ecoFOREST
biomass - heat pumps - solar

06 / 2020

ecoSMART e-source

EN

USER, INSTALLER AND TECHNICAL SERVICE MANUAL

MODEL:

SERVICE CONTACT:

Contents

1. General information

Thank you for purchasing an ecoSMART e-source source manager with your ecoGEO HP heat pump.

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 ensure optimal performance of the e-source manager, read this manual carefully before installation and commissioning. 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!

- Warning 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.

The e-source manager has been designed to work together with an ecoGEO HP heat pump or together with a cascade of several ecoGEO HP heat pumps controlled by a supervisor module.

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!

- All the installation and maintenance work described in this manual must be performed by an authorised engineer.
- Improper installation or use of the equipment could cause electrocution, short circuits, leakage of working fluids, fire or other personal injuries and/or material damage.
- If you are unsure of the procedures for installation, maintenance or use of the equipment, contact your local dealer or technical support for advice.
- If you detect a malfunction in the unit, contact your local dealer or technical support to answer any questions.
- This 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.
- When carrying out installation, maintenance or commissioning of the heat pump, always use appropriate personal protective equipment.
- Keep the plastic bags included in the packaging out of the reach of children, as improper use could result in injury caused by asphyxia.

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Hydraulic installation

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

DANGER!

- Do 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!

- 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 e-source manager 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.

Scrapping

The e-source manager is made from a variety of materials and must therefore be delivered to an authorised centre for proper scrapping and recycling of said materials.

1.2. Maintenance

The e-source no manager 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.

DANGER!

- All 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.
- Do 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 source manager is an electronic controller designed to manage several brine energy sources, such as geothermal circuits or antifreeze/air aerothermal units. It can work with a single ecoGEO HP heat pump or with a cascade of several ecoGEO HP heat pumps controlled by an ecoSMART supervisor module. In order to do so, pLAN bus communication must be established with the heat pump or cascade of heat pumps.

The e-source manager can manage up to four independent brine sources. Each source can be configured as an aerothermal or geothermal brine source. It is also able to control defrosting of each of the aerothermal sources independently and in sequence, while the heat pump(s) continue(s) to work with the other sources. It can also control a general circulator pump for all brine sources.

3. Installation

3.1. Transport and handling

Transport the e-source manager so that it is protected from bad weather.

3.2. Dimensions

The general dimensions of the unit are set out below.

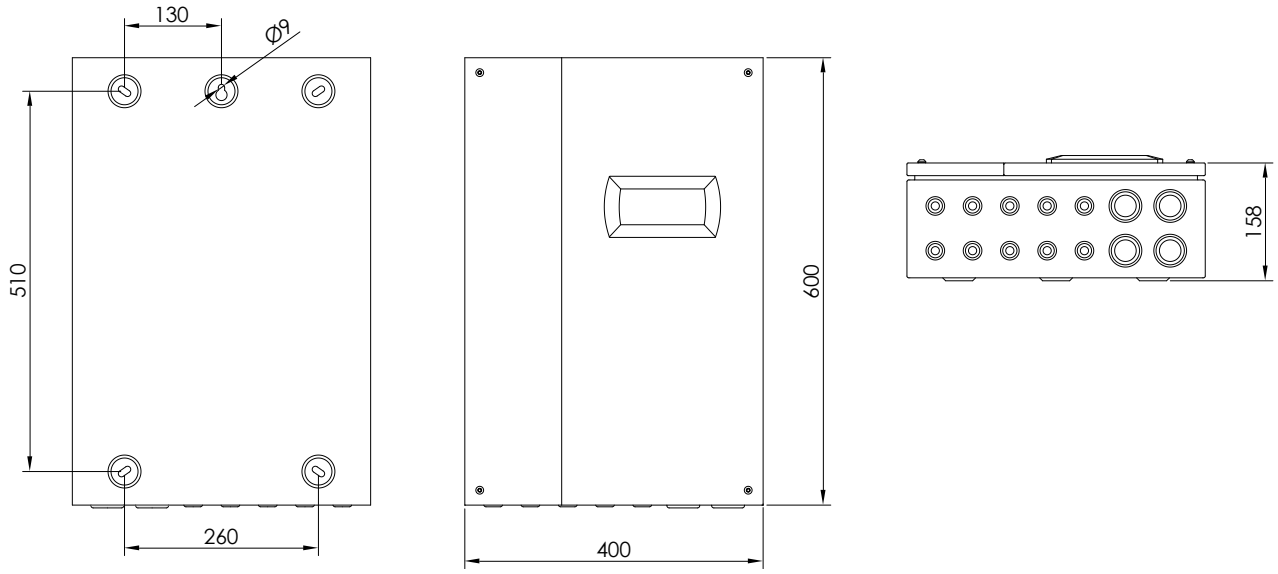

Figure 3.1. General dimensions (in mm).

3.3. Unpacking

To unpack the e-source manager, 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.

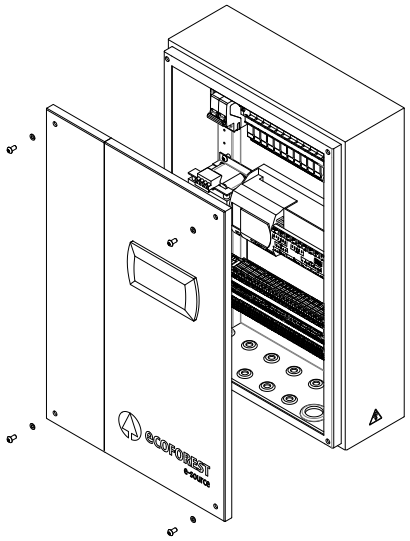

Figure 3.2. Removing the front cover of the e-source manager.

NOTE

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

3.5. Location and assembly

Choose a dry place where there is no risk of frost. The e-source manager module 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.

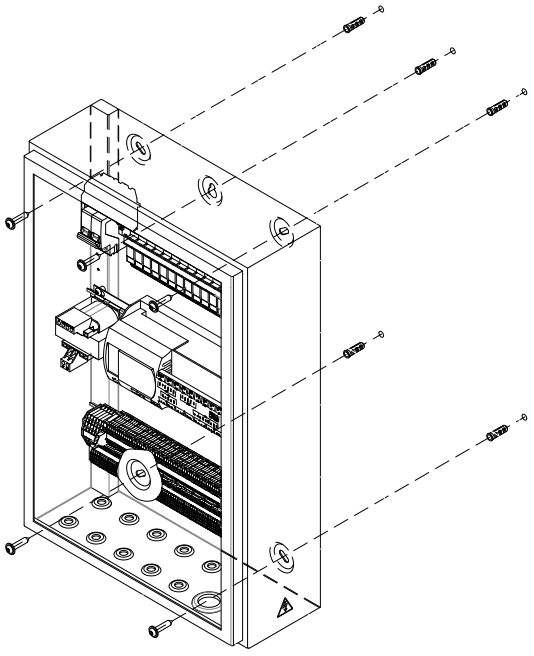

Figure 3.3. Positioning the e-source manager.

3.6. Service areas

The minimum recommended distances around the e-source manager to facilitate installation, commissioning and maintenance are set out below.

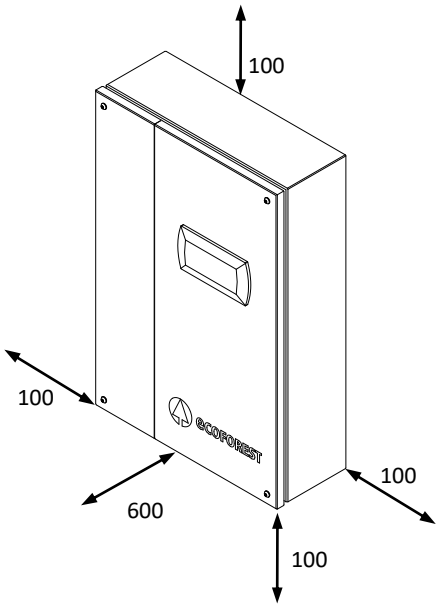

Figure 3.4. Recommended minimum service areas around the e-source manager (in mm).

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 e-source manager 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.

