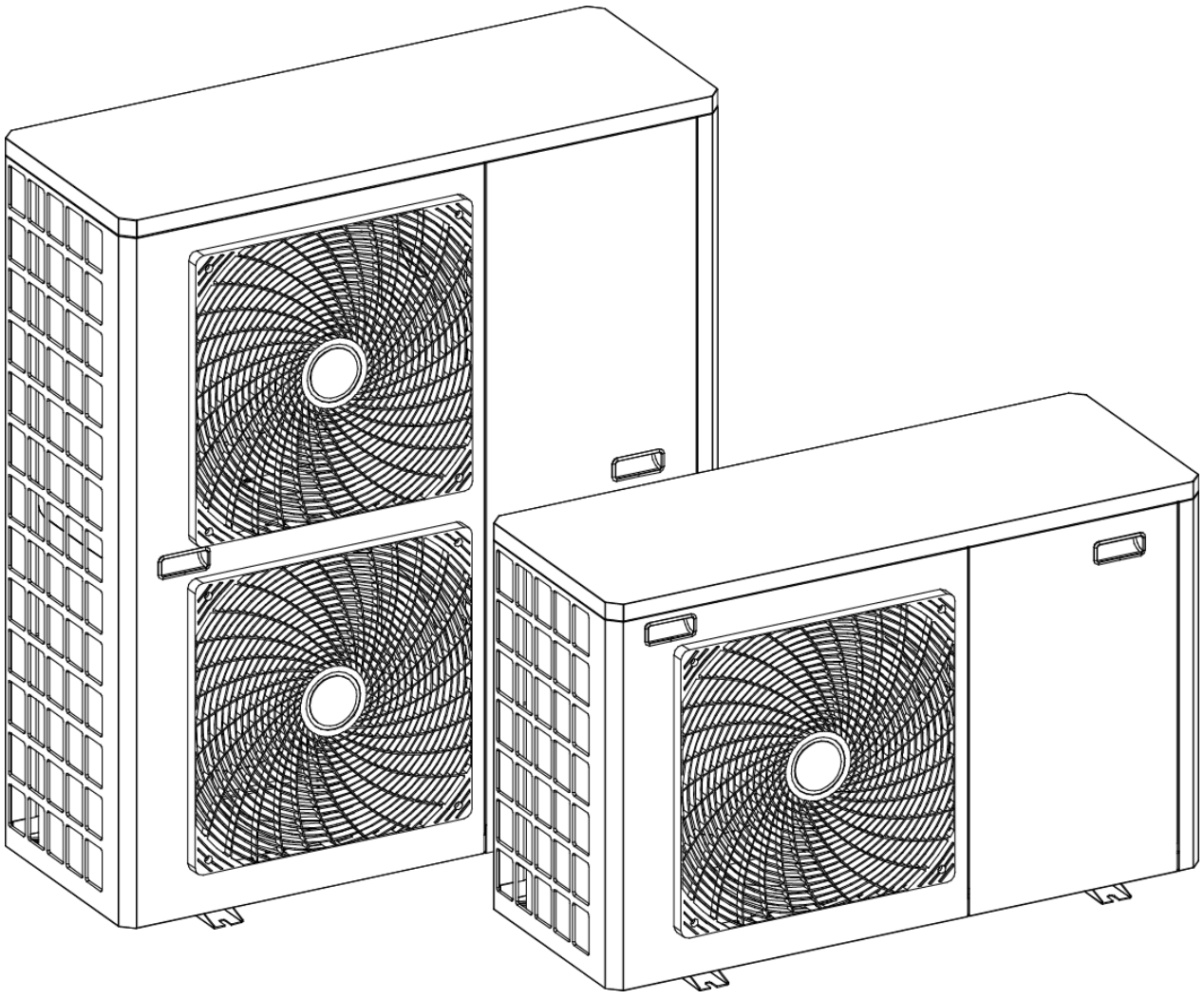
DOMUSA TEKNIK

DUAL CLIMA R

Air to Water Heat Pump



EN | INSTALLATION AND OPERATION INSTRUCTIONS

Thank you for choosing a **DOMUSA TEKNIK** heat pump. From the range of **DOMUSA TEKNIK** products you have chosen the **DUAL CLIMA R** model. This is a heat pump capable of providing the ideal level of comfort for your home, always with a suitable hydraulic installation.

This manual forms an essential part of the product and it must be given to the user. Read the warnings and recommendations in the manual carefully, as they contain important information on the safety, use and maintenance of the installation.

This water pump must be installed by qualified personnel only, in accordance with the legislation in force and following the manufacturer's instructions.

The start-up of this heat pump and any maintenance operations must be carried out only by Official Technical Assistance Services of **DOMUSA TEKNIK.**

Incorrect installation of this heat pump could result in damage to people, animals or property, and the manufacturer will not be held liable in such cases.

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1 SAFETY WARNINGS

1.1 Usage and installation warnings

DUAL CLIMA R heat pump must be installed by personnel authorised by the Ministry of Industry, in compliance with the applicable laws and regulations. The precautions detailed here cover very important issues. Please be sure to follow them carefully.

Read carefully this instruction manual and keep it in a safe, easily-accessible place. **DOMUSA TEKNIK** will not be liable for any damages caused by failure to follow these instructions.

This heat pump is suitable for use in both heating and cooling installations and can be combined with fan coils, underfloor heating/cooling, low-temperature radiators, and domestic hot water tanks (optional). It must be connected to a heating/cooling installation and/or a domestic hot water distribution network and compatible with its performance and power.

This appliance must only be used for the purpose for which it has been expressly designed. Any other use is considered unsuitable and therefore hazardous. The manufacturer shall not be considered liable under any circumstances for damage caused by unsuitable, erroneous or irrational use.

Remove all the packaging and check the contents are complete. In case of doubt, do not use the heat pump. Contact your supplier. Keep the packaging elements out of reach of children, as they can be dangerous.

Improper installation or placement of equipment or accessories may cause electrocution, short circuit, leakage, fire, or other damage to the equipment. Use only accessories or optional equipment manufactured by **DOMUSA TEKNIK** and designed specifically to work with the products presented in this manual. Do not modify, replace or disconnect any safety or control device without first consulting the manufacturer or the Official Technical Assistance Service of **DOMUSA TEKNIK**.

When it is decided not to use any more the heat pump, disable the parts that could represent a potential hazard.

1.2 Personal safety warnings

Always wear appropriate personal protective equipment (gloves, safety goggles, etc.) when performing installation and/or maintenance on the unit.

Do not touch any switch with wet fingers. Touching a switch with wet fingers may cause electric shock. Before accessing the electrical components of the heat pump, disconnect the main power supply completely.

Disconnect all electricity sources before dismantling the cover panel from the electric panel or before making any connections or accessing electrical parts.

To avoid electrocutions, be sure to turn off the power for 1 minute (or more) before servicing the electrical parts. Even after 1 minute, always measure the voltage at the terminals of the main circuit capacitors and other electrical parts before touching them and make sure that the voltage is equal to or less than 50 Vdc.

When the cover panels are disassembled, the energised parts can be easily accessed. Never leave the unit unattended during installation or during maintenance work when the cover panel is removed.

Do not touch the coolant pipes, water piping, or internal parts during and immediately after operation. Pipes and internal parts may be excessively hot or cold, depending on the use of the unit.

The hands may be burned by cold or heat in case of improperly touching pipes or internal parts. To avoid injury, wait until the pipes and internal parts return to their normal temperature. Alternatively, if access is required, be sure to wear appropriate safety gloves.

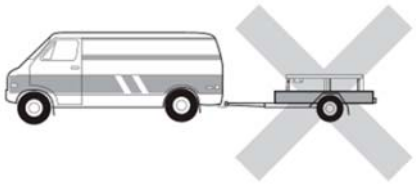
1.3 Transport, storage and handling warnings

DUAL CLIMA heat pump must be transported, handled and stored vertically. Tipping the machine may cause the oil to be emptied inside the compressor, causing premature rupture of the machine when the machine is started.

OK



NO OK



The heat pump packaging has a "tilt indicator" label to ensure that the machine has not been overturned during transport and storage. Before receiving the machine from your supplier (distributor), check the status of this indicator and refuse the device without unpacking it if the warning switch of the label indicates that it has been overturned.

Do not twist, loosen or pull the external electric cables of the heat pump. Do not insert any sharp objects through the fan grille or into the fan itself.

Do not wash the interior of the heat pump with water as this may result in electric shock or fire. For any cleaning and/or maintenance operations, disconnect the main power supply.

1.4 Freeze protection warnings

DUAL CLIMA R heat pump is a machine that is installed in the exterior of the house, so that it will be exposed to the extreme climatic conditions of cold in the periods of frost. Due to this, it is of paramount importance that this type of machine is protected against such frost. The freezing of the water inside the heat pump causes the heat pump to breakdown, with the subsequent interruption of its operation and major economic expenses involving its repair.

It is **mandatory** to use a safety system in the installation to prevent the freezing of water in the machine. **DOMUSA TEKNIK** proposes the use of glycol in the water circuit of the pump, or some antifreeze valve system to empty the installation in conditions of low temperatures. Carefully read the "Freeze Protection" section in this manual for more detailed information on these systems. **DOMUSA TEKNIK will not cover damages caused by the lack of any of these antifreeze safety systems.**

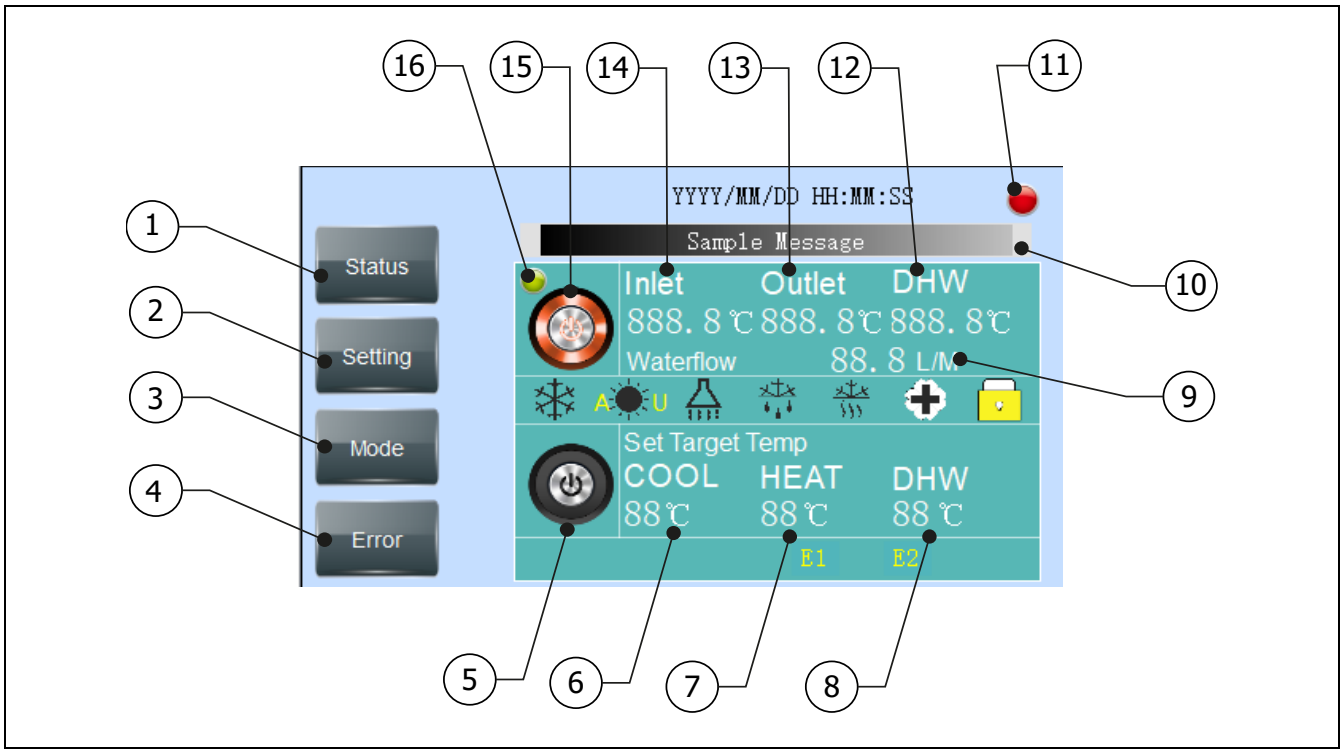
The electronic controller of the **DUAL CLIMA** heat pump has a function for protection against the freezing of the water in its interior in periods of frost. **For this function to remain active and on alert, the heat pump must be connected to the mains and have a power supply, even if it is switched off or not in use.**

A water filter should be installed in the installation, in order to avoid obstructions in the water circuit of the heat pump. It must be installed in the return circuit of the heat pump and **MUST** be installed before filling and circulating the water through the installation. The water filter should be checked and cleaned, if necessary, at least once a year. IN new installations, however, it is advisable to check it within the first few months of its commissioning.

2 ELECTRONIC CONTROLLER

2.1 Control unit

The electronic control unit of the **DUAL CLIMA R** heat pump features a touchscreen, through which all the features and adjustable configuration parameters can be managed.



1. STATUS touch button:

Press this button to access and browse through the C parameters of the heat pump service menu. See *"Status menu"*.

2. SETTINGS touch button:

Press this button to access and browse the heat pump settings menu. See "*Settings Menu*".

3. MODE touch button:

Press this button to access the different operating modes. See *"Selecting the operating modes"*.

4. ERROR touch button:

Press this button to access the last alarm codes detected in the heat pump. See *"Alarm codes"*.

5. Off button:

Press this button to turn off the heat pump.

6. Cooling temperature setpoint:

It selects and displays the cooling temperature setpoint. See *"Temperature selection"*.

7. Heating temperature setpoint:

It selects and displays the heating temperature setpoint. See *"Temperature selection"*.

8. DHW temperature setpoint:

It selects and displays the DHW temperature setpoint. See *"Temperature selection"*.

9. Current operating flow:

It displays the current heat pump operating flow.

10. Message display:

It displays the heat pump alarm codes and messages.

11. Alarm indicator LED:

Failure or alarm indicator in the heat pump operation.

12. Current DHW temperature:

It displays current DHW temperature.

13. Current flow temperature:

It displays the current temperature of the heat pump flow temperature probe.

14. Current return Temperature:

It displays the current temperature of the heat pump return temperature probe.

15. Power button:

Press this button to turn on the heat pump.

16. Power LED:

Heat pump on or off status indicator.

2.2 Icons on the control unit

The display has different display areas and sets of icons and numbers that indicate the different statuses of the heat pump.

Operating modes:	
A☀U	AU mode enabled.
❄	Cooling Mode enabled.
☀	Heating Mode enabled.
	DHW Mode enabled.

Indication of active components:	
	Water circulator pump activated.
	Compressor activated.
	Fan activated.
E1	Resistor or auxiliary energy E1 activated.
E2	Resistor or auxiliary energy E2 activated.

Additional functions:	
	Anti-legionella Function enabled.
	Antifreeze Function enabled.
	Defrost Function activated.
	Time schedule activated.
	Room Thermostat function

3 SWITCHING THE HEAT PUMP ON AND OFF

To turn on the heat pump, press the power button (**15**) and accept the selection. The heat pump will turn on in the last previously selected operating mode, and a green light will turn on in the power LED (**16**) of the digital display.

Depending on the selected operating mode, the operating mode icons () will be shown on the digital display.

To turn off the heat pump, press the off button (**5**) and accept the selection. The heat pump will proceed to execute the shutdown sequence and the green light will disappear on the power LED (**16**) of the digital display.

4 OPERATION

4.1 Operating mode manual selection

Depending on the set-up of your installation, the **DUAL CLIMA R** heat pump will be able to manage up to 5 different operating modes manually. To select these operating modes, press MODE (**3**) from the home screen and the following modes will be displayed:

Heat +DHW	+	Heating and DHW mode
Heating		Heating Mode.
DHW		Domestic Hot Water (DHW) Mode.
Cool +DHW	+	Cooling and DHW mode
Cooling		Cooling Mode.

When the heat pump is set and installed for its functioning in "AUTO" mode, the Heating and Cooling modes are not available to be selected manually. The heat pump enables and disables automatically these modes by means of the signal received from a remote room thermostat connected (see *"Heating/Cooling "AUTO" mode functioning"*).

Depending on the configuration of your installation, some of the operating modes listed may not be selectable. Please read carefully the following sections, which describe in detail the operation of these modes.

4.2 Cooling mode

This mode is selectable only if the heating/cooling installation is ready for operation in Cooling mode (cooling floor, fan coils, etc.) and the heat pump is configured for this purpose.

In this operating mode, the **DUAL CLIMA R** heat pump will cool and keep the water in the heating/cooling installation at the desired temperature. To do this, select the desired cooling temperature setpoint (see *"Temperature Selection"*) and the temperature of the room thermostat (if any) (see *"Operation in Heating/Cooling "AUTO" mode"*).

This mode will operate **only** on the heating/cooling installation, disabling the DHW production service, if any.

4.3 Heating mode

In this operating mode, the **DUAL CLIMA R** heat pump will heat and maintain the water in the heating/cooling installation at the desired temperature. To do this, select the desired heating temperature setpoint (see *"Temperature Selection"*) and the temperature of the room thermostat (if any) (see *"Operation in Heating/Cooling "AUTO" mode"*).

This mode will operate **only** on the heating/cooling installation, disabling the DHW production service, if any.

4.4 DHW mode

This mode will be selectable only if the installation has a Domestic Hot Water tank connected and the heat pump is configured for it.

In this operating mode, the **DUAL CLIMA R** heat pump will heat the domestic water of the DHW tank up to the desired temperature, allowing Domestic Hot Water service to the home. To do this, select the desired DHW setpoint temperature (see *"Temperature Selection"*). Once the desired temperature has been reached, the heat pump will stop and wait to receive the DHW demand.

This mode will operate **only** on the installation of the DHW tank, disabling the heating and/or cooling installation of the heating/cooling installation.

4.5 Cooling and DHW mode +

This mode will be selectable only if the heating/cooling installation is ready to operate in Cooling mode (cooling floor, fan coils, etc.); the installation has a connected domestic hot water tank and the heat pump is configured for it.

This operating mode is the combination of the Cooling and DHW simultaneously. When the DHW demand is enabled, the heat pump will disable the Cooling mode and will enable the Domestic Hot Water production mode, with the production of priority DHW relating to the cooling of the heating/cooling installation. Once the desired DHW temperature is reached, the heat pump will re-enable the Cooling mode.

4.6 Heating and DHW mode +

This mode will be selectable only if the installation has a Domestic Hot Water tank connected and the heat pump is configured for it.

This operating mode is the combination of the Heating and DHW modes simultaneously. When the demand for DHW is activated, the heat pump will disable the Heating mode and will enable the Hot Domestic Water production mode, with the production of priority DHW relating to the heating of the heating/cooling installation. Once the desired DHW temperature is reached, the heat pump will re-enable the Heating mode.

4.7 Operation in Heating/Cooling "AUTO" mode

By means of **"AUTO"** mode **DUAL CLIMA R** heat pump is able to activate the heating or cooling mode automatically. To enable this functioning mode, the electronic controller has 2 connections (one to activate the Heating mode and the other to activate the Cooling mode) where it is possible to connect a **Heating/Cooling type Room Thermostat (3 wires)**. By means of this type of thermostat the heat pump will activate automatically one or the other mode depending on the signal received from it, remotely from the location of the room thermostat inside the building. For a correct installation of the room thermostat follow the instructions shown in *"Room thermostat installation"* section.

Once the heating/cooling room thermostat or chrono-thermostat is installed, the heat pump will activate the Heating or Cooling modes automatically depending on the mode selected in it and the room temperature inside the house. If the DHW mode is selected in the mainboard of the heat pump, the Heating or Cooling modes will be activated in combination with the DHW production, in the same way it is described in *"Cooling and DHW mode + "* y *"Heating and DHW mode + "* sections, so the "AUTO" mode activation of functioning will not affect to DHW production.

Once the thermostat is installed at home, select the desired temperature, the desired functioning mode (Heating or Cooling) and operating periods, if it is a chrono-thermostat (see the Room-Thermostat

Manual). The heat pump will turn on and activate the operation mode selected in the thermostat (Heating or Cooling) until the temperature set in the room thermostat is reached. When the desired temperature in the home is reached, the heating or cooling service of the installation will be disabled, shutting down the operation of the heat pump. The screen of the electronic controller will display the icon, showing that the heat pump has been switched off by the room thermostat (Standby).

In the following table it is described the functioning of **Dual Clima R** heat pump in **"AUTO"** mode, depending on the remote mode selection made by the Heating/Cooling thermostat:

Thermostat selection	Dual Clima R	Dual Clima Mainboard
Heating	Only Heating mode: The heat pump activates the Heating mode.	
	Heating and DHW combi mode: The heat pump will activate the Heating mode, as long as it has been reached the temperature desired in the DHW tank.	+
Cooling	Only Cooling mode: The heat pump activates the Cooling mode.	
	Cooling and DHW combi mode: The heat pump will activate the Cooling mode, as long as it has been reached the temperature desired in the DHW tank.	+
OFF (Stand By)	Heating or Cooling modes: When the desired room temperature is reached inside the house or the room thermostat is deactivated, if it has this function, the Heating or Cooling service will be deactivated.	/ +
	Heating or Cooling and DHW combi modes: When the desired room temperature is reached inside the house or the room thermostat is deactivated, if it has this function, the Heating or Cooling service will be deactivated, remaining the DHW mode enabled.	/ + +

4.8 Operation with room thermostats

The **DUAL CLIMA R** heat pump incorporates 2 connections prepared for the installation of a room chrono-thermostat or room thermostat (see *"Room Thermostat Installation"*), what will allow the operation of the heat pump to be controlled depending on the room temperature inside the home. One connections is intended to manage the Heating mode and the other to manage the Cooling mode. Optionally, **DOMUSA TEKNIK** offers a wide range of such devices in its product catalogue.

The operation with the room thermostat will not affect the DHW service, keeping it enabled regardless of the status of the thermostat.

The installation of a room thermostat will optimise the installation's performance, adapting the heating or cooling to the requirements of your home and obtaining enhanced comfort. Additionally, if the thermostat allows the operating hours to be programmed (chrono-thermostat), it can adapt the installation to the hours of use of the installation.

Operation with 2 room thermostats

In case of having installed 2 room thermostats simultaneously (one for Heating and other one for Cooling) (see *"Room Thermostat Installation"*), once installed, select the desired temperature and operating periods, if it is a chrono-thermostat (see the Room-Thermostat Manual). The heat pump will turn on and activate the operation mode for which has been installed the room thermostat (Heating or Cooling) until the temperature adjusted is reached. When the desired temperature in the home is reached, the heating or cooling service of the installation will be disabled, shutting down the operation of the heat pump. The screen of the electronic controller will display the icon, showing that the heat pump has been switched off by the room thermostat (Standby).

In the installation of 2 room thermostats simultaneously (one for Heating and other one for Cooling), **ensure of adjusting correctly the temperatures of each one, in such a way that they do not cross, preventing both thermostats from activating simultaneously.**

Operation with the heating/cooling switching thermostat (2 wires)

If you have installed a **heating/cooling room switching thermostat** (2 wires), select the operating mode (Heating or Cooling) in which you wish to work on the heat pump. Once the thermostat is installed in the home, select the desired temperature and operating periods, if it is a chrono-thermostat (see the Thermostat Manual). The heat pump will turn on and activate the selected operating mode (Heating or Cooling) until the temperature set on the room thermostat is reached. When the desired temperature is reached in the home, the heating or cooling service of the heating/air conditioning installation will be deactivated, turning off the operation of the heat pump. The screen of the electronic controller will display the icon, showing that the heat pump has been switched off by the room thermostat (Standby).

When installing a 2-wire heating/cooling switching thermostat (Heating or Cooling), it will be essential to **ensure that the heat pump's operating mode is correctly selected, so that both can work in the same mode. If the heating operating mode is selected on the thermostat, the heat pump must also operate in this mode.**

4.9 Operation according to outdoor weather conditions (AU)

This operating mode enables the electronic controller of the **DUAL CLIMA R** heat pump to calculate the heating temperature depending on the outdoor temperature conditions (AU) at each particular time, with optimal adjustment of the heating installation conditions for improved comfort in the home and energy savings.

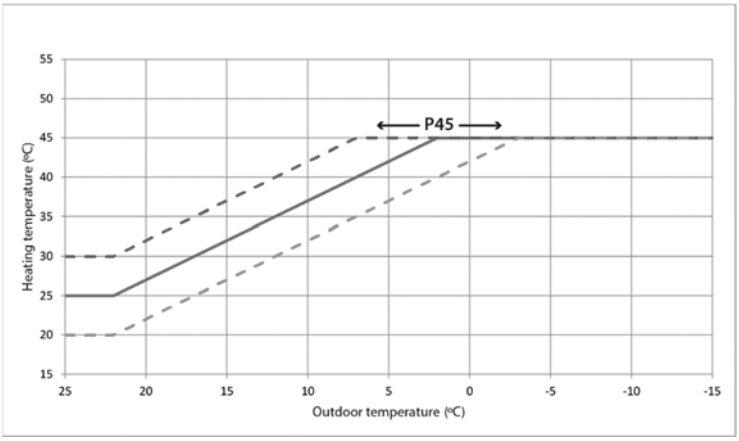
To select this operating mode, press MODE (**3**) from the home screen and then AU operating mode:

AU TEMP A☼U Operating mode according to outdoor weather conditions (AU).

In this operating mode the setpoint temperature of the Heating temperature will be calculated automatically by the electronic controller according to the temperature measured outside the home, according to the following operating curves. The selection of the operating curve must be made by technically qualified personnel. To configure the desired curve, parameters **P45** and **P46** of the Technical Menu should be adjusted (see *"Technical Menu"*).

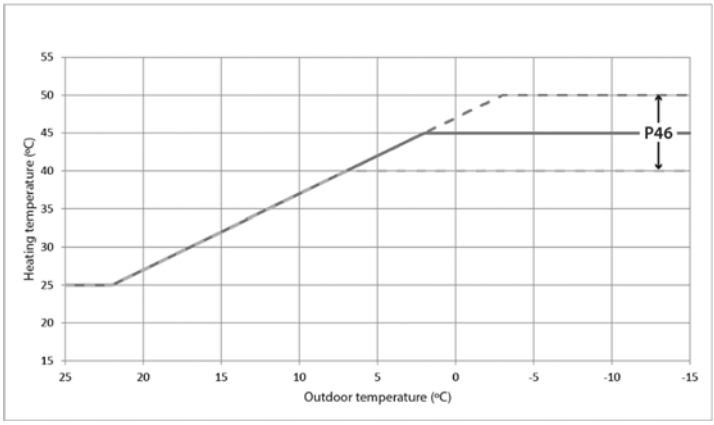
Parameter P45

Use parameter **P45** to adjust the **offset**, horizontally shifting the curve in the graph. The selectable value range is -30~15 ºC. The default factory value is 0 ºC and this value can be increased or decreased by marking the desired value in the displayed submenu. Once the desired value has been selected, press the **"Ent"** button to save said setting.



