



ecoSMART Supervisor

EN

USER, INSTALLER AND TECHNICAL SERVICE MANUAL

MODEL:

SERVICE CONTACT:

Contents

| | |
|--|-----------|
| 1. General information | 5 |
| 1.1. Safety considerations | 5 |
| 1.2. Recycling | 6 |
| 1.3. Maintenance | 7 |
| 2. General description | 7 |
| 3. Installation | 7 |
| 3.1. Transport and handling | 7 |
| 3.2. Dimensions | 7 |
| 3.3. Unpacking | 8 |
| 3.4. Fitting and removing the cover | 8 |
| 3.5. Location and assembly | 8 |
| 3.6. Service areas | 9 |
| 4. Electrical system | 9 |
| 4.1. General instructions | 10 |
| 4.2. Power supply | 16 |
| 4.3. Bus communication | 17 |
| 5. Controller user menu guide | 17 |
| 5.1. Control panel | 18 |
| 5.2. Mainscreen | 19 |
| 5.3. Active components | 19 |
| 5.4. Mode | 20 |
| 5.5. Operation program | 21 |
| 5.6. Heatpump status | 22 |
| 5.7. User menu | 23 |
| 5.8. Installer menu | 26 |
| 6. Configuration and commissioning | 29 |
| 6.1. Software version and "default values" | 29 |
| 6.2. pLAN address configuration in heat pumps | 29 |
| 6.3. Control panel Address configuration | 30 |
| 6.4. pLAN communication cable connection | 31 |
| 6.5. Selecting the heat pump model | 31 |
| 6.6. Service configuration | 31 |
| 6.7. Configuration of service response priorities | 31 |
| 6.8. Configuration of the remote control | 31 |
| 6.9. Power limitation and protection configuration | 32 |
| 6.10. Final inspection and commissioning | 32 |
| 7. Identifying and solving problems | 33 |
| 7.1. Alarm list | 33 |
| 8. Technical specifications | 33 |
| 8.1. Technical data table | 33 |
| 8.2. Circuit diagram | 34 |
| 8.3. Table of electrical connections | 35 |
| 9. Symbols | 37 |

10. Warranty and technical service 38

10.1. Manufacturer's warranty38

10.2. Authorised distributors and technical service.....38

1. General information

Thank you for purchasing an ecoGEO HP heat pump cascade system.

This manual contains information about installing, commissioning and troubleshooting the device. There is also useful information for the end user, such how to navigate and adjust parameters via the control panel.

To get the greatest benefit from your ecoGEO HP supervisor please read this manual carefully before installation and commissioning of the equipment. Keep this manual handy for future reference.

This manual contains two different kinds of warnings that should be heeded.



NOTE

- Indicates a situation that may cause material damage or equipment malfunction. This may also be used to indicate practices that are recommended or not recommended for the equipment.



DANGER!

- **W**arning of imminent or potential danger which, if not avoided, may result in injury or even death. This may also be used to warn of unsafe practices.

This supervisor was designed to control a cascade of several ecoGEO HP heat pumps.

The manufacturer is not responsible for any material damage and/or personal injury resulting from improper use or incorrect installation of the equipment.

The device must be installed by a licensed installer in accordance with applicable local regulations and in accordance with the instructions described in the installation manual.

1.1. Safety considerations

The detailed instructions in this section cover important safety aspects and must therefore be strictly complied with.



DANGER!

- **A**ll the installation and maintenance work described in this manual must be performed by an authorised engineer.
- **I**mproper installation or use of the equipment could cause electrocution, short circuits, leakage of working fluids, fire or other personal injuries and/or material damage.
- **I**f you are unsure of the procedures for installation, maintenance or use of the equipment, contact your local dealer or technical support for advice.
- **I**f you detect a malfunction in the unit, contact your local dealer or technical support to answer any questions.
- **T**his equipment should not be handled by people with physical, sensory or psychological disabilities, children and people with no suitable experience or knowledge, unless it is under the supervision or direction of a person responsible for their safety.

-
- **W**hen carrying out installation, maintenance or commissioning of the heat pump, always use appropriate personal protective equipment.
 - **K**eeP the plastic bags included in the packaging out of the reach of children, as improper use could result in injury caused by asphyxia.
-

Hydraulic installation

Installation and subsequent interventions on the hydraulic circuits controlled by the supervisor must be performed only by an authorised technician in accordance with applicable local regulations and the instructions provided in this manual.



DANGER!

-
- **D**o not touch the pipes while the unit is in operation or immediately after, as this may result in burns caused by cold or heat. If these components need to be touched, allow sufficient time for the temperatures to stabilise and wear protective gloves to avoid injury.
-

Electrical system

Any intervention on the electrical system must only be performed by an authorised electrician in accordance with applicable local regulations and the instructions provided in this manual.



DANGER!

-
- **T**he power supply to the unit must have an external switch that can shut off all the circuits. Ecoforest recommends installing an automatic external switch for each of the electrical power sources (power supply of the supervisor and power supply of devices controlled by its DO digital outputs).
 - **P**lease note that the unit may have more than one electrical power source.
 - **B**efore performing any operation on the unit, disconnect the power supply.
 - **D**uring installation and maintenance of the unit, never leave the cover open unattended.
 - **D**o not touch any electrical component with wet hands, as this could cause an electric shock.
-

1.2. Recycling

The supervisor cannot be disposed of with household waste when its useful life ends. Carry out the elimination of the appliance in accordance with the pertinent local regulations, in a correct and respectful way with the environment. Put the product at the end of its useful life in the hands of the waste manager authorized by the local authorities for transport to an appropriate treatment plant.

1.3. Maintenance

The supervisor does not require any specific maintenance after commissioning. The internal controller constantly monitors a large variety of parameters and will alert you if any problem or incident occurs, in which case we recommend that you contact your dealer.



- **A**ll maintenance work must be performed by an authorised technician. Improper handling of the equipment as a whole can result in personal injury and/or damage to materials.
- **D**o not spill water or other liquids directly on the casing or inside it, as this could cause an electric shock or fire.

2. General description

The ecoSMART Supervisor is an electronic device designed to manage a cascade of ecoGEOHP heat pumps. It can work with a minimum of 2 heat pumps and a maximum of 6. To do this you must establish pLAN bus communication with all heat pumps.

3. Installation

3.1. Transport and handling

Transport the supervisor so that it is protected from bad weather.

3.2. Dimensions

The general dimensions of the unit are set out below.

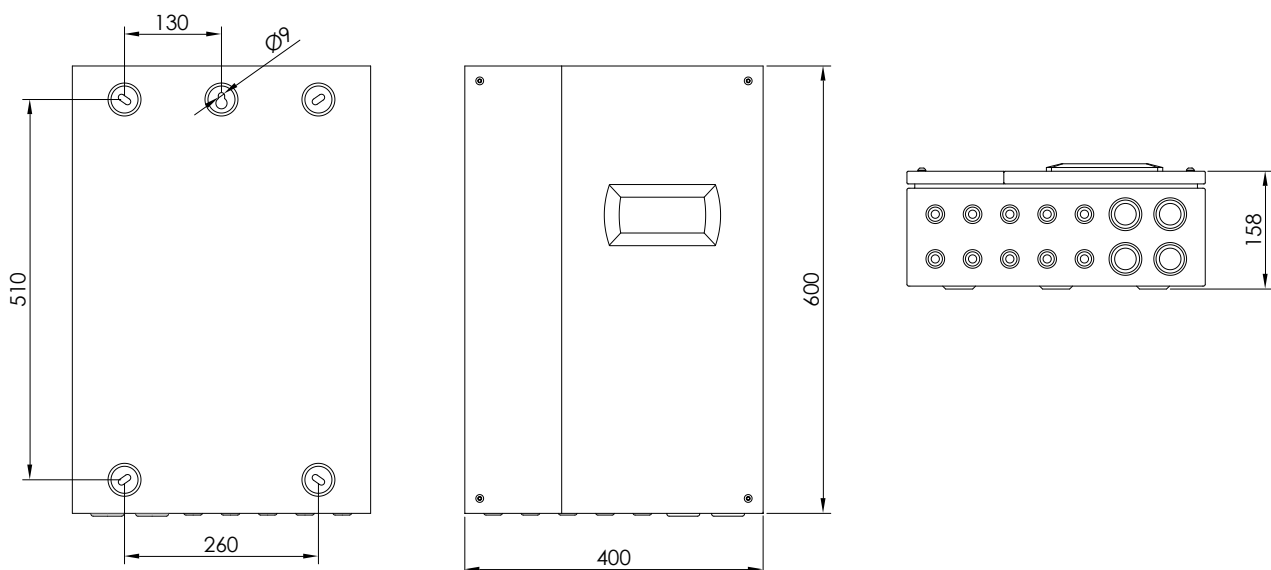


Figure 3.1. General dimensions (in mm).

3.3. Unpacking

To unpack the supervisor, carefully remove the box and check that the unit has not been damaged during transportation.

3.4. Fitting and removing the cover

A 4 mm Allen wrench is required to assemble and disassemble the cover. Remove the front cover by loosening the four screws and pulling it.

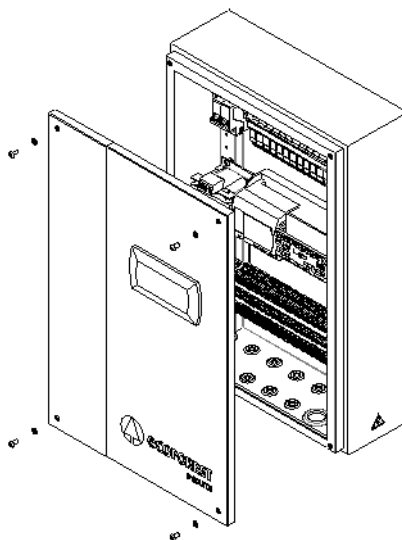


Figure 3.2. Removing the front cover of the supervisor.

3.5. Location and assembly

Choose a dry place where there is no risk of frost. The supervisor must be installed on a stable wall that can support the full weight of the unit. Use a spirit level to ensure that it is completely horizontal.

