

SUNEX<sup>®</sup>



# ***Operating Manual***

*Heat pump* **DROPS D4.2 (C)**

V 2.05/2023

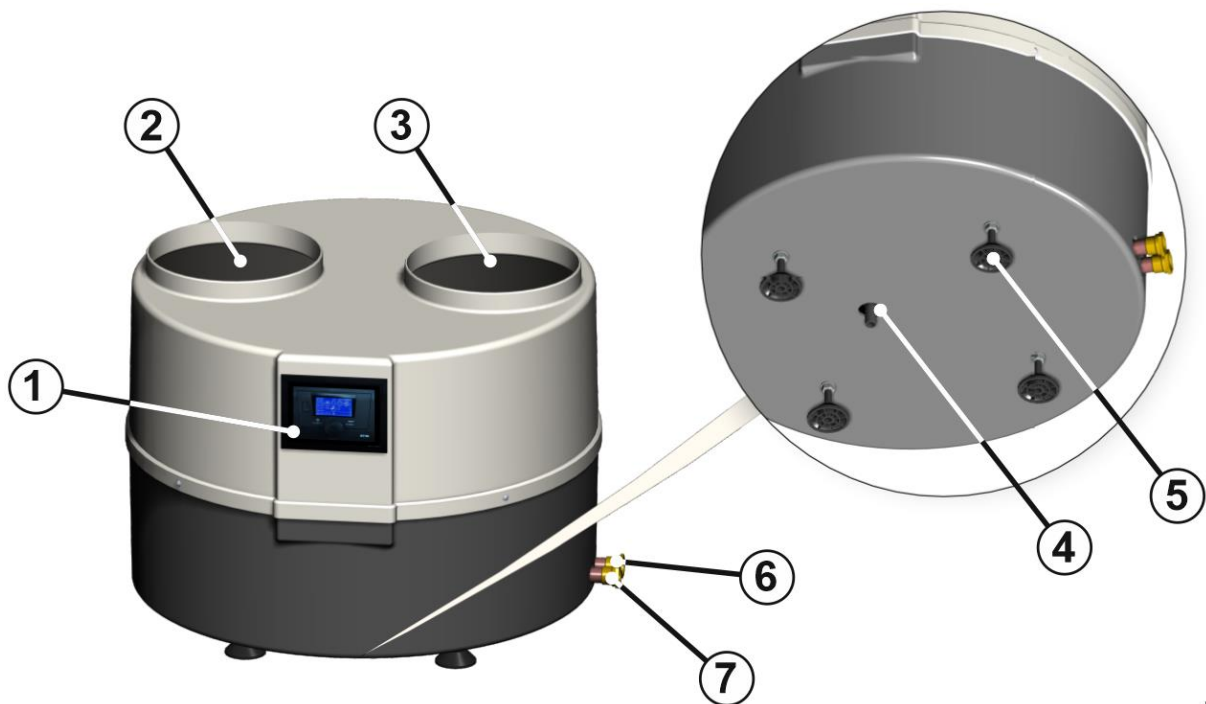


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## 1. Heat pump

The DROPS D4.2(C) heat pump is an appliance designed for heating domestic water. It uses a rotary compressor optimised for high condensing temperatures, i.e. high hot water heating temperatures. The air flow through the lamella exchanger is forced by a modern, efficient and energy-saving fan. The water is heated in a stainless steel plate heat exchanger and the water circulation is forced by a circulation pump installed in the heat pump - also suitable for direct use with domestic water. A controller with an algorithm optimised for the DROPS D4.2(C) heat pump design ensures correct operation of the heat pump. The casing is made of ABS plastic. All the above-mentioned features and components contribute to the high quality and efficiency of the heat pump.

## 2. Heat pump design



- 1- Controller, 2- air outlet, 3- air inlet, 4- condensate drain connection, 5- heat pump feet,  
6- hot water outlet, 7- cold water entry

The supply cable and the tank and buffer sensor are located at the rear of the unit.

## 3. Installation of the heat pump

### 3.1. Precautions when installing the unit

The installation of the heat pump should be carried out by a person qualified in heating and cooling equipment. Country-specific health and safety regulations must be observed during installation.

### 3.2 Installation recommendations

The DROPS D4.2(C) heat pump should be installed in a room where the air temperature does not fall below + 5°C. If there is a risk of the temperature falling below +5°C, the water circuit between the heat pump and the tank must be drained and the system must be well blown, e.g. with compressed air.

**The heat pump must be levelled using height-adjustable feet during installation. Failure to do so may result in faulty operation and ultimately damage the unit.**

Distances from partitions (walls, ceilings, etc.) must be maintained to enable trouble-free maintenance work on the heat pump. There is a condensate drain connection at the bottom of the heat pump housing to which a drain hose must be connected. It is recommended to drain the condensate into the sewer and to use a siphon.

### 3.3 Connection of hydraulic circuit

The heat pump has a built-in automatic vent, which ensures that the condenser and also the entire heating circuit is vented. The pipework between the heat pump and the cylinder should have an internal diameter of min. 20 mm.

**The heat pump should be connected to the system with flexible pipes.**

**A sloped filter must be installed on the return water line to the heat pump!!!**

**Pipes should be insulated along their entire length!!!**

#### **IMPORTANT!!!**

- **The temperature difference between the supply and return of the heating circuit should be 5-8K**
- **The heat pump should be connected to the power supply at all times. This applies if the DHW tank is heated by another heat source. Standby mode should be activated on the controller. All protection functions are then performed: condenser protection, DHW tank anti-freeze, pump anti-stop function.**
- **it is forbidden to use galvanised components in the circuit in which the heat pump operates and in the water system supplied from the wells**

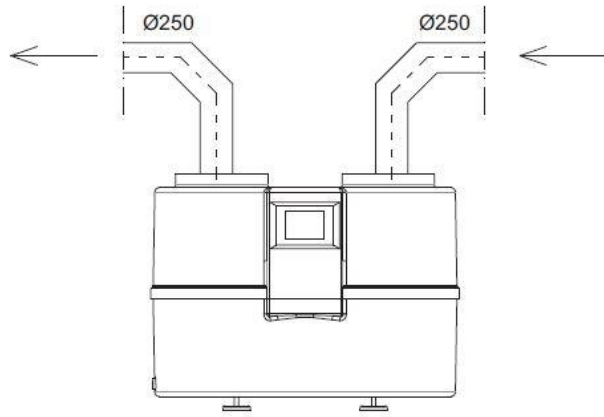
### 3.4 Air duct connection

The heat pump has two air duct connections. The internal diameter of the air ducts shall be min. 250 mm. The installation of insulated air ducts is recommended. Maximum air duct lengths: 8 m.

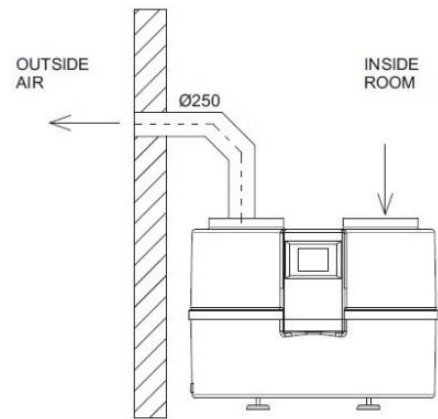
**Attention: The use of smaller diameter air ducts may result in a decrease in performance. If the air ducts are connected to the outside of the building, protection against air circulation must be provided during the winter period (sub-zero temperatures) when the heat pump is out of operation.**

An ISO Coarse (ISO Coarse) filter compliant with the currently applicable ISO 16890 standard or a G2 class filter (compliant with the withdrawn EN 779:2012 standard) should be fitted to the heat pump suction duct.

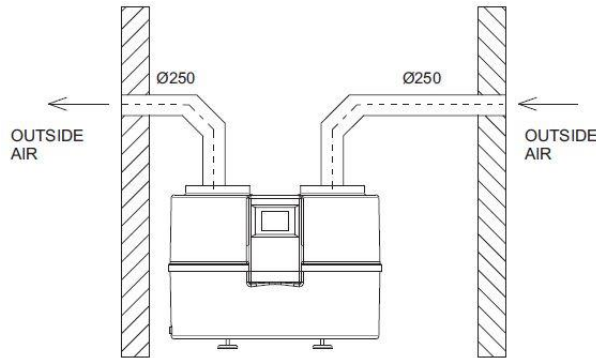
Air drawn from one room and ejected into another room



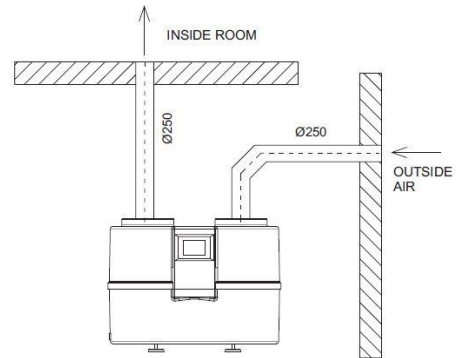
Air drawn from a room and ejected through the wall of another room



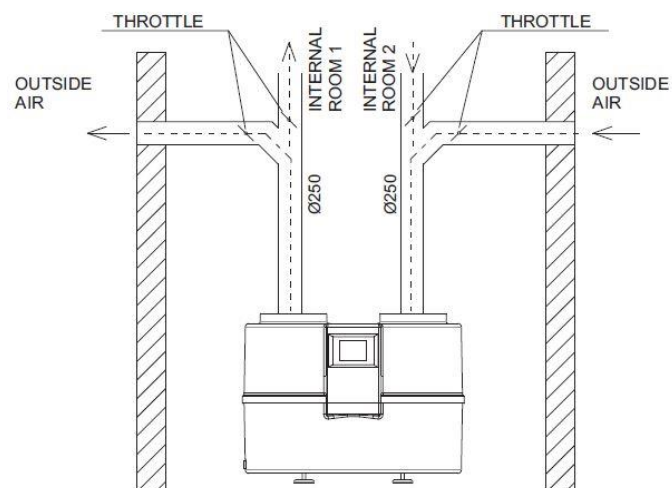
Air drawn in from outside through the wall and ejected outside through the wall