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4.1. General instructions

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

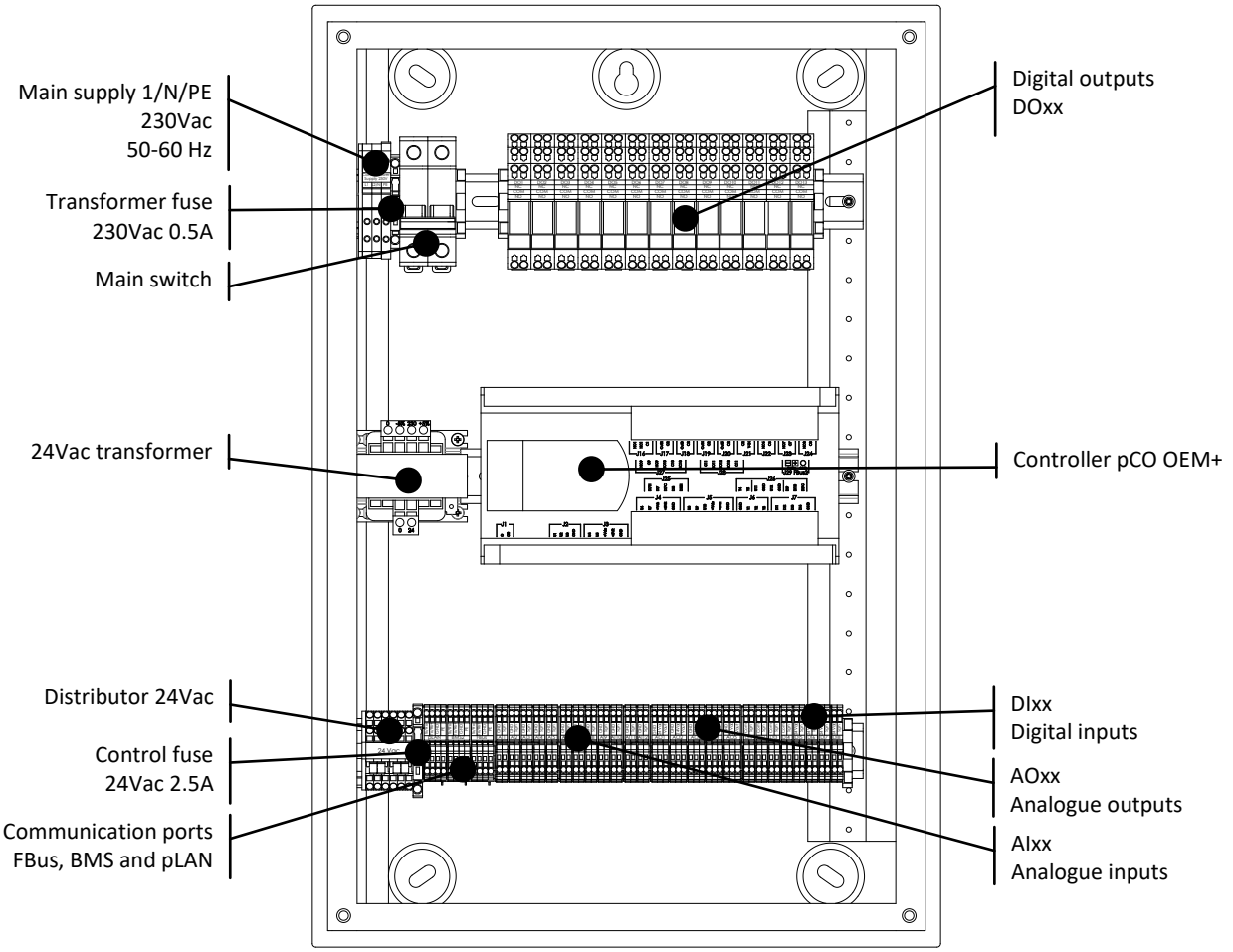

Figure 4.1. Location of internal components.

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.

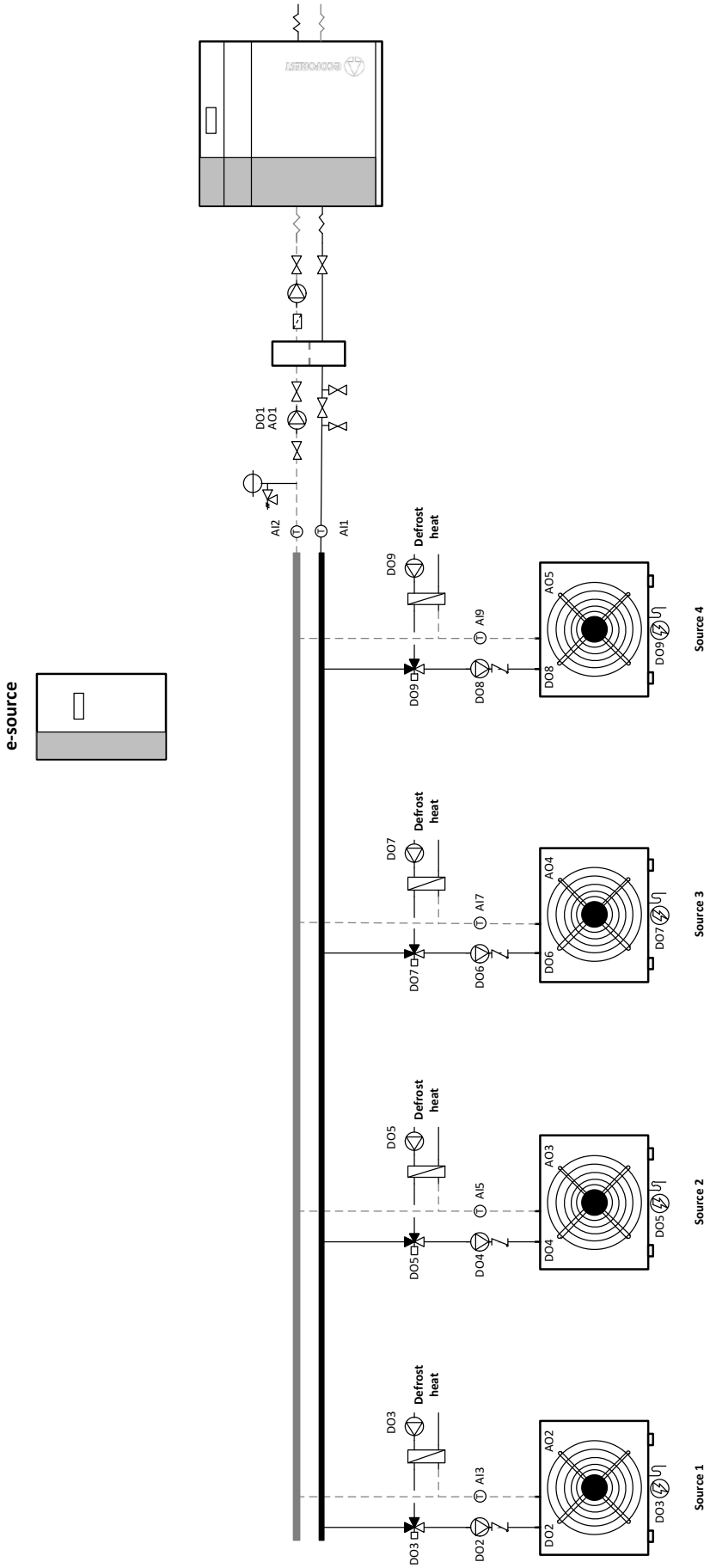

Figure 4.2. General electrical connection scheme 1.