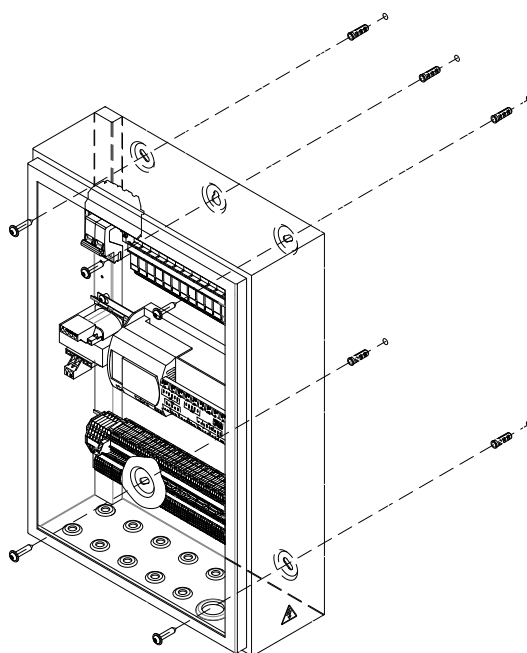


Figure 3.3. Positioning the supervisor.

**NOTE**

- When removing the cover, take care to remove the control panel cable without damaging it.

3.6. Service areas

The minimum recommended distances around the supervisor to facilitate installation, commissioning and maintenance are set out below.

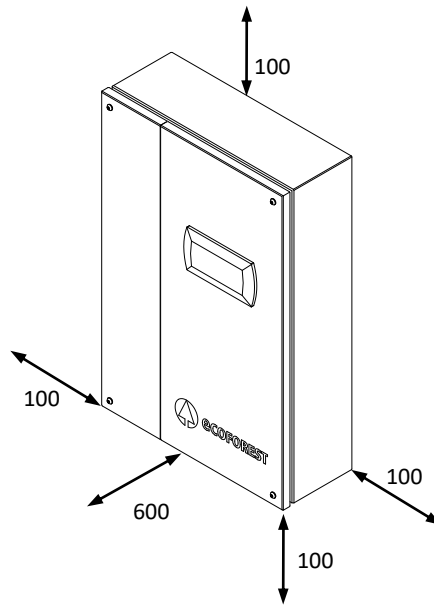


Figure 3.4. Recommended minimum service areas around the supervisor (in mm).

4. Electrical system

**DANGER!**

- The power supply to the unit must have an external switch that can shut off all the circuits. Ecoforest recommends installing an automatic external switch for each of the electrical power sources (power supply of the supervisor and power supply of devices controlled by its DO digital outputs).
- Please note that the unit may have more than one electrical power source.
- Before performing any operation on the unit, disconnect the power supply.
- During installation and maintenance of the unit, never leave the cover open unattended.
- Do not touch any electrical component with wet hands, as this could cause an electric shock.

4.1. General instructions

The locations of the main electrical panel components are shown below.

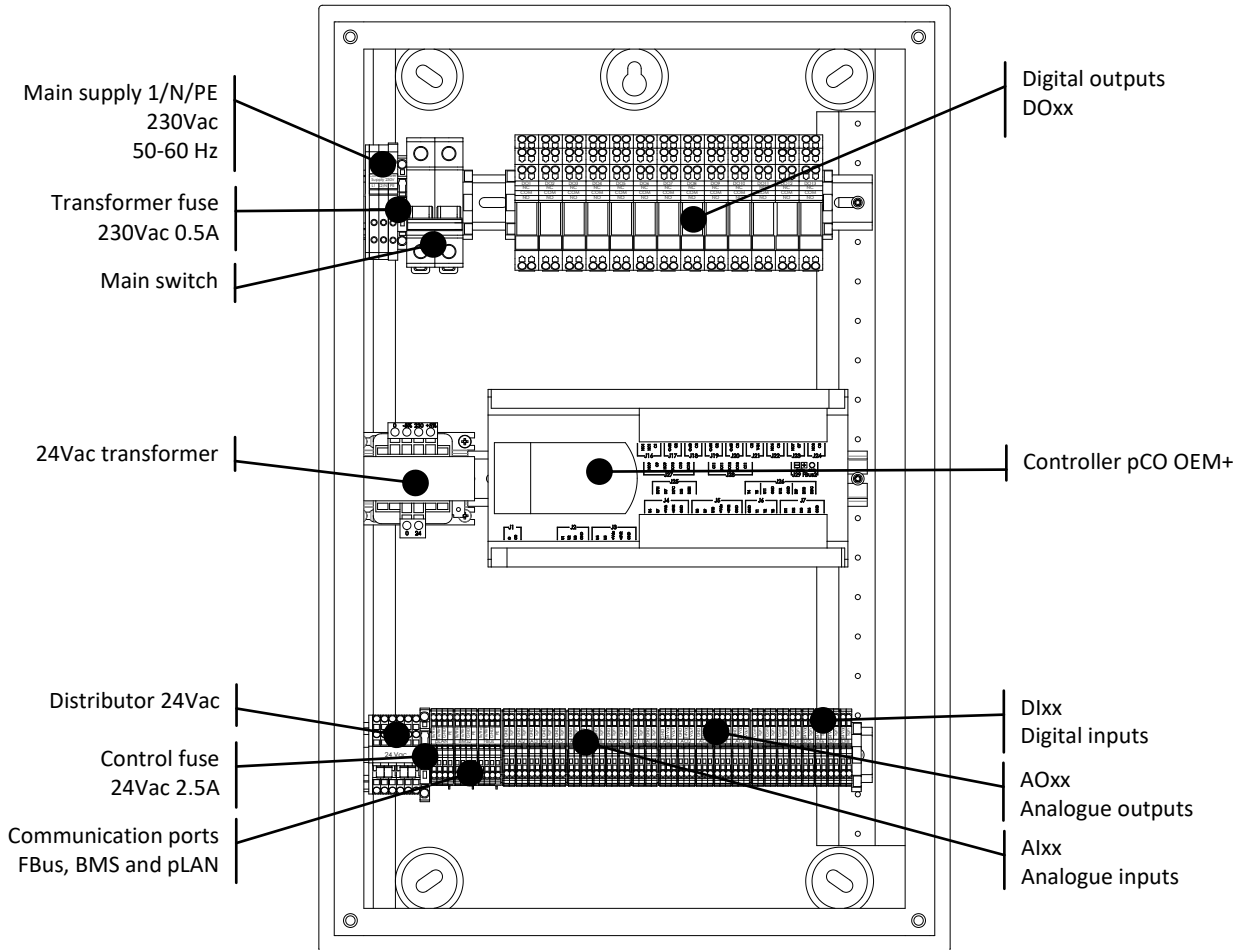


Figure 4.1. Location of internal components.

In addition to the power supply, various temperature probes (analogue inputs AIxx), open/closed contact control signals from thermostats or other external equipment (digital inputs DIxx), switching on/off of pumps, valves and/or fans (digital outputs DOxx) or regulation of pumps, valves and/or fans (analogue outputs AOxx) should be connected.

Figures 4.2 and 4.3 show installation examples to indicate the electrical connections of the components.

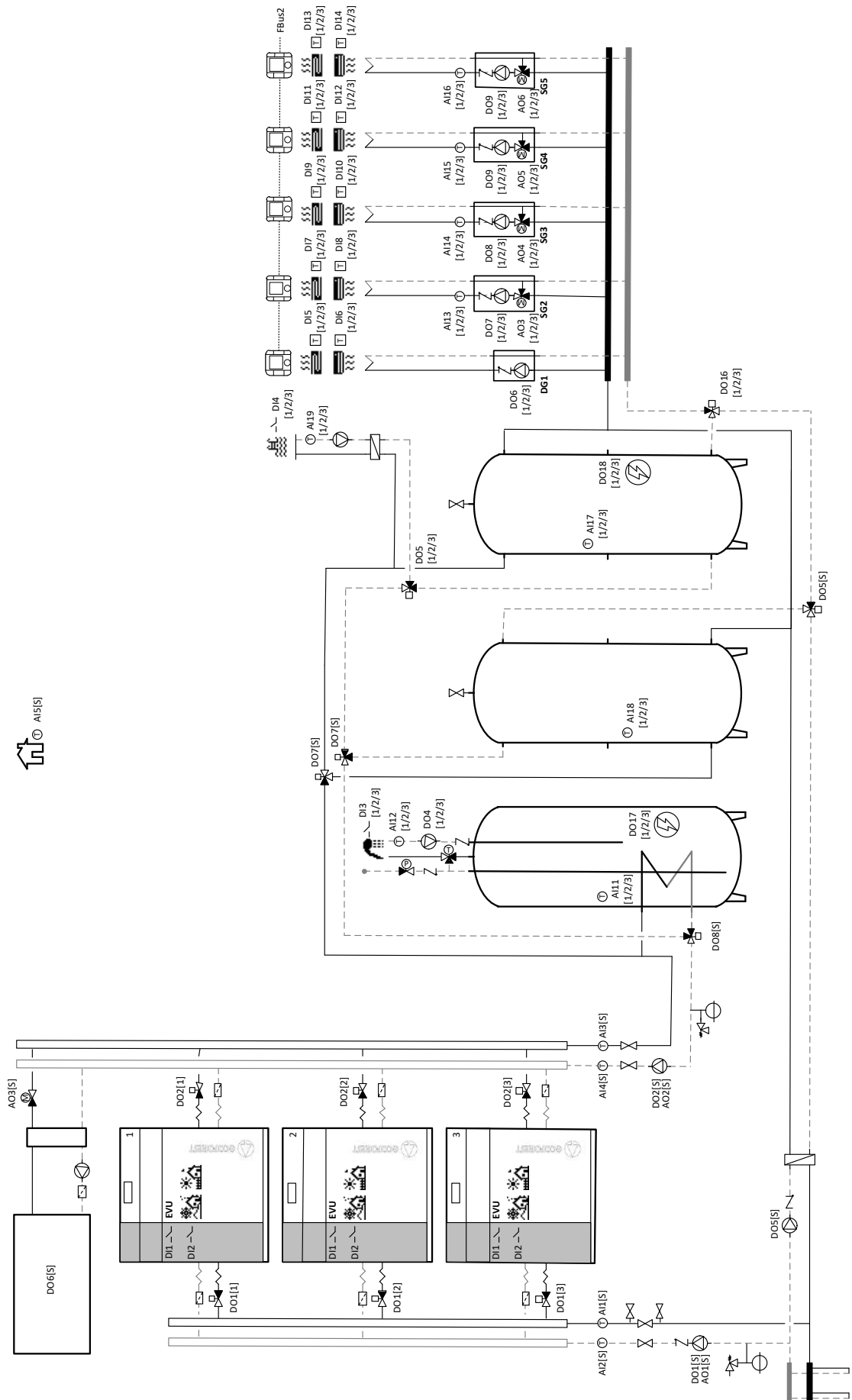


Figure 4.2. General electrical connection scheme 1. Installation for heating and cooling production with ecoGEO HP3.