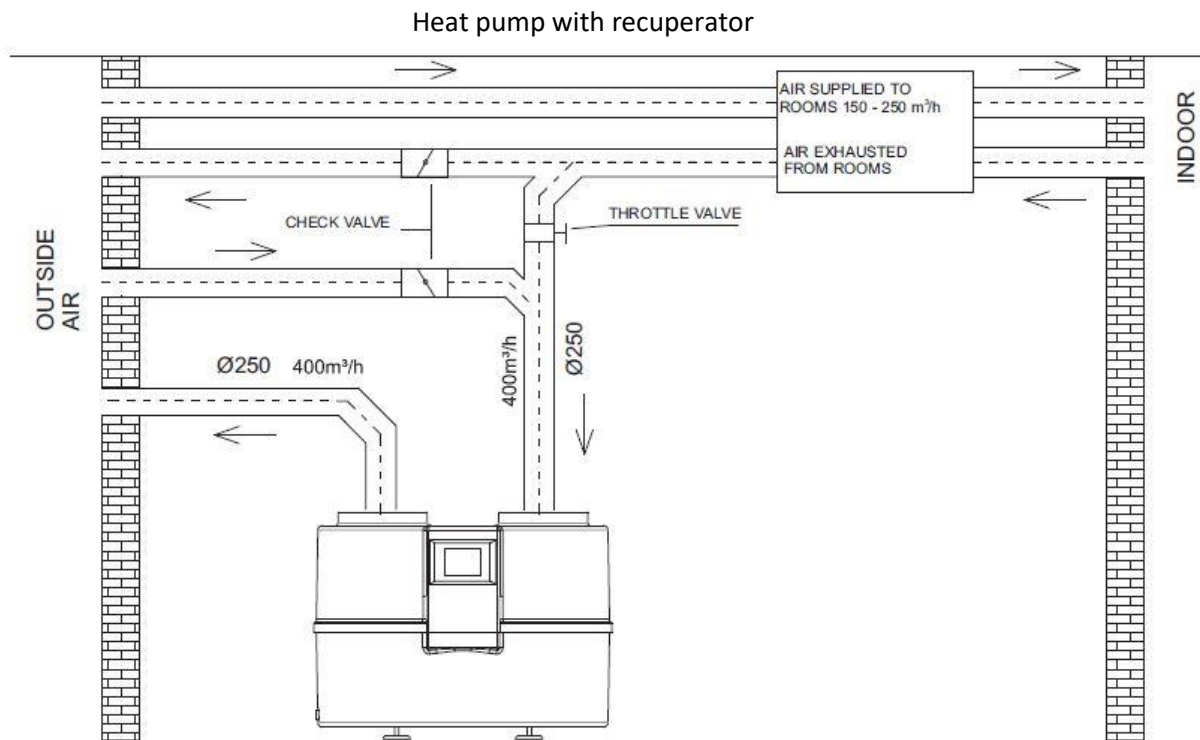


Air drawn in from outside through the wall and exhausted to the outside through the roof



Separation of intake and exhaust air





The heat pump and recuperation unit operate independently of each other, so the ventilation ducts should also be separated. The idea is that when the recuperation unit is running and the heat pump is not, the air will flow freely to the ventilation outlet and not to the heat pump. This would reduce the efficiency of the recuperation unit fan.

**Attention:** In addition, it is permissible to draw air in and out of the room in which the pump is installed. However, this may result in a reduction in energy efficiency.

### 3.5 Electrical connection

The heat pump is supplied with 1~230V/50 Hz. It has a plug with a 1.5 m cable as standard.

**Important:** It is recommended that the electrical supply circuit of the heat pump is equipped with an overcurrent circuit breaker with characteristic C and a residual current circuit breaker with a rated residual trip current of 0.03 A.

**Attention:** All work associated with the installation of the aforementioned safety features must be carried out by authorised and qualified personnel. As standard, a 2kW electric heater can be connected to the heat pump. If it is necessary to install a more powerful heater, the supply cable must be replaced.

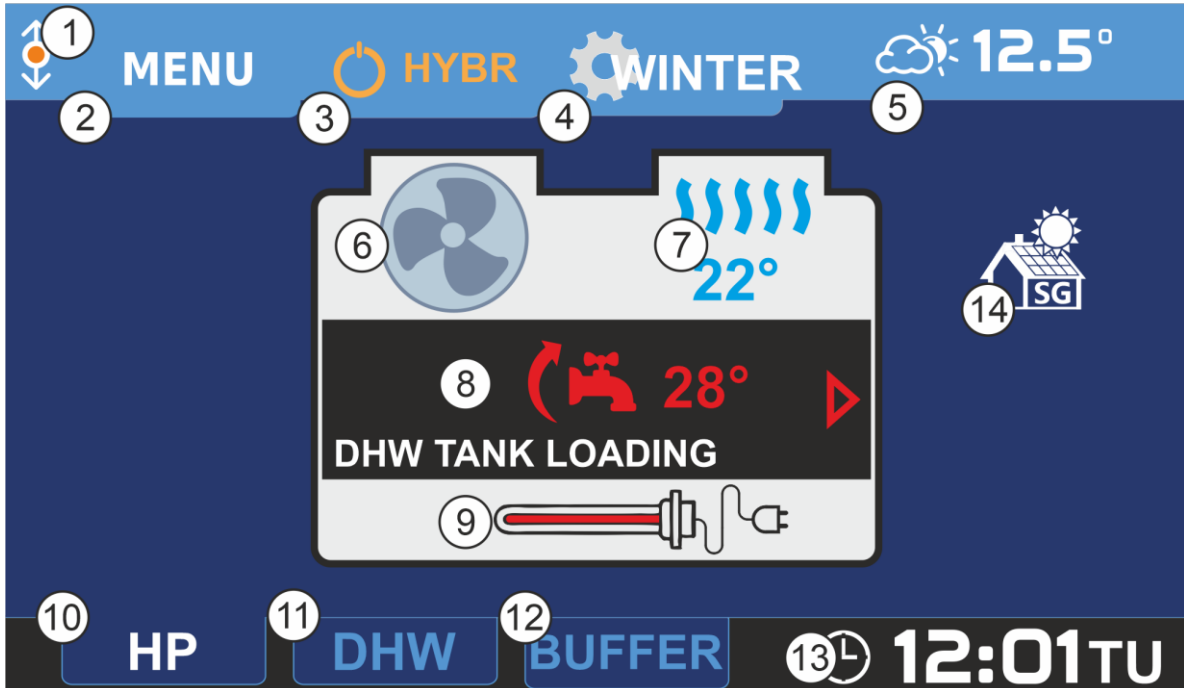
**Attention:** The sensor cable can be extended up to 10m. For its extension, a cable of type H03VV-F 2x0.5mm<sup>2</sup> or similar parameters can be used, for example.

**If the heat pump controller does not work, first check the fuse on the circuit supplying the heat pump and then the fuse located on the control board inside the heat pump. The heat pump housing must be partially dismantled for this purpose.**

## 4. Controller screen description

### 4.1 Main screen

Touching the Heat Pump graphic takes you to a detailed information screen.



1. Signalling of digital communication via C14 protocol. A flashing orange dot indicates communication.
2. Enter MENU.
3. Heat pump operation selection.
4. Selection of the installation mode.
5. Current outside temperature. Touching the button displays a graphic with the recorded outdoor temperatures over the last 24 hours.
6. Rotating fans symbolise HP operation.
7. Evaporator temperature.
8. Information on the pump's current operating status.
9. Electric heater symbol, the red colour of the heater indicates its operation.
10. Switching to the home screen (HP).
11. Switching to the DHW screen.
12. Switching to the buffer screen.
13. Current time. Touching the button takes you to the time and calendar settings.
14. Active SG mode.

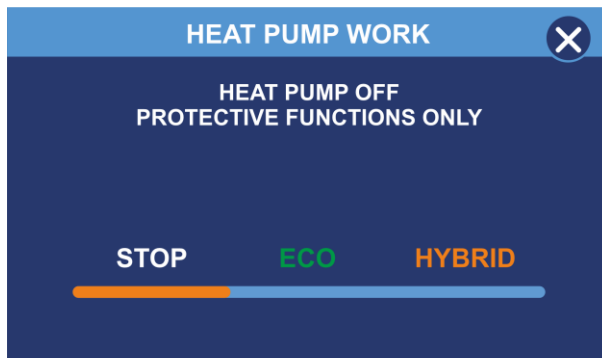
### 4.2 User menu



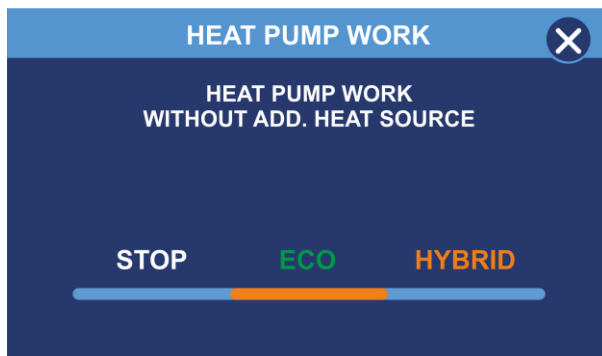
1. System settings button. Allows you to change the system settings.
2. Service settings button (Chapter 5).
3. A button for the 'cleaning' function that allows the screen to be locked for 30 seconds in order to clean the screen.



