

GEOSMART NETZERO



EN

CONTROL APPLICATIONS MANUAL

MODEL:

SERVICE CONTACT:

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1. General considerations



NOTE

- The information included below corresponds to versions of the control applications that are available at the date on which the document was issued. Other versions, both earlier and later, may differ slightly from the contents found in this section.
- Depending on the model of the heat pump or ecoSMART accessory and its configuration, certain screens or screen contents may not be displayed.
- If the following screen appears when accessing a menu, this means that the contents of that menu are not available for that model or have not been enabled by the technical service.



2. pGD1 control terminal

2.1. General description

The control terminal of the heat pump consists of a display with 6 buttons, as shown in the figure below, that allow you to move through the different menus and adjust parameters.



Figure 2.1. pGD1 control terminal.

The general functions and operation of each of the buttons are indicated below.



The ALARMS menu can be accessed directly from anywhere in the application.



The list of user menus can be accessed from anywhere in the application.



The list of installer menus can be accessed from anywhere in the application.



NOTE: It is necessary to enter access password PW1



Used to move through the menu lists.

Used to move from one screen to another inside a menu.

Used to adjust the settings of the parameters contained in a screen.

In heat pumps, used to access the heating  and cooling  outlet temperature setting screens directly from the main screen.



Used to access the selected menu.

Used to move from one adjustable parameter to another in the same screen.

Used to access the INFORMATION menu directly from the main screen.



The user can return to the previous menu from anywhere in the application.

2.2. Browsing through menu lists and screens

Once you have accessed the user or installer menus, a list of sub-menus will be displayed on the screen that will guide you to screens where you can view and adjust the unit's control parameters. Follow the instructions below to move through the various screens of the menu you have selected.

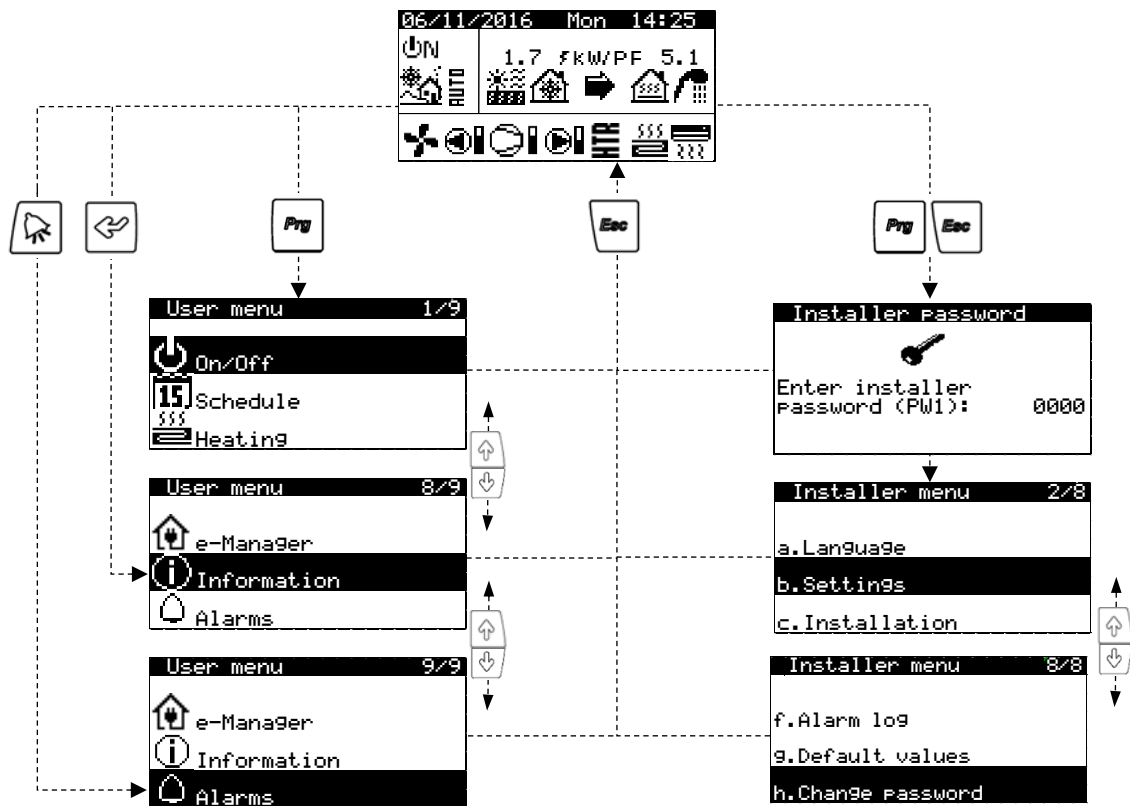


Figure 2.2. Browsing through the list of menus.

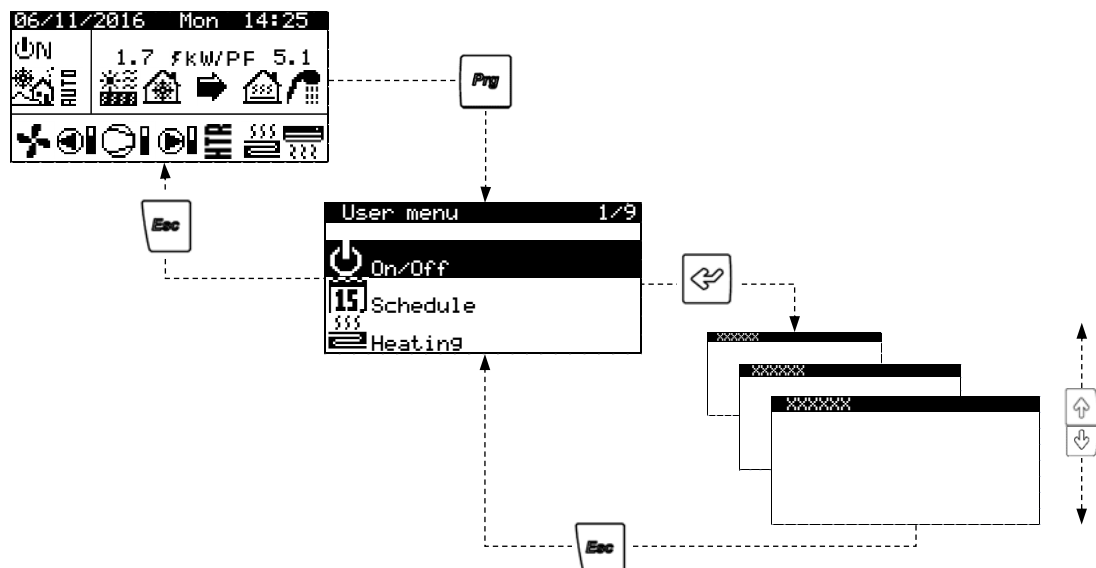















Figure 2.3. Browsing through the menu screens.

2.3. Adjusting on-screen parameters

Take the following steps to change a parameter:

1. Search for the screen containing the parameter that needs to be changed.
2. With the cursor in position 1 press on  to enter the screen and move the cursor to the parameter in position 2.
3. Adjust the parameter in position 2 with buttons  .
4. Press  to accept and move the cursor to position 3.
5. Adjust the parameter in position 3 with buttons  .
6. Press  to accept and move the cursor to position 4.
7. Adjust the parameter in position 4 with buttons  .
8. Press  to accept and return to position 1.
9. With the cursor in position 1 again, press buttons   to go to the previous or next screen, or  to return to the list of user menus.

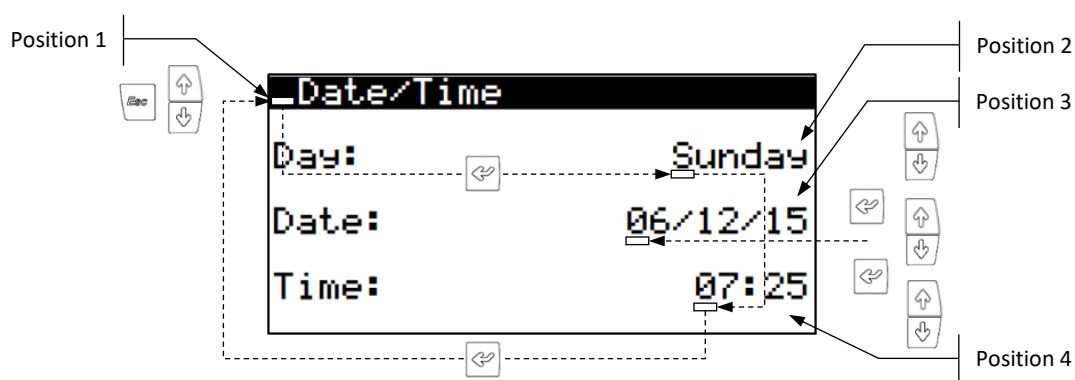


Figure 2.4. Parameter adjustment.

3. NETZERO BW/CW/HW heat pumps and block installation management

This section contains the information required to browse through and configure the parameters of the following devices:

1. NETZERO BW/CW and NETZERO HW range of geothermal heat pumps.
2. e-SUPERVISOR heat pump block manager.

This section also includes information regarding the operation of heat pumps under a block management, in which one of the heat pumps acts as the block manager.

3.1. Main screen guide

The main screen of the application contains a series of fields with information about heat pump operation.

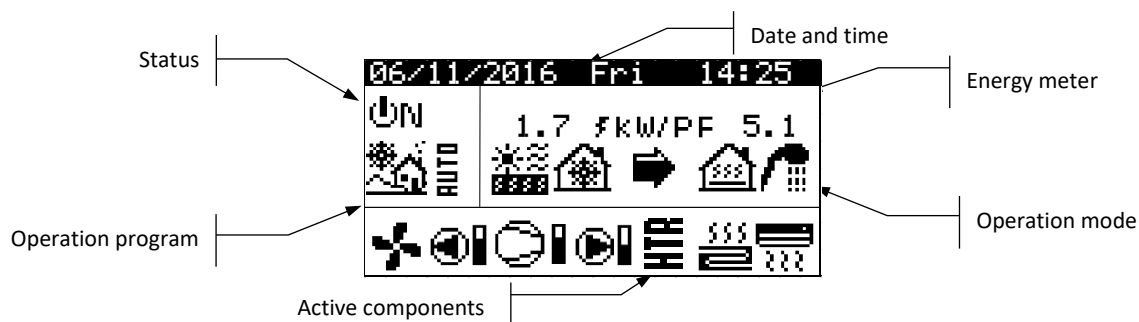













Figure 3.1. Description of the main screen.

3.1.1. Active components

This field displays the main components of the heat pump that are activated. A consumption bar is also shown for the compressor and modulating circulator pumps.

-  Activated fan of the aerothermal outdoor unit (geothermal heat pumps)
-  Brine pump activated
-  Compressor in start-up phase
-  Compressor in regulation phase
-  Number of equipment with the compressor activated in block installations
-  Compressor in shut-down phase
-  Compressor start-up is deactivated due to standby between start-ups. The minutes remaining for the compressor to start up are shown alternately with the icon.
-  Production pump activated
-  Heating units activated
-  Cooling units activated
-  Auxiliary heating/cooling unit activated



HTR System activated. There are specific icons to shown that the HTR system is activated for DHW or pool service.

DHW recirculation pump activated

Crankcase heating activated.

3.1.2. Mode

This field displays the icons that indicate the operating modes that are active. Several operating modes can be viewed simultaneously, depending on the heat pump model and the configuration set up by the technical service.



DIRECT HEATING Mode / DIRECT COOLING Mode

The heat pump sends hot / cold water directly to the heating / cooling system and adjusts the power supply to the consumption of the home. The outlet temperature and flow are constantly controlled to optimise installation performance.

These modes are activated when the heat pump receives a heating / cooling demand from the indoor terminals installed in the home (thermostats, th-Tune terminals, thT terminals or TH sensors).



BUFFER HEATING Mode / BUFFER COOLING Mode

The heat pump sends hot / cold water to the buffer storage tank of the heating / cooling system. The power supply, flow and outlet temperature are constantly controlled to maintain storage tank temperature and optimise installation performance.

These modes are activated when the buffer storage tank temperature is lower / higher than the differential of start-up temperatures.



DHW mode

The heat pump sends hot water to increase the temperature of the storage tank, so it reaches the DHW setpoint temperature as soon as possible.

This mode is activated when the DHW storage tank temperature is lower than the differential of start-up temperatures.



POOL mode

The heat pump sends hot water to the pool production exchanger and adjusts the power supply. The outlet temperature and flow are constantly controlled to optimise installation performance.

This mode is activated when the heat pump receives a request for pool production.



LEGIONELLA PROTECTION mode

The heat pump raises the temperature of the storage tank to the final temperature set by the technical service for the legionella protection program. Heating is produced initially by the compressor, followed by activation of the auxiliary DHW system, if there is one, until the final temperature is reached.

This mode is activated as per the weekly legionella protection program.



DEFROST mode

The normal operation of the heat pump is interrupted to eliminate any frost in the battery. Once defrosting has ended, the heat pump will continue operating as before.

This mode is activated as per the parameters configured in the installer menu.



ANTI-FREEZE mode

In low outside temperature conditions, the heat pump activates the circulating pump and the consumption groups when there is not a thermal request to check the temperature in the circuits, activating the compressor if necessary to prevent the water in the circuits from freezing.



DRYING HEATING FLOOR mode (Only visible with floor drying activated)

The heat pump sends hot water directly to the underfloor heating system, adjusting the delivered temperature to the one previously set in the "underfloor heating - floor drying" menu and running for whatever period of time has been set in that menu.

Note: After all the stages set in the floor drying program are completed, the heat pump returns to normal operation and this screen disappears. If there are requests for the enabled services, the heat pump deals with them.



NOTE

- Activation of the various OPERATING MODES may be affected by the time schedule functions or heat pump service priorities (DHW, HEATING, COOLING, POOL).
- The activation of the HEATING and COOLING operating modes may be affected by service shut-down temperatures.

Apart from the icons that define the operating modes, the following icons can also be found in this field.



Operation

This indicates thermal energy transfer between circuits.



If the icon is shown continuously, this indicates normal heat pump operation.



If the icon flashes, there is a heat pump protection activated.



If the icon is shown partially filled, it indicates that the compressor is running, and it is shown empty indicates that the thermal energy is transferred with the compressor off.



Energy source

Power removal or injection at the energy source.



Cycle inversion

The HEAT/COLD production cycle is being inverted. Only for reversible heat pumps.



Stand-by

The heat pump remains in standby because there is no service request.

3.1.3. Operation program

The heat pump operation program determines which operation modes can be activated.



WINTER program

The heat pump does not allow activation of the FREE COOLING and ACTIVE COOLING operating modes.



SUMMER program

The heat pump does not allow activation of the HEATING operating mode.



COMBINED program

The heat pump allows activation of any operating mode.



AUTO program

The heat pump automatically switches between the WINTER/SUMMER operating programs, depending on the outside temperature. The temperatures and time required for the switch must be adjusted by the user.



REMOTE Control

WINTER / SUMMER program selection is triggered by an external signal.

3.1.4. Heat pump status

This indicates heat pump availability to service the various heat pump functions.



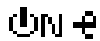
ON status

The heat pump is on and available to activate all its functions.



ON + EVU status

The heat pump is on but the compressor is deactivated by the EVU signal. Secondary functions such as outlet unit start-up, DHW recirculation, etc. can be activated.



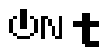
ON + SURPLUS CONTROL Status

The heat pump is on and the conditions for using the surplus electricity are met.



ON + CONSUMPTION CONTROL Status

The heat pump is on and is setting itself to adjust the total consumption of the system to the maximum limit specified by the installer.



ON + TARIFF CONTROL status

The heat pump is switched on in compliance with the tariff control schedule. The settings may therefore vary depending on how the schedule is configured.



ON + SG1 status (Normal status)

The heat pump is operating normally, as per its configuration.



ON + SG2 status (Reduced tariff)

As we are in a reduced tariff period, we will take advantage of the lower price of electricity to use the pump to produce heat or cold.



ON + SG3 status (Blocked status)

The heat pump is on but it is restricting high consumption which means that it is blocking the activation of the compressor and backups.



ON + SG4 status (Forced status)

The heat pump will force the maximum possible consumption in the installation to help balance the network.



ON + NIGHT-TIME SCHEDULE status

The heat pump is on and available to activate all its functions, but performance is limited by night-time schedule programming.



OFF status due to control terminal

The heat pump is manually switched off from the controller terminal and is therefore not available to activate any of its functions.



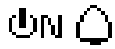
OFF status due to time schedule or calendar

The heat pump is off due to an active time schedule or calendar and is therefore not available to activate any of its functions.



OFF status due to data bus signal

The heat pump is off due to an external signal through the data bus and is therefore not available to activate any of its functions.



ON + active alarm status

The heat pump has an active alarm. The compressor cannot be started and auxiliary equipment cannot be activated. If the alarm persists for more than 5 minutes, the heat pump switches to emergency status due to an active alarm.



EMERGENCY status due to control terminal

The heat pump is in emergency status activated manually from the controller terminal. The compressor cannot be started up, but the services can be attended to if there is an auxiliary unit enabled for emergency situations.



EMERGENCY status due to active alarm

The heat pump is in emergency status due to an active alarm. The compressor cannot be started up, but the services can be attended to if there is an auxiliary unit enabled for emergency situations.