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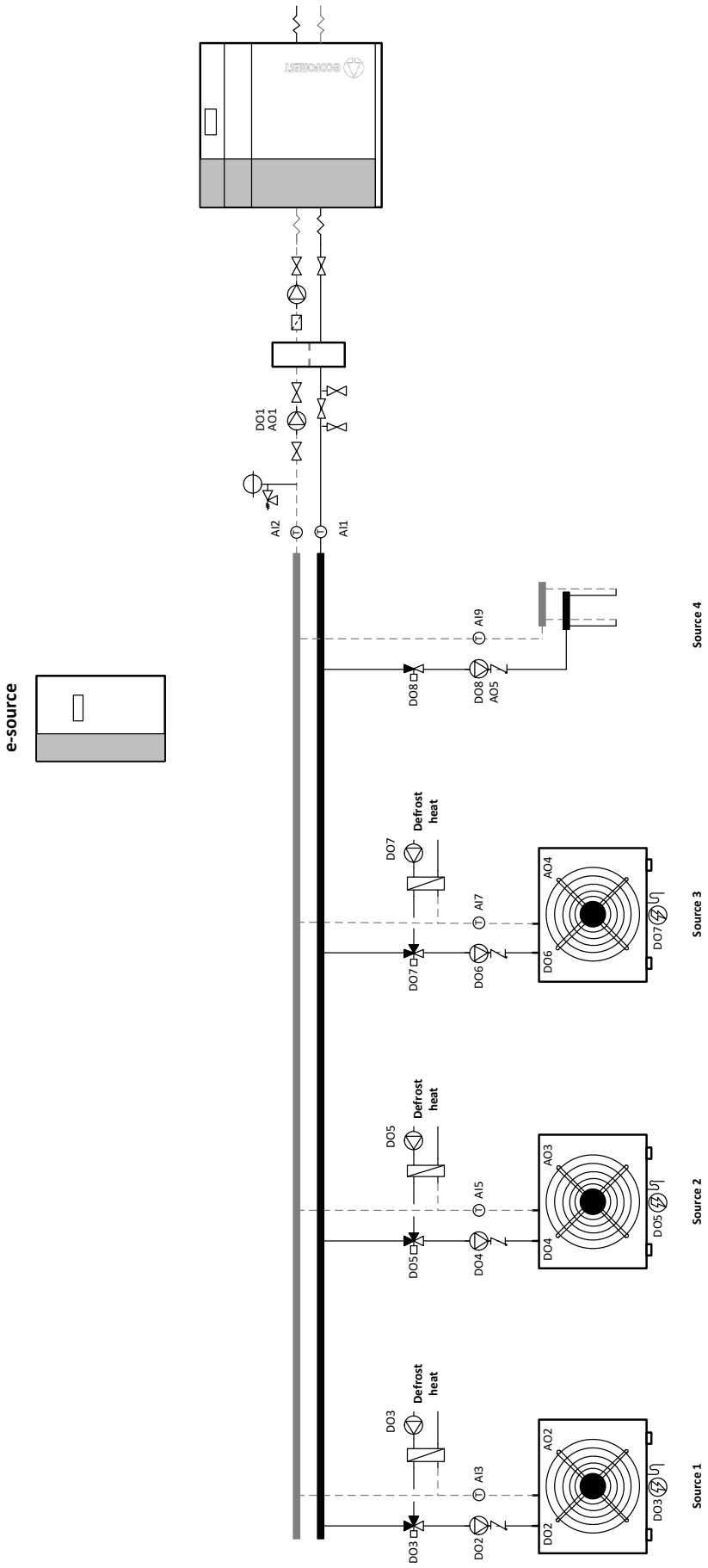


Figure 4.3. General electrical connection scheme 2.

NOTE

- The schemes in figures 4.2 and 4.3 are provided only to indicate the electrical connections. The hydraulic design of the brine system 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 mm^2. For greater lengths (up to 120 m) it is recommended to use cable with a section of 1.5 mm^2.

NOTE

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

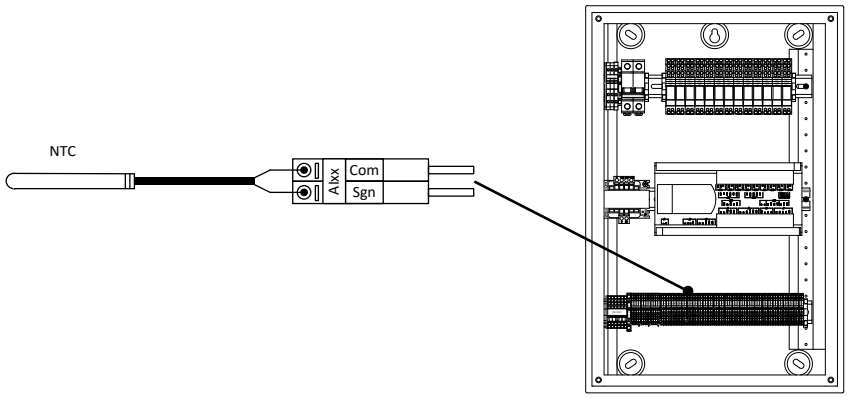


Figure 4.4. Example of temperature probe connections.

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.

NOTE

- 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.

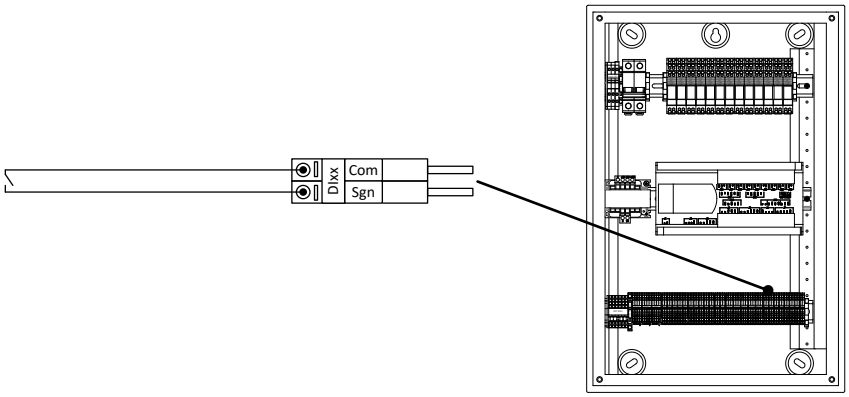


Figure 4.5. Example of voltage-free digital input connections.

NOTE

- 24Vac external equipment can be connected directly from the e-source manager, 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.

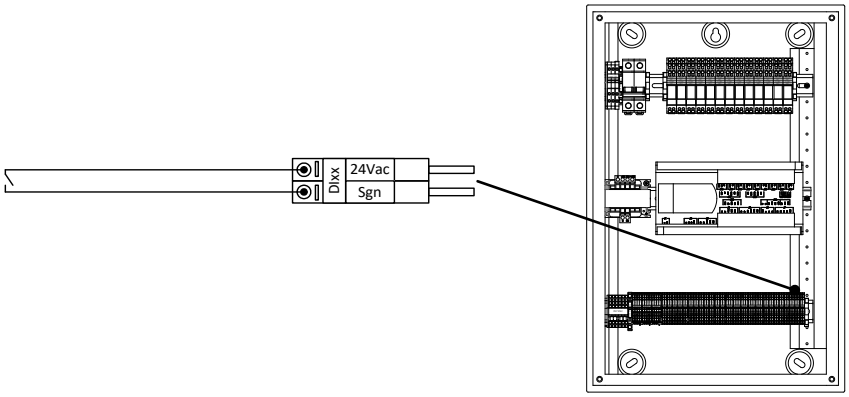


Figure 4.6. Example of digital input connection with 24Vac voltage.

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.

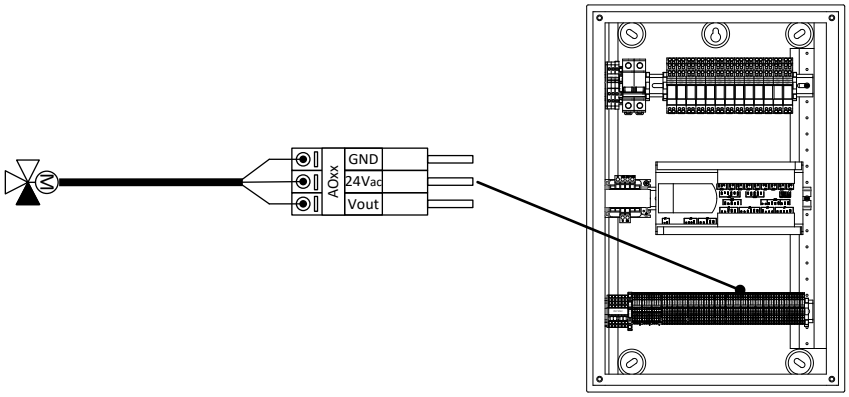


Figure 4.7. Example of 0-10Vdc modulating regulation signal connections.

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.

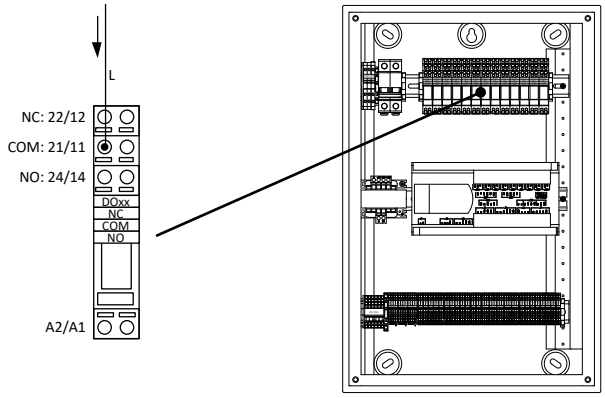


Figure 4.8. Example of digital output relay power supply connections.

