INSTALLATION, MAINTENANCE AND USER MANUAL

Domestic hot water heat pump

ORCA ZEUS

ZSW 300 and ZSW 230

V3.0_2019

Manuals are made for different series of device. Because of that reason there could be some differences between real parameters, dimensions or pictures.
We reserve the right to change the technical or any other specifications without notice and without liability. We do not take responsibility for typographical errors.

Content:

1 BASIC INFORMATION

- The enclosed installation, maintenance and user instruction manual contains all information for safe installation, maintenance and use of the device. **BEFORE USAGE, PLEASE READ THIS MANUAL CAREFULLY!**
- Store this instruction manual in a safe and dry place, if possible somewhere near the unit. The installation manual must be kept in full legible condition during the lifespan of the device.
- The device must be installed and connected according to this manual. **IF YOUR ARE NOT ABSOLUTELY SURE, THAT THE DEVICE IS CORRECTLY INSTALLED AND CONNECTED, DO NOT TURN THE DEVICE ON!**
- Maintenance must be regularly carried out in time intervals, prescribed by the manufacturer. Maintenance can only be carried out by suitably qualified and authorized service personnel. **INADEQUATE AND UNAUTHORISED MAINTENANCE LEADS TO THE LOSS OF WARRANTY RIGHTS!**
- The installer is obliged to explain to the end user how the device is properly used and maintained in accordance with this manual.
- **THE MANUFACTURER SHALL NOT BE LIABLE FOR ANY DAMAGE CAUSED BY IMPROPER OPERATION OF THE DEVICE AS A RESULT OF IMPROPER INSTALLATION AND MAINTENANCE!**
- The manufacturer reserves the right to modify the installation, maintenance and user manual without prior notice. If you lose or damage the manual (in unreadable condition), contact the manufacturer or the retailer where you purchased the device.

2 SAFETY WARNINGS

Read the instructions bellow carefully. In order to avoid any damage to persons, animals or plants, use the device only in accordance with the instructions. The magnitude of danger is highlighted by graphic symbols with the corresponding description.

WARNING!
Failure to follow the instructions can lead to injury or damage to the device. Failure to follow the instructions will lead to a loss of warranty.

DANGER!
Failure to follow the instructions can lead to injury or damage to the device. Improper use can lead to serious injury or even death. Improper use can be harmful to humans, animals and the environment.

DANGER!
Failure to follow the instructions can lead to serious injuries or even death due to an electric shock.

DANGER!
Failure to follow the instructions can lead to device ignition or fire.

DANGER!
Failure to follow the instructions can lead to serious injuries to the extremities.

DANGER!
Failure to follow the instructions can lead to serious burns.

DANGER!
Exposure to specific device parts or refrigerant can lead to frostbite.

DISPOSAL INSTRUCTIONS!

NOTE
Contains useful information and recommendations.

3 IMPORTANT WARNINGS

WARNING!

The unit can only be used for purposes prescribed by the manufacturer.

WARNING!

Only an adult person acquainted with the content of this manual, can operate the device.

DANGER!

Unit Installation, first start-up, service and maintenance must be performed by a qualified installer and always in non-electrically supplied condition.

NOTE

Install the device in a room/place, where there is enough space left around the device for cleaning and maintenance purposes. Consider the space for installation (recommended space requirements).

DANGER!

Never incline the device for more than 30°from its vertical position or transport/carry it by hand. To move the device, use only proper transport equipment.

WARNING!

Do not install the unit in a space where the temperature can fall below 0°C, water in the pipes and unit can freeze and cause damage to the unit or pipes.

WARNING!

The unit must be installed in a dry space, if it is exposed to direct sunlight it must be protected from it.

DANGER!

During operation it is forbidden to move, clean or repair the unit.

DANGER!

Do not put any object below or on the unit.

WARNING!

Connect the unit to the system using removable pipe unions, so that the unit can be easily moved or removed in case of a service intervention without the need of a greater intervention in the piping system.

DANGER!

If the intended installation location of heat pump is in room, where there is a lot of dust or ash, possibility of leakage of volatile and flammable or other undesirable substances, wood or pellet stove, it is required to ensure air intake for the heat pump from another room. Ash and dust are deposited on the evaporator, which can lead to disturbances in operation or damage to the heat pump.

DANGER!

Non-return valve and dirt trap are necessary to install on the inlet tube. Also it is necessary to install appropriate expansion vessel. It is **MANDATORY** to install safety valve (0,6 MPa) on the hot water outlet tube. Maximum allowed supply pressure is 0,4 MPa.

WARNING!

When connecting the unit to the heating system it is necessary to prevent the formation of a galvanic couple and related corrosion. To connect the unit to the heating system it is **MANDATORY** to use the enclosed transition pieces, also the piping system **MUST** be electrically grounded. In case of failure due to improper device connection the manufacturer will take no liability or warranty.

DANGER!

In case of power supply cable damage, smoke, unusual smell from unit or any other abnormality in operation, immediately disconnect the power supply cable from the supply and contact an authorized customer service.

DANGER!

Do not insert your fingers through the intake/exhaust gratings. Rotating parts of the device can injure you.

DANGER!

The unit requires reliable grounding during operation, otherwise serious injuries or even death may occur.

DANGER!

The unit needs to be connected to the power supply protected with the prescribed fuse.

DANGER!

In the event of damage to the connecting cable, it must be replaced with original cable, provided by manufacturer or authorized customer service.

DANGER!

Do not use or store flammable materials near the unit

DANGER!

Water with temperature above 50°C can cause injuries, when set temperature is higher than 50°C be careful when children and other users are using hot water.

DANGER!

Evaporator operates at low temperature. Touching it can cause frostbite.

DANGER!

Never damage or rupture the refrigerant piping. Refrigerant leakage can cause serious frostbite.

DISPOSAL INSTRUCTIONS!

The unit must be replaced and disposed according to local regulations; it contains environment potentially harmful gasses.

4 PURPOSE OF THE DEVICE

The device is an air/water heat pump with a water storage tank below. Its primary task is to heat sanitary water – the cooling effect on the surroundings is a side effect. The heat pump needs to be set in a sufficiently large and ventilated room with an enough high air temperature (basement, pantry) from which it will take the energy for its operation. The heat pump draws 75% of the necessary heat from the air, the rest is provided by the electrical power that drives the high-quality rotary compressor. The sanitary water is heated through a refrigerant heat exchanger (condenser) bended around the water storage tank. The water storage tank is made from steel with vacuum enameled protective coating. Its volume can be 230 or 300L. The 230L unit is meant to be installed in a building with a daily consumption not more than 500L per day and 300L unit in a building with consumption not more than 700L per day.

WARNING!

Injuries and resulting damage to the device or third things, which are caused due to misuse and improper use of the device, **<u>are the users sole responsibility</u>**.

5 RESPONSIBILITY

5.1 Producer responsibility

As a producer we accept no responsibility if:

- The installation and user manuals were not considered properly.
- Unit was not correctly or enough mentained.

5.2 Installer responsibility

Installers take responsibility that the unit is installed and commissioned in accordance with the next requirements:

- Read the complete installation and user manuals.
- Installation of the unit must be performed according to national standards and laws.
- Performs commissioning and solves any problems that occurred during the installation and first startup.
- Explains to the customer proper usage, settings and needed unit maintenance.

5.3 User responsibility

User needs to consider next requirements for proper unit operation:

- Read the complete installation and user manuals.
- Installation and first startup must to be performed by a professional and authorized installer.

- Regular service from an authorized person needs to be allowed / ordered.
- Keep these manuals in a safe dry place, somewhere near the unit.
- For any uncertainty ask the installer for explanation.
- Any modifications or replacement of components of the heat pump **EXCLUDES LIABILITY** of the manufacturer for the safety and functionality. In case of misuse and improper use of the device, the **manufacturer does not accept liability**. Injuries and resulting damage to the device or third things, which are caused due to misuse and improper use of the device, **are the users sole responsibility**.

6 REFRIGERANT

The unit is prefilled with HFC R134a refrigerant. The refrigerant is non-toxic, non-flammable and not explosive, is also not harmful to the ozone layer, but is heavier than air, which can lead to a crowding-out of air from the area. The result may be smaller concentration of oxygen in the air, but because of a very small amount of refrigerant in the unit, there are no serious health risks. A reduced concentration of oxygen can occur only in unventilated areas less than 10 m3 volume. Nevertheless, we recommend that you read the manufacturer's refrigerant safety sheet and handle in accordance with the written instructions.

DANGER!

Refrigerant leakage can cause serious frostbite. In case of refrigerant leakage immediately disconnect power supply and inform the authorized customer service. Do not approach the device, only when necessary (to disconnect the power supply).

