INSTALLATION & USER GUIDE

310 Air

V3.11.24

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1. Introduction

1.1 Appliance description

The 310 Air is an internal air source heat pump hot water & storage system that extracts the majority of the energy needed to provide your heating and hot water from the air outside.

1.2 Name plate

The serial number of your 310 Air heat pump can be found on the name plate, this is attached to the upper right-hand casing of the heat pump.

1.3 Information on documentation

Unless otherwise stated, all the content of this documentation applies to the 310 Air on the title page. This documentation describes appliances that are not always in the standard scope of delivery. Therefore there may be differences to your specific appliance.

Information

Read all of this documentation carefully before using the appliance and keep the documents safe. Pass this documentation on to any new user.

1.4 Symbols and possible dangers

Symbol	Type of risk
	Injury
	Electrocution
	Burns (burns, scalding)
	Material damage (appliance, consequential and environmental damage)

1.5 Keywords

Keyword	Meaning
DANGER	Failure to observe this information will result in serious injury or death.
WARNING	Failure to observe this information may result in serious injury or death.
CAUTION	Failure to observe this information may result in non-serious or minor injury.

1.6 Other symbols

► This triangular symbol is used as a bullet point.

» These two arrows represent the symbol for an instruction. This shows that there is something you must do. The actions required are described step by step.

1.7 Units of measurement

In these documents, unless otherwise specified, all lengths (e.g. in tables and illustrations) are given in millimetres.

1.8 Performance figures

The performance figures of the 310 Air indicated in these documents (text, tables and diagrams) have been calculated according to standardised measurement conditions.

However, these measurement conditions often do not completely correspond to the plant specific conditions applicable in the respective user's system.

System specific factors that can affect the conditions include, for example, the specific design of the system, the age of the system and the actual flow rates. For this reason, the stated performance figures can differ from plant specific performance data.

The stated performance figures can be confirmed only if the measurements taken for the appliance are carried out according to the relevant standardised measurement conditions.

2. Safety

2.1 Intended use

The 310 Air is intended for heating & Domestic Hot Water (DHW) in a domestic environment. It can safely be used by people who have received no instruction.

Any use of the appliance that is different from or goes beyond this is not regarded as intended use. "Intended use" also includes observing this documentation and the documentation of any accessories used.

2.2 General safety information

Observe the following safety information and instructions for the appliance.

- ► Only qualified contractors should carry out the electrical work and installation of this appliance. Only qualified contractors may open the appliance.
- ► Commissioning and maintenance of the appliance may be carried out only by 310 Air Customer Service or by authorised customer service partners.
- ► The qualified contractor is responsible for compliance with all relevant regulations during installation and commissioning.
- ► Only operate the appliance when it is fully installed and with all safety devices fitted.
- ► Alterations to the appliance may only be carried out by 310 Air Customer Service or by authorised customer service partners.

- Before commencing electrical connection and installation work, the heat pump system must be isolated from the power supply.
- The appliance must not be used as a step or platform. Do not climb on the appliance or place any loads on it.
- The water in the DHW tank can be heated to temperatures above 60°C. If the outlet temperature exceeds 43°C, there is a risk of scalding. Make sure that you do not come into contact with the discharging water.

WARNING: Burns

Work on the refrigerant circuit may be carried out only by 310 Air Customer Service or by authorised customer service partners.

WARNING: Electrocution

Contact with live components is life threatening. Damage to the insulation or individual components can be life threatening.

» If the insulation is damaged, switch off the power supply and arrange for the appliance to be repaired.

3. Scope of delivery

3.1 Checking the scope of delivery

Check that the scope of delivery is complete and intact.

- 310 Air heat pump head
- 310 Air Pre-plumbed tank
- Sensor cable & plug
- Power cable
- Rear hydraulic connection set
- Pack fibre washers

4. Preparing to install the 310 Air

Before installing the appliance, preparatory work needs to be carried out by qualified contractors

4.1 Installation location

Material damage

The intake air must not be contaminated with corrosive substances (ammonia, sulphur, chlorine, etc.). Machine components may be destroyed.

Material damage

The appliance is intended only for indoor installation. It must not be installed in rooms with high levels of humidity (permanently above 70%).

Information

The installation of the 310 Air must be carried out by an authorised contractor.

The installation location for the appliance must meet the following requirements:

- A dry and frost-free room
- No lighting fixtures or pipes must be mounted above
- Horizontal floor
- Load bearing floor
- Max. room temperature 40°C

The installation site should be positioned as close as possible to the draw-off points, especially for draw-off points with small amounts of hot water, such as kitchens. In order to prevent continuous energy losses, DHW circulation pipework should not be installed. The 310 Air must be kept frost proof together with the pipework and valves.

4.2 Maintaining minimum distances

Observe the following minimum clearances:

- Front: min. 50 mm
- Above: min. 450 mm
- Rear: min. 50 mm
- Sides: min. 100 mm

Observing the specified minimum clearances for the appliance ensures:

- Correct installation of the appliance.
- That it operates fault free.
- Ability to carry out maintenance on the appliance.

4.3 Preparing heat source connection

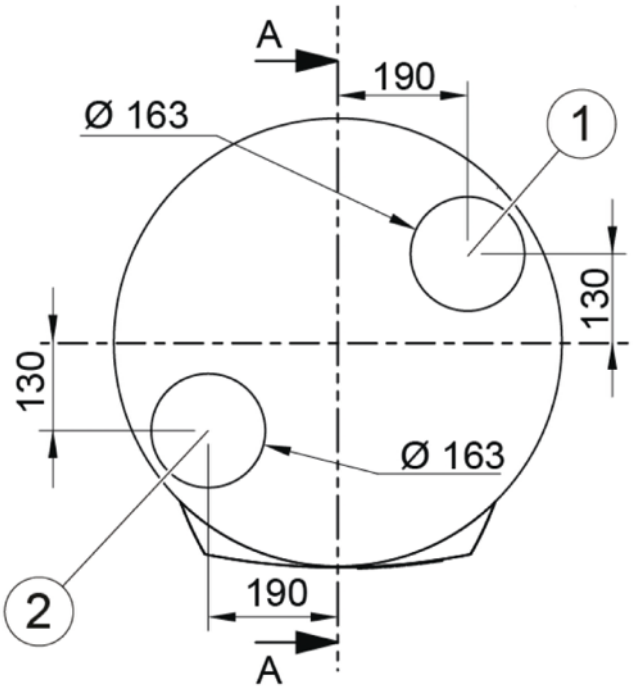
The air extraction point should be selected taking into account a high average air temperature and the required air volume.