Parameter P46

Parameter **P46** will adjust the slope of the curve and the maximum temperature of the Heating mode. The selectable value range is 30~50 ºC. The default factory value is 45 ºC and this value can be increased or decreased by marking the desired value in the displayed submenu. Once the desired value has been selected, press the **"Ent"** button to save said setting.



NOTE: An incorrect adjustment of these operating curves may cause the heating installation not to generate the desired comfort in the home, failing to provide heating in extreme weather conditions of cold and/or causing overheating in hot weather conditions.

4.10 Night Mode

With the aim of reducing the number of activations and the sound impact of the heat pump during particularly sensitive times (night), the **DUAL CLIMA R** heat pump allows the activation of the Night operating mode. During the Night operating mode, the DHW will automatically raise the adjusted setpoint temperature by +3 ºC, the Heating mode will automatically reduce its setpoint temperature by -2 ºC, and finally, the Cooling mode will automatically raise its setpoint temperature by +2 ºC.

To activate and configure this operating mode, parameters **P47**, **P48** and **P49** should be set in the Technical menu (see *"Technical Menu"*). The heat pump is supplied by default with the Night mode disabled. To activate it, parameter **P47** must be set to value 1. In addition, the start time of Night mode will be selected through parameter **P48** while the end time will be selected through parameter **P49**. The pre-adjusted factory time is from 10:00 pm to 06:00 pm.

4.11 Anti-Legionella function

This function prevents the proliferation of Legionella bacteria in the domestic hot water stored in the tank, so it will only be available if the installation has a connected Domestic Hot Water tank and the heat pump is configured for it. In addition, in order to make the function effective, it will be essential for the tank to have a heating component installed, in order to reach the temperatures required to eradicate the bacteria.

To activate this function the parameter **P53** should be set in the Technical menu (see *"Technical Menu"*). The heating pump is supplied with this function disabled, to activate it the value of parameter **P53** should be set to **1**.

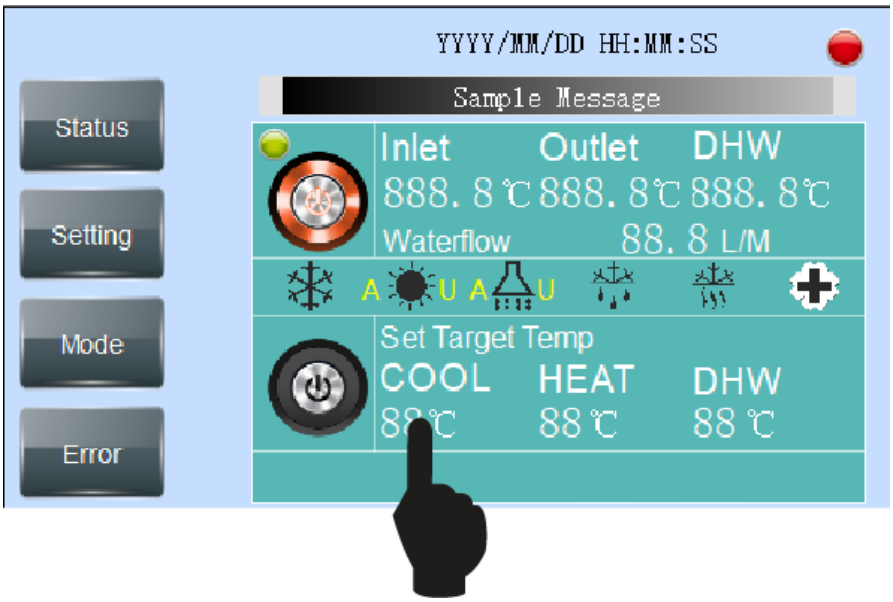
The function will periodically raise the temperature of the Domestic Hot Water from the tank to a temperature of 60~70 ºC. To do this, the desired temperature and periodicity can be selected (see *"Temperature Selection"*). This function will be activated regardless of the operating modes that are activated at the time of starting, even when the heat pump is in Standby mode.

In addition, as long as the function is enabled (**P53=1**), it is possible to activate this function manually, through parameter **P80** of the Service Menu (see *"Service Menu"*). Set the parameter **P80** to **1** to activate the anti-legionella feature once. Once the function is activated, it is not possible to stop it and it will have to wait until it finished, in order that the machine returns to its normal operation.

NOTE: In case of not having an auxiliary heating source that allows raising the DHW temperature above 60 ºC, the anti-legionella function will not ensure the eradication of said bacteria.

5 TEMPERATURE SELECTION

The desired setpoint temperatures for each operating mode can be adjusted by means of the electronic controller. To access them, press the set temperature (**6**), (**7**) or (**8**), as shown on the initial screen and change it in the displayed temperature selection submenu:



Once the desired setpoints have been set, press **"Ent"** to exit the temperature selection menu and accept the changes made. Conversely, if you do not wish to accept and save the changes made, press **"Esc".**

The following sections describe in detail the process of setting the temperature setpoint for each mode.

5.1 Adjusting the cooling mode setpoint temperature

The selectable value range for the Cooling mode is 10~25ºC. The default factory value is 12 ºC and it can be increased or decreased by marking the desired value in the displayed submenu. Once the desired value has been selected, press the **Ent** button to save it.

For the correct adjustment of the appropriate value of this operating mode, the recommendations of the installer or official Technical Service of **DOMUSA TEKNIK** should be followed. Depending on the type of installation, the location (climatic zone) and the relative humidity of the home, excessively low temperatures of the Cooling mode setpoint may create "undesired" condensations in the heating/cooling installation, causing deterioration and damage in the home.

IMPORTANT: DOMUSA TEKNIK will not be held liable for any damage and/or faults, in either the installation or the home, caused by an inadequate selection of the setpoint temperature of the Cooling mode.

5.2 Adjusting the heating mode setpoint temperature

The selectable value range for the Heating mode is 10~55 ºC. The default factory value is 45 ºC and it can be increased or decreased by marking the desired value in the displayed submenu. Once the desired value has been selected, press the **Ent** button to save it.

In addition to the temperature values, an automatic setpoint temperature can be selected the Heating mode when the operating mode is selected according to the outdoor weather conditions (AU).

A☀U is displayed on the home screen, indicating that the outdoor weather operation mode is activated. The adjustment of the setpoint temperature will be carried out automatically by the electronic controller according to the temperature measured outside the home, according to operating curves pre-set by the installer or the Official Technical Assistance Service (see *"Operation According to Outdoor Weather Conditions"*).

NOTE: If automatic operation is selected according to the external climatic conditions ("AU"), an incorrect adjustment of the operating curves may cause the heating installation not to generate the desired comfort in the home, failing to provide heating in extreme weather conditions of cold and/or causing overheating in hot weather conditions.

5.3 Adjusting the DHW mode setpoint temperature

The selectable value range for the DHW mode is 10~60 ºC. The default factory value is 50 ºC and it can be increased or decreased by marking the desired value in the displayed submenu. Once the desired value has been selected, press the **Ent** button to save it.

If the desired temperature in the tank is higher than 50 ºC, it is essential to install an auxiliary heat source in the tank (electric heating resistor, auxiliary boiler, etc.). The **DUAL CLIMA R** heat pump will heat the water in the tank to 50 ºC and, from this temperature, activate the auxiliary source to reach the desired upper temperature.

5.4 Adjusting the Anti-Legionella function parameters

For the configuration and operation of the anti-legionella feature, parameters **P18**, **P81**, **P82** and **P83** Service Menu (see *Service Menu* must be adjusted to the desired values.).

Anti-Legionella Temperature

To select the anti-legionella setpoint temperature, adjust parameter **P18** of the Service Menu (see *"Service Menu"*). The selectable value range for the Anti-Legionella function is 60~70 ºC. The default factory value is 65 ºC and it can be increased or decreased by marking the desired value in the displayed submenu. Once the desired value has been selected, press the **Ent** button to save it.

Frequency

To set the periodicity (in days) with which the anti-legionella feature will be activated, it will be necessary to set parameter **P81** of the Service Menu (see *"Service Menu"*). The selectable value range is 7~99 days. The default factory value is 7 days and it can be increased or decreased by marking the desired value in the displayed submenu. Once the desired value has been selected, press the **Ent** button to save it.

Start Time

To set the time at which the anti-legionella feature will be activated, adjust parameter **P82** of the Service Menu (see *"Service Menu"*). The selectable value range is 0~23 hours. The default factory value is 1 (at 1:00 am) and it can be increased or decreased by marking the desired value in the displayed submenu. Once the desired value has been selected, press the **Ent** button to save it.

Maintenance Minutes

To set the time during which the feature will remain active once the selected temperature has been reached, adjust parameter **P83** of the Service Menu (see *"Service Menu"*). The selectable value range is 10~99 minutes. The default factory value is 10 minutes and it can be increased or decreased by marking the desired value in the displayed submenu. Once the desired value has been selected, press the **Ent** button to save it.

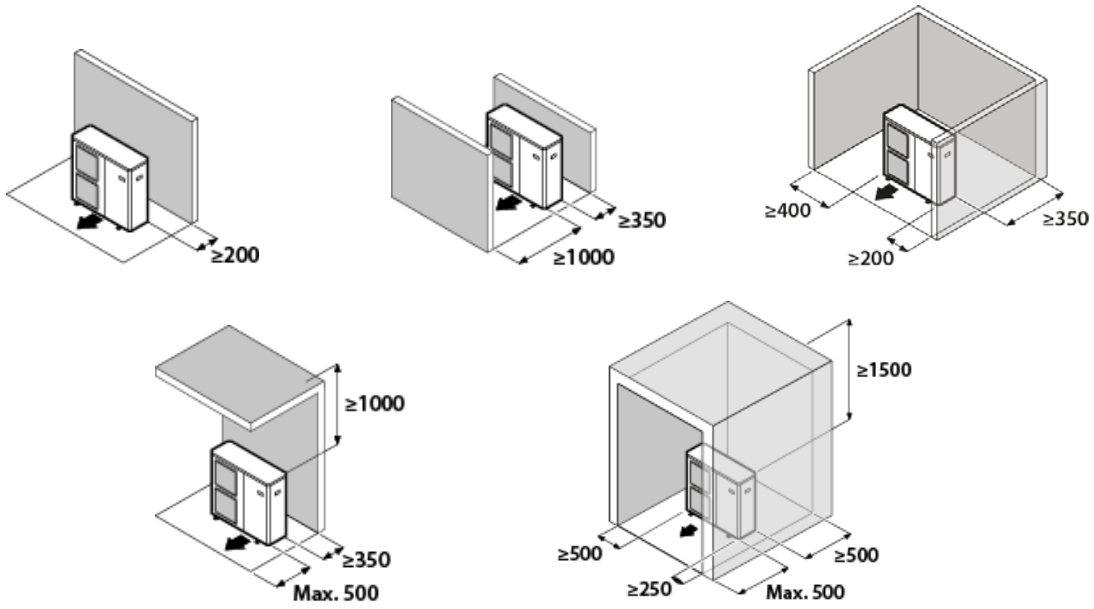
For the anti-legionella function to raise the temperature of the tank to a temperature between 60~70 ºC, it is essential to install an auxiliary heat source in the tank (electric heating resistor, auxiliary boiler, etc.). The **DUAL CLIMA R** heat pump will heat the water in the tank to 50 ºC and, from this temperature, activate the auxiliary source to reach the adjusted temperature. If this auxiliary heating source is not available, the heat pump will heat the water in the tank to 50 ºC and keep the temperature for 80 minutes before deactivating the function.

NOTE: In case of not having an auxiliary heating source that allows raising the DHW temperature above 60 ºC, the anti-legionella function will not ensure the eradication of said bacteria.

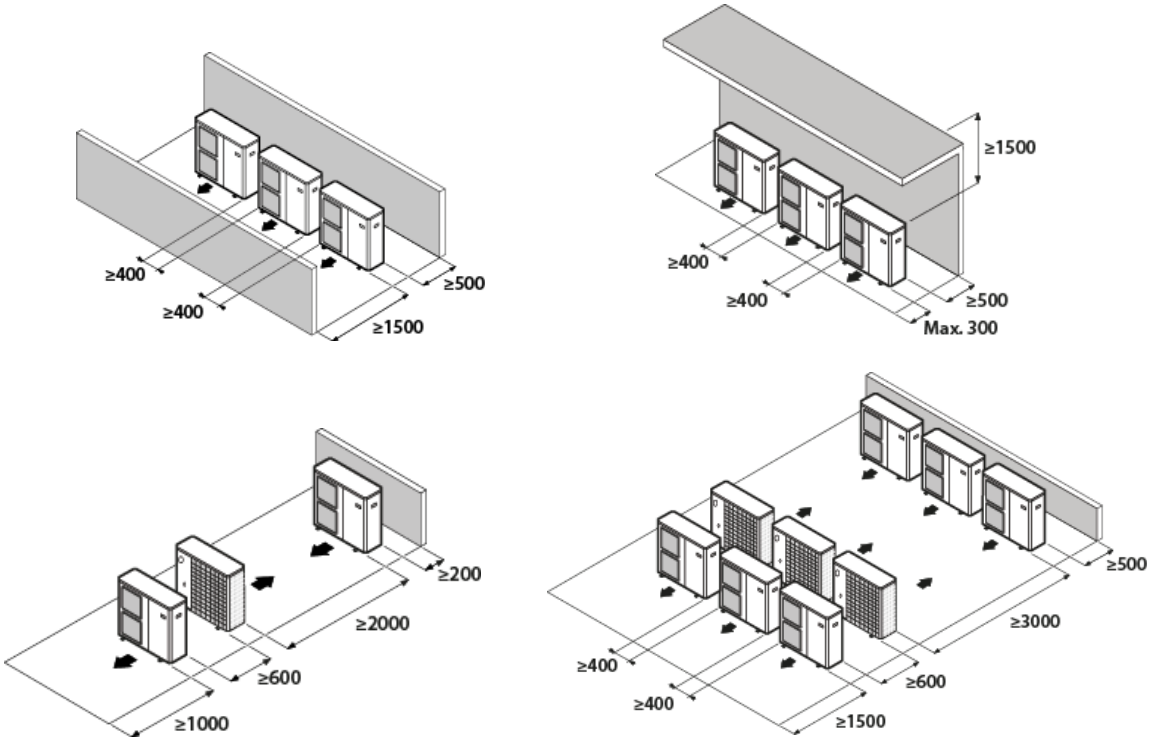
6 INSTALLATION INSTRUCTIONS

6.1 Location

The heat pump must be installed exclusively outside the home and, where possible, in a completely clear area. If a protection is needed around the appliance, it should have wide openings on the 4 sides and the installation separations indicated in the following figure must be respected. No obstacle should prevent the circulation of air through the evaporator and at the fan outlet.

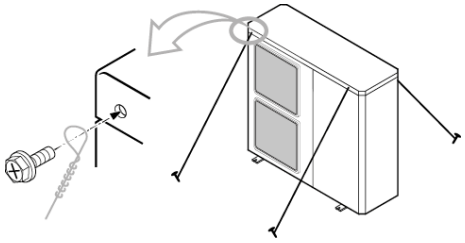


Minimum separations for the installation of a unit (mm).



Minimum separations for the installation of multiple units in the same location (mm).

Consult with the user before choosing the location of the device. It should not be placed next to sensitive walls, such as on the wall next to a bedroom. Make sure that the location of the heat pump is not disruptive to neighbours (sound level, air currents generated, low temperature of the air blown with risk of freezing plants in the path, etc.).



Choose a location that preferably has sunlight and is protected from strong and cold winds. If the heat pump is exposed to gusts of wind that make it possible to overturn it, it should be supported by suitable guys, as indicated in the figure.

The device must be sufficiently accessible for subsequent installation and maintenance work. Make sure that the passage of the hydraulic and electrical connections to the interior of the house is possible and comfortable. The spacing measures indicated in the figure above are those strictly necessary to ensure correct operation of the device; however, sometimes, it will be essential to provide more space for maintenance work.

The **DUAL CLIMA R** heat pump is a device specially designed for outdoor installation. Nevertheless, avoid installing it in a place where it may be exposed to significant water stains or spills (e.g. under a faulty gutter, near gas outlets, etc.). Move the appliance away from heat sources and flammable products.

In areas where abundant and copious snowfalls occur, special care must be taken to protect the heat pump from possible obstructions due to accumulation of snow around it. The obstruction of the air inlet and/or outlet of the machine due to the accumulation of snow may cause malfunction of the unit and possible breakdowns. The heat pump must be raised at least 100 millimetres above the maximum expected snow level. In turn, the roof should be protected from accumulation of snow, by means of a roof projecting from the building or a similar structure.

6.2 Accessories Supplied

The following accessories are supplied in the interior of the **DUAL CLIMA R** heat pump. Before proceeding with the installation of the machine, make sure that you receive them and that they are in good condition.



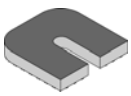
Documentation: Inside the machine, open the front door to find the documentation bag, where all the manuals and documents necessary for the use and installation of the heat pump are included.



Main board: It is supplied inside the machine and can be found by removing the cover of the electronic boards. Before connecting the power supply to the machine, the control panel should be installed inside the house.

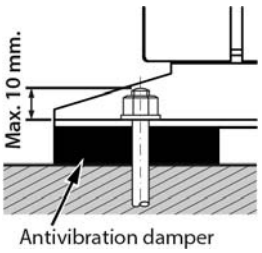


Drain valve: It is supplied inside the machine, tied with a flange to one leg of the compressor. This key must be installed in the drain socket on the back of the heat pump before filling the water in the heating/cooling circuit (see *"Diagrams and Measurements"*).



4x Anti-vibration dampers: 4 units are supplied in a bag stuck on the back of the machine, next to the hydraulic outlets.

6.3 Heat Pump fastening



The heat pump should be firmly fixed to a base, preferably a concrete base. Fasten it firmly using 4 sets of M12 bolts suitable for the base material, with nuts and washers (available on the market). Make sure that the protruding distance of the bolt does not exceed 10 mm inside the metallic support of the device (leg).

The receiving surface of the device must:

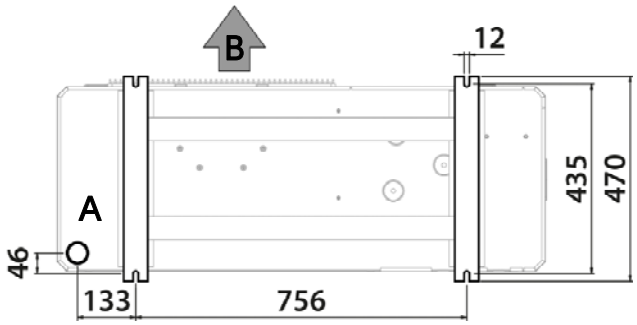
- Allow a solid fixation (preferably concrete).
- Fully support its weight.
- Have a permeable area below the condensate drainage hole (earth, gravel bed, sand, etc.).
- Do not transmit any vibration to the home, recommending the installation of the antivibration dampers supplied with the heat pump.

In case of installing the device on wall mounts, it will be especially important to isolate the machine from the transmission of vibrations and noise inside the house, it may be necessary to install more suitable antivibration dampers for the wall mount in addition to those supplied with the heat pump. Nevertheless, the installation on the ground is the most advisable.

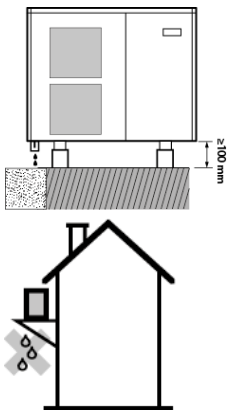
Straighten the heat pump well to ensure that the condensate water cannot exit through any paths other than the intended drain hole.

6.4 Condensates Drainage

In normal operation, the heat pump can evacuate large amounts of water, for which the DUAL CLIMA heat pump provides a hole in the bottom of the appliance. Be sure not to obstruct this hole during the installation process of the appliance.



A: Condensates drainage hole.
B: Front (discharge side).



Preferably install the device in a well-drained place. To do this, it is advisable to provide a bed of gravel, sand or similar materials below said hole. If the drain hole of the heat pump is covered by a mounting base or by the floor, lift the unit to leave a free space of at least 100 mm below it.

If it is installed on a terrace or façade, the condensate outlet must be led to a drain to avoid inconvenience and/or damage caused by the dripping of condensate water. If the installation is carried out in a region where the temperature can be below 0 ºC for a long period of time, check that the presence of frost does not represent any danger.

6.5 Hydraulic installation

The hydraulic installation must be made by qualified personnel. The applicable installation legislation must be complied with, and the following recommendations should also be taken into account:

- It is recommended to use a suitable pipe to the installation so that the minimum flow in the hydraulic circuit is reached. Before the connection of the heat pump, a thorough internal cleaning of the pipes of the installation must be carried out.
- All water circuit piping **MUST** be insulated to prevent condensation during operation in cooling mode and reduction of the cooling and heating capacity, as well as to prevent freezing of outside pipes during winter. The minimum insulation thickness of the pipes should be 19 mm (0.039 W/mK), preferably comprising a closed cell insulation or a vapour barrier. In outdoor areas exposed to the sun, the insulation must be protected from the effects of degradation.
- We recommend inserting cut-off valves between the installation piping and the heat pump to simplify maintenance tasks.
- Leave a free space around the heat pump for carrying out any maintenance and repair operations (see *"Location"*).
- Air vent valves and suitable devices should be fitted for the correct removal of air from the circuit during the filling stage.
- Install all the necessary safety elements (expansion vessel, safety valve, etc.) to comply with the applicable regulations for the installation.
- A **water filter** must be installed in the water circuit of the heat pump, in order to avoid obstructions or narrowing caused by dirt in the installation. The filter **MUST** be installed before filling the installation with water and in the return branch of the machine, to avoid the entry of dirty water into the heat exchanger (condenser). The type of filter installed must be adapted to the particular characteristics of each installation (type and material of the water pipes, type of water used, water volume of the installation, etc.). The water filter should be checked and cleaned, if necessary, at least once a year. In new installations, however, it is advisable to check it within the first few months of its commissioning.
- For the correct operation of the heat pump, a minimum water volume must be ensured in the installation, as well as a minimum flow in the hydraulic circuit of the machine. If the minimum circulation flow is not reached by the heat pump, it could have functioning problems, it could be blocked and different alarm codes would be displayed on the main board display. According to the **DUAL CLIMA R** model installed, these values will be:

DUAL CLIMA R	6R	9R	12R	16R	19R	16RT	19RT
Minimum volume (l)	35	45	60	80	95	80	95
Minimum flow rate (l/min)	14	20	30	38	42	38	42

If the water volume of the installation is lower than this value, install an inertia tank in the heating/cooling circuit. To avoid condensation and premature deterioration of the inertia tank, make sure that all hydraulic fittings and connections are properly insulated, especially when the tank is to be used in Cooling mode.

- In multi-zone installations managed by thermostatic or similar valves, some method must be provided to maintain the minimum flow rates indicated above, even when all zones are closed (bypass valve, etc.).

6.5.1 Installing a DHW tank

The **DUAL CLIMA R** heat pump may include (optionally) in its installation a tank for the production of domestic hot water. In the offering of aerothermal accessories, **DOMUSA TEKNIK** offers a wide range of DHW tanks specially designed to be combined with the **DUAL CLIMA R** heat pumps (**Sanit HE**, **BT-Trio** and **BT-Duo HE** lines). The hydraulic installation of the tank must be made by qualified personnel, subject to the applicable installation legislation and the attached instructions of the tank.

To combine an DHW tank with the heat pump, insert the **"DHW TANK SENSOR"** supplied with it into the tank sensor housing. In addition, a 3-way diverter valve (**G2**) must be installed between the external machine and the DHW + heating/cooling installation, by means of what, the electronic controller diverts the water from the heat pump to the DHW production or to the Heating/Cooling installation, depending on whether there is demand for DHW.

Dc: Dual Clima R heat pump.

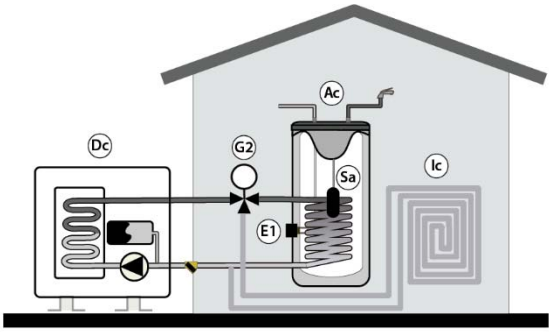
Ac: Sanit HE tank.

Sa: DHW tank sensor.

G2: 3-way diverter valve.

E1: DHW backup resistor.

Ic: Heating/Cooling installation.



In addition, optionally, a backup heater (E1) can be installed, by means of what DHW temperatures higher than 50 ºC can be obtained.

As alternative to the backup heater, **DUAL CLIMA R** heat pump optionally allows the connection of a conventional source of energy (as a gas boiler, oil boiler, etc.) as backup for DHW production, by means of the same electrical connection E1. For it, the DHW tank must be provided with an auxiliary coil exchanger and/or any intermediate system of exchange that allows the hydraulic connection of the above mentioned backup source of energy. Within the range of accessories for heat pumps, **DOMUSA TEKNIK** offers the range of DHW tanks **Sanit HE DS**, which incorporate an auxiliary coil exchanger specially designed to be combined with **DUAL CLIMA R** heat pumps.

Dc: Dual Clima heat pump.

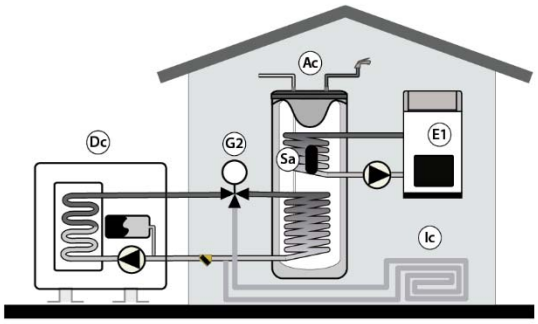
Ac: Sanit HE DS tank.

Sa: DHW tank Sensor.

G2: Diverter 3 way valve.

E1: DOMUSA TEKNIK's backup boiler.

Ic: Heating/Cooling installation.

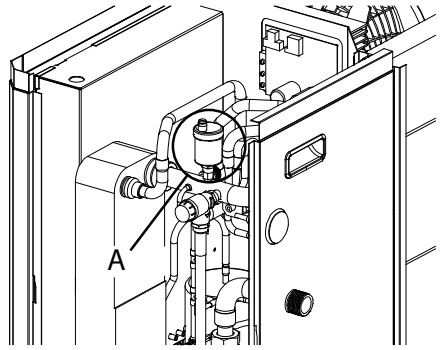


To perform the electrical installation of the DHW tank sensor, the 3-way valve (**G2**), and the backup heater or boiler (**E1**), read the *"Electrical Connections"* section of this manual carefully.