7 RECYCLING

1. Waste Product: Consult the manufacturer regarding recycling or disposal.
2. Contaminated packaging: reuse or recycle after decontamination.
3. Removing the refrigerant must be performed in accordance with EC Directive 842/2006, as well as other national and local regulations.

DISPOSAL INSTRUCTIONS!

The unit must be replaced and disposed according to local regulations; it contains environment potentially harmful gasses.

8 UNIT SPECIFICATIONS

MODEL	ZSW	230 (1)	300 (2)
Nominal heating power	kW	1,8	1,8
Max. heating power (Compressor + el. heater)	kW	3,6	3,6
Compressor nominal power consumption	kW	0,5	0,5
Compressor	typ	rotary	rotary
Coefficient of performance	W/W	3,0	3,1
Electric heater power	kW	1,8	1,8
Power supply	f/Hz/V	1/50/230	1/50/230
Refrigerant/quantity	Typ/g	R134a / 1000	R134a / 1000
Tank volume	L	230	300
Surface of bottom heat exchanger	m^2	0,5	1
Surface of upper heat exchanger (optional)	m^2	/	0,5
Air flow	m3/h	300	300
Air connection dimensions	mm	150	150
Maximal length of air ducts	m	10	10
Unit dimensions	D x H (mm)	670 x 1550	670 x 1820
Max. water outlet temperature	°C	60°C	60°C
Working range	°C	-3~35	-3~35
Water connection dimensions	″	3/4	3 /4
Unit net weight	kg	110	130 (140)

According to standard SIST EN16147

9 TRANSPORT AND DEPOT

DANGER!

The device can only be moved or transported in non-electricaly supplied condition.

WARNING!

The aggregate of the device is attached on the top of the water storage tank and it is protected with a plastic cover. The cover must not be used as a holding or support point when the unit is being transported.

WARNING!

THE DEVICE MUST BE PROPERLY PROTECTED WITH COMPULSORY PROTECTIVE BELTS WHEN TRANSPORTED IN ORDER TO PREVENT JUMPING, MOVING OR OVERTURNING.

WARNING!

Before transport the device must be properly protected by protective foil or cardboard to avoid damage such as scrapes, abrasions and holes.

WARNING!

Because of the device's construction (the aggregate being on top) there is a high risk of the device overturning during transport. The max incline of 30° must not be exceeded.

WARNING!

Do not exceed the maximum inclination of 30° from vertical.

WARNING!

The allowed temperature during transport and depot is between 10 and 45°C. During shorter periods of time (up to 24h), a higher temperature is allowed (up to 55°C).

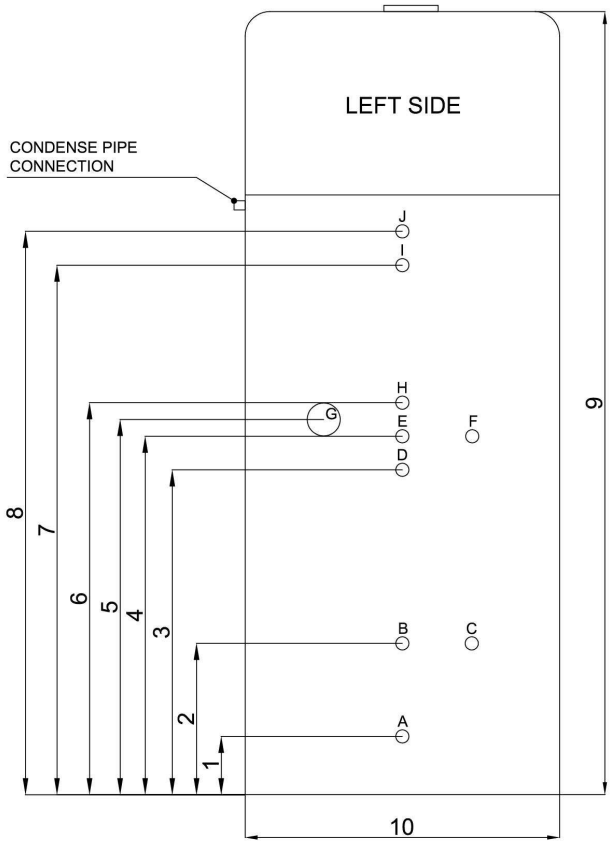
DANGER!

Because of the devices weight there is a high risk of injury to the extremities when moving the device. When moving the device, only use proper transport equipment.

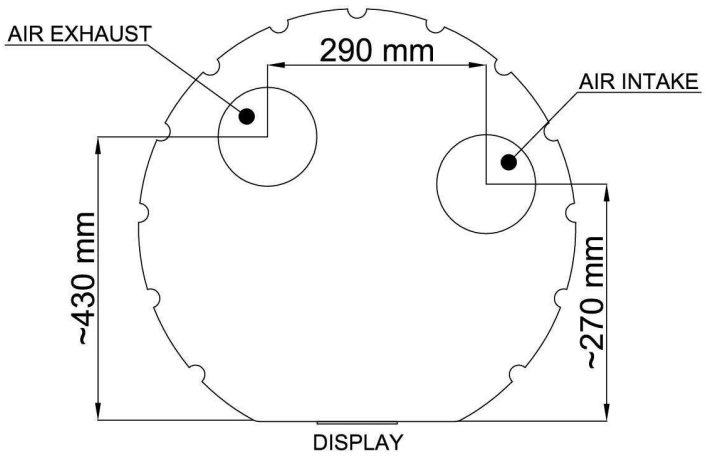
WARNING!

For damage to the device, due to improper depot and transport, the manufacturer will take no liability!

10 UNIT DIMENSIONS



P.	ZSW 230	ZSW 300 (2)
1	125 mm	125 mm
2	365 mm	365 mm
3	730 mm	730 mm
4	830 mm	840 mm
5	745 mm	905 mm
6	/	970 mm
7	/	1180 mm
8	980 mm	1270 mm
9	1550 mm	1820 mm
10	670 mm	670 mm
A	Water inlet (Z)	Water inlet (Z)
B	Solar outlet (N)	Solar outlet (N)
C	Mg. Anode	Mg. Anode
D	Solar inlet (N)	Solar inlet (N)
E	Circulation (N)	Circulation (N)
F	Mg. Anode	Mg. Anode
G	El. heater	El. heater
H	/	Solar (2) outlet (N) (optional)
I	/	Solar (2) inlet (N) (Optional)
J	Water outlet (Z)	Water outlet (Z)



All connections are 3/4"

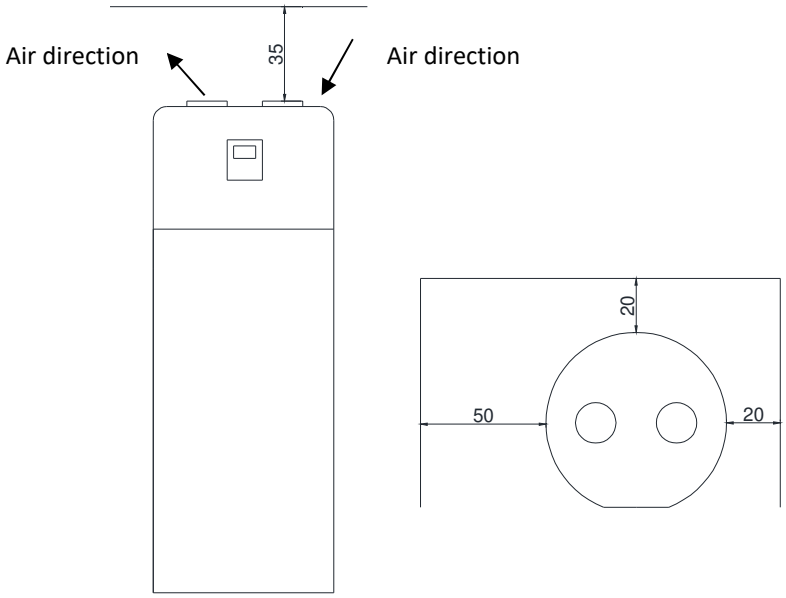
(N) – inner thread

(Z) – outer thread

Air duct connections have a diameter of 150mm and pipes to connect need to have the same or bigger diameter. Position marked with »E« is meant for water return from the circulation system. When circulation system is not connected, this connection needs to be sealed with a tap.

11 UNIT INSTALLATION

Minimal space requirements for installation and maintenance:



The unit must always be installed in a vertical position. We recommend that the unit is inclined 2-3° backwards to enable smoother condensate runoff.