The minimum duct diameter for exhaust and supply air connections must be observed.

The insulated duct system should be laid as straight as possible and avoiding sharp bends.

- Maximum total pipe length for supply and extract air: 20 m at 160 mm diameter.
- No more than 3 right angled bends are permitted.
- For each additional right angled bend, the maximum pipe length must be reduced by 1m.
- Ensure outside terminal has grill & rain cover.
- Maximum allowable duct pressure drop 80 Pa.

To prevent condensate from escaping, the ducts must be laid horizontally or at a slight downward inclination towards the wall outlets.



5. 310 Air Installation

5.1 Delivery and installation

The heat pump is delivered ready to install, i.e. fully wired on a pallet, wrapped in film.

Information

Should you notice any transportation damage to the appliance, you must report such damage immediately when the delivery is unloaded. Claims for transportation damage cannot be made subsequently.

Material damage

» Protect the appliance from damage by using lifting slings and trolleys
» When transporting, protect the appliance from impact.

- The heat pump should be stored and transported in its packaging.
- Over short distances, you may transport the appliance carefully at an angle of up to 45°.
- The standard packaging of the appliance does not provide protection against the weather or sea water.
- The appliance may be stored and transported only at temperatures of between -20°C and +45°C.

WARNING: Injury

» During transport, observe the weight of the appliance.
» Use suitable transport aids (e.g. a sack truck) for transport.
» Make sure that sufficient personnel are present during transport.

Please note the following when moving the appliance:

» Do not unpack the appliance until it has been moved to the installation site.

» Transport the appliance with a sack truck or trolley.

Material damage

The heat pump casing (cowl) cannot withstand high forces
» When transporting with the transport packaging removed, make sure that you do not lift or support the appliance by the cowl.

5.2 Positioning the appliance

» Position the appliance at the intended installation location.
» Observe minimum clearances.

Material damage

Improper installation of the appliance may cause vibration, noise and consequential damage.
» Make sure that the system has been installed vertically and on a level surface.

5.3 Connecting the condensate

Condensation is separated by cooling the air in the evaporator. The condensate drain at the rear of the heat pump must be channelled away from the heat pump with plastic pipes, and unhindered drainage of the condensate must be ensured. Depending on the air volume and humidity, condensate can accumulate at a rate of approx. 0.3 l/h.

Material damage

The condensate drain must not be permanently connected to a drain via a trap. The ammonia vapours rising from the drain can destroy the heat exchanger

5.4 Connecting the mains cold water, balanced cold water & DHW

» Connect the mains cold to the lever valve for the inlet group (22mm copper) please observe G3 water regulations for mains cold water requirements prior to the connection to the lever valve
» Connect the balanced cold for the rest of the dwelling (22mm copper)
» Connect the DHW for the dwelling (22mm copper)

Material damage

Before commissioning, the heating circuit, the mains cold water, the balanced cold water & the DHW must be filled.

5.5 Connecting the tank sensor

The tank sensor is connected to the heat pump using the 2 pin plugs. Once pushed together, lock together by screwing the outer ring until hand tight.

5.6 Connecting the immersions

The immersions are connected to the heat pump using the 2 x 3 pin plugs. Once pushed together, lock together by screwing the outer ring until hand tight.

5.7 Connecting the power supply

We recommend connecting the power supply via its own RCD. The heat pump is equipped as standard with a 2m mains power cable for 220-240 VAC, 50 Hz.

WARNING: Electrocution

Work on electrical connections and installation may only be carried out by qualified contractors.

Information

The values specified in this documentation for circuit protectors and cable cross-sections are guideline values. The qualified contractor carrying out the work is responsible for plant specific sizing of safety devices and cable cross-sections.

WARNING: Electrocution

Before commissioning, the necessary fault protection measures on the system and the earth connection must be checked by a qualified contractor.

6. Commissioning

6.1 Before initial start up

» Make sure that no one can be put at risk during the initial start up.

» Make sure that the installation tasks on the heat pump have been completed professionally.

» Ensure that the heating system is filled with sufficient cold water to 0.8 bar by using the filling loop.

» Ensure that the heating system is dosed with inhibitor correctly.

» Make sure that the system has been fully vented by opening & closing the rear air vents.

» Make sure that the cold and hot water taps have been opened to ensure no air remains.

» Make sure that the electrical installation has been carried out and completed professionally.

» Make sure that both pressure relief valves have been taken to suitably sized drain point.

» Make sure that all duct work is correctly jointed and with no possibility of air leaks

» Make sure that all duct work is correctly jointed and with no possibility of air leaks

» Make sure that all duct work is insulated throughout with no possibility to allow condensation to form

6.2 Commissioning the appliance

» Turn on appliance using the on button

» Allow any air to escape from the system by opening & closing the rear air vents

» Set the clock (see page 10)

» Check for leaks

» Fill in paperwork at rear of manual

» Handover to customer

Information

Commissioning may only be carried out by an authorised installation company.

7. Display

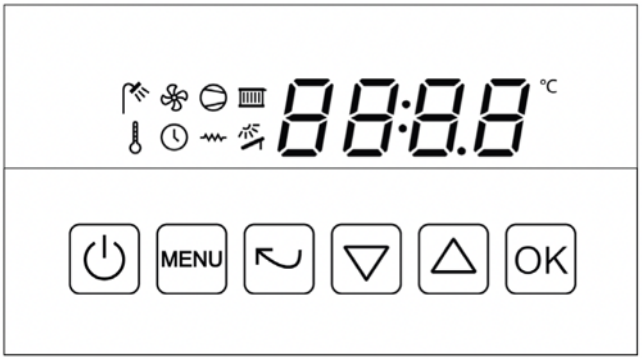
7.1 Touchscreen

Settings are made using the touchscreen on the appliance.

The touchscreen consists of an input unit and a display unit.

► The input unit consists of a capacitive touchscreen with 6 buttons.

► The display unit consists of symbols and a 4 digit display.