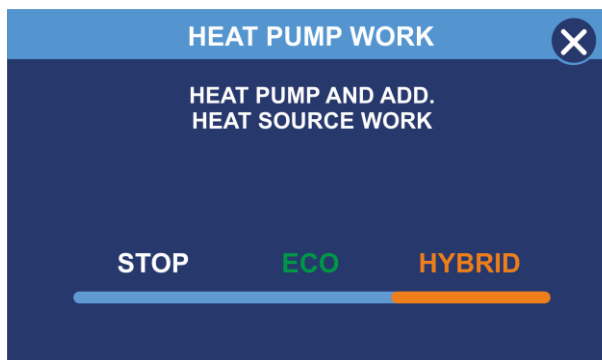
### 4.3 Changing the operating mode



**STOP mode** - heat pump off.










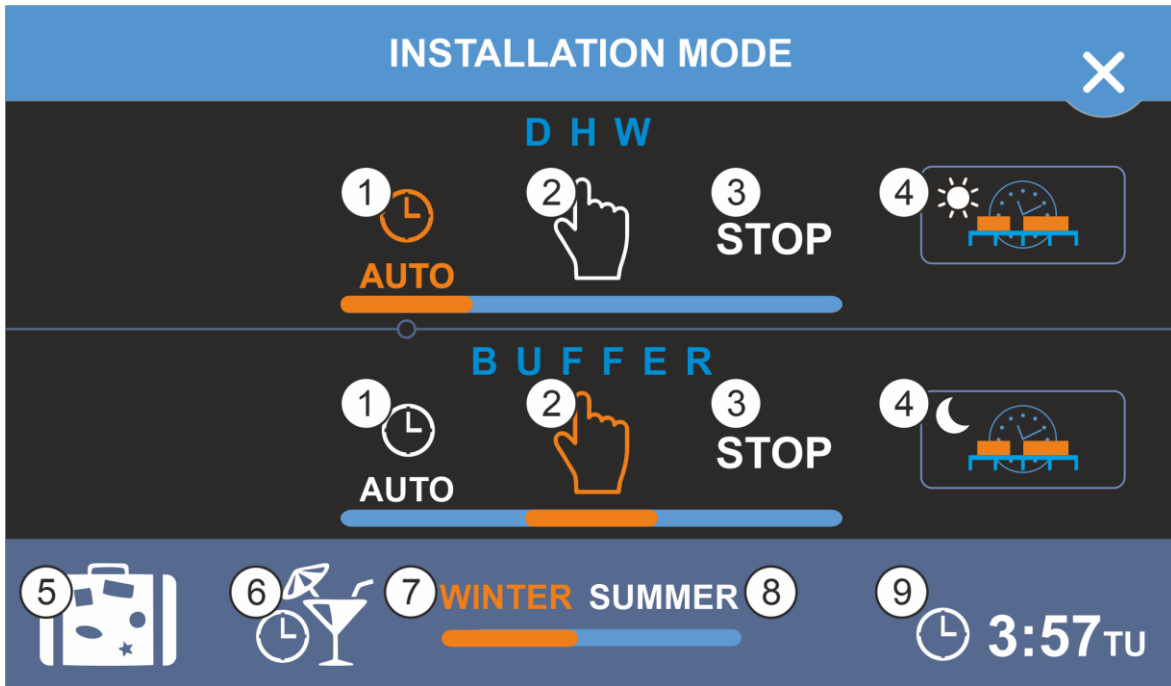
**ECO mode** - the DHW and buffer setpoint temperatures can only be set up to the heat pump maximum temperature. The electric heater is only switched on if the additional DHW tank charging is active or a pump emergency has occurred.



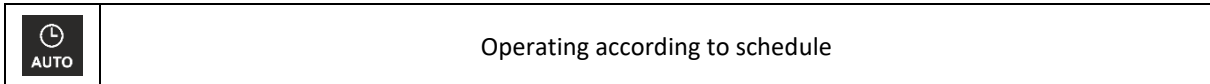
**HYBRID mode** - The DHW setpoint temperature can be set above the maximum temperature of the heat pump. When charging the tank, the heat pump operates up to the maximum operating temperature. Above this temperature, the heater is switched on.

### 4.4 Meaning of the icons displayed in the controller

	Holiday mode
	Eco mode reduced temperature
	Manual mode
	SG mode
	Comfort mode
	Holiday mode
	Fast charging of the DHW tank (heat pump + heater)

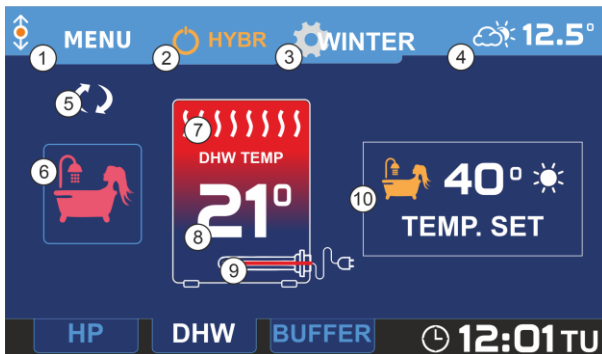


1. Operating with a schedule.
2. Manual operation (fixed temperature).
3. Stop circuit operation.
4. Setting the schedule.
5. Holiday mode.
6. Holiday mode.
7. Winter mode (buffer and DHW operation).
8. Summer mode (DHW only operation).
9. Date and time change.



#### 4.5 Installation mode

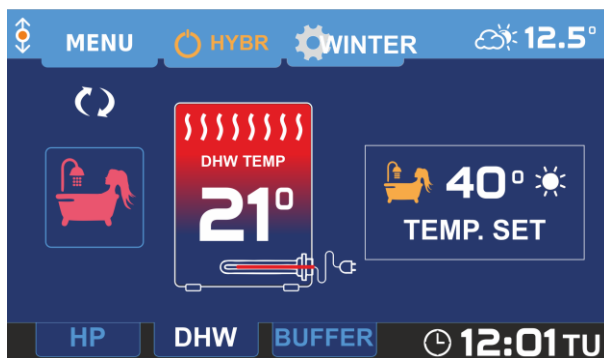
#### 4.6 Parameter settings for the DHW circuit



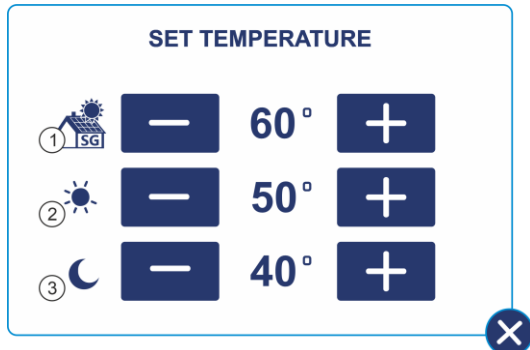
Press DHW on the main screen to enter edit mode and view DHW circuit parameters.

1. Enter MENU.
2. Select heat pump operation.
3. Select installation mode.
4. DHW operation schedule.
5. Symbol for the DHW circulation pump switched on.
6. Activation of additional source of DHW tank charging. When active, this function activates the available heat sources (HP and heater) to charge the DHW tank to the preset temperature as quickly as possible. Disables DHW circulation.
7. Charging the DHW tank with hot water.
8. Current measured temp. of DHW tank.
9. Electric heater symbol. The red colour of the heater indicates its operation.
10. Set temperature of DHW tank depending on the selected DHW operation mode.

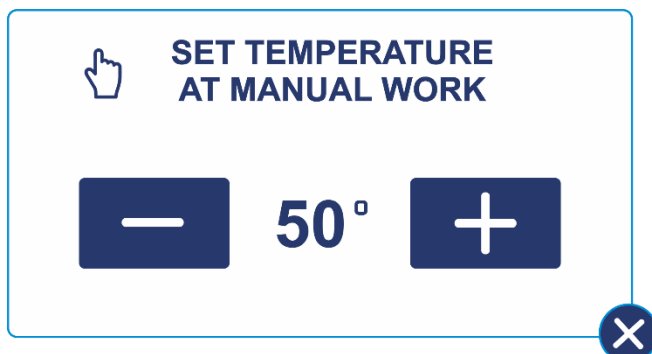
#### 4.6.1 Setting the desired temperature for the DHW circuit



The window for setting the desired temperature is displayed by pressing TEMP. SET. Depending on the selected mode of operation of the circuit, the appropriate preset temperature is set: In the STOP mode of operation, the possibility of changing the temperature setpoint is disabled, the controller displays the setpoint temperature of 0°C.

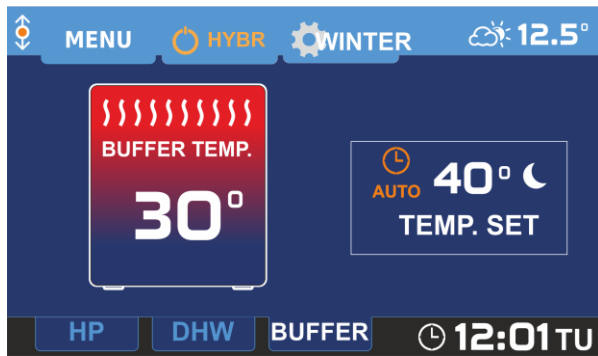


In the clock zone mode, the controller allows you to set the desired temperature of the DHW circuit for the collaboration with the SG mode (1), the comfort zone - without decrease (2) and for the ECO zone - with decrease (3).



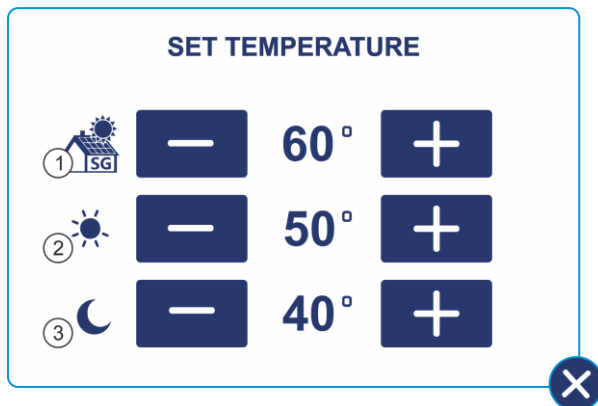
Temperature setting window for manual operation

## 4.7 Setting the buffer circuit parameters

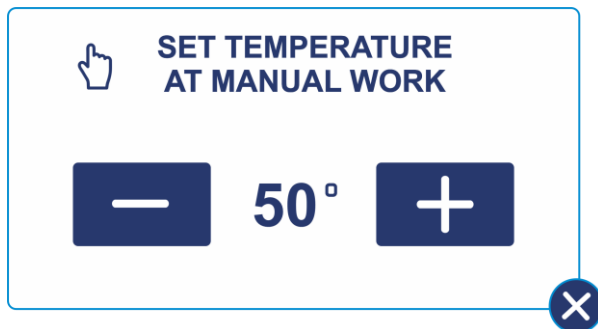


The window for setting the desired temperature is displayed by pressing TEMP. SET. Depending on the selected operation mode of the circuit, the appropriate preset temperature is set:

In the STOP operating mode, the possibility of changing the temperature setting is disabled, the controller displays the set temperature of 0°C.