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.

NOTE

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

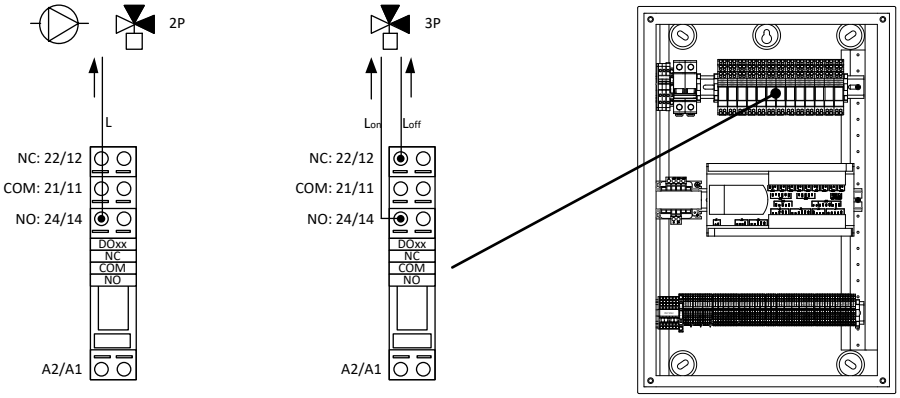


Figure 4.9. Example of digital output connections.

4.2. Power supply

The e-source manager 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 4.1. Characteristics of the e-source manager power supply.

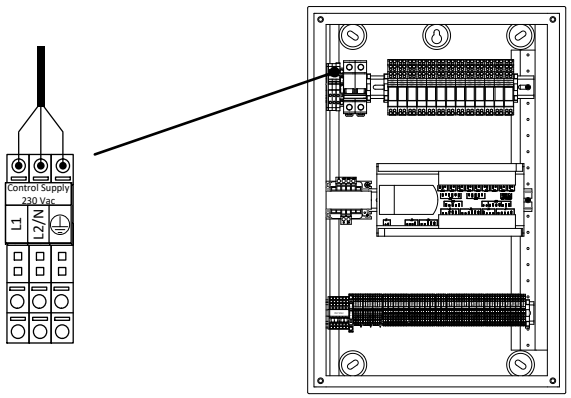


Figure 4.10. Connection scheme of the e-source manager power supply.

NOTE

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

4.3. Brine collector inlet and outlet temperature probes

Install a temperature probe before the inlet of the brine collector and another after the outlet.

Description	Signal	Type	Connector
Brine collector inlet temperature	Analogue input	NTC 10K 25 °C Probe	AI1
Brine collector outlet temperature	Analogue input	NTC 10K 25 °C Probe	AI2

Table 4.2. Connection terminals for the brine collector inlet and outlet temperature probes

4.4. Main brine pump control

In installations in which hydraulic separation is necessary, it is permitted to control an additional brine circulator pump.

Description	Signal	Type	Connector
Main brine pump control	Digital output	Activation / 8A maximum	DO1
	Analogue output	Regulation 0-10Vdc	AO1

Table 4.3. Connection terminals for brine circuit components.

4.5. Source control

It is possible to control four independent sources. The electrical connections for controlling each source are as follows.

Source 1:

Geothermal	Aerothermal	Signal	Type	Connector
Source alarm signal input		Digital input	Voltage-free (0V)	DI1
Activation of the pump or valve of the source		Digital output	Activation / 8A maximum	DO2
--	Defrost activation	Analogue output	Activation / 8A maximum	DO3
Pump regulation	Fan regulation	Analogue output	Regulation 0-10Vdc	AO2
Source inlet temperature sensor		Analogue input	NTC 10K 25 °C Probe	AI3
--		Analogue input	NTC 10K 25 °C Probe	AI4

Table 4.4. Connection terminals of source 1.

Source 2:

Geothermal	Aerothermal	Signal	Type	Connector
Source alarm signal input		Digital input	Voltage-free (0V)	DI2
Activation of the pump or valve of the source		Digital output	Activation / 8A maximum	DO4
--	Defrost activation	Analogue output	Activation / 8A maximum	DO5
Pump regulation	Fan regulation	Analogue output	Regulation 0-10Vdc	AO3
Source inlet temperature sensor		Analogue input	NTC 10K 25 °C Probe	AI5
--		Analogue input	NTC 10K 25 °C Probe	AI6

Table 4.5. Connection terminals of source 2.

Source 3:

Geothermal	Aerothermal	Signal	Type	Connector
Source alarm signal input		Digital input	Voltage-free (0V)	DI3
Activation of the pump or valve of the source		Digital output	Activation / 8A maximum	DO6
--	Defrost activation	Analogue output	Activation / 8A maximum	DO7
Pump regulation	Fan regulation	Analogue output	Regulation 0-10Vdc	AO4
Source inlet temperature sensor		Analogue input	NTC 10K 25 °C Probe	AI7
--		Analogue input	NTC 10K 25 °C Probe	AI8

Table 4.6. Connection terminals of source 3.

Source 4:

Geothermal	Aerothermal	Signal	Type	Connector
Source alarm signal input		Digital input	Voltage-free (0V)	DI4
Activation of the pump or valve		Digital output	Activation / 8A maximum	DO8
--	Defrost activation	Analogue output	Activation / 8A maximum	DO9
Pump regulation	Fan regulation	Analogue output	Regulation 0-10Vdc	AO5
Inlet temperature sensor		Analogue input	NTC 10K 25 °C Probe	AI9
--		Analogue input	NTC 10K 25 °C Probe	AI10

Table 4.7. Connection terminals of source 4.

4.6. Bus communication

In order for the e-source manager to function, it is essential that it has pLAN bus communication with the heat pump or with the cascade of heat pumps for which it works. Install a three-pole, shielded AWG 20-22 cable between the following terminals.

Description	Signal	Connector e-source	Connector ecoGEO HP	Connector Supervisor
e-source - ecoGEO HP communication bus	ModBus RS485	pLAN	pLAN	--
e-source - Cascade communication bus	ModBus RS485	pLAN	--	pLAN [1]
1 The bus cable can be connected at any point of the pLAN network formed by the ecoGEO HP heat pumps and the Supervisor module				

Table 4.8. Connection terminals for bus communication between the e-source manager and the heat pump or cascade.

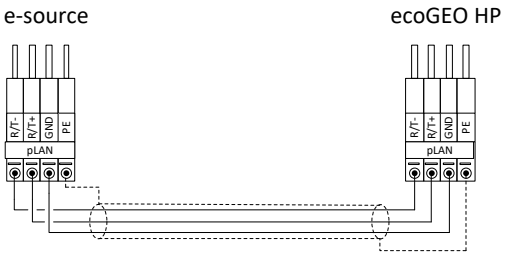


Figure 4.11. Connection scheme of the pLAN bus communication cable for installations with a single heat pump.

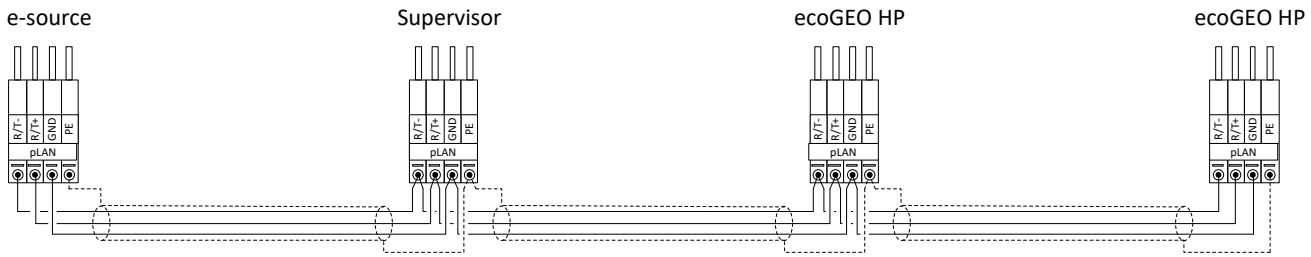


Figure 4.12. Example pLAN bus communication cable connection for installations with a cascade of heat pumps.

Some other Ecoforest devices also communicate with each other via their pLAN ports. If you want to use the e-source manager in an installation that has several Ecoforest controllers (e.g. a cascade of several ecoGEO HP heat pumps with an ecoSMART Supervisor module), this will form part of the pLAN network together with the other controllers.