EMERGENCY status due to repeated alarms

The heat pump is in emergency status due to an alarm that goes off repeatedly. The compressor cannot be started up, but the services can be attended to if there is an auxiliary unit enabled for emergency situations.



EMERGENCY status due to data bus


The heat pump is in emergency status activated by an external signal via the data bus. The compressor cannot be started up, but the services can be attended to if there is an auxiliary unit enabled for emergency situations.



NOTE

-
- The EVU signal is used in some countries by the electricity company to control electrical consumption. The EVU signal prevents energy production by the compressor and the auxiliary equipment. Circulator pumps, valves and other components can be activated to consume energy from the storage systems.
-

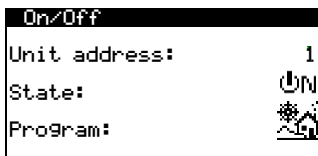
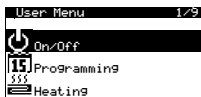
3.2. USER menu guide

To access the USER menu, press . Each menu has a series of screens that are used to change heat pump STATUS and OPERATION MODE, adjust comfort parameters and view desired information. The following table displays the structure of the USER menu.

USER menu	
Sub-menu level 1	Sub-menu level 2
1. On/Off	
2. Programming	2.1. Date/Time
	2.2. Heat pump schedule
	2.3. Services schedule
	2.4. Tariff control
3. Heating	
4. Cooling	
5. DHW / Legionella	
6. Pool	
7. e-Manager	
8. Information	
9. Alarms	

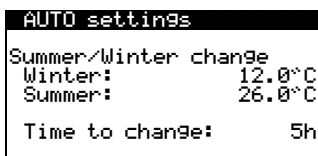
Table 3.1. USER menu structure.

3.2.1. ON/OFF Menu



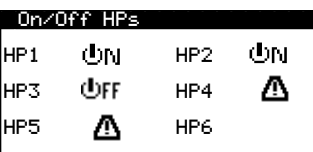
On/Off

- Displays the direction of the unit.
- Used to turn the equipment on/off or to activate the EMERGENCY status.
- Also used to choose the operation program.



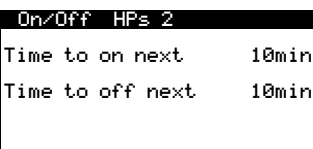
Setting up the AUTO program

- The AUTO program can be used to adjust the outdoor temperatures and the time needed to switch between the WINTER and SUMMER programs.



On/Off HPs (supervisor)

- Used to select the heat pump status between on, off and emergency in block installations with supervisor.



On/Off HPs 2

- Used to set the time to switch the next heat pump ON / OFF if the required service targets are not reached in block installations with supervisor.

```

Board switch
Unit address: 15
Switch to unit: 0
100.....016
17.0.....0032
  
```

pLAN network devices

- Displays the address of the controllers that are connected to the pLAN network, as well as their corresponding pGD1 screens.



NOTE

- The selected status of the heat pump can be changed automatically using the time schedule functions, calendar or using active alarms.

3.2.2. SCHEDULE menu

```

User Menu 2/3 Programming 1/4
On/Off a.Date/time
15 Programming b.HP schedule
Heating c.Services schedule
  
```

```

Date/Time
Day: Sunday
Date: 06/12/15
Time: 07:25
  
```

Date/Time

- This is used to adjust the day of the week, date (DD/MM/YY) and time (HH:MM 24-hour format) of the controller.

```

Daily saving time
Enable: [x]
Transition time: 60min
Start: Last SUN
in MARCH at 2:00
End: Last SUN
in OCTOBER at 3:00
  
```

Daylight savings time

- Used to adjust the settings of the automatic daylight savings time between the seasons (autumn-winter / spring-summer).

```

User Menu 2/3 Programming 2/4
On/Off a.Date/time
15 Programming b.HP schedule
Heating c.Services schedule
  
```

```

Heat pump schedule
Enable: [x]
Day: MONDAY
Copy to: MONDAY NO
1: 04:00 ON
2: 06:00 ON
3: 10:00 ON
4: 04:00 OFF
  
```

BC Schedule

- Used to schedule up to 4 time periods for each day of the week when the heat pump will be turned completely on or off.

```

Holiday schedule
Enable: [x]
State: Switched Off
SP. Season Start Stop
1.Month/Day 00/00 00/00
2.Month/Day 00/00 00/00
3.Month/Day 00/00 00/00
  
```

Holiday calendar

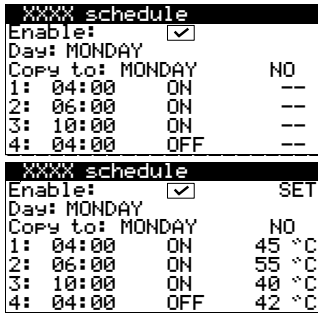
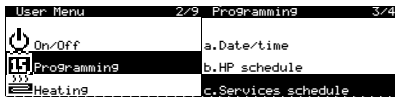
- Used to schedule up to 3 periods a year when the heat pump stays on or off.

```

Night-Time
Enable: [x]
Start: 23:00
End: 7:00
Compressor: 50.0%
Fan: [x]
  
```

Night-time

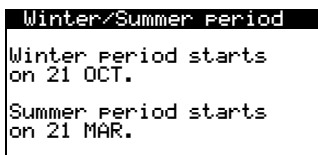
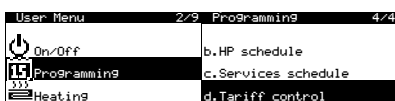
- Used to set up a daily time period when the maximum speed of the compressor is limited. This function is especially useful to reduce noise emissions at night.
- Used to disable aerothermal source in hybrid systems during night-time period.



DHW Schedule / Heating Schedule / Cooling Schedule / Pool Schedule / DHW recirculation Schedule

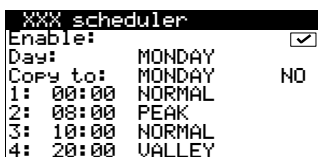
- Used to schedule up to 4 time periods for each day of the week. Independent time schedules can be set up for DHW, HEATING, COOLING, POOL, and DHW recirculation services.
- Used to select the type of schedule:
AUTO: General heat pump setpoints are applied.
SET: Specific setpoints are applied in schedule periods.

Note: The setpoints introduced by schedule are applied to the accumulation or delivery temperature depending on the selected service and its configuration.



Winter / summer period

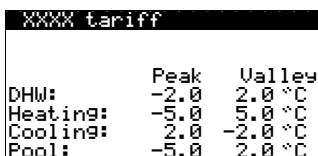
- Used to adjust the parameters that define the change between the winter and summer tariffs.



Winter / summer peak / valley tariffs

- Used to schedule up to 4 time periods for each day of the week. You can set up separate time schedules for peak winter, valley winter, peak summer and valley summer tariffs.

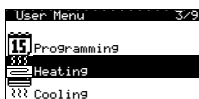
Note: The heat pump's basic schedule will be applied outside the specified time periods. This makes it possible to establish three types of tariffs (peak / flat / valley) for the winter and summer periods.



Winter / summer tariffs

- Used to set different temperatures above the pump setpoint during peak and valley periods in winter/summer for each service.

3.2.3. HEATING Menu



Heating

- This enables the HEATING mode and adjusts the heating cut-off temperature. The HEATING mode is never activated for temperatures over the cut-off setpoint.
- The icon indicates that there is a time schedule activated in the HEATING mode.

Heating buffer	
SetT:	50.0°C
DTstart:	5.0°C

Heating buffer

- This displays the setpoint temperature of the buffer storage tank and allows adjustments to be made to the start-up temperature differential.

Heating groups			
	-	0	+
DG1:			
SG2:			
SG3:			
SG4:			

Heating units

- This can be used to adjust the heating target outlet temperatures programmed by the technical service. Each ramp increases or decreases the outlet temperature by 2°C.

Room terminals			
	Tset°C	DTc°C	On/Off
Z1:	20.0	2.0	On
Z2:	21.0	2.0	On
Z3:	22.0	2.0	Off
Z4:	21.0	2.0	Off
Z5:	20.0	2.0	Off

Interior terminals

- Used to show and adjust the inside environment temperature setpoint (Tcons) and the comfort temperature differential (DTc) of the terminals of each outlet unit.
- Used to turn on and turn off the room terminals from the heat pump.

Note: This configuration is associated with the heating and cooling services. If it is modified for the heating service, it will automatically change for the cooling service and vice versa.

Term. Control AUTO		
Enable:	Tmin°C	Tmax°C
Z1:	20.0	22.0
Z2:	21.0	23.0
Z3:	22.0	24.0
Z4:	21.0	23.0
Z5:	20.0	23.0

AUTO terminal control

- Used to enable the automatic control of indoor terminals by bus (TH-Tune / THt).
- Used to set the minimum (Tmin) and maximum (Tmax) indoor ambient temperature values, between which the indoor terminals setpoints will pivot in the different operating modes.

Note: When this option is activated, the indoor terminals perform automatic setpoint changes depending on whether or not any of the energy efficiency functions are activated. When the electrical surplus management or forced consumption functions (SG4) are activated, the terminals automatically change to the most demanding room temperature setpoint in accordance with the operating mode (Tmax for heating / Tmin for cooling). When neither of these functions is activated, the indoor terminals change automatically to the least demanding setpoint. Once the setpoint has been changed automatically, it can be modified by directly adjusting each of the indoor terminals. The new setpoint will remain in effect until such time as the conditions for a new automatic setpoint change are met.

Note: This configuration is associated with the heating and cooling services. If it is modified for the heating service, it will automatically change for the cooling service and vice versa.

XXXXX XXXXX	
Emergency:	<input checked="" type="checkbox"/>
SUPPORT:	<input checked="" type="checkbox"/>

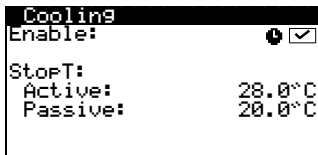
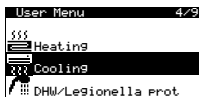
Auxiliary heating

- This is used to enable the auxiliary heating system in both EMERGENCY and SUPPORT mode.


Note: In EMERGENCY mode, the auxiliary system is activated automatically when any of the alarms are active.

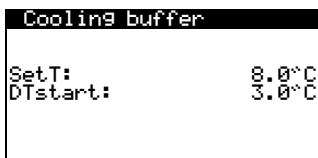
In SUPPORT mode, the auxiliary system is activated automatically for normal HEAT production, as programmed by the technical service.

3.2.4. COOLING Menu



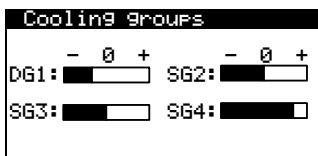
Cooling

- This is used to enable the COOLING mode and adjust the active and passive cooling cut-off temperatures. The COOLING mode cannot be activated for outside temperatures under the cooling cut-off temperature. Only PASSIVE COOLING can be activated for outside temperatures between passive and active cut-off temperatures. ACTIVE COOLING activation is only allowed for outside temperatures over the active cooling cut-off temperature.
- The  icon indicates that there is a time schedule activated in the COOLING mode.



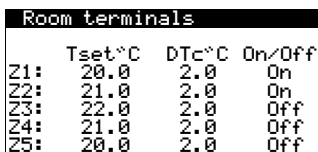
Cooling buffer

- This displays the setpoint temperature of the cooling buffer storage tank and allows adjustments to be made to the start-up temperature differential.



Cooling units

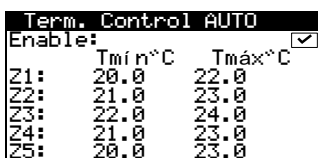
- This can be used to adjust the cooling target outlet temperatures programmed by the technical service. Each ramp increases or decreases the outlet temperature by 2°C.



Interior terminals

- Used to show and adjust the inside environment temperature setpoint (Tcons) and the comfort temperature differential (DTc) of the terminals of each outlet unit.
- Used to turn on and turn off the room terminals from the heat pump.

Note: This configuration is associated with the heating and cooling services. If it is modified for the heating service, it will automatically change for the cooling service and vice versa.

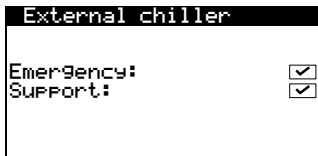


AUTO terminal control

- Used to enable the automatic control of indoor terminals by bus (TH-Tune / THt).
- Used to set the minimum (Tmin) and maximum (Tmax) indoor ambient temperature values, between which the indoor terminals setpoints will pivot in the different operating modes.

Note: When this option is activated, the indoor terminals perform automatic setpoint changes depending on whether or not any of the energy efficiency functions are activated. When the electrical surplus management or forced consumption functions (SG4) are activated, the terminals automatically change to the most demanding room temperature setpoint in accordance with the operating mode (Tmax for heating / Tmin for cooling). When neither of these functions is activated, the indoor terminals change automatically to the least demanding setpoint. Once the setpoint has been changed automatically, it can be modified by directly adjusting each of the indoor terminals. The new setpoint will remain in effect until such time as the conditions for a new automatic setpoint change are met.

Note: This configuration is associated with the heating and cooling services. If it is modified for the heating service, it will automatically change for the cooling service and vice versa.



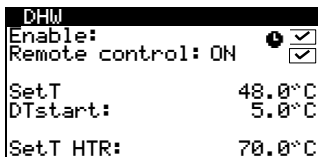
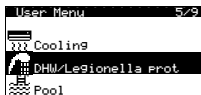
External chiller

- This is used to enable the auxiliary cooling system in both EMERGENCY and SUPPORT mode.

Note: In EMERGENCY mode, the auxiliary system is activated automatically when any of the alarms are active.

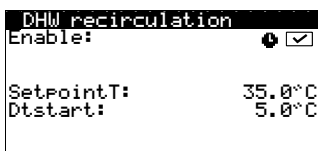
In SUPPORT mode, the auxiliary system is activated automatically for normal COOLING production, as programmed by the technical service.

3.2.5. DHW/LEGIONELLA PROT. Menu



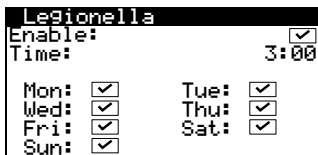
DHW

- This is used to enable the DHW mode and adjust the setpoint temperature and start-up temperature differential for the DHW storage tank.
- Used to adjust the setpoint temperature for DHW reheating with the HTR system (available depending on the unit options).
- The clock icon indicates that there is a time schedule activated in the DHW mode.



DHW Recirculation

- This is used to enable the DHW recirculation.
- The clock icon indicates that there is a time schedule activated for DHW recirculation.
- Used to set the setpoint temperature and the start-up temperature differential for DHW recirculation (available depending on the unit options).



Legionella protection program

- Used to set up a weekly program for legionella protection.
- The legionella protection program is deactivated automatically if 5 hours have elapsed without reaching the final temperature set up by the technical service.

Note: Legionella protection programs should be carried out at night, or when there is no DHW consumption.



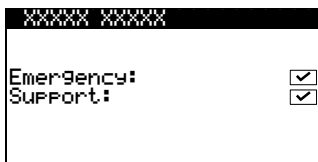
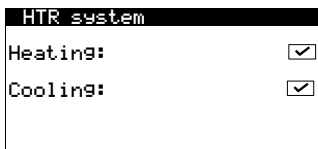
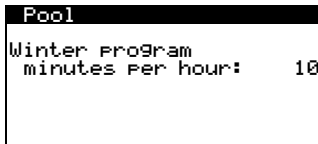
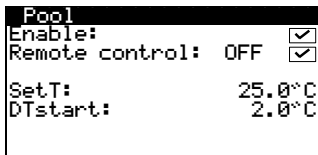
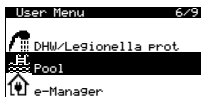
Auxiliary DHW

- This is used to enable the auxiliary DHW system in both EMERGENCY and SUPPORT mode.


Note: In EMERGENCY mode, the auxiliary system is activated automatically if there are any active alarms that prevent compressor start-up.

In SUPPORT mode, the auxiliary system is activated automatically for normal DHW production, as programmed by the technical service.

3.2.6. POOL Menu



Pool

- Used to enable the POOL mode.
- Used to set the setpoint temperature and the pool start-up temperature differential (available depending on the unit options).
- The  icon indicates that there is a time schedule activated in the POOL mode.

Percentage minutes/hour

- Used to adjust the percentage of minutes/hours that the heat pump dedicates to POOL mode when there are simultaneous heating and pool requests with the WINTER programme (available depending on installer configuration).

HTR system

- Used to enable the POOL production through the HTR simultaneously with heating and/or cooling services.

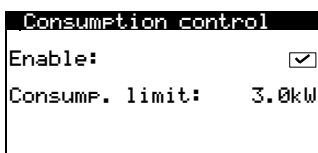
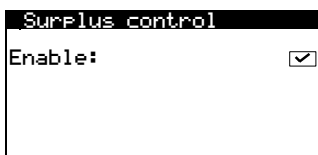
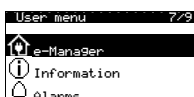
Auxiliary pool

- Used to enable the auxiliary POOL system in both EMERGENCY and SUPPORT mode.