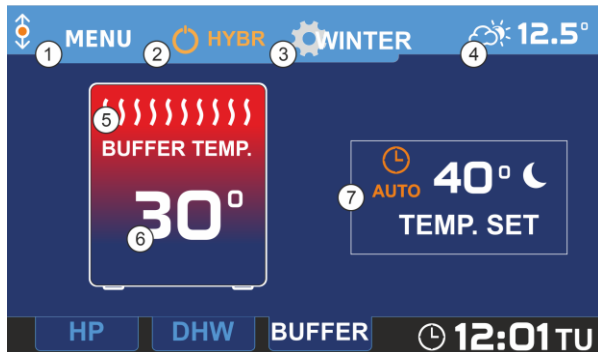


In the clock zone mode, the controller allows you to set the setpoint temperature of the buffer circuit for the collaboration with the SG mode (1), the comfort zone - without decrease (2) and for the ECO zone - with decrease (3).



Temperature setting window for manual operation

### 4.7.1 Setting the setpoint temperature for the buffer circuit



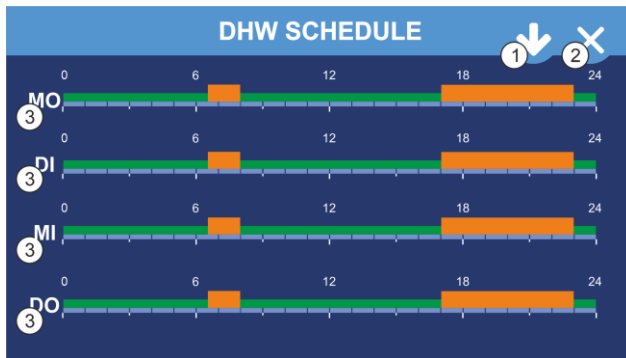
To enter the edit mode and view the BUFOR circuit parameters, press the BUFOR button on the main screen, the controller screen will display the BUFOR circuit information screen.

1. Entering the MENU.
2. Heat pump operation selection
3. Selection of installation mode.
4. Outdoor temperature diagram.

5. Charging the buffer with hot water.
6. Current measured buffer temp.
7. Setting the buffer setpoint temperature depending on the selected buffer mode.

## 4.8 Setting the schedule

The R480 controller allows a schedule to be set for weekdays (Monday - Friday), Saturday and Sunday. It is possible to set 2 heating zones, between the heating zones is a setback zone. In the setback zone, the controller maintains the temperature reduced by the value of the correction set in the Setback parameter. The schedule settings for each circuit are only available when the circuit is in the Clock Operation mode. To set the schedule for a selected circuit (DHW, BUFFER), select the mode: Operation By Clock and then press the button on the information screen for the circuit in question: then use the sliders to set the setback zones for the selected days.



1. Display of the schedule for the remaining days of the week.
2. Exit to home screen
3. Edit the schedule for individual days.

### 4.8.1 Edit weekly schedule



Clicking on the bar of the selected schedule takes you to the editing window where you can set the time and duration of the work zone for the selected day of the week.

1. Weekly schedule for copy window.
2. Exit schedule editing.
3. Timeline of the schedule for the day. Orange rectangles indicate the daytime comfort zone, green rectangles indicate the ECO zone.
4. Edit start of Comfort Zone I. The rectangle indicates the zone currently being edited.
5. Edition of the end of Comfort Zone I.
6. Edition of the start of Comfort Zone II
7. Edition of the completion of Comfort Zone II.
8. Increasing values.
9. Downscaling.

### 4.8.2 Copy schedule

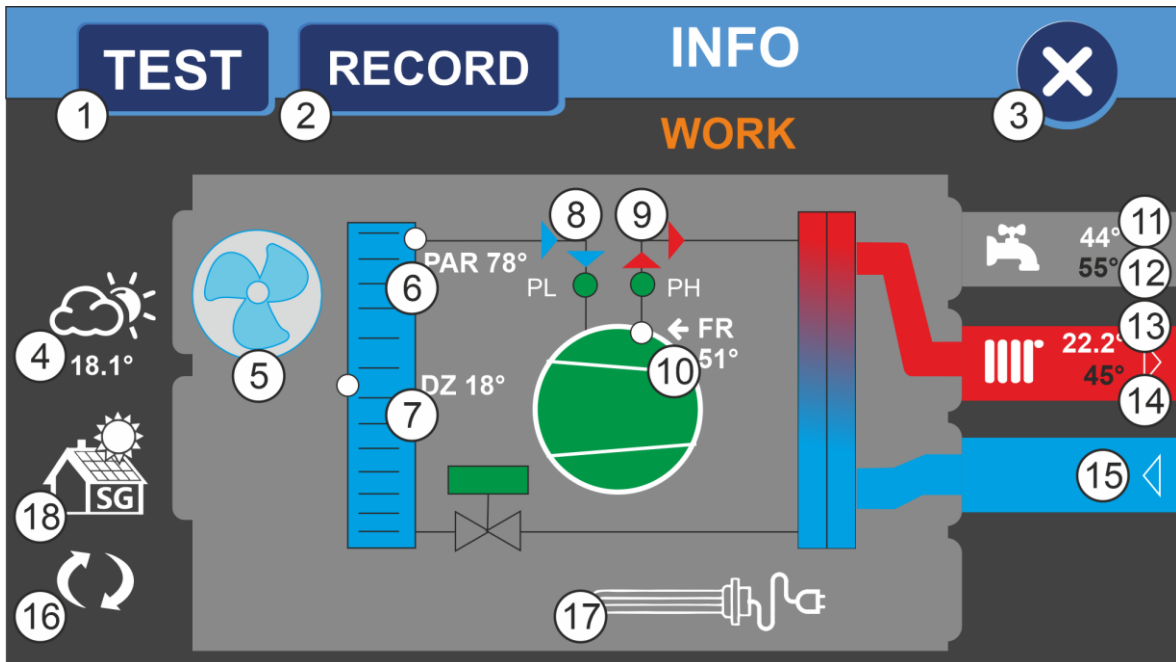
To speed up and facilitate the setting of the schedule, it is possible to copy the settings for successive days of the week. Select the day of the week for which the schedule will be copied to the next selected days and use the copy button to copy the settings.



1. Exit from the schedule copy window.
2. The day from which the schedule will be copied.
3. Selected days for which the schedule will be copied.
4. Button to start copying.

#### 4.9 Information screen

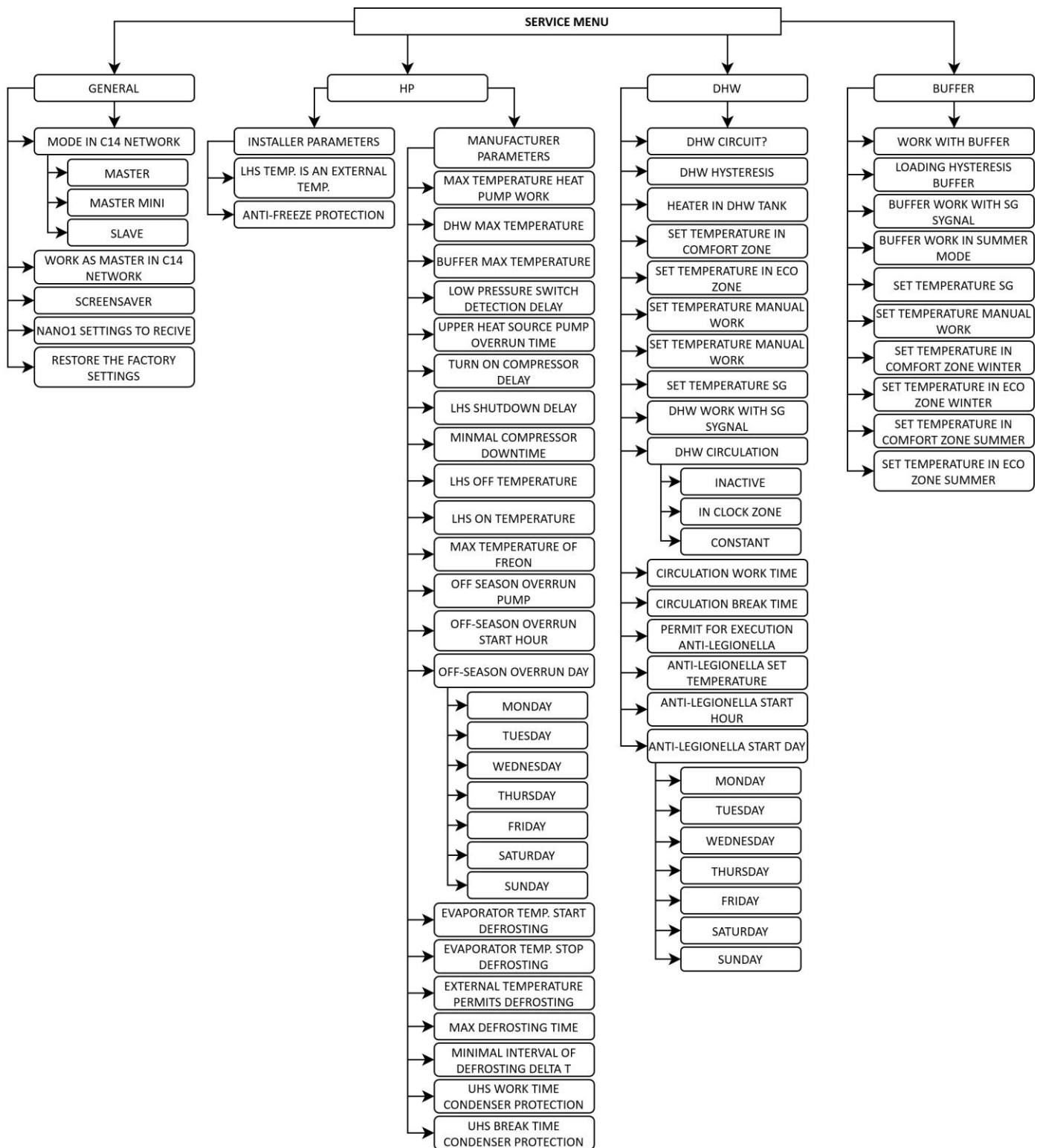
The controller allows you to read out the current parameters and the status of key heat pump components. To call up the information screen, press the button with the image of the pump on the main screen.