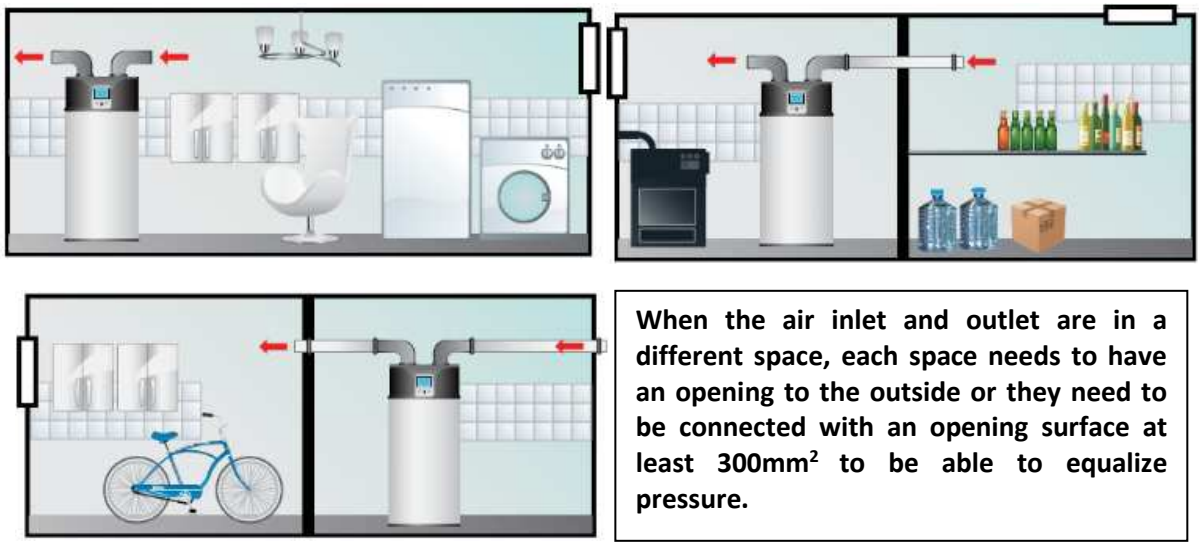
WARNING!
After placing the unit in its final location, wait at least 1 hour before turning the unit on.

WARNING!
In case of service intervention and if minimum clearances are disregarded, the user covers the costs incurred.

Min. one elbow is required. Because the inlet and outlet air connections are very close together, there is a possibility of cold air recirculation, the device will go to defrost mode more often.

WARNING!
Good insulation of neighboring walls is advisable**.**

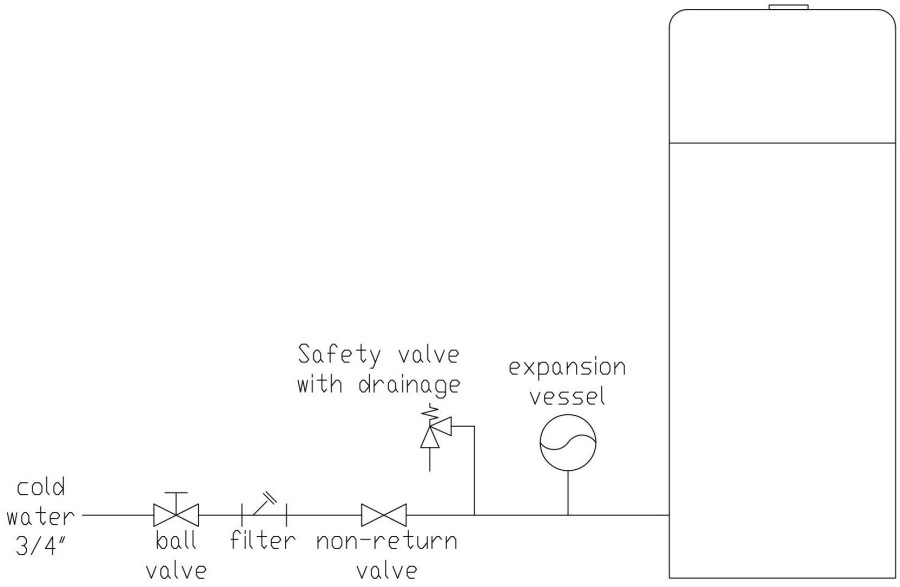
Installation possibilities:



When the air inlet and outlet are in a different space, each space needs to have an opening to the outside or they need to be connected with an opening surface at least 300mm² to be able to equalize pressure.

WARNING!
Maximal length of air ducts is 10m. Each bend 90°reduces the maximal length for 1 m. All air duct pipes need to be insulated to prevent condensation. Never reduce the internal diameter of the pipe.

12 WATER CONNECTION



The cold water connection must be performed according to the scheme above. The maximum allowed pressure in the water system is 0,4 MPa, a safety valve with a maximum pressure 0,6MPa can be used. Expansion vessel for the 230L tank needs to have at least 12L volume and for the 300L tank 18L.

Hot water connection can be directly to tap, or can be upgraded with a circulation pump. Return from the circulation system can be connected to the connection marked with "E" in scheme "8. Unit dimensions".

During rapid water heating, a small water leakage on the safety valve can occur. This is not due to damage but due to normal event of water expansion. This water needs to be captured and lead into drainage.

In case of a solar system or other heat source connected to the internal heat exchanger, it must be assured that the pressure in the heat exchanger newer exceeds 0,5MPa. It must also be assured that the water does not exceed 80°C. Damage to internal components or heat pump can occur.

In case that the additional heat exchanger is not to be used, it needs to be filled with glycol to prevent corrosion. It is not allowed to close both sides of the heat exchanger to enable pressure equalisation.

WARNING!

Improper installation of the unit can lead to damages or malfunction of the unit and loss of rights under warranty.

WARNING!

When connecting the unit to the heating system it is necessary to prevent the formation of a galvanic couple and related corrosion. To connect the unit to the heating system it is **MANDATORY** to use the enclosed transition pieces, also the piping system **MUST** be electrically grounded. In case of failure due to improper device connection the manufacturer will take no liability or warranty.

WARNING!

Before the unit is turned on, it needs to be filled with water and the system completely vented. To do this, open all hot water taps and wait until water starts to flow from all of them.

WARNING!

On the back side of the unit there is a pipe connection for condensate drain. At high water usage and high air humidity, more than a few litres of condensate water per day can occur, so this connection must be connected to outlet drainage. This pipe needs to have a constant incline of at least 1° and must be always clean.

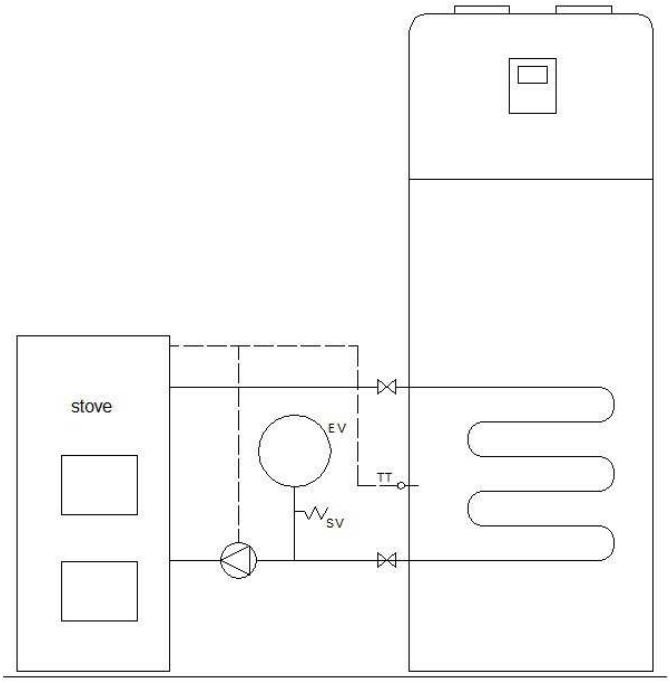
WARNING!

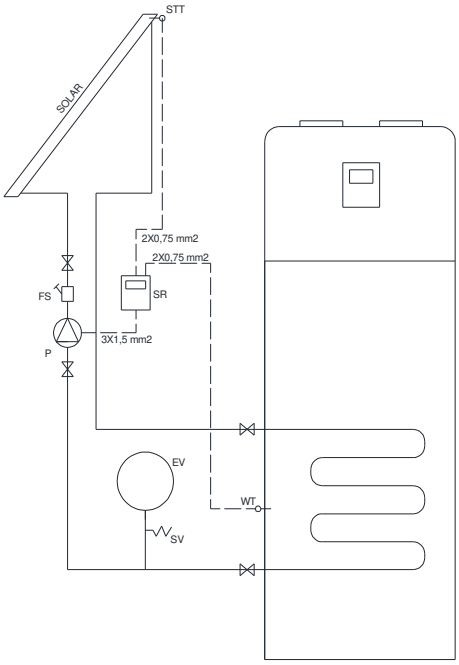
Condensate pipe must be checked and cleaned once per month.

DANGER!

The supply socket must be positioned at least 1,5m above ground level, to avoid direct water spray causing injuries or damage. The socket must be earthed, secured with a 16A fuse and FI relay with max. current 0,03A. The wire cable to the socket needs to be at least 3x2,5 mm, only the heat pump can be connected to the socket.

