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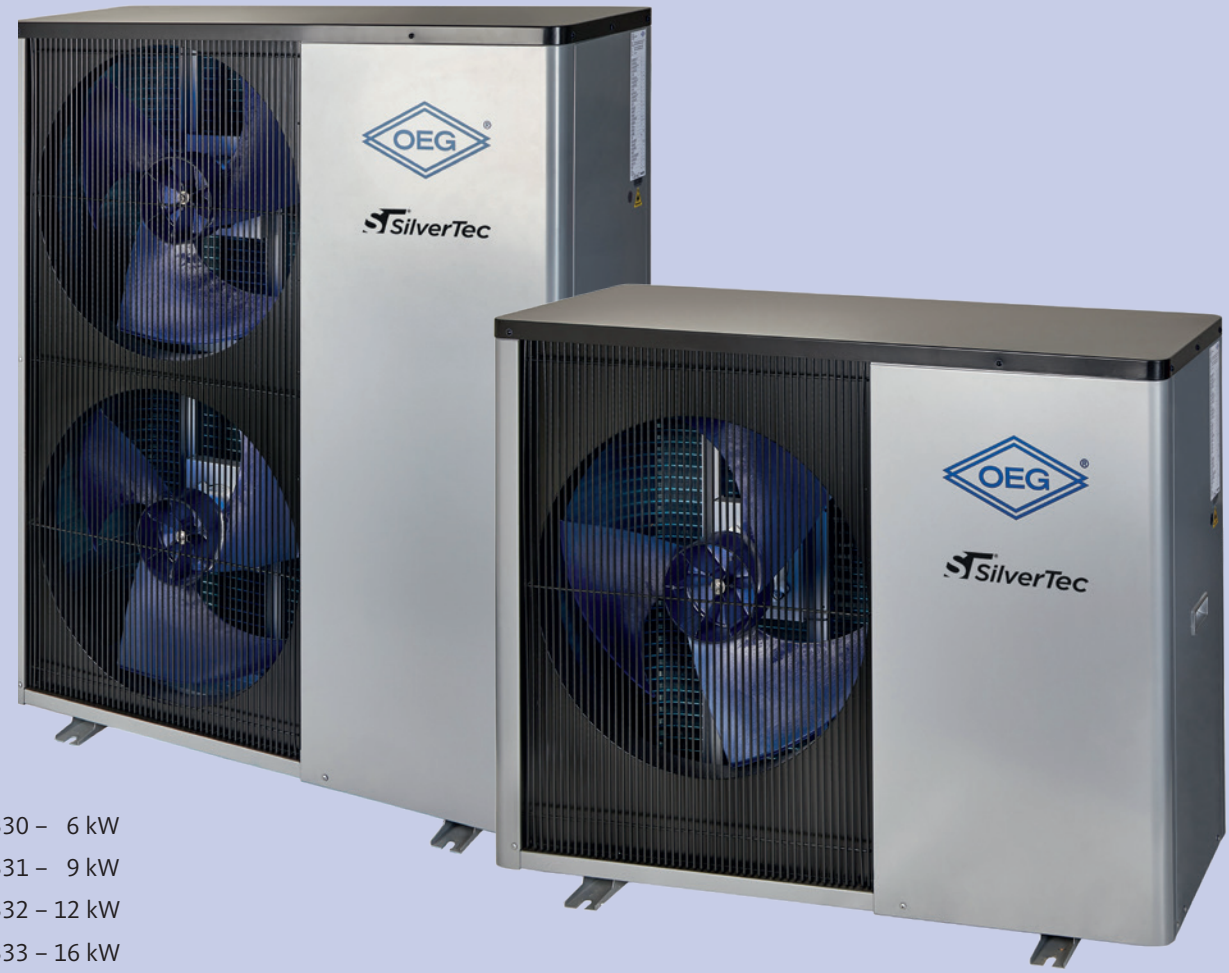


650 001 330 – 6 kW
650 001 331 – 9 kW
650 001 332 – 12 kW
650 001 333 – 16 kW

GB

Air/water heat pump with inverter technology
Installation and operating instructions

Art. 10167 R03

GB

Contents

As of: 04 / 2024

1 General

This unit is a highly efficient monobloc air/water heat pump for outdoor installation. The technical structure as well as all components are designed for a long service life even with harsh weather conditions.

1.1 Intended use

The unit is intended for space heating in detached and multi-family houses as well as in small industrial businesses. Furthermore. it can be optionally used for space cooling and DHW heating. Application range: -25 up to +45 °C outside temperature. After instructed by qualified personnel and with due regard to these installation and operating instructions. the user can operate it safely. Any other use or one which goes beyond the intended use specified in this manual shall be deemed as improper.

1.2 General safety regulations

- For a safe operation of the appliance. the user must have read and understood this manual before commissioning.
- Keep this manual in a place that is accessible at all times.
- If you sell the appliance or pass it on to somebody else. this manual must also be handed over along with the unit.
- Please observe all safety instructions! Non-observance can endanger you and others.
- The appliance must not be operated by children or by people with limited cognitive abilities.
- Always switch off the external main switch before any cleaning work.
- Do not modify any safety or control devices.
- Do not pull. remove or twist any power cables exiting the unit.
- Do not insert any objects through the grid and into the fan.
- Repairs may only be carried out by qualified personnel while adhering to all country-specific regulations.
- Have qualified personnel perform inspections and maintenances regularly.
- While being connected or during maintenance. live components must never be accessible unattended.
- During and immediately after operation some components (e.g. pipes) may be dangerously hot or cold. Do not touch such parts or. if necessary. only with suitable protective equipment.
- We do not bear any liability for damages caused by failure to observe these operating instructions.
- Works on the refrigerant circuit may only be carried out by qualified personnel and are prohibited without a valid certificate of competence.

1.3 Scope of delivery

- Ready-to-connect heat pump incl. refrigerant
- Controller with pre-assembled cable. cable length 20 m*
- Temperature sensor for DHW (domestic hot water). cable length 20 m*
- Temperature sensor T6. cable length 20 m*
- Water drain valve*
- Installation and operating instructions/manual

Always keep packaging material out of the reach of children!

*Inside the unit. behind the front panel. For opening the front panel. see chapter 3.4 on page 62 of this manual.

2 System description

The appliance is a monobloc air/water heat pump.
In a monobloc. all required components are included in one single unit. The heating circuit system of the building is directly connected to the heat pump. Since installation and connection are very simple. the system can usually be put into operation within a few hours.

The appliance provides five different operating options:

- Space cooling
- Space heating
- DHW heating
- Space cooling + DHW heating
- Space heating + DHW heating

By means of a DC inverter. the performance of the heat pump adapts fully automatically to the respective heating demand. Defrost programmes for the heat exchanger are activated fully automatically. OEG domestic monobloc heat pumps are supplied as ready- to-connect units designed for outdoor installation. The refrigerant R290 with the GWP value 3 contained in a hermetically sealed circuit is one of the most climate-friendly and at the same time most efficient refrigerants on the market.
The heat pump is set up and operated via touch-sensitive colour screen (touch screen). During operation. the display is usually not required and. therefore. dimmed. After touching the screen. the current status with the most important settings is displayed clearly. Users and technicians are provided with password-protected menu structures. The intelligent control holds a variety of information and setting options.

3 Installation

Important information to avoid damages to the heat pump

- Before water is conveyed through the plate heat exchanger. a filter must be installed. The water filter should be cleaned after the initial commissioning and after that at least annually. In addition. the installation of a dirt separator is recommended.

- In colder regions and where ambient temperatures can drop to values of 0 °C or lower. there must be sufficient **antifreeze (glycol) in the water system** of your heat pump for safety reasons. See chapter 3.6 for more information.

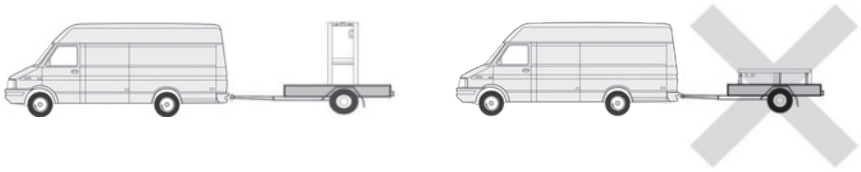
- In order to ensure the integrated electrical frost protection function is still active. the heat pump must always **remain connected to the power supply**. In case of a power failure and not enough antifreeze (glycol) has been added to the water system . the water must be completely drained from the heat pump. Freezing water in the pump can damage the heat pump seriously.

3.1 General information for the installation technician

The installation. commissioning. maintenance and repair of the appliance must only be carried out by a specialised technician. This person is responsible for the compliance with all valid regulations during installation and initial commissioning. The appliance must be installed completely and operated only with all safety devices. Protect the unit from dust and dirt during the construction phase.

3.1.1 Transport and storage

The appliance must only be transported and stored vertically.



3.1.2 Laws. directives and regulations

Local or country-specific regulations must be observed. such as the inspection and approval of the heating installation before commissioning as well as the permission from the energy supplier for the connection.
The inspection must be performed by a qualified technician and documented accordingly.
In case of a replacement of the heat pump. the installation must be approved once again if necessary.

3.1.3 Installation regulations and safety clearances

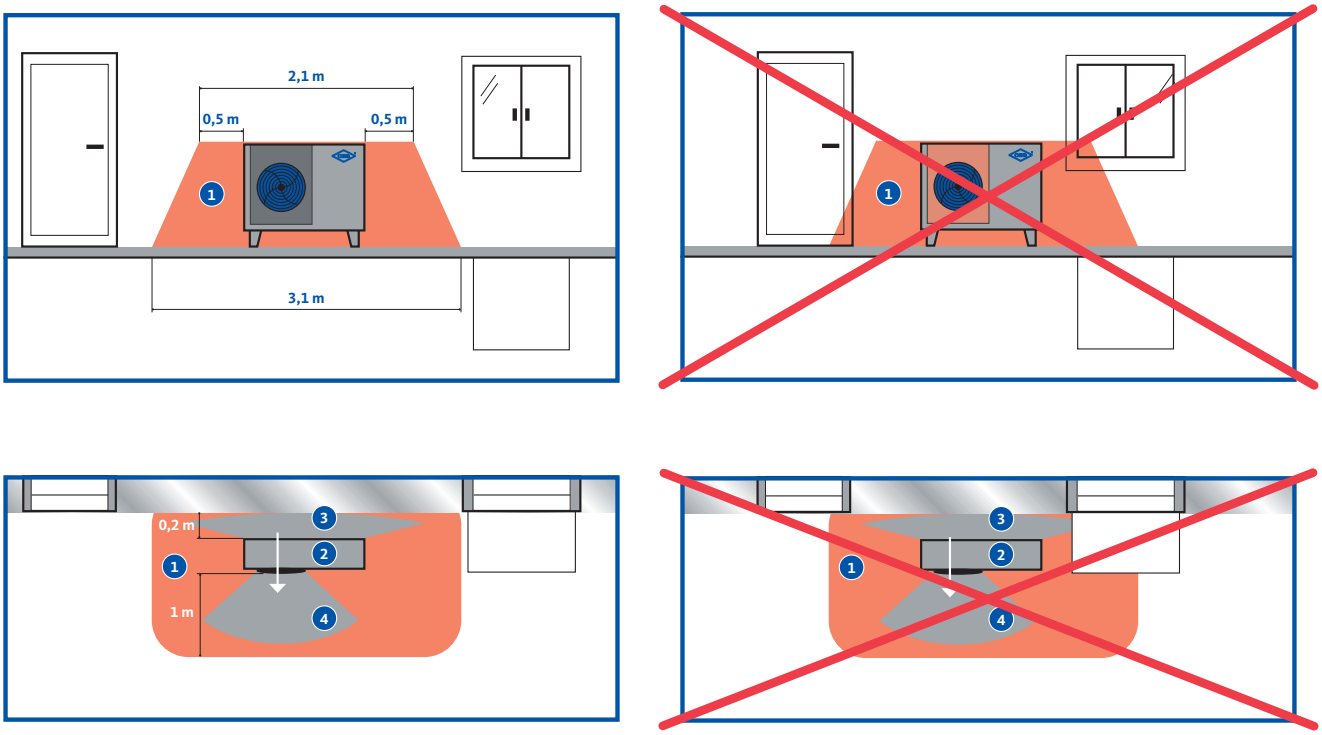
The heat pump contains combustible refrigerant and may only be installed outdoors. Select a location which prevents the ingress of refrigerant into the building or into closed rooms in the event of a leakage.
The protected areas must be free from ignition sources such as open flames. patio heaters. grills. electrical systems. socket outlets. luminaires. light switches. sparking tools and objects with temperatures › 360 °C. Furthermore. it is very important that there are no windows. doors. ventilation holes. light shafts. escape hatches. flat-roof windows. downpipes or other non-sealed shafts in the protected area. There must be no public traffic areas. car parks or neighbouring properties in this zone. The installation in a dip or on a pitched roof is not permitted.
In case of danger from vehicles. it is required to ensure there is a sufficiently dimensioned impact protection for the heat pump outside the protection zone.
Any works on the refrigerant circuit may only be carried out by competent personnel in accordance with DIN EN 13313.
Nationally and/or internationally compulsory inspections of the refrigerant circuit have to be observed by the user.
The planner. installer or user must create a possibly mandatory hazard assessment together with an ex-proof document and a risk assessment with relevant protective measures before the heat pump is installed and commissioned.

References to standard:
DIN EN 13313: EU standard refrigerating systems and heat pumps – Competence of personnel
DIN EN 60079-14: National and EU regulation Explosive atmosphere Part 14: Electrical installations design. selection and erection.
VDMA 24020: Standard sheet to support the operators and their duties.
Operational requirements for refrigerating systems.
Part 3: Refrigerating systems with combustible refrigerants of Class 3.
General requirements

Refrigerant	**R290 (propane)**
GWP (Global Warming Potential)	3
Safety class acc. to ASHRAE	A3
LFL (Lower Flammability Limit)	0.038 kg/m3
Vapour density 25 °C. 101.3 kPa	1.8 kg/m3
German water hazard class (WGK)	non-hazardous

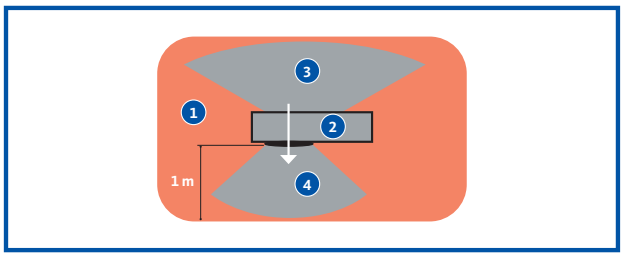
3.1.3 Installation regulations and safety clearances

Protected area when installed against a closed wall



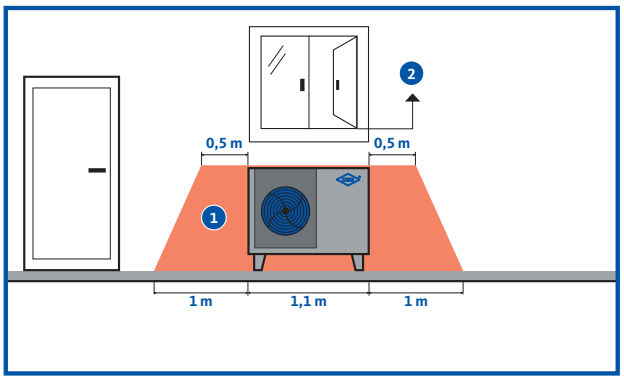
1 Protected area
2 Air flow direction
3 Air intake area
4 Air outlet area

Protected area when installed not in the vicinity of a building



1 Protected area
2 Air flow direction
3 Air intake area
4 Air outlet area

Protected area when installed below a window



1 Protected area
2 Beginning of window aperture

• Protected area must not reach into window aperture.

3.1.4 Recommended installation distances

OEG heat pumps are equipped with high-quality components to avoid and reduce sound emissions. However. operating noises cannot be entirely avoided. Depending on the installation location and pump model. the following minimum distances towards sensitive areas (e.g. bedroom windows) are recommended for the operation during the night.

Minimum distance to heat pump based on DIN 4109-1. 32nd BlmSchV and TA noise
Distance in meters. operating mode: night mode

Terrain type / Installation position	Immission limit values dB(A)	650001330 6 kW	650001331 9 kW	650001332 12 kW	650001333 16 kW
Industrial areas	70	1	1	1	1
Business parks	50	1	2	2	2
Core areas. village areas. mixed areas	45	2	2	2	3
General residential areas. small housing estates	40	3	4	4	5
All-residential areas	35	5	7	7	9
Spa areas. hospitals. nursing homes	35	5	7	7	9

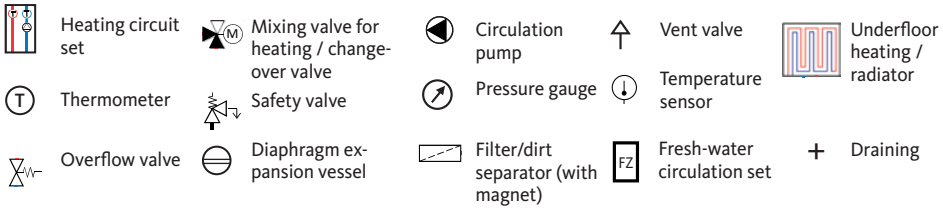
3.1.5 Control unit

The heat pump is equipped with a wired. electronic controller.
The controller is installed inside the house. In order to avoid interferences. the connection cable of the controller should not be laid close to the main connection line. You can request a variety of information from the controller. Furthermore. users and technicians are provided with all setting options required.
The controller is used during installation and maintenance.
Under normal circumstances. access to the controller is not relevant for residents.

3.2 Installation examples

For the five different operating modes (see Chapter 2 “System description“). there is a variety of hydraulic integration options.
For the space-cooling modes. all water-carrying components must be insulated impermeably and protected against corrosion.
The following application examples are only schematic diagrams. They must be complemented by missing safety modules etc.
The safety-related equipment for DHW systems must be installed in accordance with DIN EN 12828.
In all systems the minimum volume flow in the heating circuit of the heat pump must be adhered to. Non-observance leads to failure.