1. Test mode trigger button (5511).
2. Register (history) of events.
3. Exit to home screen.
4. Current outdoor temperature.
5. Fan operation. The animation indicates fan operation.
6. Current evaporator temperature.
7. Current temperature bottom source.
8. Low pressure switch, green colour indicates correct status.
9. High pressure switch, green indicates correct status.
10. Current Freon temperature.
11. Current temperature in the DHW circuit.
12. Set temperature for DHW circuit.
13. Current temperature in the buffer circuit.
14. Setpoint temp. for the buffer circuit.
15. Information on the operation of the circulation pump.
16. Status of DHW circulation pump operation, white colour indicates DHW circulation pump on.
17. Electric heater operation status, colour red indicates operation of the heater.
18. SG mode active.

## 5. Service menu

### 5.1 Structure of the service menu



## 5.2 Service settings

To call up the service settings screen press the MENU button on the main screen, the screen will display the main menu screen where the SERVICE button must be pressed. Entering the service menu requires the service code to be entered, the service code consists of 4 digits and is entered using the numeric keypad on the screen. Once the access code has been correctly entered, the Service Menu will be displayed, divided into 4 groups in which the settings can be edited: System, Heat pump and DHW and buffer circuit settings.

### 5.3 System service

C14 NETWORK MODE	Setting the controller as the master in the C14 network
SCREENSAVER	Switching the screen saver on/off
ADOPTING THE OPERATION MODE HOLIDAY FROM NANO NO1	Receiving a command to enter holiday mode from NANO thermostat No. 1. Only if NANO has a number other than 1.
RESETTING TO FACTORY SETTINGS	Resets the unit's set-up and settings to the factory settings.

### 5.4 HP SERVICE

Pressing the HP button takes you to the heat pump service menu, which is divided into 4 parameter groups. Pressing the parameter group button enters the read and edit mode for the selected parameter group.

#### 5.4.1 Installer parameters

THE TEMPERATURE OF THE LOWER SOURCE IS THE OUTSIDE TEMPERATURE	Activating the function sets a common temperature for the lower source and the outside temperature.
ANTI-FREEZE PROTECTION	When the temperature of the DHW tank falls below the temperature set in this parameter, the DHW tank will be heated.

#### 5.4.2 Manufacturer's specifications

MAX. HEAT PUMP TEMPERATURE	Maximum temperature to which the water in the upper source will be heated, setting range from 0°C to 65°C.
MAXIMUM DHW TEMPERATURE	Maximum temperature to which the water in the DHW tank can be heated, setting range 0°C to 80°C.
MAXIMUM BUFFER TEMPERATURE	Maximum temperature to which the water in the buffer tank can be heated, setting range 0°C to 65°C.
LP PRESSURE SWITCH DETECTION DELAY	Setting of the switch-on delay value for the low pressure switch, setting range from 1s(off) to 600s.
COAST DOWN TIME OF THE UPPER SOURCE PUMP	Upper source pump coastdown time.
COMPRESSOR START-UP DELAY	Time between switching on the lower source pump and switching on the compressor, setting range 10s to 600s.
LOWER SOURCE SWITCH-OFF DELAY	Delay for switching off the lower source when the set temperature is reached, control range 10s to 1200s.
MINIMUM COMPRESSOR DOWNTIME	Minimum compressor standstill time between the execution of consecutive duty cycles, control range 360s to 3000s.
TEMPERATURE OF LOWER SOURCE SWITCH OFF	Lower source temperature at which heat pump operation is interrupted, setting range -30°C to 50°C.
TEMPERATURE OF LOWER SOURCE SWITCHING ON	Lower source temperature at which the heat pump switches on and operates, setting range -30°C to 50°C.



MAX. FREON TEMPERATURE	Maximum refrigerant temperature.
POST-SEASON PUMP RUNS	Allow pumps to be switched on outside the operating season.
START TIME OF POST-SEASON RUNS	Time to allow the pump to run outside the operating season setting range 0 to 23.
DAY OF THE WEEK OF THE POST-SEASON RUNS	Permission day to switch on the pump outside the operating season setting range Monday to Sunday.
EVAPORATOR TEMPERATURE DEFROST START	Determines the evaporator temperature below which defrosting is activated.
EVAPORATOR TEMPERATURE DEFROST STOP	Determines the evaporator temperature above which defrosting is activated.
AIRFLOW TEMPERATURE DEFROST PERMISSION	Temperature of the lower source below which defrosting can take place.
MAX. DEFROSTING TIME	Specifies the maximum defrost time. Once the time set in this parameter has elapsed, the defrosting process is interrupted.
MINIMUM DEFROSTING INTERVAL DELTA T	Specifies the minimum time between defrosts.
OPERATION TIME OF THE UPPER SOURCE CONDENSER PUMP PROTECTION	Determines the duration of operation of the upper source pump when the temperature of the lower source falls below the minimum value.
INTERRUPTION TIME OF THE UPPER SOURCE CONDENSER PUMP PROTECTION	Determines the interval time between cycles of the upper source pump when the temperature of the lower source falls below the minimum value.

### 5.5 Buffer settings

OPERATING WITH THE BUFFER	Enabling the operation of the buffer circuit.
BUFFER LOADING HYSTERESIS	Buffer circuit hysteresis, control range 0°C to 10°C.
PUFFERBETRIEB MIT SG-SIGNAL	Specifies whether the buffer is to respond to the receipt of an SG signal.
BUFFER OPERATION IN SUMMER MODE	Specifies whether the buffer is to operate in summer mode.
SET TEMPERATURE SG	Setpoint temperature for buffer circuit when SG mode is active, setting range 0°C to 65°C.
TEMPERATURE SETPOINT MANUAL OPERATION	Setpoint temperature for the buffer circuit in manual operation, setting range 0°C to 65°C.
DESIRED TEMPERATURE IN THE COMFORT ZONE WINTER	Setpoint temperature for the buffer circuit in the Comfort zone, setting range 0°C to 65°.
SET TEMPERATURE IN THE ECO ZONE WINTER	Setpoint temperature for the buffer circuit in the ECO zone, setting range 0°C to 65°C.

## 5.6 DHW settings

IS THERE A HOT WATER CIRCUIT	Switching on the operation of the DHW circuit.
DHW HYSTERESIS	DHW circuit hysteresis, adjustment range 1°C to 30°C.
IS THERE A HEATER IN THE DOMESTIC HOT WATER TANK	Determines whether there is an additional heat source in the DHW tank in the form of an electric heater.
SET TEMPERATURE IN THE COMFORT ZONE	Set temperature for the DHW circuit in the Comfort zone, setting range from 0°C to 70°C.
SET TEMPERATURE IN THE ECO ZONE	Set temperature for DHW circuit in ECO zone, setting range 0°C to 70°C.
TEMPERATURE SETPOINT MANUAL OPERATION	Set temperature for DHW circuit in manual operation mode, setting range 0°C to 70°C.
TEMPERATURE SET POINT SG	Set temperature for DHW circuit when SG mode is active, setting range 0°C to 70°C.
DHW CIRCULATION	Selection of control method for DHW circulation circuit - Off, - in clock zones, - fixed.
CIRCULATION TIME	Determines how long the circulation pump has been running since it was switched on.
CIRCULATION BREAK TIME	Specifies the pause time of the circulator from the moment it is switched off.
AUTHORISATION TO IMPLEMENT ANTI-LEGIONELLA	Activation of the periodic disinfection function to prevent the growth of Legionella bacteria.
ANTI-LEGIONELLA SETPOINT TEMPERATURE	Set temperature for periodic disinfection, setting range 70°C to 85°C.
ANTI-LEGIONELLA START TIME	Anti-legionella start time, setting range 0 to 21.
ANTI-LEGIONELLA WEEKDAY	Anti-legionella start day, setting range Monday to Sunday.

## 6. Mounting and installation

### 6.1 General information

Connection and installation work must only be carried out by suitably qualified and authorised persons in accordance with the applicable regulations and standards. All connection work may only take place when the supply voltage is switched off. Before starting work, ensure that the electrical cables are not under voltage.

### 6.2 Sensors and their installation

The controller uses the following types of sensors for measurements:

- Evaporator temperature - sensor T1001,
- Lower source temperature - sensor T1001,
- DHW temperature - sensor T1001,
- Outside temperature - sensor T1002,
- temperatura freonu - czujnik T1001,
- temperatura bufora - czujnik T1001.

T1001 sensors consist of a measuring element housed in a stainless steel sheath with a diameter of 6mm and a cable resistant to temperatures up to 100°C. The sensor can be extended with a cable with a cross-section of not less than 0.5mm<sup>2</sup>, the total length of the cable should not exceed 30m. The sensors are not watertight, so it is forbidden to immerse them in any liquids. Sensor wires must not come into contact with surfaces whose temperature may be higher than 100°C. The

minimum distance between the sensor wires and parallel live mains wires is 30cm. A smaller distance may result in unstable temperature readings.

TEMPERATURE [°C]	RESISTANCE [Ω]
-40	842.1
-30	881.7
-20	921.3
-10	960.7
0	1000
10	1039
20	1077.9
30	1116.7
40	1155.4
50	1194
60	1232.4
70	1270.7
80	1308.9
90	1347

## 7. Standby mode

The heat pump should be put into standby mode during the period when it is not heating the tank. In standby mode, the controller performs the condenser protection function, the anti-stop function of the circulating pump and the DHW tank frost protection function. Therefore, the heat pump should not be switched off from the power supply during the period when another heat source is being used to heat the DHW tank. In standby mode, the measured DHW temperature is displayed. In addition, in standby mode the controller controls the DHW circulation pump according to the set operating schedule.

## 8. Safety and alarms

To ensure maximum safe and trouble-free operation, the heat pump is protected by pressure switches with automatic reset, installed in the refrigeration circuit on the low and high pressure side. The pressure switches are connected to the controller. Triggering of any of the pressure switches will stop the heat pump operation and sound an audible alarm. In addition, the compressor is protected by a hot gas sensor (control sensor). During periods when the tank is being heated by another heat source, the mode must be activated on the controller.

STANDBY – functions are carried out to prevent the condenser, DHW tank and circulating pump from freezing (anti-stop pump).