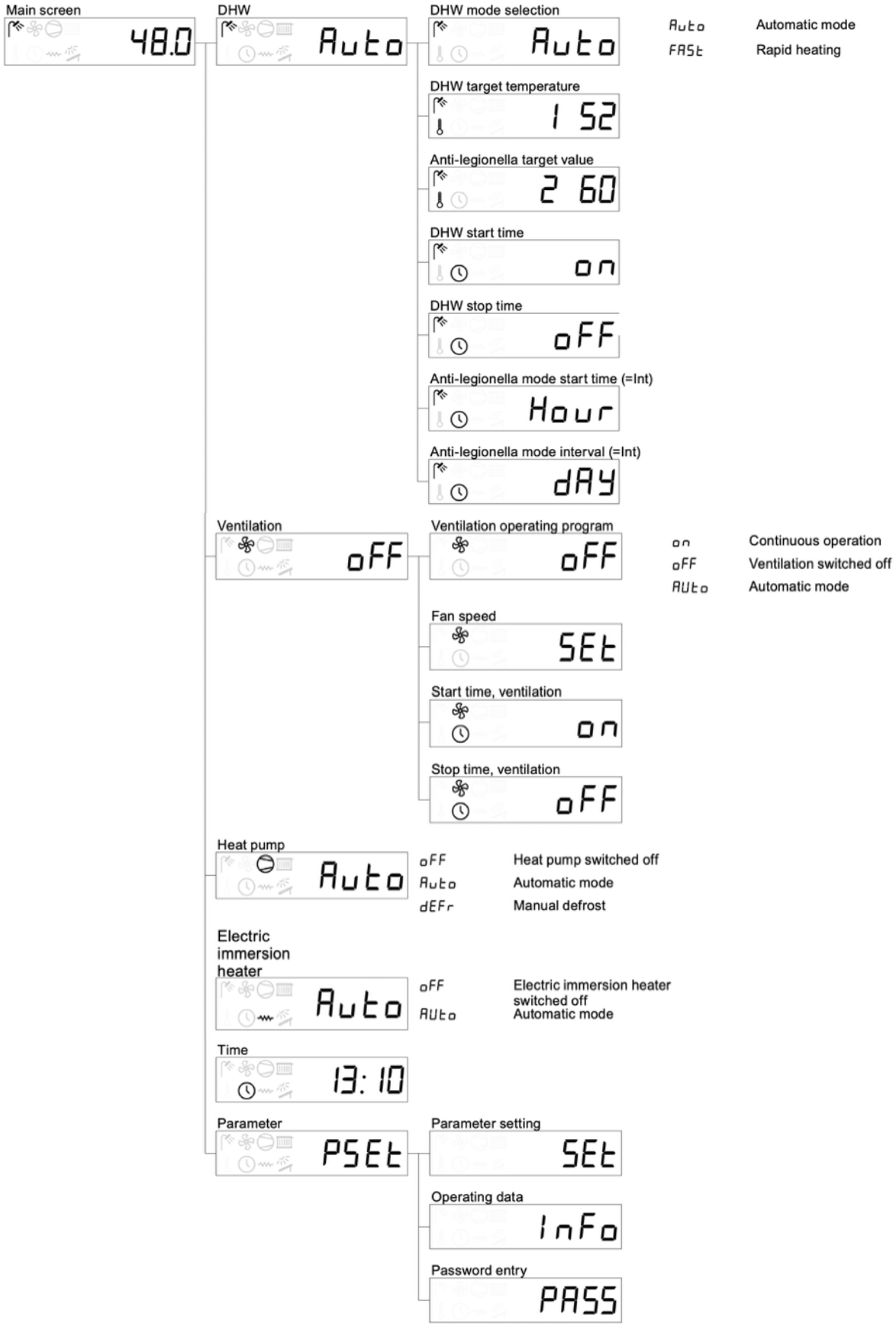
7.2 Display symbols

Symbol	Bright symbol	Dimmed symbol	Flashing symbol
	DHW active	DHW inactive	Anti-legionella mode
	Ventilation running	Ventilation switched off	
	Compressor running	Compressor switched off	Service interval (every 2500 hours of operation)
	Set temperature		
	Set time		After a longer interruption of the power supply, the clock must be reset
	Electric immersion heater running	External electric immersion heater switched off	

7.3 Display buttons

Button	Designation	Function when button is pressed
	Power button	Press the button (min. 2 s) to switch the heat pump on or off
MENU	Menu button	Calls up the main menu
	Back button	Returns to previous menu
	Down button	Scrolling in the menu / setting values / viewing the current target value (from the main screen)
	Up button	Scrolling in the menu / setting values / viewing actual values (from the main screen)
OK	OK button	Saving settings / selecting the submenu / acknowledging Er47 (defrost fault)

7.4 Menu structure

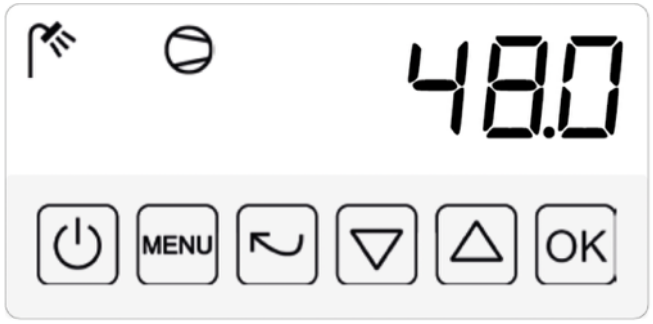


8. Control settings

8.1 Switching the 310 Air on & off

» Press and hold the On/Off button for 2 seconds

The main display field indicates the tank temperature.



Material damage

If you disconnect the appliance from its power supply, it is not protected against frost and corrosion.

» Do not interrupt the power supply of the appliance.

8.2 Setting the target temperature

» Press the Menu button.

In the main menu, the “DHW” symbol is displayed brightly.

» Press the OK button to confirm.

» To scroll in the DHW menu, use the Down button.

The symbols “DHW” and “Temperature” are displayed brightly.

» Press the OK button to confirm.

The target temperature flashes.

» Adjust the target value with the Up and Down buttons.

» Press the OK button to confirm.

» Press the Back button several times to return to the main screen.

Information

To save energy, we recommend setting the temperature at 55°C.

