is active.
An error code is displayed on the remote controller.	Consult your local dealer. Refer to "4.1 Alarm List: Overview" for a detailed list of error codes.

Notes

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