Problem description	Possible cause	Solution
<p>Switching off the heat pump by triggering the high pressure switch-message:</p> <p><b>HP PRESSURE SWITCH ERROR</b></p> <p>After the 4th time the error occurs, the heat pump will lock up.</p>	<ul style="list-style-type: none"> <li>- No or insufficient water flow between heat pump and tank</li> <li>- Defective circulation pump or blocked pump rotor</li> <li>- Tank temperature setpoint too high</li> <li>- Defective high pressure switch</li> </ul>	<ul style="list-style-type: none"> <li>- Cleaning the sloped filter on the heat pump heating circuit</li> <li>- Check that the circulation pump is operating in the controller settings service menu: Manual operation</li> <li>- Vent the heat pump circulation pump by loosening the screw in the pump body / manually unlocking the rotor</li> <li>- Replace the circulation pump</li> <li>- Lower the tank temperature set point</li> <li>- Check the high pressure switch circuit (normally closed)</li> <li>- Switch the device off and on</li> <li>- Contact the service</li> </ul>
<p>Heat pump shutdown caused by triggering the low pressure switch message:</p> <p><b>LP PRESSURE SWITCH ERROR</b></p> <p>After the 4th time the error occurs, the heat pump will lock up.</p>	<ul style="list-style-type: none"> <li>- Contaminated evaporator</li> <li>- Low suction air temperature</li> <li>- Frosted evaporator</li> <li>- Refrigerant loss</li> <li>- Defective low pressure switch</li> </ul>	<ul style="list-style-type: none"> <li>- Evaporator cleaning</li> <li>- Provide air at a higher temperature</li> <li>- Check defrosting settings</li> <li>- Activate manual evaporator defrosting</li> <li>- Check the low pressure switch circuit (normally closed)</li> <li>- Check the contact connection in the connection cube</li> <li>- Switch the device off and on</li> <li>- Contact the service</li> </ul>
<p>Heat pump does not heat up to the set tank temperature</p>	<ul style="list-style-type: none"> <li>- Tank capacity too large</li> <li>- Too much water flow between heat pump and tank</li> <li>- ECO-ECO PLUS temperature set below Tank setpoint</li> </ul>	<ul style="list-style-type: none"> <li>- Flow control between the heat pump and the tank to determine the temperature difference between supply and return in a range of 5-8K</li> <li>- Temperature setpoint adjustment ECO-ECO PLUS</li> <li>- unconnected heater or additional heat source</li> </ul>
<p>Long tank heating time</p>	<ul style="list-style-type: none"> <li>- Tank capacity too large</li> <li>- Too much water flow between heat pump and tank</li> <li>- Air duct diameter too small</li> <li>- Low outside temperature</li> </ul>	<ul style="list-style-type: none"> <li>- Flow control between the heat pump and the tank to determine the temperature difference between the supply and return in a range of 5-8 K</li> </ul>

	- Contaminated filter on intake air duct	- Use ducts according to the guidelines in the operating instructions - Activate additional (main) heat source to heat domestic water - Clean the intake air filter
Water leakage	- Incorrectly leveled appliance - Obstruction in the condensate drainage pipe - Incorrect routing of condensate line	- Level the appliance - Check patency of condensate drainage channel - Check the routing of the condensate line and that the line is not bent
Defective evaporator temperature sensor	- Sensor short circuit - Defective sensor	- Check the correct connection of the sensor - Connect the sensor to another input on the controller - Check cable for damage - Check sensor resistance - Replace the sensor
Defective DHW temperature sensor		
Defective freon temperature sensor		
Defective lower source temperature sensor		
Defective buffer temperature sensor		
Blocking the minimum temperature of the lower source (T.LS(MIN))	The minimum temperature has fallen below the minimum value	- Switch on the optional heater - Change the air intake source
Blocked due to incorrect defrosting	- Defrost failure (5 times)	- Increase defrosting time
Message: Freon maximum temperature exceeded. After the 5th time the error occurs, the heat pump locks up.	- Poor operation of the expansion valve (Freon returns to the evaporator) - Not enough refrigerant	- Contact the service

## 9. Maintenance

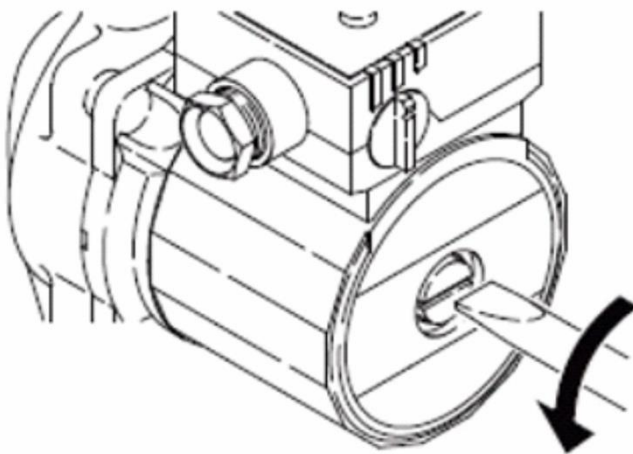
The user of the appliance is obliged to carry out servicing at least once a year, which should include:

- evaporator cleaning,
- cleaning the casing and base of the heat pump,
- cleaning the filter located in the hydraulic system,
- checking of electrical connections.

**Attention: Disconnect the heat pump from the mains before servicing!**

**Before switching on the heat pump after a prolonged period of standstill (after the winter season), check that the heat pump system is vented.**

### Ventilation by circulating pump



To bleed the circulation pump, the screw on the pump housing must be loosened and wait until water starts to come out from under the pump. Once the pump has been bled, the screw should be retightened. If the circulation pump has stopped, the power must be switched off from the heat pump. Unscrew the screw and use a screwdriver to move the rotor. After switching on the power to the heat pump in manual operation, start the tank pump to check that it is operating correctly.

## 10. SG READY function

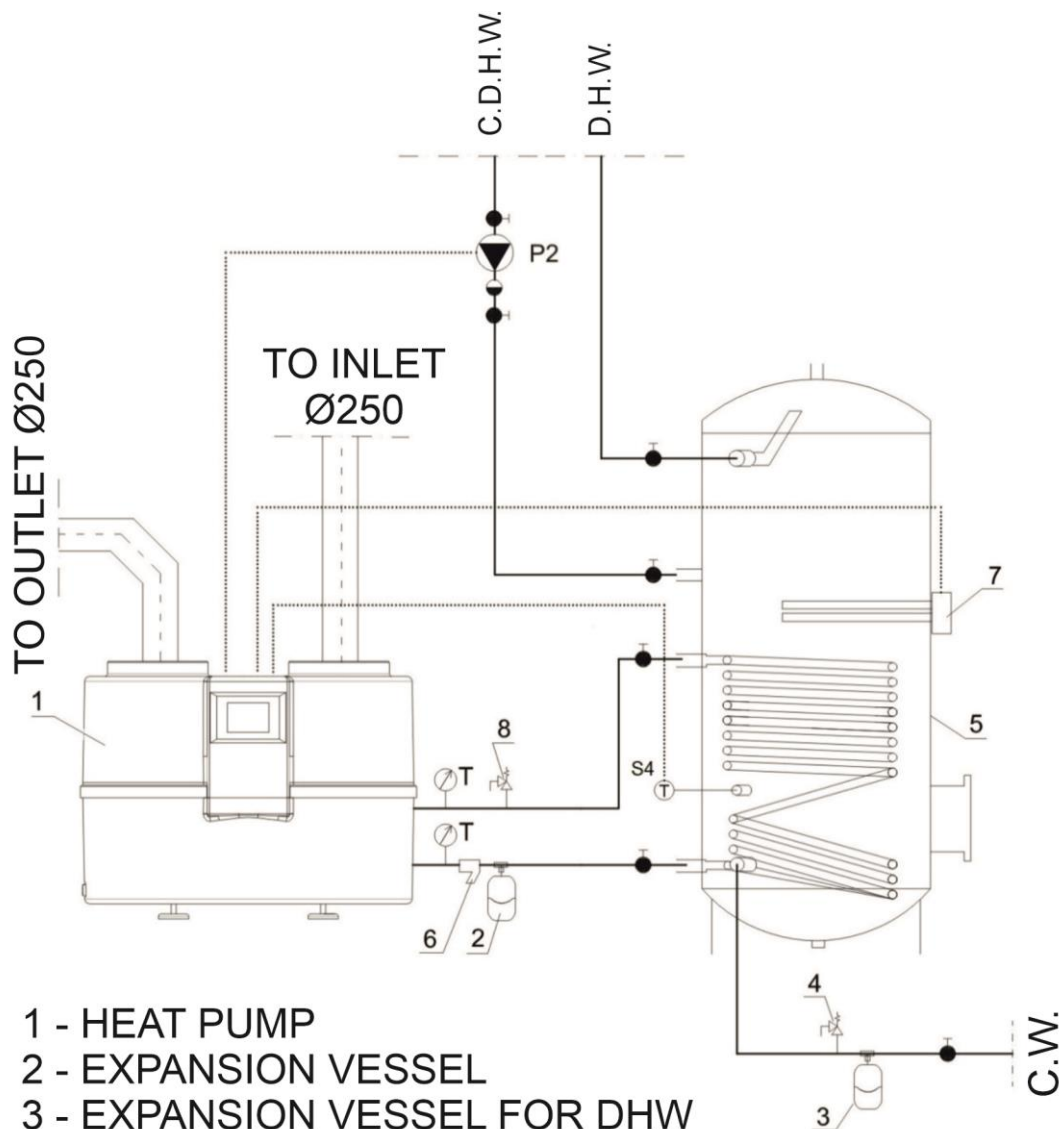
The heat pump has been developed for use with photovoltaic panel installations and energy tariff operation. The controller has an additional potential-free NO contact. When the contact is released, the heat pump starts and the DHW tank is charged to the temperature set in the SG function. The SG function is only active in the controller when the weekly programme is enabled.

## 11. Handling the equipment after its service life

When the appliance has reached the end of its service life, contact a person qualified in the recovery and disposal of controlled substances. Once the unit has been emptied of refrigerant, the unit can be sent for disposal and/or individual components can be recycled.