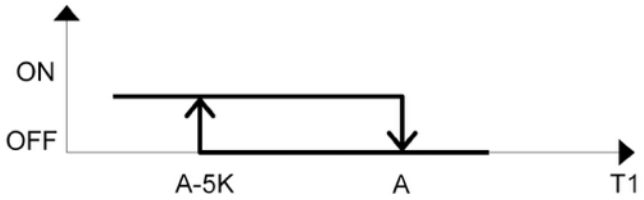
9. Heat pump operation

9.1 Heat & hot water heating

Heating takes place when:

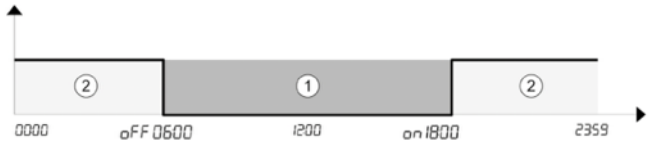
- there is a heat demand
- the time program does not block charging

A heat demand exists if temperature is 5°C lower than the target temperature ‘A’.



We do not recommend adjusting the timer program as it may reduce efficiency. Heating production can be limited by reducing the flow temperature or by means of a heating timer program with reduced temperature set point at night or when away from home.

Symbol	Parameter	Designation	Description
	on	DHW heating start time	The time from which DHW heating is enabled is set here. ► 00:00 = default setting
	oFF	DHW heating stop time	The time from which DHW heating is disabled is set here. ► 23:59 = default setting



1 Heating & DHW enabled
2 Heating & DHW disabled

9.2 Heating & hot water rapid heat up

The rapid heating is independent of the set time program. Heating to the current target value takes place immediately

Symbol	Parameter	Designation	Description
	FASt	DHW rapid heating	For once-off DHW rapid heating to start, set to “Fast”. When the target value is reached, it is automatically reset to “Auto”. ► Auto = default setting
PSEt SEt	b03	Selection of heat generator for rapid heating	The user can choose which heat generator to use for rapid heating: ► 0 = heat pump only (default setting) ► 1 = heat pump + electric immersion heater

The target temperature flashes.

» Adjust the target value with the Up and Down buttons.

» Press the OK button to confirm.

» Press the Back button several times to return to the main screen.

9.3 Anti Legionella mode

Legionella protection operation serves to fulfil the hygienic requirements for Legionella and is carried out using the heat pump and the immersions. Legionella protection operation is deactivated as factory setting, but can be configured by the system operator, see instructions below.

The shower symbol flashes when anti-legionella mode is active.

Information

In order for the heat pump to operate correctly in anti-legionella mode, it must always be supplied with power. In the event of a power failure, the set interval may be longer.

Symbol	Parameter	Designation	Description
	2. 60	Anti-legionella temperature	The DHW target temperature for anti-legionella mode is set here. ► 60°C = default setting
	Hour	Start time, anti-legionella mode	Here you set the time when anti-legionella mode should start. ► 00:00 = default setting
	dAY	Anti-legionella mode interval	The interval in days is set here. If, for example, anti-legionella mode is to start every Saturday, then 7 days must be set on a Saturday. ► 0 = anti-legionella mode deactivated (default setting)
PSEt SEt	b02	Max. heat-up time in anti-legionella mode	If the anti-legionella temperature is not reached within the time set here, the heating cycle is terminated. ► 4.0 h = default setting

9.4 Heat pump operating program

The rapid heating is independent of the set time program. Heating to the current target value takes place immediately

Symbol	Parameter	Designation	Description
	Auto	Heat pump operating program	► off = heat pump switched off ► Auto = automatic mode according to time program ► defr = manual defrost ► Auto = default setting

9.5 Evaporator defrosting

If the air inlet temperature is too low, the 310 Air evaporator is defrosted as required. For this purpose, the evaporator temperature is measured and monitored with an internal temperature sensor.

► Defrosting is automatically activated when the evaporator temperature is below 0°C for more than 120 minutes.

► Defrosting allows the evaporator temperature to rise again.

► The defrosting process is logged as successful if the evaporator temperature rises above 6°C within 20 minutes. If this is not the case, the defrosting process is logged as unsuccessful. Two further attempts are made.

► If these defrost attempts are also unsuccessful, the heat pump stops and error message Er47 appears on the display.

► Press OK button to acknowledge error message Er47.

► The fan remains off during defrosting.

Symbol	Parameter	Designation	Description
PSEt SEt	b01	DHW target temperature at Fault	During the Er47 defrost fault, the electric immersion heater provides DHW heating. It is controlled to target value b01. ► 38.0°C = default setting

9.6 Electric immersion

When there is increased demand for DHW & Heating or if rapid heating is required, the two immersions are configured as an auxiliary heater.

There are two immersions installed in the 310 Air tank, one for heating and one for DHW.

When activated by the 310 Air, these two immersions will only turn on if they are below the internal immersion thermostat set point.

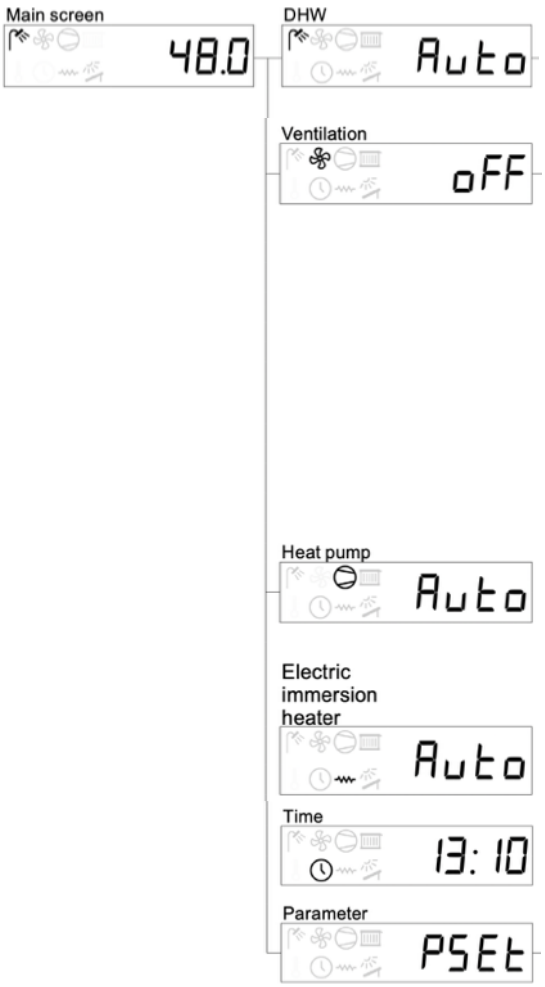
When in use, they will independently turn off when the internal immersion thermostat set point is reached or the 310 Air set point (less 5°C) has been reached, which ever comes first.