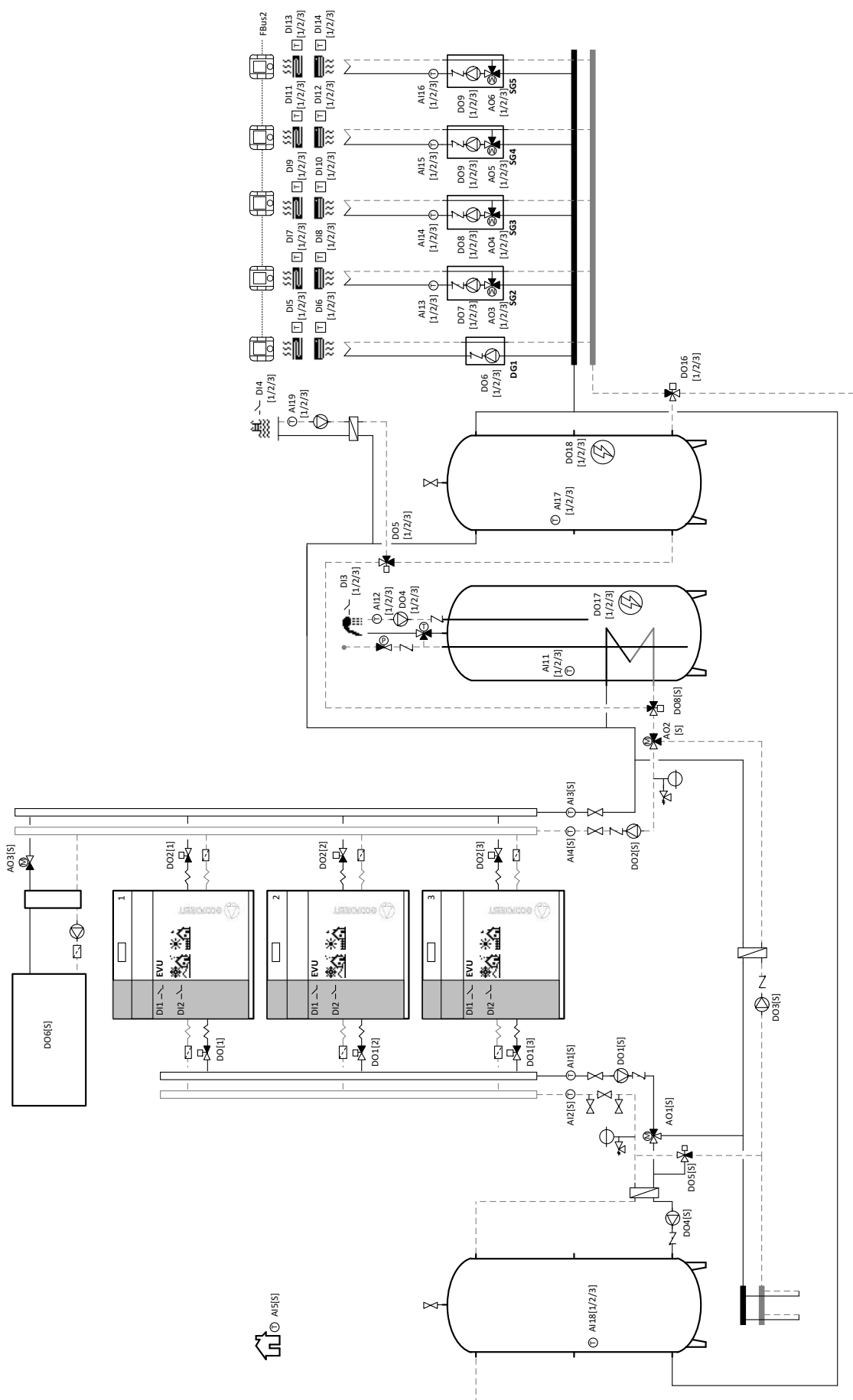


Figure 4.3. General electrical connection scheme 2. Installation for simultaneous production of heating and cooling with ecoGEO HP1



- The schemes in figures 4.2 and 4.3 are provided only to indicate the electrical connections. The hydraulic design should be carried out by a specialist. Its use in full or in part, as well as any reproduction or transfer to third parties, is the responsibility of the installation company.

Analogue inputs (AIxx)

These terminals are used to connect external temperature probes. Only passive NTC temperature probes can be connected, so cable connection polarity is not important.

If necessary, use extension cables with a maximum length of 50 m and a minimum diameter of 0.75 mm². For greater lengths (up to 120 m) it is recommended to use cable with a section of 1.5 mm².



- Use original temperature probes only; other types of components could cause poor heat pump operation and/or cause heat pump component breakdowns.

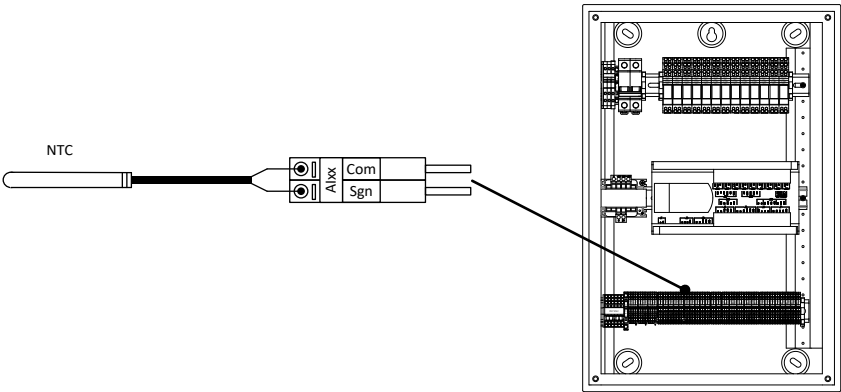


Figure 4.4. Example of temperature probe connections.

| Description | Signal | Type | Connector |
|-------------------------------------|----------------|---------------------|-----------|
| Brine outlet temperature probe | Analogue input | NTC 10K 25 °C Probe | AI1 |
| Brine inlet temperature probe | Analogue input | NTC 10K 25 °C Probe | AI2 |
| Production outlet temperature probe | Analogue input | NTC 10K 25 °C Probe | AI3 |
| Production inlet temperature probe | Analogue input | NTC 10K 25 °C Probe | AI4 |
| Outside temperature probe | Analogue input | NTC 10K 25 °C Probe | AI5 |
| Free | Analogue input | NTC 10K 25 °C Probe | AI6 |
| Free | Analogue input | NTC 10K 25 °C Probe | AI7 |
| Free | Analogue input | NTC 10K 25 °C Probe | AI8 |
| Free | Analogue input | NTC 10K 25 °C Probe | AI9 |
| Free | Analogue input | NTC 10K 25 °C Probe | AI10 |
| Free | Analogue input | NTC 10K 25 °C Probe | AI11 |
| Free | Analogue input | NTC 10K 25 °C Probe | AI12 |

Table 4.1. List of the connection terminals of the external temperature probes.

Digital control inputs (DIxx)

Digital signals (open/closed contact) from thermostats or other external equipment can be connected to these terminals to control the sources.



- Take special care with the working voltage of each digital input; improper handling could cause poor heat pump operation and/or heat pump component breakdowns. Some digital inputs require voltage-free signals, while others require 24Vac signals. 24Vac signals are sent from their own terminal block strip.
- Do not mix voltage-free and 24Vac signals.

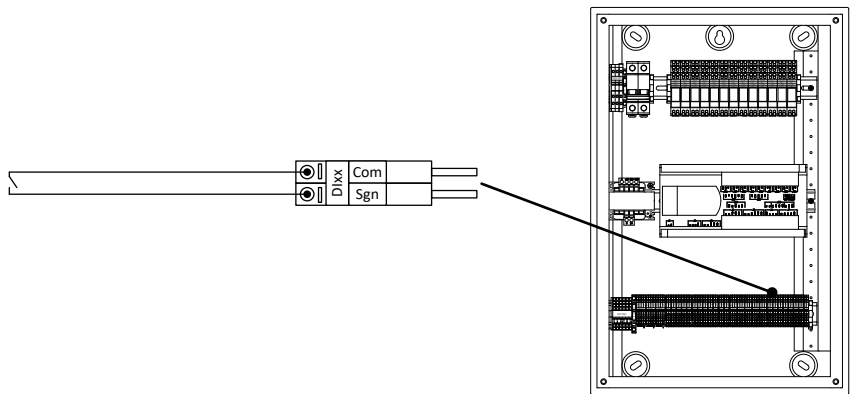


Figure 4.5. Example of voltage-free digital input connections.



- 24Vac external equipment can be connected directly from the supervisor, and connected equipment as a whole must not exceed 36VA or 1.5A. Failure to comply with these ranges could cause poor heat pump operation and/or heat pump component breakdowns.

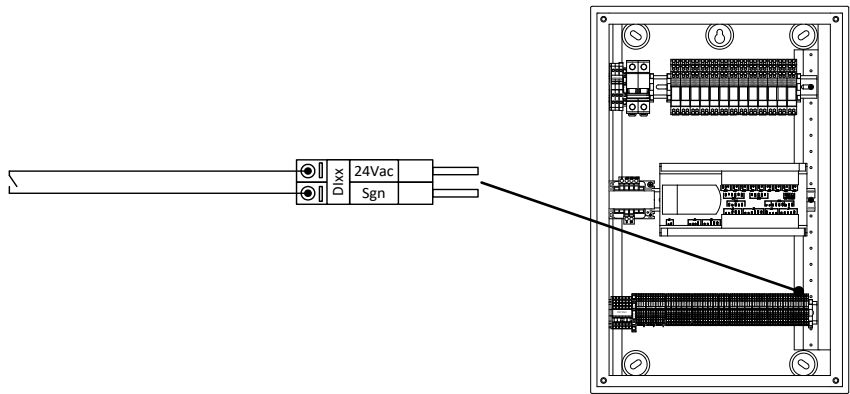


Figure 4.6. Example of digital input connection with 24Vac voltage.

| Description | Signal | Type | Connector |
|--|---------------|-------------------|-----------|
| Remote heat pump activation EVU | Digital input | Voltage-free (0V) | DI1 |
| Remote winter/summer program selection | Digital input | Voltage-free (0V) | DI2 |
| Free | Digital input | Voltage-free (0V) | DI3 |
| Free | Digital input | Voltage-free (0V) | DI4 |
| Free | Digital input | 24Vdc / 24Vac | DI5 |
| Free | Digital input | 24Vdc / 24Vac | DI6 |
| Free | Digital input | 24Vdc / 24Vac | DI7 |
| Free | Digital input | 24Vdc / 24Vac | DI8 |

Table 4.2. List of the connection terminals of the external control signals

Analogue outputs (AOxx)

These terminals send analogue 0-10Vdc regulation signals to modulate the control of pumps and/or fans. Moreover, these connectors have a 24Vac power supply terminal for modulating equipment that requires a 24Vac power supply.