6.5.2 Filling the installation

The hydraulic installation must include a filling valve, air vent valves and the necessary hydraulic components for correctly filling it.

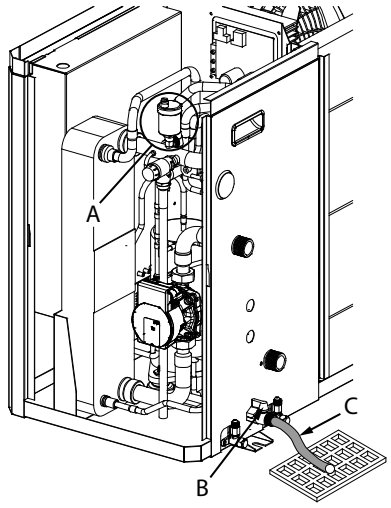
To fill the heat pump, open the filling valve until the pressure gauge located on the back of the machine shows a pressure of 1~1.5 bars. The heat pump has a automatic air vent (A) on top of the heat exchanger's (condenser) flow tube. Open it during the filling process and wait for the water to begin flowing out. The air should also be bled from the rest of the installation using the air vent valves provided. Filling should be performed slowly, thus helping the evacuation of air from the water circuit. Close the filling valve after filling. To comfortably access the heat pump air vent valve, open the top cover and side panel of the heat pump.



IMPORTANT: Switching on the heat pump with no water inside could result in serious damages.

6.5.3 Draining the heat pump

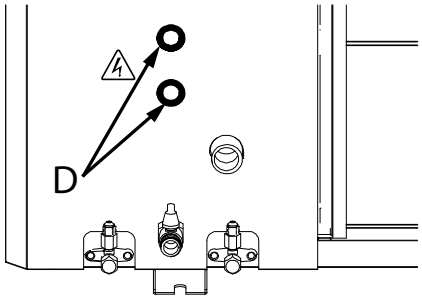
With the **DUAL CLIMA R** heat pump, a drain valve is supplied, which must be installed in the outlet (B) provided in the bottom part of the back side of the machine. The draining of the heat pump water will be carried out by opening said valve. Connect a flexible hose (C) to the valve and run it to a drain. To ensure a complete drainage, it is advisable to open the manual air vent (A) that incorporates the heat pump in its interior, so that the air enters the circuit. After draining the boiler, close the drain valve again and remove the flexible tuve.



6.6 Electrical connections

The electrical installation of the **DUAL CLIMA R** heat pump and its electrical accessories should be carried out by qualified personnel, subject to the current installation regulations on the matter. The electrical installation must be connected so that the heat pump can be fully isolated and disconnected for the safe execution of any maintenance operations.

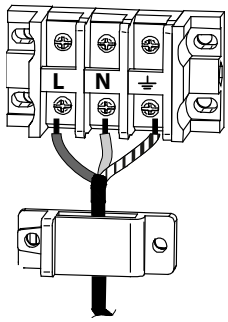
The machine has 2 holes with cable grommets (D) in its back side to introduce all connection cables inside the machine. The cables exposed to the weather conditions of the exterior should be protected by means of protective raceways or pipes. Alternatively, they should be of a suitable category for use outdoors (H07RN-F type or higher). It is also advisable to keep the high-voltage cables (general supply, diverter valves, electrical heaters, circulation pumps, etc.) at a minimum distance of 25 mm from low-voltage cables (main board cable, temperature sensors, room sensor, etc.) and drive them through independent pipes.



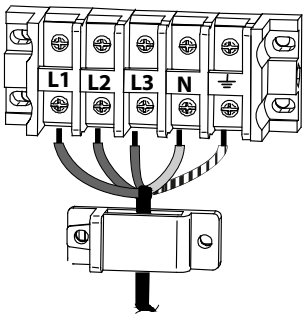
IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

6.6.1 Connection to the main power supply

The **DUAL CLIMA R** heat pump is prepared for connection to 230 V ~ 50 Hz o 400 Hz ~ 50 Hz in the terminals indicated in the figure (see *"Electrical Diagrams"*). Inside the machine, open the front door and access to the electronic boards area to find the power supply terminals. **Make sure to make the earth connection.**



230 V~ 50 Hz



400 V 3N~ 50 Hz

The dimensioning and type of the main supply cables must at all times comply with the rules and regulations in force. Nevertheless, the following table details some recommended features and dimensions, as a guide:

			Maximum consumption (A)	Min. wire section (mm^2)	Recommended fuse	Recommended cable type
DUAL CLIMA 6R	**HP**	230 V~ 50 Hz	13	1,5	16A	H05VV-U3G (protected in pipe)
	HP+E1		33	6	36A	
	HP+E1+E2		53	16	63A	
DUAL CLIMA 9R	**HP**		13	1,5	16A	
	HP+E1		33	6	36A	
	HP+E1+E2		53	16	63A	
DUAL CLIMA 12R	**HP**		19	2,5	25A	
	HP+E1		39	6	40A	
	HP+E1+E2		59	16	63A	
DUAL CLIMA 16R	**HP**		25	4	32A	
	HP+E1		45	10	50A	
	HP+E1+E2		65	16	75A	
DUAL CLIMA 19R	**HP**		25	4	32A	
	HP+E1		45	10	50A	
	HP+E1+E2		65	16	75A	
DUAL CLIMA 16RT	**HP**	400 V 3N~ 50 Hz	9	1,5	16A	
	HP+E1		29	6	36A	
	HP+E1+E2		49	10	63A	
DUAL CLIMA 19RT	**HP**		9	1,5	16A	
	HP+E1		29	6	36A	
	HP+E1+E2		49	10	63A	

HP: Heating Pump. E1: DHW auxiliary electrical heater. E2: Heating auxiliary electrical heater.

For the correct selection of the type and dimensions of machine's main supply cable, it has to take in account the electrical consumption of the optional accessories connected on the heat pump (auxiliary electrical heaters, circulating pumps, ...). There are columns included in the above table indicating the maximum consumptions for combinations of heat pump and the auxiliary heater **E1** and **E2** (see *"Electrical Diagrams"*).

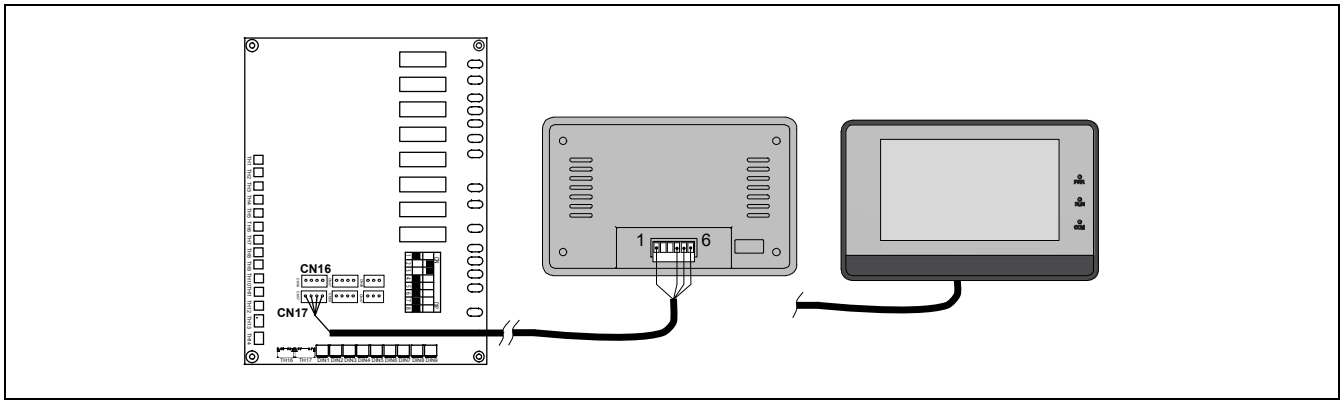
The electrical connection of the heat pump must be protected by an earth leakage circuit breaker (a high-speed switch of 30 mA (<0.1 s)).

IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

IMPORTANT: The cable section indicated in the table above is indicative since it depends on the type of cable and installation. In any case, be sure to comply with local regulations.

6.6.2 Main board connection

The main board is supplied inside the heat pump. Before start-up, it must be connected to the machine. To do this, first install the moan board inside the house and pass the cable that is supplied to this location (located near the sensor bundle). Finally, the connectors of the cable and the main board should be connected at their ends.



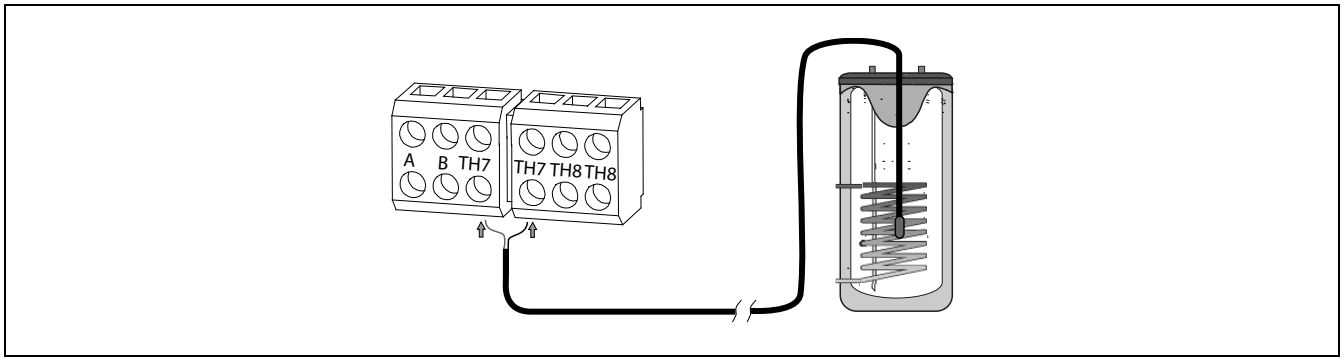
The cable supplied with the heat pump is 5 meters long. If necessary, it can be extended to a maximum distance of 100 meters (section between 0.5 ÷ 1.25 mm^2).

IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

6.6.3 Connecting the DHW tank sensor

When installing an DHW tank in combination with the heat pump, a temperature sensor must be installed in the accumulator. By means of this sensor, the electronic controller of the heat pump will be able to manage the temperature of the DHW, activating the DHW mode when the temperature of the accumulator falls below the desired temperature.

A DHW tank sensor is supplied within the **DUAL CLIMA R** heat pump. This sensor is located in the documentation bag, inside the machine and is identified as **"DHW TANK SENSOR"**. The electrical connection of the sensor will be made between terminals **TH7** of the inputs terminal strip of the heat pump. Before connecting, it will be necessary to remove the resistance connected from factory in these terminals. To install it, release the sensor from the bundle, take it to where the DHW tank is located, and insert it into the sensor housing provided in it.



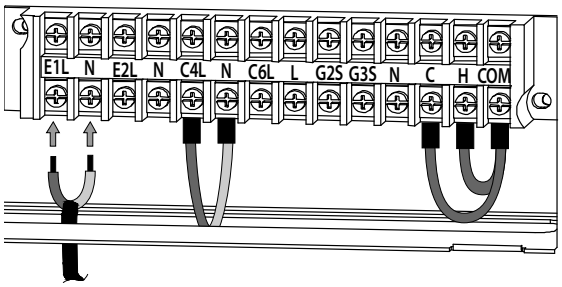
The sensor supplied with the heat pump is 5 meters long. If necessary, it can be extended to a maximum distance of 50 meters (section between 0.5 ÷ 1.25 mm^2).

IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

6.6.4 Connecting a backup source of energy for DHW (E1)

The **DUAL CLIMA R** heat pump allows the connection of an electrical heater for DHW production backup (optional). It should be mounted in the socket provided for this purpose in the tank. With this heater, it will be possible to obtain hot water temperature exceeding 50 ºC, enabling the necessary temperature to be reached for the correct execution of the function for protection against the Legionella bacteria.

The electrical connection of the resistor will be made between terminals **E1L** and **N** (Neutral) of the component terminal of the heat pump.



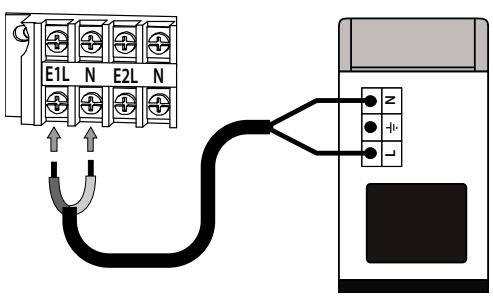
The relay that activates the heater has a maximum capacity of 20 A of consumption. Therefore, to connect resistors exceeding 4,500 W, a contactor must be interposed between the terminals of the power terminal and the heater.

As alternative to the backup electrical heater, **DUAL CLIMA R** heat pump allows the connection of a conventional source of energy as gas boiler, oil boiler, biomass, etc. For it, the DHW tank must be provided with an auxiliary coil exchanger and/or any intermediate system of exchange that allows the hydraulic connection of the above mentioned backup source of energy.

They are used the same terminals **E1L** and **N** (Neutral) of the components powerstrip to make the connection between the backup source of energy and the heat pump. Depending on the installation characteristics and the type of the backup boiler, the electrical connection could be made at least by 2 different ways:

Direct connection

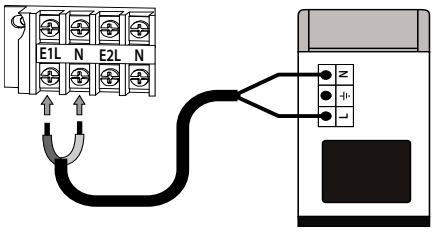
In this type of connection it is used the powered output of **E1** relay (230 V~; maximum 20A) to activate directly the backup energy source (switch on the boiler, activate the backup circulating pump, etc.). For it, connect the terminals **E1L** and **N** of the heat pump to the main power supply input of the backup boiler and/or of the device of the installation provided.



NOTE: When the backup source of energy is connected, it has to be taken in account that the maximum capacity of E1 relay is 20 A.

Voltage-free connection

When the input to manage the activation of the backup energy source is voltage-free type (i.e. room thermostat input, phone relay input, etc.), it is necessary to isolate the powered output of the heat pump (**E1**) from the voltage-free input of the backup energy source, by means of installing a relay between them. To perform correctly this electrical installation follow carefully the diagram below:



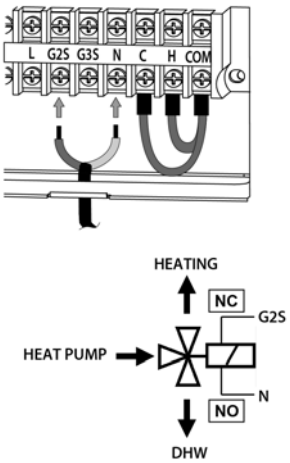
IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

6.6.5 Connecting the DHW diverter valve (G2)

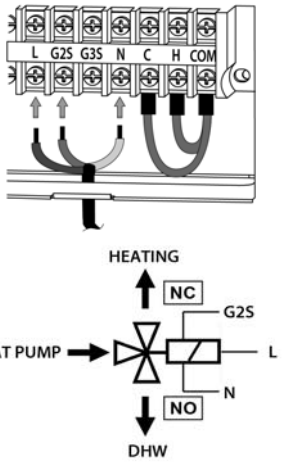
When installing an DHW tank in combination with the heat pump, a motorised 3-way diverter valve must be installed between the unit and the installation. By means of this valve, the electronic controller of the heat pump will divert the water to the DHW tank (in DHW mode) or to the heating/cooling circuit (in heating or cooling mode).

The electrical connection of the valve will be made in terminals **G2S** and **N** (Neutral) of the component terminal of the heat pump. The motorised diverter valve has to be equipped with 2 wires (with return spring) or 3 wires with phase return. In the latter case, the phase wire of supply of the valve (line) must be connected in the terminal **L** of the terminals strip. The following figures describe the connection of the motorised valve:

V3V (2 wires)



V3V (3 wires)



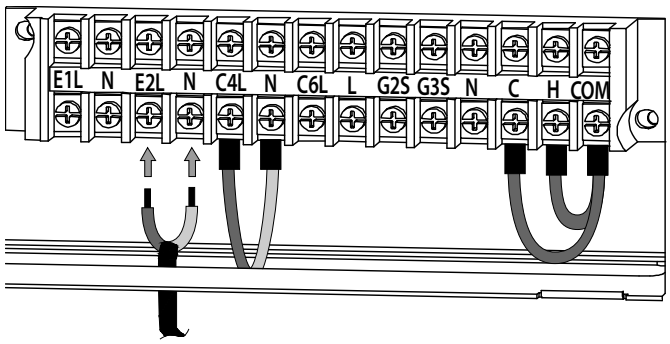
NO: Normally **OPEN** (not energising the motor).
NC: Normally **CLOSE** (not energising the motor).

IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

6.6.6 Connecting a backup source of energy for Heating installation (E2)

The **DUAL CLIMA R** heat pump allows the connection of a backup electrical heater for Heating installation (optional). Within the wide range of accessories for heat pumps, **DOMUSA TEKNIK** offers the optional HP Hydraulic Kit that includes a heating electrical heater (2,500 W).

The electrical connection of the heater will be made between terminals **E2L** and **N** (Neutral) of the component terminal of the heat pump.



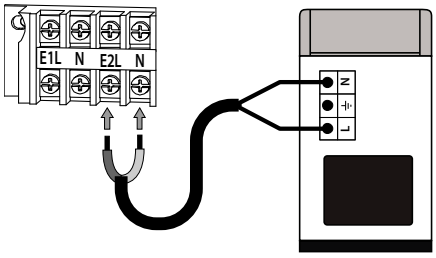
The relay that activates the electrical heater has a maximum capacity of 20 A of consumption. Therefore, to connect a heater exceeding 4,500 W, a contactor must be interposed between the terminals of the power terminal and the heater.

As alternative to the backup electrical heater, **DUAL CLIMA R** heat pump allows the connection of a conventional source of energy as gas boiler, oil boiler, biomass, etc. For it, the heating installation must be provided with an auxiliary system of water heat exchange that allows the hydraulic connection of the above mentioned backup source of energy, preferably it should be independent from the water circuit of the heat pump.

They are used the same terminals **E2L** and **N** (Neutral) of the components powerstrip to make the connection between the backup source of energy and the heat pump. Depending on the installation characteristics and the type of the backup boiler, the electrical connection could be made at least by 2 different ways:

Direct connection

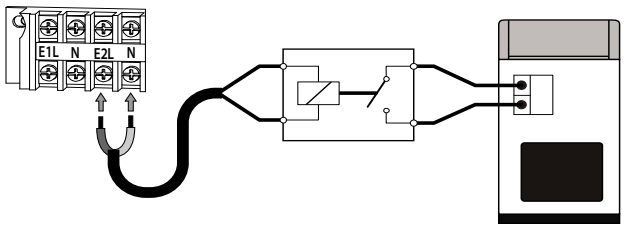
In this type of connection it is used the powered output of **E2** relay (230 V~; maximum 20A) to activate directly the backup energy source (switch on the boiler, activate the backup circulating pump, etc.). For it, connect the terminals **E2L** and **N** of the heat pump to the main power supply input of the backup boiler and/or of the device of the installation provided.



NOTE: When the backup source of energy is connected, it has to be taken in account that the maximum capacity of E2 relay is 20 A.

Voltage-free connection

When the input to manage the activation of the backup energy source is voltage-free type (i.e. room thermostat input, phone relay input, etc.), it is necessary to isolate the powered output of the heat pump (**E2**) from the voltage-free input of the backup energy source, by means of installing a relay between them. To perform correctly this electrical installation follow carefully the diagram below:



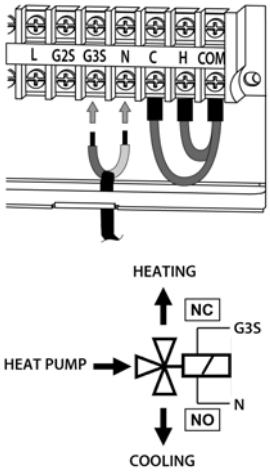
IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

6.6.7 Connecting the Heat/Cold diverter valve (G3)

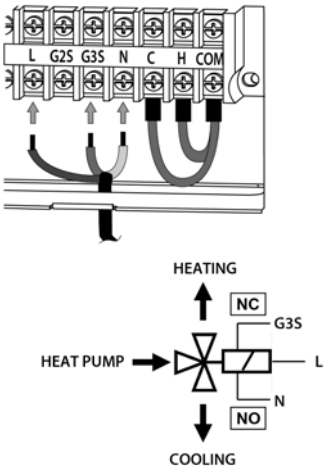
When it is required to divert the water to different circuits depending on whether the machine is in the Heating or Cooling mode (e.g. Heating by radiators and Cooling by fan-coils), a motorised 3-way diverter valve must be installed between the machine and the installation. By means of this valve, the electronic controller of the heat pump will divert the water to the heating circuit during Heating mode or to the cooling circuit during the Cooling mode.

The electrical connection of the valve will be made in terminals **G3S** and **N** (Neutral) of the component terminal of the heat pump. The motorised diverter valve has to be equipped with 2 wires (with return spring) or 3 wires with phase return. In the latter case, the phase wire of supply of the valve (line) must be connected in the terminal **L** of the terminals strip. The following figures describe the connection of the motorised valve:

V3V (2 wires)



V3V (3 wires)



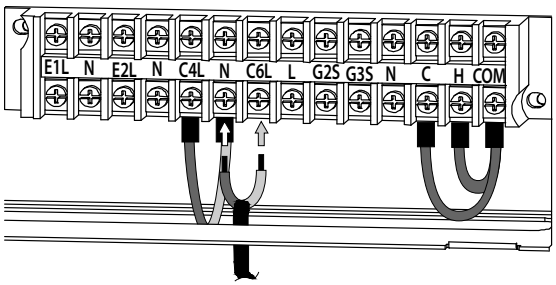
NO: Normally **OPEN** (not energising the motor).
NC: Normally **CLOSE** (not energising the motor).

IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

6.6.8 Connecting a Heat Pump auxiliary pump (C6)

The **DUAL CLIMA R** heat pump allows the connection of a circulation pump (**C6**) to increase the water flow rate of the machine if necessary, in addition to that obtained by its internal pump (**C4**). This **C6** circulation pump will work in parallel with the internal pump of the **C4** machine only when it is operating in the Heating or Cooling mode.

The electrical connection of the circulating pump will be made between terminals **C6L** and **N** (Neutral) of the component terminal of the heat pump.

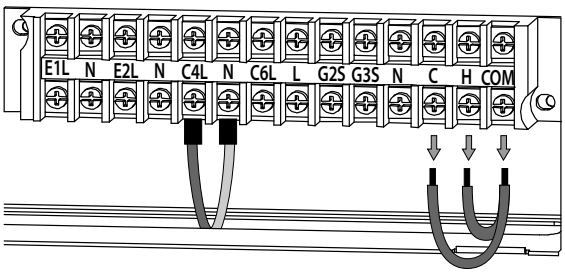


IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

6.6.9 Room thermostat installation

The **DUAL CLIMA R** heat pump incorporates 2 connections in the components terminal strip prepared for the connection of up to two room chrono-thermostats or room thermostats (see *"Electrical Diagrams"*), which will manage the heating or cooling service of the heating/cooling installation, turning off the operation of the heat pump when the desired temperature inside home is reached and turning on again when it descends. By means of **C-COM** input it will activate and deactivate the Cooling mode, and by means of **H-COM** input it will activate and deactivate the Heating mode, in such a way that they will be managed remotely and automatically (**"AUTO"** mode), from the location where the thermostat is installed.

The **C**, **H** and **COM** terminals are supplied from the factory with a jumper between each of them, so it will be necessary to remove **both** jumpers before connecting any of the configurations of room thermostats planned.



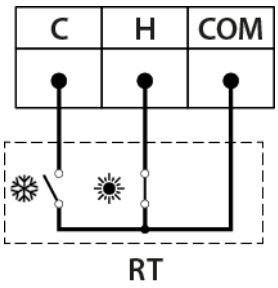
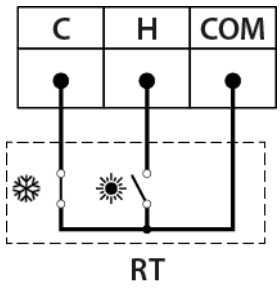
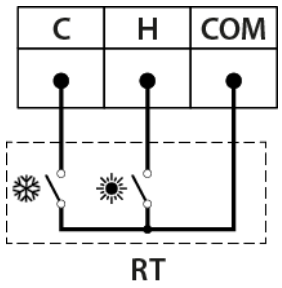
Depending on the type of the room thermostat used or any combination of them, it will be possible to install up to 4 different configurations of room thermostat installation. In the following sections they are described the functioning and installation instructions for each configuration.

IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

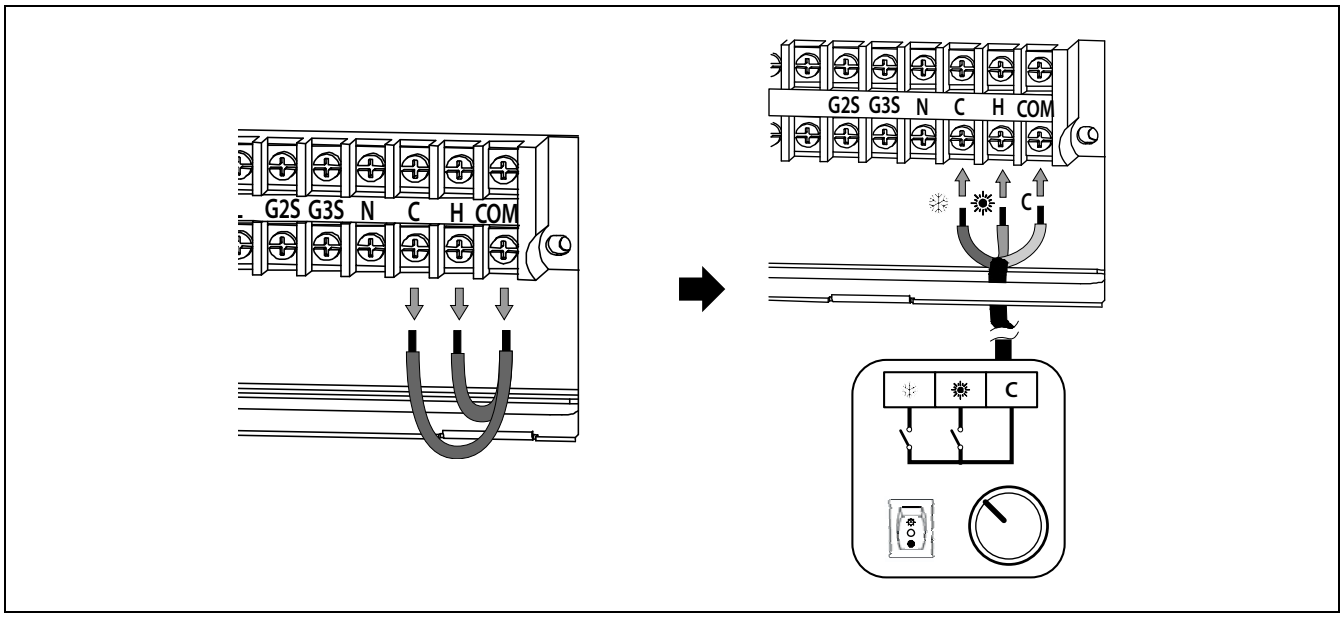
A Heating/Cooling type 3 wires room thermostat installation ("AUTO" mode)

This type of thermostat, beside selecting the desired temperature and the periods of functioning, if it is a chrono-thermostat, offers to the user the possibility of selecting the mode of functioning (Heating ☀ /Cooling ❄) in the own thermostat.