12.1 Solar collector installation





STT: solar temp. sensor

P: solar circulation pump

EV: solar expansion vessel

SV: safety pressure valve

FS: flow limiter with flow meter

SV: electronic safety valve

HW: hot water outlet

DR: drainage

The solar system must be connected to connections marked with »B« and »D« on scheme »10. Unit dimensions«. Regulation of the solar system must be connected to a separate regulation system for regulating the solar circulation pump. The temperature sensor for the water temperature can be inserted into the sleeve next to the heat pump temperature sensor for the bottom temperature, which is located on the back side of the heat pump. The maximum allowed temperature of water from the solar system must never exceed 85°C. This needs to be considered when setting the parameters for the solar system. The maximum pressure of 0,5MPa must also never be exceeded.

WARNING!

Failure to abide with the above instructions can lead to device malfunction or failure. In this case rights under warranty are lost.

13 TRIAL OPERATION

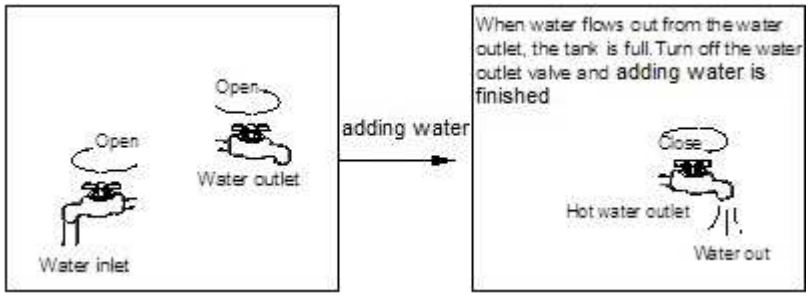
13.1 Confirmation before trial operation

1) All the installation preparations are complete.
2) Water heater is installed correctly.
3) The pipelines and wiring connections are correct.
4) The accessories are installed correctly.
5) The drainage is unblocked.
6) The thermal insulation is intact.
7) The earthing wire is connected correctly.
8) The power voltage is consistent with the rated voltage of the heater.
9) There is no obstacle at the air inlet and outlet of the unit.
10) All of the electric protection is working protector can work effectively.
11) The water tank is full.

CAUTION：

Before using this unit, please follow the steps below.

Adding water: If the unit is used for the first time or used again after emptying the tank, please make sure that the tank is full of water before turning the power on.



NOTE

The ball valve at water inlet should be open when the unit is in operation.

WARNING!

Operation without water in the water tank may result in damage of auxiliary electrical heater. Due to such damage, the supplier is not responsible for the quality issue.

DANGER!

Water over 50°C may result in serious burns or death. Special care should be paid to children, the disabled and the elderly.

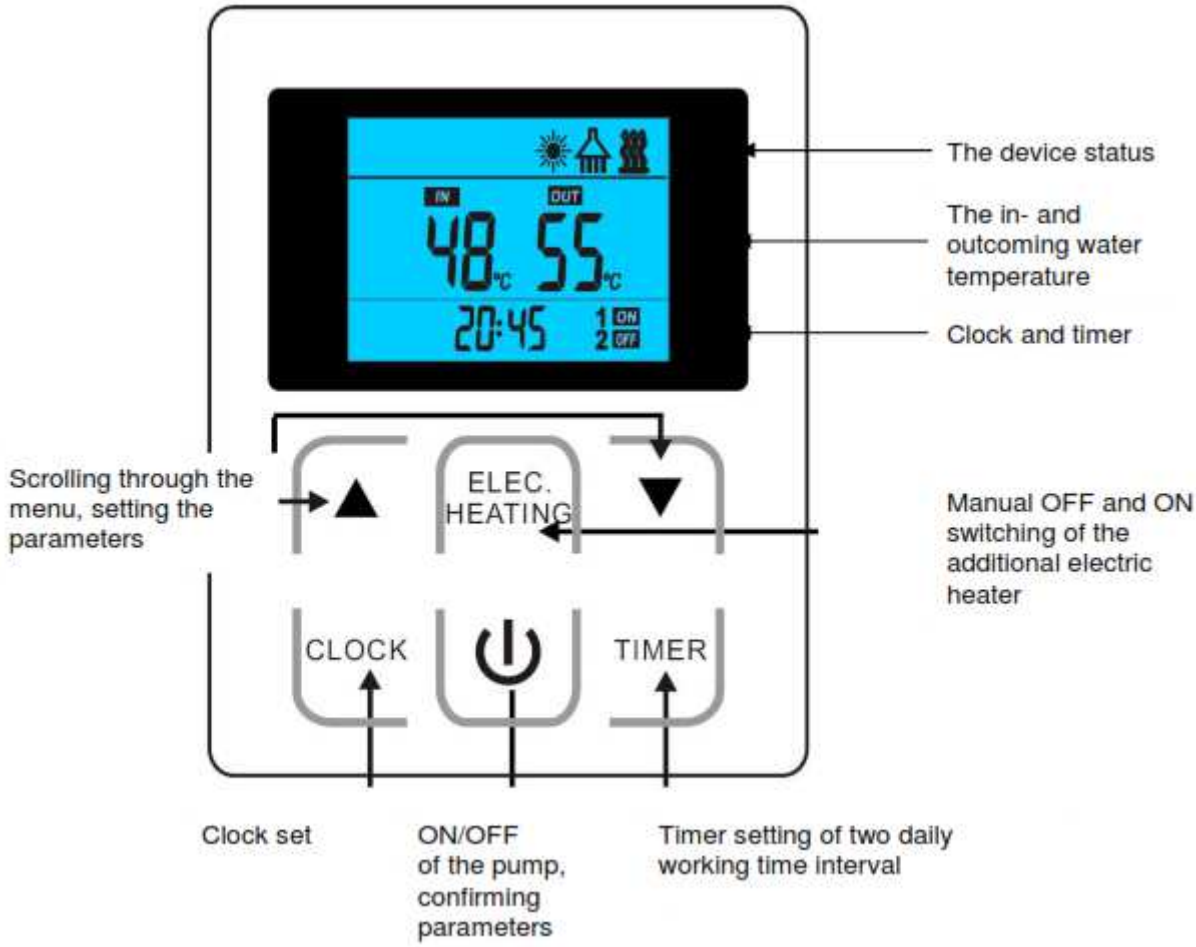
WARNING!

Failure to abide with the above instructions can lead to device malfunction or failure and serious material or human damage. In this case rights under warranty are lost.

14 UNIT SETTINGS

When the unit is connected to the water system and filled with water, it can be connected to the power supply.
Power supply can only be plugged into a grounded socket (16A, 230V / 50 Hz).
The power supply cable must be connected to a socket, which is earthed and is protected with a corresponding safety fuse (16A, 230V/50Hz)

When the heat pump is correctly installed, connected and the system according to these instructions filled with water, the pump can be turned-on with the **ON/OFF button**. After 3 seconds the electronic module displays the temperature of the in- and outgoing water in the water tank.

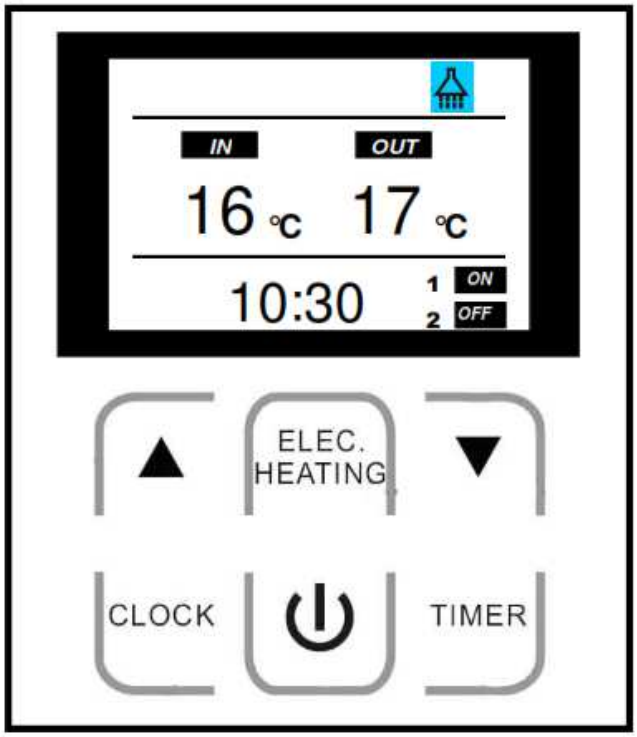


- Heat pump (compressor, ventilator) is currently running
- Domestic hot water is prepared, compressor is switched off-standby mode
- Electric heater is ON, it can be parallel with compressor or independent

15 THE USE OF THE CONTROLLER

15.1 Parameter overview and setting, alarm description

When unit is connected to the power supply, the display will show the following:



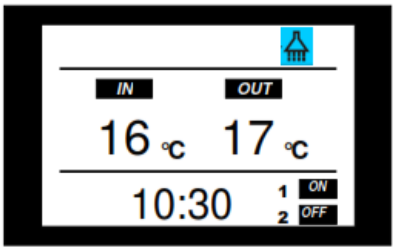
Current water temperature in bottom part of tank is 16°C and 17°C in upper part of the tank. The current time is 10:30, **unit is in standby mode.**

With one press on button  we can turn the unit on and in a few seconds it starts running. First the ventilator starts and s few seconds later the compressor.