Note: In EMERGENCY mode, the auxiliary system is activated automatically if there are any active alarms that prevent compressor start-up.

In SUPPORT mode, the auxiliary system is activated automatically for normal POOL production, as programmed by the technical service.

3.2.7. e-MANAGER menu



Surplus control


- Used to enable the surplus electricity control.

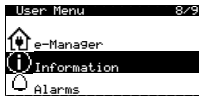
Note: The surplus control attempts to adjust the network balance (consumption and injection) to the value set in the installer menu at all times.

Consumption limit

- Used to enable the electrical consumption limit control.
- Used to set the maximum overall consumption value of the electrical installation by means of the heat pump power control.

3.2.8. INFORMATION Menu

Press  for quick access to the information menu from the main screen.



On/Off HPs			
HP1	ON	HP2	ON
HP3	OFF	HP4	⚠
HP5	⚠	HP6	--

On/Off HPs (supervisor)

- Used to monitor the status of the heat pumps that are connected to the supervisor via the pLAN bus.

Brine/Production			
	Brine	Heat.	
Outlet:	2.0	35.1 °C	
Inlet:	5.1	29.9 °C	
DT:	3.1	5.2 °C	
Press:	1.2	1.4 bar	
Pumps:	95.0	87.0 %	

Brine/production (NETZERO BW/CW)

- This displays the inlet and return temperatures, temperature difference, current pressure and the percentage of circulator pump regulation in the brine and production circuits or the regulation values of the simultaneous production valves.

Brine/Production			
	Brine	Heat.	
Outlet:	2.0	35.1 °C	
Inlet:	5.1	29.9 °C	
DT:	3.1	5.2 °C	
Press:	1.2	1.4 bar	
Valv:	95.0	87.0 %	

Outdoor temperature	
Outdoor-T:	14.7 °C
Outdoor StopT	
Heating:	21.0 °C
Active cool.:	28.0 °C
Passive cool.:	23.0 °C

Outside temperature

- This displays the current outside temperature and the outside temperatures for heating and cooling cut-off.

Boiler	
State	Off
RealT:	40.0 °C
Regulation:	100%

Boiler

- This displays the On/Off status of the boiler, current temperature in the water sensor beneath the boiler, and the boiler input percentage.

Chiller	
Status:	Off
RealTemp:	10.0 °C
Regulation:	100.0%

Chiller

- This displays the On/Off status of the chiller, current temperature in the water sensor beneath the chiller, and the chiller input percentage.

Heating	
SetPoint1:	35.0 °C
1. 35.0 °C	2. 25.0 °C
--	--
5. -- °C	--

Heating (supervisor)

- Displays the heating setpoint temperature of the supervisor and the heating setpoint temperatures configured for each heat pump.

Cooling	
SetPoint1:	12.0 °C
1. 15.0 °C	2. 12.0 °C
--	--
5. -- °C	--

Cooling (supervisor)

- Displays the cooling setpoint temperature of the supervisor and the cooling setpoint temperatures configured for each heat pump.

DHW		
SetPointT: 48.0°C		
1.	48.0°C	2. 40.0°C
--	--	--
5.	-.°C	--

DHW (supervisor)

- Displays the DHW setpoint temperature of the supervisor and the DHW setpoint temperatures configured for each heat pump.

Pool		
SetPointT: 27.0°C		
1.	27.0°C	2. 23.0°C
--	--	--
5.	-.°C	--

Pool (supervisor)

- Displays the pool setpoint temperature of the supervisor and the pool setpoint temperatures configured for each heat pump.

Room terminals			
	Tset °C	Treal °C	RH %
Z1:	22.0	21.9	23.2
Z2:	21.0	19.5	33.1
Z3:	23.0	21.6	29.2
Z4:	22.0	22.3	34.6
Z5:	21.5	20.7	44.6

Interior terminals

- In installations with indoor terminals equipped with bus communication (Th-T or TH sensors), it displays the indoor setpoint temperature (Tcons), the current temperature (Treal) and the current relative humidity (HR) of the terminals assigned to each outlet unit.

XXXXX buffer tank	
RealT:	49.9°C
SetPointT:	50.0°C
DTstart:	5.0°C

Heating buffer / Cooling buffer

- This displays the setpoint temperature, the start-up temperature differential and the current temperature of the buffer storage tank.

Note: There are separate screens for the heating and cooling buffer storage tanks.

Note: If the icon (MAX) is displayed above the actual temperature, it indicates that an operating limit of the heat pump has been reached and has been not possible to reach the established setpoint or has not been possible to reach without using auxiliary equipment. This condition modifies the general starting up criteria of the heat pump so that it might not start despite there being demand in the service.

XXXXXX Groups			
	SetT °C	RealT °C	Reg %
DG1:	50.0	49.8	
SG2:	45.0	46.2	10.1
SG3:	45.0	43.0	23.2
SG4:	35.0	35.1	94.6

Heating units / Cooling units

- This displays the target outlet temperature (Tcons), the current outlet temperature (Treal) and the regulation percentage (Reg) of each outlet unit.

Note: There are separate screens for the heating and cooling outlet units.

DHW	
RealT:	47.9°C
SetT:	48.0°C
DTstart:	5.0°C
Start comp .T:	43.0°C

DHW Tank

- This displays the setpoint temperature, the start-up temperature differential and the current temperature of the DHW storage tank.

Note: If the icon (MAX) is displayed above the actual temperature, it indicates that an operating limit of the heat pump has been reached and has been not possible to reach the established setpoint or has not been possible to reach without using auxiliary equipment. This condition modifies the general starting up criteria of the heat pump so that it might not start despite there being demand in the service.

DHW recirculation	
State:	ON
RealT:	47.9°C
SetT:	48.0°C
DTstart:	5.0°C

DHW Recirculation

- Shows the On/Off status of the DHW recirculation system.
- This displays the setpoint temperature, the start-up temperature differential and the current temperature of the DHW recirculation.

Pool vessel	
Status:	Off
Tsup:	32.0°C
SetT:	37.0°C


Pool vessel (without pool vessel temperature sensor)


- Displays the On/Off status of the pool, the current pool outlet temperature and the setpoint temperature.

Pool vessel	
RealT:	23.7°C
SetpointT:	25.0°C
DTstart:	2.0°C


Pool vessel (with pool vessel temperature sensor)

- This displays the setpoint temperature, the start-up temperature differential and the current temperature of the POOL.

Heat pump meters	
	Press ENTER to access



Press  to access the heat pump meter menu

This menu contains the heat pump energy meter screens.

Instantaneous		kW	
	2.5		0.0
COP:	4.2		10.3
SPF:	4.2		0.0






Instantaneous (heating)

- Displays instantaneous information regarding heat pump consumption, power delivered for heating services and energy efficiency.

Instantaneous		kW	
	2.6		9.1
EER:	4.2		
SPF:	5.1		

Instantaneous (cooling)



- Displays instantaneous information regarding heat pump consumption, power delivered for cooling service and energy efficiency.

Current XXXX		kWh	
	18.2		3.2
	5.0		0.0
SPF:	5.1		3.3

Current day / month

- Displays information regarding heat pump consumption, power delivered for each service and energy efficiency on the current day/month.


Note: The current day/month energy counter is reset when the day/month changes.


Históric		MWh	
February			
	2.3		0.4
	0.8		1.9
SPF:	5.7		0.0

Historical

- Displays monthly and yearly information regarding heat pump consumption, power delivered for each service and energy efficiency.

Note: The values shown correspond to the last 12 completed months, that is, the data corresponding to the current month is not included.

Aux. heaters meters	
	Press ENTER to access




Press  to access the auxiliary heaters meter menu

This menu contains the auxiliary heaters energy meter screens.

Instantaneous		kW	
	7.0		4.0
			3.0
GSPF:	4.2		0.0

Instantaneous

- Displays instantaneous information regarding consumption of the electric auxiliary heaters. Information is shown separately for each service.

Current XXX		kWh	
	25.5		18.0
			4.5
GSPF:	3.8		3.0

Current day / month

- Displays information regarding consumption of the electric auxiliary heaters on the current day/month. Information is shown separately for each service.
- Displays information regarding energy efficiency of the installation on the current day/month, including both the heat pump and electrical auxiliary heaters.

Historic		MWh
Annual		
	24.4	 18.1
		 4.2
GSPP:	3.8	 2.1

Historical

- Displays monthly and yearly information regarding consumption of the electric auxiliary heaters. Information is shown separately for each service.
- Displays monthly and yearly information regarding energy efficiency of the installation including both the heat pump and electrical auxiliary heaters.

Note: The values shown correspond to the last 12 completed months, that is, the data corresponding to the current month is not included.

Surplus control	
Status:	ON
Real:	-0.1 kW
Setpoint:	-0.1 kW


Surplus control


- Displays information on the status of the surplus control, the instantaneous measurement of the network balance and the setpoint for the configured surplus regulation.

Consumption limit	
Status:	OFF
Real:	0.7 kW
Setpoint:	5.0 kW

Consumption limit

- Displays information on the status of the consumption limit control, the instantaneous measurement of consumption and the setpoint for the configured consumption limit.

e-Manager meters	
	Press ENTER to access

Press  to access the e-MANAGER meter menu

This menu includes the e-MANAGER energy meter displays

Instantaneous	
Consumption:	28.3 kWh
Injection:	6.3 kWh

Instantaneous

- Used to display the instantaneous values of the energy consumed and injected into the network.

Month/year	
Annual	
Consumption:	3.4 kWh
Injection:	0.0 kWh

Month / Year

- Used to display the monthly and annual values of the energy consumed and injected into the network.

Maximeter month/year	
Annual	
Consumption:	2.1 kW

Month / Year maximeter

- Used to display the monthly and annual values of the maximum energy consumed by the network.

Month/year coverage	
Annual	
Production:	
Surplus:	38%

Month / Year coverage

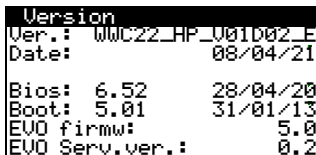
- Used to display the monthly and annual ratio of thermal energy produced in surplus control.



Active demands

- The upper part displays the active service demands.
- The lower part displays the active demands of the different heating/cooling zones.

Note: If the icon (MAX) is displayed above the icon of any of the service demands, it indicates that an operating limit of the heat pump has been reached and has been not possible to reach the established setpoint for that service or has not been possible to reach without using auxiliary equipment. This condition modifies the general starting up criteria of the heat pump so that it might not start despite there being demand in the service.



Version


- Displays information about the control application installed in the controller.

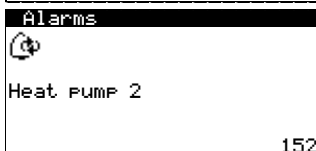


APIs version


- Displays information about the BUS version included in the software version installed.

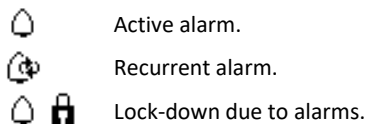
3.2.9. ALARMS Menu

Press  for quick access to the alarm menu from the main screen.

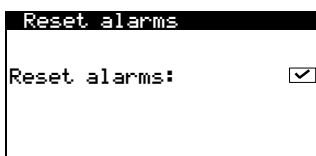


Active alarms

- These screens display the alarms that are active and do not allow compressor start-up. The  button stays on.
- It also uses icons to indicate whether the heat pump is locked down or has recurring alarms.





- Displays the existence of active alarms in a slave of a block installation.



Reset alarms

- Allows to unblock a heat pump blocked and switched to emergency mode by the repetition of a critical alarm.
- Allows to cancel a recurring alarm condition produced by the repetition of the same alarm.

3.3. INSTALLER menu guide

To access the installer menu, press   at the same time. Afterwards, enter access password PW1. This menu is used to define the type of installation and the services the heat pump will deal with, to adjust the various operation parameters and protections as well as to carry out various start-up and maintenance operations.

This menu displays the sub-menu structure of the INSTALLER menu.

INSTALLER menu		
Sub-menu level 1	Sub-menu level 2	Sub-menu level 3
1. Language		
2. Settings		
3. Installation	3.1. Heat pump model	
	3.2 Brine	
	3.3. Services	3.3.1. Heating
		3.3.2. Cooling
		3.3.3. DHW
		3.3.4. Pool
		3.3.5. Priorities
		3.3.6. Special programs
	3.4. Auxiliary equipment	3.4.1. Bivalent parameters
		3.4.2. Internal resistor
		3.4.3. DHW resistor
		3.4.4. Buffer resistor
		3.4.5. Boiler
	3.5. e-Manager	
	3.6 Remote control	3.6.1. EVU/SG control
		3.6.2. Service control
		3.6.3. Bus control
	3.7. Protections	
	3.8. Probe conf.	
4. Information*		
5. Manual activation		
6. Alarm log*		
7. Default values		
8. Change password		

Table 3.2.INSTALLER menu structure.

3.3.1. Language selection

Installer menu	1/8
a.Language	
b.Settings	
c.Installation	

Language	
Language:	ENGLISH
ENTER to change	

Language

- Used to select the language of the heat pump or e-SUPERVISOR controller.

Language	
Disable language mask at start-up:	No
Show mask time:	60s

Language

- Used to enable the language selection screen that appears on launching the controller.
- Used to adjust the display time of the language selection screen on launching the controller.

3.3.2. Settings

Installer menu 2/3	
a. Language	
b. Settings	
c. Installation	

Units	
Temperature:	°C
Pressure:	psi

Units

- Allows selecting the units used to show the values of temperature and pressure in the heat pump screen.

Energy Meters	
Electrical consump.:	
Heat Pump	

Energy meters

- Used to select the criterion for the equipment electric consumption evaluation.
COMPRESSOR: Only compressor is considered for the consumption evaluation.
HEAT PUMP: Compressor and auxiliary components, such as circulating pumps or fans are considering.

Energy Meters	
Integrated	
Passive cooling:	<input checked="" type="checkbox"/>
%Antifreeze C1:	25%

Energy meters 2

- Used to select if passive cooling thermal production is considered in the heat pump energy meters.
- Used to define the brine concentration in the primary circuit (brine circuit) to estimate the thermal production in passive cooling mode.

3.3.3. Selecting the heat pump model

Installer menu	3/8	Configuration	1/8
a.Language		a.Heat pump model	
b.Settings		b.Source	
c.Installation		c.Services setup	

```

HP configuration
Model:
ERRJA0
Device role:
Stand-alone

Configuration
Model:
EEMSC0
Device Rol:
Block master
  
```

XXXX Configuration

- Used to select the heat pump model. This selection is required for the correct operation of the heat pump and the energy meters.
- It is used to assign the role within the installation to the equipment being configured.

STAND-ALONE: Equipment that works independently in an installation in which there are no more equipment in a communications network (NETZERO BW/CW and NETZERO HW).

BLOCK MASTER: Equipment that works as master within a communications network in which the master coordinates the different slaves and each slave manages its own components (NETZERO BW/CW and NETZERO HW).

BLOCK SLAVE: Equipment that works within a communications network under the management of another equipment of higher hierarchy defined as block master (NETZERO BW/CW and NETZERO HW).

Note: Once you have selected the model and the role, you must restart the inverter. To do this, you must cut off the supply of electricity to the inverter for at least 30 seconds.

Note: To enter the correct model, please refer to the label on your heat pump.

Note: Access to some of the heat pump configuration screens may be limited, depending on the model selected.

```

Enable HPs
HP1: ☒ Address 1
HP2: ☒ 2
HP3: ☒ 3
HP4: ☐ 4
HP5: ☐ 5
HP6: ☐ 6

Enable HPs
HP1: ☒ Address 1
HP2: ☐ 2
HP3: ☐ 3

HP configuration
P-LAN address:
--
  
```

Enable HPs

- Allows enable up 6 heat pumps to works under a block management in the configuration menu of the e-SUPERVISOR.
- Allows enable up 3 heat pumps to works under a block management in the configuration menu of a heat pump defined as block master.
- Allows to visualize the PLAN address assigned to each outdoor unit.

Note: It is recommended to enable the heat pumps in an orderly way to guarantee a proper performance of the installation.

HP configuration

- Used to select the address of each equipment within the PLAN network in a block installation of NETZERO BW/CW and NETZERO HW heat pumps.

Special applications

- Used to indicate that the installation only attends cooling services from the primary circuit.
- Used to indicate that the installation attends both cooling services from the primary circuit as heating services from the secondary one.

Note: These special applications are only available in equipment without possibility of reversing the refrigeration cycle.

```

Special applications
Enable
Cooling service
Circuit C1 ☐
Simult. generation
Circuits C1/C2 ☐
  
```

3.3.4. Configuration of the brine system

Installer menu	3/8	Configuration	2/8
a.Language		a.Heat pump model	
b.Settings		b.Source	
c.Installation		c.Services setup	

Source
Type:
Geothermal

Brine

- Used to select the type of brine system.

GEOTHERMAL: System with vertical or horizontal geothermal brine collector.

AEROTHERMAL: System with brine via aerothermal units. The variable speed aerothermal units and defrost program controls are enabled.

HYBRID: Brine systems that combine a geothermal collector and an aerothermal collector. The controls for the hybrid system, variable speed aerothermal units and defrost programs are enabled.