For its functioning, this type of thermostat has 3 signal wires; one for the activation of the Heating mode, one for the activation of the Cooling mode and one for common signal. Depending on the state of each signal, **DUAL CLIMA R** heat pump will manage the Heating/Cooling operation modes in the following way:

Heating mode	Cooling mode	OFF (Stand By) (temp. reached)
		

The **C**, **H** and **COM** terminals are supplied from the factory with a jumper between each of them, so it will be necessary to remove **both** jumpers before connecting this type of room thermostat, as it is described in the following diagram:

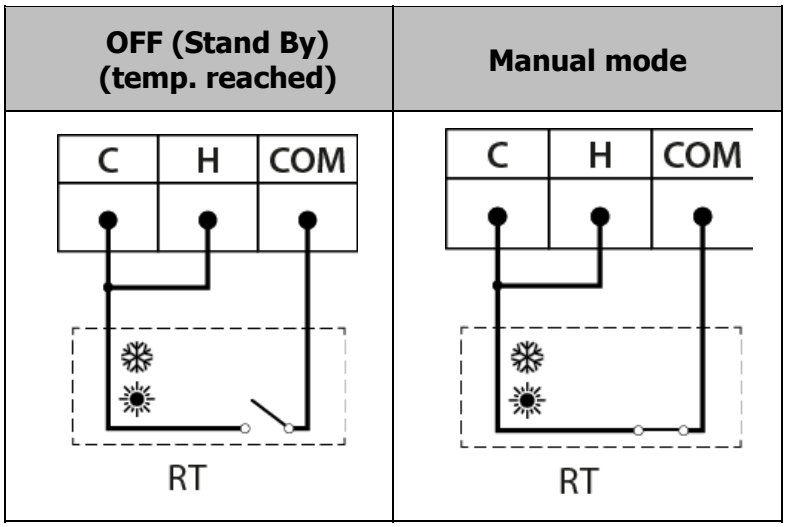


IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

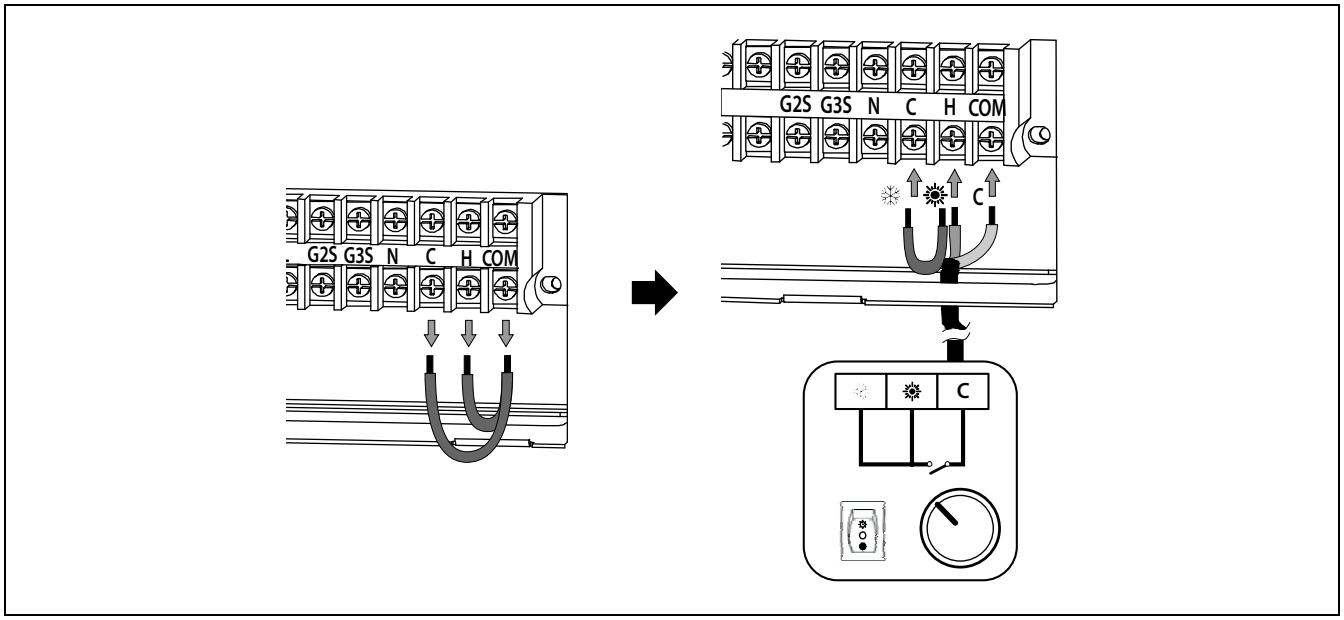
Connecting a 2-wire Heating/Cooling switching thermostat

This type of thermostat allows the user to select the desired temperature and operating periods for chrono-thermostats. Unlike the 3-wire heating/cooling switching thermostat, the 2-wire thermostat does not allow selection of the operating mode (Heating ☀/Cooling ❄) only on the thermostat itself. It will be necessary to select the operating mode on both the thermostat and the heat pump. For this room thermostat management to operate correctly, the heat pump and the thermostat must be configured **solely for** the Heating or Cooling operating mode

As indicated in the figure, if the thermostat signal requires it, the electronic control of the heat pump will start to operate in "Manual" mode, that is, the Heating/Cooling operating modes must be selected manually from the remote control.



Terminals **C**, **H** and **COM** are supplied from the factory with a jumper connected to each of them. Therefore, to install this type of thermostat, it will be necessary to remove **the two** jumpers and connect the thermostat as described in the following figure, with a bridge being required between inputs **C** and **H**:

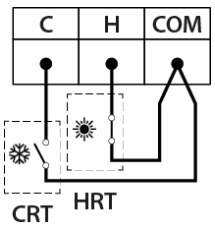
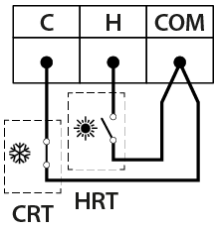
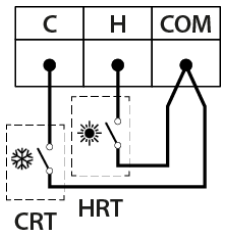
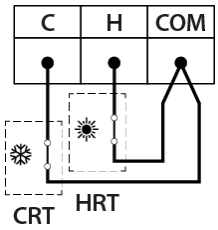


IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

Two room thermostat installation

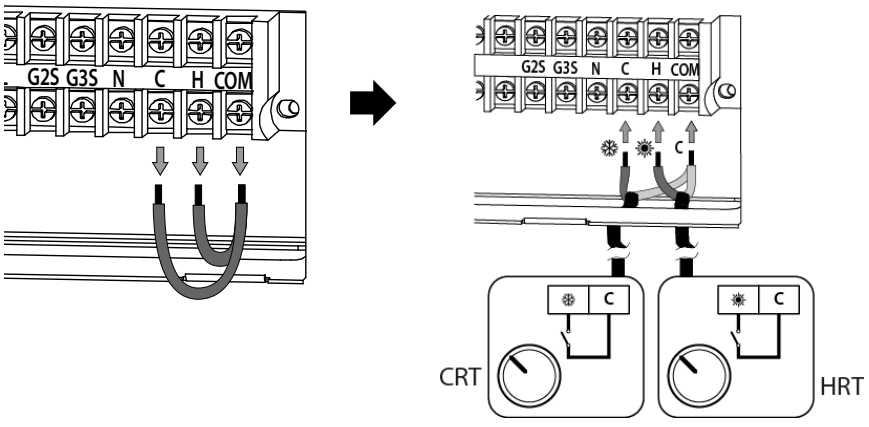
In this type of configuration 2 simple room thermostats will be connected, one connected to **C** and **COM** inputs (cooling room thermostat **CRT**) and the other connected to **H** and **COM** inputs (heating room thermostat **HRT**). Each of them will manage a different operation mode, so every thermostat will have to be of a type compatible with the functioning mode for which it has been installed. The room thermostat connected to cooling input (**CRT**) has to be activated (close signal) when room temperature is higher than the one desired (setpoint temperature), and in the same way, the room thermostat connected to heating input (**HRT**) has to be activated (close signal) when room temperature is lower than the one desired (setpoint temperature).

The **DUAL CLIMA R** heat pump will activate the Heating/Cooling modes depending on the signal received from each room thermostat in the following way:

Heating mode	Cooling mode	OFF (Stand By) (temp. reached)	Manual mode
			

As it is described above, in case of adjusting the desired temperatures of the room thermostats in such a way that both are activated simultaneously, the electronic controller of the heat pump will switch to "Manual" operating mode, that is, the Heating/Cooling modes will have to be activate and deactivate in the mainboard of the heat pump manually. To avoid this situation it will be essential **to ensure of adjusting correctly the desired temperatures of each one in such a way that they do not cross, preventing both thermostats from activating simultaneously.**

The **C**, **H** and **COM** terminals are supplied from the factory with a jumper between each of them, so it will be necessary to remove **both** jumpers before connecting the room thermostats, as it is described in the following diagram:



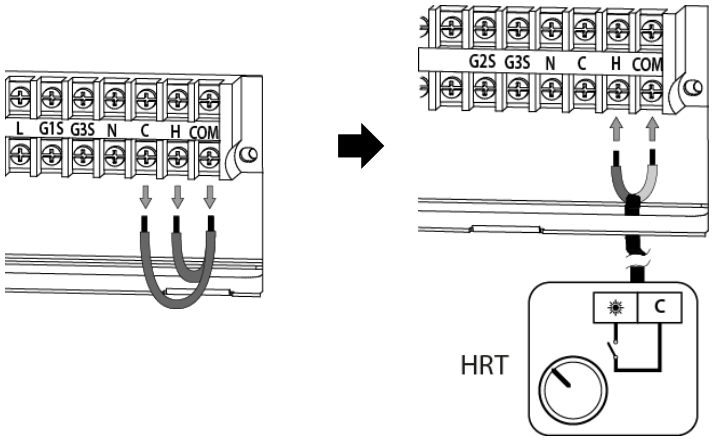
IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

One simple room thermostat installation

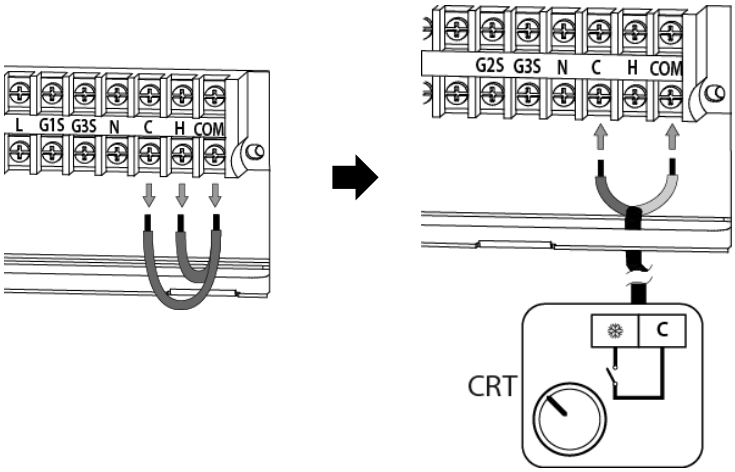
In this type of configuration a unique simple room thermostat will be connected, either connected to **C** and **COM** inputs (cooling room thermostat **CRT**) or connected to **H** and **COM** inputs (heating room thermostat **HRT**). It will be compulsory to set the heat pump for a **unique** mode of operating (either Heating mode or Cooling mode) in order to ensure a proper functioning of this room thermostat installation configuration (see *"Configuring the Heat Pump"*). Depending on the input where the room thermostat is connected the thermostat will have to be of a type compatible with the functioning mode for which it has been installed. If the room thermostat is connected to cooling input (**CRT**) it has to be activated (close signal) when room temperature is higher than the one desired (setpoint temperature), and in the same way, if the room thermostat is connected to heating input (**HRT**) it has to be activated (close signal) when room temperature is lower than the one desired (setpoint temperature).

The **C**, **H** and **COM** terminals are supplied from the factory with a jumper between each of them, so it will be necessary to remove **both** jumpers before connecting the room thermostat, as it is described in the following diagrams:

Heating type thermostat (Heating mode)



Cooling type thermostat (Cooling mode)



IMPORTANT: Before carrying out any work on the electrical installation of the heat pump, always ensure it is disconnected from the mains.

6.7 Freeze Protection

The **DUAL CLIMA R** heat pump is a machine that is installed in the exterior of the home, so that it will be exposed to the extreme climatic conditions of cold in the periods of frost. Because of this, it is of paramount importance that this type of machine is protected against such frost, as its internal construction and the amount of water inside it make it more prone to freezing. The freezing of the water inside the heat pump causes the rupture of the heat exchanger, with the subsequent interruption of its operation and major economic expenses involving its repair.

For these reasons, it will be **mandatory** to use a safety system in the installation to prevent the freezing of water in the machines. **DOMUSA TEKNIK** proposes the use of any of the following systems:

- **Antifreeze liquid (glycol):** The antifreeze liquid must be diluted with the water inside the heat pump. The concentration of glycol in the mixture must be calculated taking into account the historical minimum temperature of the climatic zone where the machine is located and the concentrations indicated by the manufacturer of the glycol for said minimum temperature. Additionally, it will be essential to perform a periodic analysis of the water-glycol mixture to ensure that the proper properties and mixing percentage are maintained over time (at least once a year).
- **Antifreeze valve of the exteriors:** The antifreeze valve or valves should be installed outside the building, in the water circuit of the heat pump, near the heat pump, if possible. It **should be ensured** that, when activated, the entire water content in the interior of the machine is drained. Due to the construction of the **DUAL CLIMA R** heat pump, to drain the water content, at least one antifreeze should must be installed in the water drain pipe (between the machine and the drain valve). **DOMUSA TEKNIK** optionally offers an antifreeze valve kit especially designed to be installed in the **DUAL CLIMA R** heat pump.

In addition to these active systems for antifreeze safety, a water filter must be installed in the water circuit of the heat pump, in order to avoid obstructions or narrowing caused by dirt in the installation to help accelerate the freezing process or to cause the water drainage devices not to work properly. The filter **MUST** be installed before filling the installation with water and in the return branch of the machine, to avoid the entry of dirty water into the heat exchanger. The type of filter installed must be adapted to the particular characteristics of each installation (type and material of the water pipes, type of water used, water volume of the installation, etc.). The water filter should be checked and cleaned, if necessary, at least once a year. IN new installations, however, it is advisable to check it within the first few months of its commissioning.

DOMUSA TEKNIK will not cover damages caused by the lack of any of these antifreeze safety systems described above.

In installations where glycol has not been added, in case of prolonged periods of absence, to prevent possible accidental power failures and/or heat pump failure, the water in the machine must be drained. In periods of frost, the absence of electricity for 30 minutes or more may cause the water to freeze.

The electronic controller of the **DUAL CLIMA R** heat pump has a function for protection against the freezing of the water in its interior in periods of frost. **For this function to remain active and on alert, the heat pump must be connected to the mains and have a power supply, even if it is switched off or not in use.**

The antifreeze function will activate the operation of the circulation pumps, compressor and other installation components depending on the temperature conditions being read, both in the water and outside the home. The following sections describe the operation of the antifreeze process of the **DUAL CLIMA R** heat pump.

6.7.1 Antifreeze in DHW mode

When the temperature of the Domestic Hot Water tank falls below +5 ºC, the controller starts the antifreeze function, activating the DHW mode. When the temperature of the tank reaches 20 ºC, the function stops. If the heat pump stays on for more than 30 minutes without reaching the indicated temperature, the antifreeze function of the DHW will stop.

If after the antifreeze process, the domestic hot water temperature remains below 5°C, the heat pump will stop, and an error code will be displayed on the screen.

6.7.2 Antifreeze in Heating mode

When the water temperature of the heat pump drops below +4 ºC (read on the flow or on the return), the controller starts the antifreeze function, activating the water circulation pumps (**C4** and **C6**). If the outside temperature is below 15 ºC, the operation of the heat pump will also be activated. When the water temperature reaches 10 ºC or the heat pump has been running for more than 30 minutes without reaching this temperature, the antifreeze function will stop.

If after the antifreeze process, the flow or return temperature remains below 4°C, the heat pump will stop and an error code will be displayed on the screen.

IMPORTANT: It will be mandatory to use a safety system in the installation to prevent the freezing of water in the machines.

NOTE: For the antifreeze function to remain active and on alert, the heat pump must be connected to the mains and have electrical supply.

DOMUSA TEKNIK will not cover damages caused by the lack of an antifreeze safety system in the installation.

7 CONFIGURING THE HEAT PUMP

The **DUAL CLIMA R** heat pump is supplied from factory configured to provide Heating, Cooling and DHW modes. In case the installation does not have any of these services allowed, **THEY MUST** be disabled by adjusting the parameters in the control unit (see *"Settings menu"*). When any mode is disabled, all the settings and parameters related to this operating mode will disappear from the main board display.

Disabling the DHW mode

If the installation does not have an storage tank for the production of DHW, this mode must be disabled. To disable this feature, parameter **P56** of the Service Menu must be adjusted (see *"Service Menu"*). The heat pump is supplied by default with the DHW service enabled. To disable it, set parameter **P56** to value **0**. Furthermore, it will be necessary to disconnect the heat pump from the mains and reconnect it to validate this change.

Disabling the Heating mode

If the installation does not have a water circuit ready to operate in heating mode (underfloor heating, radiators, etc.), this mode must be disabled. To disable this feature, parameter **P55** of the Technician Menu must be adjusted (see *"Technician Menu"*). The heat pump is supplied by default with the heating service enabled. To disable it, set parameter **P55** to value **0**. Furthermore, it will be necessary to disconnect the heat pump from the mains and reconnect it to validate this change.

Disabling the Cooling mode

If the installation does not have a water circuit ready to operate in the cooling mode (cooling floor, fan coils, etc.), this mode must be disabled. To disable this feature, parameter **P54** of the Technician Menu must be adjusted (see *"Technician Menu"*). The heat pump is supplied by default with the cooling service enabled. To disable it, set parameter **P54** to value **0**. Furthermore, it will be necessary to disconnect the heat pump from the mains and reconnect it to validate this change.

IMPORTANT: Keeping a mode enabled without the installation being prepared to operate with it may cause a malfunction of the heat pump and SERIOUS damage to the installation.

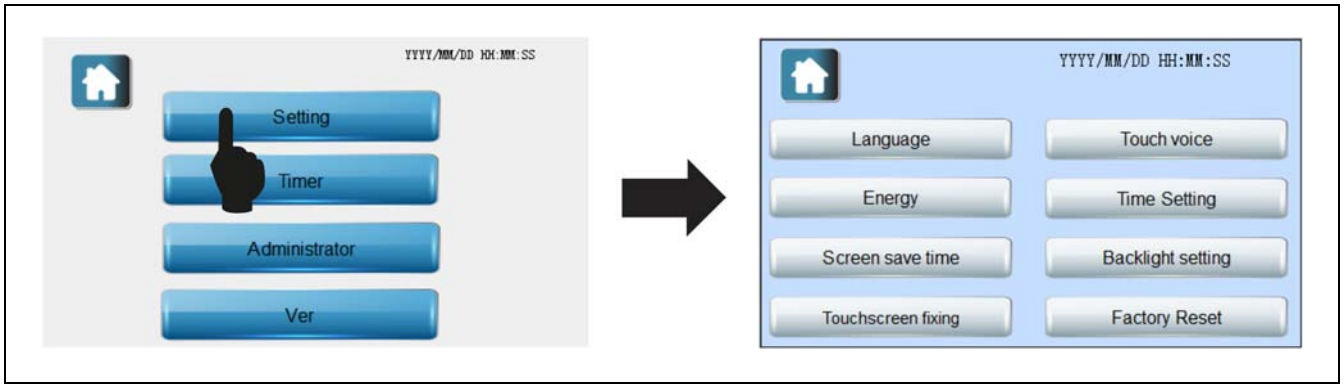
8 SETTINGS MENU

The electronic control of the **DUAL CLIMA R** pump has a SETTINGS menu (**2**) through which different features can be configured and managed.

8.1 Settings

On the SETTINGS menu (**2**), the electronic control of the **DUAL CLIMA R** pump has a submenu, through which different features are managed.

To exit the menu and return to the home screen, press the touch button .



Operating language

The **DUAL CLIMA R** heat pump integrates several languages for the electronic control unit so that the user can select the language with they wish to work. When selecting a language, the screens, menus and descriptions will change to the selected language.

Energy

The Dual Clima R heat pump has an option for measuring the renewable energy generated in the installation. This option can be used to consult the renewable energy generated by the heat pump each day, month or year.

Wait time settings

With this option, the user can select the wait time of the touchscreen before going into stand-by mode. In other words, the defined value will be the time during which the screen will remain idle before going into stand-by mode.

Once in the stand-by mode, pressing any point will return to the last display.

Touchscreen adjustment

In the event of detecting misalignments in the precision of the touchscreen, the electronic control unit includes the option to adjust the touchscreen. In this option, all the points shown on the menu must be pressed in the order indicated. This will allow the control unit to recalibrate the screen adjustment precision.

Date and time settings

The **DUAL CLIMA R** heat pump includes a time and date indication, through which some of its features are managed. Therefore, it is essential to set the correct date and time when starting the heat pump.

NOTE: Any poor adjustment of the time and date may cause certain features to malfunction.

Through the date and time setting option, select the exact date and time by filling in the following fields (Year, Month, Day, Hour, Minute, and Second). Once completed, the change must be accepted by pressing the **APPLY** key.

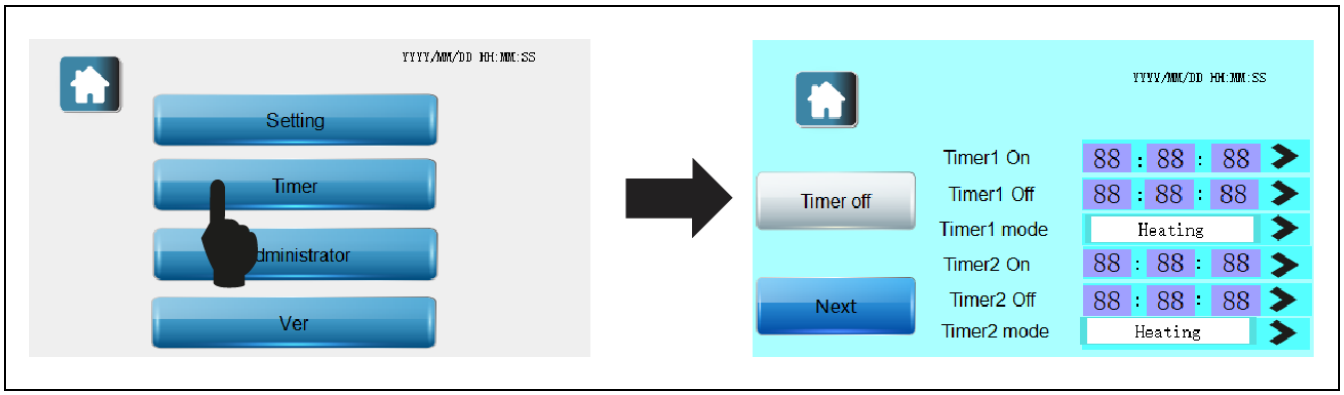
Screen contrast adjustment.

In the event of detecting any mismatch in the screen contrast or when requiring better viewing, the electronic control unit includes the option to adjust the screen contrast. In this option, the percentage of brightness required for the correct display of the screen must be selected. Once completed, the change must be accepted by pressing the **APPLY** key.

8.2 Time scheduling

On the SETTINGS menu (**2**), the **DUAL CLIMA R** heat pump integrates a time scheduler by means of which it is possible to schedule the On and Off periods, as well as the desired operating modes in each of them (weekly scheduling).

To exit the menu and return to the home screen, press the touch button .



There are 4 schedules, called *Schedule 1*, *Schedule 2*, *Schedule 3*, and *Schedule 4*. In each one of them, the user can set points for switching on, points for switching off, and operating modes of the heat pump. The user can set up to 4 different schedules on a single day or, alternatively, set 4 different operating schedules on different days of the week. It will not be necessary to use all the schedules, but the heat pump will only work on the active schedules.

To activate a schedules, for example, *Schedules 1*, follow the following steps below:

- In the ➤ selector of **Schedule 1 ON**, enter the time and days of the week to enable the schedule.
- In the ➤ selector of **Schedule 1 OFF**, enter the time and days of the week to disable the schedule.
- In the ➤ selector of **Schedule Mode 1**, select the heat pump operating mode in the defined interval (see *Selecting Manual Operating Modes*).

It is possible to adjust only the activation points in the different schedules, in such a way that these points will change the operating mode each time the time scheduled for each of them is reached (e.g. Schedule 1: 06:00 ☀ + ⚗, Schedule 3: 21:00 ⚗, daytime start of the Heating mode, keeping the DHW service active 24 hours a day).

NOTE: It must be ensured that different schedules are not set in the same time interval, in order to guarantee the correct operation of both the time scheduling and the heat pump.