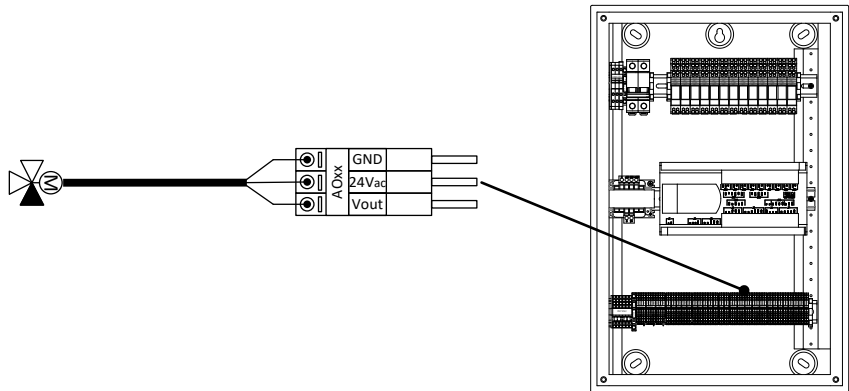


Figure 4.7. Example of 0-10Vdc modulating regulation signal connections.

| Description | Signal | Type | Connector |
|---|-----------------|----------------------------|-----------|
| Brine pump adjustment / Cooling cogeneration valve adjustment | Analogue output | Valve regulation 0 – 10Vdc | AO1 |
| Production pump regulation / Heating cogeneration valve adjustment | Analogue output | Valve regulation 0 – 10Vdc | AO2 |
| Auxiliary heating system regulation | Analogue output | Valve regulation 0 – 10Vdc | AO3 |
| Free | Analogue output | Valve regulation 0 – 10Vdc | AO4 |
| Free | Analogue output | Valve regulation 0 – 10Vdc | AO5 |

Table 4.3. List of the connection terminals of the regulation signals for external equipment.

Digital outputs to relay (DOxx)

The relay terminal block provides digital outputs to control external equipment, such as circulator pumps, fans or open/closed valves. Each relay should be powered externally with the operating voltage of the component to be controlled. Power is supplied to each relay separately, so different operating voltages can be used in each. The following figure shows an example of an installation of a relay power supply.

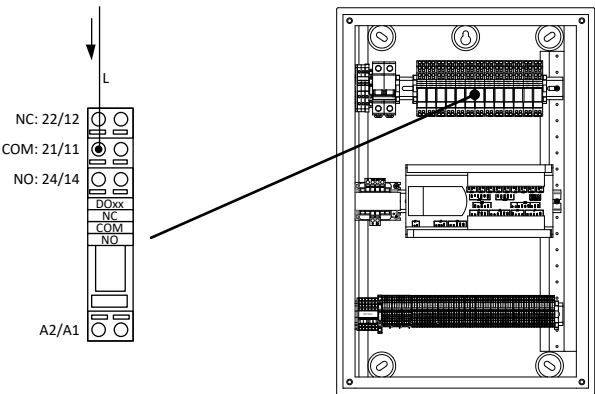
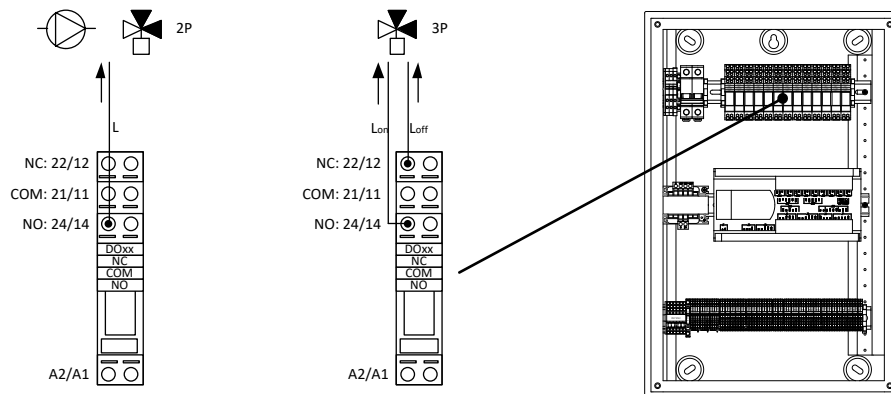


Figure 4.8. Example of digital output relay power supply connections.

Each relay allows independent pole switching; it can thus control the switching on/off of the units, including those powered with a different voltage. The capacity of the relays is 8A/250Vac per pole. If the equipment to be controlled exceeds this capacity, an external relay or contactor must be installed. Shown below are examples of connections between circulator pumps and 3-way valves with controls at 2 or 3 points.



- Pay special attention to the maximum consumption allowed by each relay. Use an intermediate relay or a contactor for the connection, if necessary.

**Figure 4.9.** Example of digital output connections.

| Description | Signal | Type | Connector |
|--|----------------|--------------------------------|-----------|
| Brine pump activation | Digital output | Activation 230Vac / 8A maximum | DO1 |
| Production pump / buffer pump activation | Digital output | Activation 230Vac / 8A maximum | DO2 |
| Auxiliary brine pump activation | Digital output | Activation 230Vac / 8A maximum | DO3 |
| Auxiliary pump cool tank activation | Digital output | Activation 230Vac / 8A maximum | DO4 |
| Free cooling production activation | Digital output | Activation 230Vac / 8A maximum | DO5 |
| Auxiliary heating system activation | Digital output | Activation 230Vac / 8A maximum | DO6 |
| Active cooling production activation | Digital output | Activation 230Vac / 8A maximum | DO7 |
| DHW production activation | Digital output | Activation 230Vac / 8A maximum | DO8 |
| Free | Digital output | Activation 230Vac / 8A maximum | DO9 |
| Free | Digital output | Activation 230Vac / 8A maximum | DO10 |

Table 4.4. List of the connections of external equipment to the upper terminal blocks of relays.

4.2. Power supply

The supervisor only requires one electrical connection. The power supply to the 24Vac transformer connects to it to power the controller and other devices with low power consumption. The following table shows the characteristics of the necessary electrical connection:

| Type of power supply | Type of protection/ Cut-off current | Recommended cable section |
|-------------------------|---|---------------------------|
| 1/N/PE 230 V / 50-60 Hz | Magnetic, thermal and differential / 1A | 1.5 mm ² |

Table 4.5. Characteristics of the supervisor power supply.

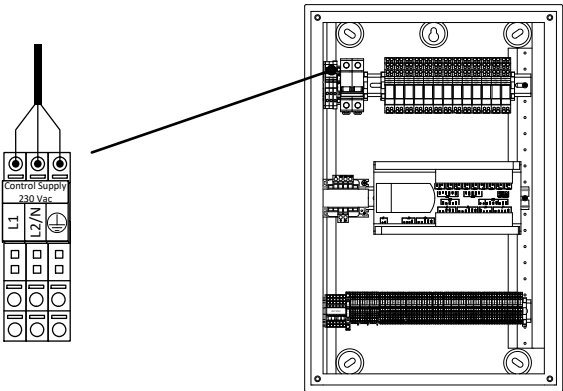


Figure 4.10. Connection scheme of the supervisor power supply.



NOTE

- The power supply of elements controlled by DO digital outputs must be independent.

4.3. Bus communication

For the supervisor to run properly, it is essential to keep pLAN bus communication with the cascade of heat pumps. Install a shielded three-pole cable type AWG 20-22 between the pLAN terminals of the supervisor and the heat pumps.

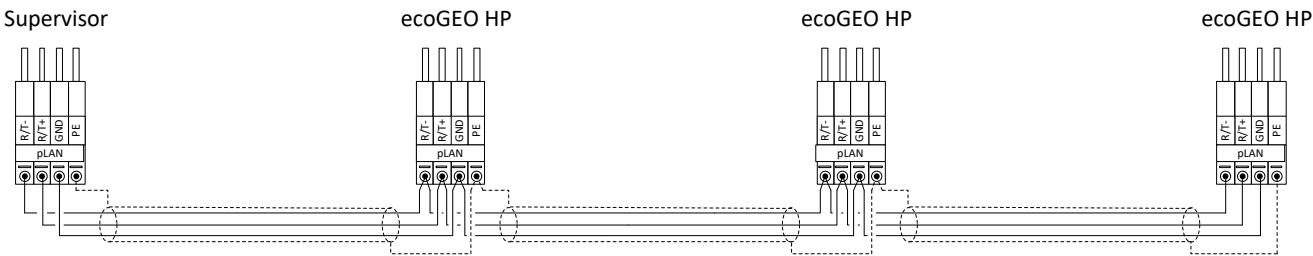


Figure 4.11. Example pLAN bus communication cable connection for installations with cascade of heat pumps.

Some other Ecoforest devices also communicate with each other via their pLAN ports. In any case, all Ecoforest controllers that connect via pLAN will establish a single pLAN network.

5. Controller user menu guide



NOTE

- The information included below corresponds to application versions launched after October 2019. Other versions, both earlier and later, may differ slightly from the contents found in this section.
- Depending on the settings configured by the technical service, there might be screens or screen contents that are not shown.
- If the following screen appears when accessing a menu, this means that the service requested has not been enabled by the technical service.



5.1. Control panel

The supervisor panel has a screen with 6 buttons, like the one shown in the illustration below. The buttons are used to move through the various user menus and to adjust the parameters.



Figure 5.1. Control panel.

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



This allows the user to move through the menu lists.

This allows the user to move from one screen to another inside a menu.

This is used to adjust the settings of the parameters contained in a screen.



This allows the user to access the selected menu.