The pLAN port of the heat pump or of the ecoSMART Supervisor module may already have several cables connected. Connect the bus cable from the e-source ecoSMART in the same connector together with the other cables. If it is easier, the bus cable can be connected at any other point of the pLAN network.

5. Controller user menu guide

NOTE

- The information included below corresponds to application versions launched after May 2018. 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 e-source control 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. Main screen

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

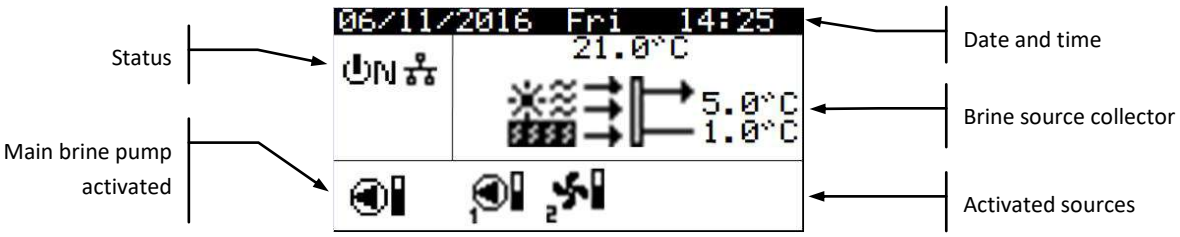


Figure 5.2. Description of the main screen.

5.3. Active components

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

 Main brine pump activated

 Geothermal source activated (source 1)

 Aerothermal source activated (source 2)

 Wait. The unit is initialising

STAND-BY The unit is on and awaiting the activated command

5.4. Operating modes

This field shows icons that indicate the current operating mode of the e-source.

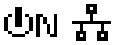
 Brine sources in operation. It also indicates the brine source collector inlet and outlet temperatures.

 Wait. The unit is initialising.

STAND-BY The unit is on and awaiting the activated command.

5.5. Status

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



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

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

5.6. List of user menus

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.

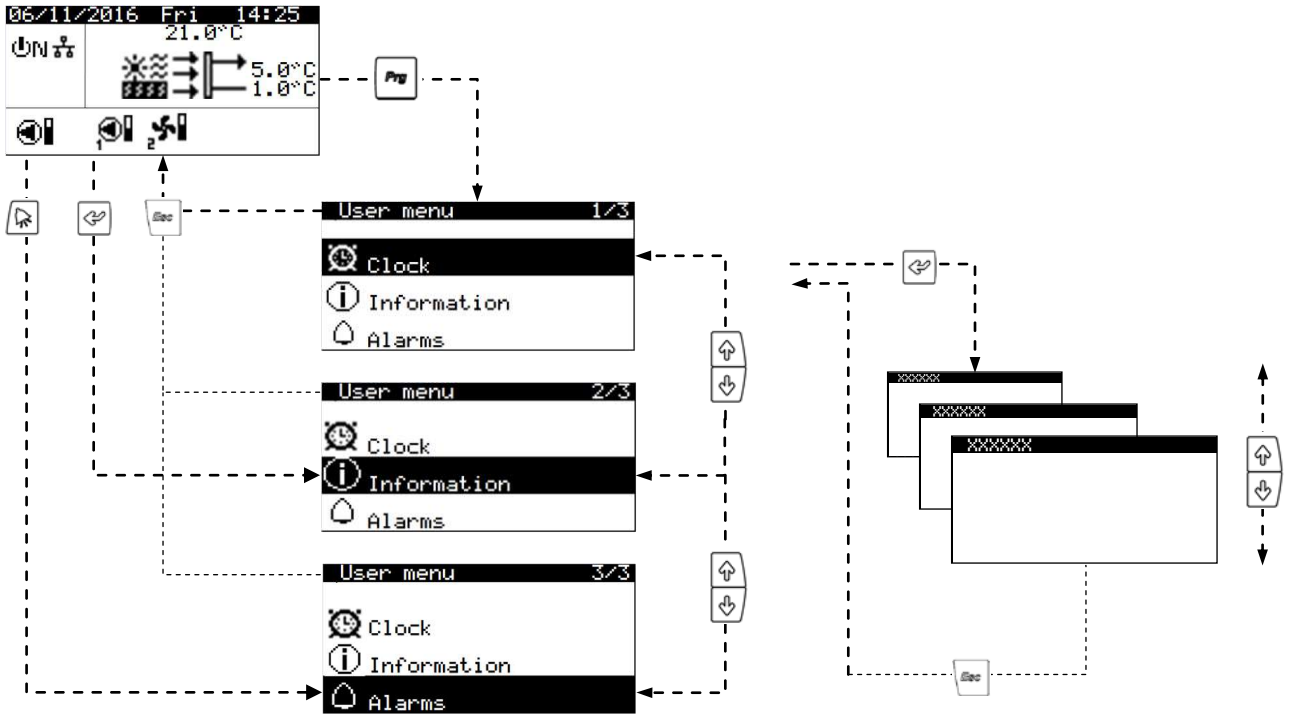


Figure 5.3. Browsing through the list of user menus.

5.7. Parameter adjustment

Take the following steps to change a parameter:

1. Search for the screen containing the parameter that needs adjusting (see Section 0).
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 Esc to return to the list of user menus.

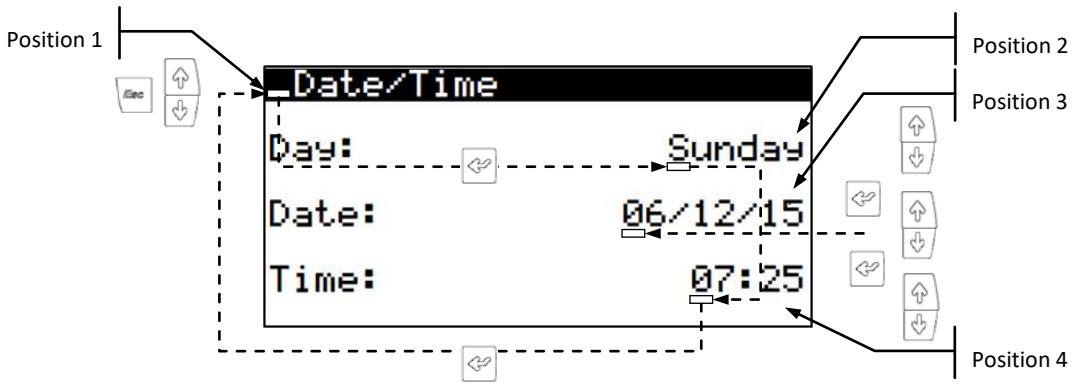
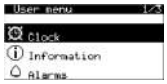
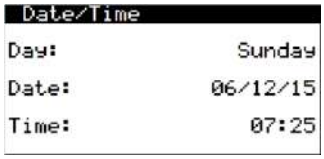


Figure 5.4. Parameter adjustment.

EN

5.8. CLOCK Menu





Date/Time

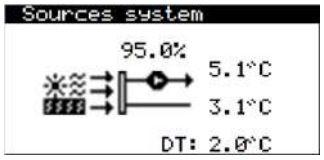
This is used to adjust the day of the week, date (DD/MM/YY) and time (HH:MM 24-hour format) of the controller.

Daily saving time

The settings of automatic time change between seasons (autumn-winter / spring-summer) can be adjusted.

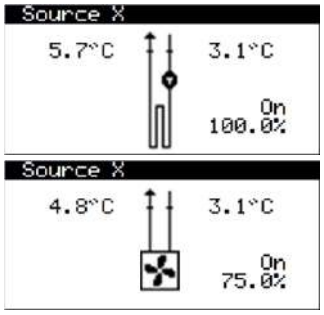
5.9. INFORMATION Menu (user)

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



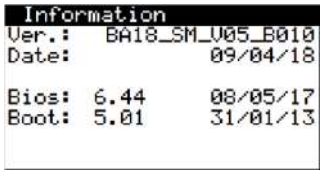
Brine system

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



Geothermal or aerothermal source 1, 2, 3 and 4

1. Shows the source outlet temperature and the brine collector inlet temperature.
2. Shows the on/off status of the source:
3. Shows the source regulation %
   A. GEOTHERMAL: Shows the pump speed in %.
   B. AEROTHERMAL: Show the fan speed in %.

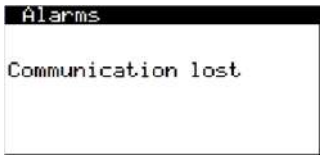


Version

This shows information about the application installed in the controller.