Aerothermal source		
Control:	% Air flow	
	Min	Max
Range:	50	100 %
DTair unit:	9.0°C	
ASFnominal:	0.90	

Aerothermal collector

- Used to select the air source control type:

% AIR FLOW: the regulation percentages are considered based on a nominal air flow rate defined for each device.

% FAN: the regulation percentages are considered based on the maximum regulation allowed for the fan employed.

- Used to adjust the maximum and minimum regulation percentage allowed according to the control type selected.
- Used to adjust the difference in air-antifreeze agent.
- In NETZERO BW/CW heat pumps, used to adjust the nominal operating factor (nominal ASF) of the aerothermal collector.

Note: The following table displays the recommended nominal ASF values for different aerothermal unit configurations:

Aerothermal unit	ASF 1 unit	ASF 2 units
AU6	2	1
AU12	1	0.5
AU22	0.55	0.25

Source limits		
Aerotherm.	Min	Max
OutdoorT:	-25.0	2.0 °C
GlycolT:	-7.0	20.0 °C
Geothermal	Min	Max
OutdoorT:	-25.0	2.0 °C
GlycolT:	-7.0	20.0 °C

Source limits

- Used to set the maximum and minimum outdoor temperature at which the aerothermal collector is allowed to work.
- Used to set the maximum and minimum antifreeze temperature at which the aerothermal collector is allowed to work.
- Used to set the maximum and minimum outdoor temperature at which the geothermal collector is allowed to work.
- Used to set the maximum and minimum antifreeze temperature at which the geothermal collector is allowed to work.

Note: This screen is only available for hybrid brine systems.

```

Defrosting
Enable: ☒
Defrosting by: DHW
Start:
Frost factor: +25%
End:
StopT: 12.0°C
Max. time: 30min
  
```

Defrost

- Used to adjust the defrost program of the aerothermal collector and to adjust its parameters.
- Used to adjust the production system used as a heat source to perform defrosting (heating / DHW / pool).
- Used to adjust the difference between the nominal ASF and defrost program start-up.
- Used to adjust the brine fluid temperature required to finish the defrost program.
- Used to adjust the maximum defrost program operation time.

Note: This screen is only available for aerothermal or hybrid brine systems and with models that include integrated passive cooling.

```

Hybrid system
Sources
%min air: 20%
%min ground: 20%
  
```

Hybrid system

- Used to adjust the minimum power percentage absorbed by each collector. If the power percentage absorbed by one of the collectors decreases below the established limit, it is disabled.

Note: This screen is only available for hybrid brine systems.

```

Special Parameters
DTsource: 5.0°C
  
```

Special parameters

- In NETZERO BW/CW heat pumps, used to target temperature difference between the brine circuit outlet and inlet.

```

Source manager
Enable: ☐
  
```

Source manager

- Used to enable an e-SOURCE source manager for the control of the brine system.

Note: This option is only available for NETZERO HW pumps.

Note: In installation that include e-SUPERVISOR, the e-SOURCE must be enabled in the e-SUPERVISOR configuration menu.

3.3.5. Configuration of the heating system

Installer menu	3/8 Installation	3/8 Services setup
a. Language	b. Source	a. Heating
b. Settings	c. Services setup	b. Cooling
c. Installation	d. Auxiliary systems	c. DHW

```

Heating scheme
Enable: ☒
Connection type: Direct
Production D002: ☒
  
```

Heating

- Used to enable the heating service.
- Used to select the type of connection to the heat emission system:
DIRECT: Heat production is enabled by requests coming from indoor terminals. Activation of the outlet units for heating is not allowed when another service is being produced (cooling / DHW / pool).
BUFFER T1: Heating production is enabled by the temperature probe of the buffer storage tank. Activation of the outlet units for heating is allowed when another service is being produced (cooling / DHW / pool).
COMBI T1: Heating production is enabled by the temperature probe of the buffer storage tank. Activation of outlet units for heating is not allowed when another DHW is being produced.
- Used to enable use of the heat pump to produce heat.

Heating9 groups	
DG1:	<input checked="" type="checkbox"/> Heating floor
SG2:	<input checked="" type="checkbox"/> Heating floor
SG3:	<input checked="" type="checkbox"/> Fancoils
SG4:	<input checked="" type="checkbox"/> Radiators
SG5:	<input checked="" type="checkbox"/> Heating floor

Heating9	
T limit:	68.2°C

Heating9 groups	
DG1:	None
SG2:	Direct 0-10Vdc
SG3:	None
SG4:	Reverse 10-0Vdc
SG5:	Direct 0-10Vdc

Heat.relay thermostat	
Logic	
DG1:	NO DI05
SG2:	NO DI07
SG3:	NO DI09
SG4:	NC DI11
SG5:	NO DI13

Heating BUS terminal		
	TIPO	Direcc.
DG1:	th-Tune	01
SG2:	thT	52
SG3:	th-Tune	03
SG4:	thT	54
SG5:	th-Tune	05

BUS-terminal AUTO	
Enable:	<input checked="" type="checkbox"/>
DTsummer/winter	
DG1:	2.0°C
SG2:	2.0°C
SG3:	2.0°C
SG4:	2.0°C
SG5:	2.0°C

Heating Groups

- Used to enable the outlet units in heating mode.
- Used to select the type of heat emission system used in each unit. This selection affects the shape of the heating curve used.

Note: Different emission systems can be used for heating and cooling in a single outlet unit.

Heating

- Used to adjust the configurable limit temperature value for heating, being the maximum supply temperature that can be reached for this service. This is the value that will be taken as a setpoint in the event of surplus energy utilisation. Cases of surplus energy utilisation are:
Photovoltaic surplus.
Surplus due to SG states.
Surplus due to excess energy in simultaneous production.

Heating groups

- Used to select the modulating valve control logic of the combined outlet units.

Note: The modulating valve control logic must be the same in both heating and cooling mode. If it is changed for one service, it will be changed automatically for the other.

Note: With direct logic the 10V signal corresponds to a 100% of regulation (without mixing) and with the reverse logic the 10V signal corresponds to a 0% of regulation (100% mixing).

Heating relay thermostats

- Used to select the type of logic used in each of the digital inputs of the outlet units in heating mode.
NO: Contact closed to activate the request.
NC: Contact open to activate the request.
- Displays the connection terminal of each digital input (DIxx).

Heating bus terminals

- Used to enable the use of indoor terminals with data bus communication in heating mode.
- Displays the address assigned (ADx) by the controller to the indoor terminal associated to each outlet unit. Bus terminals must be configured with the addresses displayed on this screen.

Note: This configuration is associated with the heating and cooling services. If a bus terminal is enabled for a unit for heating, it is automatically enabled for cooling.

Cooling/heating terminals

- Used to enable automatic switching between WINTER / SUMMER programs in indoor bus terminals. If this option is enabled, the switch between WINTER / SUMMER programs of the indoor terminals will be carried out automatically based on the room temperature.
- Used to adjust the temperature change differential (DTsw) between the WINTER / SUMMER programs.

Note: If the heat pump is in the WINTER program and all indoor terminals with bus connections are changed to the SUMMER program, the heat pump will change automatically to the SUMMER program and vice versa.

Note: This configuration is associated with the heating and cooling services. If it is modified for the heating service, it will automatically change for cooling.

Interior compensation	
G1:	1.0
G2:	1.0
G3:	1.0
G4:	1.0
G5:	1.0

Indoor offset

- Used to adjust the indoor offset factor for each outlet unit. The indoor offset factor corrects the target outlet temperature of the outlet unit based on the indoor temperature.

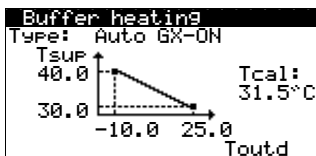
VALUE = 0: No indoor temperature offset.

VALUE = 0.5: Correction of the outlet temperature equal to half the difference between actual and setpoint temperature.

VALUE = 1: Correction of the outlet temperature equal to the difference between actual and setpoint temperature.

VALUE = 2: Correction of the outlet temperature equal to double the difference between actual and setpoint temperature.

Note: This configuration is associated with the heating and cooling services. If it is modified for the heating service, it will automatically change for cooling.

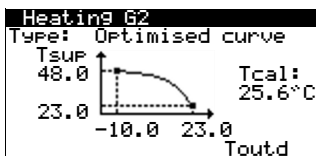


Buffer heating

- Used to configure a specific buffer heating curve and display the temperature calculated.
- Used to select the calculation criterion of the accumulation setpoint in buffer heating systems.

AUTO GX: The setpoint is obtained as the maximum between the value calculated by the heating buffer curve and those calculated by the enabled consumption groups.

AUTO GX-ON: The setpoint is obtained as the maximum between the value calculated by the heating buffer curve and calculated by those consumption groups with demand.



Heating G1, G2, G3, G4 and G5

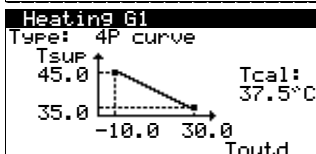
- Used to select the calculation criterion of the delivery temperature of the consumption groups.

OPTIMISED CURVE: Delivery temperature calculated from an equation that considers the outdoor temperature, the emission system, the insulation level, and the values configured in the curve.

4P CURVE: Delivery temperature calculated from the outdoor temperature by means of a linear relationship according to values configured in the curve.

Note: To establish a fixed delivery setpoint, the same delivery temperature must be defined for the two outdoor temperatures configured in the 4P CURVE.

- Used to displays the delivery temperature calculated from the outdoor temperature and the curve type selected.



Insulation	
Building insulation:	
Good	

Insulation

- Used to select the building insulation level.

Note: The calculation of the target outlet temperatures based on the heating curves of the outlet units is carried out using an attenuated outdoor temperature. The higher the insulation level, the higher the attenuation applied to the outdoor temperature.

Special Parameters	
DTheating:	5.0°C
Dtsupply:	0.0°C

Special parameters 1

- Used to adjust the target temperature difference between the production circuit outlet and inlet in heating mode.
- Used to adjust a temperature difference between the calculated target outlet temperature and the actual outlet temperature of the heat pump. This option is useful in cases where collection must be performed at a different temperature than consumption, or when an intermediate exchanger is installed between production and use.

Special Parameters	
Heating/cooling valve	
Consumption control	<input checked="" type="checkbox"/>
Production control	<input type="checkbox"/>
Simultaneous consum.	<input checked="" type="checkbox"/>
Heating + cooling	

Special parameters 2

- Used to select the operation of the heating/cooling valve when there are no independent digital outputs to control the production and the consumption.
- Used to enable simultaneous activation of units that request heating and cooling.
ENABLED: In case of simultaneous heating and cooling requests, all outlet units are enabled equally.
DISABLED: In case of simultaneous heating and cooling requests, priority is given to the service (heating / cooling) of the lowest number outlet unit with an enabled request. Activation of units that do not request the service set as a priority is not allowed. This restriction only affects the outlet units that are enabled for both heating and cooling mode.

Note: Simultaneous unit activation is associated with the heating and cooling services. If it is modified for the heating service, it will automatically change for cooling.

3.3.6. Configuration of the cooling system

Installer menu		3/8 Installation		3/8 Services setup		2/6	
a. Language		b. Source		a. Heating			
b. Settings		c. Services setup		b. Cooling			
c. Installation		d. Auxiliary systems		c. DHW			

Active cooling scheme	
Enable:	<input checked="" type="checkbox"/>
Connection type:	Buffer tank
Production D001:	<input checked="" type="checkbox"/>

Active cooling

- Used to enable the active cooling service.
- Used to select the type of connection to the active cooling emission system:
DIRECT: Cooling production is enabled by requests coming from indoor terminals. Enabling the outlet units for active cooling is not allowed when another service is being produced (heating / DHW / pool).
BUFFER T1: Active cooling production is enabled by the same temperature probe than for heating production service. Enabling the outlet units for active cooling is not allowed when another service is being produced (heating / DHW / pool).
BUFFER T2: Active cooling production is enabled by a different temperature probe than for heating production service. Enabling the outlet units for active cooling is allowed when another service is being produced (heating / DHW / pool).
- Used to enable use of the production circulator pump for the active cooling service.

Passive cooling	
Enable:	<input checked="" type="checkbox"/>
Production PUMP:	<input checked="" type="checkbox"/>
Brine PUMP:	<input checked="" type="checkbox"/>

Passive cooling

- Used to enable the passive cooling service.
- Used to enable use of the circulator pump for the passive cooling service.
- Used to enable use of the brine collector circulator pump for the passive cooling service.

Note: The passive cooling system is enabled by requests coming from indoor terminals, even in installations with a cooling buffer storage tank.

Cooling groups	
DG1:	<input checked="" type="checkbox"/> Heating floor
SG2:	<input checked="" type="checkbox"/> Heating floor
SG3:	<input checked="" type="checkbox"/> Fancoils
SG4:	<input checked="" type="checkbox"/> Radiators
SG5:	<input checked="" type="checkbox"/> Heating floor

Cooling Groups

- Used to enable the outlet units in cooling mode.
- Used to select the type of emission system used in each outlet unit in cooling mode.

Note: Different emission systems can be used for heating and cooling in a single outlet unit.

Note: In units where an UNDERFLOOR HEATING or RADIATOR emission system is selected and a temperature reading and relative humidity terminal is enabled, the anti-condensation protection will activate automatically.

Cooling	
T limit:	5.0°C

Cooling

- Used to adjust the minimum configurable temperature limit value for cooling, being the maximum supply temperature that can be reached for this service. This is the value that will be taken as a setpoint in the event of surplus energy utilisation. Cases of surplus energy utilisation are:
Photovoltaic surplus.
Surplus due to SG states.
Surplus due to excess energy in simultaneous production.

Cooling groups	
DG1:	None
SG2:	Direct 0-10Vdc
SG3:	None
SG4:	Reverse 10-0Vdc
SG5:	Direct 0-10Vdc

Cooling groups

- Used to invert the modulating valve control logic of the combined outlet units.

Note: The modulating valve control logic must be the same in both heating and cooling. If it is changed for one service, it will be changed automatically for the other.

Note: With direct logic the 10V signal corresponds to a 100% of regulation (without mixing) and with the reverse logic the 10V signal corresponds to a 0% of regulation (100% mixing).

Cooling relay thermostat	
Logic	
DG1:	NO DI05
SG2:	NO DI07
SG3:	NO DI09
SG4:	NC DI11
SG5:	NO DI13

Cooling relay thermostats

- Used to select the type of logic used in each of the digital inputs of the outlet units in cooling mode.
NO: Contact closed to activate the request.
NC: Contact open to activate the request.
- Displays the connection terminal of each digital input (DIxx).

Cooling BUS terminals		
	Tipo	Direcc.
DG1:	th-Tune	01
SG2:	thT	52
SG3:	th-Tune	03
SG4:	thT	54
SG5:	th-Tune	05

Cooling bus terminals

- Used to enable the use of indoor terminals with data bus communication in cooling mode.
- Displays the address assigned (ADx) by the controller to the indoor terminal associated to each outlet unit. Bus terminals must be configured with the addresses displayed on this screen.

Note: This configuration is associated with the heating and cooling services. If a bus terminal is enabled for an outlet unit in a service, it is automatically enabled for the other one.

BUS-terminal AUTO	
Enable:	<input checked="" type="checkbox"/>
DTsummer/winter	
DG1:	2.0°C
SG2:	2.0°C
SG3:	2.0°C
SG4:	2.0°C
SG5:	2.0°C

Cooling/heating terminals

- Used to enable automatic switching between WINTER / SUMMER programs in indoor bus terminals. If this option is enabled, the switch between WINTER / SUMMER programs of the indoor terminals will be carried out automatically based on the room temperature.
- Used to adjust the temperature change differential (DTsw) between the WINTER / SUMMER programs.

Note: If the heat pump is in the WINTER program and all indoor terminals with bus connections are changed to the SUMMER program, the heat pump will change automatically to the SUMMER program and vice versa.

Note: This configuration is associated with the heating and cooling services. If it is modified for the heating service, it will automatically change for heating.

Interior compensation	
G1:	1.0
G2:	1.0
G3:	1.0
G4:	1.0
G5:	1.0

Indoor offset

- Used to adjust the indoor offset factor for each outlet unit. The indoor offset factor corrects the target outlet temperature of the outlet unit based on the indoor temperature.

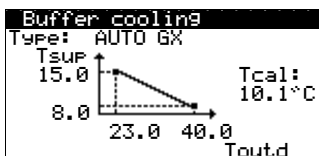
VALUE = 0: No indoor temperature offset.

VALUE = 0.5: Correction of the outlet temperature equal to half the difference between actual and setpoint temperature.

VALUE = 1: Correction of the outlet temperature equal to the difference between actual and setpoint temperature.

VALUE = 2: Correction of the outlet temperature equal to double the difference between actual and setpoint temperature.

Note: This configuration is associated with the heating and cooling services. If it is modified for the heating service, it will automatically change for heating.

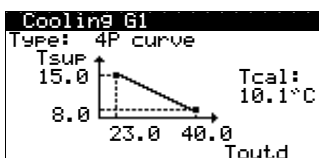


Buffer cooling

- Used to configure a specific buffer cooling curve and display the temperature calculated.
- Used to select the calculation criterion of the accumulation setpoint in buffer cooling systems.

AUTO GX: The setpoint is obtained as the minimum between the value calculated by the cooling buffer curve and those calculated by the enabled consumption groups.