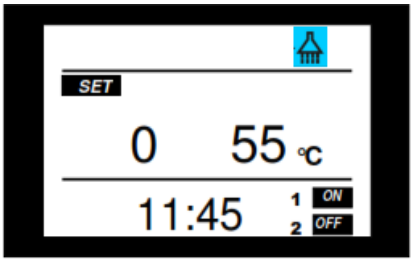
Review of the current set parameters for operation can be performed when the device is working or when it is in standby mode. When the device is working (compressor and fan are working), press the  button once to put the device in standby mode. In standby mode all the parameters can also be changed. In the working mode the parameters can only be checked with no possibility of changing them.

To check the parameters press one of the buttons  or  . Pressing the »**UP**« button you can move from the first to the last parameter. Pressing the »**DOWN**« button, you can move from the last to the first parameter. This is how you check the parameters in both operation modes (standby and working mode).

To change the parameters, the device must work in stand-by mode (described above). Display shows current water temperature on the bottom and on the top of the water tank. In upper right corner a »**shower icon**« is shown. This is how the display can be seen:



Below it will be shown how to change the desired temperature of hot water, from value **55°C** to **48°C.** With ▲ or ▼ buttons you can choose the parameter you would like to change. In standby mode, press the ▲ button. On the display, the following situation will be shown:



Display is showing us parameter no. **“0”** and current value is **“55°C”**

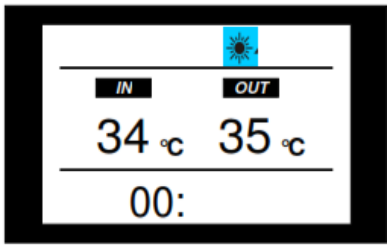
Now press ELEC. HEATING and ⏻ buttons at the same time, the value of the parameter starts to blink. Now you can change the value of the parameter with ▲ or ▼ buttons. When you have set the desired value, press the ⏻ button once to confirm the setting. New value of the selected parameter is now saved.

In this how all other parameters from **“0”** to **“12”** can be changed. »**Parameter table**« can be found on the next pages of these manual.

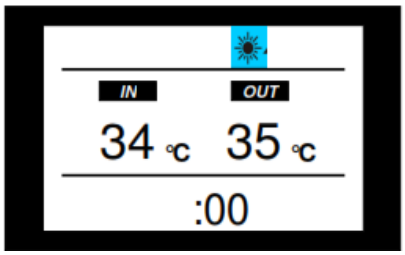
Some models of heat pumps provide 24-hour ventilation. To turn ventilation on or off in standby mode hold the ELEC. HEATING button for 5 s. The fan character on display appears or turns off.

15.2 Time settings

Exact time setting can be adjusted in both operation modes (working and standby mode). Press on CLOCK button once, the display shows the next situation:



Hour position **"00"** starts to blink and with ▲ and ▼ buttons, the hour value can be set. Then we press the CLOCK button and minutes **"00"** starts to blink.



Now with ▲ and ▼ buttons set current minutes value.

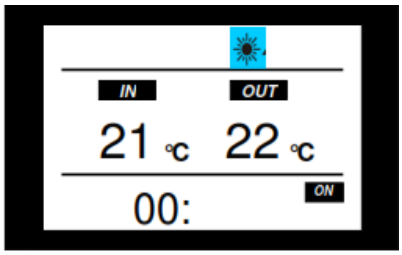
15.3 Setting timer for heating

Sanitary water can be heated in two ways. The most common heating of sanitary water is in relation to the need for it. Whenever the temperature of water in the tank falls for the temperature difference (Parameter no. 1) below the set point (Parameter no. 2) the device turns on and heats up the sanitary water.

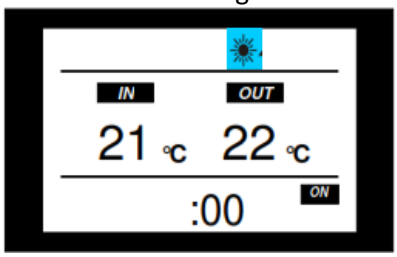
In the second way, the unit will heat up sanitary water by a scheduled program. The regulator allows the setting of two working and two static cycles. The device can only heat up the water in the active cycle's time. If the temperature of domestic hot water during the sleep cycle falls below the temperature difference, the heat pump will not start. This operation mode is effective in case of two tariff counter and setting for the operation in the lower rate, but may occasionally cause a lack of domestic hot water in case of short work time interval.

15.4 Time interval settings

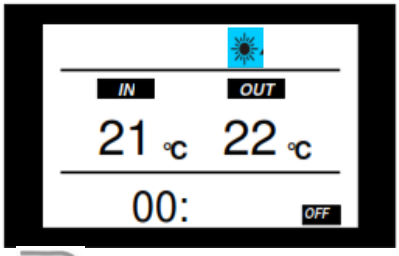
We can set the timer in both operation modes (working and standby mode). With one press on the TIMER button, the display shows the next status:



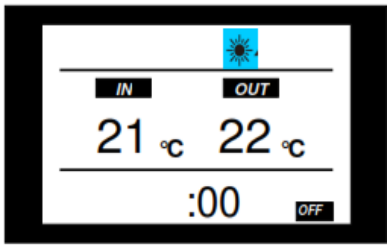
Clock »00« is blinking and with ▲ and ▼ buttons we can set the hour of the **start heating cycle clock**, then press the TIMER button again and minutes »00« start blinking.



Now, with the ▲ or ▼ buttons set the minutes of the **start heating cycle**, example: 23:30. With another press on the TIMER button, the display shows the next status:



Clock »00« is blinking and with ▲ and ▼ buttons we can set the hour of the **end heating cycle clock**, then press the TIMER button again and minutes »00« start blinking.



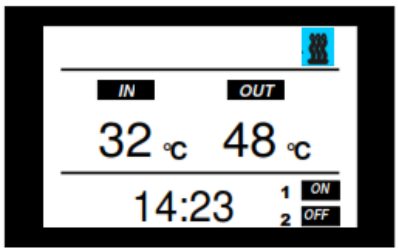
Now, with the ▲ and ▼ buttons set the minutes of the **end heating cycle clock**, example: 06:00.

Controller enables setting 2 daily turn on and off cycles. During setting, please ensure that the heating cycle is not shorter than 6h. Set timer is valid after 24h after setting finished.

To delete the time interval settings, press the TIMER button and then the CLOCK button.

15.5 Manual start of electric heater

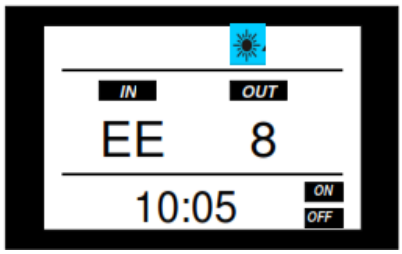
The electric heater can be turned on manually with pressing the ELEC. HEATING button once. The display will show the following status:



In the right top corner, the  icon is shown, which inform us that the electric heater is turned on. When electric heater is manually turned on, we also need to manually turn it off.
When the electric heater is turned on and the unit is also turned on, the water is heated with both the electric heater and compressor. When the unit is turned off, the water is heated only by the electric heater.

15.6 Malfunctions – error notification

In case of unit error, the display will show:



You can find the List of errors with description in these manual under paragraph »Troubleshooting and solutions«

15.7 Antilegionella program settings

This program enables regular water heating in tank above standard set temperature and kills potentially harmful microbes in the water tank.

Program has a settable period in how many days the program will be repeated. The period can be set under parameter number **“10”.** This period means in how many days after one cycle, the new cycle will start. During cycle, unit will heat the water in the tank up to set temperature under parameter number **“4”**. When the set temperature (parameter 4) in the tank is reached, the unit will maintain this temperature for a set time under parameter number **“5”**. After that time, the unit will start its normal heating cycle until the next start of the antilegionella program.