Symbols and their meanings:

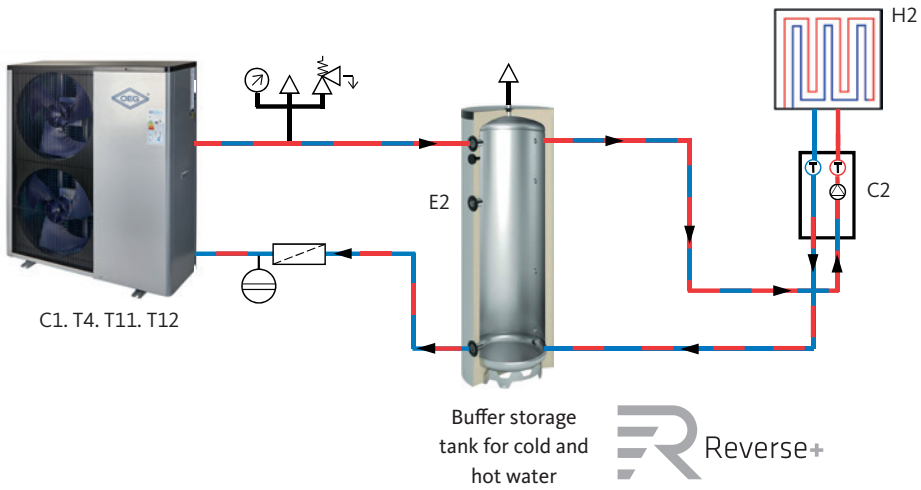


3.2 Installation examples

Plan 1:

Space heating/Space cooling:

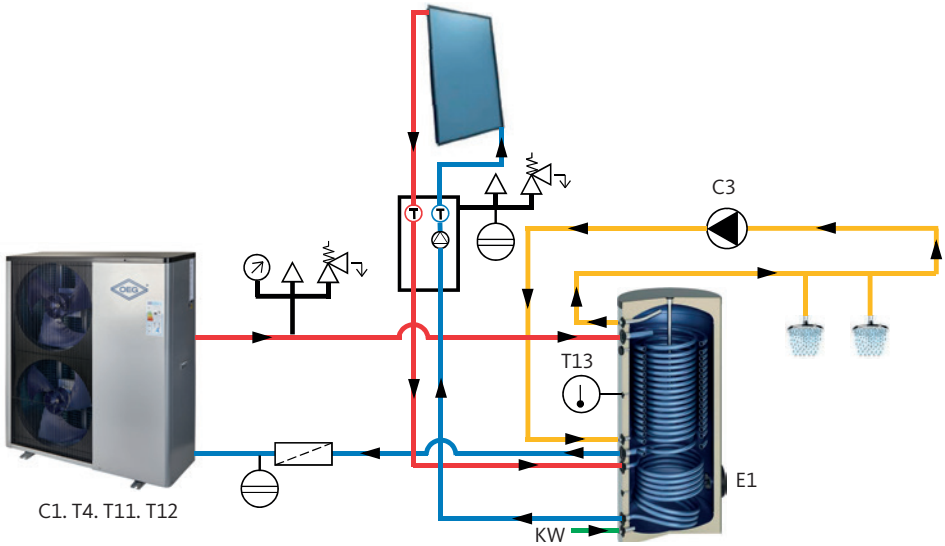
C1 integrated circulation pump
C2 in-house circulation pump
E2 electrical booster heater for heating water
H2 underfloor heating
T4 temperature sensor ambient air
T11 temperature sensor heating water return
T12 temperature sensor heating water flow



Plan 2:

DHW heating with solar energy:

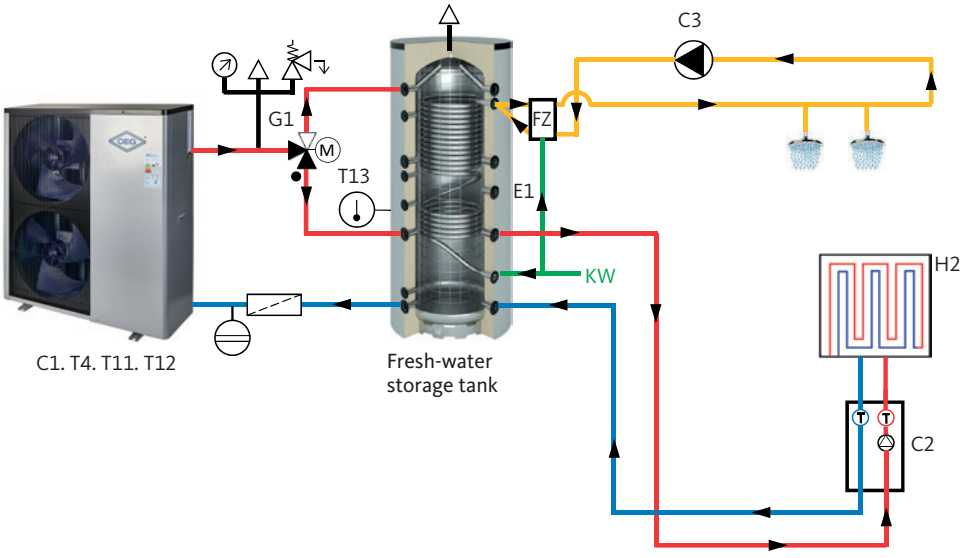
C1 integrated circulation pump
C3 DHW circulation pump
E1 electrical booster heater for DHW
KW cold water inlet
T4 temp. sensor ambient air
T11 temp. sensor heating water return
T12 temp. sensor heating water flow
T13 temp. sensor DHW tank

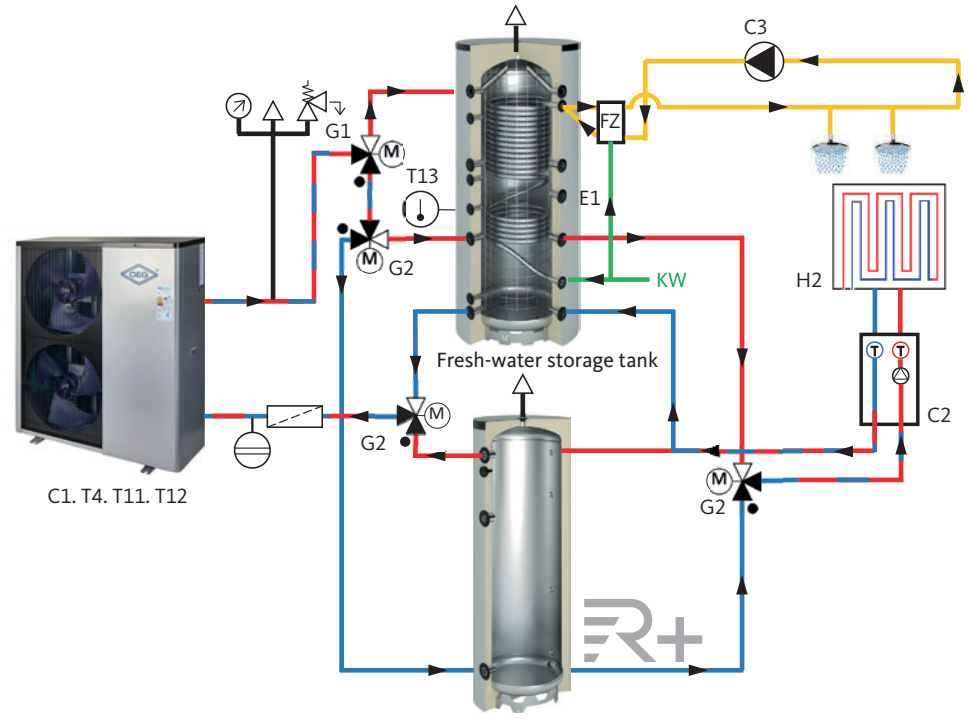


Plan 3:

Heating and DHW heating:

C1 integrated circulation pump
C2 in-house circulation pump
C3 DHW circulation pump
E1 electrical booster heater for DHW
FZ fresh-water circulation set
G1 three-way valve AC/DHW
H2 underfloor heating
KW cold water inlet
T4 temp. sensor ambient air
T11 temp. sensor heating water return
T12 temp. sensor heating water flow
T13 temp. sensor DHW tank





Buffer-cold storage tank

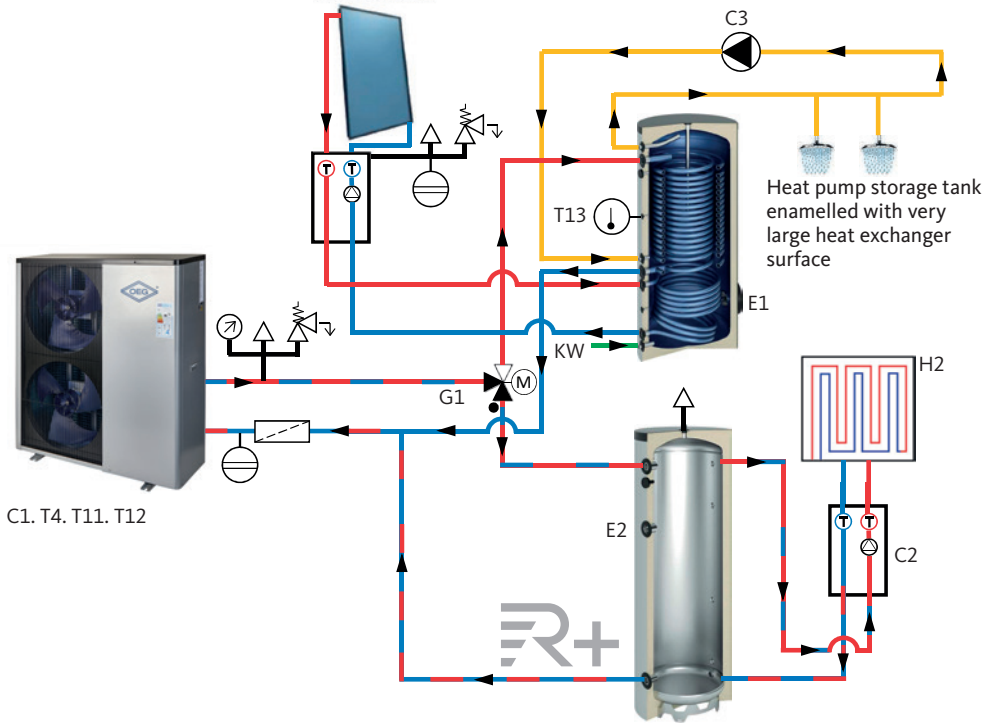
- marks the open connection of the valve in initial position (currentless)

Plan 4:

Heating/cooling and DHW heating:

C1	integrated circulation pump
C2	circulation pump heating circuit
C3	DHW circulation pump
E1	electrical booster heater for DHW
FZ	fresh-water circulation set
G1	three-way valve AC/DHW
H2	underfloor heating
KW	cold water inlet
T4	temp. sensor ambient air
T11	temp. sensor heating water return
T12	temp. sensor heating water low
T13	temp. sensor DHW tank

Efficient 2-tank system diagram for space heating and DHW heating by means of fresh-water storage tank Pure+ incl. energy-saving circulation set and separate storage tank for space cooling.



Buffer storage tank for cold and hot water marks the open connection of the valve in initial position (currentless)

Plan 5:

Heating/cooling and DHW heating with solar energy:

C1	integrated circulation pump
C2	in-house circulation pump
C3	DHW circulation pump
E1	electrical booster heater for DHW
E2	electrical booster heater for heating water
G1	three-way valve AC/DHW
H2	underfloor heating
KW	cold water inlet
T4	temp. sensor ambient air
T11	temp. sensor heating water return
T12	temp. sensor heating water flow
T13	temp. sensor DHW tank

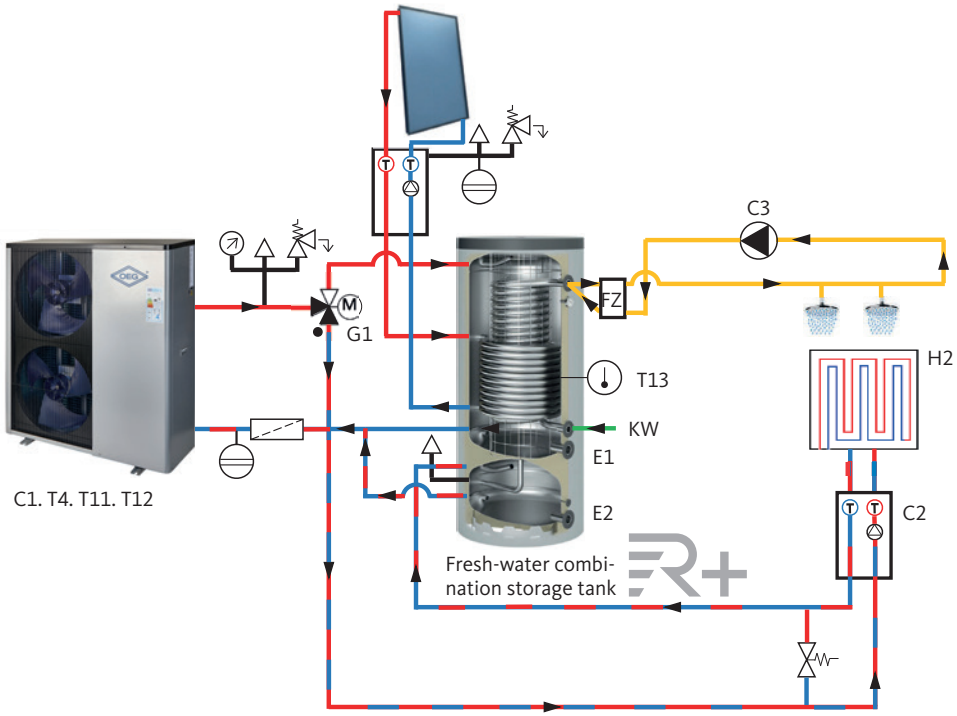
3.2 Installation examples

Plan 6:

Heating/cooling and DHW heating with solar energy:

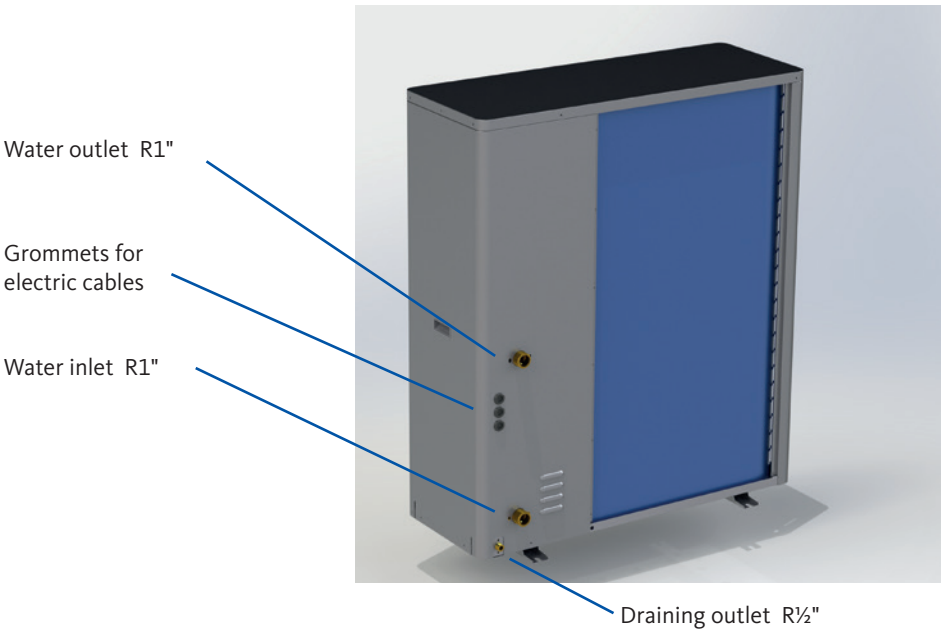
C1 integrated circulation pump
C3 DHW circulation pump
E1 electrical booster heater for DHW
E2 electrical booster heater for heating water
G1 three-way valve AC/DHW
H2 underfloor heating
KW cold water inlet
T4 temp. sensor ambient air
T11 temp. sensor heating water return
T12 temp. sensor heating water flow
T13 temp. sensor DHW tank

Efficient 2-in-1 tank system diagram for operation in mode Space heating and Space cooling with buffer storage tank in the return. Preferably for seasonal mode change. Additional efficient DHW heating with solar support by means of hygienic stainless steel coil and energy-saving circulation set.



3.3 Pipe connection

Backside connections of heat pump



All supply lines (electricity and water) are protected against moisture. mechanical damages and UV rays by installation conduits or other appropriate measures. Especially in winter. an unobstructed outflow at the condensate opening must be observed. In order to ensure operational safety at all times. the use of a heat strip with frost monitor can be helpful.

Water supply connections

To facilitate the connection of the appliance. it is recommended to use flexible. impermeable corrugated stainless steel pipes. Contaminants in the pipes must be flushed out before the heat pump is connected. A strainer / dirt filter needs to be installed in the return pipe upstream from the heat pump. It is also recommended to use a dirt separator in the return pipe to the heat pump additionally to the filter.
All water-carrying pipes have to be thermally insulated inside and outside sufficiently pursuant to applicable regulations. If cooling operations are planned. vapour-impermeable insulations should be installed to prevent condensate formation.

Hydraulic minimum sections and flow rates

The minimum pipe cross-section of the hydraulic system must not at any point be below the internal diameter of the water connections at the heat pump.

Capacity heat pump	Nominal flow rate (l/min)	Minimum flow rate (l/min)	Minimum pipe section (mm)
6 kW	18	6	25
9 kW	26	8	25
12 kW	35	11	25
16 kW	46	14	32

The heat pump should preferably be connected with short and flexible pipes for acoustic decoupling. Longer connection lines between heat pump and tank should be in smooth-pipe version due to lower flow pressure losses.

The **heating water quality** must comply with the following conditions:

Size of dirt particles	< 0.5 mm
Water hardness	≤ 8.4 °dH or ≤ 15 °fH
pH value	6.5 - 8.5
Conductivity (softening)	< 1.000 µS/cm
Conductivity (desalting)	< 1.000 µS/cm
Cl^-	< 100 mg/l
SO_4^{2-}	< 100 mg/l
Fe^{2+}	< 1 mg/l
H_2S	< 0.5 mg/l

Pipe fixings and wall feed-throughs must be performed with structure-borne sound insulations. If needed (e.g. in case of a power failure). the water can be drained from the heat pump via the drain valve.

3.4 Electrical connection

Electrical connection

All electrical installation and connection works have to be performed in accordance with national and local regulations. The connection to the mains supply is only permitted as a fixed connection. The appliance must be able to be disconnected from the mains supply via an isolating distance of at least 3 mm all-pole.

	6 kW	9 kW	12 KW	16 KW
Max. consumption (A)	12	13.7	5.7	9.4
Rated voltage / frequency (V / Hz)	230 / 50	230 / 50	400 / 50	400 / 50

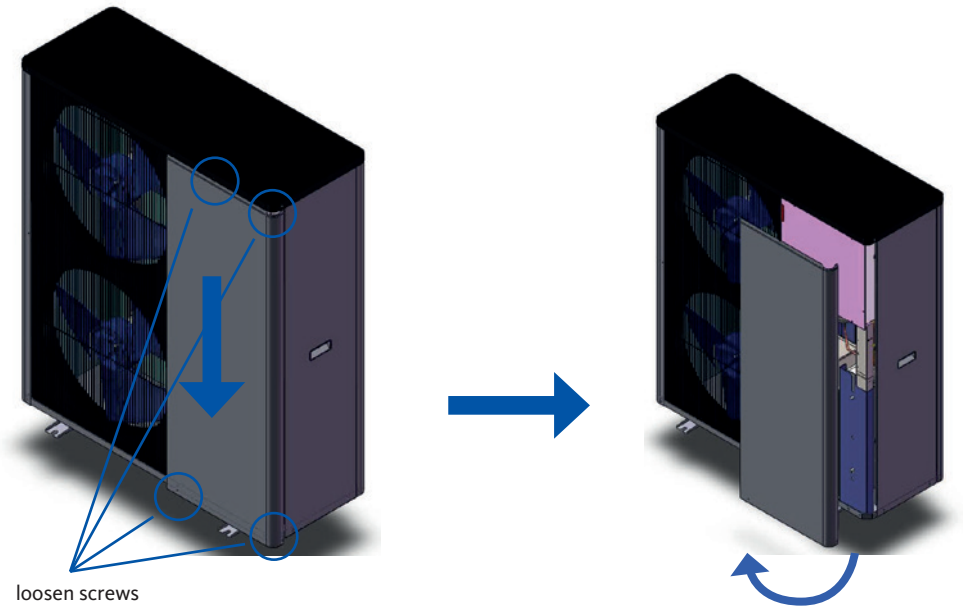
Sensor connection cables

Sensor connection cables between heat pump and control unit should not be installed close to the main connection lines.

Connection cable control unit

The control unit is connected to the heat pump via a 4-core. 20 m long cable.
The cable may be extended to up to 100 m if required.
Please also read the information in Chapter 3.1.5.

Opening the cabinet for the connection of electrical lines



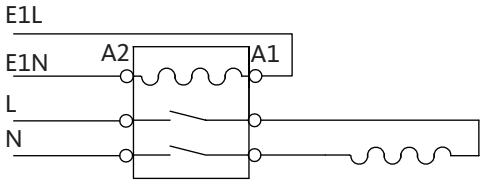
loosen screws

The following elements are located behind the side cover:

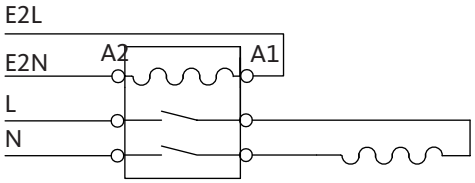
- Power connection
- Terminal block for the connection of sensors. pumps. valves and heating elements
- Removable. wired controller with 20 m cable
- DHW temperature sensor with 20 m cable
- Circulation-line sensor with 20 m cable

Connection of electrical booster heater

Separate circuit breakers must be installed for all installations.



E1: Electrical booster heater for hot water



E2: Electrical booster heater for heating water

If the temperature in the DHW storage tank falls below +5 °C. the system will switch to DHW frost protection automatically.
If the temperature rises above +15 °C or the circulation pump has worked for longer than 30 minutes. DHW frost protection will be deactivated automatically.