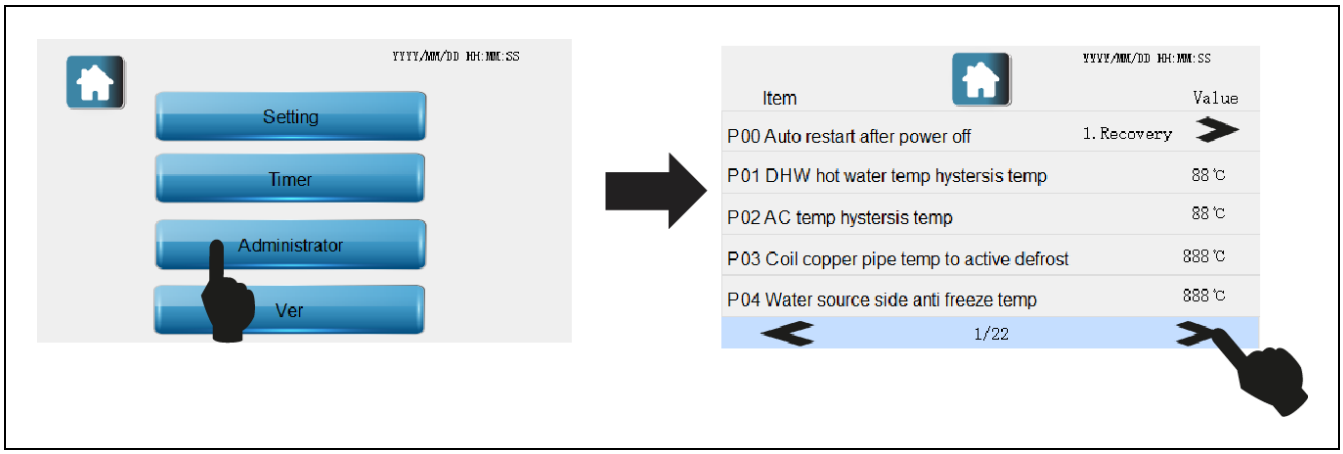
NOTE: Days of the week: MO (Monday), TU (Tuesday), WE (Wednesday), TH (Thursday), FR (Friday), SA (Saturday), and SU (Sunday).

Once the schedules have been defined, to enable the time scheduling feature, turn on the scheduling using the **Scheduling OFF** button. It will show that the schedule has been enabled, displaying **Scheduling ON**. At any time, the time scheduling can be disabled by pressing the scheduling activation button.

In addition, when the scheduler is adjusted and turned on, the scheduling symbol will be displayed permanently (🕒) on the home screen of the electronic control screen, indicating that the time schedule is enabled. To restore manual operation, return to the time scheduling menu and disable the feature by pressing the **Scheduling ON button.** It will show that the schedule has been disabled, displaying **Scheduling OFF**.

8.3 Service Menu

On the Settings menu (**2**), the electronic control of the **DUAL CLIMA R** pump has a Service Menu, with which the operation of both the gas circuit and the water circuit can be managed. Any incorrect setting of any of the parameters in this menu can cause a failure and/or breakage of the machine. Therefore, most of the parameters of the service menu should only be modified by personnel authorised by **DOMUSA TEKNIK**. Nevertheless, some technical parameters (described in previous sections) will be useful for the installer and/or the user and must be adjusted by them, depending on the thermal and operating characteristics that they wish to obtain in the home.



On this menu, the user can view and modify all technical parameters of the **DUAL CLIMA R** pump..

To exit the menu and return to the home screen, press the touch button. .

To validate access to the Service Menu, enter the password "2222" and press the "**Ent**" key. Using the ◀ and ▶ buttons, the user can browse through all the technical parameters up to the desired parameter. By clicking the current value of the parameter, the user can access the screen to modify its value and validate it by pressing the "**Ent**" key.

NOTE: Any parameters not indicated on the table are technical parameters set at the factory. Therefore, they should not be modified under any circumstances. Modifying any of these parameters may cause result in malfunction and/or breakage of the heat pump.

The following is a list of parameters that can be adjusted by the installer and/or user. Any adjustment of a parameter that is not in this list may cause a serious breakdown and/or rupture of the heat pump. Therefore, **DOMUSA TEKNIK** will not be held responsible for damages caused by their incorrect modification by unauthorised personnel.

Code	Definition	Range	Default value
P09	Ambient temp to active DHW E1-heater	-20 ~ 20 ºC	0 ºC
P10	Ambient temp to active AC E2-heater	-20 ~ 20 ºC	0 ºC
P18	Sterilization target temperature	60 ~ 70 ºC	65 ºC
P27	Second heat source validation	0: Assistant electric heater 1: Normal 2nd heat source 2: Combined together with electric heater 3: Combined together with a boiler	0
P28	Start_air_temp for 2nd heat source	-30 ~ 10 ºC	-15 ºC
P45	Weather compensation curve AU offset. (Only with AU mode selected)	-30 ~ 15 ºC	0 ºC
P46	AC Heating AU curve max temp value. (Only with AU mode selected)	30 ~ 50 ºC	45 ºC
P47	Night mode validation	0 (disabled), 1 (enabled)	0
P48	Night mode start point.	0 ~ 23 (hour)	22
P49	Night mode stop point	0 ~ 23 (hour)	6
P53	Virus Killing function valiation	0 (disabled), 1 (enabled)	0
P54	Cooling function valid	0 (disabled), 1 (enabled)	1
P55	Heating function valid	0 (disabled), 1 (enabled)	1
P56	DHW function valid	0 (disabled), 1 (enabled)	1
P80	Forced sterilization	0: Normal 1: Kill once	0
P81	Sterilization interval X	7 ~ 99 days	7
P82	Sterilization start time Y	0 ~ 23	1
P83	Sterilization keeping time	5 ~ 99 minutes	10

9 STATUS MENU

Using the **C** parameters of the STATUS Menu (**1**), it is possible to **view** and check the status of all the control and safety components of the heat pump at all times, as well as the values of some operating parameters. The **C** parameters are display parameters and, thus, will not be modifiable, being used to diagnose the operation of the machine during maintenance and repair. To access them, follow the steps below:

To access the **C** parameters of the status menu, press the STATUS touch button on the home screen. By means of the ◀ and ▶ buttons, the user can navigate through all the **C** parameters, and their value will be displayed at all times on the screen.

To exit the **C** parameters display and return to the home screen, press the touch button. .

NOTE: The parameters indicated in the table as "Reserved" are parameters that do not apply to these heat pump models.

Code	Definition	Unit	Range
C00	Coil temp	°C	
C01	Compressor discharge temp(AIN1)	°C	
C02	Ambient temp	°C	
C03	HP AC outlet water temp	°C	
C04	DHW tank temp	°C	
C05	Reserved		
C06	Reserved		
C07	DIN6 status	0/1	0: Connected, 1: Disconnected
C08	DIN5 status	0/1	0: Connected, 1: Disconnected
C09	Sterilization status	0/1	0: off, 1: on
C10	High pressure switch status	0/1	0: Connected, 1: Disconnected
C11	Mid pressure switch status	0/1	0: Connected, 1: Disconnected
C12	Low pressure switch status	0/1	0: Connected, 1: Disconnected
C13	Reserved		
C14	Reserved		
C15	Compressor overcurrent protect switch status	0/1	0: Connected, 1: Disconnected
C16	Defrosting	0/1	0: off, 1: on
C17	AC Antifreeze	0/1	0: off, 1: on
C18	DHW antifreeze	0/1	0: off, 1: on
C19	Compressor running frequency	Hz	
C20	ASHP outdoor fan (Only when P61=0)	0/1	0: off, 1: on
C21	Compressor heater	0/1	0: off, 1: on
C22	4-way valve	0/1	0: Cold, 1: Heat
C23	Bypass valve	0/1	0: off, 1: on
C24	Reserved		

Code	Definition	Unit	Range
C25	AC solenoid valve G2	0/1	0: DHW, 1: Cold/Heat
C26	Season solenoid valve G3	0/1	0: Cold, 1: Heat
C27	DHW heater E1	0/1	0: off, 1: on
C28	AC heater E2	0/1	0: off, 1: on
C29	C4 water pump	0/1	0: off, 1: on
C30	C5 AC water pump	0/1	0: off, 1: on
C31	C6 AC assistant water pump	0/1	0: off, 1: on
C32	Current	A	
C33	Reserved		
C34	AC Heat inlet water target temp	°C	
C35	DHW target temp	°C	
C36	Anti-legionella target temp	°C	
C37	Compressor IPM module temp	°C	
C38	Suction temp	°C	
C39	Inner pipe temp (Refrigerant)	°C	
C40	Expansion valve opening degree	°	
C41	Reserved		
C42	Reserved		
C43	Reserved		
C44	Return lubricant oil status	0/1	0: off, 1: on
C45	Reserved	°C	
C46	Reserved		
C47	Water flow	l/min	
C48	Compressor total running time1*1000 hours	1000 x hours	
C49	Compressor total running time2	hours	
C50	DHW coil indicator	0/1	0: off, 1: incorrect exchange
C51	EC C4 water pump speed		
C52	Reserved		
C53	DC fan1 rotate speed	rpm	
C54	DC fan2 rotate speed	rpm	
C55	Running mode	0/3	0: AUTO, 1: Cold, 2: Heat, 3: DHW
C56	Target frequency	Hz	
C57	Compressor model Encode		5: DC9R, 6: DC12R, 7: DC16R, 8: DC16RT, 9: DC19RT, 11: DC6R, 12: DC19R
C58	Reserved		
C59	Reserved		
C60	Actual HP AC return water temp	°C	

Code	Definition	Unit	Range
C61	Reserved		
C62	Return lubricant oil error cumulative times	-	-
C63	Reserved		
C64	Reserved		
C65	Reserved		
C66	Reserved		
C67	Reserved		
C68	Reserved		
C69	Reserved		
C70	Reserved		
C71	Reserved		
C72	SW version No		
C73	AC Input voltage	V	
C74	Reserved		
C75	HP stop code		
C76	IPM Voltage	V	

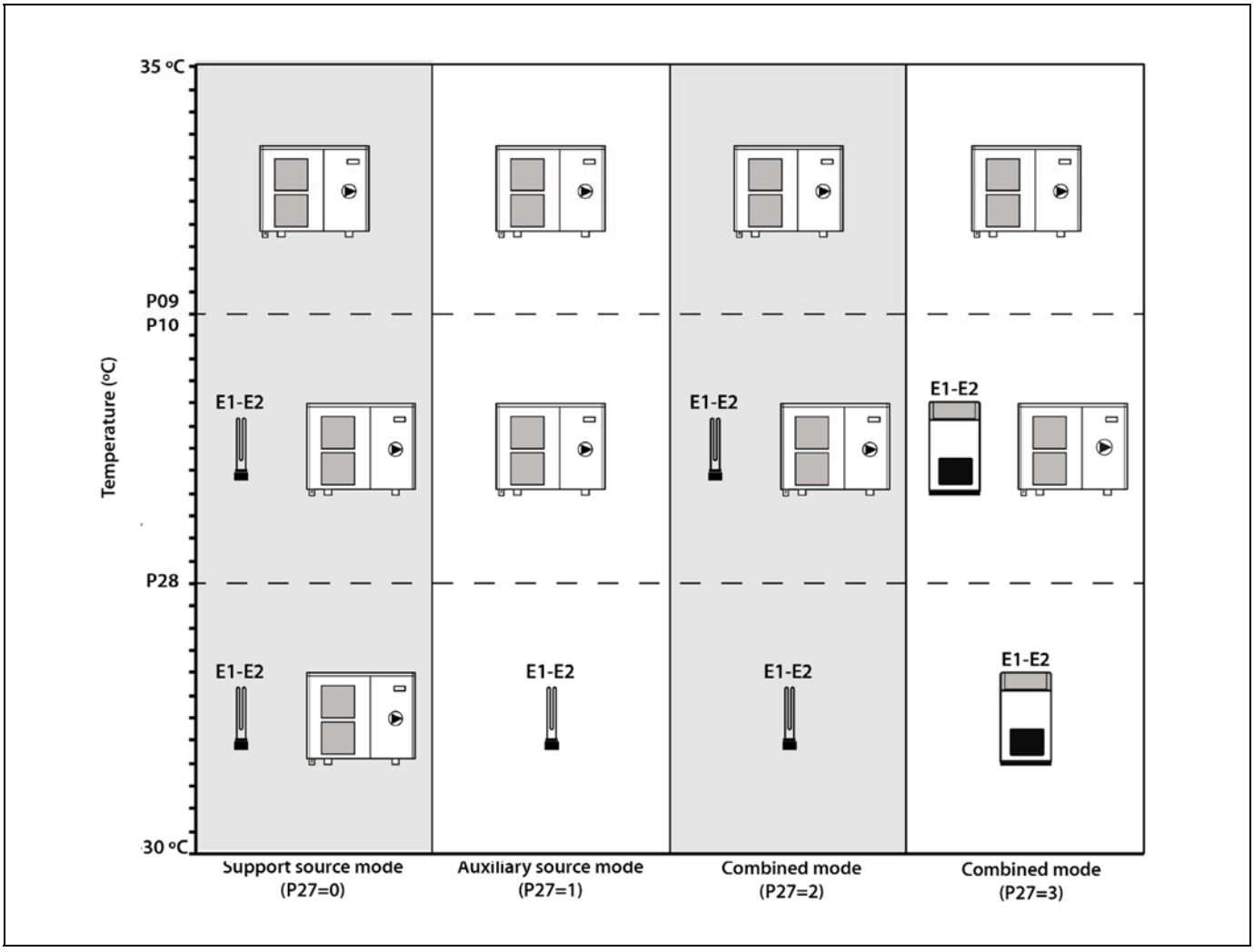
10 CONFIGURATION OF AUXILIARY OR SUPPORT SOURCES (E1, E2)

The basic principle of **DUAL CLIMA R** heat pump functioning consists of getting the energy from the air outside the building and using it inside the house in the form of thermal energy for a heating/cooling water circuit and/or to produce Domestic Hot Water. For this reason, the capacity of heating of the heat pump will depend directly on the quantity of available energy in the air outside the building, and in consequence, on the temperature and humidity of it.

For these reasons, when the weather conditions where the heat pump is located are of extremely low temperatures and/or wet, the heat pump could need the help of a backup source of energy to reach the wished conditions of comfort. **DUAL CLIMA R** heat pump includes 2 relay outputs (**E1**, **E2**) for the connection of mentioned backup energy sources, which might be electrical heaters, gas boiler, oil boiler, etc., or any combination of them. One of these outputs is dedicated to help in DHW production (**E1**), whereas the other one is dedicated to help in heating circuit requirements (**E2**).

The way of functioning of these outputs related to the outside temperature could be set by means of **P27** parameter of the Technical, being able to be selected 4 different functioning modes.

The available energy sources are graphically displayed below, depending on the outside temperature and the operating mode selected using parameter **P27** of the Technical menu.



10.1 Backup source mode (P27 = 0)

In this mode the energy sources will be activated when the outside temperature descends from a value selected in the parameters **P09** and **P10** of the Technical menu, in order to help the heat pump to achieve its requirements, keeping both systems working together in combination. This is the mode set by default.

The backup energy source for DHW (**E1**) will be only activated when the heat pump is working in DHW production mode and the backup energy source for Heating (**E2**) will be only activated when it is working in Heating mode.

Backup mode setup for DHW (E1)

When the heat pump is working in DHW mode, the backup energy source connected to E1 output will be enabled if outside temperature descends from the value selected in the parameter P09 and if the heat pump cannot achieve the DHW temperature setpoint adjusted. Once the backup source of energy of support is activated, the heat pump and the backup energy will work together to reach the desired DHW temperature.

The range of values for **P09** parameter is between -20 ~ +20 ºC. The default value set in factory is 0 ºC and this value can be increased or decreased by marking the desired value in the displayed submenu. Once the desired value has been selected, press the **"Ent"** button to save said setting.

Backup mode setup for Heating (E2)

When the heat pump is working in Heating mode, the backup energy source connected to **E2** output will be enabled if outside temperature descends from the value selected in the parameter **P10** and if the heat pump cannot achieve the Heating temperature setpoint adjusted. Once the backup source of energy of support is activated, the heat pump and the backup energy will work together to reach the desired Heating temperature.

The range of values for **P10** parameter is between -20 ~ +20 ºC. The default value set in factory is 0 ºC and this value can be increased or decreased by marking the desired value in the displayed submenu. Once the desired value has been selected, press the **"Ent"** button to save said setting.

10.2 Auxiliary source mode (P27 = 1)

In this functioning mode the Heating backup source of energy (**E2**) becomes an alternative source of energy to the one of the heat pump ("auxiliary source"). It is activated when the outside temperature descends from the value selected in the parameters **P28** of the Technical menú (see *"Technical Menu"*). At the same time, the heat pump is switched off (Stand By mode), remaining the auxiliary source **E2** as the unique heat source for the whole installation, for Heating and DHW mode.

In this functioning mode the backup energy source for DHW (**E1**) is only activated when it is necessary to achieve a temperature higher than 50 ºC in the DHW tank.

The range of values for **P28** parameter is between -30 ~ +10 ºC. The default value set is -15 ºC and this value can be increased or decreased by marking the desired value in the displayed submenu. Once the desired value has been selected, press the **"Ent"** button to save said setting.

10.3 Passive combined mode (P27 = 2)

This operating mode is optimized for installations in which you want to combine the "Support source mode" and the "Auxiliary source mode" using passive auxiliary energy sources that do not generate primary water circulation, such as an electrical resistance, heat exchanger etc.

When the outside temperature falls below the value selected by means of parameters **P09** and **P10** in the Technical menu, the auxiliary energy sources will be activated in combination with the heat pump as described in the *"Support source mode"* section.

If the outside temperature should drop below the value selected in parameter **P28** of the Technical menu, the heat pump will turn off (Stand By), leaving the auxiliary source **E2** as the only heat source in the installation as described in the section *"Auxiliary source mode"*.

NOTE: Whenever the operation of a backup or auxiliary power source (E1 or E2) is activated, the heat pump circulation pump (C4) is activated.

10.4 Active combined mode (P27 = 3)

This operating mode is optimized for installations where you want to combine the "Support source mode" and the "Auxiliary source mode" using active auxiliary energy sources that generate primary water circulation such as a boiler.

When the outside temperature falls below the value selected by means of parameters **P09** and **P10** in the Technical menu, the auxiliary energy sources will be activated in combination with the heat pump as described in the *"Support source mode"* section.

If the outside temperature should drop below the value selected in parameter **P28** of the Technical menu, the heat pump will turn off (Stand By), leaving the auxiliary source **E2** as the only heat source in the installation as described in the section *"Auxiliary source mode"*.

NOTE: THE CIRCULATION PUMP of the heat pump (C4) WILL NOT ACTIVATE in *"Auxiliary source mode"*, therefore, it is essential that the auxiliary power source has its own circulation pump.

11 COMMISSIONING

11.1 Prior warnings

Repair and maintenance of the heat pump must be carried out by a qualified professional authorised by **DOMUSA TEKNIK**. For optimal operation and conservation of the heat pump, it should be serviced annually.

Carefully read this instruction manual and keep it in a safe, easily-accessible place. **DOMUSA TEKNIK** will not be liable for any damages caused by failure to follow these instructions.

Before any servicing, **disconnect the heat pump from the mains**.

11.2 Start-up

In order for the **guarantee to be valid**, the heat pump must be started up by **personnel authorised by DOMUSA TEKNIK**. Before beginning the start-up process, the following must be complied with:

- The heat pump must be electrically connected to the mains and the power supply should be correct.
- The installation must be filled with water (the pressure must be between 1 and 1.5 bar) and well flushed.
- If the installation has flow and return valves, check they are open.

The start-up sequence, as minimum, should be as follows:

- Check that the configuration of the heat pump is correct and corresponds to the Heating, Cooling and/or DHW services allowed for the installation.
- Check that the values of all the parameters (**P**) of the Technical menu are correct and adjust them if necessary.
- Check that the heat pump and the internal piping installation do not present any damage caused during transport.
- Check that the fan can move freely.
- Check that the insulation of all pipes is correct, particularly in installations that can be used in Cooling mode.

11.3 Equipment delivery

After the initial start-up, the Technical Assistance Service will explain to the user how the heat pump functions, making any observations they consider relevant.

The installer is responsible for clearly explaining to the user the functioning of any control or regulation device forming part of the installation but not supplied with the heat pump.

12 MAINTENANCE

To maintain the heat pump in perfect working order, a yearly maintenance should be performed by personnel authorised by **DOMUSA TEKNIK**. Between the maintenance tasks, the following operations should be performed at least once a year:

- Check that the supply, consumption and electrical installation are correct.
- Check that the water installation, safety valves and control devices work correctly.
- Check that the water circulation pump is working correctly. Make sure that the water pipe and pipe fittings do not have leaks and/or clogs.
- Remove all dirt from the evaporator.
- Check that the various components of the gas circuit work correctly. Inspect the joints of the pipes and that the valves are well lubricated.
- Chemically clean the plate heat exchanger every 3 years.
- Check if the coolant gas content is correct.

13 DISPOSAL AND RECYCLING

Disassembly

This product may only be disassembled by a suitably qualified (F-gas) refrigeration engineer.

This heat pump contains R32 refrigerant. The refrigerant must not be allowed to escape into the atmosphere.

Recycling

In order for the heat pump to be recycled or disposed of it must be taken to a suitably licensed waste facility. You will need to contact a qualified refrigeration engineer to do this for you. Please contact the installer or local authority for more information.

Disposal

Do not try to dismantle the system yourself.

Dismantling of the unit, treatment of the refrigerant, of oil and of other parts must be done in accordance with relevant local and national legislation. The complete heat pump unit, including the compressor and the oil contained within it, must be disposed of at a licensed waste facility, as it still remains contaminated by the refrigerant.

The refrigerant will be removed and returned to the refrigerant manufacturer for recycling or disposal.

14 ELECTRICAL DIAGRAMS

14.1 Nomenclature

Refrigerant circuit components:

MC: Compressor motor.
RC: Compressor heater.
RL: Reactance.
MV: Fan motor.
EEV: Electronic expansion valve.
V4V: 4-way valve.
VB: Bypass valve.
TD: Discharge thermostat.
PH: High-pressure switch (DIN1).
PM: Mid pressure switch (DIN2).
PL: Low-pressure switch (DIN3).
TH1: Discharge temperature sensor.
TH2: Coil temperature sensor.
TH3: Ambient temperature sensor.
TH6: Suction temperature sensor.
TH7: DHW temperature sensor.
TH8: Water inlet temperature sensor.
TH9: Water outlet sensor.
TH11: Inner pipe temperature sensor.
TH12: Room temperature sensor.

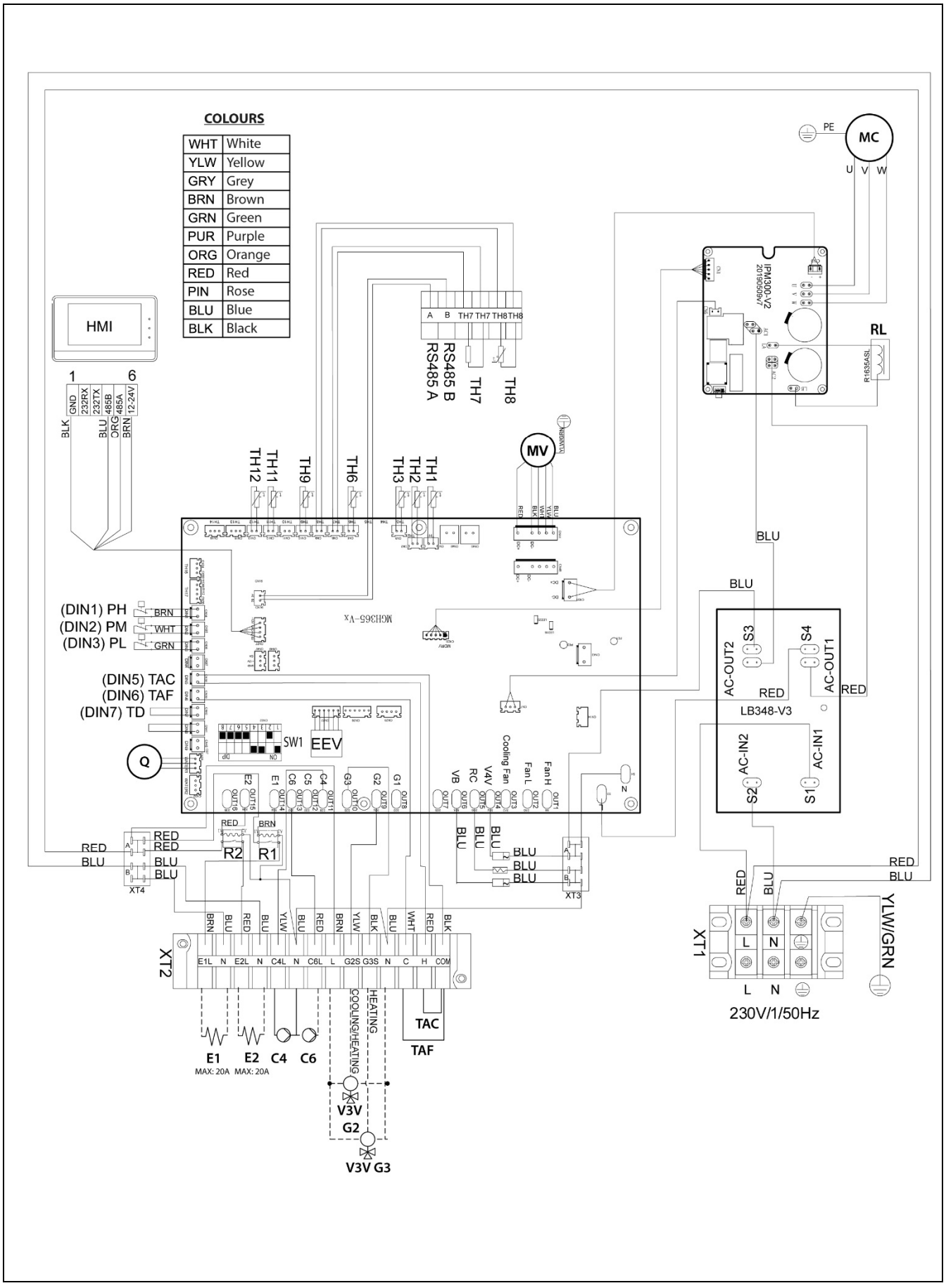
Water circuit power supply and components:

L: Phase.
N: Neutral.
R: Relay.
Q: Flow meter.
SW1: DIP-Switch 1.
HMI: Main board.