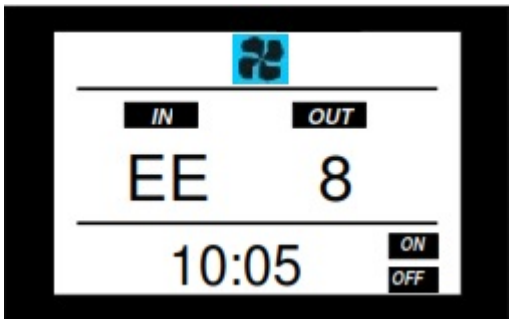
When the antilegionella program starts, the compressor and electric heater will work in parallel.

In the bottom part of the tank, there is an electric heater with 1800W nominal power installed. This heater has many functions. One is to help the compressor during the antilegionella program and reach desired temperatures which can be higher than 60°C. In this application the electric heater is turned on automatically when the water temperature reaches set parameter number **“2”.**

15.8Ventilation settings

Different ventilation settings allow us to use reduced fan power. We can choose from full fan power and half fan power. Ventilation mode allows us to power the fan, even though the heat pump has heated sanitary water to desired temperature and compressor is not running. Ventilation is activated by pressing the electrical heating button 

for 5 seconds. After that, a fan icon will appear on the display  .



Ventilation is deactivated by pressing the electrical heating button 

for 5 seconds. After that the icon on the4 display  will disappear.

16 PARAMETER TABLE

Param.	Description	Range	Factory setting	Note
0	Desired water temperature	10 - 70°C	48	Settable
1	Difference to start heating cycle	2 - 15°C	5	Settable
2	Temp. to start electric heater	10 - 90°C	50	Settable
3*	Time delay to start electric heater (min)	0 – 90 min	45	Settable
4	Desired water temp. during antilegionella program	60 - 90°C	60	Settable
5	Antilegionela time duration	0 - 90	0	Settable
6	Minimal time between two defrost cycles	30 - 90 min	45	Settable
7	Evaporator temp. to start defrost cycle	-20 - 30°C	-7	
8	Evaporator temp. to stop defrost cycle	2 - 30°C	13	
9	Max. defrost time	1 - 12 min	8	
10	Interval between two antilegionella cycles	7 - 99 days	99	
11				
12				
A	Water temperature above	-9 – 99°C		
B	Water temperature below	-9 – 99°C		
C	Evaporator temperature	-9 – 99°C		
D	Evaporation temperature	-9 – 99°C		
E	Gas temperature on compressor outlet	-9 – 99°C		
F	EEV position		10	

* On some unit models, set parameter need to be multiplied with factor 5.

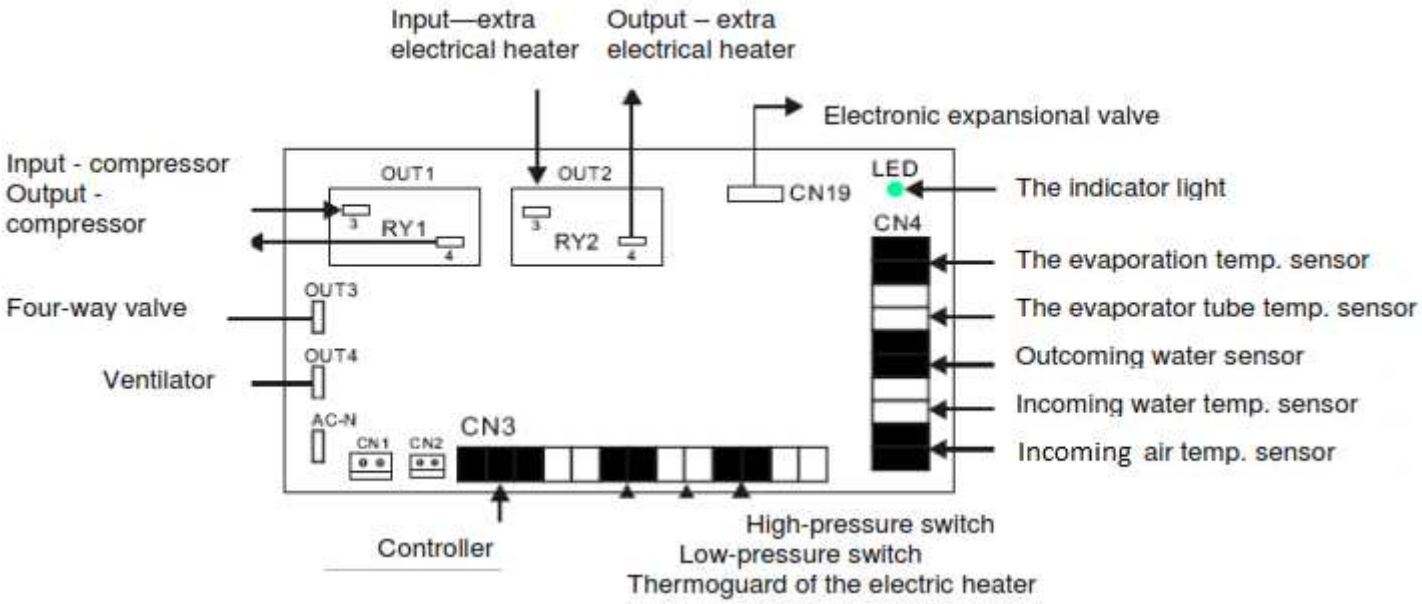
Advice:

It is a fact that heat pump will work more efficient if the set water temperature will be set to lower water temperature. We recommend that under the parameter **»0«**, the desired water temperature is set to 45°C, and the antilegionella program cycle is set to minimal cycle 1 month.

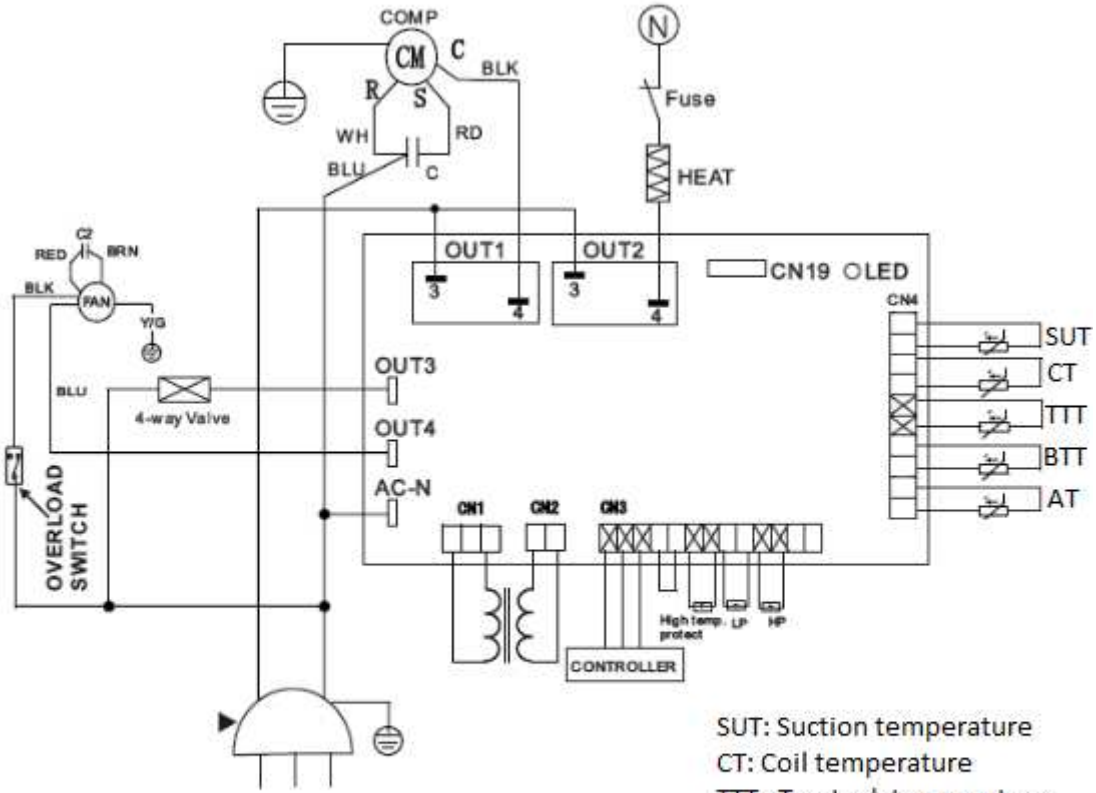
Maximal water outlet temperature

Air temp.	T<-3°C	-3°C<T<35°C	35°C<T
Compressor	-	60°C	-
El. heater	60°C	60°C	60°C

17 PCB BOARD CONNECTIONS



17.1 Electronic scheme



Power supply - 230V, 50Hz

SUT: Suction temperature
CT: Coil temperature
TTT : Top tank temperature
BTT: Bottom tank temperature
AT: Ambient temperature