AUTO GX-ON: The setpoint is obtained as the minimum between the value calculated by the cooling buffer curve and calculated by those consumption groups with demand.



Cooling G1, G2, G3, G4 and G5

- Used to configure a 4P CURVE to calculate the consumption group delivery temperature.

Note: To establish a fixed delivery setpoint, the same delivery temperature must be defined for the two outdoor temperatures configured in the 4P CURVE.

- Used to displays the delivery temperature calculated from the curve.

Special Parameters	
DTcooling:	3.0°C
DTsupply:	0.0°C
DTdew-Point:	3.0°C

Special parameters 1

- Used to adjust the target temperature difference between the production circuit outlet and inlet in cooling mode.
- Used to adjust a temperature difference between the calculated target outlet temperature and the actual outlet temperature of the heat pump. This option is useful in cases where collection must be performed at a different temperature than consumption, or when an intermediate exchanger is installed between production and use.
- Used to set a minimum production temperature protection in cooling mode based on the dewpoint. This option is only available when cooling outlet units are enabled for UNDERFLOOR HEATING or RADIATOR emission systems in combination with bus terminals (th-T or th-TUNE).

Special Parameters	
Heating/cooling valve	<input checked="" type="checkbox"/>
Consumption control	<input type="checkbox"/>
Production control	<input type="checkbox"/>
Simultaneous consum.	<input checked="" type="checkbox"/>
Heating + cooling	<input checked="" type="checkbox"/>

Special parameters 2

- Used to select the operation of the heating/cooling valve when there are no independent digital outputs to control the production and the consumption.
- Used to enable simultaneous activation of units that request heating and cooling.

ENABLED: In case of simultaneous heating and cooling requests, all outlet units are enabled equally.

DISABLED: In case of simultaneous heating and cooling requests, priority is given to the service (heating / cooling) of the lowest number outlet unit with an enabled request. Activation of units that do not request the service set as a priority is not allowed. This restriction only affects the outlet units that are enabled for both heating and cooling mode.

Note: Simultaneous unit activation is associated with the heating and cooling services. If it is modified for the heating service, it will automatically change for cooling.

3.3.7. Configuration of the DHW production service

Installer menu	3/8	Installation	3/8	Services setup	3/6
a.Language		b.Source		b.Cooling	
b.Settings		c.Services setup		c.DHW	
c.Installation		d.Auxiliary systems		d.Pool	

DHW	
Enable	<input checked="" type="checkbox"/>
Recirculation PUMP:	<input checked="" type="checkbox"/>
Production D004:	<input checked="" type="checkbox"/>

DHW

- Used to enable the DHW production service.
- Used to enable use of the circulator pump for the DHW service.
- Use to enable the use of a DHW recirculation pump.

DHW Tank	
T limit:	82.0°C
Legionella SetPointT:	65.0°C

DHW Tank

- Used to adjust the configurable DHW temperature limit value, being the maximum supply temperature that can be reached for this service. This is the value that will be taken as the setpoint in the event of surplus utilisation. Cases of surplus energy utilisation are:

Photovoltaic surplus.

Surplus due to SG states.

Surplus due to excess energy in simultaneous production.
- Used to adjust the setpoint temperature in the DHW storage tank for the legionella protection program.

Special Parameters	
DT DHW:	1.0°C

Special parameters

- Used to adjust the target temperature difference between the production circuit outlet and inlet in DHW mode.

HTR configuration	
DT discharge:	3.0°C

HTR configuration

- Used to adjust the temperature difference required between the DHW temperature and the heat pump discharge temperature to activate the HTR system for DHW.

DHW cascade	
Separate tank:	<input checked="" type="checkbox"/>

DHW cascade

- Used to enable the option for the heat pump to provide DHW service independently from the rest of the heat pumps that make up the block.

Note: This option is only available for installations with heat pump block management.

3.3.8. Configuration of the pool service

Installer menu	3/8 Installation	3/8 Services setup	4/6
a. Language	b. Source	c. DHW	
b. Settings	c. Services setup	d. Pool	
c. Installation	d. Auxiliary systems	e. Priorities	

Pool	
Enable:	<input checked="" type="checkbox"/>
Exchanger DT:	10.0°C
Production D008:	<input checked="" type="checkbox"/>

Pool	
Enable:	<input checked="" type="checkbox"/>
Logic DI04:	NA

Pool

- Used to enable the pool service.
- Used to adjust the temperature difference between the setpoint temperature of the pool and the outlet of the heat pump. This parameter must be adjusted to obtain an appropriate temperature difference in the pool exchanger.

Note: Available depending on unit options.

- Used to set the request logic of the pool.

Note: Available depending on unit options.

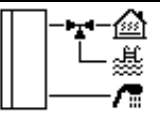
- Used to enable use of the production circulator pump for the pool service.

Pool	
T limit:	30.0°C
SUPPLYT:	28.0°C

Pool (temperature limit)

- Used to adjust the configurable pool limit temperature value, being the maximum supply temperature that can be reached for this service. This is the value that will be taken as a setpoint in the event of surplus energy utilisation. Cases of surplus energy utilisation are:
Photovoltaic surplus.
Surplus due to SG states.
Surplus due to excess energy in simultaneous production.
- Used to adjust the target outlet temperature in pool mode.

Note: Available depending on unit options.

Connection type	
	

Connection type

- Used to select whether the pool is connected in parallel to the heating circuit or the DHW circuit (HTR system).

Note: Available depending on unit options.

Special Parameters	
DT Pool:	5.0°C

Special parameters

- Used to adjust the target temperature difference between the production circuit outlet and inlet in pool mode.

3.3.9. Configuration of production priorities

Installer menu	3/8 Installation	3/8 Services setup	5/6
a. Language	b. Source	d. Pool	
b. Settings	c. Services setup	e. Priorities	
c. Installation	d. Auxiliary systems	f. Special programs	

Priorities	
1	2
4	3
5	

Priorities

- This allows the response to the different services to be prioritised. Services with the same priority level can be dealt with simultaneously.

Heating/Pool	
Minutes Per hour control:	<input checked="" type="checkbox"/>

Heating/pool

- It allows to enable management by a pool priority strip in facilities with the same priority of heating and pool services.

Note: This option is only available if the same priority is assigned to pool and heating services.

Note: If the same priority is assigned to the heating and pool services, and this option is not enabled both services are attended to simultaneously.

3.3.10. Activation of special programs

Installer menu	3/8 Installation	3/8 Services setup	6/6
a. Language	b. Source	d. Pool	
b. Settings	c. Services setup	e. Priorities	
c. Installation	d. Auxiliary systems	f. Special programs	

Manual defrosting	
Enable:	<input checked="" type="checkbox"/>

Manual defrost

- Used to manually activate the defrost function, even if the parameters set in the programming are not reached.

Drying floor	
Enable:	<input checked="" type="checkbox"/>
1. 12 35.0	2. 12 35.0
3. 12 35.0	4. 12 35.0
5. 12 35.0	6. 12 35.0

Floor drying

- Used to enable the floor drying program. This program helps control the mortar drying process using underfloor heating.
- Used to set a schedule with up to six time periods with different outlet temperatures.

Note: Once all the phases established in the floor drying programme have been completed, the heat pump returns to normal operation. In this way, if the heat pump receives demands from the enabled services, it will meet them.

3.3.11. Configuration of auxiliary equipment

Installer menu	3/8 Installation	4/8 Auxiliary systems	1/3
a. Language	c. Services setup	a. Auxiliary devices	
b. Settings	d. Auxiliary systems	b. Bivalent support	
c. Installation	e. e-Manager	c. Replacement support	

Internal elec. Heater	
Enable:	D05
Heating:	<input checked="" type="checkbox"/>
DHW:	<input checked="" type="checkbox"/>
Pool:	<input checked="" type="checkbox"/>
Capacity:	3.0 kW

Internal electric heater

- Used to enable the indoor auxiliary resistor for heating, DHW and/or pool services.

Note: Available depending on unit options.

Note: In the USER level, its use must be enabled as SUPPORT and/or EMERGENCY for the heating, DHW and/or pool services.

Note: If it is enabled for DHW, it will also be used to support the LEGIONELLA PROTECTION programs.

- Used to select the capacity of the internal electrical heater.

DHW electrical heater	
Enable:	D06
DHW:	<input checked="" type="checkbox"/>
Capacity:	1.5 kW

DHW electric heater

- Used to enable the auxiliary electric resistor installed inside the DHW inter-accumulator for SUPPORT, EMERGENCY or for LEGIONELLA PROTECTION programs.

Note: In the USER level, it must be enabled as SUPPORT and/or EMERGENCY for the DHW production service.

- Used to select the capacity of the DHW electrical heater.

Buffer elect. heater	
Enable:	D09
Heating:	<input checked="" type="checkbox"/>
Capacity:	3.0 kW

Buffer electric heater

- Used to enable an auxiliary resistor installed inside the heating buffer storage tank for SUPPORT or EMERGENCY.

Note: In the USER level, it must be enabled as SUPPORT and/or EMERGENCY for the heating service.

Note: Only available in models that do not have an internal resistor.

- Used to select the capacity of the buffer electrical heater.

External boiler	
Enable:	D010
Heating:	<input checked="" type="checkbox"/>
DHW:	<input checked="" type="checkbox"/>
Pool:	<input checked="" type="checkbox"/>
Log.:	Direct 0-10Vdc
Consumption:	3.0 kW
Production PUMP:	<input checked="" type="checkbox"/>

Boiler

- Used to enable an auxiliary external boiler for heating, DHW and/or pool services.
- Used to select the control logic of the boiler modulating valve.
- Used to select the capacity of the auxiliary heater.

Note: The capacity of the auxiliary heater only should be introduced if the auxiliary heater installed is of the electrical type.

- Used to enable / disable the production pump when the services are provided only with the boiler.

Note: In the USER level, its use must be enabled as SUPPORT and/or EMERGENCY for the heating, DHW and/or pool services.

Note: If it is enabled for DHW, it will also be used for the LEGIONELLA PROTECTION programs.

External chiller	
Enable:	D09
Cooling:	<input checked="" type="checkbox"/>
Log.:	Direct 0-10Vdc
Production PUMP:	<input checked="" type="checkbox"/>

Chiller

- Used to enable an auxiliary external chiller for cooling.
- Used to select the control logic of the chiller modulating valve.
- Used to enable / disable the production pump when the services are provided only with the chiller.

Note: In the USER level, its use must be enabled as SUPPORT and/or EMERGENCY for the cooling service.

Installer menu	3/8	Installation	4/8	Auxiliary systems	2/3
a.Language		c.Services setup		a.Auxiliary devices	
b.Settings		d.Auxiliary systems		b.Bivalent support	
c.Installation		e.e-Manager		c.Replacement support	

XXXXXX SUPPORT	
T bivalent:	8.0°C
DTstart:	5.0°C
Starting time:	99min

Bivalent support

- Used to set the outdoor temperature at which simultaneous use of the heat pump and the auxiliary equipment is allowed.
- Used to set a minimum time period and the temperature difference with regard to the outlet target temperature (heating, pool and cooling) or accumulation (DHW) so the auxiliary equipment can be used at the same time. If the outlet temperature remains below the target within a range higher than the starting temperature difference and during at least the established starting time, the use of auxiliary equipment is allowed.

Installer menu	3/8	Installation	4/8	Auxiliary systems	3/3
a.Language		c.Services setup		a.Auxiliary devices	
b.Settings		d.Auxiliary systems		b.Bivalent support	
c.Installation		e.e-Manager		c.Replacement support	

Replacement support	
T replacement:	
Heating mode:	-99.0°C
Cooling mode:	99.0°C

Replacement support

- Used to set the outdoor temperature at which the heat pump is replacement by the auxiliary equipment.
- For DHW, HEATING or POOL mode, below the substitution temperature the compressor cannot start and all the services are attended with the enabled support equipment.
- For COOLING mode, above the substitution temperature, the compressor cannot start and the cooling service is attended to with the enabled support equipment.

3.3.12. e-MANAGER configuration

Installer menu	3/8	Installation	5/8
a.Language		d.Auxiliary systems	
b.Settings		e.e-Manager	
c.Installation		f.Remote control	

Grid meter	
Enable:	<input checked="" type="checkbox"/>
Address:	100
Model:	Circutor CEM C21/C31

Network meter

- Used to enable the reading of the network meter, select the address of the meter in the communication network and the model of the energy meter installed.

Note: The default meter address is 100. If you change the meter address on the display, you must also change it physically on the meter as per the manufacturer's instructions in the manual.

Surplus control	
Balance:	0.0kW
Activation:	-0.5kW 3min
Deactivation:	0.5kW 5min

Surplus control

- Used to set the target network balance value for surplus regulation. The default balance for the surplus regulation is set to zero. This means that when the heat pump is regulating the surplus, it will always try to achieve a zero balance value with the network (zero consumption and zero injection). As the electricity production and consumption of the heat pump are variable over time, it is possible that this value may fluctuate slightly.
- Used to adjust the limits for the activation and deactivation of the surplus regulation of the heat pump. A power injection limit and a time for activation as well as a consumption limit and a time for deactivation of the regulation must be set.

Note: Negative power values refer to power flows to the network (injection to the network). Positive values refer to power flows to the installation (network consumption).

e-Manager	
External device detected	

external e-Manager

- This screen is displayed when the heat pump detects an external ecoSMART e-MANAGER device connected to the pLAN network. In this case, the e-MANAGER functions built into the heat pump are disabled and must be programmed from the external device.

3.3.13. Configuration of remote-control options

Installer menu	3/8 Installation	6/8 Remote control	1/4
a. Language	e. e-Manager	a. EVU/SG Control	
b. Settings	f. Remote control	u. Services Control	
c. Installation	g. Protections	z. BUS Control	

SG/EVU Control	
EVU Control:	<input type="checkbox"/>
SG Control:	<input checked="" type="checkbox"/>
SG Signal1:DI1	NC
SG Signal2:DI2	NC

SG/EVU control

- Used to enable the EVU electrical consumption control. The EVU control prevents production of energy with the compressor or the auxiliary equipment. Circulator pumps, valves and other components can be activated to consume energy from the storage systems.
- Used to enable SG status control. If the SG mode control is enabled, EVU functionality will not be available and vice versa. Depending on the value of the digital inputs, there are four SG operating statuses:

SG1 [0 0] (Normal state): The heat pump is operating normally, as per its configuration.

SG2 [0 1] (Reduced tariff): As we are in a reduced tariff period, we will take advantage of the lower price of electricity to use the pump to produce heat or cold.

SG3 [1 0] (Block status): Signal to block the compressor and support the heat pump.

SG4 [1 1] (Forced state): The heat pump will force the maximum possible consumption in the installation to help balance the network.

These external signals can be sent by the electricity company itself to endeavour to keep the distribution network balanced at all times.

- Used to assign the EVU signal or SG signals to the available DI(s).
- Used to select the operation logic of the EVU and SG control.

NO: Closed contact to activate EVU control. In SG control it will interpret a 0 with open contact.

NC: Open contact to activate EVU control. In SG control it will interpret a 1 with open contact.

SG2 Mode	
	Valley
DHW:	2.0°C
Heating:	5.0°C
Cooling:	-2.0°C
Pool:	5.0°C

SG2 mode

- Used to set the temperature differential on the setpoints of the services in SG2 "Reduced tariff" mode.

Installer menu	3/3	Installation	6/3	Remote control	3/4
a.Language		e.e-Manager		a.EU/SG Control	
b.Settings		f.Remote control		u.Services Control	
c.Installation		g.Protections		..BUS Control	

Services Control	
Wint./Summ.:	<input checked="" type="checkbox"/> DI1 NA
DHW:	<input type="checkbox"/> - - NA
Pool:	<input checked="" type="checkbox"/> DI4 NA

Service control

- Used to enable remote control of the SUMMER / WINTER program. Also used to select the digital input used by the remote program control. With SG control modes enabled, enabling remote program selection makes it incompatible with selecting DHW production control. Also used to select the operating logic of the program control.

NO: Closed contact to select WINTER, open contact to select SUMMER.

NC: Closed contact to select SUMMER, open contact to select WINTER.

- Used to enable remote control of DHW production. Also used to select the digital input used by the remote control of DHW production. With SG mode control enabled, enabling DHW production control makes it incompatible with enabling remote programme selection. If SG mode control is enabled, we can choose one of the remaining remote controls (winter/summer program or DHW production). Also used to select the operation logic of the DHW remote control.

NO: Closed contact to enable DHW production.

NC: Open contact to enable DHW production.

Note: When DHW production is enabled, it will only start if there is a request according to the parameters established as USER and if there is no higher priority service with a request.

- Used to enable remote control of pool production. Also used to select the operating logic of the pool remote control.

NO: Closed contact to enable pool production.

NC: Open contact to enable pool production.

Note: When pool production is enabled, it will only start if there is a request according to the parameters established as USER and if there is no higher priority service with a request.

Installer menu	3/3	Installation	6/3	Remote control	4/4
a.Language		e.e-Manager		a.EU/SG Control	
b.Settings		f.Remote control		u.Services Control	
c.Installation		g.Protections		..BUS Control	

BMS remote control	
Enable:	<input checked="" type="checkbox"/>

BMS remote control

- Used to enable remote control via BMS or BMS / FBus2 communication ports through ModBus protocol.