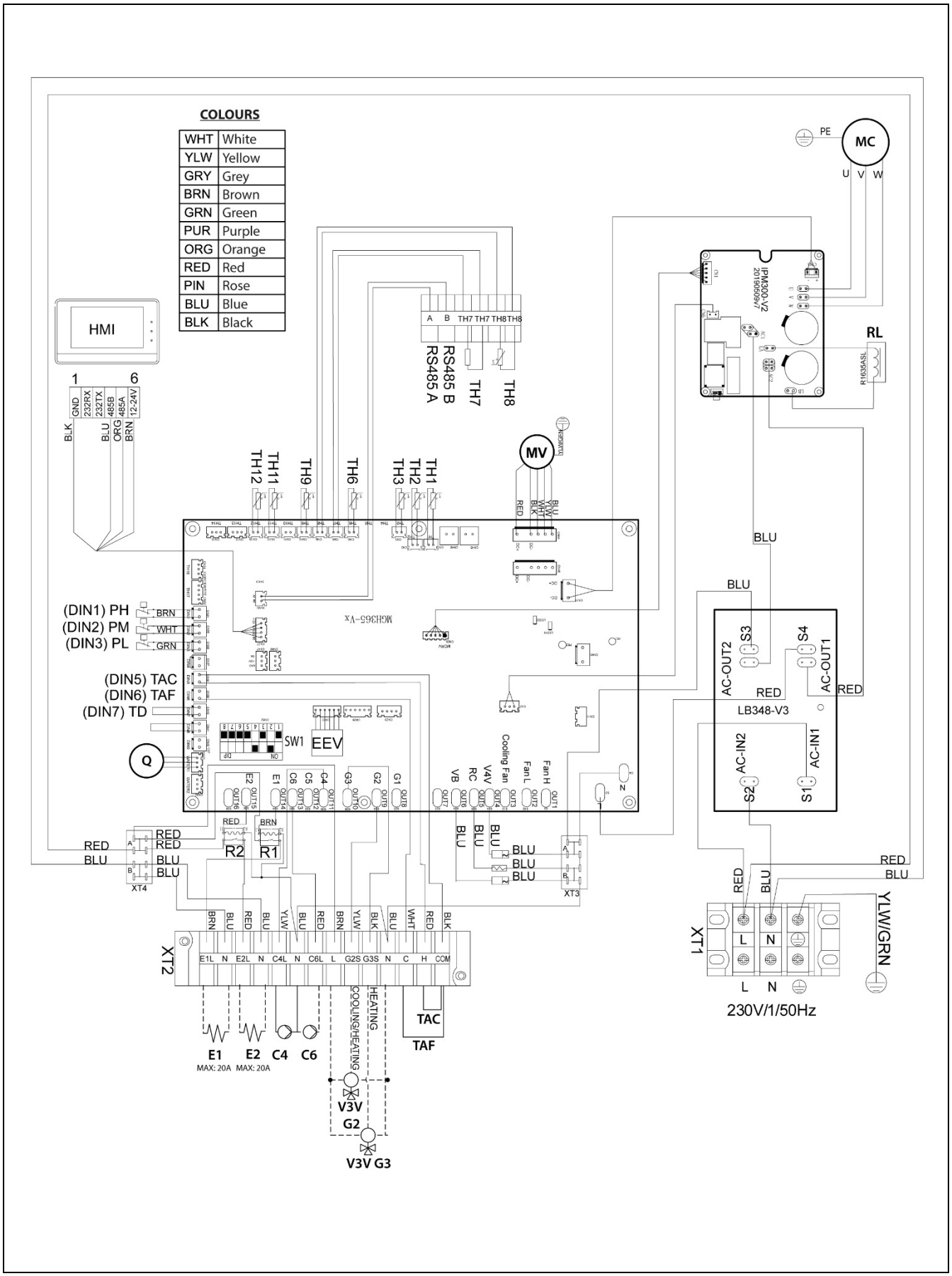
Component connection terminal:

E1: DHW backup resistor.
E2: Heating backup resistor.
C4: Circulator pump of the heat pump.
C6: Backup circulator pump.
TAF: Cooling mode room thermostat.
TAC: Heating mode room thermostat.
G2: Heating/DHW 3-way valve.
G3: Heat/Cold 3-way valve.

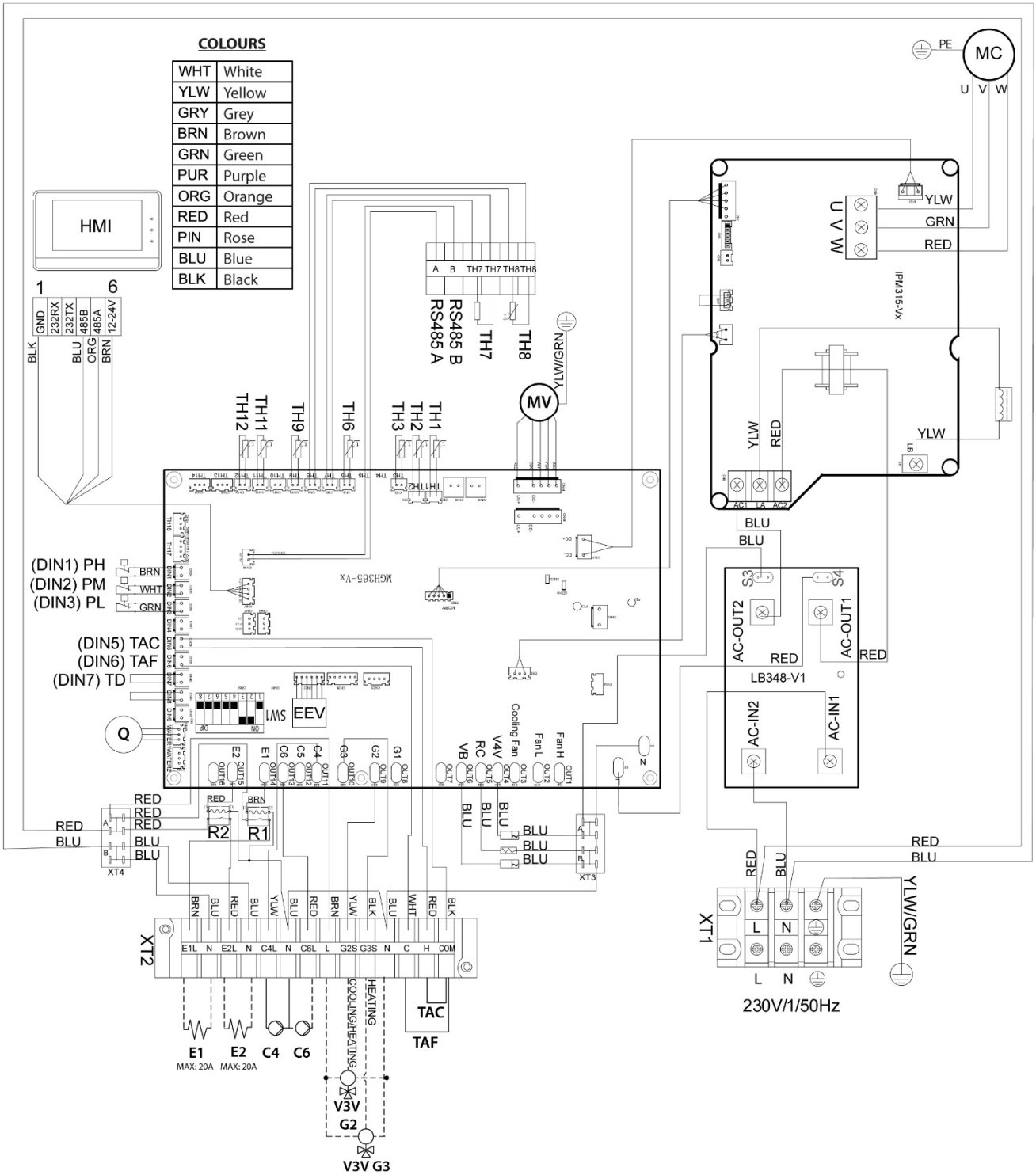
14.2 Dual Clima 6R



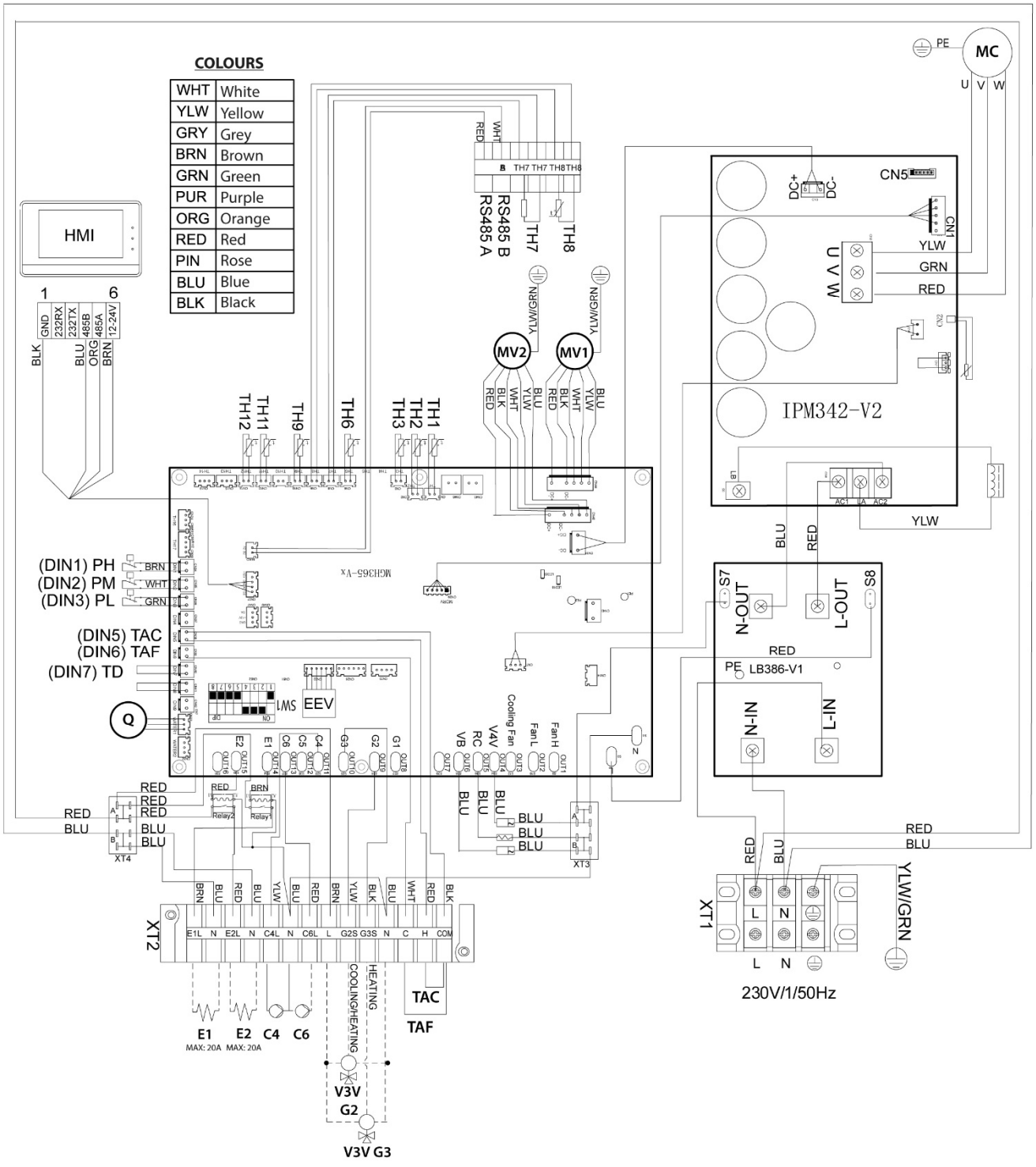
14.3 Dual Clima 9R



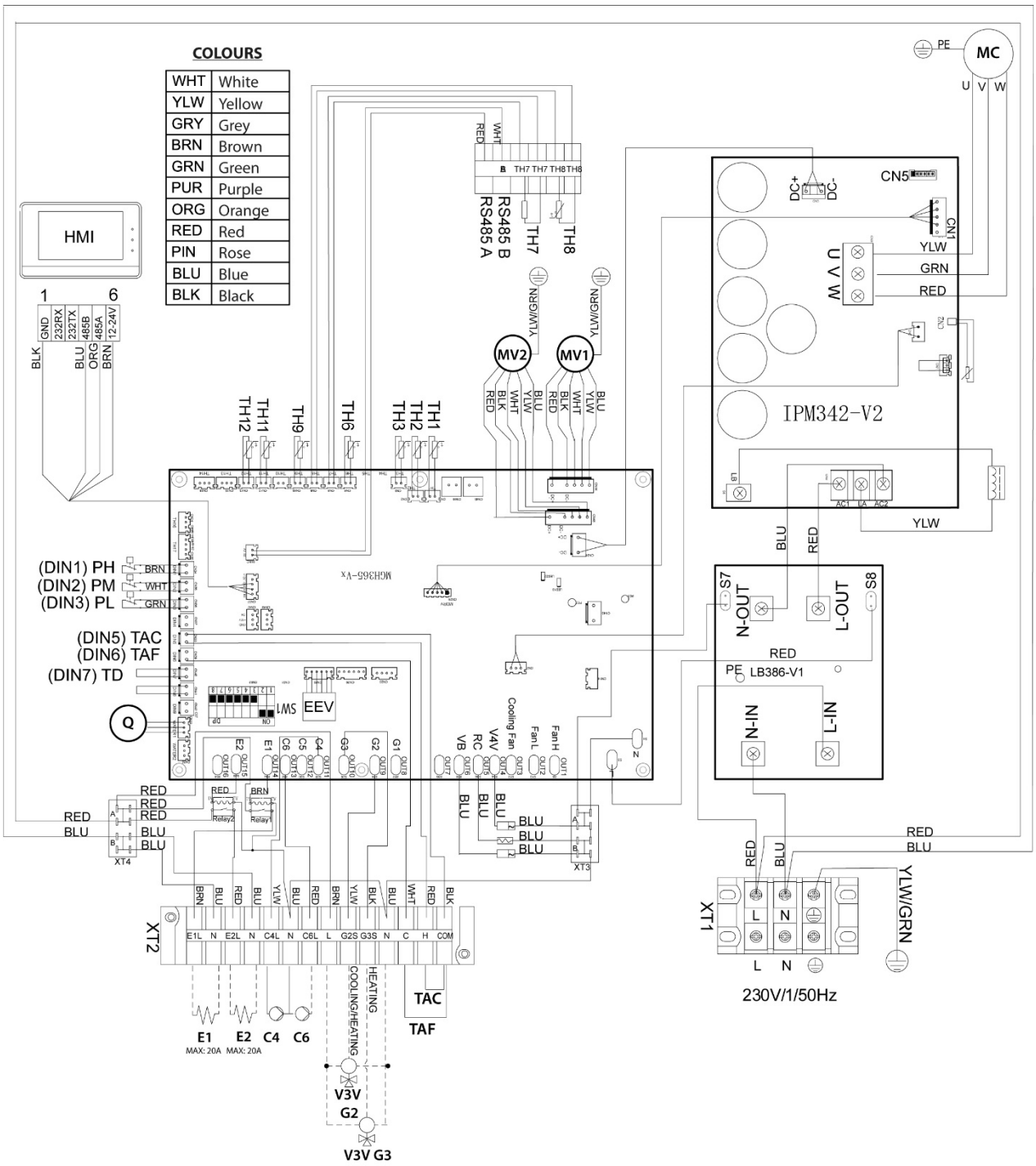
14.4 Dual Clima 12R



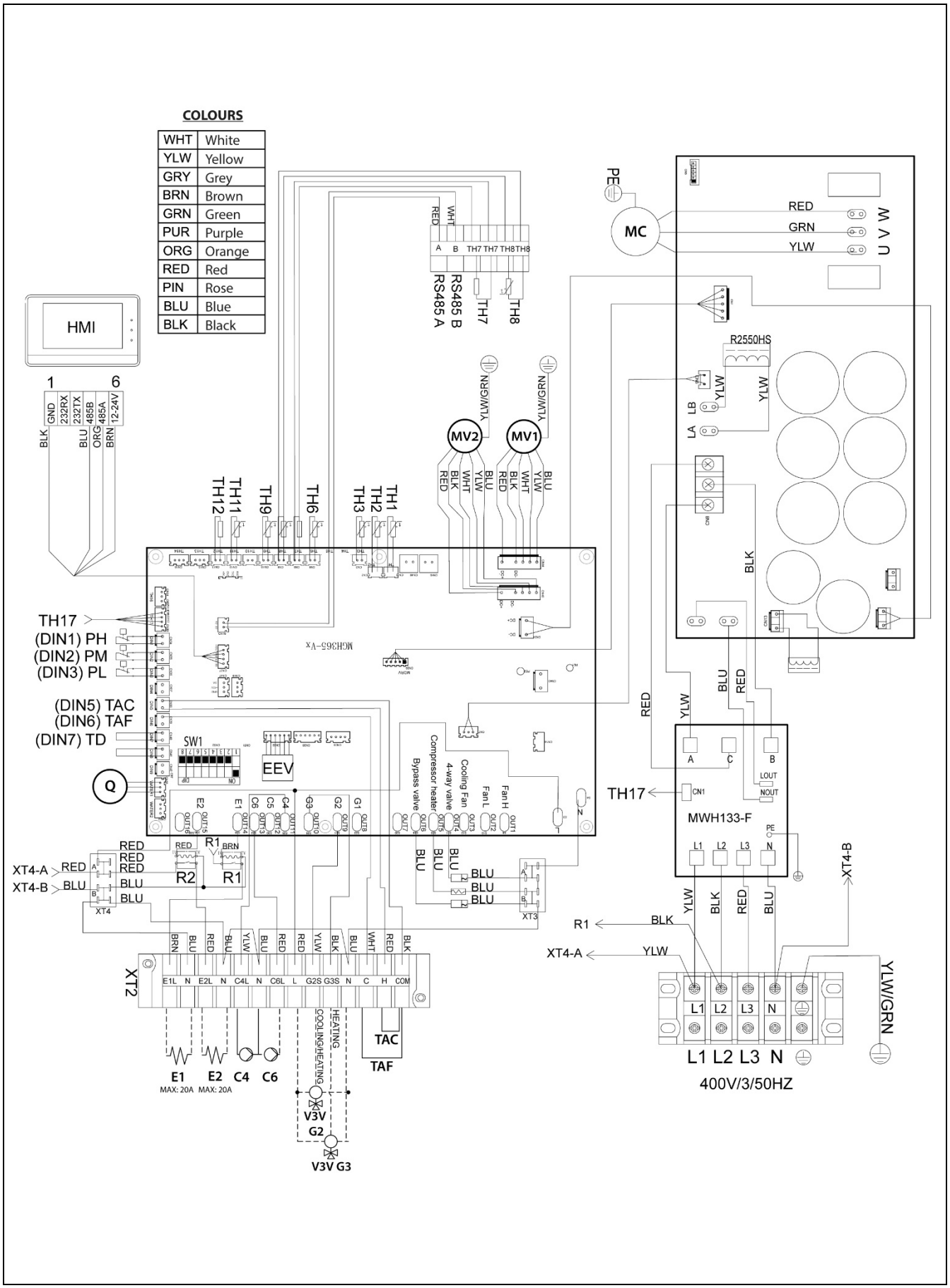
14.5 Dual Clima 16R



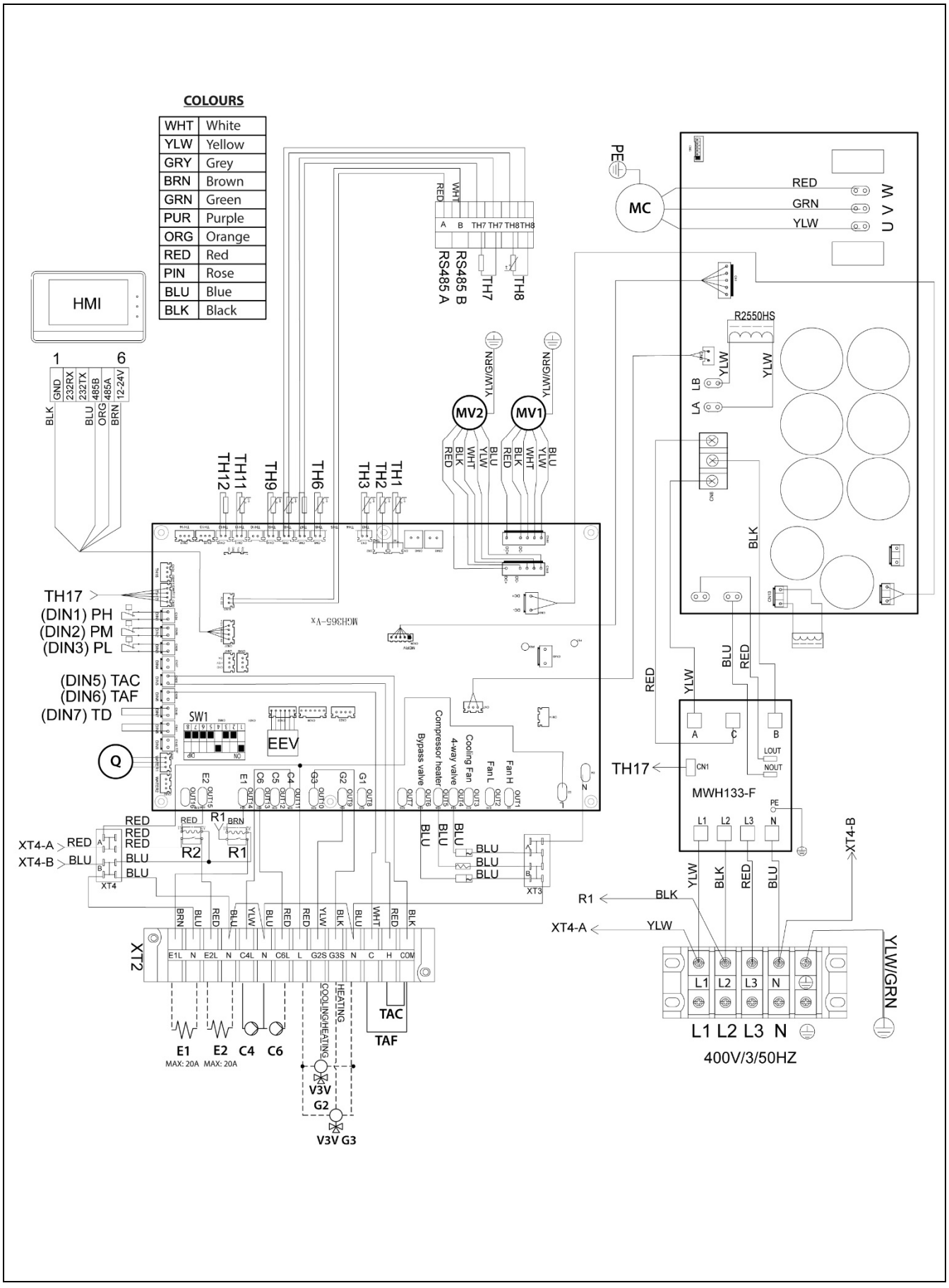
14.6 Dual Clima 19R



14.7 Dual Clima 16RT



14.8 Dual Clima 19RT



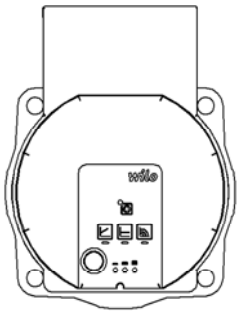
15 TECHNICAL CHARACTERISTICS

MODELO		DULA CLIMA 6R	DULA CLIMA 9R	DUAL CLIMA 12R	DUAL CLIMA 16R	DUAL CLIMA 19R	DUAL CLIMA 16RT	DUAL CLIMA 19RT
Type	-	Air to water						
Heating nominal capacity	kW	6,21	8,9	12,0	16,3	18,9	16,8	18,7
Cooling nominal capacity	kW	6,1	8,1	11,2	15,60	16,6	15,9	16,6
Heating nominal consumption	kW	1,26	1,81	2,50	3,34	4,26	3,44	4,06
Cooling nominal consumption	kW	1,53	2,08	3,01	4,3	4,8	4,24	4,4
Heating nominal intensity	A	5,39	7,39	11,20	14,2	17,5	5,3	6,5
Cooling nominal intensity	A	7,2	9,2	12,6	19,0	21,0	6,5	6,8
COP (Air +7ºC, Water 35ºC)	-	4,93	4,92	4,8	4,88	4,44	4,88	4,61
EER (Air +35ºC, Water 18ºC)		3,99	3,89	3,72	3,63	3,69	3,75	3,77
Maximum consumption	kW	2,88	2,88	3,45	5,75	5,75	5,8	5,8
Maximum intensity	A	12,5	12,5	19,0	25,0	25,0	8,5	8,5
Electrical supply	-	230 V~ / 50 Hz					400 V 3N~ 50 Hz	
Max. service pressure: (water circuit)	MPa (bar)	0,3 (3)						
Max. water temperature	ºC	60						
Nominal water flow	m3/h	1,07	1,53	2,06	2,8	3,2	2,8	3,2
Max. working pressure: (coolant circuit)	MPa	4,2						
Coolant	-	R32						
Coolant amount	Kg	1,8	1,8	2,35	2,8	2,8	2,8	2,8
Compressor oil type	-	FW68S						
Protection degree	-	IPX4						
Fan rpm	Rpm	850	900	900	900	900	900	900
Fan power	W	85	85	85	85	85	85	85
Sound power	dB(A)	56	57	61	58	60	58	60
Dimensions: (H/W/D)	mm	710/1115/425	710/1115/425	960/1115/425	1280/1115/425	1280/1115/425	1280/1115/425	1280/1115/425
Net weight	Kg	90	90	105	140	140	140	140

16 CHARACTERISTICS OF THE CIRCULATION PUMP

The characteristics and functionalities of the circulation pump are described below.

16.1 Characteristics of the SC pump



16.2 Symbology

Indicator lights (LEDs)



Signal display:

- LED is lit up in green in normal operation.
- LED lights up/flashes in case of a fault.



Display of selected control mode Δp-v, Δp-c and constant speed.

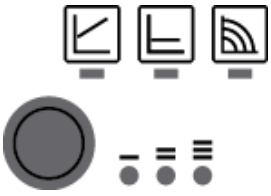


Display of selected pump curve (I, II, III) within the control mode.



LED indicator combinations during the pump venting function, manual restart and key lock.

Operating button



Press:

- Select control mode.
- Select pump curve (I, II, III) within the control mode.

Press and hold:

- Activate the pump venting function (press for 3 seconds).
- Activate manual restart (press for 5 seconds).
- Lock/unlock button (press for 8 seconds).

16.2.1 Control modes

Constant speed I, II, III (traditional mode):

The pump operates at a constant, pre-set speed.

Variable differential pressure (Δp-v):

The setpoint value of the differential pressure H increases in a straight line between ½H and H within the permitted flow margin. The differential pressure generated by the pump is adjusted to the appropriate setpoint value of differential pressure.

Constant differential pressure (Δp-c):

The control keeps the set delivery head constant irrespective of the pumped volume flow.

Setting the control mode

	LED display	Control mode	Pump curve
1		Constant speed	II
2		Constant speed	I
3		Variable differential pressure Δp-v	III
4		Variable differential pressure Δp-v	II
5		Variable differential pressure Δp-v	I
6		Constant differential pressure Δp-c	III
7		Constant differential pressure Δp-c	II
8		Constant differential pressure Δp-c	I
9		Constant speed	III

Pressing the button for the 9th time returns to the basic setting (constant speed / characteristic curve III).