5.10. ALARMS Menu

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



Active alarms

These screens display the alarms that are or have been 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.

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.

6. Controller installer menu guide

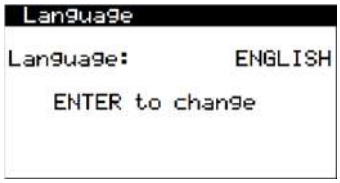
To access the installer menu, press Prg Esc at the same time. Afterwards, enter access password PW1. This menu is used to define the type of installation and the services the heat pump will deal with, to adjust the various operation parameters and protections as well as to carry out various start-up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

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

INSTALLER menu		
Sub-menu level 1	**Sub-menu level 2**	**Sub-menu level 3**
a. Language		
b. Configuration	**b.a.** Source management	
	b.b. Source configuration	**b.b.1.** Source 1
		b.b.2. Source 2
		b.b.3. Source 3
		b.b.4. Source 4
	b.c. Remote control	
	b.d. Protections	
	b.e. Probe Conf.	
c. Information		
d. Manual activation		
e. Default values		
f. Change password		

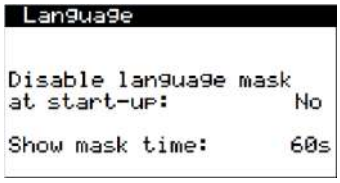
Table 6.1. INSTALLER menu structure.

6.1. Language selection



Language

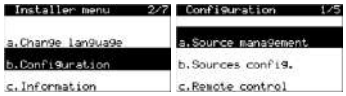
Used to select the language of the heat pump controller.

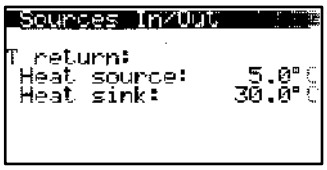


Language

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

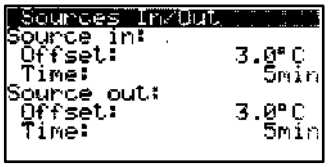
6.2. General management of all source



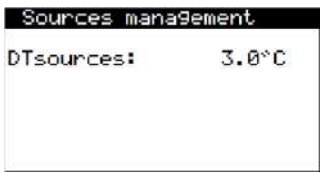


Source on/off

1. Used to configure the target return temperature in heat source mode.
2. Used to configure the target return temperature in heat dissipation mode.

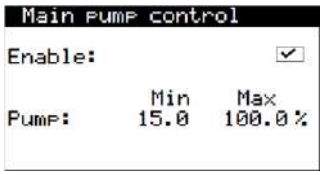


1. Used to configure the temperature differential and the time to start up a brine source.
2. Used to configure the temperature differential and the time to turn off a brine source.



Sources regulation

Only if “DT Sources” has been selected. Used to select the value of the temperature difference between target outlet and inlet . It will be used to the sources regulation.



Main brine pump control

1. Used to enable or disable use of the main brine pump.
2. Used to configure the maximum and minimum speed at which the pump can work.

Switching on order or priority:

Governs the order in which available sources are switched on. The switching off order is the opposite of the switching on order. Some sources may not be available due to being out of the operating temperature range (see section 6.3), due to have an alarm signal in their digital input (see sections 0 and 8.1) or due to the temperature sensor of the source being faulty or disconnected (see section 8.1). Sources that are available will follow the order or priority shown in table 6.1.

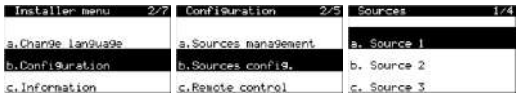
Switching off order or priority	
Maximum priority	Source 1
↑	Source 2
↓	Source 3
Minimum priority	Source 4

Table 6.1. Order of priority for switching off sources.

For example, if sources 1, 3 and 4 are available, the system will start up with source 1. Then, if necessary, it will start source 3 and if it detects that one more is necessary, it will start source 4. When the e-source determines that it should switch off a source, the first will be source 4, then, if necessary, it will switch off source 3. If the system shuts down completely it will also switch off source 1.

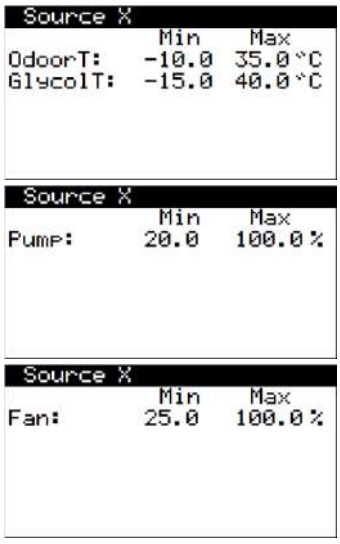
For this reason, the source that is intended to operate for the longest time should be connected and configured as "Source 1", the next as "Source 2", and so on.

6.3. Configuration of each source



Source 1, 2, 3 and 4

1. Used to enable the source.
2. Used to configure the source as geothermal or aerothermal.



Max/min source 1, 2, 3 and 4

1. Used to configure the maximum and minimum outdoor temperature at which each source is allowed to function.
2. Used to configure the maximum and minimum glycol temperature at which each source is allowed to function.

Regulation of source 1, 2, 3 and 4

Used to configure the maximum and minimum regulation % at which the source will function. This will be for the circulator pump in a geothermal source and for the fan in an aerothermal source.

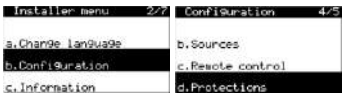
EN

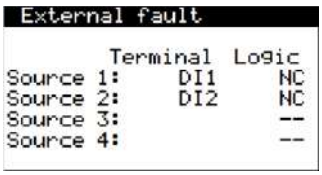
Defrosting of source 1, 2, 3 and 4

Only for sources configured as aerothermal.

1. Used to enable the defrost program of the aerothermal collector.
2. 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.
3. Used to configure the % increase of DT to start the defrost cycle.
4. Used to configure the glycol temperature at the collector outlet to end defrosting.
5. Used to configure a maximum time by which to end defrosting despite the configured "T return" not having been reached.

6.4. Protection configuration

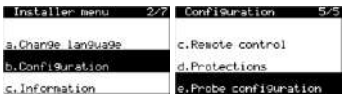


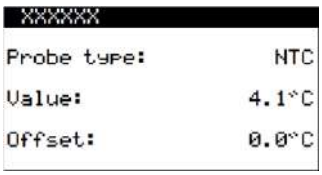


External fault

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

6.5. Sensor management



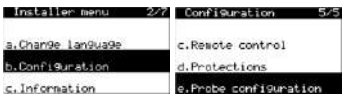


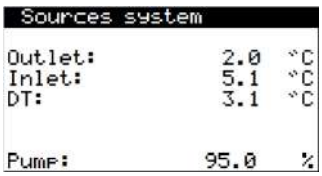
XXXXXX

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

Note: There are screens for all temperature probes.

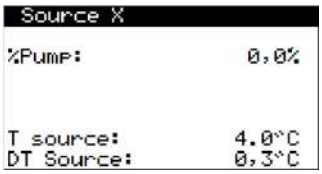
6.6. Information Menu (installer)

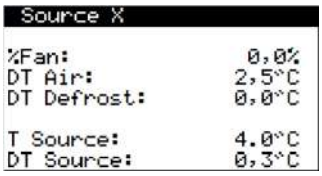




Brine system

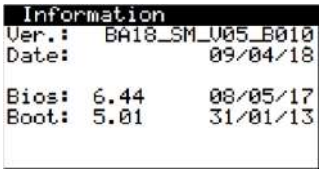
Shows the operating status of the main brine pump. Also shows the brine collector inlet and outlet temperature as well as the difference between them (DT).





Geothermal or aerothermal source 1, 2, 3 and 4

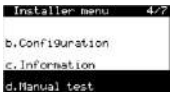
1. Shows the regulation % of the source:
   C. GEOTHERMAL: Shows the pump speed in %.
   D. AEROTHERMAL: Shows the fan speed in %.
2. Only for aerothermal sources. Shows the actual DT value (outdoor air temp. – collector outlet glycol temp.) and the configured value to start defrosting.
3. Shows the source outlet temperature and the difference with the brine collector inlet temperature.

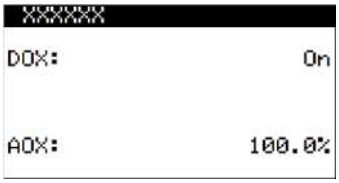


Version

This shows information about the application installed in the controller.