This is used to move from one adjustable parameter to another in the same screen.

This is used to access the INFORMATION menu directly from the main screen.

5.2. Mainscreen

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

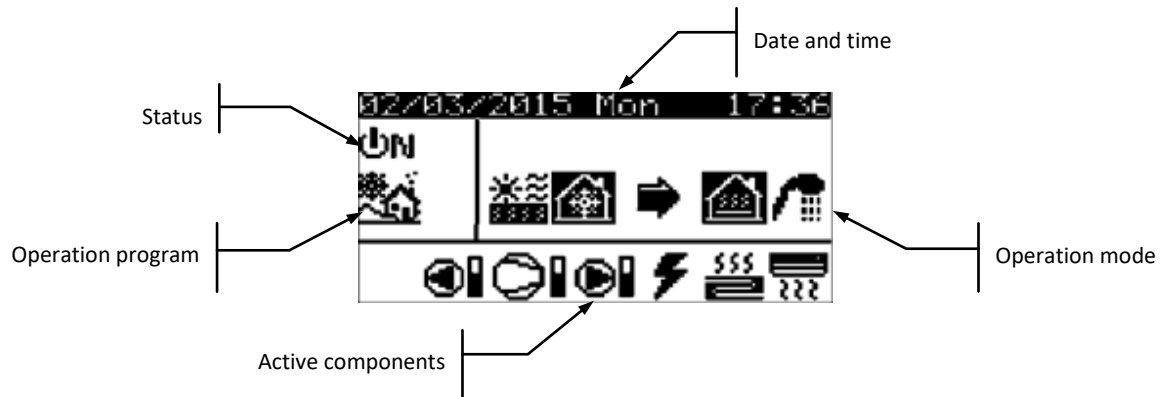










Figure 5.2. Description of the main screen.

5.3. Active components

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

-  Brinepumpactivated
-  Compressor in start-up phase
-  Compressoractivated
-  Compressor in shut-downphase
-  Productionpumpactivated
-  Heatingunitsactivated
-  Coolingunitsactivated
-  Auxiliaryheatingunitactivated

5.4. Mode

This field shows 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 request from the interior 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 demand 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 in compliance with the provisions in the weekly legionella protection program.



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.



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.



Wait

Compressor start-up is deactivated due to standby between start-ups (15 minutes). The minutes remaining for the compressor to start up are shown next to the icon.

STAND
-BY

No demand. The heat pump remains in standby because there is no demand.

5.5. 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 PASSIVE COLD and ACTIVE COLD 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.

5.6. Heatpump 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 + NIGHT 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 from control panel

The heat pump is switched off from the front panel of the controller 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.



OFF status due to supervisor

In facilities with several units operating in parallel, the heat pump is switched off by the supervisor and is therefore not available to activate any of its functions.



EMERGENCY status from control panel

The heat pump is in emergency status, activated manually from the front panel of the controller. 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.



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.

5.7. User menu

In Table 5.1 the sub-menu structure of menu 1. USER is shown.

| 1. USER menu | | |
|------------------|------------------|-----------------------------|
| Sub-menu level 1 | Sub-menu level 2 | Screen |
| 1.1. On/Off | | On/Off |
| | | AUTO settings |
| | | pLAN address |
| | | Heat pumps state |
| | | ecoGEO group On/Off |
| 1.2. Schedule | 1.2.1. Date/Time | Date/Time |
| | | Clock |
| | 1.2.2. Holidays | Holidays |
| 1.3. Heating | | Heating buffer |
| | | Heatingsetpoint |
| 1.4. Cooling | | Cooling buffer |
| | | Cooling setpoint |
| 1.5. DHW | | DHW storage tank |
| 1.6. Pool | | Pool settings |
| 1.7. Information | | Brine/Production |
| | | Cogeneration |
| | | Outside temperature |
| | | ON/OFF ecoGEO group |
| | | HP availability |
| | | Compressors |
| | | Energy meter |
| | | Month energy meter |
| | | Month / Annual energy meter |
| | | Version |
| 1.8. Alarms | | Active alarms |
| | | Reset alarms |

Table 5.1. USER menu structure.

The functions included in each menu are described below.

MENU 1.1. ON/OFF

ON/OFF. Allows the heat pump to be switched between ON / OFF / REMOTE. The selected state can be modified via the programming of the schedule or alarm. Also allows the operating program to be selected between WINTER / SUMMER / AUTO / REMOTE. In both cases the REMOTE option is only available if the installer has been previously enabled in menu 2. INSTALLER / REMOTE CONTROL. If the REMOTE option has been selected, the heat pump responds to the control signals from an external device in the corresponding terminals.

AUTO SETTINGS. Allows modified Winter / Summer change temperature and the time of change. If select winter temperature up summer temperature, the machine make the mix program in intermediate temperatures.

PLAN ADDRESS. Shows control units connected by pLAN and the control panels connected to each control unit. Also shows the unit control and the control panel address of this it control.

HEAT PUMPS STATE. Allows shows the state of each heat pump connected by pLAN. In the

Table 5.2 you can see the different states of heat pumps.








| Icono | Significado |
|---|--|
|  | Heat pump ON |
|  | Heat pump compressor OFF by EVU signal |
|  | Heat pump OFF by Supervisor |
|  | Heat pump OFF by BUS |
|  | Heat pump Off by CONTROL PANEL |
|  | Heat pump Off by ALARM |
|  | Heat pump LOCKED by alarm |

Table 5.2. Heat pump states in pLAN.

**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.

ECOGEO GROUP ON/OFF. Allows modified the percentages minimum and maximum of rpm between heat pumps work with best COP, also changed the time ot of this range to turn ON / OFF the next heat pump.

MENU 1.2. SCHEDULE**MENU 1.2.1. Date/time**

DATE/TIME. Here it is possible to set the date and time of the supervisor control program.

CLOCK. Here it is possible to enable/disable the automatic time change between seasons. Allows changes to be made to the time zone to be applied and the dates/times when time changes occur.

MENU 1.2.1. Holidays

Allows three holiday periods to be defined during which the supervisor RESPONDS / DOES NOT RESPOND to the services requested. The settings on this screen override the settings of the time schedules for each of the services.

MENU 1.3. HEATING

HEATING. Allows the heating cut-off temperature to be adjusted, i.e., the maximum outside environment temperature over which the system does not respond to heating demands. Also shows the heating connection type (DIRECT / BUFFER).

HEATING SETPOINT. Shows the heat pumps connected to supervisor with heating enabled, also displayed heating setpoint of each heat pump. The temperatures are the setpoint and the temperature gradient set point in case of installing exchangers in each heat pump.

MENU 1.4. COOLING

COOLING. Allows the cooling cut-off temperature to be adjusted, i.e., the maximum outside environment temperature below which the system does not respond to cooling demands. In installations with free and active cooling must configure two temperatures, the free cooling cut-off temperature, it is the same that cooling cut-off temperature that we have described, and the active cooling cut-off temperature, over which the system only make active cooling. Also shows the cooling connection type (DIRECT / BUFFER).

COOLING SETPOINT. Shows the heat pumps connected to supervisor with cooling enabled, also displayed cooling setpoint of each heat pump. The temperatures are the setpoint and the temperature gradient set point in case of installing exchangers in each heat pump.

MENU 1.5. DHW

DHW STORAGE TANK. Shows the heat pumps connected to supervisor with DHW enabled and the temperature set point of DHW in each heat pump.

MENU 1.6. POOL

POOL. Shows the heat pumps connected to supervisor with Pool enabled and the temperature set point of Pool in each heat pump.

MENU 1.7. INFORMATION

All the information is displayed here concerning the operation of the supervisor and the heat pumps and the state of the overall installation. It is possible to access this menu quickly by pressing the [←] key from the main screen.

BRINE / PRODUCTION. Shows the outlet and inlet temperatures of the brine and production circuits, the temperature jump in each of them, the pressure in each of the circuits and the adjustment percentage of each of the circulator pumps.

SIMULTANEOUSLY PRODUCTION. Shows the percentage of regulation in valves to make cogeneration mode. It only be shown in HP1 with simultaneously heating and cooling production.

OUTSIDE TEMPERATURE. Shows the current outdoor temperature, the heating and the cooling cut-off temperature, i.e. the outside environment temperature above or below which the HEATING or COOLING mode are deactivated.

ON/OFF ECOGEO GROUP. Shows heat pumps connected to supervisor, which are enabled, the current state of each one (On/Off), and the heat pumps stopped or locked by alarm.

HP AVAILABILITY. This screen shows the operating hours accumulated in each heat pump. Also, with an upward arrow shows the next pump that turn on and with a downward arrow the next to turn off.

COMPRESSORS. Shows the current rotational speed of each heat pump connected with the supervisor. Also shows if the heating or cooling capacity is enough, excessive or insufficient.

ENERGY METER. Shows the instantaneous heating and cooling capacity with this parameters calculate the Coefficient of Performance (COP), the Efficiency Energy Ratio (EER) and the Seasonal Performance Factor (SPF), considering in each time the active energy.

Month energy METER. Displays the energy values explained in the previous section accumulated over a month.

MONTH / ANNUAL ENERGY METER. Displays the energy values explained in the previous section accumulated over a year.

VERSION. Displays information related to the version of control program, bios and expansion valve driver installed in the heat pump.

MENU 1.8. ALARMS

It is possible to access this menu quickly by pressing the [Alarm] key from the main screen.

ACTIVE ALARMS. Displays the alarms that are currently active. All the alarms included in this menu will not allow the compressor to start. If the cause of the alarm has been solved, it automatically disappears from the menu and once again the compressor can start. There are some alarms which if repeated five consecutive times activate a permanent alarm. If this occurs the heat pump cannot be started until the active permanent alarm has been manually reset.

RESET ALARMS. Allows permanent alarms to be reset which were caused by a succession of five alarms resulting from the same cause.