Note: To access the controller via the BMS or BMS2 ports, they must be configured as MODBUS SLAVE EXTENDED.

BMS configuration	
Protocol:	MB Extended
Baudrate:	19200
Stop bits:	2
Parity:	None
Address:	17

BMS configuration

- Used to assign the address of the BMS port.
- Used to configure the communication parameters via the BMS port.

Note: This port can be used to connect several expansion cards for communication that allow remote access to the controller through various protocols.

BMS2 configuration	
Protocol:	MB Extended
Baudrate:	19200
Stop bits:	2
Parity:	None
Address:	17

BMS2 configuration

- Used to assign the controller BMS2 port address.
- Used to configure the communication parameters via the BMS2 port.

Note: This port can be used to connect indoor bus terminals with MODBUS MASTER configuration.

Note: This port can be used to access the controller remotely with MODBUS SLAVE EXTENDED configuration.

FB2 configuration	
Protocol:	MB Master
Baudrate:	19200
Stop bits:	2
Parity:	None

FB2 configuration

- Used to display the communication parameters of the FB2 port.

Note: All external devices connected to the heat pump through the Fieldbus 2 port must be compatible with this configuration (th-Tune, th-T, BUS outdoor temperature sensor, energy meters and gas detectors).

3.3.14. Protection configuration

Installer menu	3/8	Installation	7/8
a.Language		f.Remote control	
b.Settings		g.Protections	
c.Installation		h.Probe_conf.	

Compressor capacity		
	Min	Max
Heating:	25	100 %
Cooling:	25	100 %
DHW:	25	100 %
Pool:	25	100 %

Limit compressor 1

- Used to limit the modulation range of the compressor for each production service. This option is used to adjust the range of thermal power supplied to the production circuit, absorbed in the brine circuit or the electrical consumption of the heat pump.

Compressor capacity	
Consumption:	1.5kW
Heating:	19.7kW
Cooling:	15.5kW
DHW:	14.3kW
Pool:	18.0kW

Limit compressor 2

- Used to limit the maximum electricity consumed by the heat pump.
- Used to limit and control the maximum thermal power delivered by the heat pump to each service.

Comp. Speed bypass		
	Min	Max
Range1:	25.0	100.0%
Range2:	25.0	100.0%
Range3:	25.0	100.0%
Range4:	25.0	100.0%

Compressor speed bypass

- Used to define up to 4 speed ranges within which the compressor is not allowed to work, the purpose of which is to solve problems related to abnormal noises derived from resonant frequencies in the unit. During speed increases and decreases, the compressor will jump from one speed range to another within the defined speed ranges.

Note: It is advisable not to use this functionality unless strictly necessary, as it may affect the unit's capacity to respond, as well as its ability to deliver the scheduled services.

Pumps capacity		
	Min	Max
Brine:	30.0	89.1 %
Produc.:	30.0	87.4 %

Limit pumps

- Used to limit the modulation range of the brine and production circulation pumps. This option is used to adjust the flow of the brine and production circuits.

Brine protection	
MaximumT:	40.0°C
MinimumT:	2.0°C
MinimumP:	0.5bar

Brine protection

- Used to adjust the maximum and minimum temperature of the brine circuit. If any of the limit values are reached, the brine temperature alarm is activated.

Danger: It is very important to set the minimum collection temperature correctly. An incorrect configuration of this parameter can cause serious damage to the unit due to freezing. The minimum brine temperature must be at least 10°C higher than the freezing temperature of the fluid used. If you are not sure of the freezing temperature of the fluid used, check it with a refractometer.

- Used to set the minimum pressure of the brine circuit, under which the alarm is triggered.

Note: In addition to low pressure alarm value, the heat pump calculates a warning value to allow solve the problem of low pressure before the equipment stop by alarm.

Production Protection	
MinimumT:	4.0°C
MinimumP:	0.5bar
Anti frost:	<input checked="" type="checkbox"/>
Heating Groups	<input checked="" type="checkbox"/>

Production protection

- Used to adjust the minimum production temperature in cooling mode. If the set temperature is reached, the compressor stops.
- Used to set the minimum pressure of the production circuit, under which the alarm is triggered.

Note: In addition to low pressure alarm value, the heat pump calculates a warning value to allow solve the problem of low pressure before the equipment stop by alarm.

- Used to adjust the anti-freeze protection of the production circuit. If the outside temperature drops below 3°C, the circulation of the production circuit pumps is activated. If the heat pump delivery temperature decreases below a value, the heat pump starts.

Note: The antifreeze protection is applied if the status of the heat pump is ON and only protect the circuits in which flow is guaranteed when the circulating pump of the production circuit is activated.

Note: Integrated auxiliary heaters are the only type of auxiliar system that can be used for the antifreeze protection.

Start delay	
Compressor:	10min
Pumps:	2min

Start delay

- Used to adjust the amount of delay before starting up the compressor.

Note: Compressor start-up may experience extra delays due to automatic pre-start checks.

- Used to adjust the delay time before starting up circulating pumps to allow the diverter valves to be positioned correctly before starting flow circulation.

Trial period	
Enable:	<input checked="" type="checkbox"/>
Days:	30

Trial period

- Used to enable the trial period. If it is enabled, the heat pump is locked after the established time.
- Used to adjust the duration of the trial period.

Note: The trial period must be disabled to unlock the heat pump.

3.3.15. Probe configuration

Installer menu	3/8	Installation	8/8
a.Language		f.Remote control	
b.Settings		g.Protections	
c.Installation		h.Probe conf.	

XXXX temperature	
AIxx: NTC	
Value:	4.1°C
Offset:	0.0°C
Outdoor temperature	
Type: BUS (BMS2)	
Value:	17.2°C
Offset:	0.0°C

XXXX temperature

- Display the type of probe installed in each analog input and their current value.
- Used to enter a correction of the temperature probe readings.
- Used to select the probe type for the outdoor temperature reading.

XXXX Pressure	
AI06: 0-5U	
Range:	0-4bar
Value:	1.2bar
Offset:	0.0bar

XXXX pressure

- Display the type of hydraulic pressure probe installed and their current value.
- Used to enter a correction of the probe readings.
- Used to select the measuring range of the hydraulic pressure probe installed.

Gas sensor	
Sensor type:	
Sanhua_SGD41S_D3_Mx	

Refrigerant sensor

- Used to select the installed gas sensor model (depending on model).

3.3.16. Technical information menu

This menu includes all the screens included in the USER / INFORMATION menu (see section 0). In addition, it includes the following screens with technical information about the equipment.

Installer menu	4/8	Information	1/7
c.Installation		a. IDU	
d.Information		b. ODU1	
e.Manual test		c. ODU2	

NOTE: In case of block installations an additional menu is shown in order to select the equipment that wants to be consulted.

Drying heating floor	
Tset	Time
35.0 °C	12h
35.0 °C	12h
35.0 °C	12h
35.0 °C	12h
35.0 °C	12h
35.0 °C	12h

Drying heating floor (Only visible with floor drying activated)

- Displays the currently active floor drying phase. It also displays the number of hours and the outlet temperature set for each phase.

Note: Once all the phases established in the floor drying programme have been completed, the heat pump returns to normal operation. In this way, if the heat pump receives demands from the enabled services, it will meet them.

Air unit	
Tin:	10.0°C
Tout:	5.0°C
%Fan	100%
ASF:	0.99
DT Air Unit:	12.0°C
DT Defrost:	12.5°C

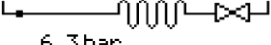
Aerotherm

- Displays the flow and return temperatures and the fan regulation percentage of the aerothermal brine system.
- Displays the aerothermal fan heater operating factor (ASF).
- Displays the current difference between the air and the anti-freeze temperatures, and the value set for the start of the defrost programme.

Hybrid system		
	Ground	Air
Tin:	12.3	14.7°C
Tout:	12.3	14.7°C
Ratio:	50	50 %

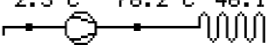
Hybrid system

- Displays the flow and return temperatures of the aerothermal and geothermal brine systems.
- Displays the percentage of energy absorption with respect to the total of each brine system

Expansion valve	
2.1°C	-3.2°C
	
6.3 bar	
SH: 5.3°C	Std-by 24.3%

Expansion valve

- Displays the current parameters related to the operation of the expansion valve or the evaporator.

Compressor 1		
2.3°C	78.2°C	46.1°C
		
6.8 bar	32.6 bar	
46.3%	3250rpm	

Compressor 1

- This displays the current parameters in relation to the operation of the compressor and the condenser.

Compressor 2	
Hours:	0010527
Starts:	0009316
Starts/hour:	0.88
InverterT:	56°C

Compressor 2

- This displays the registry of compressor hours of operation, number of start-ups and start-up/hour ratios.
- It displays the current temperature of the compressor inverter.

Cascade status			
n°HP	COMP. REF	Hours	
1.	90.7%	000284h	
2.	56.3%	000256h	
3.	0.0%	000247h	
-	-	---	
5.	0.0%	000000h	
-	-	---	

Cascade status (Supervisor)

- Displays the speed percentage of the compressors of each heat pump in the system.
- Displays the number of operating hours of each heat pump in the system.

AI Values			
AI1:	16.3	AI8:	29.8
AI2:	9.0	AI9:	1.4
AI3:	20.0	AI10:	26.5
AI4:	11.4	AI11:	19.9
AI5:	14.6	AI12:	19.5
AI6:	1.1	AI13:	23.8
AI7:	30.8	AI14:	27.3

AI Values

- This displays the current measured value at all analog inputs.

DI Status			
DI1:	On	DI8:	On
DI2:	Off	DI9:	Off
DI3:	Off	DI10:	Off
DI4:	On	DI11:	Off
DI5:	On	DI12:	On
DI6:	Off		
DI7:	Off		

DI Status

- This displays the current status of all digital inputs.

AO signals	
AO1:	100.0
AO2:	87.4
AO3:	56.9
AO4:	32.9
AO5:	46.5
AO6:	0.0

AO Signals

- This displays the current status of all analog outputs.

DO Status			
DO1:	Off	DO8:	On
DO2:	Off	DO9:	On
DO3:	On	DO10:	Off
DO4:	On	DO11:	Off
DO5:	On	DO12:	On
DO6:	Off	DO13:	Off
DO7:	Off	DO14:	Off

DO Signals

- This displays the current status of all digital outputs.

3.3.17. Manual activation of components



NOTE

- To access this menu, the equipment must be switched off from the control terminal.
- Manual activation of the equipment components must only be performed by authorised technicians and only when maintenance or repair operations are carried out on the equipment.

```
Installer menu 5/8
d.Information
e.Manual test
f.Alarm log
```

```
XXXXXX
DOxx:      On
AOxx:      100.0%
```

XXXXXX

- Used to activate the various components controlled by the heat pump manually, both internal and external.
- For components with modulating control, it is also used to adjust different regulation values manually.

3.3.18. Alarm log

```
Installer menu 6/8
e.Manual test
f.Alarm log
g.Default values
```

```
Alarms
Press ENTER to
view LOG ALARMS
```

Heat pump alarm log

- The heat pump stores information on the last 50 alarms, showing the last alarm recorded in the first position, followed by the previous alarms. From this screen, press to access the alarm log.

```
1/50 03:04 19/01/22
Low flow evap. 66
1.2bar 5.4bar
-4.8°C 5.7°C
5.0°C 5.0°C
-99.9°C -99.9°C
-99.9°C -99.9°C
-99.9°C 0% -99.9°C
2/50 13:16 30/12/21
Inverter alarm 50
I1: 2082 I2: 0
I3: 81 I4: 0
I5: 16: 0
I7: I8: 0
I9: I10: 0
I11: P12: 0
2/50 13:16 18/12/21
Heat Pump 2 152
```

Heat pump X log

- Displays information on the main operating parameters of the equipment when serious alarm situations occur that may lead to or indicate faults in the equipment.
- Displays the code of inverter alarms.
- Displays the code of gas sensor alarms.

Note: Certain minor alarms are not included in the history log.

```
Alarms
Press ENTER to
view LOG ALARMS
Press PRG for
Help information
```

Alarm log (supervisor)

- The e-SUPERVISOR stores information on the last 50 alarms, showing the last alarm recorded in the first position, followed by the previous alarms. From this screen, press to access the alarm log.
- Press to access the help information about parameters showed in the alarm log.

```

1/50 03:04 06/12/17
Alarm Probe 1
P1: -99.9
P2: 5.2
P3: 8.5
P4: 38.4
P5: 22.9

```

X log (supervisor)

- Displays information on the main operating parameters of the equipment when serious alarm situations occur that may lead to or indicate faults in the equipment.

Note: Certain minor alarms are not included in the history log.

```

Help information
P1: Brine Dlvry Temp.
P2: Brine Return Temp.
P3: Prod.Dlvry Temp.
P4: Prod.Return Temp.
P5: Outdoor Temp.

```

Help information (supervisor)

- Displays the description of the parameters shown in the alarm.

3.3.19. Default values

```

Installer menu 7/8
f.Alarm log
g.Default values
h.Change password

```

```

Initialization
Delete user settings
and set default
values:

NO

```

Initialization

- Used to delete the settings in the USER and INSTALLER menus and restore the default factory configuration.

```

Reset energy meters
Reset energy meters

NO

```

Delete meters

- Used to delete the energy meter history log.

```

Inverter conf.
Start conf.: No
Record values: Off

```

Configure inverter

- Used to configure the compressor inverter. Once the configuration has been started, this is carried out automatically.

Note: Available depending on unit options.

3.3.20. Change password

```

Installer menu 8/8
f.Alarm log
g.Default values
h.Change password

```

```

New Password
Enter new installer
Password (PW1): 0000

```

New password

- Used to change the password to access the INSTALLER menu (PW1).

4. ecoSMART e-SOURCE source manager

This section contains the information necessary to browse through and configure the parameters of the e-SOURCE source manager.

4.1. Main screen guide

The main screen of the application contains a series of fields with information about heat pump operation.

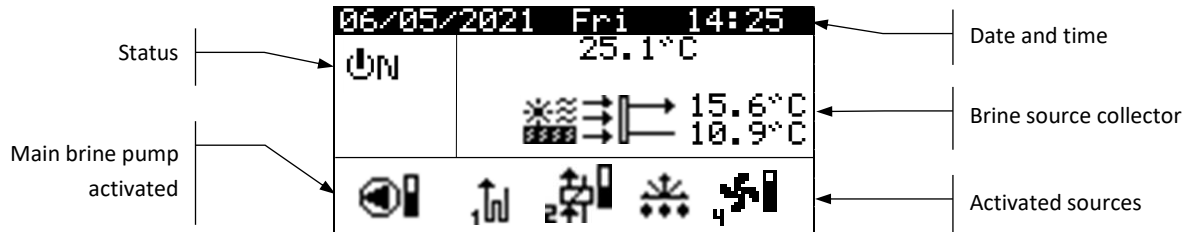


Figure 4.1. Description of the main screen.

4.1.1. Active components

This field displays the main components that are activated. In addition, a consumption bar is shown for the fan, modulating circulator pumps and valves.



Main brine pump activated



Geothermal source activated (source 1)



Aerothermal source activated (source 2)



Groundwater source activated (source 3)



Defrost activated

4.1.2. Operating modes

This field displays icons that indicate the current operating mode of the e-SOURCE.



Heat absorption mode

The set of sources is supplying heat to the primary circuit (direct cycle) of the heat pump / heat pump block. It also indicates the inlet and outlet temperatures of the set of sources.



Heat dissipation mode

The set of sources is supplying heat to the secondary circuit (direct cycle) or to the primary circuit (inverted cycle) of the heat pump/heat pump block. It also indicates the inlet and outlet temperatures of the set of sources.



Wait

The unit is initialising.

STAND-BY

The unit is on, with no alarms, and awaiting a source activation command.

4.1.3. e-SOURCE Status

This indicates e-source availability to service the various heat pump functions.



OFF status due to control terminal

The e-SOURCE is manually switched off from the controller terminal; therefore, it is not available to activate any of its functions.



OFF status due to pLAN network

The e-source is off as commanded by the heat pump or cascade of heat pumps.



OFF status due to data bus

The e-SOURCE is switched off due to an external signal via the data bus, therefore it is not available to activate any of its functions.



ON status

The e-SOURCE is switched on and available to activate all its functions.



ON + active alarm status

The e-SOURCE has an active alarm; therefore, it is not available to activate any of its functions.



EMERGENCY status due to control terminal

The e-SOURCE is in emergency state activated manually from the controller terminal.



EMERGENCY status due to active alarm

El e-SOURCE is in an emergency status due to an active alarm.



EMERGENCY status due to data bus

The e-SOURCE is in emergency status activated by an external signal via the data bus.



EMERGENCY status due to pLAN network

The e-SOURCE is in an emergency status activated by an order from the heat pump or heat pump cascade

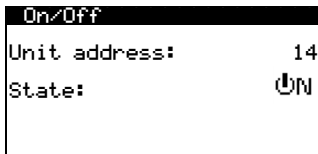
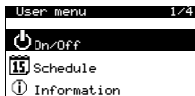
4.2. USER menu guide

Follow the instructions below to browse through the various user menu screens. Each menu has a series of screens that are used to adjust parameters and view desired information.

USER menu
Sub-menu level 1
1. On/Off
2. Time schedule
3. Information
4. Alarms

Table 4.1. USER menu structure.