If the heating flow or return temperature of the heat pump falls below the value of parameter P25. heating frost protection will be activated. Depending on the outside air temperature. one of the following actions will be started:

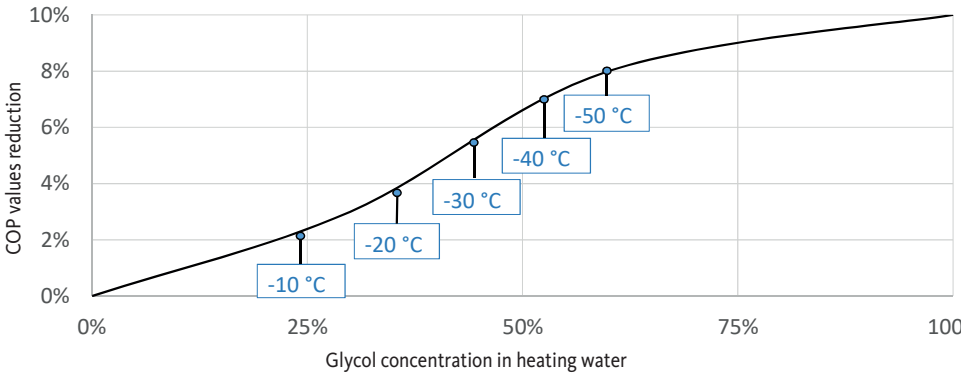
- At an outdoor temperature of ≤ +15 °C: compressor for heating will start
- At an outdoor temperature of ≥ +15 °C: circulation pumps C1 and C2 will start

If the heating flow temperature is higher than +10 °C or the circulation pump has worked for longer than 30 minutes. heating frost protection is deactivated.

If the heating flow or return temperature falls below +10 °C and the circulation pump has worked for longer than 30 minutes. the time calculation starts and records how often the deactivating status occurs. If it occurs twice within 90 minutes. error code E24 will appear.
In climate zones with the danger of frost. it is recommended to add glycol-based antifreeze to the heating water to protect the heat pump. The reliability of frost protection increases with a rising glycol content in the heating water. In most climate zones. the efficiency of the heat pump is only marginally impaired by the use of antifreeze.
The graph shows the relationship of reliable frost protection. glycol content and efficiency. Depending on the antifreeze used. the specified values can deviate.
Please observe the manufacturer's specifications.

3.6 Heating frost protection

Frost protection with outdoor temperatures below 0 °C



3.7 Commissioning

3.7.1 Before initial start

Inspection of mechanical components

- Check the housing and the internal pipe system for any damages.
- Check if the heating-water circuit is filled and completely vented.
- Check if the fan can run smoothly.

Inspection of electrics

- Check if the power supply (voltage. frequency) complies with the technical specifications on the type plate.
- Check all electrical connections for a firm seat and possible damages.

Inspection of pipe system

- Check all valves and the flow directions of the water.
- Check the appliance inside and outside for any possible leaks.
- Check the insulation of all pipes.

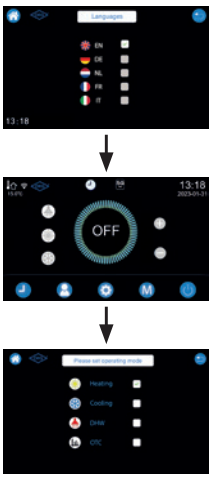
Filling out the commissioning report (see Chapter 8)

3.7.2 Initial start and commissioning

After the system inspection has been completed. the heat pump can be put into operation.

- Switch on the power supply.
- Follow the start menu and enter the data on language. date and operating mode.
- Switch on the heat pump (see 4.7.2).
- The circulation pump starts to run immediately. After 30 seconds the fan motor starts.
- After another 5 seconds the compressor begins to work.
- Initially. air may escape from the heating water. and it may become necessary to vent the system.
- If afterwards heat pump. circulation pump or heating element still make bubbling sounds. the entire system will require to be vented.
- As soon as the system is stable (with correct pressure and all air evacuated from the system). the controller can be set as required.
- Check the temperature differential between heating water flow and return.
- It is recommended to expertly adjust the parameters of the heat pump system individually.
- Fill out the commissioning report. See download area of OEG heat pumps in the OEG online shop.

Commissioning:



4 Control unit and operation

The wired control unit

The controller is operated by touching the screen surface. The main menu shows the most important status information and temperature settings in the display.
The heat pump is switched on and off via the controller. in the submenus detailed status information can be indicated. and many control parameters can be set there.
Parameter settings are only allowed to be modified by qualified technicians.

4.1 PV Ready instruction

The heat pump is controlled by the inverter of the photovoltaic system. If parameter P121 is set to 0 (factory setting). the PV Ready function will shut off. If P121 is set to 1. PV Ready will be activated. Under this function. there are the following 5 operating modes:

1. Heating operation:

After the heat pump controller has received the corresponding signal from the PV inverter. the system shuts down automatically. When restarted. the heat pump will start heating with maximum power until the set temperature is reached.

2. DHW heating:

After the heat pump controller has received the corresponding signal from the PV inverter. the system shuts down automatically. and when restarted. the hot water will be heated up to the maximum flow temperature. while the heat pump runs up to the maximum operating limit. After that. the DHW temperature with the set hysteresis will be maintained as long as the inverter signal continues.

3. Heating + DHW heating:

After the heat pump controller has received the corresponding signal from the PV inverter. the system shuts down automatically. When restarted. the heat pump will start heating with maximum power until the set temperature is reached. As long as the PV inverter signal continues. the heat pump will perform DHW heating.

4.1 PV Ready instruction

4. Cooling operation:
After the heat pump controller has received the corresponding signal from the PV inverter. the system automatically shuts down. When restarted. the heat pump will start cooling at the maximum power until the set temperature is reached.

5. Hot water production (DHW)+ Cooling operation:
After the heat pump controller has received the corresponding signal from the PV inverter. the system shuts down automatically. After the restart. DHW heating will run at the highest temperature. and the heat pump will run up to the maximum operating limit. When the DHW has reached the target temperature. the system will shut down. When restarted. the heat pump will start cooling with the maximum power until the target temperature is reached.

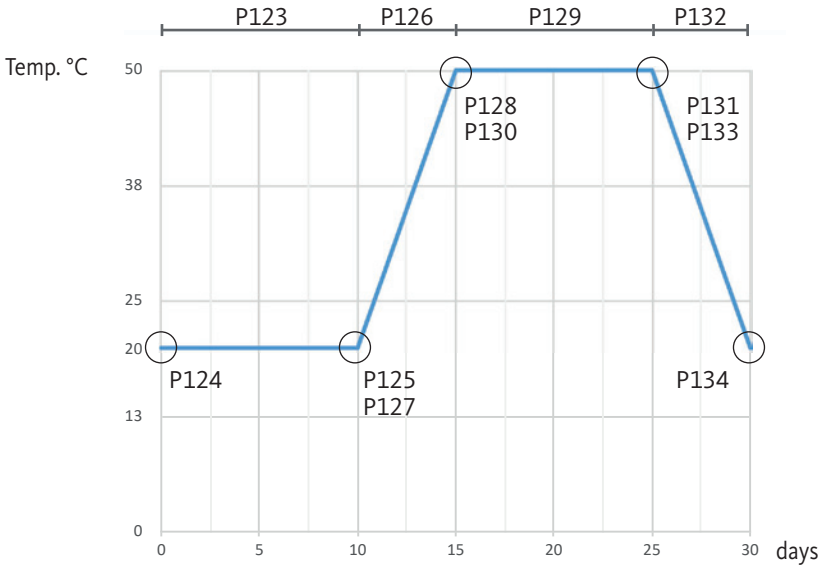
4.2 Floor drying

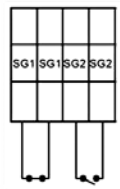
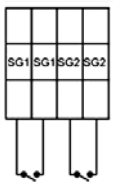
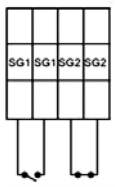
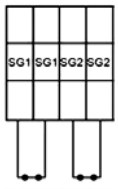
The installation technician is responsible for setting all parameters according to the requirements of the floor manufacturer.

The linear progression of the temperatures is calculated by the software itself depending on the set duration.

P122 floor drying programme (0 = off. 1 = on)
P123: 1st period (1 .. 15 days. factory set 10 days)
P124: 1st period start temperature (10 .. 60 °C. factory set 20 °C)
P125: 1st period end temperature (10 .. 60 °C. factory set 20 °C)
P126: 2nd period (1 .. 15 days. factory set 5 days)
P127: 2nd period start temperature (10 .. 60 °C. factory set 20 °C)
P128: 2nd period end temperature (10 .. 60 °C. factory set 50 °C)
P129 3rd period (1 .. 15 days. factory set 10 days)
P130: 3rd period start temperature (10 .. 60 °C. factory set 50 °C)
P131: 3rd period end temperature (10 .. 60 °C. factory set 50 °C)
P132: 4th period (1 .. 15 days. factory set 5 days)
P133: 4th period start temperature (10 .. 60 °C. factory set 50 °C)
P134: t4th period end temperature (10 .. 60 °C. factory set 20 °C)

After the entire process. P122 is automatically reset to „0“.



Mode	Switch-off command Mode 1	Standard operation Mode 2	On/Off signal Mode 3	Switch-on command Mode 4
SG1	Close ON	Open OFF	Open OFF	Close ON
SG2	Open OFF	Open OFF	Close ON	Close ON
Connection				
Display	SG OFF	no display	SG ON	SG ON

Mode 1: Switch-off command: The energy supplier orders the heat pump to briefly disconnect from the electricity grid to balance out any peak loads and to reduce the load on the grid. It can. however. disconnect a heat pump only max. 3x for 2 hours per day from the grid. This operating mode is equivalent to a remote shutdown by the supplier.
The switch-off command is triggered if SG1(K8)=ON(close) and SG2(K6)=OFF(open).

1.1 The heat pump will go into shutdown mode.
1.2 The heat pump will be completely blocked for up to 2 hours (Switch-off command).
1.3 The “SG OFF“ icon will be displayed on the controller.
1.4 The heat pump will wait up to 2 hours for the SG1(K8) or SG2(K6) input to change the operating mode.
(If the heat pump does not receive a command to restore the original operating mode within 2 hours. it will continue to run automatically.).
1.5 If the SG2 switch is closed. the signal will remain activated for at least 10 minutes. After the signal drops. it should not be activated again for 10 minutes.
1.6 A heat pump shut-down happens up to 3 times a day.
1.7 During this command. all safety-relevant heat pump functions will be normal. Thus. the defrost function. the frost protection function and other necessary functions ensure the safety and control of the heat pump.

Mode 2: Standard Operation: The heat pump operates in energy-efficient standard operation with proportional heat storage charging for the maximal 2-hour blockade by the electricity supplier.
Switching state SG1(K8)=OFF(open) and SG2(K6)=OFF(open)

2.1 This command has no effect on the operation of the heat pump. The heat pump will work in standard operation mode.
2.2 The controller will not display any SG icons.

4.3 SG Ready manual

Mode 3: On/Off signal: The heat pump operates with modified target temperatures. It is not a definite start command but a switch-on recommendation.
If SG1(K8)=OFF(open) and SG2(K6)=ON(close). the function will be on.

3.1 This command is recommended for turning on the heat pump.

3.2 When the switch-on demand is activated:

a. the heat pump will change the heating target temperature to the temperature selected on PSG2 (P202).

b. the heat pump will change the cooling target temperature to the temperature selected on PSG4 (P204).

c. the heat pump will change the DHW target temperature to the temperature selected on PSG6 (P206). 3.3 The new target temperature can only be reached with the heater selected on PSG8 (P208).

3.4 The controller will display the „SG On“ icon.

Mode 4: Switch-on command: This is a definite start command if it is possible within the controller settings. For this operating status. the controller must provide different settings for different electricity prices and usage models.

a. The heat pump (compressor) will be active (switched on).

b. The heat pump (compressor + electric booster heaters) will be active. Optional: higher temperature in the heat storage tank.

4.1 This command is the forced switch-on command of the heat pump.

4.2 When the switch-on command is activated:

a. the heat pump will change the heating target temperature to the temperature selected on PSG3 (P203).

b. the heat pump will change the cooling target temperature to the temperature selected on PSG5 (P205).

c. the heat pump will change the DHW target temperature to the temperature selected on PSG7(P207).

4.3 The new target temperature can only be reached with the heater selected on PSG8 (P208).

4.4 The controller will display the „SG On“ icon.

NOTE: If during any switch operating mode (switch recommendation or switch command) the heat pump reaches the new target temperature selected. it will enter standby mode and maintain that temperature as long as the operating mode is still active.

No	Definition	Range	Default value
PSG1	SG Ready activation	ON/OFF	OFF
PSG2	Heating Switch-on recommendation target temperature	OFF. 10 °C – 70 °C	OFF
PSG3	Heating Switch-on command target temperature	OFF. 10 °C – 70 °C	OFF
PSG4	Cooling Switch-on recommendation target temperature	OFF. 30 °C – 10 °C	OFF
PSG5	Cooling Switch-on command target temperature	OFF. 30 °C – 10 °C	OFF
PSG6	DHW Switch-on recommendation target temperature	OFF. 10 °C – 70 °C	OFF
PSG7	DHW Switch-on command target temperature	OFF. 10 °C – 70 °C	OFF
PSG8	Heater for DHW and heating modes	0: Heat pump – E1/E2 1: E1/E2 only 2: Heat pump only	Heat pump + E1/E2

PSG1 (P201):
The SG Ready function will be activated with this parameter.
If PSG1(P201) = ON: the SG Ready function will be activated. SG1(K8) and SG2(K6) are considered as heat pump function. If PSG1(P201) =OFF: SG Ready function will not be activated. SG1(K8) and SG2(K6) states will not be considered.

PSG2 (P202):
This parameter will define the target temperature in the heating mode when „Switch on Recommended Mode“ is active. The highest value of this parameter is the maximum operating temperature of the heat pump (70 °C).
If PSG2(P202) = OFF. the recommended switch-on command will not have any effect on the heating.
If PSG2(P202) = 65 °C: when the recommended command is turned on. the heat pump will change its target heating temperature to 65 °C and work with the heater defined on PSG8.
Note: This parameter is only sensible if a buffer tank is installed.

PSG3 (P203):
This parameter will define the target temperature in the heating mode when “Command mode” is turned on.
The highest value of this parameter is the maximum operating temperature of the heat pump (70 °C).
If PSG3(P203) = OFF: the switch-on command will not have any effect on the heating.
If PSG3 = 65 °C: if the recommended command is turned on. the heat pump will change its target heating temperature to 65 °C and work with the heater defined on PSG8.
Note: This parameter is only sensible if a buffer tank is installed.

PSG4(P204):
This parameter will define the target temperature in the cooling mode when the switch-on recommendation is activated. The lowest value of this parameter is the minimum operating temperature of the heat pump (10 °C). If PSG4(P204) = OFF: the recommended switch-on command will not have any effect on the cooling.
If PSG4(P204) = 15 °C: if the recommended command is turned on. the heat pump will change its target cooling temperature to 15 °C.
Note: This parameter is only sensible if a buffer tank is installed.

PSG5(P205):
When the switch-on command mode is activated. this parameter will define the target temperature in the cooling mode. The lowest value of this parameter is the minimum operating temperature of the heat pump (10 °C).
If PSG5 = OFF: the switch-on command will not have any effect on the cooling.
If PSG5 = 15 °C: when the switch-on command is turned on. the heat pump will change its target cooling temperature to 15 °C. Regardless of PSG8 being in cooling mode or not. the heat pump will still work in the cooling mode.
Note: This parameter is only sensible if a buffer tank is installed.

PSG6(P206):
PSG6: This parameter will define the target temperature in DHW mode when the switch-on command is activated. The highest value of this parameter is the maximum operating temperature of the heat pump (70 °C).
If PSG6 = OFF. the switch-on command will not have any effect on the DHW heating mode.
If PSG6 = 65 °C: when the recommended command is turned on. the heat pump will change the target DHW temperature to 65 °C and work with the heater defined on PSG8.

4.3 SG Ready manual

PSG7(P207):
When the forced switch-on command is activated. this parameter will define the target temperature in DHW mode. The highest value of this parameter is the maximum operating temperature of the heat pump (70 °C).
If PSG7 = OFF: the recommended command has no effect on the DHW mode.
If PSG7 = 65 °C: when the recommended command is turned on. the heat pump will change the target DHW temperature to 65 °C and work with the heater defined on PSG8.

PSG8(P208):
This parameter will define the heating accessories required for the heating when the heat pump needs to be turned on for DHW heating or heating mode while SG Ready is running.
If PSG8 = 0 (heat pump + E1/E2). both heat pump and booster heating can work when the SG Ready function needs to start the heat pump. The E1 and E2 working logic will follow normal booster activation logic. The new target temperature will be reached with the heat pump and the booster heating (if required).
If PSG8 = 1 (E1/E2 only). the heat pump will not start when the SG Ready function needs to reach a new target temperature. The new target temperature can only be reached without a heat pump. This option will be useful if the user does not want to start it when SG Ready needs it.
If PSG8 = 2 (heat pump only). E1 and E2 will not be able to start when the SG Ready function needs to be started. The new target temperature can only be reached with a heat pump.

4.4 Setting of booster heaters and second heat source

Control of E1 electrical booster heater
The E1 electrical booster heater is activated in DHW mode.
Control of E1 electrical booster heater:
Start condition 1:
• The actual temperature of the DHW storage tank ≥ [P35]
• DHW target temperature [P04] hot-water tank temperature ≥ [P07]
The E1 electrical booster heater will be switched on if the conditions above are fulfilled simultaneously.
Stop condition 1:
• DHW storage tank temperature ≥ DHW target temperature [P04]
• DHW storage tank temperature < [P35] -2 °C
If one of the conditions above is fulfilled. the E1 electrical booster heater will be switched off.
Remark:
In DHW mode. the E1 electrical booster heater will be switched on at the beginning of the defrosting process and switched off at the end of the process.
If there is a problem with the heat pump in DHW mode (except failure of the DHW sensor). the E1 electrical booster heater will be switched on and will work normally according to the set DHW temperature.

Control of E2 electrical booster heater
The E2 electrical booster heater has two functions defined by parameter [P81]:
[P81] = 0. A/C heating. [P81] = 1. the second heat source A/C electrical heating function
Start conditions:
• Outside temperature < [P22]
• Return temperature ≤ A/C heating target temperature [P02] A/C return temperature [P24] ΔT
• Flow temperature ≤ heating target temperature [P02]
• If the conditions above are all fulfilled at the same time and the compressor runtime is > [P36]. the E2 electrical booster heater will be switched on.

4.4 Setting of booster heaters and second heat source

Stop conditions:
- Outside temperature ≥ [P22] +2 °C
- Flow temperature ≤ A/C heating target temperature [P02]
- If one of the conditions above is fulfilled. the E2 electrical booster heater will be switched off.

Remarks:
In A/C heating mode. the E2 electrical booster heater is switched on at the beginning of the defrosting process and is switched off at the end of the process.
If there is a problem with the heat pump in A/C heating mode (except sensor failure of the flow temperature). the E2 electrical booster heater will be switched on and will work normally according to the set temperature of the A/C heating mode.

Function of second heat source:
Outside temperature < [P82]. the heat pump will be switched off and the second heat source will be switched on.
Outside temperature ≥ [P82]. the heat pump will be switched on and the second heat source will be switched off.

4.5 Control of pumps and valves

Pumps
C1: Integrated circulation pump
C2: Optional auxiliary pump or heating circuit pump (parameter P65)
C3: DHW circulation pump

Valves:
G1: Electrical 3-way valve – changeover heating and DHW heating
G2: Electrical 3-way valve – changeover Cooling - Heating
G3: Electrical 3-way valve – changeover Solar heat and Heat pump
Also see Chapter 10 Electrical diagrams.
The G2 relay is currentless in cooling mode.

4.6 Temperature setting ranges

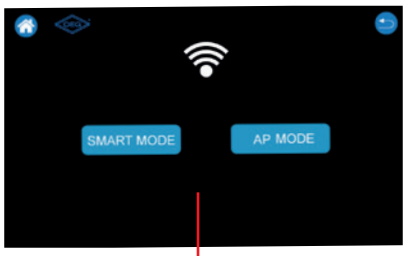
Space cooling mode
- The temperature setting range is between +7 and +25 °C. standard setting is +12 °.

Space heating mode
- The temperature setting range is between +10 and +75 °C. standard setting is +45 °C.

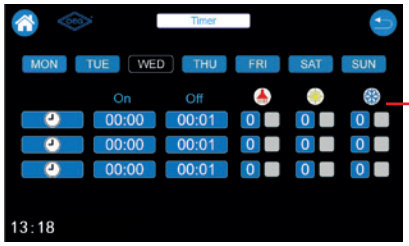
DHW mode
- The temperature setting range is between +10 and +75 °C. standard setting is +45 °C. (From +70 °C and higher. an E1 / E2 electrical booster heater sets in).