9.7 Heat pump factory settings

The 310 Air is delivered pre-configured to simplify the installation.

- ► DHW is set to AUTO
- ► Ventilation is set to OFF
- ► Heat pump is set to AUTO
- ► Immersion is set to AUTO

►Time needs to be set



10. Smart grid function

10.1 Smart grid control

The 310 Air offers the possibility to switch off via an external (PSU) contactor or to control the heat pump to a higher target value (smart grid).

Information

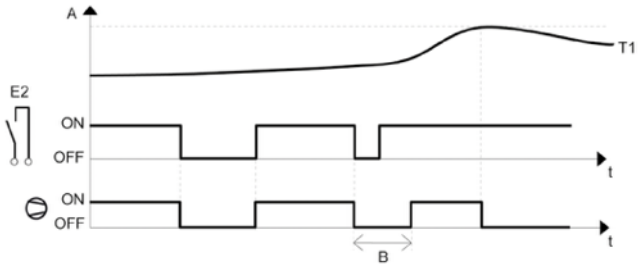
A PSU contractor shutdown has higher priority than an external target value increase (smart grid)

Symbol	Parameter	Designation	Description
PSEt SEt	A03	Function of input E2	0 = no function 1 = PSU shutdown ► Contact E2 open = heat pump switched off (incl. electric immersion heater) ► Contact E2 closed = heat pump running 0 = default setting
	A04	Function of input E3	0 = no function 1 = PSU shutdown 2 = Smart Grid function 3 = fan function ► Contact E3 open = normal target value ► Contact E3 closed = target for anti-legionella mode 0 = default setting

PSU shutdown (parameter A03 = 1)

The heat pump switches off when:

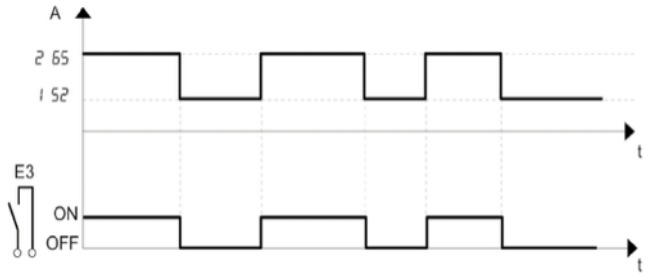
- ► contact E2 is open (the display shows “Stop”).
- ► or the target temperature has been reached.



A Target
B Minimum compressor downtime

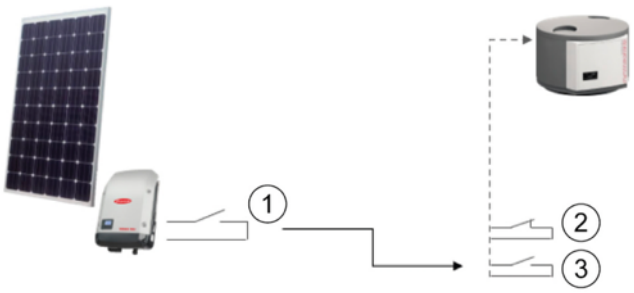
External target value increase (parameter A04 = 2)

If the electricity tariff is favourable, the target can be increased. All active heat generators then control to the target value for anti legionella mode.



A Target

Example of a photovoltaic system



1 Contact E3 Potential-free output on inverter
2 Input E2 Stop (N/C contact)
3 Input E3 Smart Grid

11. Maintenance and care

11.1 Service

We recommend having your 310 Air inspected annually and, if necessary, serviced by 310 Air Customer Service.

Material damage

Maintenance work on electrical components of the heat pump may only be carried out by qualified contractors.

» If it is necessary to clean the casing sections of the appliance, use only a damp cloth (with water or a weak soapy solution). Do not use any abrasive or aggressive cleaning materials.

» If the casing sections are heavily soiled, use methyl alcohol.

11.2 Problem solving

Any occurring faults are shown on the touchscreen. (See page 10, Malfunction Table)

If a fault occurs, contact your system installer. The system installer knows your hydraulic system and how it operates. The causes of faults can often be found in the settings or in the hydraulics.

Before contacting the installer, make a note of the serial number of the 310 Air.

The serial number is shown on the name plate on the upper right-hand casing section of the heat pump.

11.3 General safety information

Observe the following safety information and instructions for the 310 Air.

- Only qualified contractors should carry out the electrical work and installation of the 310 Air. Only qualified contractors may open the 310 Air.
- Commissioning and maintenance of the appliance may be carried out only by 310 Air Customer Service or by customer service partners authorised by 310 Air Customer Service.
- The qualified contractor is responsible for compliance with all relevant regulations during installation, commissioning and servicing.
- Only operate the 310 Air when it is fully installed and with all safety devices fitted.
- Alterations to the 310 Air may only be carried out by 310 Air Customer Service or by customer service partners authorised by 310 Air Customer Service.