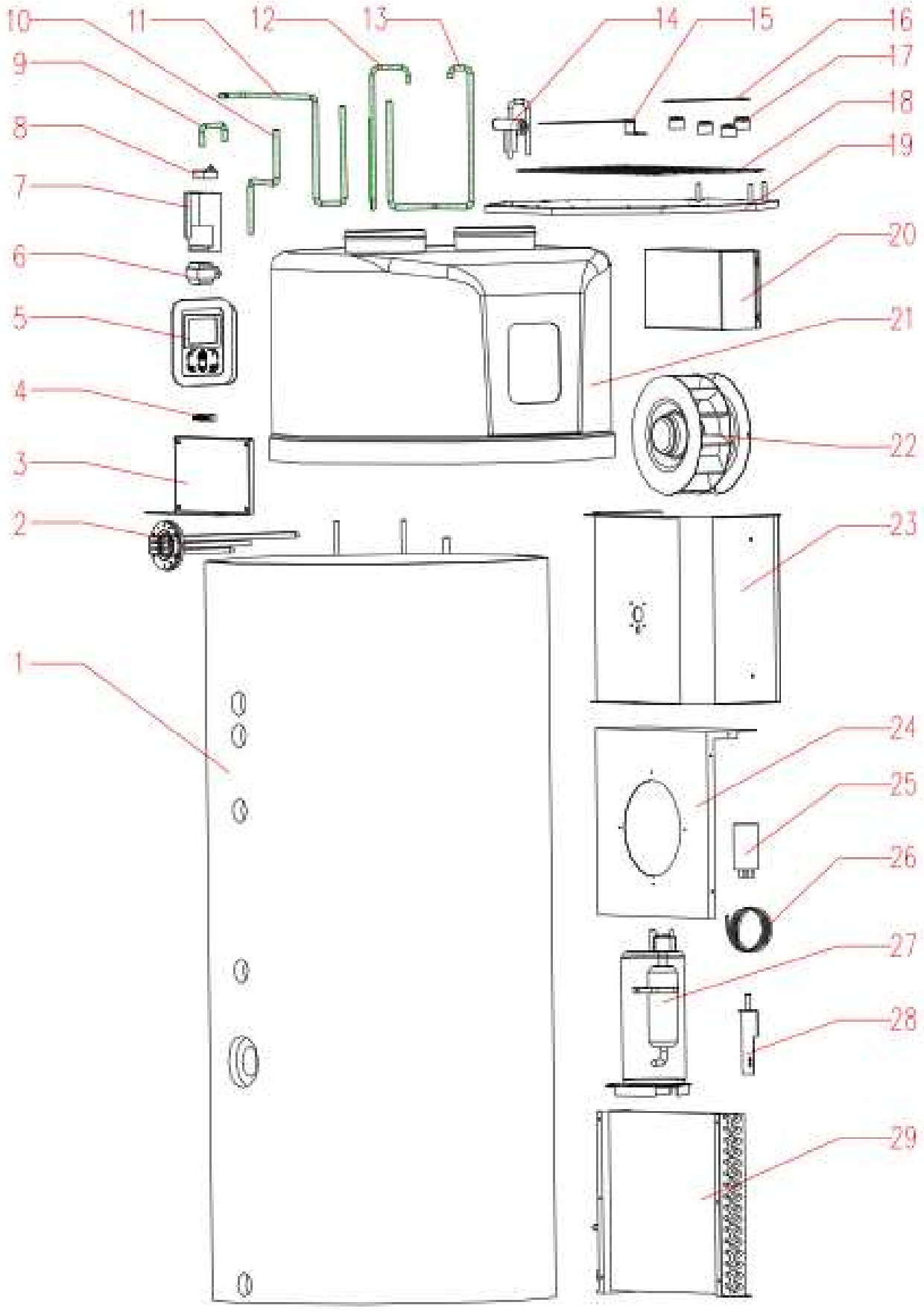
17.2 Temperature sensor resistance

T (℃)	R (KΩ)		T (℃)	R (KΩ)		T (℃)	R (KΩ)
-30.0	63.7306		14.0	7.7643		58.0	1.5636
-29.0	60.3223		15.0	7.4506		59.0	1.5142
-28.0	57.1180		16.0	7.1513		60.0	1.4666
-27.0	54.1043		17.0	6.8658		61.0	1.4206
-26.0	51.2686		18.0	6.5934		62.0	1.3763
-25.0	48.5994		19.0	6.3333		63.0	1.3336
-24.0	46.0860		20.0	6.0850		64.0	1.2923
-23.0	43.7182		21.0	5.8479		65.0	1.2526
-22.0	41.4868		22.0	5.6213		66.0	1.2142
-21.0	39.3832		23.0	5.4048		67.0	1.1771
-20.0	37.3992		24.0	5.1978		68.0	1.1413
-19.0	35.5274		25.0	5.0000		69.0	1.1068
-18.0	33.7607		26.0	4.8108		70.0	1.0734
-17.0	32.0927		27.0	4.6298		71.0	1.0412
-16.0	30.5172		28.0	4.4566		72.0	1.0100
-15.0	29.0286		29.0	4.2909		73.0	0.9800
-14.0	27.6216		30.0	4.1323		74.0	0.9509
-13.0	26.2913		31.0	3.9804		75.0	0.9228
-12.0	25.0330		32.0	3.8349		76.0	0.8957
-11.0	23.8424		33.0	3.6955		77.0	0.8695
-10.0	22.7155		34.0	3.5620		78.0	0.8441
-9.0	21.6486		35.0	3.4340		79.0	0.8196
-8.0	20.6380		36.0	3.3113		80.0	0.7959
-7.0	19.6806		37.0	3.1937		81.0	0.7730
-6.0	18.7732		38.0	3.0809		82.0	0.7508
-5.0	17.9129		39.0	2.9727		83.0	0.7293
-4.0	17.0970		40.0	2.8688		84.0	0.7086
-3.0	16.3230		41.0	2.7692		85.0	0.6885
-2.0	15.5886		42.0	2.6735		86.0	0.6690
-1.0	14.8913		43.0	2.5816		87.0	0.6502
0.0	14.2293		44.0	2.4934		88.0	0.6320
1.0	13.6017		45.0	2.4087		89.0	0.6144
2.0	13.0057		46.0	2.3273		90.0	0.5973
3.0	12.4393		47.0	2.2491		91.0	0.5808
4.0	11.9011		48.0	2.1739		92.0	0.5647
5.0	11.3894		49.0	2.1016		93.0	0.5492
6.0	10.9028		50.0	2.0321		94.0	0.5342
7.0	10.4399		51.0	1.9656		95.0	0.5196
8.0	9.9995		52.0	1.9015		96.0	0.5055
9.0	9.5802		53.0	1.8399		97.0	0.4919
10.0	9.1810		54.0	1.7804		98.0	0.4786
11.0	8.8008		55.0	1.7232		99.0	0.4658
12.0	8.4385		56.0	1.6680		100.0	0.4533
13.0	8.0934		57.0	1.6149			

18 TROUBLESHOOTING AND SOLUTIONS

Description	Alarm	Indicator	Reason	Solution
Supply connected		OFF		
Device active		ON		
Bottom water temp. sensor failure	P1	1 ON 1 OFF	Sensor failure or no connection	Check and replace sensor if needed
Upper water temp. sensor failure	P2	2 ON 1 OFF	Sensor failure or no connection	Check and replace sensor if needed
Temp. sensor on entrance in evaporator failure	P3	3 ON 1 OFF	Sensor failure or no connection	Check and replace sensor if needed
Temp. sensor on evaporator outlet failure	P4	4 ON 1 OFF	Sensor failure or no connection	Check and replace sensor if needed
Air temperature sensor failure	P5	5 ON 1 OFF	Sensor failure or no connection	Check and replace sensor if needed
High pressure	E1	6 ON 1 OFF	Too much gas in the system, no water in tank	
Low pressure	E2	7 ON 1 OFF	Too little gas in the system, bad temperature transfer on evaporator, evaporator sensor failure	Check leakage, clean evaporator, check sensor on evaporator, check air flow
El. heater thermal protection	E3	8 ON 1 OFF	Too high water temperature or no water in tank	Check cold water inlet
Hot gas	E4	9 ON 1 OFF		Check whole refrigerant circle
Communication failure	E8	ON	Communication between PCB and display disabled	Check connection between display and PCB
Defrost	Defrost	blinking		

19 COMPONENTS



No.	Name	Product code
1	Water storage tank 230 or 300L	
2*	Electric heater 1800W	
3	PCB holder	
4	Connector	
5*	Display	
6*	Transformer	
7*	Main control board (PCB)	
8*	Fan capacitor	
9	Condenser pipe outlet	
10	Condenser pipe inlet	
11	Evaporator inlet pipe	
12	Gas inlet pipe	
13	Gas outlet pipe	
14*	4 – way valve	
15	Compressor holder	
16	Strengthen holder	
17	Compressor rubber dampers	
18	Compressor plate	
19	Condensate plate	
20	PCB cover	
21	Main cover	
22*	Centrifugal fan with motor	
23	Evaporator holder	
24	Fan holder	
25*	Compressor capacitor	
26*	Expansion valve	
27*	Compressor	
28	Compressor holder	
29*	Evaporator	
*	High pressure switch	
*	Low pressure switch	
*	Temp. sensor (all)	
*	Power cord	

* All positions marked with star are available as spare part.