4.7 Wired control unit

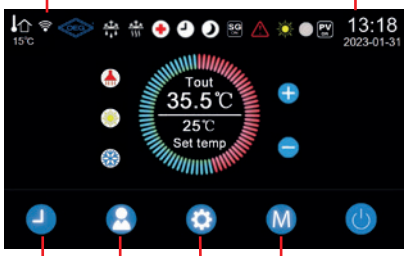
4.7.1 Overview menu structure

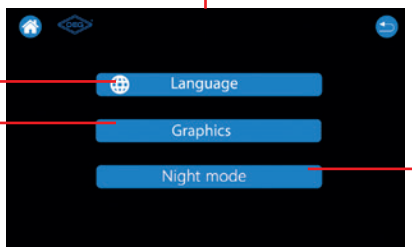


Operating times
Heat pump timer



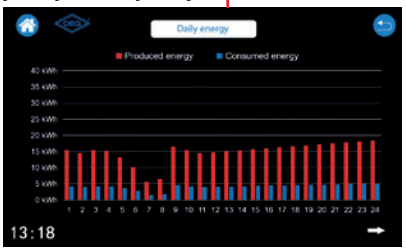
Home screen

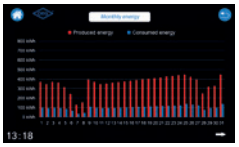


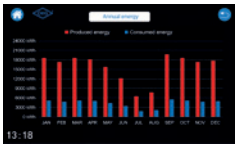


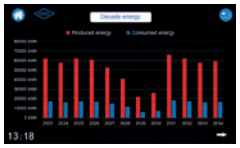
Language
selection

daily / monthly /
yearly / every 10 years





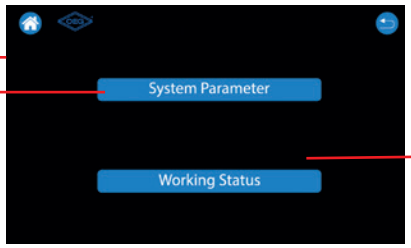




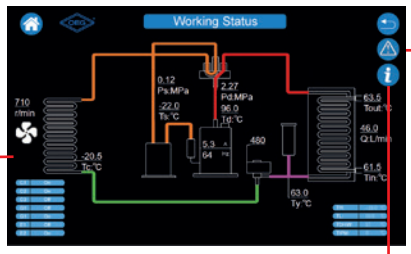
Clock and
date setting

Operating mode

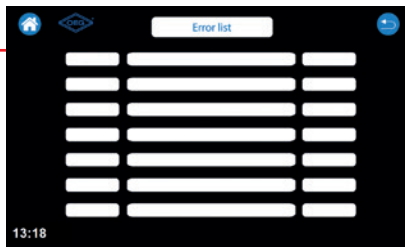
Settings



Operating status
refrigeration circuit

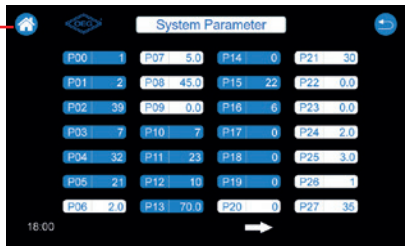


Error list

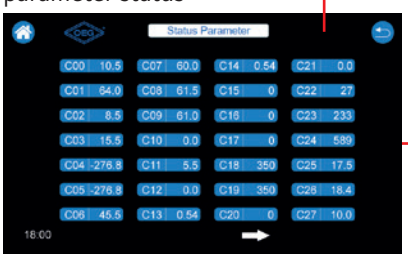


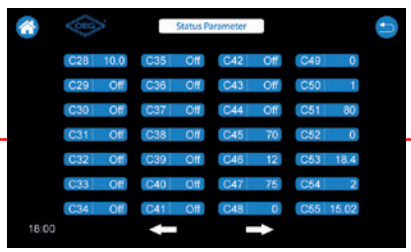
Modification
of parameters

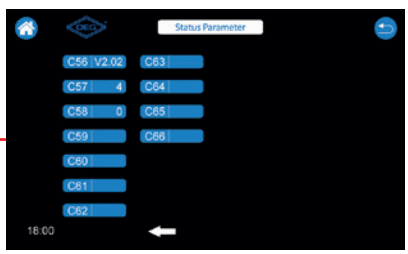
Password:
99



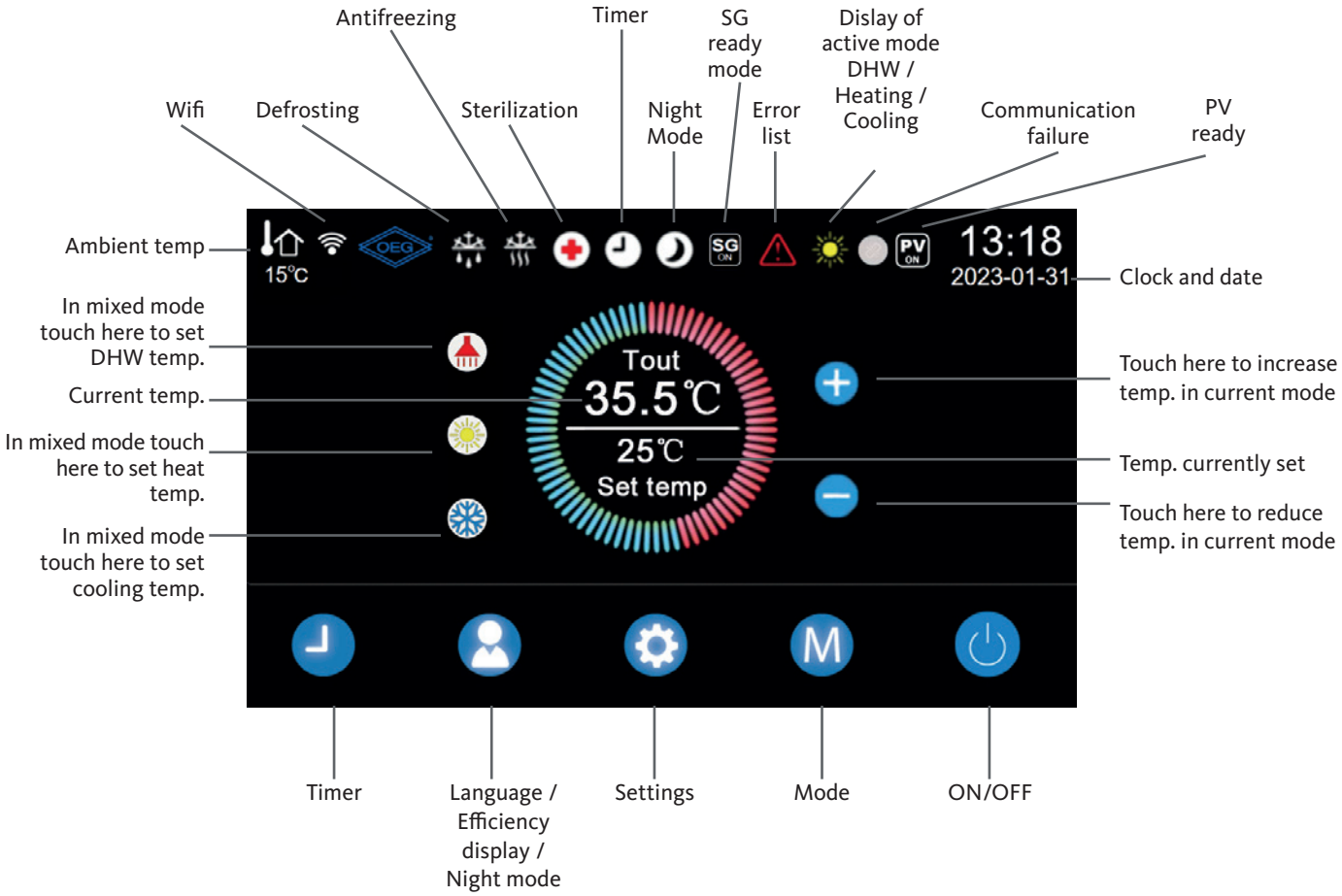
Information
parameter status







4.7.2 Keys and functions



*Optional room temperature mode for single rooms

1. The room temperature sensor T2 is installed in the room to be heated.
2. Installation of the auxiliary circulation pump C2 for the heating circuit.
3. Setting parameter P65 to “1“ (default setting is “0“)
The min. pump speed of the auxiliary circulation pump C2 is set with parameter P59.

4.7.2.1 On/Off switching

Press ON/OFF button
for 3 seconds to switch the heat pump on or off.

4.7.2.2 Different languages

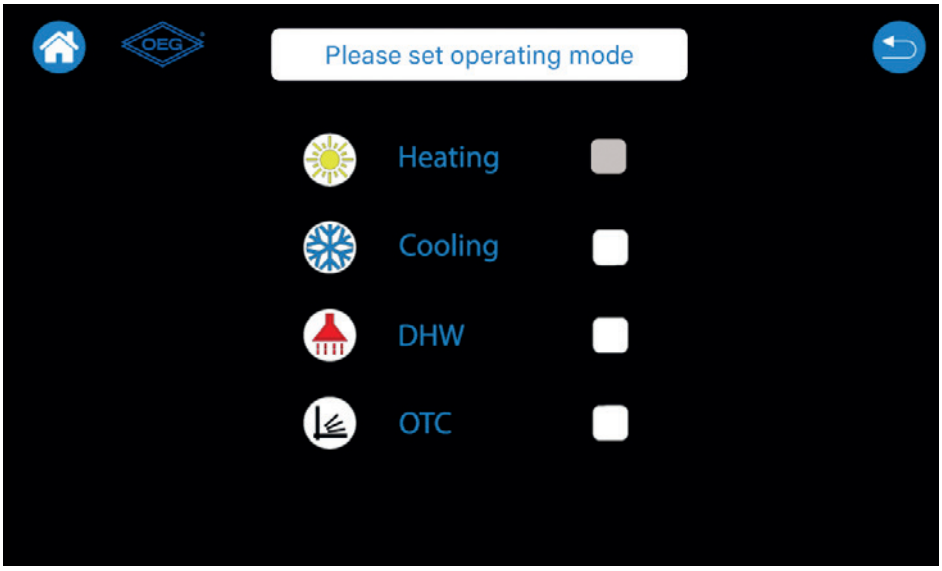
Touch language selection button
to select the respective language.

Clock and date setting 4.7.2.3

Press clock and date button
for 4 seconds to set time and date.

Changing the operating mode 4.7.2.4

Touch the operating mode button M
to select the desired operating mode.



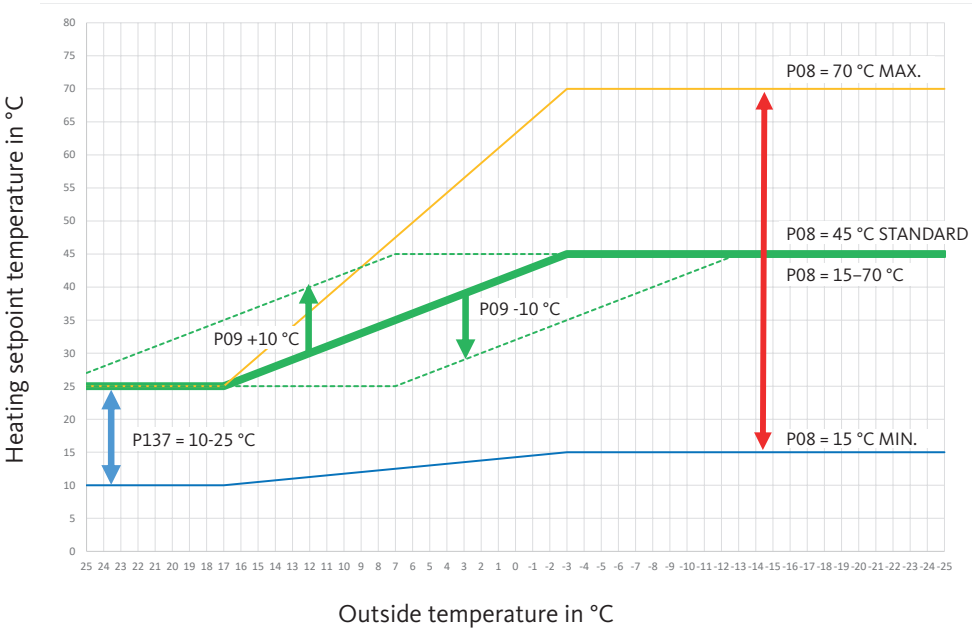
The heat pump can control up to 7 different operating modes.

(1) Cooling only
(2) Heating only
(3) DHW only
(4) Cooling and DHW
(5) Heating and DHW
(6) OTC+Heating
(7) OTC+Heating + DHW

When choosing the operating mode Cooling or Heating plus DHW heating. DHW heating has priority.
When choosing the operating mode DHW heating only. the heat pump works only in DHW heating mode. no cooling or heating.
The anti-legionella mode is an independent. automatic operating mode. If necessary. you can modify the parameters individually.
If required, please modify only parameter 14 to 0.
OTC operating mode in Chapter 4.7.2.4 on the following page.

4.7.2.4 Changing the operating mode

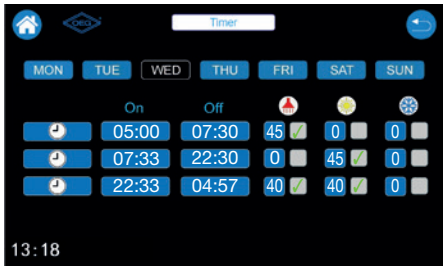
OTC (Outdoor Temperature control = weather-compensated) is an operating mode for the automatic temperature adjustment of the heat pump depending on the ambient temperature according to the following Auto heat curve.



A. Whether the OTC operating mode is switched on or off, depends on Parameter P18.
O-position means that the operating mode is off, 1 means it is on.
B. The shifting of the automatic heat curve is determined by Parameter P09.
A positive value means rising, a negative value means dropping (-10 °C ~ 10 °C).
C. The highest temperature of the OTC heat curve is determined by Parameter P08, from 35 °C ~70 °C, standard is 45 °C.
When the parameter value is 45, then the highest OTC target temperature is 45 °C.

4.7.2.5 Setting operating times

Touch the timer button to set the operating time of the heat pump.



Example times

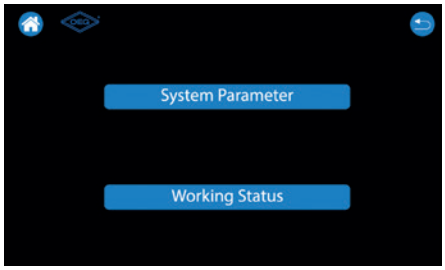
The timer switching times must not overlap.
A time lag of at least three minutes must be kept between the individual switching times.

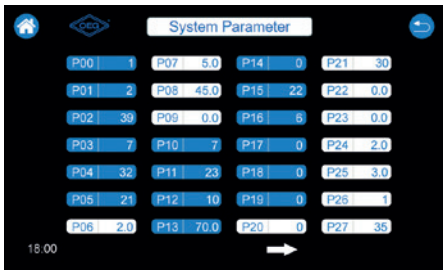
6. Night mode 4.7.2.6

1. Whether the night mode is turned on or off. depends on parameter P17.
   0-setting means the night mode is off. 1-setting means it is on. The start time of the night mode is defined by P15. The end is set by P16.
2. In night mode. the hot-water mode runs at the actual temperature setting of +3 °C.
   the space heating runs at an actual setting of -2 °C.
   Space cooling runs at +2 °C. The exterior fan runs at low speed.

Parameter modification 4.7.2.7

Touch the settings button 
and select the button “System parameters”. Then enter the password “99” to modify the parameters.





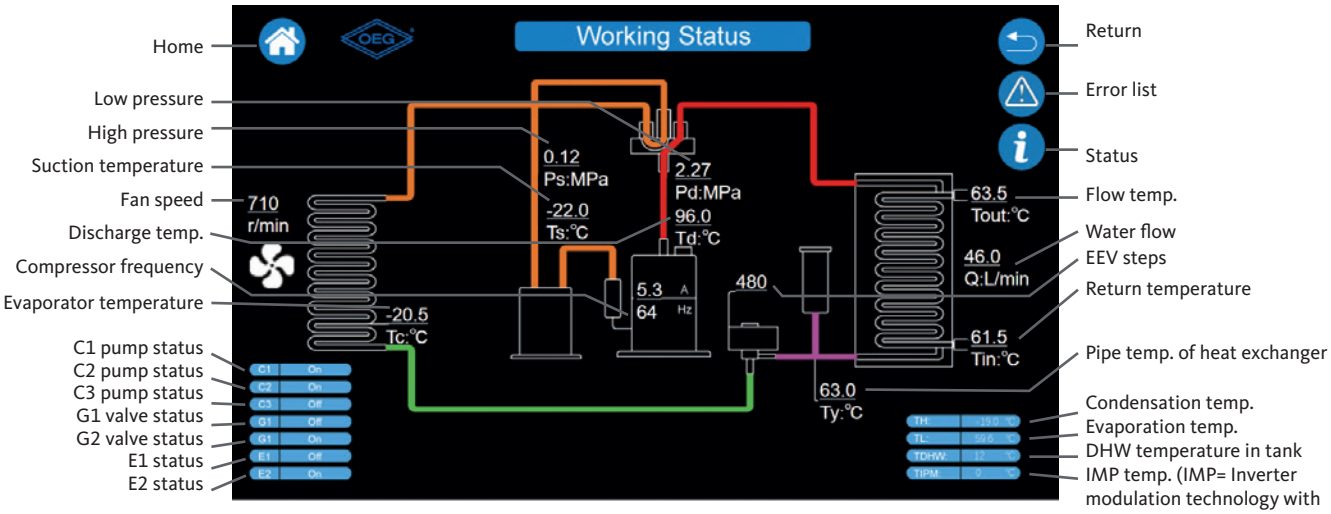
Attention:
Parameter modifications are only allowed to be made by competent technical experts. Wrong settings can lead to serious damages to the heat pump and the loss of any warranty claims.
Refer to Chapter 4.9 for a list of all parameters.

4.7.2.8 Checking the operating state

Touch button 

1. and select the button “Working status” to check the refrigerant circuit.

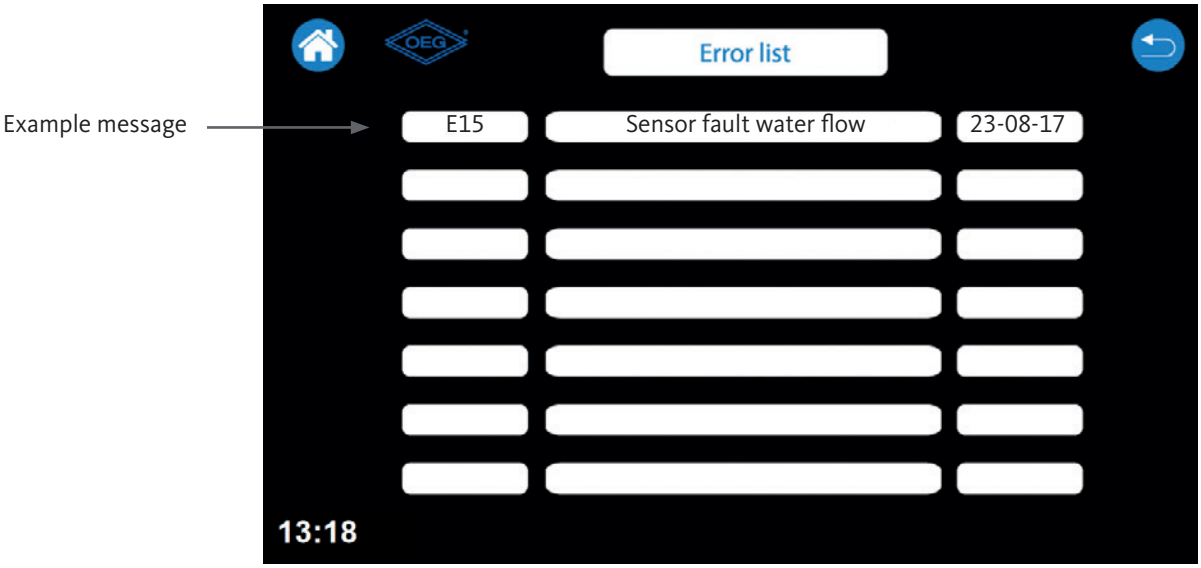
Thereby. you will be informed about performance data and operating state.