4.2.1. ON/OFF Menu



On/Off

- Displays the direction of the unit.
- Used to turn the equipment on/off or to activate the EMERGENCY status.

4.2.2. TIME SCHEDULE menu



Date/Time


- Displays the day of the week.
- Used to adjust the date (DD/MM/YYYY).
- Used to adjust the controller time (HH:MM 24h format).

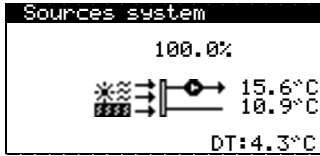
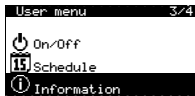


Daylight savings time

- The settings of automatic daylight savings time between seasons (autumn-winter / spring-summer) can be adjusted and enable.

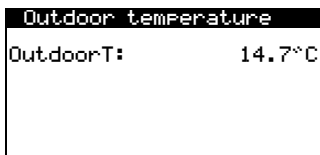
4.2.3. INFORMATION Menu

Press  for quick access to the information menu from the main screen.



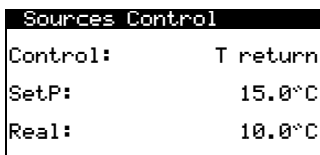
Brine system

- Displays the operating status of the main brine pump.
- Also displays the brine collector inlet and outlet temperature as well as the difference between them (DT).



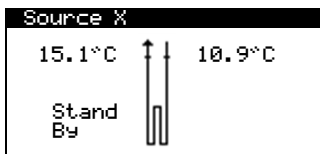
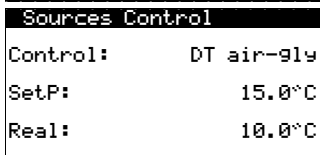
Outside temperature

- Displays the current outdoor temperature.






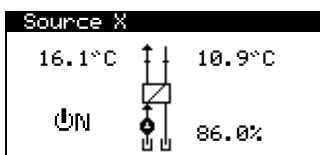
Source control

- Displays the type of source control, by target return temperature or by target temperature difference (DT).
- Displays the setpoint temperature for return temperature or target temperature difference (DT)
- Displays the actual return temperature or the actual temperature difference (DT) of the system.






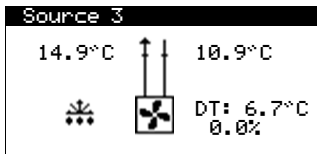
Geothermal source 1, 2 and 3

- Displays the source outlet and inlet temperature.
- Displays the status of the source:
 -  Source running.
 -  Source available and on stand-by.
 -  Source not available.



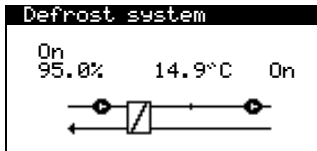
Phreatic source 1, 2 and 3

- Displays the source outlet and inlet temperature.
- Displays the status of the source:
 -  Source running.
 -  Source available and on stand-by.
 -  Source not available.
- Displays the source capacity regulation percentage.



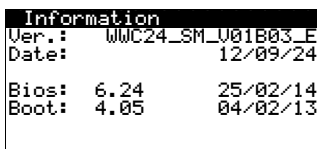
Aerothermal source 1, 2 and 3

- Displays the source outlet and inlet temperature.
- Displays the status of the source:
 - Source running.
 - Source defrosting.
 - Source available and on stand-by.
 - Source not available.
- Displays the source capacity regulation percentage.



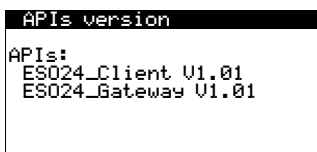
Defrost system

- Displays the status and regulation of the heat consumption circulator for defrosting (left).
- Displays the status of the heat supply circulator to the defrost system (right).
- For modulating defrost systems, displays the temperature of the heat supply circuit to the defrost system.



Version

- This displays information about the application installed in the controller.

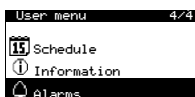


APIs BUS version

- This displays information about the APIs version included in the software version installed.

4.2.4. ALARMS Menu

Press for quick access to the alarm menu from the main screen.



Active alarms

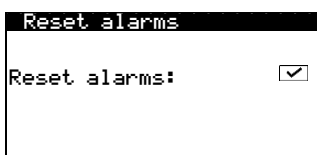
- Displays the alarms that are or have been found to be active. The button lights up and remains on if there is an active alarm locking the system. It also flashes if there is any kind of active alarm that does not lock the system or if the system has recovered after any kind of alarm.
- It also uses icons to indicate whether the e-SOURCE has recurring alarms.



Active alarm.





Recurrent alarm.



Reset alarms

- Once the problem that caused the alarm has been resolved, the alarm can be reset on this screen. The button will switch off.

4.3. INSTALLER menu guide

To access the installer menu, press   at the same time. Afterwards, enter access password PW1. This menu is used to define the type of installation and the services the heat pump will deal with, to adjust the various operation parameters and protections as well as to carry out various start-up and maintenance operations.

This menu displays the sub-menu structure of the INSTALLER menu.

INSTALLER menu		
Sub-menu level 1	Sub-menu level 2	Sub-menu level 3
1. Language		
2. Installation	2.1. Model	
	2.2. Source configuration	2.3.1. Source 1
		2.3.2. Source 2
		2.3.3. Source 3
	2.3. Source management	
	2.4. Remote control	2.4.1. DT control
		2.4.2. Bus control
	2.5. Protections	
	2.6. Probe	
3. Information		
4. Manual activation		
5. Alarm log		
6. Default values		
7. Change password		

Table 4.2. INSTALLER menu structure.

4.3.1. Language selection

```

Installer menu 1/7
a. Change Language
b. Installation
c. Information

```

```

Language
Language:      ENGLISH
ENTER to change

```

Language

- Used to select the language of the heat pump controller.

```

Language
Disable language mask
at start-up:    No
Show mask time: 60s

```

Language

- Used to enable the language selection screen that appears on launching the controller.
- Used to adjust the display time of the language selection screen on launching the controller.

4.3.2. e-SOURCE Model selection

Installer menu 2/7	Installation 1/6
a.Change Language	a.Model
b.Installation	b.Sources config.
c.Information	c.Sources management

```

Model
Select model:
EMSM00
  
```

Model selection

- Used to select the e-SOURCE model. This selection is required for the correct operation of the e-SOURCE panel.

Note 1: To enter the correct model, please refer to the label on your e-SOURCE.

```

PLAN configuration
Unit type:
Unit address:      14
  
```

pLAN configuration (e-SOURCE COMMUNITY)

- Used to enable/disable and select between e-SOURCE COMMUNITY Master or Slave.
- Used to assign the network address of the controller.

Note: This configuration can be used to connect blocks of up to six e-SOURCE COMMUNITY units operating in parallel.

4.3.3. Source configuration

Installer menu 2/7	Installation 2/6	Configuration 1/3
a.Change Language	a.Model	a.Source 1
b.Installation	b.Sources config.	b.Source 2
c.Information	c.Sources management	c.Source 3

```

Source type
Enable: ☒
Type:      Geothermal
  
```

Source type

- Used to enable the source.
- Used to configure the source as geothermal, phreatic, or aerothermal.

```

Source type
Enable: ☒
Type:      Aerothermal
  
```

```

Source limits
      Min      Max
OutdoorT: -20.0  50.0°C
GlycolT:  -20.0  50.0°C
DTmin air-gly:  2.0°C
  
```

Source limits

- Used to configure the maximum and minimum outdoor temperature range within which each source is allowed to function.
- Used to configure the maximum and minimum glycol temperature range within which each source is allowed to function.
- Used to adjust the minimum air-antifreeze temperature difference at which the aerothermal sources are allowed to work.

```

Source capacity
      Min      Max
Source:  15.0  100.0%
  
```

Source capacity

- Used to configure the maximum and minimum regulation percentage at which the source is allowed to function.

Note: In installations with geothermal sources, there is no source control.

Start Defrost 1	
DT Start:	<input checked="" type="checkbox"/>
DT nominal:	5.0°C
Frost factor:	80%

Start of defrost 1

- Used to enable defrosting by the difference between the outdoor air temperature and the temperature of the glycol at the outlet of the source.
- Used to configure the nominal DT in the conditions in which there is no frost. DT is the difference between the outdoor air temperature and the temperature of the glycol at the outlet of the source.
- Used to configure the percentage increase of DT to start the defrost cycle.

Start Defrost 2	
ASR Start:	<input checked="" type="checkbox"/>
ASR nominal:	20.0
Frost factor:	80%

Start of defrost 2

- Used to enable defrosting by aerothermal source operation factor. This parameter is defined as the quotient between the power exchanged at the aerothermal source and the temperature differential between the ambient air and the fluid (antifreeze mixture) at the fan heater outlet.
- Used to adjust the nominal ASR of the aerothermal collector. This value will be taken as a reference for the operation factor of the equipment when the aerothermal source is totally free of frost.
- Used to set the frost degradation factor required to start the defrost cycle. The higher the setting of this value, the more the defrost start will be delayed, and vice versa.

Note: Only for aerothermal sources and with e-SOURCE models connected to the p-LAN network. Not available for installations with e-SOURCE COMMUNITY.

Start Defrost 3	
Time Start:	<input checked="" type="checkbox"/>
Glycol T:	0.0°C
Tiempo:	60min

Start of defrost 3

- Used to enable defrosting by operating time.
- Used to configure the temperature of the glycol at the inlet of the source collector in order to start defrosting.
- Used to set the source operation time below the temperature specified to start defrosting.

Start Defrost 4	
Off-cycle:	<input checked="" type="checkbox"/>
Frost factor:	80%

Start of defrost 4

- Used to enable defrost when the source shuts down, regardless of the reason for the shutdown.
- Used to set the frost degradation factor required to start the defrost cycle after a shutdown. The same nominal ASR or nominal DT reference value set in the DEFROST START 1 or 2 screens is taken into account for the calculation of the frost factor.

Note: Only for aerothermal sources and with e-SOURCE models connected to the p-LAN network. Not available for installations with e-SOURCE COMMUNITY.

End defrost	
T return:	15.0°C
Max. Time:	30min

End defrost

- Used to configure the temperature of the fluid (antifreeze mixture) at the source outlet required to consider that the defrosting has ended.
- Used to set a maximum time for the defrost to end, even if the specified fluid outlet temperature condition has not been met.

4.3.4. Source management

Installer menu	2/7	Installation	3/6
a. Change Language		a. Model	
b. Installation		b. Sources config.	
c. Information		c. Sources management	

Sources In/Out
Control: T return

Sources In/Out
Control: DT air-9ly
Heat source: 5.0°C
Heat sink: 5.0°C

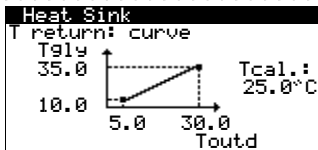
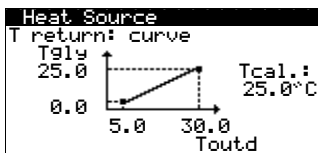
Sources In/Out

- Used to select the type of control for the capacity modulation of the source block. This capacity control shall be applied to both source on/off and individual source modulation.

T_RETURN: Capacity control aims to achieve the specified fluid temperature in the return to the heat pumps.

DT_AIR: Capacity control aims to achieve the specified air/fluid temperature difference in the return to the heat pumps. This option is only available for brine systems that only have aerothermal sources.

- Used to set the setpoint air-fluid temperature difference for operation in source mode and sump mode. This option is only available if air-fluid temperature difference capacity control has been previously selected.



Source/Sink

- Used to configure the curve to calculate the return temperature depending on the outdoor temperature both in source and sink mode.
- Used to display the return temperature calculated from the curve.

Note: This option is only available if capacity control by return temperature has been selected.




Sources In/Out	
Source in:	
Offset:	5.0°C
Time:	5min
Source out:	
Offset:	5.0°C
Time:	5min

- Used to configure the temperature differentials with respect to the capacity control targets set for switching brine sources on/off.
- Used to set the times required to switch sources on/off if the above conditions are met.

Main PUMP control		
	Min	Max
Pump:	30.0%	100.0%
DT SetP:		3.0°C

Main brine pump control

- Used to configure the maximum and minimum speed at which the pump can work.
- Used to select the target outlet-return temperature differential for the source block.

Priorities			
	 1	 2	 3
Source	1	2	2
Sink	1	2	2

Priorities

- Used to set the priorities for the use of each source, both for operation in source and sump mode. When required by capacity control, the sources will be switched on/off in the order specified to achieve the source block target.

Note: If the same priority number is set for different sources, they will be switched on/off simultaneously when required by the capacity control. However, each source will be able to activate its defrost programme independently.

Defrost management	
Source PUMP:	<input checked="" type="checkbox"/>
Delay:	120s
Flow control:	0-10V
T limit:	10.0°C

Defrost management 1

- Used to enable the use of each source's circulator to establish the flow rate through the source during defrosting.
- Used to set the delay in the activation of the circulation pump that established the flow rate through the source with respect to the defrost heat input flow rate.

Note: Configuration of this parameter is critical to ensure that the defrost heat exchanger is adequately protected against possible breakage due to freezing.

- Used to choose the type of regulation of the defrost consumption circulator from among the following options: On/Off, 0-10V, 10-0V, PWM-A and PWM-B.
- Used to set the minimum temperature that the heat supply circuit can reach for defrosting.

Note: Configuration of this parameter is critical to ensure that the defrost heat exchanger is adequately protected against possible breakage due to freezing.

Defrost management 2	
Defrost type:	Sequential
Defrost delay:	15min

Defrost management 2

- Used to set the minimum waiting time between the defrost processes of the aerothermal sources, defined as the time between the end of the defrost of one source and the start of the next.

4.3.5. Configuration of remote control options

Installer menu	2/7	Installation	4/6	Remote control	1/2
a.Change Language		b.Sources config.		a.DI Control	
b.Installation		c.Sources management		b.BUS Control	
c.Information		d.Remote control			

Source demand	
Enable:	<input type="checkbox"/>
Logic DI5:	NC

Start / Stop

- Used to enable the remote control of the e-SOURCE, when it is working in stand-alone mode (e-MANAGER COMMUNITY).
- Used to configure the NO/NC (Normally Open/Closed) logic of the start/stop digital input.

DI Sources	
Source 1:	On/Off
Source 2:	On/Off
Source 3:	Alarm

DI Control

- Used to configure the function of the digital source input:
 - Disabled: the digital input has no function
 - ON/OFF: used to ENABLE/DISABLE the source.
 - Alarm: used to disable the source involved in the generation of an alarm.

DI Sources		
Source 1:	DI1	Logic NC
Source 2:	DI2	NC
Source 3:	DI3	NC

External fault

- Used to configure the NO/NC (normally open/closed) logic of the digital input of each source to receive external alarm signals.

Installer menu 2/7	Installation 4/6	Remote control 2/2
a.Change Language	b.Sources config.	a.DI Control
b.Installation	c.Sources management	b.BUS Control
c.Information	d.Remote control	

BMS configuration
ADDRESS: 1
PROTOCOL: MODBUS SLAVE
BAUDRATE: 19200
STOP BIT: 2
PARITY: None

BMS configuration

- Used to assign the address of the BMS port.
- Used to configure the communication parameters via the BMS port.

Note: This port can be used to connect several expansion cards for communication that allow remote access to the controller through various protocols.

BMS2 configuration
ADDRESS: 1
PROTOCOL: MODBUS SLAVE
BAUDRATE: 19200
STOP BIT: 2
PARITY: None

BMS2 configuration

- Used to assign the controller BMS2 port address.
- Used to configure the communication parameters via the BMS2 port.

Note: This port can be used to connect indoor bus terminals with MODBUS MASTER configuration.

Note: This port can be used to access the controller remotely with MODBUS SLAVE EXTENDED configuration.

4.3.6. Probe configuration

Installer menu 2/7	Installation 5/6
a.Change Language	c.Sources management
b.Installation	d.Remote control
c.Information	e.Protections

XXXXXX	AIX
Probe type:	NTC
Value:	14.0°C
Offset:	0.0°C

XXXXXX



- Displays the type of sensor installed in each analog input and their current value.
- Used to enter a correction of the sensor readings.

Note: There are screens for all temperature probes.

4.3.7. Technical information menu

Installer menu 3/7
a.Change Language
b.Installation
c.Information

This menu includes all the screens included in the USER / INFORMATION menu (see section 4.2.3). In addition, it includes the following screens with technical information about the equipment.

Source X	
14.9°C	10.9°C
	
	DT: 6.7°C
	ASR: 0
	0.0%

Aerothermal source 1, 2 and 3

- Displays the source outlet and inlet temperature.
- Displays the status of the source:



Source running.



Source defrosting (aerothermal units).

Stand-by

Source available and on stand-by.



Source not available.

- Displays the actual DT value (outdoor air temp. – collector outlet glycol temp.).
- Displays the operating factor (ASR) of the aerothermal collector.
- Displays the aerothermal source capacity regulation percentage.

AI Values	
AI1:	16.3
AI2:	9.0
AI3:	20.0
AI4:	11.4
AI5:	14.6
AI6:	1.1
AI7:	30.8
AI8:	29.8
AI9:	1.4
AI10:	26.5
AI11:	19.9

AI Values

- This displays the current measured value at all analog inputs.