16.2.2 Functions

Venting

- Fill and vent the system correctly.
- If the pump does not vent automatically:
    - Activate the pump venting function via the operating button: press and hold for 3 seconds, then release.
    - The pump venting function is initiated and lasts 10 minutes.
    - The top and bottom LED rows flash in turn at 1 second intervals.
    - To cancel, press and hold the operating button for 3 seconds.

NOTE: this function does not vent the heating system.

Lock

- It protects against undesired or unauthorized adjustment of the pump.
- To activate the key lock, press and hold the operating button for 8 seconds until the LEDs for the selected setting briefly flash, then release.
- LEDs flash constantly at 1-second intervals.
- The key lock is activated: pump settings can no longer be changed.

The key lock is deactivated in the same manner as it is activated.

Activating factory setting

The factory setting is activated by pressing and holding the operating button whilst switching off the pump.

- Press and hold the operating button for at least 4 seconds.
- All LEDs flash for 1 second.
- The LEDs for the last setting flash for 1 second.

When the pump is switched on again, the pump runs using the factory settings (delivery condition).

Manual restart

The pump attempts an automatic restart upon detecting a blockage.

If the pump does not restart automatically:

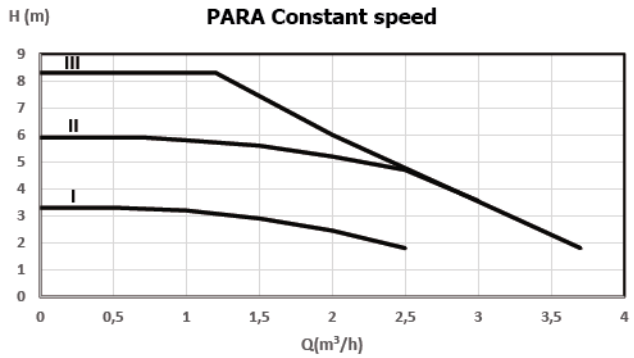
- Activate manual restart via the operating button: press and hold for 5 seconds, then release.
- The restart function is initiated and lasts max. 10 minutes.
- The LEDs flash in succession clockwise.
- To cancel, press and hold the operating button for 5 seconds.

16.3 Circulating pump flow curves

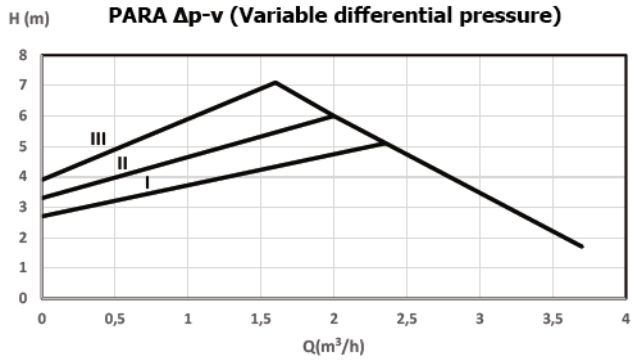
By means of the following diagrams it is possible to calculate the hydrodriving pressure available for the heating/cooling installation, taking in account the water pump working curves and the pressure drop of each **DUAL CLIMA R** model.

16.4 Dual Clima 12R, 16R and 16RT circulation pump working curves

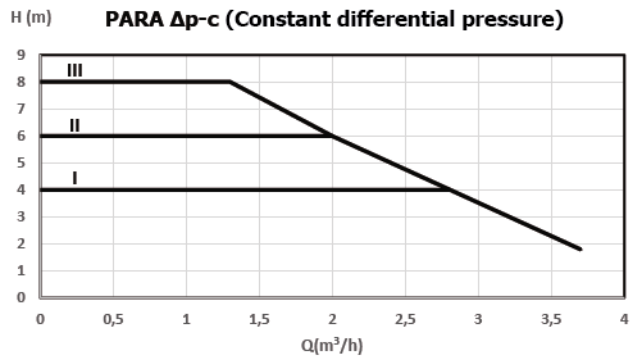
Characteristic curve of the circulation pump for constant speed mode I, II, III:



Characteristic curve of the circulation pump for the variable differential pressure mode:

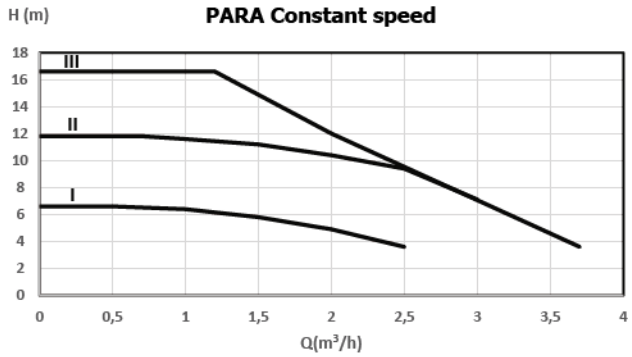


Characteristic curve of the circulation pump for the constant differential pressure mode:

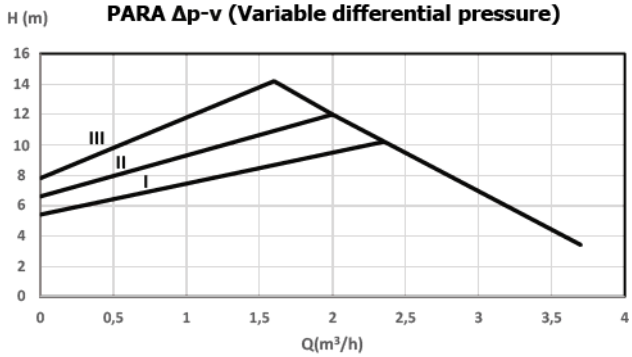


16.5 Dual Clima 19R and 19RT circulation pump working curves

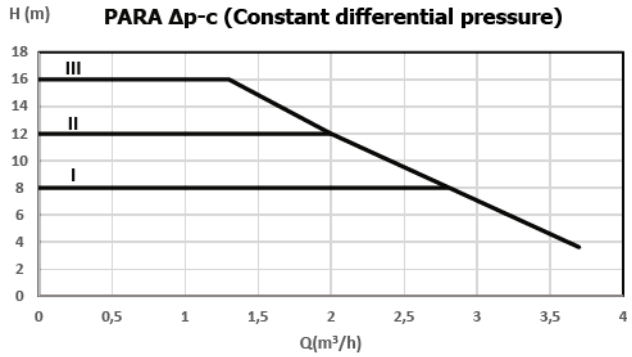
Characteristic curve of the circulation pump for constant speed mode I, II, III:



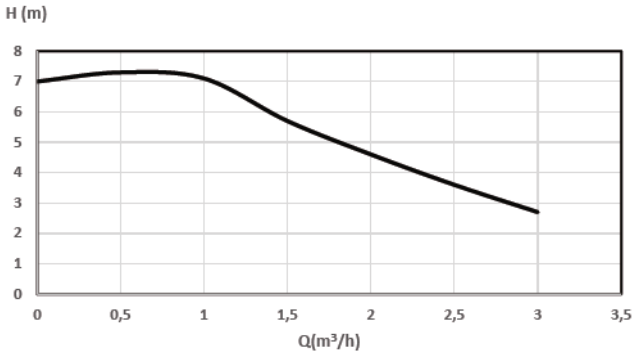
Characteristic curve of the circulation pump for the variable differential pressure mode:



Characteristic curve of the circulation pump for the constant differential pressure mode:

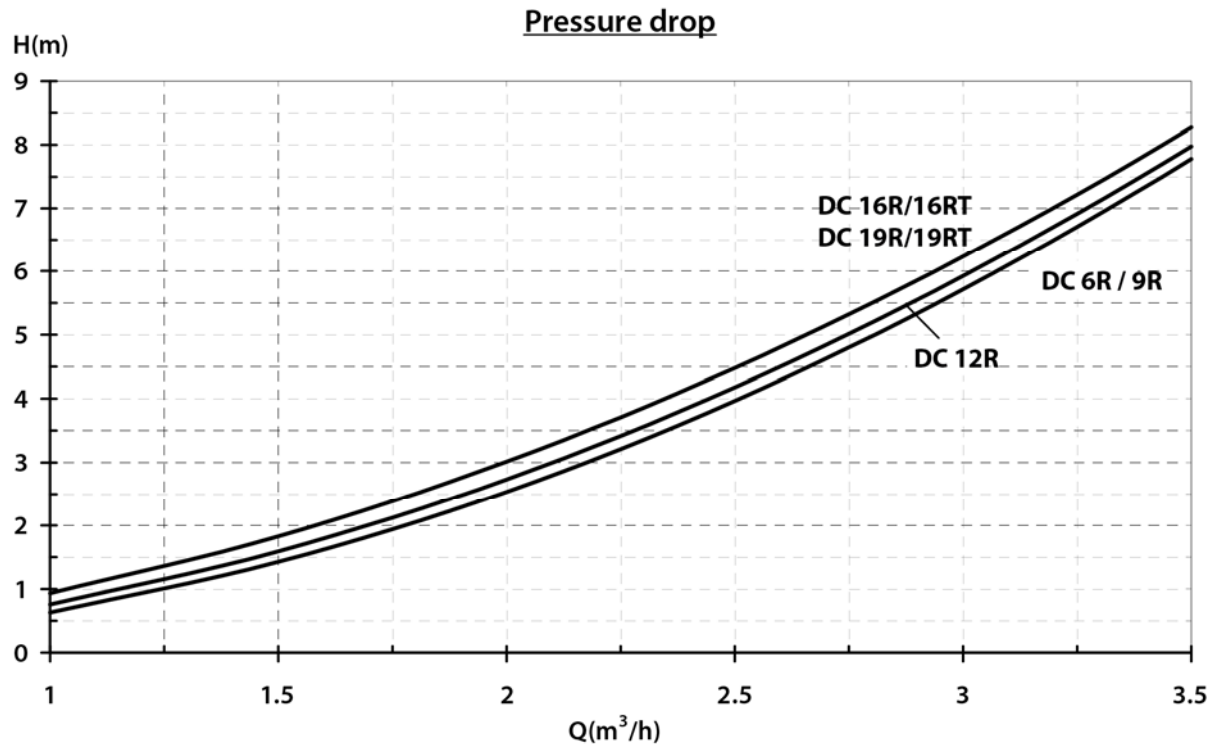


16.6 Dual Clima 6R and 9RT circulation pump working curves



Heat pump pressure drop curves

In the following diagrams is shown the pressure drop produced by the inner hydraulic circuit of each **DUAL CLIMA R** model, depending on the water flow of the installation:

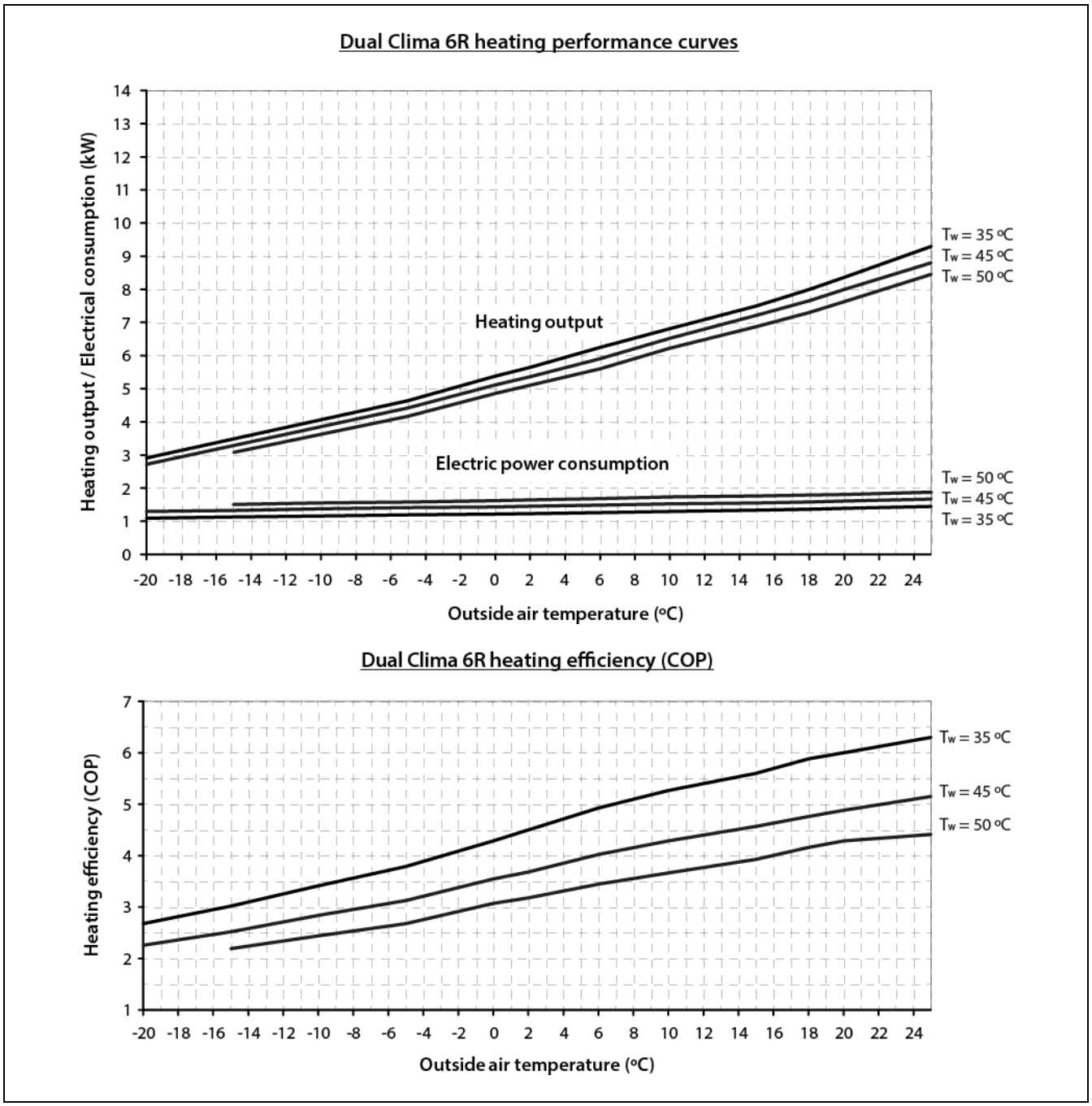


17 PERFORMANCE AND EFFICIENCY DIAGRAMS

The basic principle of **DUAL CLIMA R** heat pump functioning consists of getting the energy from the air outside the building and using it inside the house in the form of thermal energy for a heating/cooling water circuit and/or to produce Domestic Hot Water. For this reason, the capacity of heating and the efficiency of the heat pump will depend directly on the quantity of available energy in the air outside the building, and in consequence, on the temperature of it.

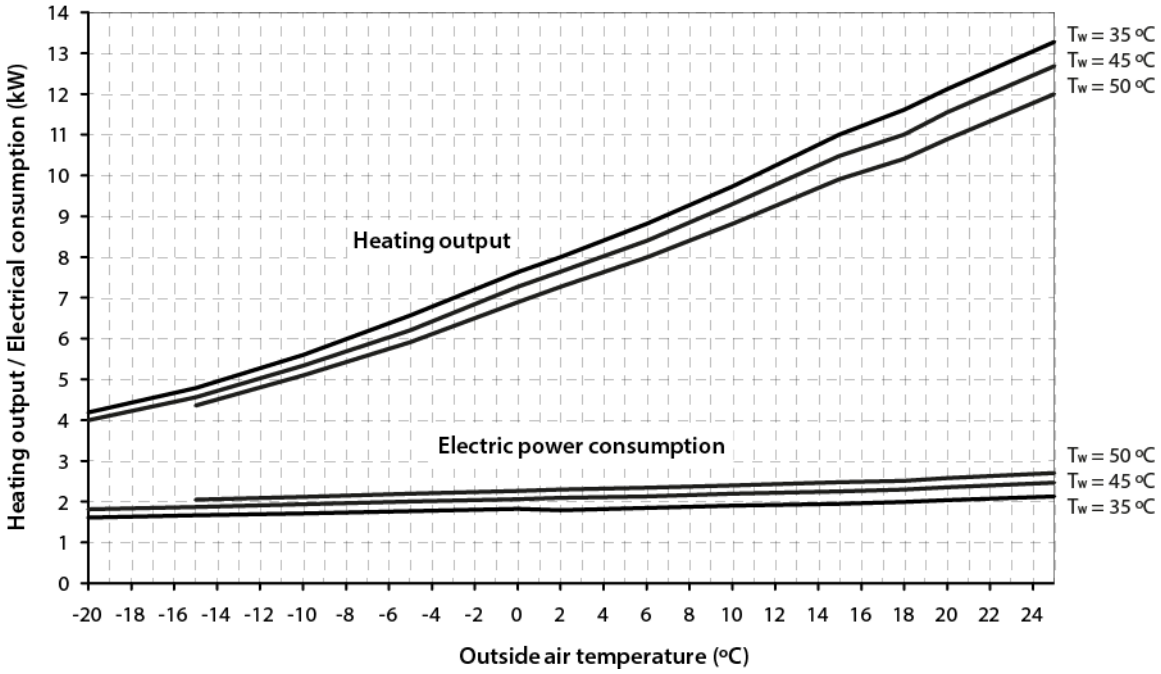
In the following diagrams the heating performance (output) and efficiency (COP) of each **DUAL CLIMA R** model is shown, depending on the outside air temperature.

DUAL CLIMA 6R

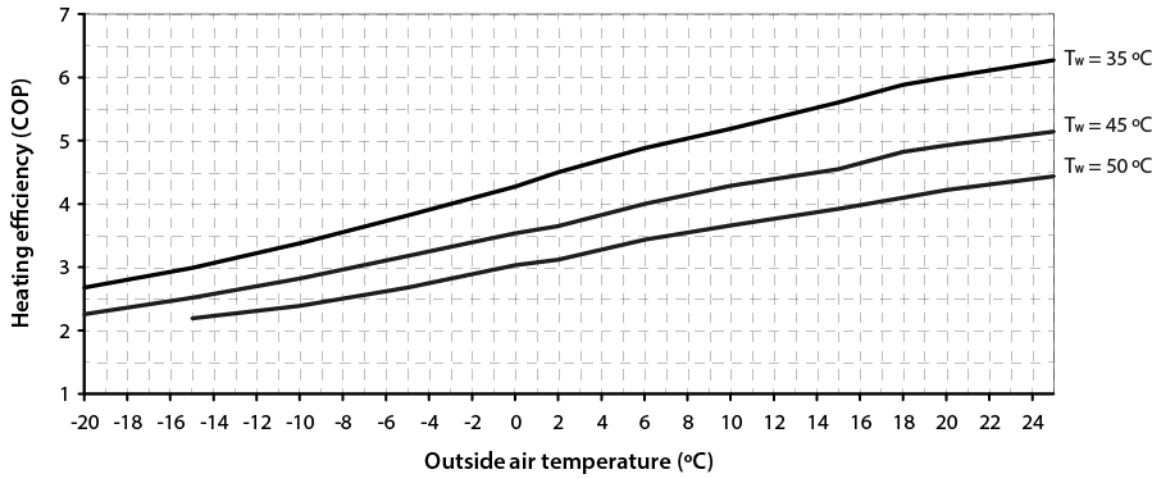


DUAL CLIMA 9R

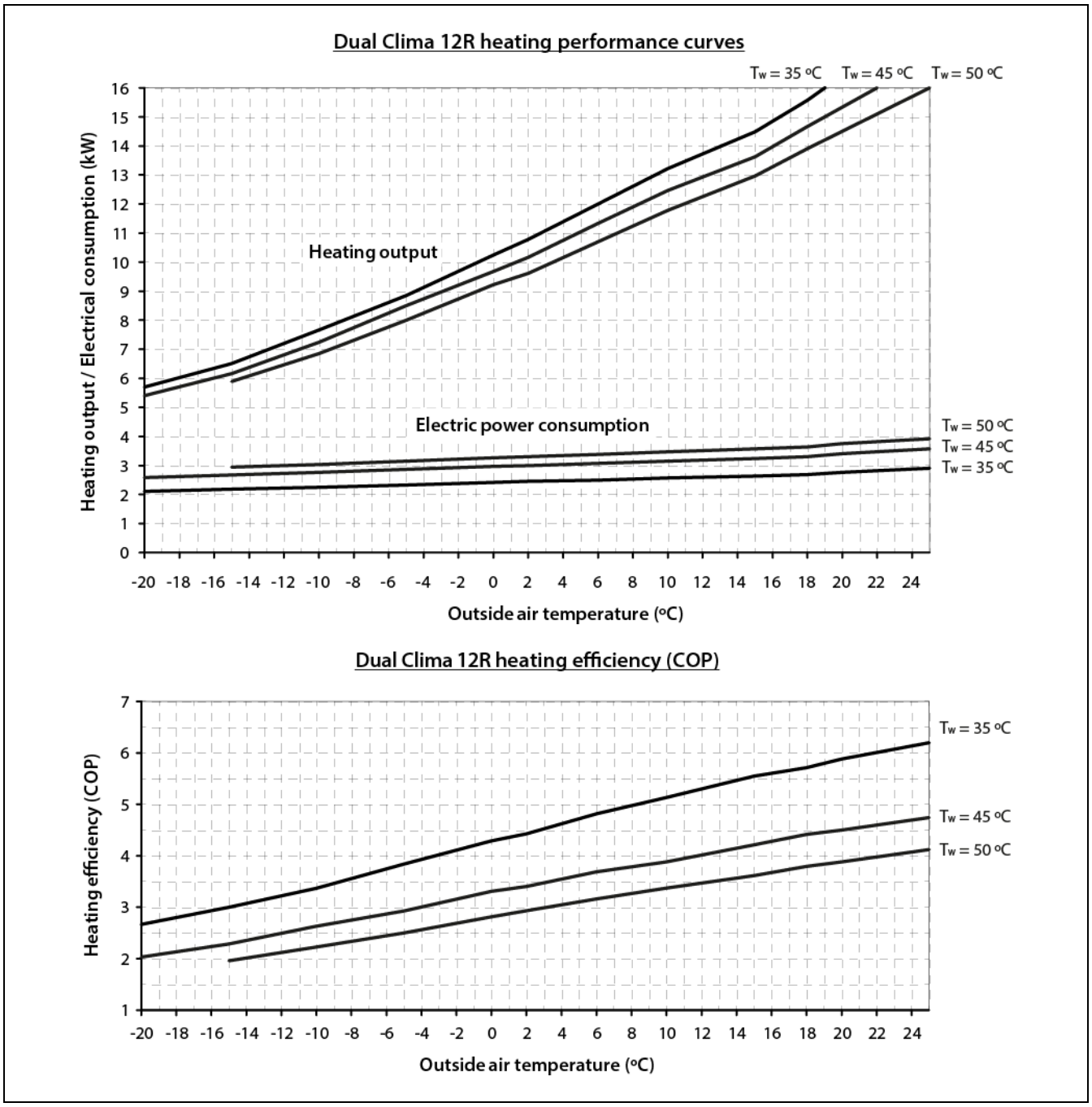
Dual Clima 9R heating performance curves



Dual Clima 9R heating efficiency (COP)