6.7. Manual activation of components





XXXXXX

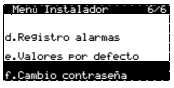
1. Used to manually activate the different components controlled by the e-source.
2. For components with modulating control, used to adjust different regulation values manually.

6.8. Default values

Initialization

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

6.9. Change password



New password

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

7. Configuration and commissioning

NOTE

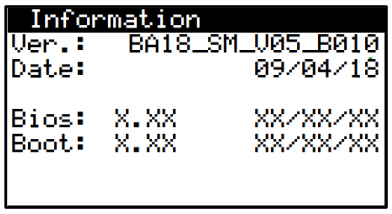
- Before starting control configuration, ensure that the pLAN connection terminals are disconnected. Leaving the pLAN cable connected may cause the e-source components or the components it controls to malfunction or even break down.
- If the software needs to be updated or the configuration needs to 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.

7.1. Software version and "default values"

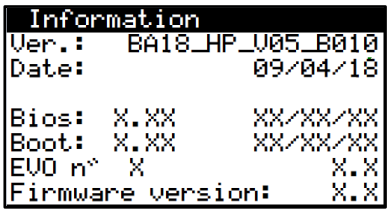
Ensure that the e-source manager has the same software version number installed as the other controllers on the pLAN network. The software version can be found in “user menu → information” (see point 0) and in “installer menu → information” (see point 6.6). The software version number is identified by the code Vxx_Bxxx (e.g. figure 7.1).

If necessary, update the e-source manager 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 7.1, the e-source manager software is identified by the letters "SM", the ecoGEO HP heat pump software by the letters "HP" and the supervisor module software by the letters "PS".

e-source



ecoGEO HP



Supervisor

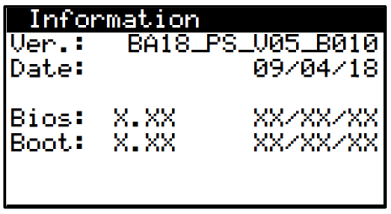


Figure 7.1. Example information screens showing the ecoSMART e-source, ecoGEO HP heat pump and ecoSMART Supervisor software version.

Check that there is no configuration in the e-source 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”.

7.2. pLAN address

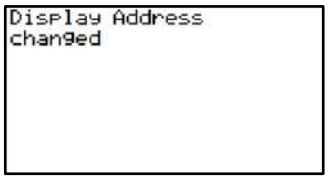
The e-source manager pLAN communication address is 14. The pLAN communication address of its control panel must therefore be 19. It is not possible to use other addresses for the e-source manager and its control panel.

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 e_Source	**14**	**19**
ecoSMART Supervisor	15	18

Table 7.1. Control addresses and control panel addresses for units connected via the pLAN network.

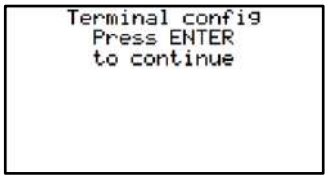
To configure these addresses in the control panel, access the “DISPLAY ADDRESS SETTING” menu by simultaneously pressing and holding the three buttons on the right of the control panel [↑] [←┘] [↓].

Change “Display address setting” and “I/0 Board address” to configure the e-source addresses.

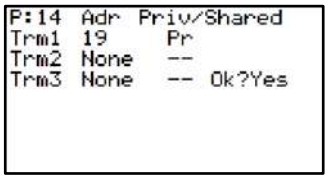


After making the changes, the screen shown in the figure appears. The control panel then appears with no image.

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/0 Board address” are correctly selected. Move on from this screen by pressing [←┘].



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



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 e-source manager software is loaded.

7.3. Enabling the e-source in the heat pump or cascade of heat pumps

If not done already, configure the heat pump or cascade of heat pumps, depending on the characteristics of your installation.

Enable the “Source Manager” in the heat pump or in the supervisor module in the installer menu → Configuration → Brine → Source manager.

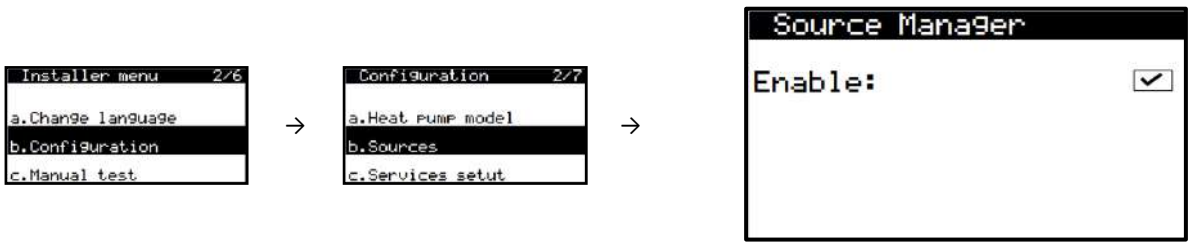


Figure 7.2. Screen to enable use of the e-source manager in the heat pump or in the cascade supervisor.

7.4. pLAN communication cable connection

Connect the pLAN communication cable to the e-source manager.

7.5. Source manager configuration

Configure the source manager in accordance with sections 5 and 6.

7.6. 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 e-source manager in accordance with the instructions in section 4.2.
2. The pLAN bus communication cable has been connected between the e-source manager and the rest of the pLAN network (ecoGEO HP heat pumps, Supervisor module, etc.) in accordance with the instructions in section 4.6. For more information, refer to the ecoGEO HP heat pump and Supervisor module manuals.
3. All the temperature probes required for the e-source, the ecoGEO HP heat pumps and, if there is one, the Supervisor module have been installed, in accordance with the instructions in sections 4.4 and 4.5. For more information, refer to the ecoGEO HP heat pump and Supervisor module manuals.
4. All the control signals from external equipment (thermostats and/or other external equipment) have been connected to the e-source, the ecoGEO HP heat pumps and, if there is one, the Supervisor module, in accordance with the instructions in sections 4.4 and 4.5. For more information, refer to the ecoGEO HP heat pump and Supervisor module manuals.
5. All the external equipment (pumps, valves and/or other external equipment) have been connected to the e-source, the ecoGEO HP heat pumps and, if there is one, the Supervisor module, in accordance with the instructions in sections 4.4 and 4.5. 4.5. For more information, refer to the ecoGEO HP heat pump and Supervisor module manuals.

Commissioning and checking for unusual noises:

1. Check that the temperature readings from different sensors are correct.
2. Start up the whole system (e-source, 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.

8. Identifying and solving problems

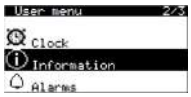
8.1. Alarm list

There are a number of reasons why the e-source manager 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 (see section 0). The following situations are possible:

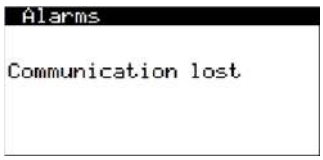
1. **The button stays lit:** There is an alarm that is locking the system.
2. **The button flashes:** There is an alarm that is not locking the system or there was another kind of alarm.

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 e-source does not cause permanent locking).

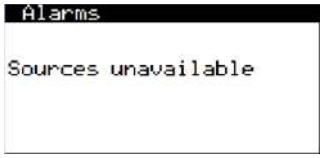
Below is a list of possible alarms and the corresponding messages that are displayed on the control panel:



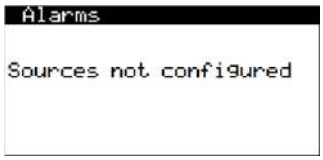
No alarms
The e-source has no alarms.



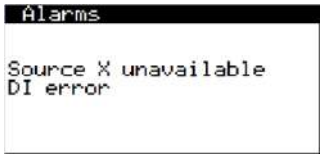
Communication fault
The e-source manager has no pLAN communication with the other elements of the pLAN network. This alarm locks the system.



No available sources
There are no available sources because all configured sources are out of range (see section 0) or there is an alarm caused by an external digital input (see section 0). This alarm locks the system.



Sources not configured
There are no configured sources. This alarm locks the system.



Source X unavailable
Source X is not available due to an external alarm in the digital input DI of the source (see section 0).

Temperature probe

Alarm due to broken or disconnected temperature probe. Depending on the probe causing the alarm, this may lock the system.