Refrigerant circuit

4.7.2.9 System protection and error checking

In the main menu touch the button “Error list” (triangle) to check on errors in the history.



4.8 Remote control of heat pump via WiFi

Remote control of OEG heat pumps is possible with smartphones via the third-party provider app “Home Comfort“. You can find the app “Home Comfort“ in the Apple app store or in the Google Play Store .
In order to activate the WiFi function of the heat pump. press the WiFi symbol on the heat pump’s control unit for 4 seconds.
OEG Ltd. is neither the manufacturer nor the provider of this app and expressly assumes no liability for the function. safety and availability of the app nor for damages resulting from the app.

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Download on the App Store

4.9 Parameter modification

Parameter table for system setting

No	Description	Range	Standard 6KW 650 001 330	Standard 9KW 650 001 331	Standard 12KW 650 001 332	Standard 16KW 650 001 333	User Level
P00	ON/OFF	0: OFF 1: ON	0	0	0	0	1
P01	Working mode	1: DHW heating 2: A/C heating 3: Hot water + A/C heating 4: A/C cooling 5: Hot water + A/C cooling	2	2	2	2	1
P02	Heating target temperature	10~70 °C	45	45	45	45	1
P03	Cooling target temperature	7~25 °C	12	12	12	12	1
P04	DHW target temperature	10~70 °C (Value ≥P35. only electric booster heater operation)	45	45	45	45	1
P05	Room target temperature	10~35 °C	21	21	21	21	1
P06	A/C Temperature difference	1~15 °C	5	5	5	5	2
P07	DHW temperature difference	1~15 °C	5	5	5	5	2
P08	A/C heating OTC curve max. temp. value (weather-compensated OTC curve)	15~70 °C	45	45	45	45	2
P09	A/C heating OTC curve parallel shifting value (weather-compensated OTC curve)	-10~10 °C	0	0	0	0	2
P10	Thermal sterilisation cycle	1~99 days	7	7	7	7	1
P11	Thermal sterilisation start time	0~23 (time)	23	23	23	23	1
P12	Thermal sterilisation run time	5~99 min.	10	10	10	10	1
P13	Thermal sterilisation temperature	50~70 °C	70	70	70	70	1
P14	Thermal disinfection mode selection	0-Auto 1-manual 2-OFF	2	2	2	2	1
P15	Night mode start	0-23 (time)	22	22	22	22	1
P16	Night mode end	0-23 (time)	6	6	6	6	1
P17	Night mode OFF/ON	0-OFF 1-ON	0	0	0	0	1
P18	Hot water AU OFF/ON	0-OFF 1-ON	0	0	0	0	1
P19	A/C AU OFF/ON	0-OFF 1-ON	0	0	0	0	1
P20	Working mode circulation pump	0: no stop. 1: stop when temp. reached 2: runtime: 1 min. every 15 min.	0	0	0	0	2
P21	Frost protection interval circulation pump	5~50 min.	30	30	30	30	2
P22	Ambient temp. to activate booster heater for heating (E2)	-20~10 °C	-5	-5	-5	-5	2
P23	Ambient temp. to activate second energy source for DHW (E1)	-20~10 °C	-5	-5	-5	-5	2
P24	Electrical booster heater to activate temperature parallel shift value	1~15 °C	5	5	5	5	2
P25	A/C frost protection temperature	-15~5 °C	3	3	3	3	2
P26	Flow sensor	0 - DN 25 1 - DN 40	0	0	0	1	2
P27	First defrost interval	15~99 min.	50	50	50	50	2
P28	Defrost selection	0: Auto 1: Manual defrost (after defrost back to default 0)	0	0	0	0	1
P29	Evaporator temperature to activate defrost	-8~5 °C	-3	-3	-3	-3	2
P30	Evaporator temperature to de-activate defrost	5~30 °C	20	20	20	20	2
P31	Max. defrost time	2~20 min.	12	12	12	12	2
P32	EEV control mode	0: no 1: test chart 2: manual 3: suction gas superheat 4: discharge gas superheat	3	3	3	3	3
P33	EEV manually initiate opening steps (heating)	50~480 (only valid if P32=2)	400	400	400	400	3
P34	EEV manually initiate opening steps (cooling)	50~480	400	400	400	400	3
P35	In DHW mode. highest water temperature for running compressor	0~70 °C	70	70	70	70	3
P36	Time interval between compressor and E1 commissioning (reserved)	0~999 min.	5	5	5	5	3

User levels:
Level 1: user level code “99”
level2: Specialist level
Level 3: Manufacturer level

See Chapter 7 for abbreviations list

Parameter table for system setting

No	Description	Range	Standard 6KW 650 001 330	Standard 9KW 650 001 331	Standard 12KW 650 001 332	Standard 16KW 650 001 333	User Level
P37	Temperature difference for variable DC fan speed (heating)	2~15 °C	6	6	6	6	3
P38	Temperature difference for variable DC fan speed (cooling)	3~18 °C	8	8	8	8	3
P39	Selection of compressor model (reserved)	0~999	358	59	73	69	3
P40	Setting of compressor frequency	0: manual 1: auto	1	1	1	1	3
P41	Compressor oil return frequency	10~100 Hz	50	50	50	50	3
P42	Compressor frequency limiting current	1~50A	11	14	6	9	3
P43	Compressor frequency reduction current	1~50A	13	16	8	11	3
P44	Compressor frequency shutdown current	1~50A	15	18	9	13	3
P45	Maximum running frequency	50~120 Hz	90	90	85	85	3
P46	Minimum running frequency	0~90 Hz	35	35	35	35	3
P47	Defrost running frequency	30~90 Hz	65	65	65	65	2
P48	Maximum frequency DHW	2~10 (max. frequency x 20~100%)	10	10	10	10	3
P49	DHW maximum frequency	0~99	0.2	0.2	0.2	0.2	3
P50	Discharge superheat differential coefficient. desired superheat degree in percent	0~99	1	1	1	1	3
P51	High pressure value to limit compressor frequency rising	2.0~4.5MPa (display value multiply 0.1)	29.5	29.5	29.5	29.5	3
P52	High pressure value to cancel compressor frequency limit	2.0~4.5MPa (display value multiply 0.1)	26	26	26	26	3
P53	Protection pressure (high)	2.5~5.0MPa (display value multiply 0.1)	32	32	32	32	3
P54	Protection pressure (low)	0.01~1.0MPa (display value multiply 0.1)	0.3	0.3	0.3	0.3	3
P55	Pressure difference for high pressure protection recovery	0.2~1.5MPa (display value multiply 0.1)	5	5	5	5	3
P56	Pressure difference for low pressure protection recovery	0.01~1.0MPa	0.15	0.15	0.15	0.15	3
P57	Discharge gas protection temperature	100~125 °C	105	105	105	105	3
P58	Temperature difference for variable circulation pump 1-stage	3~8 °C	5	5	5	5	3
P59	Max. running speed of DC motor	2~8 (stands for 20% to 80% of the speed)	8	8	8	8	2
P60	Min. running speed of PWM circulation pump	500-1.500 rpm	600	650	700	650	3
P61	Minimum water flow	3~80 l/min. step 1	6	8	11	14	3
P62	Definition of A/C function	0: Cooling + heating 1: Only cooling 2: Only heating	0	0	0	0	3
P63	DHW heating ON/OFF	0: No 1: Yes	1	1	1	1	1
P64	EEV minimum open step	0-480	90	90	90	90	3
P65	Function definition for circulation pump C2	0: Auxiliary pump 1: Circulation pump for DHW circulation	0	0	0	0	1
P66	Selected heat source	0: Air 1: Water (reserved)	0	0	0	0	3
P67	Room thermostat (reserved)	0: OFF 1: ON	0	0	0	0	1
P68	Flow switch selection	0: Water flow switch 1: Water flow sensor	1	1	1	1	2
P69	Fan motor type	0: AC motor 1: First DC motor 2: Second DC motor 3: Two DC motors	1	1	1	3	3
P70	Automatic restart	0:OFF 1: ON	1	1	1	1	1
P71	DC motor speed control	0: Manual 1: Auto	1	1	1	1	3
P72	DC motor fixed speed	0-1.500 rpm (display value multiply 10)	0	0	0	0	3
P73	Pressure regulator type	0: Pressure sensor 1: Pressure switch	0	0	0	0	3
P74	EVI EEV control mode	0: no 1: checking 2: manual 3: auto	0	0	0	0	3
P75	EVI EEV manually initial open steps (heating)	40~480	40	40	40	40	3

User levels:
Level 1: user level code “99”
level2: Specialist level
Level 3: Manufacturer level

See Chapter 7 for abbreviations list

4.9 Parameter modification

Parameter table for system setting

No	Description	Range	Standard 6KW 650 001 330	Standard 9KW 650 001 331	Standard 12KW 650 001 332	Standard 16KW 650 001 333	User Level
P76	EVI EEV manually initial open steps(cooling)	40~480	40	40	40	40	3
P77	EVI Target superheat (heating)	-5~10 °C	3	3	3	3	3
P78	EVI Target superheat (cooling)	-5~10 °C	3	3	3	3	3
P79	WIFI data upload interval	30~9999 s	300	300	300	300	3
P80	Reserved	0-10 (display value multi-ply 0.1)	10	10	10	10	3
P81	E2 function definition	0: Electrical booster heater 1: Second heating source 2: Combined together with electrical booster heater 3: Combined with a boiler	0	0	0	0	1
P82	Ambient temperature to activate the second energy source in auxiliary mode (E2. E1)	-30~20 °C	-25	-25	-25	-25	1
P83	DHW heating circulation pump mode (C3 pump P88=1)	0: No 1: Timer 2: Temperature 3: Timer + temperature	3	3	3	3	1
P84	Temperature difference for DHW heating pump (C3 pump P88=1)	4~20 °C	5	5	5	5	1
P85	Ambient defrost temperature	0~20 °C	5	5	5	5	2
P86	Difference ambient defrost temperature and coil temperature ΔT1	0~20 °C	8	8	8	8	2
P87	Factory default	0: No 1: Timer 2: Temperature 3: Timer + temperature	0	0	0	0	1
P88	C3 pump selection	0: DHW auxiliary pump 1: DHW circulation pump	0	0	0	0	1
P89	Discharge gas superheat percentage coefficient. desired superheat degree in percent	0.1~2	0.3	0.3	0.3	0.3	3
P90	Discharge gas superheat differential coefficient. difference between actual and desired superheat	0~20	1	1	1	1	3
P91	Difference defrost ambient temperature and evaporator temperature ΔT2 (ambient temperature < -7 °C)	0~20°C	8	8	8	8	2
P92	Target suction superheat (heating) (ambient temperature ≤ -5)	-20~50°C	0.5	0	0.5	0.5	3
P93	Target suction superheat (heating) (-5 ≥ ambient temperature > +5)	-20~50°C	0.5	0	0.5	0.5	3
P94	Target suction superheat (heating) (+5 ≥ ambient temperature > +25)	-20~50°C	0.5	0.5	0.5	0.5	3
P95	Target suction superheat (cooling)	-20~50°C	3	3	3	3	3
P96	Target suction superheat (heating) (+45 ≥ ambient temperature> +25)	-20~50°C	0.5	0.5	0.5	0.5	3
P97	When P40=0. compressor frequency set value	10~100Hz	50	50	50	50	3
P98	The control signal of G1 valve is reversed	0: normal 1: reversed	0	0	0	0	1
P99	The control signal of G2 valve is reversed	0: normal 1: reversed	0	0	0	0	1
P100	The control signal of G3 valve is reversed	0: normal 1: reversed	0	0	0	0	1
P101	EEV steps for defrosting	0~480	480	480	480	480	3
P102	Temperature difference protection valve for inlet and outlet water	8~20	12	12	12	12	3
P103	EEV initial opening hold time	0~300	60	60	60	60	3
P104	Initial compressor frequency for AC heating/cooling capacity calculation	20~60	50	50	50	50	3
P105	Compressor starting frequency A	20~60	30	30	35	30	3
P106	Compressor starting frequency A running time	0~300	60	60	60	60	3
P107	PRt calculation value	1~100	3	3	3	3	3
P108	R485 monitoring address	1	1	1	1	1	3
P109	Discharge gas temperature value 1 to limit compressor frequency	80~125	100	100	100	100	3
P110	Discharge gas temperature value 2 to limit compressor frequency	80~125	97	97	97	97	3

User levels:
Level 1: user level code “99”
level2: Specialist level
Level 3: Manufacturer level

See Chapter 7 for abbreviations list

Parameter table for system setting

No	Description	Range	Standard 6KW 650 001 330	Standard 9KW 650 001 331	Standard 12KW 650 001 332	Standard 16KW 650 001 333	User Level
P111	Discharge gas temperature value 2 to limit compressor frequency	80~125	95	95	95	95	3
P112	EEV adjustment temperature when discharge gas temperature is too high	80~125	100	100	100	100	3
P113	EEV adjustment time when discharge gas temperature is too high	1~120	30	30	30	30	3
P114	Compressor frequency reduction percentage after set temperature reached.	0~60 %	2	2	2	2	3
P115	Protection value outlet temperature too high	70~90	83	83	83	83	3
P116	Calculation booster heater	0~1	0	0	0	0	2
P117	E0 reserviert	0~20.0kw	0	0	0	0	2
P118	E1 capacity booster heater DHW	0~20.0kw	0	0	0	0	2
P119	E1 capacity booster heater space heating	0~20.0kw	0	0	0	0	2
P120	reserved		0	0	0	0	
P121	PV activation	0=OFF 1=ON	0	0	0	0	1
P122	Floor drying prgramme	0=OFF.1=ON. After the entire process automatic reset to „0“	0	0	0	0	1
P123	1st period	1~15 Tage	10	10	10	10	2
P124	1st period start temperature	10~60 °C	20	20	20	20	2
P125	1st period end temperature	10~60 °C	20	20	20	20	2
P126	2nd period	1~15 Tage	5	5	5	5	2
P127	2nd period start temperature	10~60 °C	20	20	20	20	2
P128	2nd period end temperature	10~60 °C	50	50	50	50	2
P129	3rd period	1~15 days	10	10	10	10	2
P130	3rd period start temperature	10~60 °C	50	50	50	50	2
P131	3rd period end temperature	10~60° C	50	50	50	50	2
P132	4th period	1~15 days	5	5	5	5	2
P133	4th period start temperature	10~60 °C	50	50	50	50	2
P134	4th period end temperature	10~60 °C	20	20	20	20	2
P135	OTC heating limiting temperature	15~25 °C	17	17	17	17	2
P136	OTC heating recovery temperature	3~13 °C	10	10	10	10	2
P137	Minimum temperature OTC heating curve	10 - 25 °C	25	25	25	25	1
P202	Heating switch-on recommendation target temperature	OFF 10 °C~70 °C	OFF	OFF	OFF	OFF	1
P203	Heating switch-on command target temperature	OFF 10 °C~70 °C	OFF	OFF	OFF	OFF	1
P204	Cooling switch-on recommendation target temperature	OFF 10 °C~30 °C	OFF	OFF	OFF	OFF	1
P205	Cooling switch-on command target temperature	OFF 10 °C~30 °C	OFF	OFF	OFF	OFF	1
P206	DHW switch-on recommendation target temperature	OFF 10 °C~70 °C	OFF	OFF	OFF	OFF	1
P207	DHW switch-on command target temperature	OFF 10 °C~70 °C	OFF	OFF	OFF	OFF	1
P208	Heating device for DHW heating and heating modes	0: Heat Pump+E1/E2 1: E1/E2 only 2: Heat Pump only	OFF	OFF	OFF	OFF	1

User levels:
Level 1: user level code “99”
level2: Specialist level
Level 3: Manufacturer level

See Chapter 7 for abbreviations list

4.10 Control parameters

Code	Name	Value/Meaning	Remark
C00	Evaporator temperature	-30~97 °C	Displayed in refrigerant circuit
C01	Discharge temperature	-30~128 °C	Displayed in refrigerant circuit
C02	Ambient temperature	-30~97 °C	Displayed in refrigerant circuit
C03	Suction temperature	-30~97 °C	Displayed in refrigerant circuit
C04	EVI Inlet temperature	-30~97 °C	Reserved
C05	EVI Outlet temperature	-30~97 °C	Reserved
C06	Refrigerant liquid temperature	-30~97 °C	Displayed in refrigerant circuit
C07	Water inlet temperature	-30~97 °C	Displayed in refrigerant circuit
C08	Water outlet temperature	-30~97 °C	Displayed in refrigerant circuit
C09	DHW tank temperature	-30~97 °C	Displayed in refrigerant circuit
C10	Water flow	L/min	Displayed in refrigerant circuit
C11	Main circulation temperature differential	-30~97 °C	
C12	EVI circulation temperature differential	-30~97 °C	
C13	High pressure	MPa	Displayed in refrigerant circuit
C14	Low pressure	MPa	Displayed in refrigerant circuit
C15	Compressor running frequency	0~120HZ	Displayed in refrigerant circuit
C16	Fan motor 1	0-1500RPM	Displayed in refrigerant circuit
C17	Fan motor 2	0-1500RPM	Displayed in refrigerant circuit
C18	EEV steps	0-500	Displayed in refrigerant circuit
C19	EVI EEV steps	0-500	
C20	Compressor target frequency	0-100HZ	
C21	Compressor input current	0-50A	Displayed in refrigerant circuit
C22	IPM temperature	-30~97 °C	Displayed in refrigerant circuit
C23	AC power voltage	0-500V	
C24	DC power voltage	0-1000V	
C25	T6	-30~97 °C	Displayed in hydraulic circuit
C26	Room Temperature (T2)	-30~97 °C	Displayed in hydraulic circuit
C27	Evaporator temperature	-30~97 °C	
C28	Condenser temperature	-30~97 °C	
C29	Switch for cooling	ON/OFF	
C30	Switch for cooling	ON/OFF	
C31	Sterilisation status	ON/OFF	
C32	Compressor overcurrent switch status	ON/OFF	
C33	Defrost status	ON/OFF	
C34	AC antifreeze status	ON/OFF	
C35	DWH antifreeze status	ON/OFF	
C36	Compressor heater status	ON/OFF	
C37	4-way valve status	ON/OFF	
C38	G1 3-way valve	ON/OFF	
C39	G2 3-way valve	ON/OFF	
C40	E1 heater	ON/OFF	
C41	E2 heater	ON/OFF	
C42	C1 circulation pump	ON/OFF	

See Chapter 7 for abbreviations list

Control parameter 4.10

Code	Name	Value/Meaning	Remark
C43	C2 circulation pump	ON/OFF	
C44	C3 circulation pump	ON/OFF	
C45	Heating target temperature	10~75 °C	
C46	Cooling target temperature	7~25 °C	
C47	Hot-water target temperature	10~75 °C	
C48	Sterilisation target temperature	50~75 °C	
C49	Lubricant oil return status	0/1	
C50	Compressor total run time	h	
C51	C1 circulation pump speed	0~100%	
C52	Operating mode	0 – 4 0: no 1: DHW heating 2: A/C heating 4: A/C cooling	
C53		-30~97 °C	
C54	Heat pump mode	0 – 5 0: no 1: DHW heating 2: A/C heating 4: A/C cooling 3: DHW + A/C heating 5: DHW + A/C cooling	
C55	PCB Software version	/	
C56	HMI software version	/	
C57	Number of compressor starts		
C58	Number of defrost times		

Retrieving the error memory 4.11

Code	Meaning	Remark
E01	Sensor error outdoor air temperature	Outdoor air temp sensor, open circuit or short circuit
E02	Sensor error evaporator temperature	Evaporator temperature sensor, open circuit or short circuit
E03	Sensor error suction temperature	Suction temperature sensor, open circuit or short circuit
E04	Sensor error EVI inlet temperature	EVI inlet temperature sensor, open circuit or short circuit
E05	Sensor error EVI outlet temperature	EVI outlet temperature sensor, open circuit or short circuit
E06	Sensor error discharge temperature	Discharge temperature sensor, open circuit or short circuit
E07	Sensor error DHW temperature	Hot-water temperature sensor, open circuit or short circuit
E08	Sensor error outlet temperature	Outlet temperature sensor, open circuit or short circuit
E09	Sensor error inlet temperature	Inlet temperature sensor, open circuit or short circuit
E10	Sensor error refrigerant temperature	Sensor, open circuit or short circuit
E11	Sensor error high pressure	1. Sensor fault 2. Open circuit or short circuit 3. PCB fault
E12	Sensor error low pressure	1. Sensor fault 2. Open circuit or short circuit 3. PCB fault
E13	High pressure protection	1. Too much refrigerant 2. Error throttling part 3. Error pressure sensor
E14	Low pressure protection	1. Too much refrigerant 2. Error throttling part 3. Error pressure sensor
E15	Failure water flow	1. Too little water flow 2. Failure water flow switch