20 MAINTENANCE, MALFUNCTION AND SOLUTIONS

20.1 Maintenance by the user

Taking into account the instructions for installation and use, the unit will operate without any major disruption, major service intervention and additional maintenance.
If the unit will not be used for an extended period of time (unit will be turned off), you must turn on the unit periodically (every 14 days) and let it run for at least 30 minutes.
In certain periods (especially during winter) and in specific conditions in area (temperature, humidity) where the unit is installed, the amount of condensate will vary. At times there will be a lot of condensate, sometimes none at all. **This does not mean that unit is malfunctioning**. Amount of condensate is dependent of relative humidity and time of unit operation.
The user is obliged to follow the following maintenance instructions. **Proper and adequate maintenance of the equipment is a prerequisite for the recognition of warranty.**

WARNING!
Periodically check (monthly) connection for condensate drain. In case of clogging clean it appropriately.

WARNING!
Ensure clean heat pump working environment. Periodically inspect and if necessary clean the area, where the heat pump is located. This way you decrease the frequency of evaporator cleaning and ensure smooth and optimal performance of your heat pump.

WARNING!
In so far as the intended place of installation is in room where there is much dust or ash, possibility of leakage of volatile and flammable or other unwanted substances, wood or pellet stove, arrange heat pump air intake from another room. Dust and ash are deposited on heat pump evaporator and inside the heat pump, which can lead to operation disruptions or heat pump malfunctions. Leakage of explosive substances can lead to explosion or fire.

WARNING!
Periodically (every 6 months) check the connections (power, water, refrigerant) to the heat pump. Pay attention to possible water or refrigerant leaks. Inspect the dirt trap as well (monthly). In case of dirt trap not being cleaned regularly, it can get clogged. Periodically (monthly) inspect non-return valve on cold water line; gently press the valve lever, to drain the water.

WARNING!
In case of pipe clogging or freezing of certain parts, turn off the unit, disconnect it from the power supply and immediately contact customer service.

WARNING!
In case of odor or unusual sounds, immediately turn off the unit and contact customer service.

WARNING!
If the unit is located in room, where temperature can fall below freezing point (0°C) and heat pump will not be used for an extended period of time, the unit must be emptied. Otherwise damage to water container or electrical heating can occur.

WARNING!
Regular cleaning of water container and electrical heater (during Mg anode substitution or inspection) is required, to ensure efficient operation of the heat pump.

WARNING!
Magnesium anode must be inspected every 12 months and replaced if needed (Mandatory replacement every 24 months), to ensure and extend service life of the container. Qualified person removes the used anode and installs a new anode. After replacement make sure the anode is properly sealed. Otherwise warranty on the storage tank is not valid.

WARNING!

In case of malfunction contact authorized customer service. Faulty parts can be only replaced with original parts. **NEVER FIX THE DEVICE YOURSELF**! In case of unauthorized access to the unit or replacement of faulty parts with unoriginal parts, the manufacturer will not be liable.

WARNING!

USER IS OBLIGED TO FOLLOW ABOVE INSTRUCTIONS FOR MAINTENANCE. IN CASE OF DEVICE MALFUNCTION OR INJURIES DUE TO IMPROPER OR INSUFFICIENT MAINTENANCE BY THE USER, THE MANUFACTURER WILL NOT BE LIABLE FOR THE CAUSED DAMAGE OR CONSEQUENCES.

20.2 Regular annual maintenance

To ensure optimal operation and long service life of the device, regular yearly maintenance must be performed. When purchasing the unit, user agrees to allow regular maintenance from the authorized customer service. Some of the main items which include regular annual service are:

- Mg anode inspection
- Pipe and wire device connections
- Expansion vessel pressure inspection
- Condensate draining pipes cleaning
- Cold water inlet filter cleaning
- Refrigerant pressure in the system
- Functional test and device inspection
- Electrical heater inspection
- Operation control of electronic elements (compressor, ventilator, circulating pump, overflow valve, diverter valve…)
- Additional training of the user to ensure smooth operation of the device.

20.3 Malfunctions and resolutions

Malfunctions	Causes	Resolutions
Units doesn`t work	1. Power supply failure 2. Power supply connection failure 3. Power supply fuse failure	1. Cut down the power supply switch and check power supply. 2. Check out the reason and recover it. 3. Renew the fuse after check.
High pressure side of the compressor higher than normal	1. Too much refrigerant 2. Poor heat on evaporator	1. Contact your local service. Discharge over-charged refrigerant. 2. Clean the evaporator.
Low pressure side of the compressor lower than the normal value	1. Not enough refrigerant. 2. The filter or the capillary is blocked	1. Contact your local service. Check if the system is leaking and fill the system with refrigerant. 2. Contact your local service. Change the capillary or filter
No hot water comes out of the outlet.	1. Tap water has been closed 2. Water pressure is too low 3. Inlet valve has been closed	1. It'll return to normal after tap water is supplied. 2. Run the unit when the water pressure is higher. 3. Open the inlet water valve.

Warranty statement

We hereby declare that:

- Device will work properly in warranty period if you will use it in accordance with its purpose and instructions for use,
- we will on your request if it is made within the warranty period, on our own expense take care to remove the defects and shortcomings of the device, which cause non proper operation of unit within 45 days from the date of notification of failure.
- Warranty applies only for components installed and enclosed to delivered device, for components that are subject of installation: (filter, safety valve, expansion vessel, circulating pump, ...), warranty need to be assured directly from supplier of this components and not supplier of heat pump (seller or installer of the additional equipment).

The device, that will not be repaired within the period of 45 days, at your request, we will replace it with a new one.
Warranty begins on the date of retail sale, which can prove with a valid invoice or confirmed warranty certificate (name, seat, seal, signature of vendor and installer and date of the sale and installation).
Warranty is valid in EU. **Regular yearly service in warranty term is mandatory**, after and of warranty it is recommended. **In case of not performed regular yearly service warranty on the unit is no longer valid. Proof of performed regular yearly services is bill of performed service and confirmed warranty certificate.**

Warranty terms:

- 2 years on complete unit (if on invoice of unit is not written some other term)
- 5 years on enameled water tank, if:
    - Mg. anodes were annually checked
    - Mg anodes were replaced every 24 months
    - If instructions for galvanic couple formation prevention were followed

This warranty does not apply in the following cases:

- Unit was not used in accordance with enclosed manuals
- Installation and/or first start of unit was not performed by authorized person
- Repairs were performed by non-authorized person
- Negligent handling with device
- Damage caused by mechanical shock from buyer or a third party
- If, during the warranty period, regular yearly services were not performed
- If changes has been made to the original equipment, or if the device has been used for other purposes than those specified by the manufacturer
- If in the device were installed non-original parts
- On circulation pump if magnetic filter was not installed on heating system return and was damaged because of metal parts in heating system
- If Magnesium anode was not replaced every two years. Warranty does not include filters, seals, magnesium anode, other consumables and annual service which is chargeable.

Repair during the warranty period:
For repairs within the warranty period customer need to propose confirmed warranty certificate, original bill of unit purchase and its installation. When reporting faults on the unit, customer needs to give next information: device model, failure, serial number of product and purchase date.

Time of ensuring service:
This is the time period in which we provide service, supplies and spare parts. It shall be counted from the date of purchase. Time of ensuring service is a warranty period plus 3 years. In the event of a change of the unit model, we provide spare parts in the same color two years and with similar color for 3 years after the expiration of the warranty period.

The buyer has the right to obtain warranty after its completion, if it turns out that it was a hidden defect in the product which caused the damage.

WARRANTY CERTIFICATE

DEVICE:

TYPE:_____SERIAL NR.: _____

TYPE:_____SERIAL NR.: _____

TYPE:_____SERIAL NR.: _____

SELLER:

STAMP:

INSTALLER: (installer fills out)

STAMP:

_____

(Company name)

_____

(Company address)

Date of install: _____

SERVICE BOOK:

1. Service inspection:

Date: _____, Company:_____, STAMP

2. Service inspection:

Date: _____, Company:_____, STAMP

3. Service inspection:

Date: _____, Company:_____, STAMP

4. Service inspection:

Date: _____, Company:_____, STAMP

5. Service inspection:

Date: _____, Company:_____, STAMP