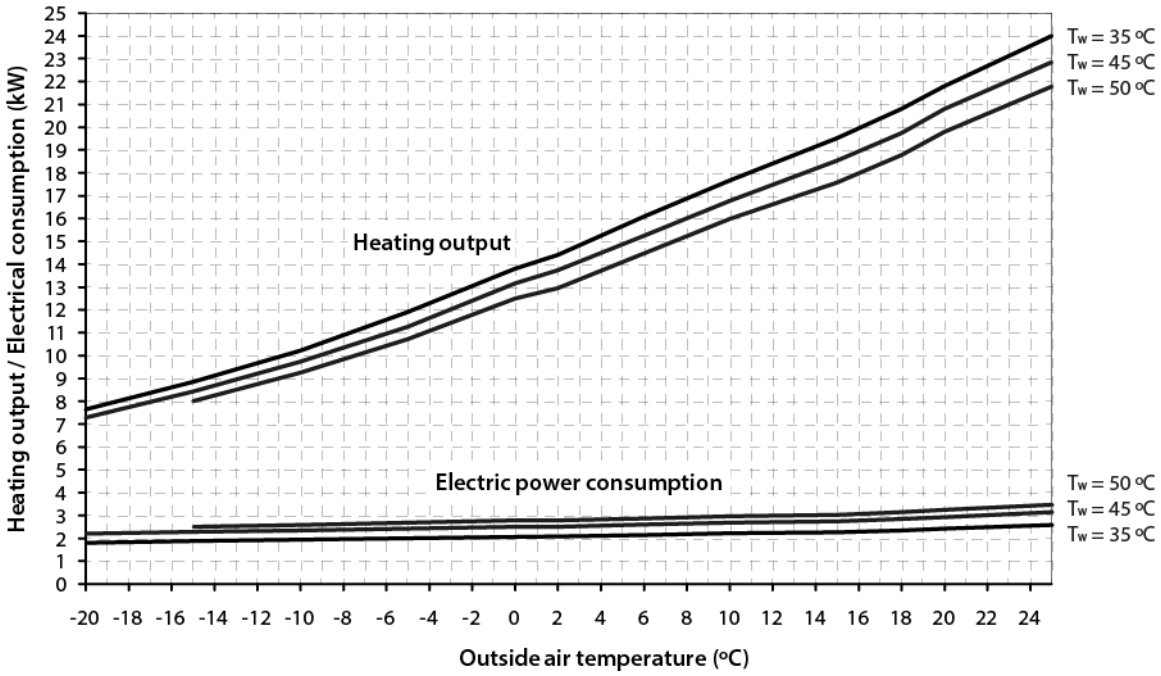


DUAL CLIMA 12R

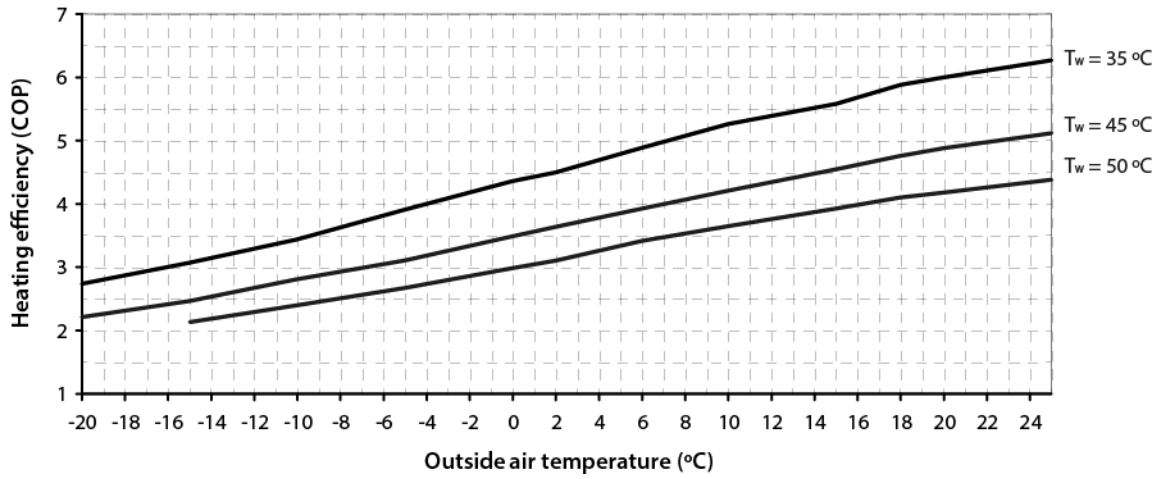


DUAL CLIMA 16R

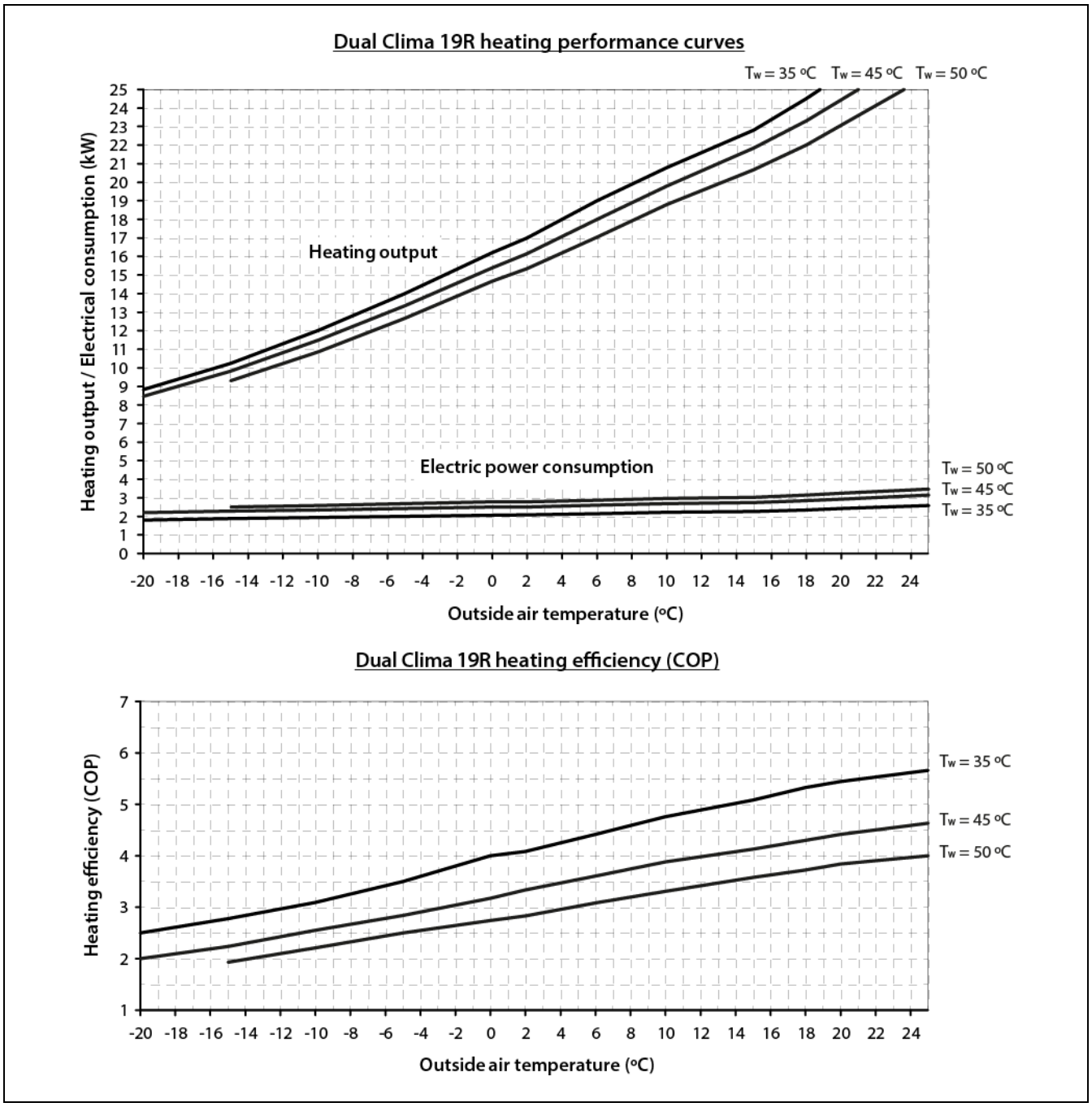
Dual Clima 16R heating performance curves



Dual Clima 16R heating efficiency (COP)

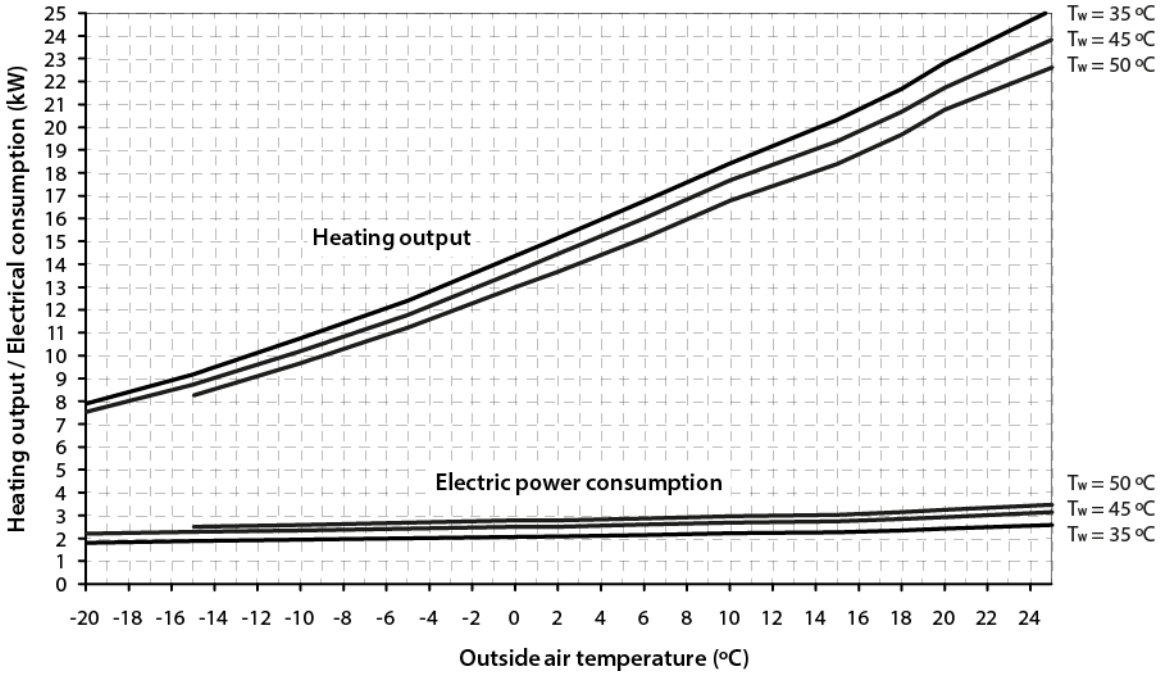


DUAL CLIMA 19R

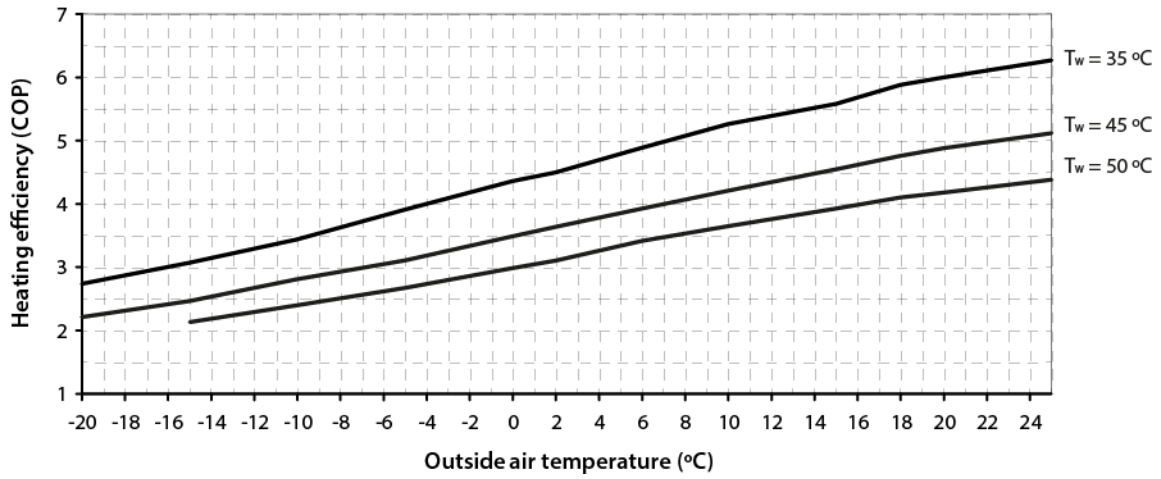


DUAL CLIMA 16RT

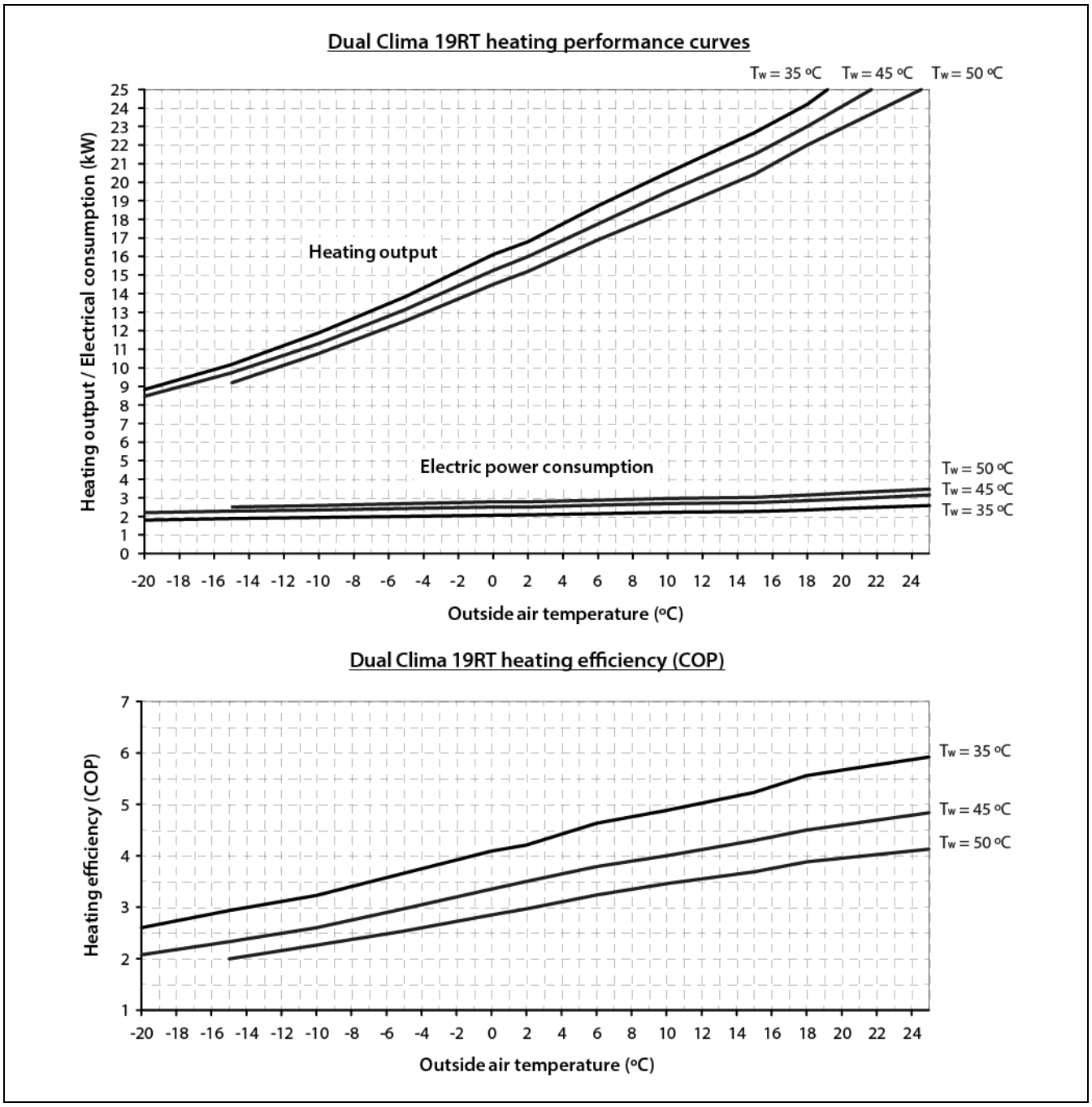
Dual Clima 16RT heating performance curves



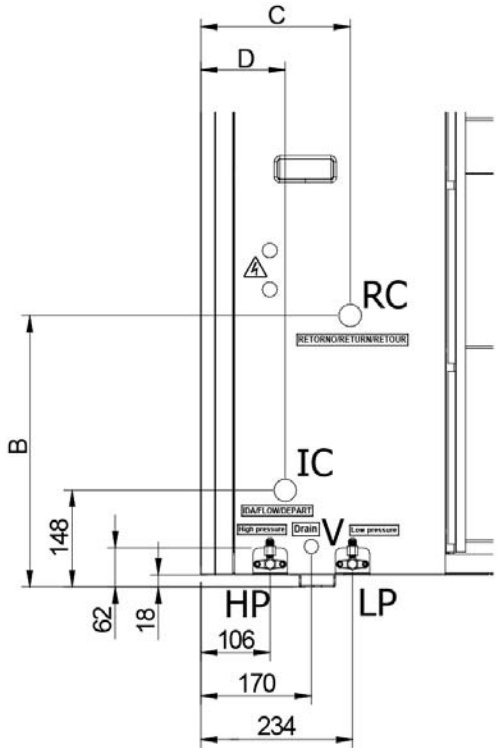
Dual Clima 16RT heating efficiency (COP)

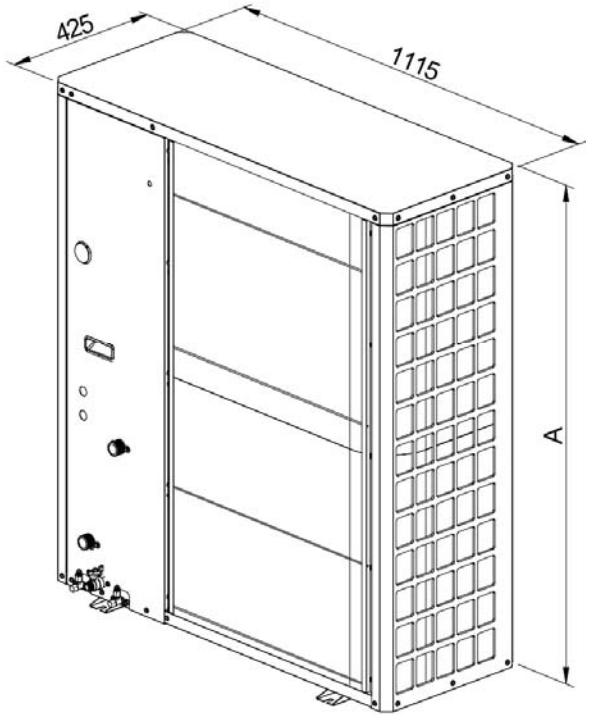


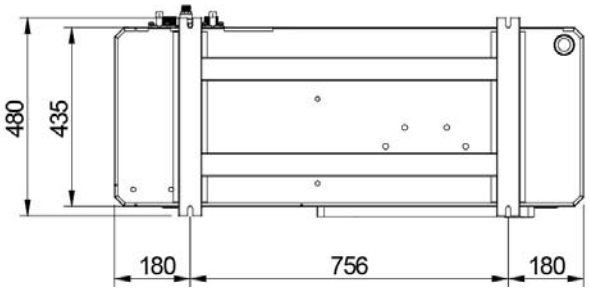
DUAL CLIMA 19RT



18 DIAGRAMS AND MEASUREMENTS







	DUAL CLIMA 6R	DUAL CLIMA 9R	DUAL CLIMA 12R	DUAL CLIMA 16R	DUAL CLIMA 19R	DUAL CLIMA 16RT	DUAL CLIMA 19RT
A (mm)	710	710	960	1280	1280	1280	1280
B (mm)	402	402	419	419	419	419	419
C (mm)	130	130	230	230	230	230	230
D (mm)	230	230	130	130	130	130	130
IC: Flow Heating/Cooling	1″			1-1/4″			
RC: Return Heating/Cooling	1″			1-1/4″			
V: Draining the water circuit	1/2"						

HP: Gas circuit high-pressure outlet.

LP: Gas circuit low-pressure outlet.

19 ALARM CODES

The **DUAL CLIMA R** heat pump has an electronic controller that performs continuous self-testing to detect any pump malfunctioning. When the controller detects malfunctioning, this is indicated by an alarm code and the red light of the alarm indicator LED (**11**) on the control panel display.

Use the ERROR touch button (**4**) on the home screen to access the alarm codes menu in which all malfunctions detected by the heat pump are displayed.

To exit the menu and return to the home screen, press the touch button .



On this menu, the user can view the time and date of each of the detected alarm codes, reset the current alarm code, if any, and clear the complete history of malfunctions. The table below shows a list of the alarm codes that may appear:

Code	Alarm	Description
E01	Excess temperature in the compressor gas discharge.	The compressor discharge temperature safety has been activated. Contact the nearest official Technical Assistance Service.
E02	Outdoor temperature sensor failure.	Open circuit or short circuit in the outdoor temperature sensor. Contact your nearest official Technical Assistance Service to have it replaced.
E03	External heat exchanger temperature sensor failure.	Open circuit or short circuit in the external heat exchanger temperature sensor. Contact your nearest official Technical Assistance Service to have it replaced.
E04	Return temperature sensor failure.	Open circuit or short circuit in the return temperature sensor. Contact your nearest official Technical Assistance Service to have it replaced.
E05	Flow temperature sensor failure.	Open circuit or short circuit in the flow temperature sensor. Contact your nearest official Technical Assistance Service to have it replaced.
E06	DHW temperature sensor failure.	Open circuit or short circuit in the flow temperature sensor. Contact your nearest official Technical Assistance Service to have it replaced.
E07	Incorrect heat pump setting.	Check the SW1 of the control card and all parameters of the Service Menu. Contact your nearest official Technical Assistance Service to have it replaced.

Code	Alarm	Description
E08	Excess temperature in the external heat exchanger.	The external heat exchanger temperature safety has been activated. Contact your nearest official Technical Assistance Service.
E09	Antifreeze function in Heating/Cooling mode.	The antifreeze function in heating/cooling mode has been activated twice in 90 minutes. Disconnect and reconnect the power supply of the heat pump. If the alarm is triggered persistently repeatedly, contact the nearest official Technical Assistance Service.
E10	Antifreeze function in DHW mode.	The antifreeze function in DHW mode has been activated twice in 60 minutes. Disconnect and reconnect the power supply of the heat pump. If the alarm is triggered persistently repeatedly, contact the nearest official Technical Assistance Service.
E11	Indoor exchanger temperature probe failure.	Open circuit or short circuit in the internal heat exchanger temperature sensor. Contact your nearest official Technical Assistance Service to have it replaced.
E12	Incorrect heat pump setting.	Check the SW1 of the control card and all parameters of the Service Menu. Contact your nearest official Technical Assistance Service to have it replaced.
E13	Incorrect heat pump setting.	Check the SW1 of the control card and all parameters of the Service Menu. Contact your nearest official Technical Assistance Service to have it replaced.
E14	Suction temperature probe failure.	Open or short circuit of the suction temperature probe. Contact your nearest official Technical Assistance Service to have it replaced.
E15	Discharge temperature probe failure.	Open circuit or short circuit of the discharge temperature probe. Contact your nearest official Technical Assistance Service to have it replaced.
E16	Room sensor failure.	Open circuit or short circuit in the room sensor. Contact your nearest official Technical Assistance Service to have it replaced.
E17	Failure to read the flow temperature probe or antifreeze activated 3 times in 20 minutes.	Failure to read the flow temperature probe or antifreeze activated 3 times in 20 minutes. Disconnect and reconnect the power supply of the heat pump. If the alarm is triggered persistently repeatedly, contact the nearest official Technical Assistance Service.
E18	Low temperature difference between flow and return.	Excessively low temperature difference between the flow and return temperature probes. Check the installation and disconnect and reconnect the power supply of the heat pump. If the alarm is triggered persistently repeatedly, contact the nearest official Technical Assistance Service.
F01	Voltage protection.	The voltage of the power supply is too high, too low, or unstable. The heat pump will recover when the voltage is within the value range allowed by the heat pump: 185-265 V AC for simple phase models 340-440 V AC for three phase models
F02	IPM PFC module failure.	Error in the IPM module or incorrect cable connection. Disconnect and reconnect the power supply of the heat pump. If the alarm is triggered persistently repeatedly, contact the nearest official Technical Assistance Service.

Code	Alarm	Description
F03	Abnormal stop of the compressor.	The compressor stops abnormally. Contact your nearest official Technical Assistance Service.
F04	Sensor of the IPM module.	Open circuit or short circuit in the temperature sensor. Contact your nearest official Technical Assistance Service to have it replaced.
F05	Current sensor of the outdoor unit.	Failure of the internal ammeter of the machine or the power cable does not cross it. Contact your nearest official Technical Assistance Service to have it repaired.
F06	IPM Module failure.	IPM Module failure. For repair, contact the nearest Official Technical Assistance Service.
F07	Compressor start failure.	The compressor cannot start properly. Contact your nearest official Technical Assistance Service.
F08	Overcurrent protection.	The electric current of the compressor is too high. Contact your nearest official Technical Assistance Service.
F10	Overcurrent on the PFC module.	The electrical current in the PFC module is too high. Contact your nearest official Technical Assistance Service.
F11	Overcurrent in the IPM module.	The electrical current in the IPM module is too high. Contact your nearest official Technical Assistance Service.
F12	IPM communication failure.	Communication is not good in the IPM Module. For repair, contact the nearest Official Technical Assistance Service.
F13	Low voltage in the IPM Module.	Low voltage in the IPM Module. For repair, contact the nearest Official Technical Assistance Service.
F14	Fan motor 1 failure.	Fan motor 1 failure. For repair, contact the nearest Official Technical Assistance Service.
F15	Fan motor 2 failure.	Fan motor 2 failure. For repair, contact the nearest Official Technical Assistance Service.
P01	High pressure protection.	The high-pressure switch has been activated. Disconnect and reconnect the power supply of the heat pump. If the alarm is triggered persistently repeatedly, contact the nearest official Technical Assistance Service.
P02	Low pressure protection.	The low-pressure switch has been activated. Disconnect and reconnect the power supply of the heat pump. If the alarm is triggered persistently repeatedly, contact the nearest official Technical Assistance Service.
P03	Disconnect and reconnect the power supply of the heat pump.	The discharge thermostat has been activated. Disconnect and reconnect the power supply of the heat pump. If the alarm is triggered persistently repeatedly, contact the nearest official Technical Assistance Service.
P05	Insufficient water flow.	The water flow meter of the machine detects a lower water flow than that allowed for each moment of the heat pump (see "Hydraulic Installation"). Disconnect and reconnect the power supply of the heat pump. If the alarm is triggered persistently repeatedly, contact the nearest official Technical Assistance Service.
P06	Incorrect heat pump setting.	Check the SW1 of the control card and all parameters of the Service Menu. Please contact your nearest official Technical Assistance Service to have it replaced.
P07	Lack of phase.	Error in the power supply. Contact your nearest official Technical Assistance Service to have it repaired.

Code	Alarm	Description
P09	Incorrect heat pump setting.	Check the SW1 of the control card and all parameters of the Service Menu. Please contact your nearest official Technical Assistance Service to have it replaced.
P10	Incorrect heat pump setting.	Check the SW1 of the control card and all parameters of the Service Menu. Please contact your nearest official Technical Assistance Service to have it replaced.
P11	Incorrect heat pump setting.	Check the SW1 of the control card and all parameters of the Service Menu. Please contact your nearest official Technical Assistance Service to have it replaced.
P12	Incorrect heat pump setting.	Check the SW1 of the control card and all parameters of the Service Menu. Please contact your nearest official Technical Assistance Service to have it replaced.
P13	Incorrect heat pump setting.	Check the SW1 of the control card and all parameters of the Service Menu. Please contact your nearest official Technical Assistance Service to have it replaced.

NOTE: It will be very useful for the technical assistance service if you can inform them of the alarm code that has appeared on call-out.

20 WARRANTY CONDITIONS

DOMUSA TEKNIK's **commercial guarantee**(*) covers the standard functioning of the products manufactured by **DOMUSA Calefacción S.Coop.**, in accordance with the following conditions and time periods:

1. This commercial guarantee is valid for the following periods, as from the start-up date:

   2 Years for electric and hydraulic elements: pumps, valves, etc.

   5 years for heat pump compressors.

   10 Years for the stainless steel tank of the FUSION models.

   During the 2-year period following the start-up date, **DOMUSA TEKNIK** will carry out any repairs of original flaws or defects totally free of charge.

   After these 2 years have elapsed and until the end of the guarantee period, labour costs and call-out charges will be payable by the user.

2. The annual overhaul is not included in the terms of this guarantee.

3. Sufficient access must be provided for the maintenance and repair of the heat pumps. Expenses arising from faulty access are not included in the terms of this warranty.

4. The **start-up** and annual overhaul are to be carried out by personnel authorised by **DOMUSA TEKNIK**.

5. The **commercial guarantee** will be null and void in the following cases:
   - The obligatory annual maintenance has not been carried out according to what is specified in the RITE.
   - The heat pump has not been installed respecting the laws and regulations in force on the matter.
   - The commissioning has not been carried out immediately after installation, by personnel authorized by **DOMUSA TEKNIK**.

Failures due to misuse or incorrect installation, use of non-suitable electrical power or fuel, supply with water with physical or chemical properties causing incrustation or corrosion, incorrect handling of the appliance and, in general, for any reason beyond **DOMUSA TEKNIK**'s control, are excluded from this guarantee.

This guarantee does not affect the consumer's rights as stipulated by law.

NOTES:

NOTES:

NOTES:

DOMUSA
TEKNIK

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CDOC002336 20/10/22

www.domusateknik.com

DOMUSA TEKNIK reserves the right to make modifications of any kind to its product characteristics without prior notice.