See Chapter 7 for abbreviations list

4.11 Retrieving error memory

Code	Meaning	Remark
E16	Communication error	Communication error main board and controller
E17	Protection against excessively high discharge temperature	1. Too little refrigerant 2. Error throttling part
E18	Reserved	
E20	IPM protection	See detailed description at end of list
E21	Reserviert	
E22	Water temperature differential too big	Check circulation pump and water pipe filter
E23	DHW anti-freeze 2x	The antifreeze function in DHW mode has been activated 2 x within 60 minutes.
E24	AC anti-freeze 2x	The antifreeze function in A/C mode has been activated 2 x within 90 minutes.
E25	Reserved	
E26	T6 temperature sensor error	T6 temperature sensor, open circuit or short circuit
E27	Ambient temperature exceeds upper limit	Ambient temperature > 45 °C
E28	Water inlet temperature too high (cooling)	Cooling: water inlet temperature > 40 °C Please turn off and allow water to cool down below 40 °C before turn on.
E29	Room temperature sensor error	Temperature sensor, open circuit or short circuit
E30-31	Reserved	
E32	Water outlet temperature too high (heating)	Outlet temperature > 75 °C. Check circulation pump and water filter.
E33-35	Reserved	
E36	Communication failure DC fan board	Check communication cable.
E37-39	Reserved	
E40	Water outlet temperature too low (cooling)	Outlet temperature < 5 °C. Check circulation pump and water filter.
E41-43	Reserved	
E44	1# DC motor failure	Check motor wire or motor fault
E45	2# DC motor failure	Check motor wire or motor fault
E46-49	Reserved	
E50	High-temperature protection of evaporator	1. Too little refrigerant 2. Failure of throttling part 3. Temperature sensor error of evaporator
E51-57		
E58	Ambient temperature exceeds lower limit	Ambient temperature < (P82)
E59-98	Reserved	
E99	Communication failure inverter model	Communication failure main board and inverter board

See Chapter 7 for abbreviations list

Explanation error message E20

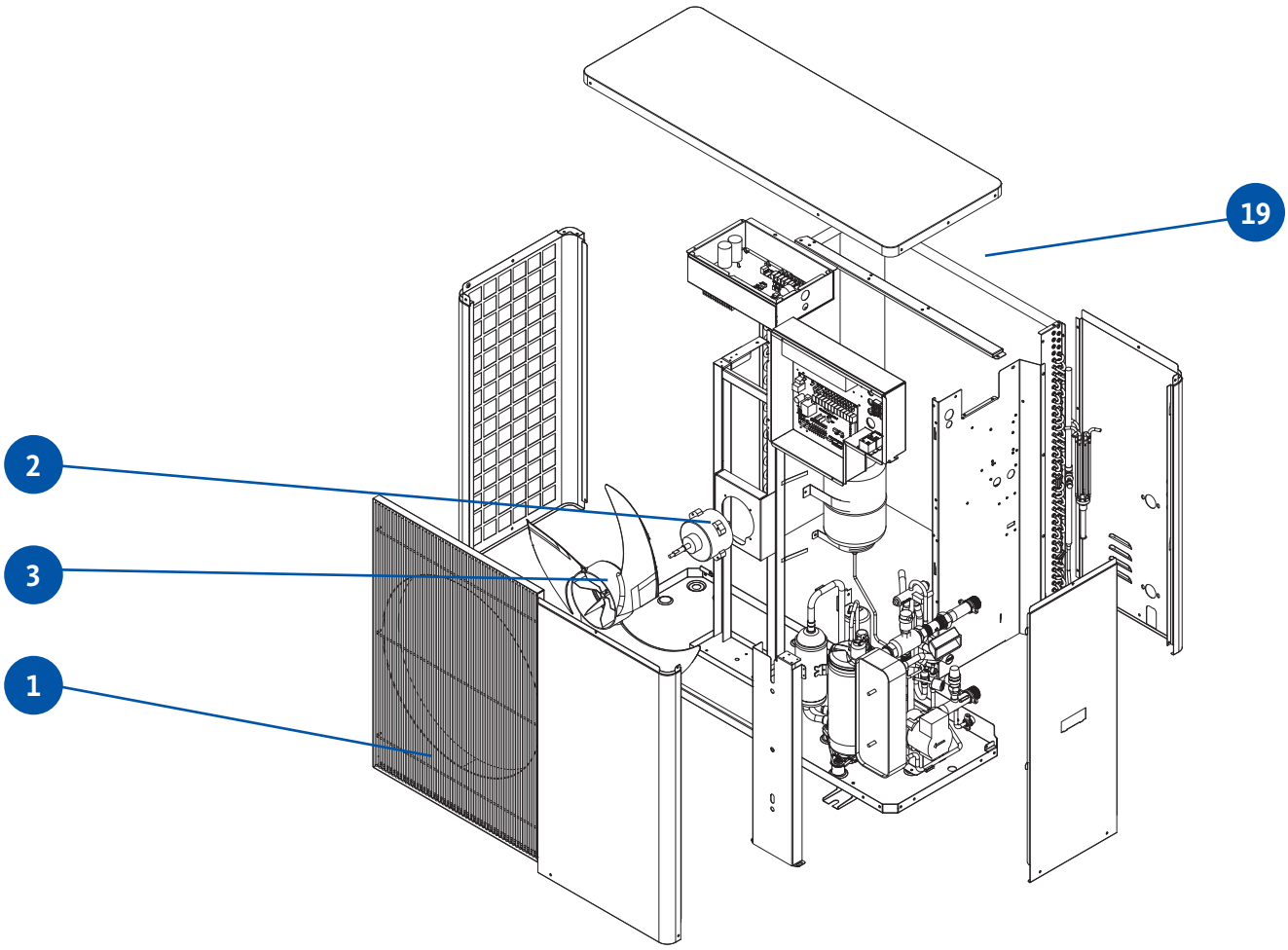
Code	Meaning	Remark
E20-1	IPM failure	The current of the IPM module is too high or the temperature is too high
E20-4	Warning compressor frequency decrease by IPM temperatures	Driver error
E20-5	Compressor drive failure (other drive failures except IPM)	Phase loss, out-of-step or drive hardware damage
E20-16	C bus undervoltage	DC bus voltage ≤ DC bus undervoltage stop protection value
E20-32	DC bus overvoltage	DC bus voltage ≥ DC bus overvoltage stop protection value
E20-257	Unusual communication with main board	The driver cannot receive communication data for 200 consecutive seconds.
E20-258	Phase loss failure	1. The current transformer is damaged. 2. The current transformer is inserted improperly. 3. When the air compression is operated over 40 Hz without load, the frequency AC current is very small, resulting in abnormal detection of the current transformer.
E20-260	AC input current overvoltage shutdown	1. AC overcurrent, the load is suddenly too large, too late to lower the frequency. 2. The compressor is overpowered, the load is suddenly too large, and it is too late to lower the frequency. 3. The compressor is overpowered, and the difference between high and low pressure of the compressor is too large.
E20-261	Warning compressor frequency decrease by AC input current	Driver error
E20-264	AC input voltage over- and undervoltage	
E20-288	IPM over-temperature shutdown	1. The heat dissipation is poor. The condensing fan rotates at a low speed or stops unexpectedly. 2. The ambient temperature rises too fast to cause the temperature to be too high, and the compressor has no time to lower the frequency.
E20-290	Warning compressor frequency decrease by compressor current	Driver error
E20-291	Acceleration by overcurrent	Driver error
E20-292	Deceleration by overcurrent	Driver error
E20-293	Overcurrent at constant speed	Driver error
E20-294	Acceleration by overvoltage	Driver error
E20-295	Deceleration by overvoltage	Driver error
E20-296	Overvoltage at constant speed	Driver error
E20-297	Out-of-step fault	Driver error
E20-298	IPM module hardware protection failure	IPM module protection
E20-299	Abnormal current detection circuit	The current detection module is abnormal
E20-320	Compressor overcurrent	1. The compressor is temporarily overloaded (e.g. liquid compression) 2. The programme does not match the compressor 3. The U, V and W lines of the compressor are inversely connected, and the compressor reverses 4. Compressor wear (lack of oil and liquid compression lead to wear of compressor cylinder block)
E20-384	PFC (Power factor correction)	1. PFC component defective 2. Current or voltage drop in the power grid 3. Overload protection 4. Control fault

See Chapter 7 for abbreviations list

5 Technical data

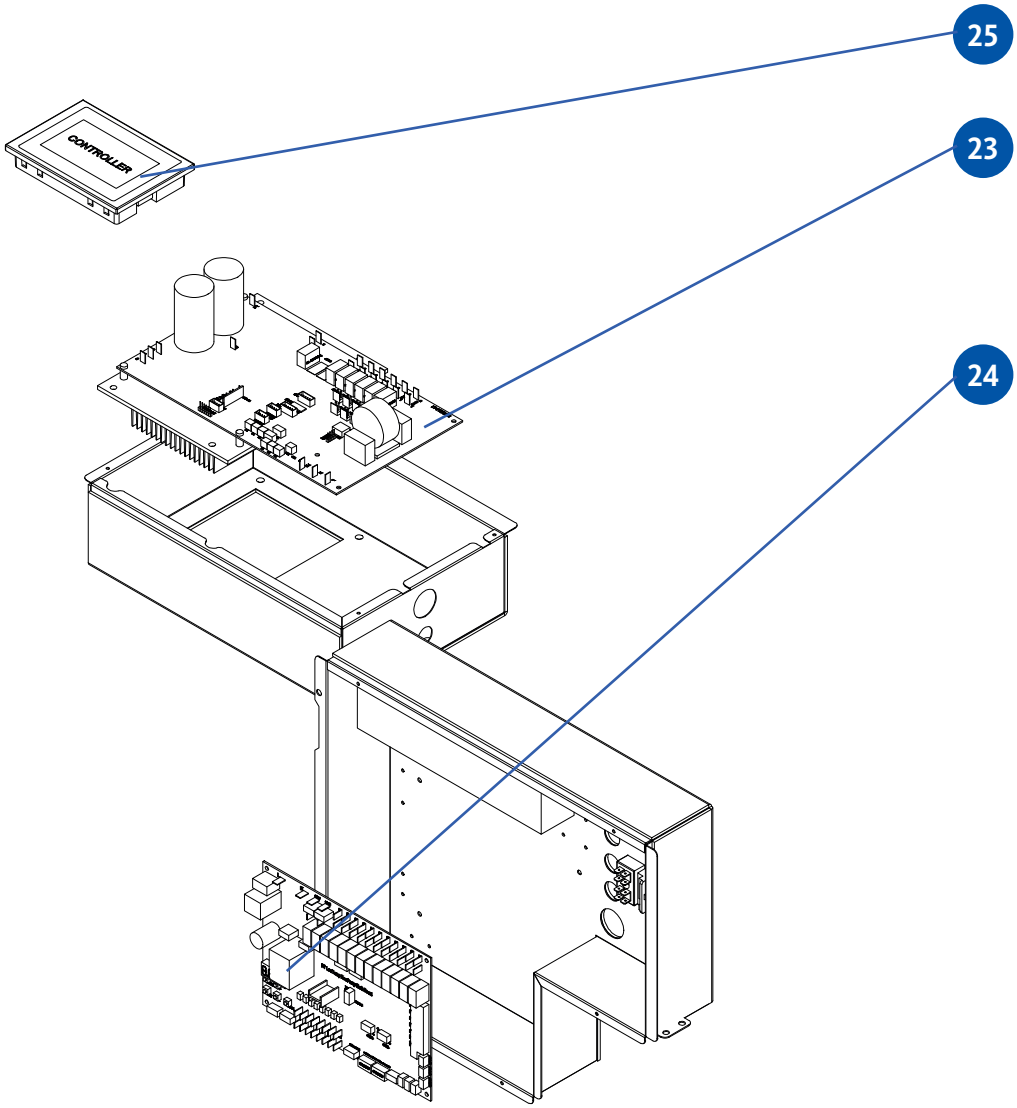
5.1 Exploded drawing and spare parts list

650 001 330 – Air/water heat pump 6 kW R290 Inverter 230 V
650 001 331 – Air/water heat pump 9 kW R290 Inverter 230 V
650 001 332 – Air/water heat pump 12 kW R290 Inverter 230 V



No.	OEG Art. No.	Name of spare part
1	**650 001 680**	Air outlet grid
2	**650 001 409**	Fan motor
3	**650 001 686**	Fan blade
19	**650 001 678**	Temperature sensor T4

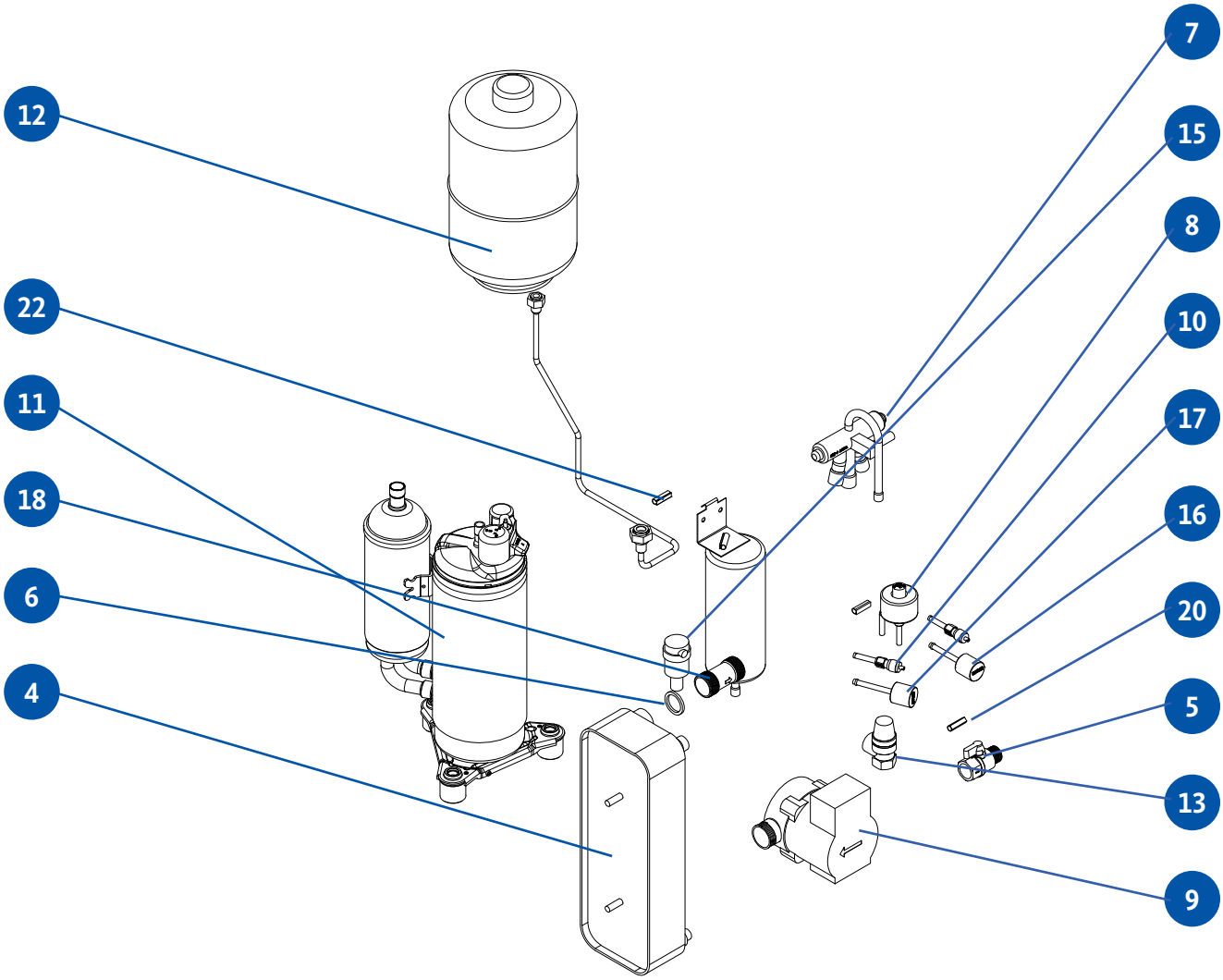
650 001 330 – Air/water heat pump 6 kW R290 Inverter 230V
650 001 331 – Air/water heat pump 9 kW R290 Inverter 230V
650 001 332 – Air/water heat pump 12 kW R290 Inverter 400V



No.	OEG Art. No.	Name of spare part
23	**650 001 697**	Speed controller for 650 001 330
23	**650 001 698**	Speed controller for 650 001 331
23	**650 001 699**	Speed controller for 650 001 332
24	**650 001 707**	PCB
25	**650 001 715**	Controller

5.1 Exploded drawing and spare parts list

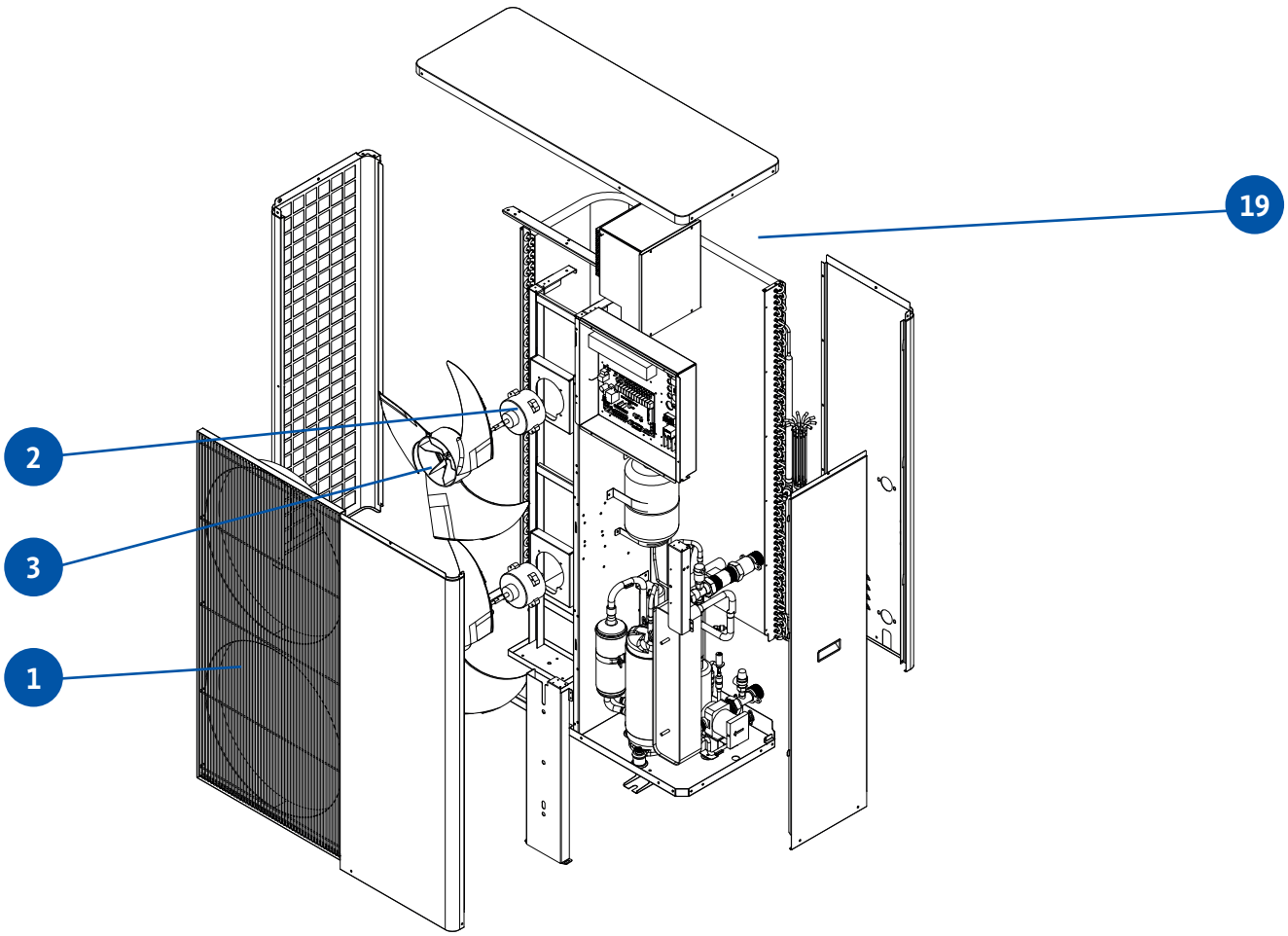
650 001 330 – Air/water heat pump 6 kW R290 Inverter 230V
650 001 331 – Air/water heat pump 9 kW R290 Inverter 230V