12. Rectifying faults

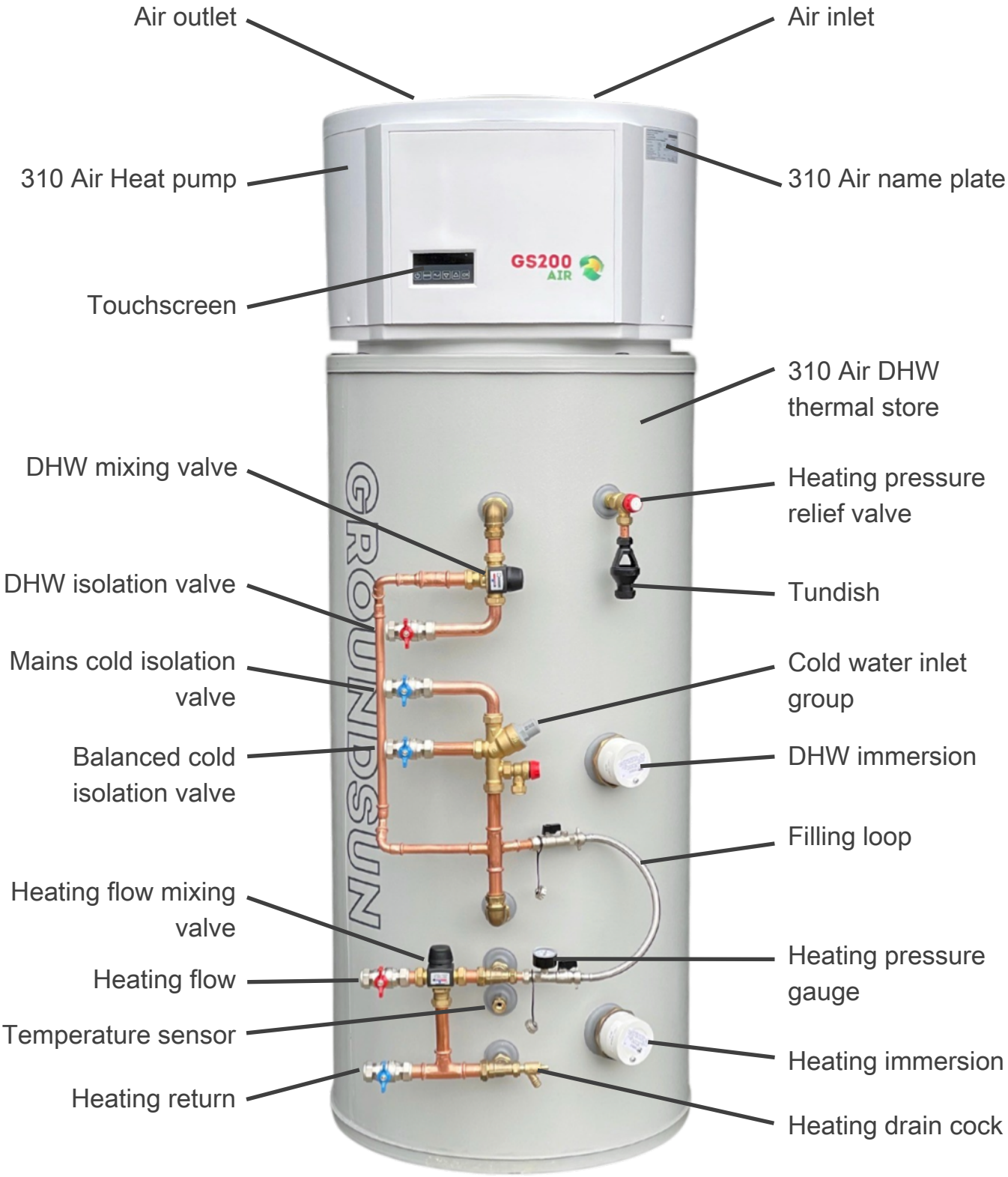
12.1 Malfunction table

Error	Possible Cause	Remedy
DHW temperature too low	Water consumption too high	Reduce consumption
	DHW target temperature set too low	Check DHW target temperature
	Measured tank sensor value not correct	Check tank sensor
	Outdoor air too cold (heating output too low)	Switch on auxiliary heater
	Defrost active	Wait 20 min
Compressor and fan not running	Start capacitor defective	Replace; contact 310 Air customer service
	Winding damage	Replace; contact 310 Air customer service
Compressor and fan run without heating the water	No air flow, evaporator dirty	Clean evaporator with water
	Evaporator iced-up	Defrost
	Air lines clogged	Unclog
	Insufficient refrigerant	Replace; contact 310 Air customer service
	Expansion valve does not open	Replace; contact 310 Air customer service
Compressor not running, fan running	Starting facility faulty	Replace; contact 310 Air customer service
	Compressor defective	Replace; contact 310 Air customer service
Continuous water leakage	Safety valve does not close	Vent or replace
	Tank defective	Turn off the cold water supply
	Tank drips	Check seals, retighten if necessary
Water discharge, only when heat pump is running	Condensate	Turn off the cold water supply
	Condensate drain is blocked	Clean the drain
Odour	No siphon in the condensate drain	Install
	No water in the siphon	Fill
Noise	Gurgling sound	Water level in siphon too low; refill
	Rippling noise	Condensate drain blocked; clean
No indication	No voltage (230V)	Check the breaker on the consumer unit for your home. Switch the breaker back on. If the breaker triggers again after being switched back on, contact a qualified electrician or 310 Air customer service
Electric immersion heater switched on but not heating	Superheating	Acknowledge safety thermostat
	Electrical supply defective	Replace
Er36 High pressure shutdown (acknowledge with OK)	Measured tank sensor value not correct	Check tank sensor
	Tank not filled to correct pressure	Use filling loop to fill system to correct pressure
	Refrigerant circuit	Contact 310 Air customer service
	Condenser silted up or calcified	Clean, renew
Er 47 defrost fault (acknowledge with OK)	Intake temperature too low	Heat pump operating program off and temporary heat with electric immersion heater
Er 57 Heat source frost protection (automatic acknowledgement)	Intake temperature too low	Heat pump operating program off and temporary heat with electric immersion heater
Flashing HP symbol	Term expiry after 1.5 to 2 years	Have time counter reset when serviced

12.2 Fault messages on touchscreen

Display	Cause	Remedy / Cause
E1H	Sensor F1 faulty, lead break	Check sensor
E1L	Sensor F1 faulty, short circuit	Check sensor
E2H	Sensor F2 faulty, lead break	Check sensor
E2L	Sensor F2 faulty, short circuit	Check sensor
E3H	Sensor F3 faulty, lead break	Check sensor
E3L	Sensor F3 faulty, short circuit	Check sensor
E4H	Sensor F4 faulty, lead break	Check sensor
E4L	Sensor F4 faulty, short circuit	Check sensor
EP	Fault in parameter memory	Switch off power and switch on again
Er36	High pressure shutdown	If the fault reoccurs, notify 310 Air customer service
Er47	Defrost fault	Acknowledge fault with OK
Er57	Heat source frost protection	Acknowledge fault with OK
Fros	Boiler frost protection	Automatic acknowledgement
StOP	External shutdown (PSU)	The fault is acknowledged automatically when the cause is rectified
Cr id	Target value increase active	Check parameter setting. Check external wiring / circuits

13. 310 Air Components



14. Water quality

14.1 Effects of water quality

1 Sulphates and nitrates act as inhibitors for pitting corrosion caused by chlorides in pH-neutral environments.

2 Generally speaking, a low pH value (below 6) increases the risk of corrosion and a high pH value (above 7.5) reduces it.

3 Fe3+ and Mn4+ are powerful oxidising agents and can increase the risk of localised corrosion in stain- less steels. SiO2 above 150 ppm increases the risk of scaling.