5.8. Installer menu

In ¡Error! No se encuentra el origen de la referencia. the sub-menu structure of menu 2. INSTALLER is shown.

| INSTALLER menu | | |
|----------------------|----------------------------|--------------------------|
| Sub-menu level 1 | Sub-menu level 2 | Screen |
| 2.1. Language | | Change language |
| 2.2. Configuration | 2.2.1. Sources | Sources |
| | 2.2.2. Services | Services |
| | | Priorities configuration |
| | 2.2.3. Remote control | Remote control EVU |
| | | Remote WINTER/SUMMER |
| | | Remote BUS CONTROL |
| | | BMS configuration |
| | | BMS2 configuration |
| | 2.2.4. Protections | Pump limitation |
| | | Pumps DT definition |
| | | Brine alarm |
| | | Cold outlet alarm |
| | 2.2.5. Probe configuration | Brine outlet temp. |
| | | Brine inlet temp. |
| | | Heating outlet temp. |
| | | Heating inlet temp. |
| | | Outside temperature |
| 2.3. Manual test | | Brine pump |
| | | Production pump |
| | | Auxiliary brine pump |
| | | Auxiliary pump cooltank |
| | | Free cooling |
| | | Free |
| 2.4. Alarm log | | Alarm log |
| | | Initialize alarm log |
| 2.5. Default values | | Initialize application |
| | | Initialize energy meter |
| 2.6. Change password | | New password |

Table 5.3. INSTALLER menu structure.

The functions included in each menu are described below.

MENU 2.1. LANGUAGE

Allows the language of the heat pump management program to be selected.

MENU 2.2. CONFIGURATION

MENU 2.2.1. Brine

Allows the type of brine system to be selected and the different operating parameters to be set for this same brine system.

BRINE CONFIGURATION. Allows the type of brine system to be selected from among GEOTHERMAL COLLECTOR / AIR UNIT / HYBRID SYSTEM.

MENU 2.2.2 Services

SERVICES. Allows ENABLED / DISABLED the services activated by the heat pump to in the supervisor.

PRIORITIES CONFIGURATION. Allows the response to the different services to be prioritised.

MENU 2.2.3. Remote control

EVU CONFIGURATION. Allows ENABLED/DISABLED the EVU function. The heat pump is on, but the compressor is disabled by the EVU signal. Secondary functions can be activated such as start of drive groups, DHW recirculation, etc.

REMOTE CONFIGURATION HP. Allows the remote control of supervisor to be ENABLED / DISABLED and the operating logic to be selected.

REMOTE CONFIGURATION WINTER / SUMMER. Allows the remote control of WINTER / SUMMER program to be ENABLED / DISABLED and the operating logic to be selected.

REMOTE BUS CONTROL. It allows to ENABLE / DISABLE the BUS remote control function to manage the ACTIVATION / DEACTIVATION and the setpoints of each shunt groups in heating and cooling, and the services DHW and POOL. Also it allows to control the BUS remote control ON / OFF and WINTER / SUMMER. BUS communication makes use of BMS and BMS2 ports.

CONFIGURACIÓN BMS. Allows the communications parameters in BMS2 port to be changed in pCOOEM+. The configuration to READ / WRITE data in this port need to be the factory default parameters which are showed in the Figure 5.3.

| BMS CONFIG. | |
|-------------|--------------|
| ADDRESS: | 4 |
| PROTOCOL: | MODBUS SLAVE |
| BAUDRATE: | 19200 |
| STOP BIT: | 2 |
| PARITY: | None |

Figure 5.3. Factory default settings of BMS port for Reading data from heat pump.

CONFIGURACIÓN BMS2. Allows the communications parameters in BMS2 port to be changed in pCOOEM+. The configuration to READ / WRITE data in this port need to be the factory default parameters which are showed in the Figure 5.4.

| BMS2 CONFIG. | |
|--------------|--------------|
| ADDRESS: | 5 |
| PROTOCOL: | MODBUS SLAVE |
| BAUDRATE: | 19200 |
| STOP BIT: | 2 |
| PARITY: | None |

Figure 5.4. Factory default settings of BMS2 port for Reading data from heat pump.

MENU 2.2.4. Protections

PUMPS LIMITATION. Allows adjusted the minimum and maximum regulation of pumps connected to supervisor. You could check flow drop in exchangers for each model.

PUMPS DT DEFINITION. It allows select brine and production DT's, who must be adjusted with brine and production pumps.

BRINE TEMP. ALARM. Allows the value to be set below which the alarm is activated due to low temperatures in the brine circuit.

COOLING TEMP.ALARM. Allows the value to be set below which the alarm is activated due to low outlet temperatures in the production circuit.

MENU 2.2.5. Probe configuration

BRINE OUTLET TEMPERATURE. Displays the type of temperature probe installed in the brine circuit outlet and its current reading. It is also possible for a correction to be made to the probe reading.

BRINE INLET TEMPERATURE. Displays the type of temperature probe installed in the brine circuit inlet and its current reading. It is also possible for a correction to be made to the probe reading.

PRODUCTION OUTLET TEMPERATURE. Displays the type of temperature probe installed in the heating circuit outlet and its current reading. It is also possible for a correction to be made to the probe reading.

PRODUCTION INLET TEMPERATURE. Displays the type of temperature probe installed in the heating circuit inlet and its current reading. It is also possible for a correction to be made to the probe reading.

OUTSIDE TEMPERATURE. Displays the type of outside temperature probe and its current reading. It is also possible for a correction to be made to the probe reading.

MENU 2.3. Manual test

BRINE PUMP. Allows the manual ENABLING / DISABLING of the brine pump's control relay (DO1) and for adjustments to be made to the rotational speed percentage.

PRODUCTION PUMP/BUFFER PUMP. Allows the relay to be manually ENABLED / DISABLED which controls the production pump for HEATING / DHW / POOL production or the buffer storage tank pump (DO2) and adjustments to be made to the rotation speed percentage.

AUXILIARY BRINE PUMP. Allows relay to be manually ENABLED / DISABLED which controls an auxiliary brine pump in case of heat pump is working by cogeneration mode (DO3).

AUXILIARY PUMP COOL TANK. Allows relay to be manually ENABLED / DISABLED which controls an auxiliary pump cool tank in cooling buffer tank mode (DO4).

FREE COOLING. Allows the relay to be manually ENABLED / DISABLED which controls 3-way valves for free cooling (DO5).

ACTIVATION AUXILIARY SYSTEM. Allows the relay to be manually ENABLED / DISABLED which controls auxiliary system (DO6).

MENU 2.4. Alarm log

ALARM LOG. Here it is possible to access the log of all the alarms that occurred during the period of operation of the heat pump, indicating the date and time that they were activated.

INITIALISE ALARM LOG. Allows the alarm history log of the supervisor to be cleared.

MENU 2.5. Default values

INITIALISE APPLICATION. Allows the adjustments performed in menu 1 to be cleared. USER and 2. INSTALLER and restore the factory default settings.

INITIALISE ENERGY METER. Allows the history log of the heat pump's energy meters to be cleared.

MENU 2.6. Change password

NEW PASSWORD. Allows the access password to menu 2 to be changed. INSTALLER (PW1).

6. Configuration and commissioning



- Before starting control configuration, ensure that the pLAN connection terminals are disconnected. Leaving the pLAN cable connected may cause the supervisor components or the components it controls to malfunction or even break down.
- If the software needs to be updated or the configuration needs to be deleted (installer menu → default values) keep the pLAN cable disconnected.
- Follow the configuration steps in the order shown in this section. Any change in the configuration order may cause the unit to malfunction. If the configuration order is changed, delete the configuration using the tool found in "installer menu → default values" and start again.

6.1. Software version and "default values"

Make sure the supervisor has the same software version number as the heat pumps. The software version can be found in "user menu → information" and in "installer menu → information". The software version number is identified by the code Vxx_Bxxx (e.g. figure 6.1).

If necessary, update the supervisor software or even the software of all the devices on the pLAN network. Make sure to install the correct software for each device. As shown in figure 6.1, the ecoGEO HP heat pump software is identified by the letters "HP" and the supervisor software by the letters "PS".

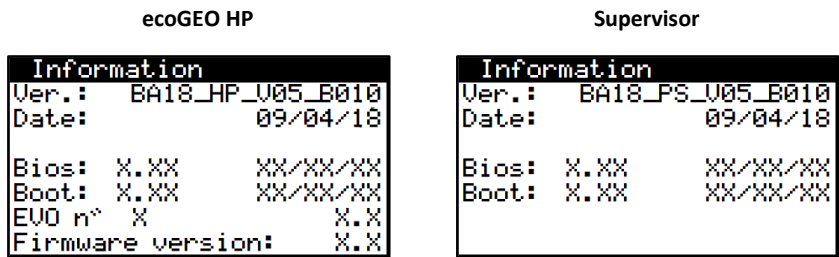


Figure 6.1. Example information screens showing the ecoGEO HP heat pump and ecoSMART Supervisor software version.

Check that there is no configuration in the supervisor electronic control. If there are any configuration parameters or if you are not sure, delete the whole configuration using the tool in "installer menu → default values".

6.2. pLAN address configuration in heat pumps

To configure pLAN address access IN EACH HEAT PUMP, WHICH WILL BE MANAGED BY SUPERVISOR, TO THE INSTALLER MENU (press [Prg]+[Esc] and enter the installer password PW1) -> CONFIGURATION -> REMOTE CONTROL -> CASCADE MODE.

1. On the pLAN MASTER/SLAVE ENABLED / DISABLED cascade mode.
2. Select the unit control address. Address 15 is reserved for supervisor, select between 1 and 6 for each heat pump, select a logical order. Do not repeat address in heat pumps. Please see the sample below in the Figure 6.2.

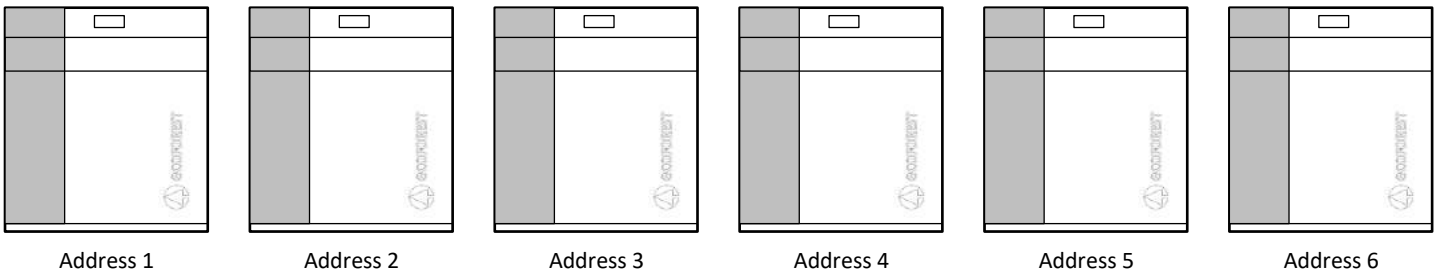


Figure 6.2. Cascade with ecoGEO HP heat pumps with the address related to each heat pump number.