DI Status	
DI1:	On
DI2:	Off
DI3:	Off
DI4:	On
DI5:	On

DI Status

- This displays the current status of all digital inputs.

AO Signals	
AO1:	100.0
AO2:	87.4
AO3:	56.9
AO4:	32.9
AO5:	46.5

AO Signals

- This displays the current status of all analog outputs.

DO Status			
DO1:	Off	DO8:	On
DO2:	Off	DO9:	On
DO3:	On	DO10:	Off
DO4:	On	DO11:	Off
DO5:	On	DO12:	On
DO6:	Off		
DO7:	Off		

DO Signals

- This displays the current status of all digital outputs.

4.3.8. Manual activation of components

Installer menu	4/7
b. Installation	
c. Information	
d. Manual test	



XXXXXX	
DOXX:	On
DOYY:	Off
AOXX:	0.0%

XXXXXX




- Used to manually activate the different components controlled by the e-source.
- For components with modulating control, used to adjust different regulation values manually.

4.3.9. Alarm log

Installer menu	5/7
c. Information	
d. Manual test	
e. Alarm log	

Alarms	
	Press ENTER to view LOG ALARMS
	Press PRG for Help information

Alarm log

- Used to access the alarm history log by pressing . It contains records of the last 50 alarms sorted by date and time, showing the last alarm recorded in the first position, followed by the previous alarms. From this screen, press  to access the alarm log.
- Press  to access the help information about parameters showed in the alarm log.

01/50	03:04	06/12/17
Sources not availab. 20		
AI1:	25.9	AI11: 20.0
AI2:	26.1	
AI3:	26.1	
AI5:	26.0	
AI7:	25.8	
AI9:	18.6	

X log

- Displays information on the main operating parameters of the equipment when serious alarm situations occur that may lead to or indicate faults in the equipment.

Note: Certain minor alarms are not included in the history log.

```
Help information
P1:Brine Dlvry Temp.
P2:Brine Return Temp.
P3:Source 1 Temp.
P4:Source 2 Temp.
P5:Source 3 Temp.
P6:Defrost Sys. Temp.
P7:Outdoor Temp.
```

Help information

- Displays the description of the parameters showed in the alarm.

4.3.10. Default values

```
Installer menu 6/7
d.Manual test
e.Alarm log
f.Default values
```

```
Initialization
DEFAULT INSTALLATION
Erase user settings
and install global
default value:      NO
```

Initialization

- Used to delete the settings in the USER and INSTALLER menus and restore the default factory configuration.

4.3.11. Change password

```
Installer menu 7/7
e.Alarm log
f.Default values
g.Change password
```

```
Change Password

Insert new installer
Password (PW1): 0000
```

New password

- Used to change the password to access the INSTALLER menu (PW1).

5. NETZERO BW/CW/HW multi-device installations

A multi-device installation in a pLAN network is one that includes different NETZERO units connected to each other via a system communication network or a pLAN network. In installations of this type, the units work together in a coordinated manner to ensure the correct operation of the whole system.

In order to build the system, it is necessary to connect the individual units via a wired network to the pLAN port of the controller of each unit. On the other hand, it is also necessary to use control applications originating from the same software compilation in the different units in order to ensure system compatibility. This type of installation therefore requires a number of additional operations and considerations compared to the installation of individually operated units.

5.1. Types of pLAN network installations

There are different types of installations in which it is necessary to connect the pLAN network devices; these are listed below:

The following are the types of multi-unit installations in which a pLAN network should be used:

- Installations of two or more heat pumps with joint block management.
- Installations with one or more heat pumps including an e-SUPERVISOR block supervisor.
- Installations of one or more heat pumps including an e-SOURCE source manager.

One of the key steps in the commissioning process of this type of installation is the building and configuration of the pLAN.

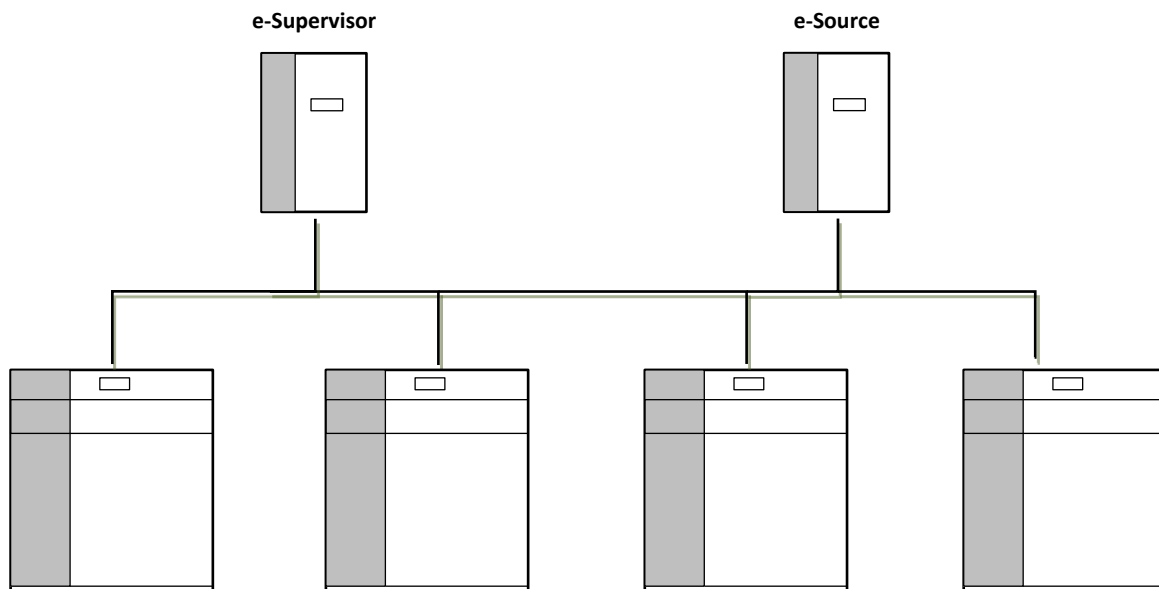


Figure 5.1. Example of a pLAN network installation.

5.2. Building a pLAN network

To build the network, the pLAN terminals of the individual unit controllers must be connected by cable. Depending on the controller model, this terminal may vary in position. Look for the pLAN port identifier or refer to the unit's manual.

On the other hand, the pGD1 terminals should be connected to the pLAN network through the RJ12-pLAN connector available in the unit's controller, as per its factory connection.

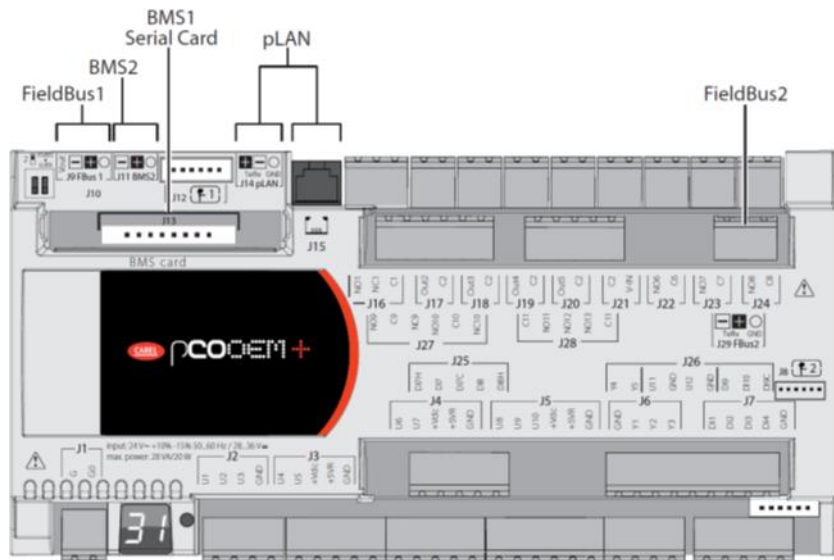


Figure 5.2. Identifying pLAN connectors in the unit's driver.

To ensure the pLAN network works properly, please observe the following recommendations:

- Use shielded 3-wire twisted pair cables. Using any other type of cable may cause communication interference.
- Be sure to connect the wiring to the corresponding terminal of each controller (Tx/Rx-, Tx/Rx+, GND).
- Connect the cable shield to earth to avoid interference.
- Do not install the pLAN network cable parallel to power cabling.

The pLAN network consists of a master unit (MASTER) and one or more slave units (SLAVE 1-n). In installations with heat pump block management that include an e-SUPERVISOR, the latter acts as the master. In installations with heat pump block management that do not include an e-SUPERVISOR, one of the pumps in the block acts as the master, while the remaining units work as slaves. In all other installations that include a heat pump, the latter acts as the master of the system. e-SOURCE accessory units always act as slaves within the system.

To identify the individual units within the pLAN network, it is necessary to correctly assign the access addresses to the connected devices. Each unit has two independent devices connected to the pLAN network, the controller and the pGD1 terminal. Therefore, each of these devices must be configured with different pLAN addresses.

The following table lists the addresses assigned to each of the devices within the pLAN.



Figure 5.3. Building a pLAN network.

Unit	Function pLAN	pLAN controller address "I/O board address"	pLAN pGD1 terminal address "Display address setting"
Heat pump no. 1	Master / Slave	1	32
Heat pump no. 2	Slave	2	31
Heat pump no. 3	Slave	3	30
Heat pump no. 4	Slave	4	29
Heat pump no. 5	Slave	5	28
Heat pump no. 6	Slave	6	27
ecoSMART e-SOURCE	Slave	14	19
ecoSMART e-SUPERVISOR	Master	15	18

Table 5.1. Assigning access addresses in pLAN networks.

5.3. Configuring and starting up a pLAN network

To configure and start up a pLAN network, perform the following steps in the order given:

- Disconnect the units from the pLAN network during the pLAN network configuration process.

To ensure that the pLAN configuration process is successful, it is crucial that the units cannot communicate with other units connected to the pLAN network. Otherwise, units with the same address may coexist within the network, which means that the addresses of the devices cannot be configured correctly.
- Install a compatible software package on all units in the pLAN network.

To ensure that the units in the pLAN network can communicate properly, all of the units must have software versions that are compatible with each other.
- Configure the pLAN network access addresses of the individual unit controllers.

Pay special attention to the assignment of access addresses for each controller as described in section 5.2.
- Configure the pLAN network access addresses of the pGD1 control terminals of each unit.

Do not configure the addresses of the pGD1 terminals if the address of their associated controller has not been previously assigned as described in section 5.2.
- Start up the pLAN network and check that it has been built properly.
- Configure the control applications of each individual unit in the pLAN network as described in this manual.

5.3.1. Compatible software for pLAN network installations

To ensure that the units within the pLAN network work properly, they must all have software versions from the same compilation. Therefore, to ensure the successful start-up of these systems, it is necessary to install a compatible software package on all of them.

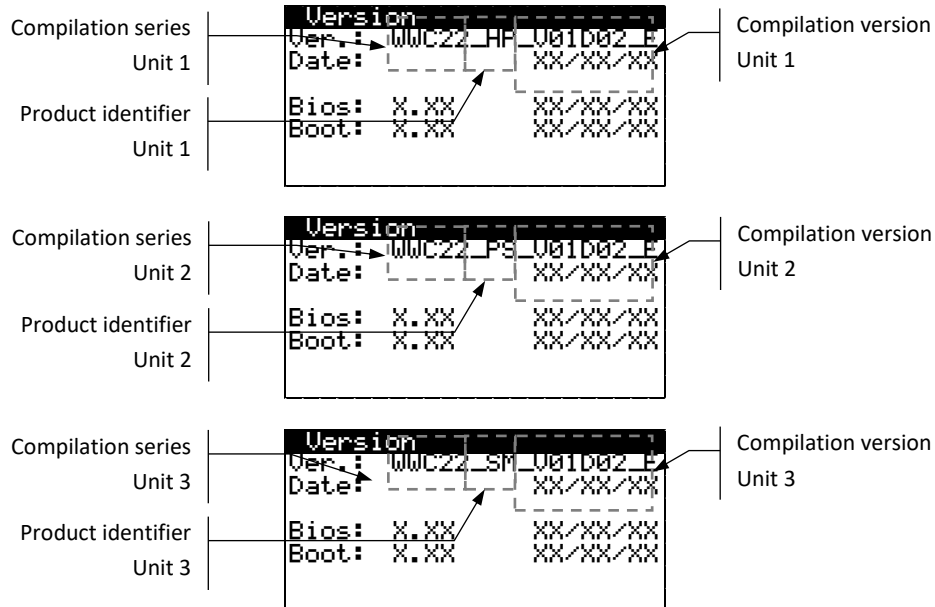


Figure 5.4. Compatibility of software versions in units in a pLAN network.

Each compatible software package consists of installable files for the different products. Once the software has been installed on all the units, check that the entire system has been correctly installed. You can check this information by accessing the USER / INFORMATION menu.

1. Check that the compilation serial identifier is the same in all the units.
2. Check that the version and compilation date is the same on all units.
3. Check that the product identifier corresponds to the unit on which you have installed the different software files.



NOTE

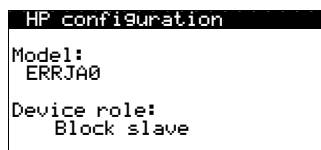
- If you have configured parameters on the devices before starting the pLAN configuration, it is recommended that you reset them to the factory default values.

5.3.2. Configuring the pLAN address of the controller in a heat pump

The heat pump controllers are delivered from the factory with a pLAN address equal to 1. To build a pLAN network, therefore, it is necessary to configure the pLAN address during system start-up.

To configure a pLAN address for a heat pump, follow the instructions below:

1. Go to the menu INSTALLER / CONFIGURATION / HEAT PUMP MODEL.
2. Go to the HP CONFIGURATION screen.
 - Assign the device ROLE within the pLAN network.



3. Go to the HP CONFIGURATION screen in devices defined as BLOCK MASTER
 - Enable the slaves desired.

Enable HPs		
		Address
HP1:	<input checked="" type="checkbox"/>	1
HP2:	<input type="checkbox"/>	2
HP3:	<input type="checkbox"/>	3

- Go to the HP configuration screen II in devices defined as BLOCK SLAVE.

- Enter the address of the device in the pLAN network according to the addresses of the slaves enabled in the device configured as BLOCK MASTER.

HP configuration	
P-LAN address:	--

5.3.3. Configuring the pLAN address of the controller in ecoSMART accessories

The ecoSMART range of accessories are supplied with the pLAN addresses already configured in the factory and it should not therefore be necessary to configure them when starting up the system.

5.3.4. Configuring the pLAN address of the pGD1 terminal

To configure a pLAN address for an ecoSMART heat pump and accessories, follow the instructions below:

- Go to the DISPLAY ADDRESS SETTING menu of the pGD1 terminal by simultaneously pressing .

Display address setting.....: 19	Display Address changed
I/O Board address: 14	

- Configure the pLAN address of the pGD1 terminal as described in section 5.2.
 - Configure the pLAN address of the controller to which the pGD1 terminal is connected.
- If the screen is blank, go back to the DISPLAY ADDRESS SETTING menu of the pGD1 terminal by pressing .

Display address setting.....: 19
I/O Board address: 14

- Check that the pLAN addresses of the pGD1 terminal and the controller have been correctly assigned.
- Move on to the next display configuration screen of the pGD1 terminal by pressing .

Terminal confi9 Press ENTER to continue	P:14 Adr Priv/Shared Trm1 19 Pr Trm2 None -- Trm3 None -- Ok?Yes
---	---

- Configure the pLAN address of the screen on which you want to display on the controller the parameter "Trm1". Assign the value of the display connected to the controller.
- Configure the screen as private display by selecting "Pr".
- Save the configured values. Move the cursor to "OK? No", select "OK? Yes" and accept the change.





NOTE

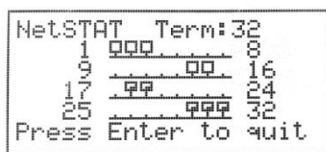
- If no image appears within 10 seconds after the pGD1 terminal has been configured, repeat the configuration step by step.
- If the problem persists, check that the installed software and the configured addresses are correct.

5.3.5. Starting up a pLAN network

Once all the addresses of the network devices have been configured, connect the bus cable to the pLAN terminals of the controllers to start up the pLAN network.

pLAN communication should be established after a few seconds. Check that all units and their respective pGD1 terminals are connected to the pLAN network. To do this, follow the instructions below:

1. Go to the DISPLAY ADDRESS SETTING menu of any of the pGD1 terminals in the pLAN network by simultaneously pressing and holding down  .
2. Go to the pLAN DEVICES screen.



- Check that the addresses of the devices connected to the pLAN network are detected correctly.

5.4. Configuring the control applications for each unit

Once all the units and their respective pGD1 terminals are connected to the pLAN network, you can start configuring the control applications of the units as per the instructions given in the different sections of this manual.



NOTE

- Do not configure any settings in the control applications of the units until the pLAN network is connected and up and running. Otherwise, system configuration errors may occur, resulting in the units operating abnormally.
 - If you have configured settings on the units before connecting the pLAN network, we recommend that you reset all units to their default values before proceeding with the system configuration.
-

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