Explanation

» [+] Good resistance under normal conditions.

» [0] Corrosion may occur, particularly if other factors are rated 0.

» [-] We do not recommend use.

Substances in water	Concentration (mg/l or ppm)		Time limits for analysis after sampling
Total hardness (°dH)	4-14		No limit
HCO3-/SO4²-	>1.0 <1.0	+ -	No limit
Electrical conductivity	<10 µS/cm 10-500 µS/cm >500 µS/cm	0 + 0	No limit
pH[2]	<7.0 7,0-9,0 >9.0	0 + 0	Within 24 h
Alkalinity (HCO3-)	<70 70-300 >300	0 + 0	Within 24 h
Sulphate [1] (SO4²-)	<100 <200 >200	+ 0 -	No limit
Ammonium (NH4+)	<2 2-20 >20	+ 0 -	Within 24 h
Chlorides (Cl-)	<100 100-200 >200	+ 0 -	No limit
Free chlorine (Cl2)	<1 1-5 >5	+ 0 -	Within 5 h
Hydrogen sulphide (H2S)	<0.05 >0.05	+ -	No limit
Free (aggressive) Carbon dioxide (CO2)	<5 5-20 >20	+ 0 -	No limit
Nitrate [1] (NO3-)	<100 >100	+ 0	No limit
Iron [3] (Fe)	<0.2 >0.2	+ 0	No limit
Aluminium (Al)	<0.2 >0.2	+ 0	No limit
Manganese [3] (Mn)	<0.1 >0.1	+ 0	No limit

15. Specification

15.1 Temperature sensor

PTC, type KTY81-121			
Tempera-ture [°C]	Re-sist-ance [ohm]	Temperature [°C]	Resistance [ohm]
-50	510	50	1196
-40	562	60	1286
-30	617	70	1378
-20	677	80	1475
-10	740	90	1575
0	807	100	1679
10	877	110	1786
20	951	120	1896
25	990	130	2003
30	1029	140	2103
40	1111	150	2189

15.2 Real time clock

Accuracy 50 pmm (error max. 5 seconds per day), battery buffering by Gold-Cap up to 3 days.

In the event of a longer power failure, the clock must be reset

15.3 Voltage quality

The following table shows voltage quality requirements in isolated mode (in mains mode, the relevant standards apply):

Harmonic	Maximum proportion
2	2.0%
3	5.0%
4	1.0%
5	6.0%
6	0.5%
7	5.0%
8	0.5%
9	1.5%
10	0.5%
11	3.5%
12	0.5%
13	3.0%
14	0.5%
15	0.5%
16	0.5%
17	2.0%
18	0.5%
19	1.5%
20	0.5%
21	0.5%
22	0.5%
23	1.5%
25	1.5%
> 25	0.5%

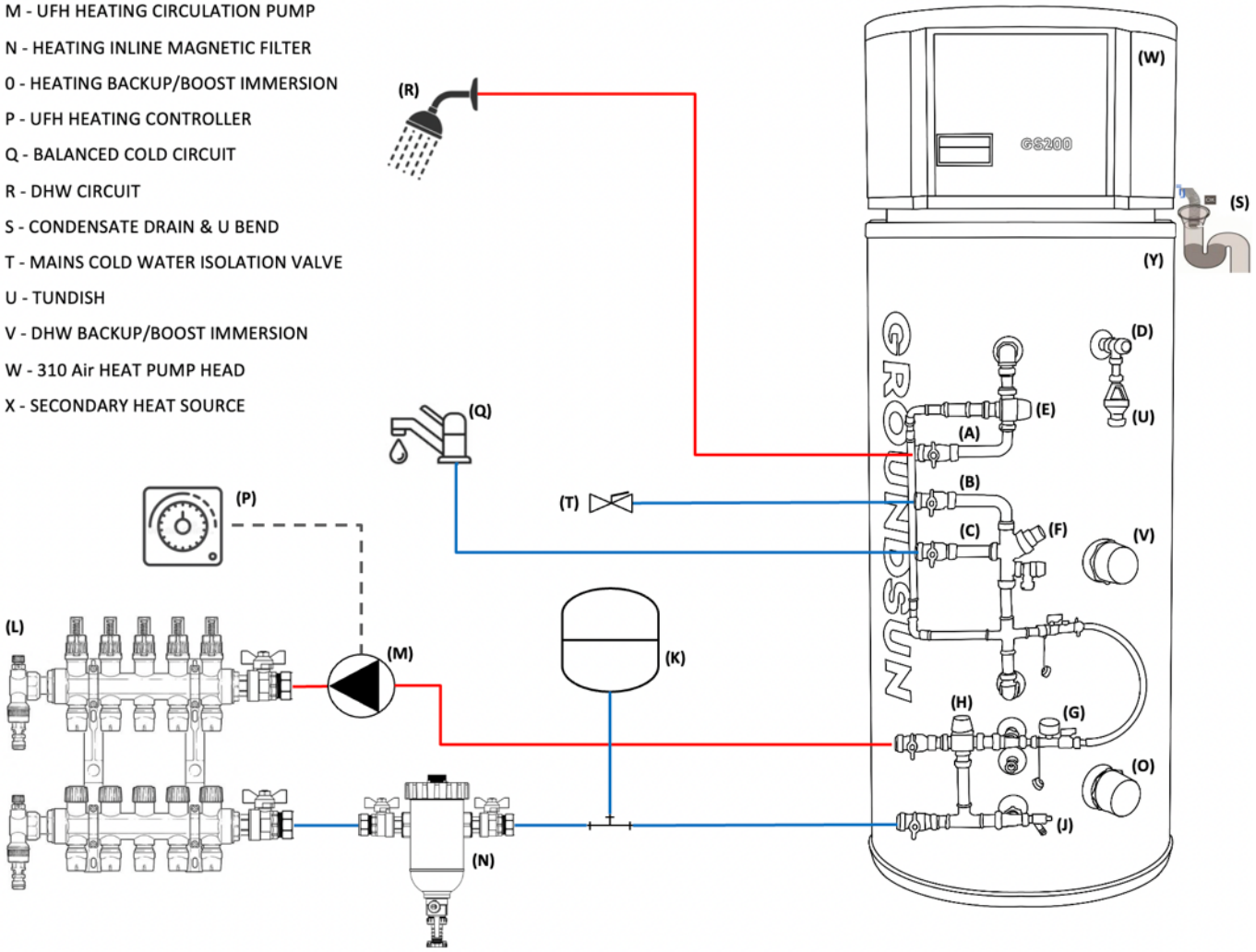
- Total harmonic content (THC) 8%
- Frequency 49.5 Hz to 50.5 Hz
- Slow voltage changes 230 V ± 10% (integration interval 10 min)
- Rapid voltage changes 230 V ± 5% (integration interval 10 ms)
- Voltage asymmetry 2%