In the Figure 6.3.shows cascade configuration for heat pump number 2.



Figure 6.3. Cascade configuration example for heat pump number 2.

6.3. Control panel Address configuration

The supervisor pLAN communication address is 15. The pLAN communication address of its control panel must therefore be 18. It is not possible to use other addresses for the supervisor and its control panel.

| Unit | Controller address "I/O boardaddress:" | Control panel address "Displayaddresssetting" |
|---------------------|---|--|
| Heat pump no. 1 | 1 | 32 |
| Heat pump no. 2 | 2 | 31 |
| Heat pump no. 3 | 3 | 30 |
| Heat pump no. 4 | 4 | 29 |
| Heat pump no. 5 | 5 | 28 |
| Heat pump no. 6 | 6 | 27 |
| ecoSMART Supervisor | 15 | 18 |

Table 6.1. Control addresses and control panel addresses for units connected via the pLAN network.

To configure these addresses in the control panel, access the "DISPLAY ADDRESS SETTING" menu by simultaneously pressing and holding the three buttons on the right of the control panel [↑] [←] [↓].



Change "Display address setting" and "I/O Board address" to configure the supervisor addresses.



After making the changes, the screen shown in the figure appears. The control panel then appears with no image.

Go back to the "DISPLAY ADDRESS SETTING" menu by simultaneously pressing and holding the three buttons on the right of the panel [↑] [←] [↓]. Make sure that "Display address setting" and "I/O Board address" are correctly selected. Move on from this screen by pressing [←].

```
Terminal config
Press ENTER
to continue
```

A screen will appear as shown in the figure. Press [↵] to go to the next screen.

```
P:14  Adr  Priv/Shared
Trm1  19   Pr
Trm2  None --
Trm3  None --  Ok?Yes
```

In "Trm1" change the control panel address again as shown in the figure.

Press [↵] again and change the control panel privacy "Pr". Press [↵] until reaching "No", which is next to "Ok?" and change it to "Yes". Press [↵] to start control panel address configuration.

If the control panel shows no image for more than 10 seconds when starting configuration, repeat the configuration step by step. If this persists, check that the right software is loaded.

6.4. pLAN communication cable connection

Connect the pLAN communication cable to the supervisor.

6.5. Selecting the heat pump model

To select the heat pump model access the INSTALLER MENU (press [Prg]+[Esc] and enter the installer password PW1) -> CONFIGURATION -> HEAT PUMP MODEL.

On the MODEL SELECTION screen select the model of heat pump you are using from the available options. You must select the same model (HP1 or HP3) for all the heat pumps managed by supervisor.

6.6. Service configuration

To configure all the services, configure it in each heat pump connected to supervisor the services (HEATING, COOLING, DHW and/or POOL) that you want enabled. The heat pump where you enabled the service manage the sensor and/or the control signal. To configure the heat pump see Installation and operating manual ecoGEO HP.

6.7. Configuration of service response priorities

To configure the priorities for responding to the different services previously enabled, access in the supervisor to the INSTALLER MENU (press [Prg]+[Esc] and enter the installer password PW1) -> CONFIGURATION -> SERVICES -> PRIORITIES.

On the PRIORITIES CONFIGURATION screen select the priorities for responding to the different services previously enabled from among the options available in the heat pump.

6.8. Configuration of the remote control

To configure the remote control options available to the supervisor access the INSTALLER MENU (press [Prg]+[Esc] and enter the installer password PW1) -> REMOTE CONTROL.

On the REMOTE CONFIGURATION screen enable the desired remote control options available. Also select the type of logic to be used for each of the options enabled between NO/NC (normally open / normally closed).

6.9. Power limitation and protection configuration

To configure the safety protections and operating range limitations of the supervisor access the INSTALLER MENU (press [Prg]+[Esc] and enter the installer password PW1) ->CONFIGURATION -> PROTECTIONS.

1. On the PUMPS LIMITATION screens, adjust the percentages of maximum and minimum of pump circulations during operation of the heat pump.
2. On the BRINE ALARM screen set the minimum temperature of the brine circuit below which the alarm is activated and the heat pump turns off.
3. On the COOLING ALARM screen set the minimum outlet temperature during operation of the heat pump in COOLING mode below which the alarm is activated and the heat pump turns off.
4. To configure power limitation and protection configuration in heat pump connected to supervisor see Installation and operating manual ecoGEO HP.

6.10. Final inspection and commissioning



NOTE

-
- Commissioning should be performed only after verification that all the circuits have been properly filled and bled.
 - Before commissioning, check that all the pumps, valves and other components are functioning correctly. To do this, you can enable them individually in the installer menu → manual activation of components.
 - Before commissioning, check that all the circuits are flowing and that nothing is preventing the flow.
-

Check the following points to ensure that they have been carried out successfully.

Inspection of the electrical installation:


1. The power supply has been connected to the terminal block of the supervisor in accordance with the instructions in section 4.2.
2. The pLAN bus communication cable has been connected between the supervisor and the rest of the pLAN network (ecoGEO HP heat pumps, Supervisor module, etc.) in accordance with the instructions in section 4.3. For more information, refer to the ecoGEO HP heat pump and Supervisor module manuals.
3. All the temperature probes required for the supervisor, the ecoGEO HP heat pumps and, if there is one, the Supervisor module have been installed, in accordance with the instructions in sections 4.1. For more information, refer to the ecoGEO HP heat pump manuals.
4. All the control signals from external equipment (thermostats and/or other external equipment) have been connected to the supervisor, the ecoGEO HP heat pumps and, if there is one, the Supervisor module, in accordance with the instructions in sections 4.1. For more information, refer to the ecoGEO HP heat pump manuals.
5. All the external equipment (pumps, valves and/or other external equipment) have been connected to the supervisor, the ecoGEO HP heat pumps and, if there is one, the Supervisor module, in accordance with the instructions in sections 4.1. For more information, refer to the ecoGEO HP heat pump manuals.



Commissioning and checking for unusual noises:

1. Check that the temperature readings from different sensors are correct.
2. Start up the whole system (heat pump and Supervisor module) and check that it functions properly in the various operating modes in which it will operate.
3. Check for any unusual noises in other parts of the installation.

7. Identifying and solving problems

7.1. Alarm list

There are a number of reasons why the supervisor activates an alarm to protect the system from possible damage or to alert the user to a malfunction. If an alarm is activated, the  button on the control panel lights up red and the alarms menu can be accessed by pressing this button. The following situations are possible:

1. **The  button stays lit:** There is an alarm that is locking the system.
2. **The  button flashes:** There is an alarm that is not locking the system or there was another kind of alarm.


If the cause of the alarm locking the system is resolved, the system starts to function normally and the  button flashes to indicate that there has been an alarm. This process may be repeated indefinitely (the supervisor does not cause permanent locking).

Table 7.1 there is a list of possible alarms and the corresponding messages which are displayed on the control panel.

| Alarm No. | MESSAGE |
|-----------|--|
| 1 | Check services priorities |
| 2 | Not heat pump available |
| 3 | Low brine outlet temperature |
| 4 | Low production outlet temperature |
| 5 | Failure of a temperature probe (the defective probe is shown on the screen) |

Table 7.1. List of alarms and messages that are displayed on the control panel.

8. Technical specifications

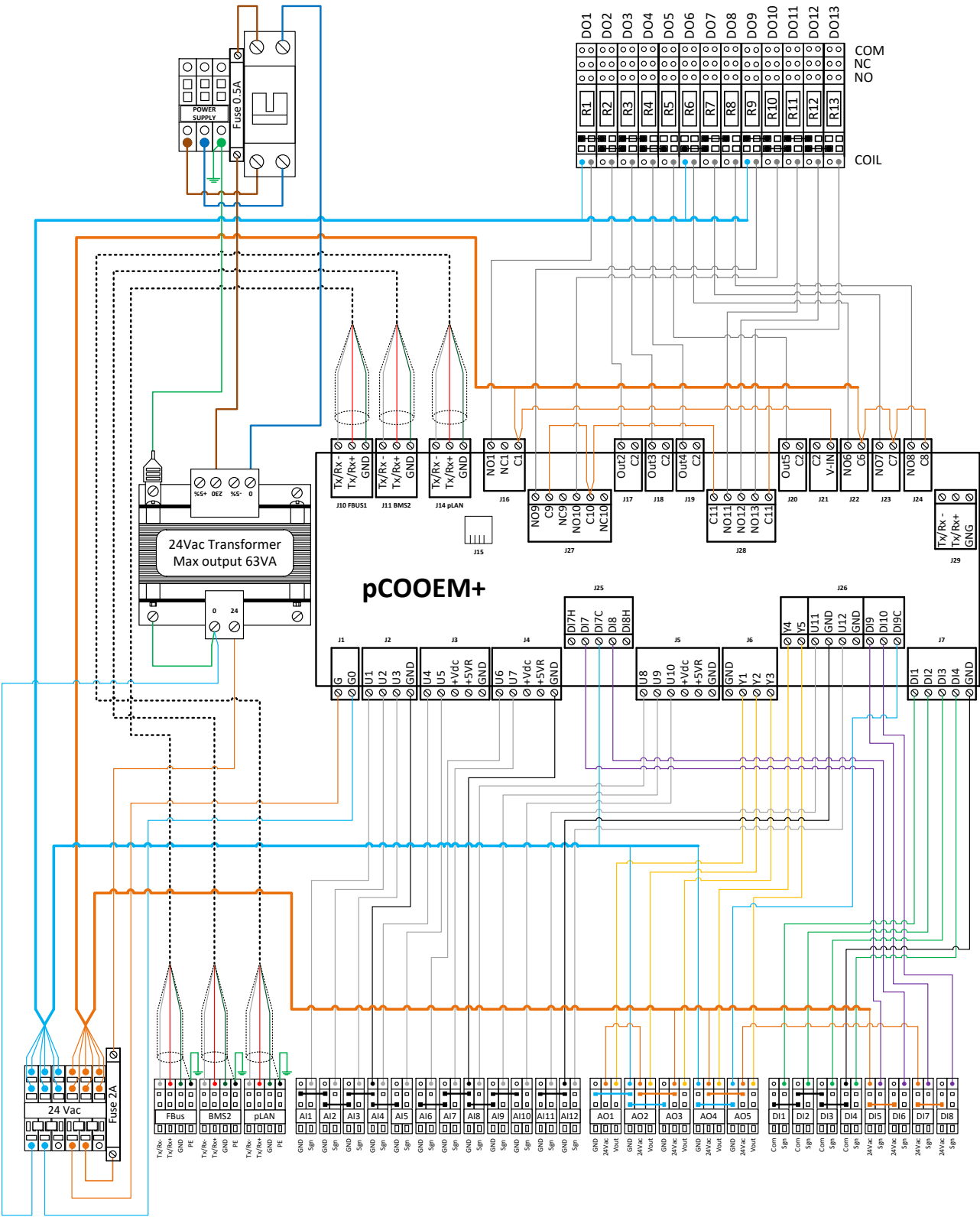
8.1. Technical data table

Table 8.1 shows the main technical specifications of the supervisor.

| Specification | | Units | ecoSMART supervisor |
|-----------------|---|-------|---------------------------------------|
| Application | Cascade control of several ecoGEO HP heat pumps | | |
| | Place of installation | | Indoors |
| Electrical data | Type of power supply | V | 1/N/PE 230V, 50Hz |
| | Maximum recommended external protection | A | Magnetic, thermal and differential 1A |
| | Primary transformer circuit fuse | A | 0.5 |
| | Secondary transformer circuit fuse | A | 2.5 |
| Dimensions | Height x Width x Depth | mm | 600x400x158 |
| Weight | Empty weight (without assembly) | kg | 15 |

Table 8.1. Table of technical specifications of the supervisor.