## 12. Hydraulic schemes

### 12.1 Scheme 1

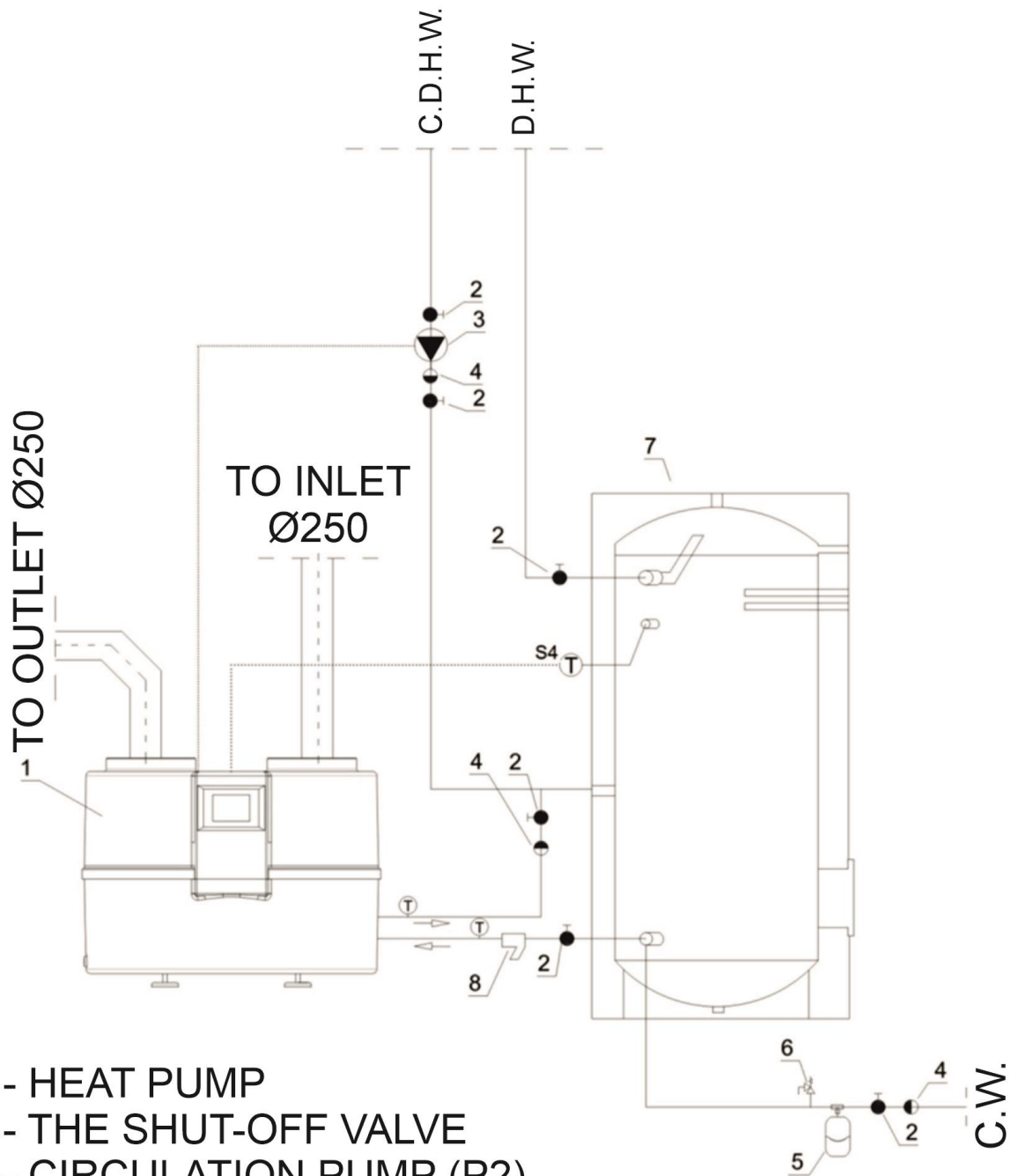


- 1 - HEAT PUMP
- 2 - EXPANSION VESSEL
- 3 - EXPANSION VESSEL FOR DHW
- 4 - WATER SAFETY VALVE
- 5 - DHW TANK
- 6 - MESH FILTER
- 7 - ELECTRIC HEATER (G)
- 8 - SAFETY VALVE

INLET AND OUTLET OF THE HEAT PUMP  
MUST BE FITTED WITH DIAL THERMOMETERS

Minimum coil surface area 1,3m<sup>2</sup>

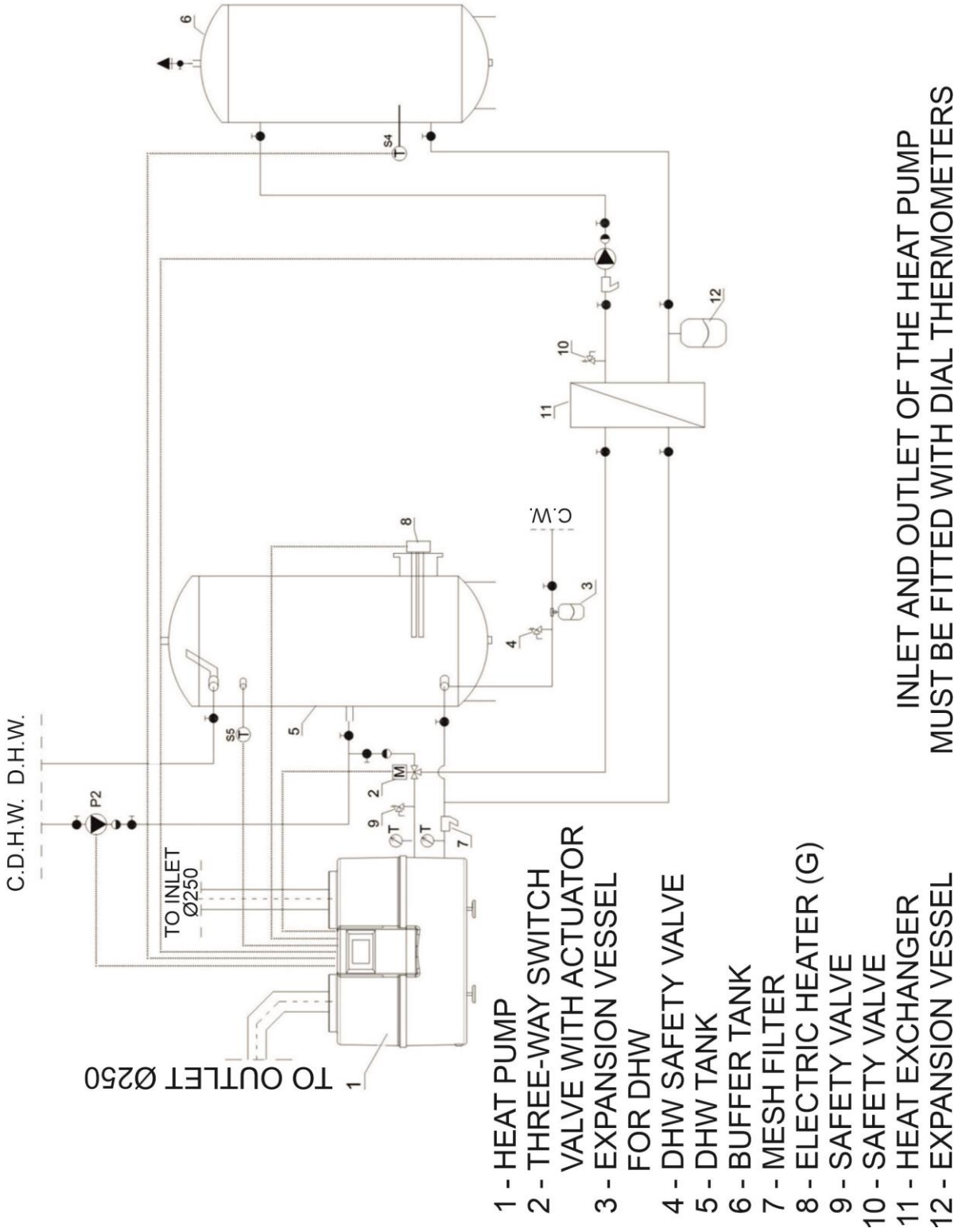
12.2 Scheme 2



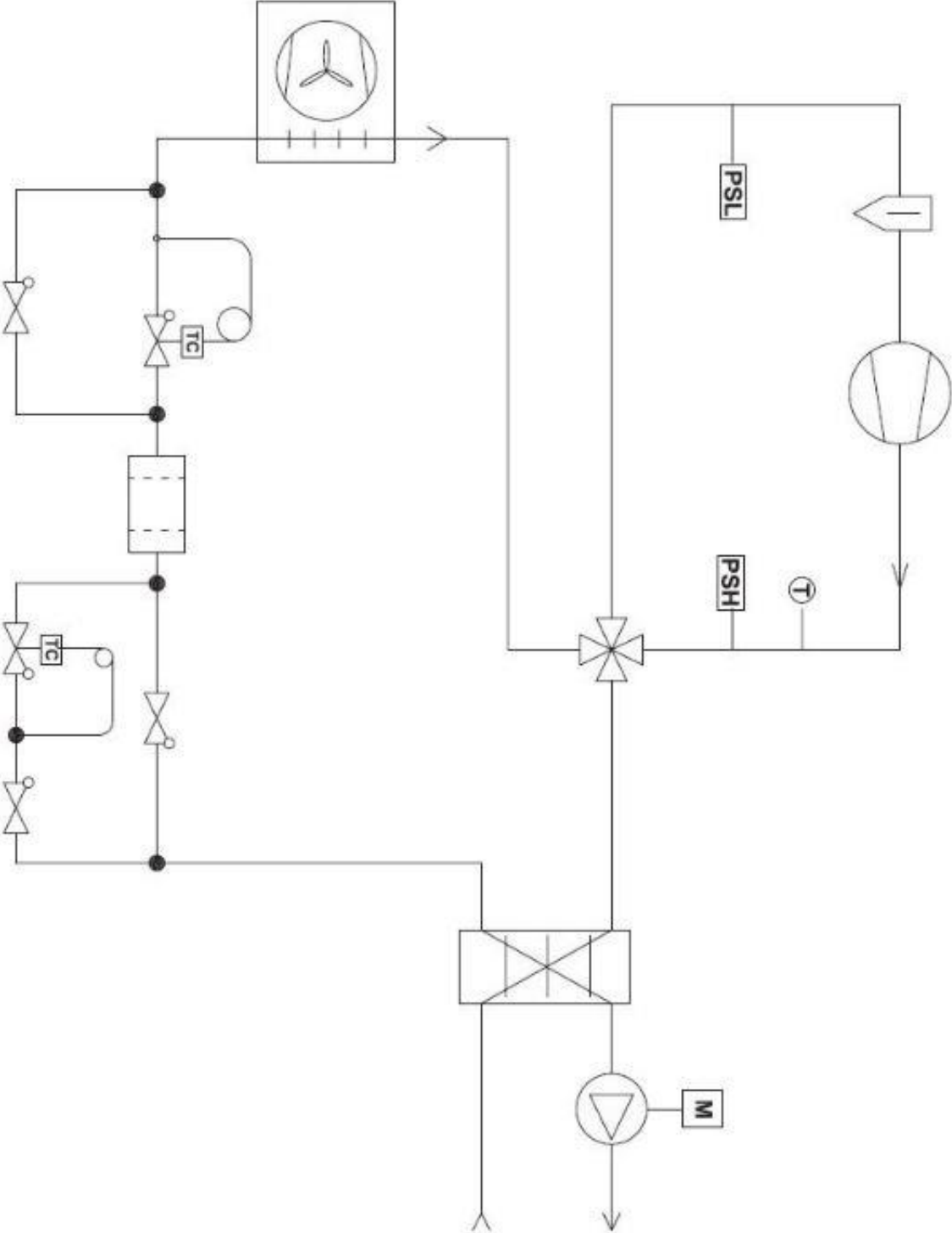
- 1 - HEAT PUMP
- 2 - THE SHUT-OFF VALVE
- 3 - CIRCULATION PUMP (P2)
- 4 - REVERSE VALVE
- 5 - EXPANSION VESSEL
- 6 - SAFETY VALVE
- 7 - DHW TANK
- 8 - MESH FILTER