No.	OEG Art. No.	Name of spare part
4	**650 001 687**	Heat exchanger
7	**650 001 422**	4-way valve
11	**650 001 693**	Compressor for 650 001 330
11	**650 001 692**	Compressor for 650 001 331
12	**650 001 373**	Expansion vessel
17	**650 001 356**	Low-pressure sensor
22	**650 001 679**	Temperature sensor

No.	OEG Art. No.	Name of spare part
5	**650 001 339**	Brass ball valve
6	**650 001 405**	Silicone gasket
8	**650 001 695**	Electronic expansion valve for 650 001 330
8	**650 001 469**	Electronic expansion valve for 650 001 331
9	**650 001 408**	Circulation pump
10	**650 001 696**	Filling valve
13	**650 001 350**	Safety valve
15	**650 001 346**	Automatic vent valve
16	**650 001 355**	High-pressure sensor
18	**650 001 357**	Water flow sensor
20	**650 001 489**	Temperature sensor T1

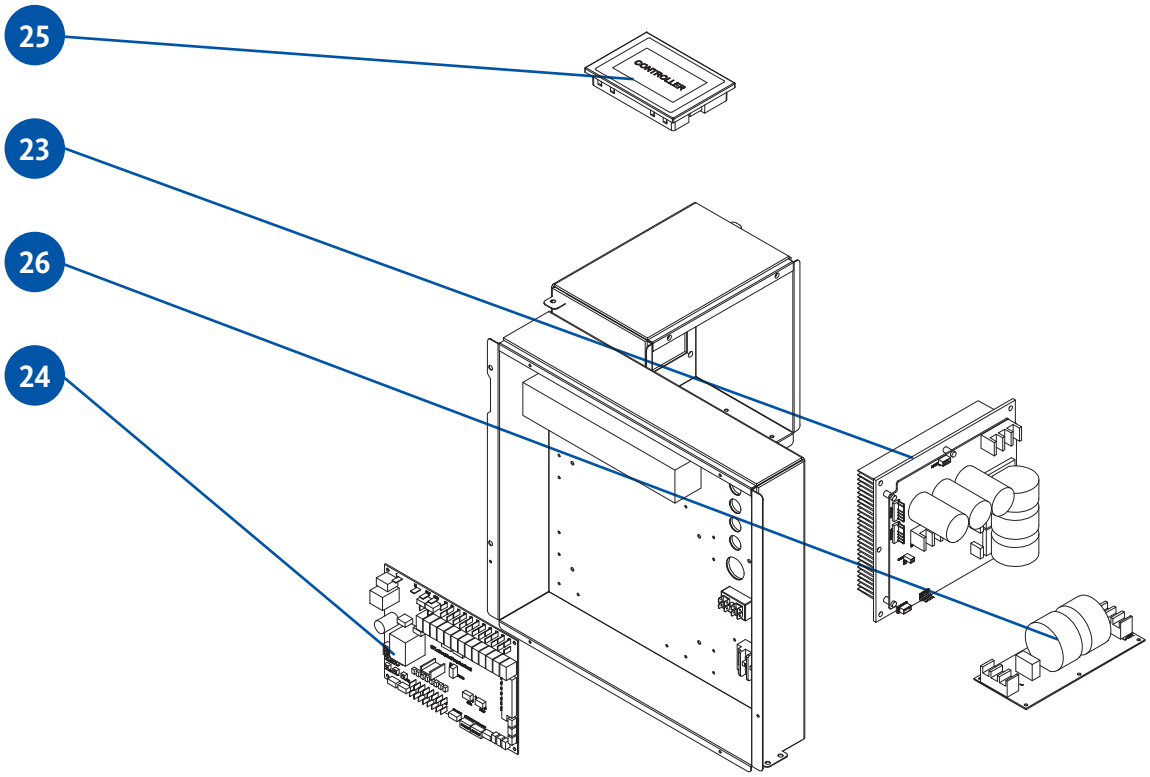
650 001 333 – Air/water heat pump 16 kW R290 Inverter 400 V



No.	OEG Art. No.	Name of spare part
1	**650 001 681**	Air outlet grid
2	**650 001 409**	Fan motor
3	**650 001 686**	Fan blade
19	**650 001 678**	Temperature sensor

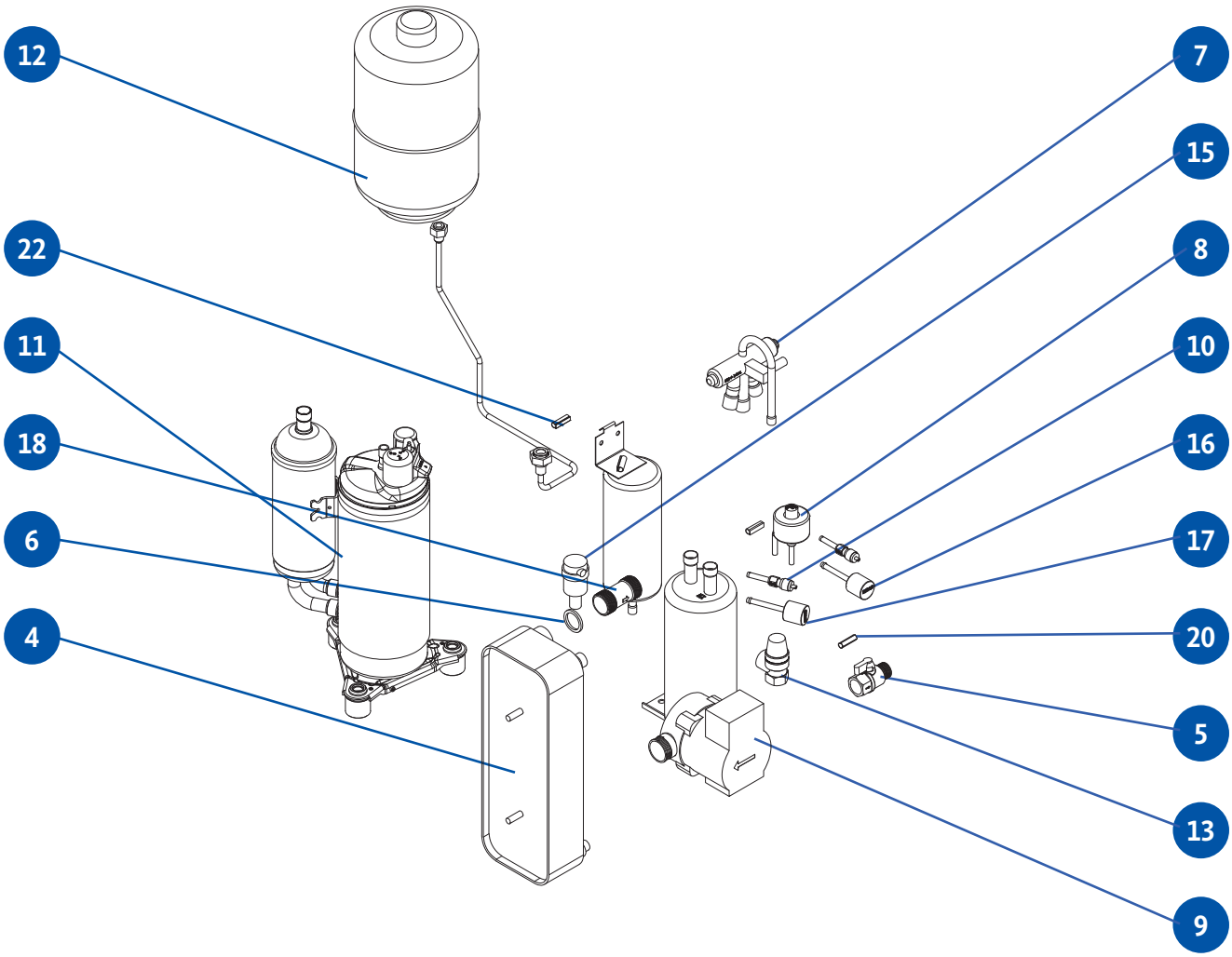
5.1 Exploded drawing and spare parts list

650 001 333 – Air/water heat pump 16 kW R290 Inverter 400 V



No.	OEG Art. No.	Name of spare part
23	**650 001 699**	Speed controller
24	**650 001 707**	PCB
25	**650 001 715**	Controller
26	**650 001 711**	Filter board

650 001 332 – Air/water heat pump 12 kW R290 Inverter 400 V
650 001 333 – Air/water heat pump 16 kW R290 Inverter 400 V



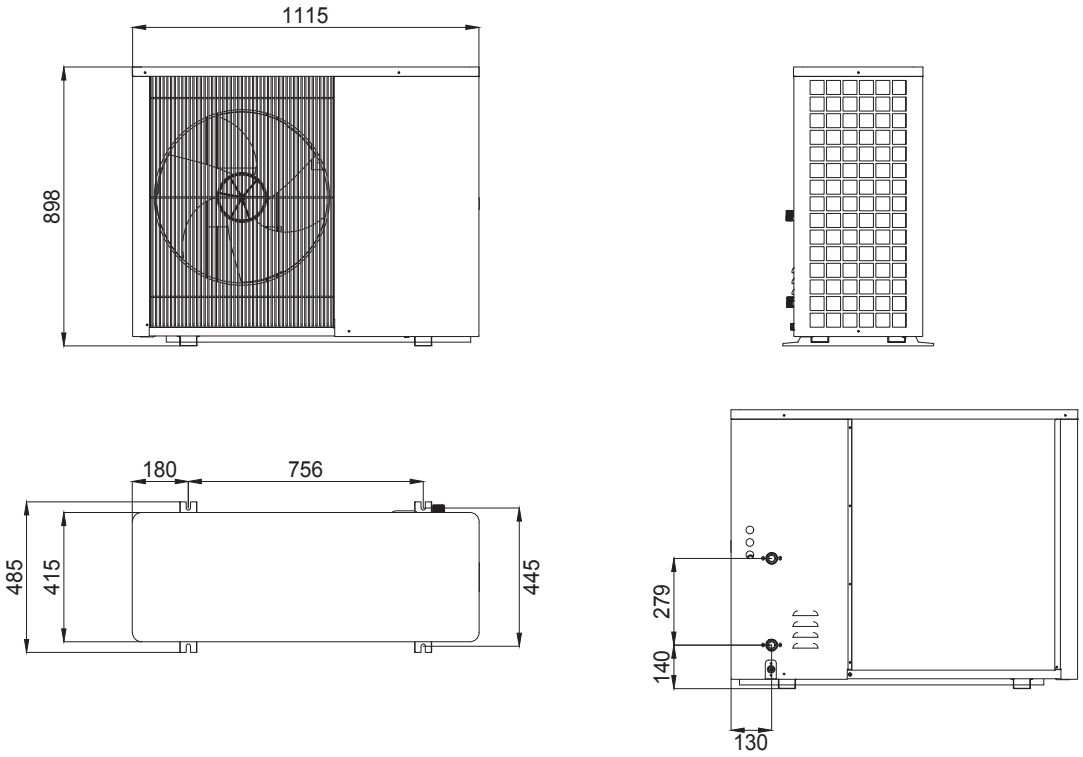
No.	OEG Art. No.	Name of spare part
4	**650 001 688**	Heat exchanger for 650 001 332
4	**650 001 689**	Heat exchanger for 650 001 333
6	**650 001 405**	Silicone gasket
11	**650 001 691**	Compressor for 650 001 332
11	**650 001 694**	Compressor for 650 001 333
12	**650 001 373**	Expansion vessel
13	**650 001 350**	Safety valve
16	**650 001 355**	High-pressure sensor
22	**650 001 679**	Temperature sensor

No.	OEG Art. No.	Name of spare part
5	**650 001 339**	Brass ball valve
7	**650 001 422**	4-way valve for 650 001 332
7	**650 001 377**	4-way valve for 650 001 333
8	**650 001 469**	Electric expansion valve for 650 001 332
8	**650 001 378**	Electric expansion valve for 650 001 333
9	**650 001 369**	Circulation pump for 650 001 332
9	**650 001 674**	Circulation pump for 650 001 333
10	**650 001 696**	Filling valve
15	**650 001 346**	Automatic vent valve for 650 001 332
17	**650 001 356**	Low-pressure sensor
18	**650 001 357**	Water flow sensor for 650 001 332
18	**650 001 675**	Water flow sensor for 650 001 333
20	**650 001 489**	PCB

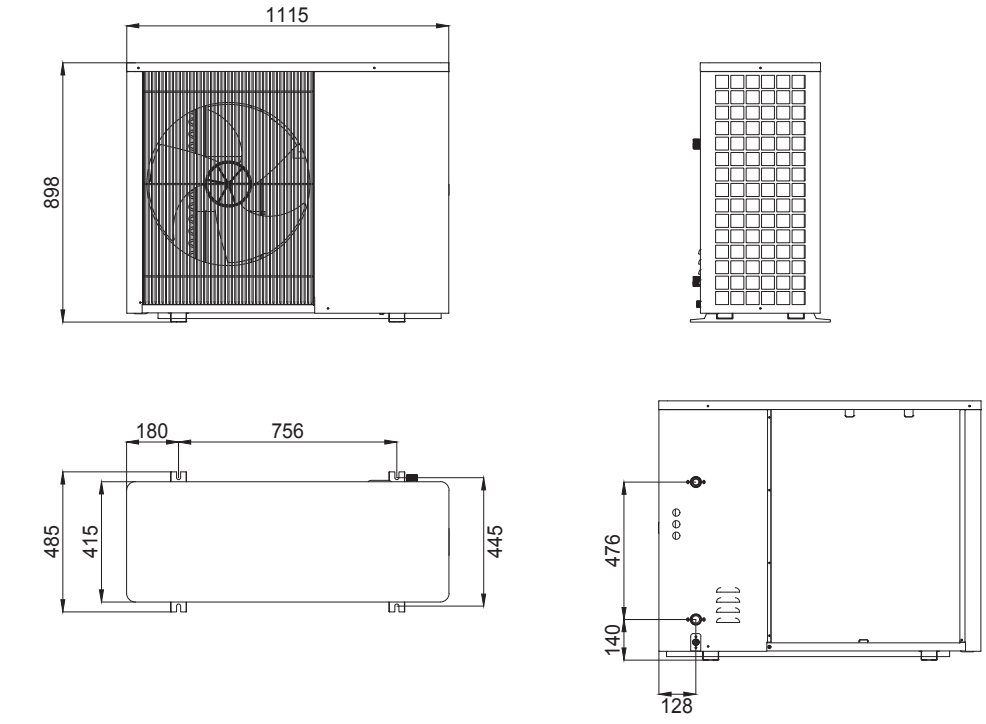
5.2 Dimensions

650 001 330 – Air/water heat pump 6 kW R290 Inverter 230 V

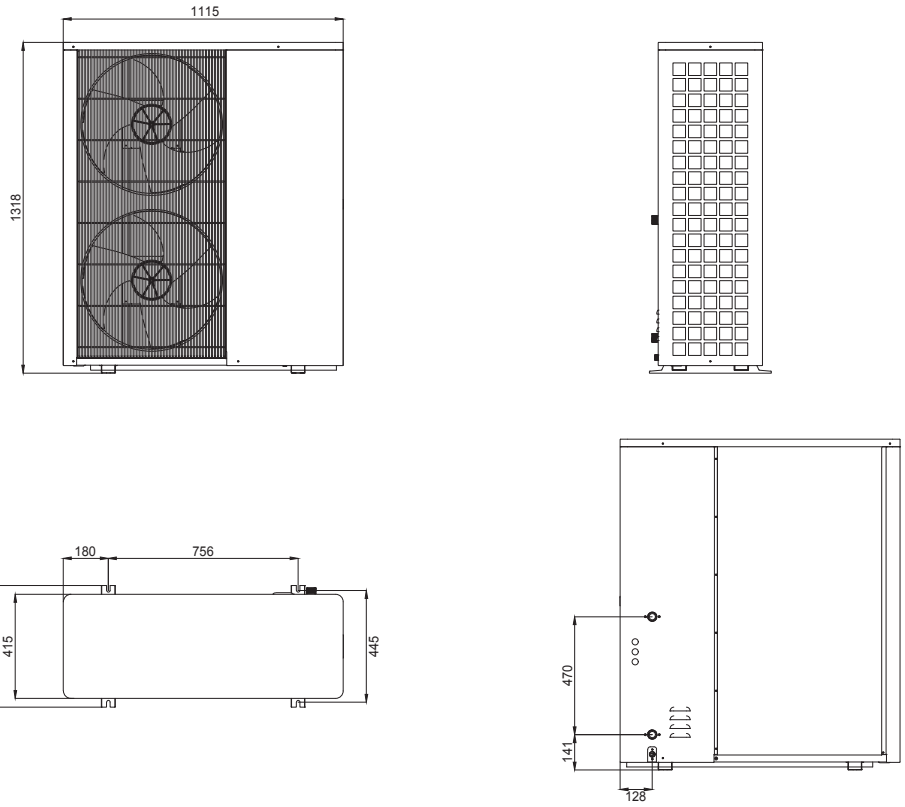
650 001 331 – Air/water heat pump 6 kW R290 Inverter 230 V



650 001 332 – Air/water heat pump 12 kW R290 Inverter 400 V



Air/water heat pump 16 kW R290 Inverter 400 V



5.3 Product specifications

Heat capacity range		650 001 330 6 kW	650 001 331 9 kW	650 001 332 12 kW	650 001 333 16 kW
Rated Heating Capacity Range	kW	2 ... 7	3 ... 10	4 ... 13	5 ... 17
Rated Heating Capacity (A7 / W35)[1)]	kW	6.324	9.064	12.069	15.928
Rated Heating Input (A7 / W35)[1)]	kW	1.419	2.047	2.751	3.509
COP (A7 / W35)[1)]	kW/kW	4.46	4.43	4.39	4.54
SCOP 55 °C / 35 °C	kWh/kWh	3.55 / 4.69	3.58 / 4.65	3.51 / 4.72	3.60 / 4.70
Rated Cooling Capacity (A35 / W18)	kW	6.25	8.85	10.8	14.85
Rated Cooling Input (A35 / W18)	kW	1.42	2.28	2.88	3.97
EER (A35 / W18)	kW/kW	4.44	3.88	3.75	3.74
Rated Voltage / Frequency	V / Hz	230 / 50	230 / 50	400 / 50	400 / 50
Rated Input Power[2)]	kW	2.76	3.15	3.75	6.21
Rated Input Current[2)]	A	12	13.7	5.7	9.4
High / Low Cut-off Pressure	Mpa	3.2 / 0.03	3.2 / 0.03	3.2 / 0.03	3.2 / 0.03
Refrigerant Type / Charge	... / kg	R290 / 0.8	R290 / 1.05	R290 / 1.2	R290 / 1.4
CO_2-Equivalent (GWP Global Warming Potential)	kg	2.4	3.15	3.6	4.2
Unit Protection Class		IPx4	IPx4	IPx4	IPx4
Electrical Shockproof[2)]		Class 1	Class 1	Class 1	Class 1
Sound Pressure Level 1 m	dB (A)	43.6	48.4	50.7	54
Sound Power Level	dB (A)	62	66	65.3	70
Max Water Outlet Temperature	°C	*75*	*75*	*75*	*75*
Diameter Of Water Connections		DN25	DN25	DN 25	DN 32
Rated Water Flow	m³/h	1.1	1.57	2.1	2.75
Internal Pressure Drop at Rating Water Flow	kPa	*13*	*21*	*28*	*28*
Residual Pump Pressure	kPa	45	25	30	25
Min / Max Water Pressure	bar	0.5 / 3.0	0.5 / 3.0	0.5 / 3.0	0.5 / 3.0
Min / Max Outdoor Temperature Heating Mode / DHW	°C	-25 ... +45	-25 ... +45	-25 ... +45	-25 ... +45
Min / Max Outdoor Temperature Cooling Mode	°C	+10 ... +45	+10 ... +45	+10 ... +45	+10 ... +45
Net Weight	kg	90	95	110	140
Gross Weight	kg	110	115	130	160
Net Dimensions (L / W / H)	mm	1115 / 415 / 900	1115 / 415 / 900	1115 / 415 / 900	1115 / 415 / 1320
Net Dimensions (L / W / H)	mm	1155 / 500 / 1025	1155 / 500 / 1025	1155 / 500 / 1025	1155 / 500 / 1445

1) According To EN14511-2
2) According To IEC / EN 60335-1

RoHS

Maintenance and cleaning for users 6.1

The heat pump should be inspected in regular intervals. Maintenance works are necessary at least once a year and have to be recorded afterwards in order to esnure the longest possible service life of the heat pump.