8.2. Circuit diagram



8.3. Table of electrical connections

| DIGITAL OUTPUTS | | | |
|---------------------|----------------------|----------------------------|-------------------------------------|
| CONNECTIONS | | DESCRIPTION | |
| Connection terminal | Controller terminal | Type | Signal |
| Block I / DO1 | pCOOEM+ / J16 / NO1 | Activation 250Vac / 8A max | Brine pump activation |
| Block I / DO2 | pCOOEM+ / J17 / Out2 | Activation 250Vac / 8A max | Production pump activation |
| Block I / DO3 | pCOOEM+ / J18 / Out3 | Activation 250Vac / 8A max | Auxiliary brine pump activation |
| Block I / DO4 | pCOOEM+ / J19 / Out4 | Activation 250Vac / 8A max | Auxiliary pump cool tank activation |
| Block I / DO5 | pCOOEM+ / J20 / Out5 | Activation 250Vac / 8A max | Passive cooling activation |
| Block I / DO6 | pCOOEM+ / J22 / NO6 | Activation 250Vac / 8A max | Auxiliary heating system |
| Block I / DO7 | pCOOEM+ / J23 / NO7 | Activation 250Vac / 8A max | Active cooling activation |
| Block I / DO8 | pCOOEM+ / J24 / NO8 | Activation 250Vac / 8A max | DHW production activation |
| Block I / DO9 | pCOOEM+ / J27 / NO9 | Activation 250Vac / 8A max | Free |
| Block I / DO10 | pCOOEM+ / J27 / NO10 | Activation 250Vac / 8A max | Free |
| Block I / DO11 | pCOOEM+ / J28 / NO11 | Activation 250Vac / 8A max | Free |
| Block I / DO12 | pCOOEM+ / J28 / NO12 | Activation 250Vac / 8A max | Free |
| Block I / DO13 | pCOOEM+ / J28 / NO13 | Activation 250Vac / 8A max | Free |

| COMMUNICATIONS | | | |
|---------------------|---------------------|-------------------------------|-------------------------------|
| CONNECTIONS | | DESCRIPTION | |
| Connection terminal | Controller terminal | Type | Signal |
| Block II / FBus1 | pCOOEM+ / J9 FBus1 | RS485 ModBus RTU | -- |
| Block II / BMS2 | pCOOEM+ / J11 BMS2 | RS485 ModBus RTU | Remote bus access |
| -- | pCOOEM+ / BMS card | Communications card connector | |
| Block II / pLAN | pCOOEM+ / J14 pLAN | RS485 ModBus RTU | Communication with heat pumps |
| Block II / FBus2 | pCOOEM+ / J29 FBus2 | RS485 ModBus RTU | -- |

| ANALOGUE INPUTS | | | |
|---------------------|---------------------|---------------|---|
| CONNECTIONS | | DESCRIPTION | |
| Connection terminal | Controller terminal | Type | Signal |
| Block II / AI1 | pCOOEM+ / J2 / U1 | NTC 10K 25 °C | Brine circuit outlet temperature probe |
| Block II / AI2 | pCOOEM+ / J2 / U2 | NTC 10K 25 °C | Brine circuit inlet temperature probe |
| Block II / AI3 | pCOOEM+ / J2 / U3 | NTC 10K 25 °C | Production circuit outlet temperature probe |
| Block II / AI4 | pCOOEM+ / J3 / U4 | NTC 50K 25 °C | Production circuit inlet temperature probe |
| Block II / AI5 | pCOOEM+ / J3 / U5 | NTC 10K 25 °C | Outside temperature probe |
| Block II / AI6 | pCOOEM+ / J4 / U6 | NTC 10K 25 °C | Free |
| Block II / AI7 | pCOOEM+ / J4 / U7 | NTC 10K 25 °C | Free |
| Block II / AI8 | pCOOEM+ / J5 / U8 | NTC 10K 25 °C | Free |
| Block II / AI9 | pCOOEM+ / J5 / U9 | NTC 10K 25 °C | Free |
| Block II / AI10 | pCOOEM+ / J5 / U10 | NTC 10K 25 °C | Free |
| Block II / AI11 | pCOOEM+ / J5 / U11 | NTC 10K 25 °C | Free |
| Block II / AI12 | pCOOEM+ / J5 / U12 | NTC 10K 25 °C | Free |

| ANALOGUE OUTPUTS | | | |
|---------------------|---------------------|-------------|--|
| CONNECTIONS | | DESCRIPTION | |
| Connection terminal | Controller terminal | Type | Signal |
| Block II / AO1 | pCOOEM+ / J6 / Y1 | 0-10Vdc | Brine pump adjustment / Brine simultaneously production valve regulation |
| Block II / AO2 | pCOOEM+ / J6 / Y2 | 0-10Vdc | Production pump regulation / Heating simultaneously production valve regulation |
| Block II / AO3 | pCOOEM+ / J6 / Y3 | 0-10Vdc | Auxiliary heating system regulation |
| Block II / AO4 | pCOOEM+ / J26 / Y4 | 0-10Vdc | Free |
| Block II / AO5 | pCOOEM+ / J26 / Y5 | 0-10Vdc | Free |

| DIGITAL INPUTS | | | |
|---------------------|----------------------|-------------------|--|
| CONNECTIONS | | DESCRIPTION | |
| Connection terminal | Controller terminal | Type | Signal |
| Block II / DI1 | pCOOEM+ / J7 / DI1 | Voltage-free (0V) | Remote BC activation EVU |
| Block II / DI2 | pCOOEM+ / J7 / DI2 | Voltage-free (0V) | Remote winter/summer program selection |
| Block II / DI3 | pCOOEM+ / J7 / DI3 | Voltage-free (0V) | Free |
| Block II / DI4 | pCOOEM+ / J7 / DI4 | Voltage-free (0V) | Free |
| Block II / DI5 | pCOOEM+ / J25 / DI7 | 24Vdc / 24Vac | Free |
| Block II / DI6 | pCOOEM+ / J25 / DI8 | 24Vdc / 24Vac | Free |
| Block II / DI7 | pCOOEM+ / J26 / DI9 | 24Vdc / 24Vac | Free |
| Block II / DI8 | pCOOEM+ / J26 / DI10 | 24Vdc / 24Vac | Free |

9. Symbols



DHW circuit



Pool



Heating system



Cooling system



NTC temperature probe



Relay thermostat



Data bus communication terminal



Circulator pump



Direct outlet unit



Outlet unit with mixture



Electrical resistance



Drain defrost heater



Expansion vessel



3-way valve open/closed



3-way thermostatic valve



3-way modulating valve 0-10Vdc



Check valve



Cut-off valve



Safety valve



Differential pressure valve



Particulate filter



Heat exchanger



Outlet pipe



Return pipe



Flexible hose



Drain

10. Warranty and technical service

10.1. Manufacturer's warranty

ECOFOREST is liable for lack of conformity of the product or its spare parts, in compliance with the current regulations of the country where the product is purchased. The warranty is only valid in the country where the product is purchased.

In addition, with previous consent from ECOFOREST, the local authorised distributor can offer an extension of the warranty established by current legislation.

Conditions and validity of the warranty

In order for this warranty to be considered valid the following conditions must be verified.

- ECOFOREST must allow the product under warranty to be sold in the country where it is going to be installed.
- The product under warranty must be used exclusively for the purpose that it was designed for.
- All installation, start-up, maintenance and repair work carried out on the equipment must be performed by a technical service authorised by ECOFOREST.
- All replacement of parts must be carried out by a technical service authorised by ECOFOREST and always with original ECOFOREST spare parts.
- The purchaser must inform the establishment that sold the product of the lack of conformity within 30 (thirty) days.
- For the warranty to be effective, the purchaser must present a legal document that supports the date of purchase from the establishment that made the sale.

Disclaimer of warranty

The warranty does not include product non-conformities derived from:

- Weather conditions, chemical agents, improper use and other causes that do not depend directly on the product.
- Installation and/or handling of the equipment by unauthorised personnel.
- Improper transportation of the product.
- Part wear due to normal equipment operation, unless due to a manufacturing defect.

Request for service under warranty

A request for service during the warranty period must be presented at the establishment where the product was purchased.

Product returns will only be accepted if previously accepted in writing by ECOFOREST.

The product must be returned in its original packaging and with a legal document that supports the date of purchase from the establishment that made the sale.

10.2. Authorised distributors and technical service

ECOFOREST has an extensive network of authorised companies that distribute and perform the technical service on its products. This network will provide our customers with all the information and technical support they need, anywhere and under any circumstance.

ECOFOREST GEOTERMIA, S.L.

Parque Empresarial Porto do Molle / Rúa das Pontes, 25

36350 – Nigrán – Pontevedra – Spain

Tel.: +34 986 262 184

<http://www.ecoforest.es>



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The manufacturer reserves the right to make any necessary changes to the contents of this manual without prior notice.