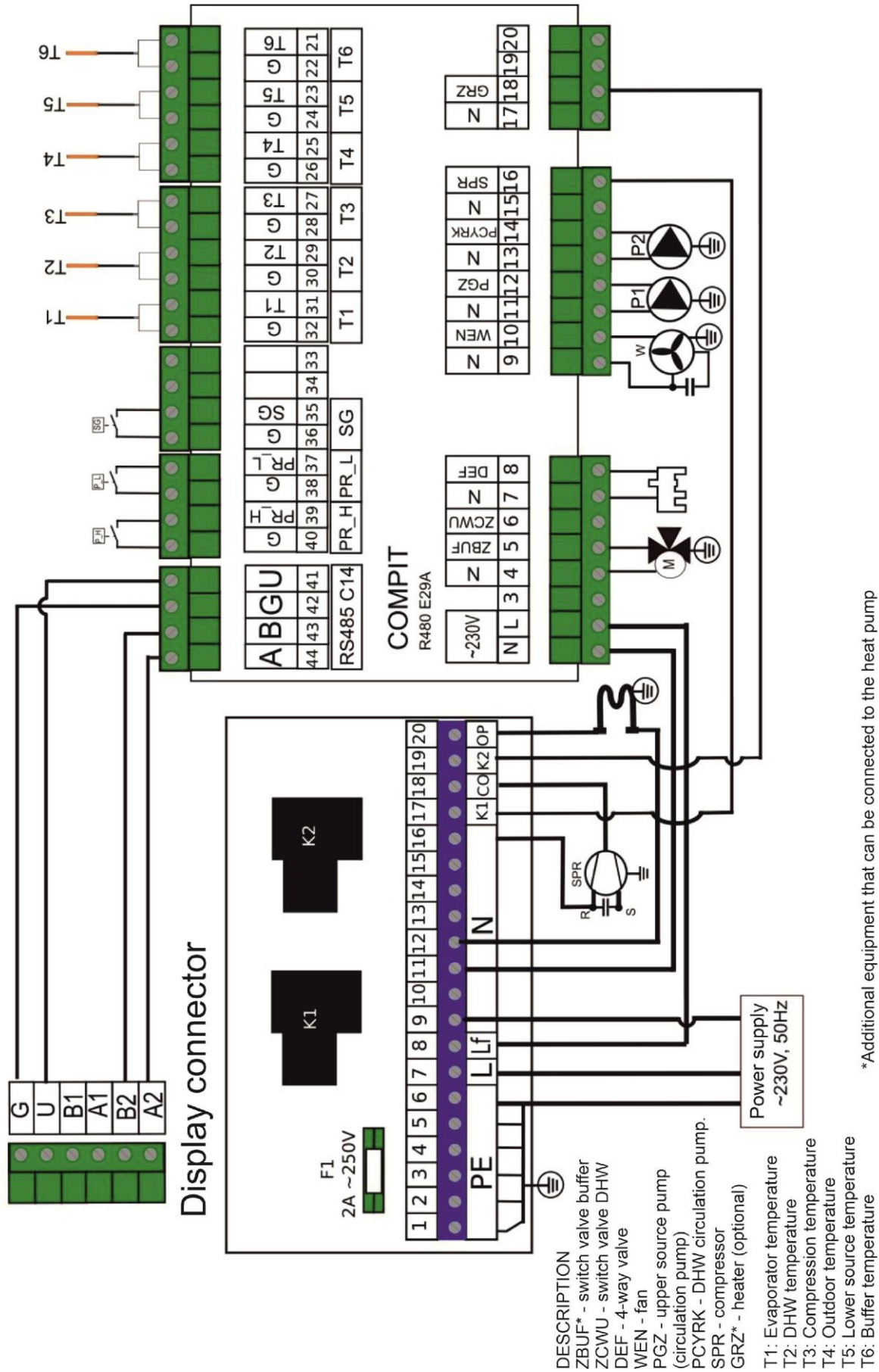
12.3 Scheme 3



13. Diagram of the refrigeration circuit



# 14. Electrical scheme



## 15. Technical specifications

### 15. Technical data

Scope of application		
Outdoor temperature	°C	min: -7 / max 43
Hot water temperature with heat pump	°C	55
Hot water temperature with electric heater	°C	65
Minimum installation area	m <sup>2</sup>	1
Electrical parameters		
Power supply		1/N/PE 220-240V/50Hz
Recommended protection		C8
Maximum inrush current	A	30
Maximum operating current of the heat pump	A	6,5
Power absorbed	fan	90
	circulation pump	Max 55
Electric power consumption for drawn-in air at 20°C	kW	min. 0,55, max. 1,3
Performance		
Energy efficiency class	-	A+
Water load profile	-	XL
Rated heat output A15/W10-55	kW	2,85
Maximum heat output*	kW	3,6
COP A15/W55 (acc. to PN-EN 16147:2017-04)	-	3,07
COP A20/W55	-	3,42

Refrigeration circuit		
Compressor type	rotary	
Compressor oil type	ESTER OIL VG74/480 ml	
Refrigerant/quantity	HFC-134a/0,80kg	
GPW of medium		1430
CO <sub>2</sub> equivalent	t	1,14
Maximum permissible low pressure	bar	4,7
Maximum permissible high pressure	bar	24
Dimensions		
Diameter	mm	670
Height	mm	500
Weight	kg	53
Heating circuit parameters		
Heating circuit connections		2xIT <sup>3</sup> / <sub>4</sub> "
Minimum inside pipe diameter	mm	20
Recommended flow rate	m <sup>3</sup> /h	0,33÷0,35
Maximum permissible heating circuit pressure	bar	6
Operating medium		water/propylene glycol
Other		
Sound power level	dB(A)	57

The above COP values as well as the heating times were determined under the following conditions: Intake air temperature 20°C. Pump connected directly to a 300l DHW tank. The above values may change under other conditions.

**The manufacturer cannot be held responsible for any malfunctions or damage to the heat pump caused by incorrect selection of the tank capacity.**

**Contains fluorinated greenhouse gases covered by the Kyoto Protocol.**

**The manufacturer reserves the right to change the information contained in the manual**



The used product cannot be treated as communal waste. Once dismantled, the appliance must be taken to a collection point for the recycling of electrical and electronic equipment. Proper disposal of the used product prevents potential negative environmental impacts that could occur if the waste is not properly managed. For more detailed information about recycling this product, please contact your local council waste management service or the shop where you purchased the product.

**The manufacturer reserves the right to change the information contained in the manual.**

**In case of a heat pump malfunction, the "Start-up Protocol" must be included in the complaint notification to be sent to the manufacturer. The protocol will be the basis for determining the correctness in terms of selection and installation of the unit.**

## Start-up protocol for heat pump DROPS D4.2(C)

Investor's copy

Device serial number					
Investor's name and address					
Name of the commissioning person					
Installation location e.g. basement					
Air ducts		Diameter:	Material:		
Heating pipeline		Diameter:	Material:		
Heating diagram as per instructions operating manual		Scheme number:	Other:		
DHW tank capacity					
Buffer tank capacity					
Supply temperature - heat pump*					
Return temperature-heat pump*					
Method of condensate drainage					
<b>Electrical connection</b>					
Name of the person making the connection					
Over-current protection					
RCD-Switch					
Cross-section of supply cable					
Heater	YES	NO	Circulation pump	YES	NO
Attention					
Commissioning date					

\* Note down the temperature of the tank during the measurement. The temperature of the tank during the measurement should not be below 30°C.

.....

Seller's stamp/signature

.....

Stamp/signature of installation company

.....

Investor's signature

## Start-up protocol for heat pump DROPS D4.2(C)

*a copy for the device manufacturer*

Device serial number					
Investor's name and address					
Name of the commissioning person					
Installation location e.g. basement					
Air ducts		Diameter:	Material:		
Heating pipeline		Diameter:	Material:		
Heating diagram as per instructions operating manual		Scheme number:	Other:		
DHW tank capacity					
Buffer tank capacity					
Supply temperature - heat pump*					
Return temperature-heat pump*					
Method of condensate drainage					
<b>Electrical connection</b>					
Name of the person making the connection					
Over-current protection					
RCD-Switch					
Cross-section of supply cable					
Heater	YES	NO	Circulation pump	YES	NO
Attention					
Commissioning date					

\* Note down the temperature of the tank during the measurement. The temperature of the tank during the measurement should not be below 30°C.

.....  
Seller's stamp/signature

.....  
Stamp/signature of installation company

.....  
Investor's signature

**Manufacturer contact**

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