1. Visual inspection of the system for irregularities.
2. Dirt separators and filters should be cleaned every 6 months to ensure the system is clean and to avoid blockages.
3. Heat pumps should always be kept clean. Leaves and dirt must be removed regularly. Make sure that there are no obstacles placed in front of or behind the heat pump. Good ventilation and regular cleaning of the evaporator support the efficiency of the heat pump. The drain hole for condensate and defrost water must always be kept free.
4. In order to ensure frost protection of the heat pump, permanent power supply is of utmost importance.
5. Power supply and electrics must be checked.
6. Water supply system, safety valves and automatic vent must be function-tested. There must not be any air in the system because this will reduce the water circulation.
7. The system pressure must be tested. A pressure that is too high can damage the heat pump. Low pressure will result in malfunctions.
8. Water pipe and pipe screw connections must be tested for leaks.
9. All unit components must be function-tested. Pipe joints and valve branches must be tested for refrigerant leaks.
10. The plate heat exchanger must be chemically flushed every 3 years.
11. The error memory at the control unit must be checked.

7 Abbreviations

Abbreviation	Description
Δ P	Fluctuation of low pressure
Δ Tc	Fluctuation of coil temperature
Δ Ts	Fluctuation of suction temperature
A	Compressor current
A/C	Air conditioning unit
A/C temp	Water flow temperature of air conditioning unit
A7/35	Outdoor temperature 7°/35°
AC power voltage	AC power voltage
Actual temp	Actual temperature
AU	Automatic weather-compensated heating curve
CH	Hot-water circulation
COP	Coefficient of performance
DC	Direct current
DHW	Domestic hot water
DHW AU	Automatic weather-compensated curve for hot water
DHW temp	Hot-water temperature
DSP	Digital signal processor
EC motor	EC motor (electronically commutated)
EEPROM	Electrically Erasable Programmable Read-Only Memory
EER	Energy Efficiency Ratio
EEV	Electronic Expansion Valve
EVI	Enhanced Vapour Injection
G3	3-way valve solar (solar or booster heater space heating)
GWP	Global Warming Potential (CO2 equivalent)
Heating AU	Automatic weather-compensating curve for heating
HW	Warm / hot water
Hz	Compressor frequency
IPM	Intelligent Power Module
K	Kelvin
PCB	Printed Circuit Board
Pd	High pressure
PFC	Power Factor Correction
Ps	Low pressure
PWM	Pulse Width Modulation
RS486	Interface for high-speed serial data transmission
SCOP	Seasonal coefficient of performance, defines the efficiency of a heat pump in all-year heating operation
SYS	System
T in	Water inlet temperature
T out	Water outlet temperature
Tc	Coil temperature
Td	Discharge gas temperature
TH	Condensation temperature
TIMP	IPM temperature
TL	Evaporation temperature
Ts	Suction temperature
Tt	Temperature of hot-water tank
Ty	Pipe temperature of heat exchanger
W7/18/35	Water temperature 7°/18°/35°
WB	Wet-bulb temperature
WIFI	Wireless internet access WIFI /WLAN

8 Inbetriebsnahmeprotokoll

Commissioning expert technician

Expert technician: .....

Commissioning date: .....

OEG customer number: .....

Location/Customer address: .....

Serial number heat pump: AC __ __ __ __ __ __ DBP __ __ __ __ __ __ __

Construction year of building: .....

New building: .....

Existing building: .....

Building heating load (in accordance with DIN EN 12831): .....

Heat distribution system (underfloor heating, panel radiators, radiators, convectors, wall heating): .....

DHW heating with heat pump: ☐ yes ☐ no

Free fax number:
EU 00 800-63 43 29 24

Email:
sales@oeg.net

Activity	Done	Remark
Heat pump connection application to electricity supplier	☐	
Electrical connection acc. to wiring diagram	☐	
Have the installation clearances been observed?	☐	
Have the safety clearances (R290!) been observed?	☐	
Visual inspection of heat pump for damages inside and outside	☐	
Which hydraulic diagram from the operating instructions has been chosen?		
1st storage tank used		manufacturer, type:
2nd storage tank used		manufacturer, type:
Solar system	yes ☐ no ☐	manufacturer, type:
Changeover valve heating/hot water	yes ☐ no ☐	manufacturer, type:
Changeover valve heating/cooling	yes ☐ no ☐	manufacturer, type:
Pre-charge pressure and size external expansion vessel	Bar	manufacturer, type, size:
Pre-charge pressure internal expansion vessel	Bar	
System pressure	Bar	
If required: Has an auxiliary pump been installed?	yes ☐ no ☐	manufacturer, type, size:
Has a strainer/dirt separator been installed?	yes ☐ no ☐	manufacturer, type, size:
Has the system been flushed?	yes ☐ no ☐	
Has the system been filled with antifreeze?	Vol.%	manufacturer, type:
Volume flow acc. to display at controller	l/min	
Nominal flow rate reached acc. to type plate	m³/h	
Visual heat pump inspection for leakages	☐	
Has the system been vented?	☐	

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Commissioning expert technician

Activity	Done	Remark
Piping supply/return heat pump, cross section	mm	total length, material:
Condensation drain connected	☐	
Have date and time been set?	☐	
Which operating mode has been selected?		
Design temperature supply	°C	
Design temperature return	°C	
Bivalence point	°C	
Activation Auto temperature and heating curve adjustment	☐	
Electrical booster heater	☐	manufacturer, type, output:
2nd heat generator		manufacturer, type, output:
After 10-minute operating time:		
Supply heat pump	°C	
Return heat pump	°C	
Air inlet	°C	
Air outlet	°C	
High pressure refrigerant	Mpa	
Low pressure refrigerant	Mpa	
Has the installation company optimised the system parameters?	☐	
Have the modified system parameters been documented (list)?	☐	
Has a system diagram been created?	☐	
Have photos of the heat pump system been taken?	☐	
Have the documents been handed over to the final customer?	☐	
Briefing final customer	☐	
Miscellaneous		

The OEG heat pump has been connected and tested in accordance with the valid, accepted rules of technology (VDE 0100, 0701-0702, DIN EN 12828, 14336, 15450, 12831, VDI 2035, 4650, 4645) and OEG's installation and operating instructions.

.....

Place | Date

.....

Customer signature

.....

Expert technician signature

Appendix 1: Parameter list
Appendix 2: System drawing / Hydraulic diagram

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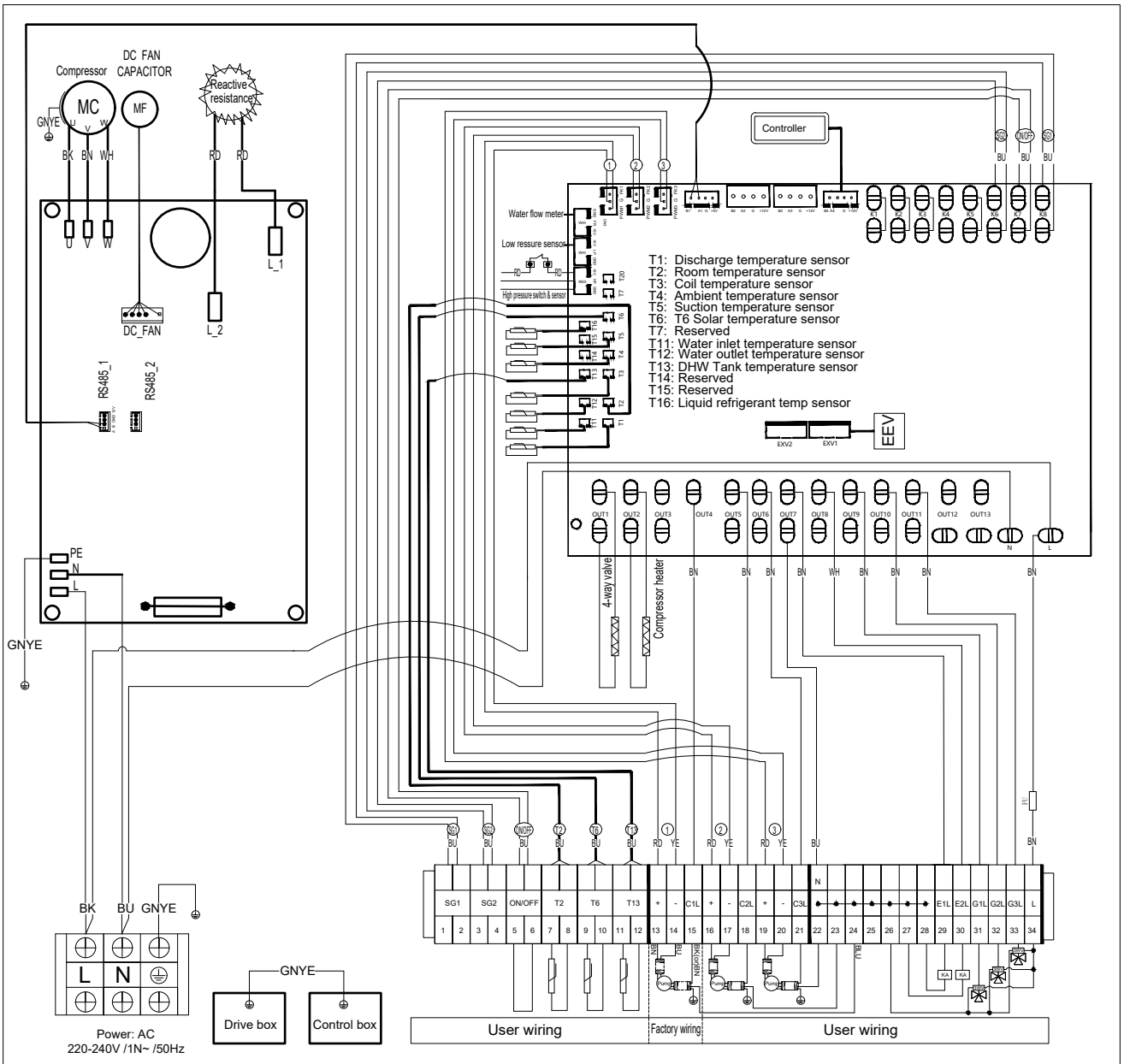
9 Electrical connection

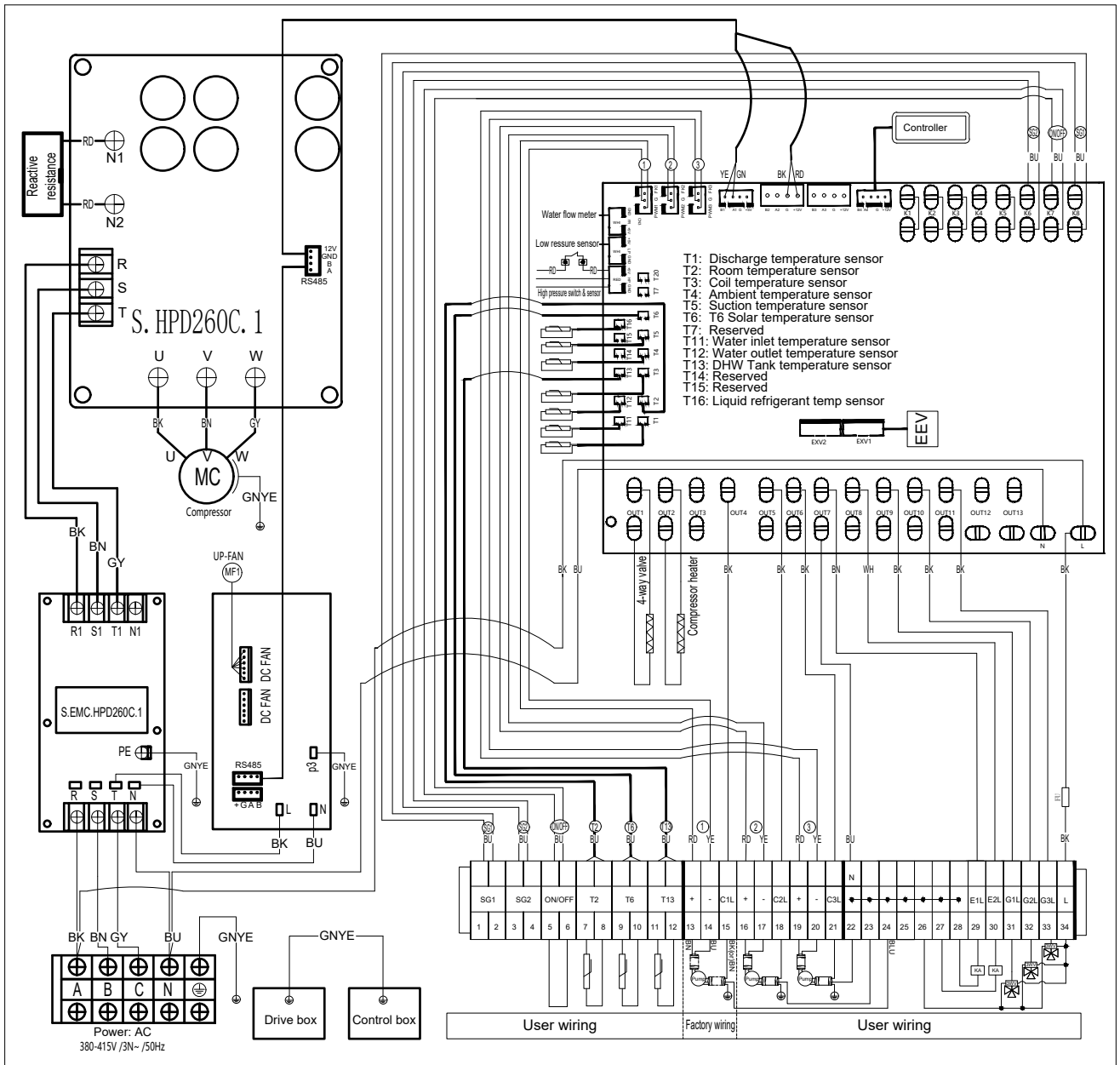
Wiring diagram for 650001330 (6 kW) and 650001331 (9 kW)



6/9/KW ELECTRICAL DIAGRAM

K1: Heating switch	E1: DHW Electrical heater
K2: Cooling switch	E2: Buffer tank electrical heater
K3: Reserve	C1: Built-in water pump
K4: Water flow switch	C2: Auxiliary pump or indoor circulation pump
K5: Reserve	C3: DHW auxiliary pump
K6: SG2 contact without power	G1: DHW 3-way valve
K7: ON/OFF	G2: Season 3-way valve(G2L:OFF:Cooling or G2L:ON:heating)
K8: SG1 contact without power	G3: Solar 3-way valve(Solar auxiliary AC heating)

Wiring diagram for 650001332 (12 kW)

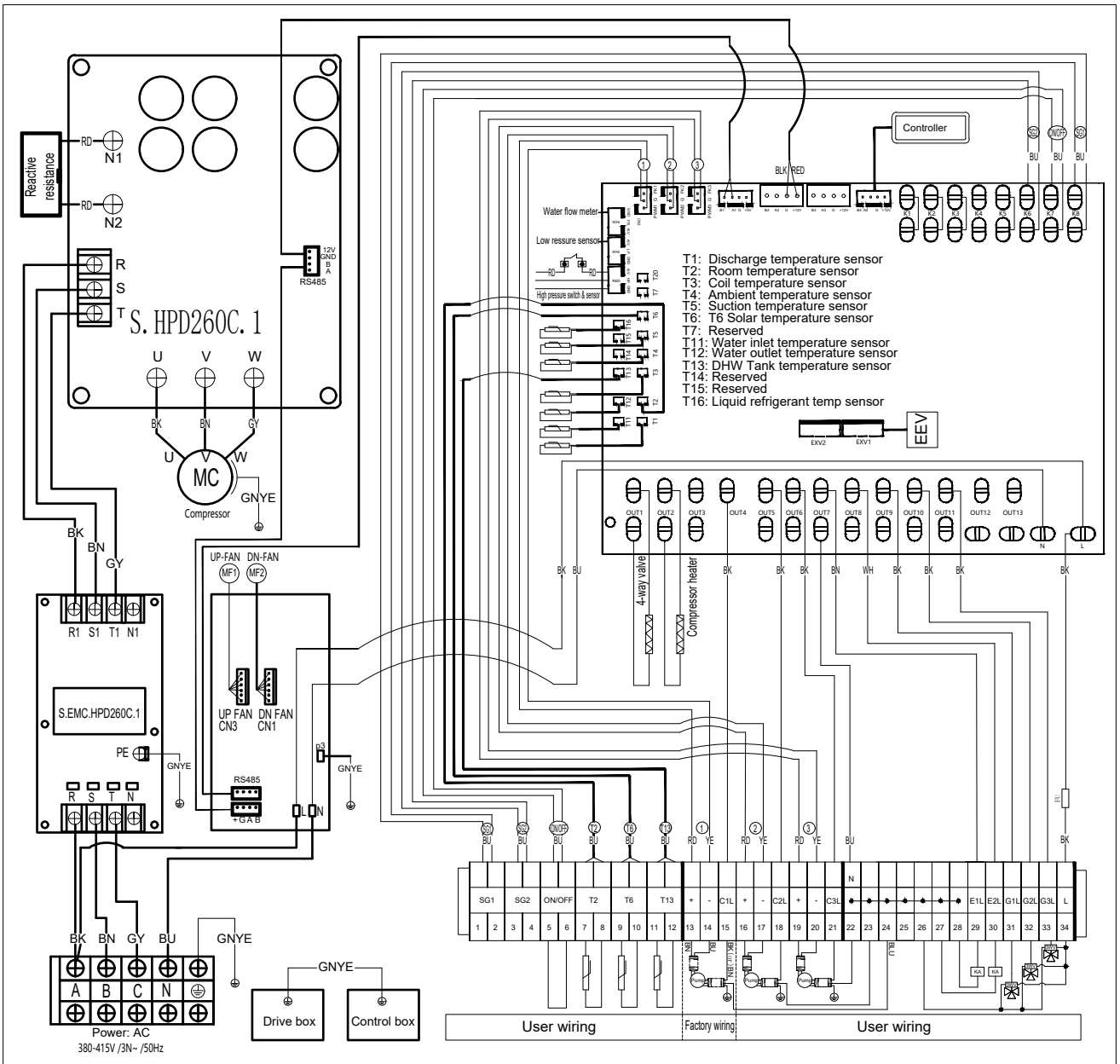


12KW ELECTRICAL DIAGRAM

K1: Heating switch	E1: DHW Electrical heater
K2: Cooling switch	E2: Buffer tank electrical heater
K3: Reserve	C1: Built-in water pump
K4: Water flow switch	C2: Auxiliary pump or indoor circulation pump
K5: Reserve	C3: DHW auxiliary pump
K6: SG2 contact without power	G1: DHW 3-way valve
K7: ON/OFF	G2: Season 3-way valve(G2L:OFF:Cooling or G2L:ON:heating)
K8: SG1 contact without power	G3: Solar 3-way valve(Solar auxiliary AC heating)

9 Electrical connection

Wiring diagram for 650001333 (16 kW)



16KW ELECTRICAL DIAGRAM

K1: Heating switch	E1: DHW Electrical heater
K2: Cooling switch	E2: Buffer tank electrical heater
K3: Reserve	C1: Built-in water pump
K4: Water flow switch	C2: Auxiliary pump or indoor circulation pump
K5: Reserve	C3: DHW auxiliary pump
K6: SG2 contact without power	G1: DHW 3-way valve
K7: ON/OFF	G2: Season 3-way valve(G2L:OFF:Cooling or G2L:ON:heating)
K8: SG1 contact without power	G3: Solar 3-way valve(Solar auxiliary AC heating)

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