9. Technical specifications

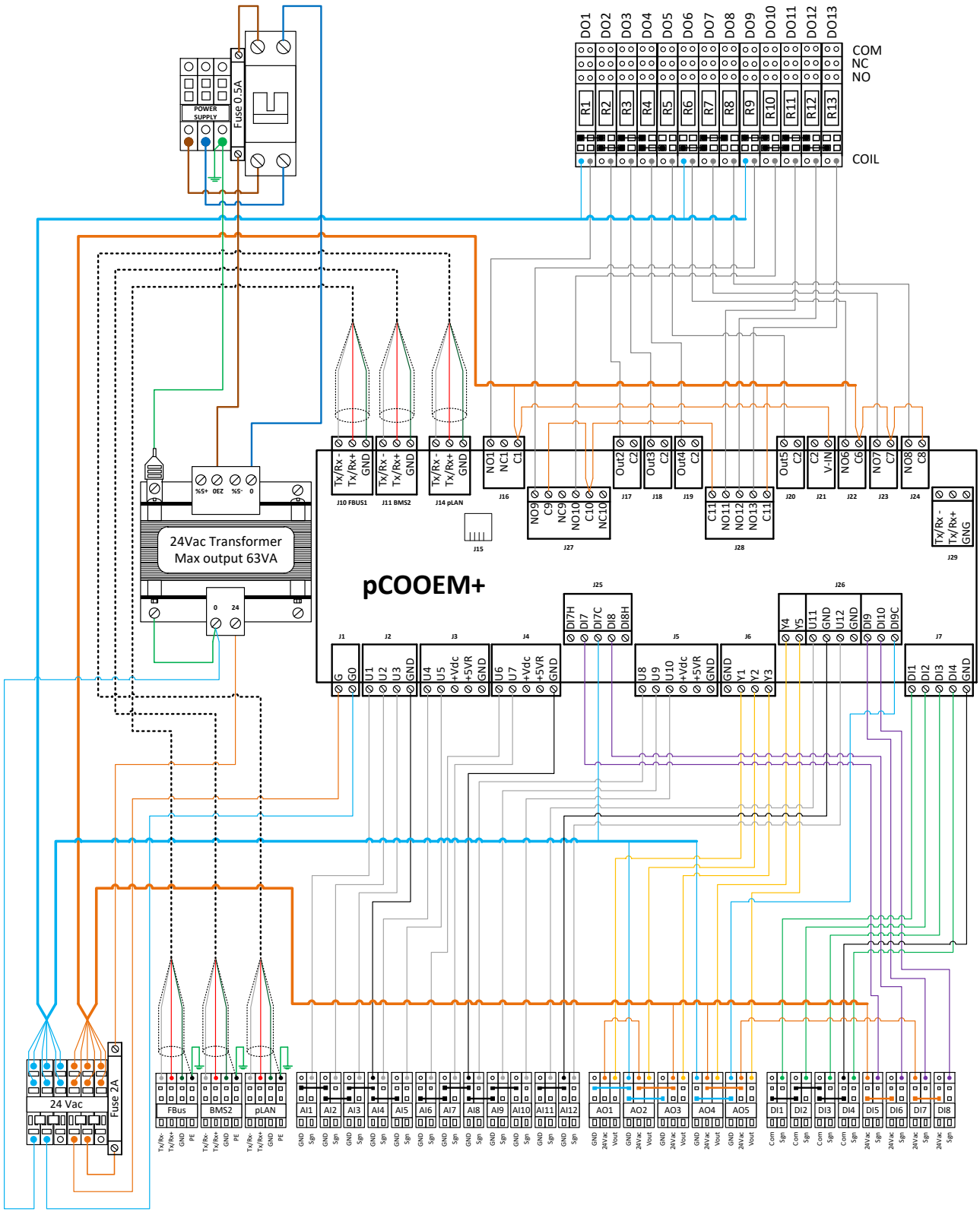
9.1. Technical data table

Table 9.1 shows the main technical specifications of the e-source manager.

Specification		units	ecoSMART e-source
Application	Geothermal and/or aerothermal brine sources together with the ecoGEO HP range		
	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 9.1. Table of technical specifications of the e-source manager

9.2. Circuit diagram



9.3. Table of electrical connections

DIGITAL OUTPUTS			
CONNECTIONS		**DESCRIPTION**	
Connection terminal	**Controller terminal**	**Type**	**Signal**
Block I / DO1	pCOOEM+ / J16 / NO1	Activation 250Vac / 8A max	Main brine pump control
Block I / DO2	pCOOEM+ / J17 / Out2	Activation 250Vac / 8A max	Activation of source 1
Block I / DO3	pCOOEM+ / J18 / Out3	Activation 250Vac / 8A max	Defrosting activation source 1 (aerothermal only)
Block I / DO4	pCOOEM+ / J19 / Out4	Activation 250Vac / 8A max	Activation of source 2
Block I / DO5	pCOOEM+ / J20 / Out5	Activation 250Vac / 8A max	Defrosting activation source 2 (aerothermal only)
Block I / DO6	pCOOEM+ / J22 / NO6	Activation 250Vac / 8A max	Activation of source 3
Block I / DO7	pCOOEM+ / J23 / NO7	Activation 250Vac / 8A max	Defrosting activation source 3 (aerothermal only)
Block I / DO8	pCOOEM+ / J24 / NO8	Activation 250Vac / 8A max	Activation of source 4
Block I / DO9	pCOOEM+ / J27 / NO9	Activation 250Vac / 8A max	Defrosting activation source 4 (aerothermal only)
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 collector outlet temperature
Block II / AI2	pCOOEM+ / J2 / U2	NTC 10K 25 °C	Brine collector inlet temperature
Block II / AI3	pCOOEM+ / J2 / U3	NTC 10K 25 °C	Source 1 inlet temperature
Block II / AI4	pCOOEM+ / J3 / U4	NTC 50K 25 °C	Free sensor source 1
Block II / AI5	pCOOEM+ / J3 / U5	NTC 10K 25 °C	Source 2 inlet temperature
Block II / AI6	pCOOEM+ / J4 / U6	NTC 10K 25 °C	Free sensor source 2
Block II / AI7	pCOOEM+ / J4 / U7	NTC 10K 25 °C	Source 3 inlet temperature
Block II / AI8	pCOOEM+ / J5 / U8	NTC 10K 25 °C	Free sensor source 3
Block II / AI9	pCOOEM+ / J5 / U9	NTC 10K 25 °C	Source 4 inlet temperature
Block II / AI10	pCOOEM+ / J5 / U10	NTC 10K 25 °C	Free sensor source 4
Bloque II / AI11	pCOOEM+ / J26 / U11	NTC 10K 25ºC	Free
Bloque II / AI12	pCOOEM+ / J26 / U12	NTC 10K 25ºC	Free

ANALOGUE OUTPUTS			
CONNECTIONS		**DESCRIPTION**	
Connection terminal	**Controller terminal**	**Type**	**Signal**
Block II / AO1	pCOOEM+ / J6 / Y1	0-10Vdc	Main brine pump regulation
Block II / AO2	pCOOEM+ / J6 / Y2	0-10Vdc	Pump or fan regulation source 1
Block II / AO3	pCOOEM+ / J6 / Y3	0-10Vdc	Pump or fan regulation source 2
Block II / AO4	pCOOEM+ / J26 / Y4	0-10Vdc	Pump or fan regulation source 3
Block II / AO5	pCOOEM+ / J26 / Y5	0-10Vdc	Pump or fan regulation source 4

DIGITAL INPUTS			
CONNECTIONS		**DESCRIPTION**	
Connection terminal	**Controller terminal**	**Type**	**Signal**
Block II / DI1	pCOOEM+ / J7 / DI1	Voltage-free (0V)	Alarm signal input in source 1
Block II / DI2	pCOOEM+ / J7 / DI2	Voltage-free (0V)	Alarm signal input in source 2
Block II / DI3	pCOOEM+ / J7 / DI3	Voltage-free (0V)	Alarm signal input in source 3
Block II / DI4	pCOOEM+ / J7 / DI4	Voltage-free (0V)	Alarm signal input in source 4
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

10.Symbols

	NTC temperature probe		Outlet pipe
	Open/closed contact or thermostat signal		Return pipe
	Expansion vessel		Flexible hose
	Safety valve		Drain
	Circulator pump		Check valve
	Drain defrost heater		Cut-off valve
	3-way valve open/closed		Particulate filter
	2-way valve open/closed		Heat exchanger
	3-way modulating valve 0-10Vdc		

11.Warranty and technical service

11.1. 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.

11.2. 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.

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