16. Schematic

16.1 Typical UFH schematic

LEGEND

A - HOT WATER OUTLET (22mm)
B - MAINS COLD WATER INLET (22mm)
C - BALANCED COLD WATER OUTLET (22mm)
D - PRESSURE TEMPERATURE RELIEF VALVE
E - DHW MANUAL BLENDING VALVE
F - COLD WATER INLET GROUP (22mm)
G - FILLING LOOP WITH PRESSURE GAUGE
H - HEATING MANUAL BLENDING VALVE
J - HEATING DRAIN COCK
K - HEATING EXPANSION VESSEL
L - UFH HEATING MANIFOLD
M - UFH HEATING CIRCULATION PUMP
N - HEATING INLINE MAGNETIC FILTER
0 - HEATING BACKUP/BOOST IMMERSION
P - UFH HEATING CONTROLLER
Q - BALANCED COLD CIRCUIT
R - DHW CIRCUIT
S - CONDENSATE DRAIN & U BEND
T - MAINS COLD WATER ISOLATION VALVE
U - TUNDISH
V - DHW BACKUP/BOOST IMMERSION
W - 310 Air HEAT PUMP HEAD
X - SECONDARY HEAT SOURCE



17. Customer service

17.1 Contact us

Should your 310 Air develop faults despite the use of quality components and care in its production, please contact 310 Air customer service on the phone number below.

310 Air SERVICE :

info@littleheatpump.co.uk

The heat pump model and serial number are given on the name plate. The name plate is attached to the upper right hand casing section of the heat pump.

17.2 Maintenance

We offer a wide range of maintenance options.

Benefits of 310 Air maintenance

- A correctly performed service not only helps to save energy but also protects the environment.
- In addition, correct care of the heating system is necessary to ensure many years of operation and extend the service life of the system.
- For the system user, this reduces the risk of system failure.

Should your 310 Air require a service, please contact the 310 Air service team.

18. Disposal

18.1 Disposal of transport packaging

Your appliance has been carefully packed for transportation. Please help to protect the environment by ensuring that transport packaging is disposed of properly and professionally.

The transport packaging for this appliance consists of recyclable raw materials. Waste transport packaging should be sorted and recycled. Leave disposal of transport packaging to the qualified contractor or system installer who has installed the appliance.

18.2 Disposal of the appliance

Dispose of the appliance properly and professionally at a regional waste collection facility. Observe environmental regulations and standards.

Information

The heat pump must not be disposed of with household waste.

18.3 Refrigerant R134a

The refrigerant circuit of this appliance is filled with R134a refrigerant.

R134a refrigerant is a fluorinated greenhouse gas listed in the Kyoto Protocol.

R134a refrigerant must not be discharged into the atmosphere.

19. Warranty

The tank is guaranteed against failure for a period of five years from the date of despatch. All other parts are guaranteed for two years.

The 310 Air is guaranteed against all manufacturing defects provided it was installed by a qualified installers using our instruction manuals.

A defective part does not warrant the whole appliance being replaced.

The warranty only extends to parts which we identify as having been defective at manufacture. If required our technical department may require for the part to be returned.

Labour, transport and packaging costs are the responsibility of the user.

Repairs on a device will not result in compensation.

The warranty only applies to the 310 Air and its components and excludes any part or installation external to the appliance.

Annual service maintenance of the 310 Air by a trained engineers is essential for ensuring sustained use and durability. In the absence of regular maintenance, the warranty will not apply.

Please ensure that the installer has fully completed the commissioning checklist on the inside back pages of this manual.

The installer is required to complete the checklist on your behalf followed by your signature to say that you have received it and to say that you have received a full and clear explanation of the 310 Air's operation. A signed copy of the Checklist should be emailed to info@littleheatpump.co.uk to comply with warranty conditions.

20. Service

The 310 Air should be serviced annually to ensure the products safety, efficiency and performance. The service engineer should complete the service record after each service.

The commissioning checklist will be required in the event of any warranty work.

The warranty does not apply to defects or damage caused by items such as

- Misuse, abuse, negligence, improper transport or handling
- Incorrect installation, or installation which has been carried out without following the instructions in the manual
- Insufficient maintenance
- Modifications or changes carried out on the 310 Air
- Impact from foreign objects
- Any other damage which is not due to defects in the product
- The 310 Air is not guaranteed against variations in colour of the appliance or damage caused by air pollution, exposure to chemical elements
- Incorrect installation, or installation which has been carried out without following the instructions in the manual
- Incorrect product selection by the system designer due to heat loss calculations not matching as built building performance

21. Declaration of Conformity

DE EU-KONFORMITÄTSERKLÄRUNG
EN EU DECLARATION OF CONFORMITY
FR DÉCLARATION DE CONFORMITÉ UE
PL DEKLARACJA ZGODNOŚCI UE
IT DICHIARAZIONE DI CONFORMITÀ UE
ES DECLARACIÓN DE CONFORMIDAD DE LA UE
PT DECLARAÇÃO DE CONFORMIDADE CE
NL EU-CONFORMITEITSVERKLARING
CS PROHLÁŠENÍ O SHODĚ EU

DE	Produktmodell/Produkt:		D-A	CH	EXP	UK		D-A	CH	EXP	UK
EN	Product model / product:	Europa 250 DK	110220	110221	110220	110221					
FR	Modèle du produit / Produit :	Europa 250 DKL	110225	110226	110225	110226					
PL	Model produktu/produkt:	Europa 300 L	110295	110296	110295	110296					
IT	Modello/prodotto:	Europa 333 Genius	110280	110281	110280	110281					
ES	Modelo de producto/producto:	Europa Mini IWPL	110244	-	110244	110404					
PT	Modelo de produto/produto:	Europa Mini IWP	110246	110403	110246	110403					
NL	Productmodel/product:										
CS	Model výrobku/výrobek:										

DE	Name und Anschrift des Herstellers oder seines Bevollmächtigten:	**OCHSNER Wärmepumpen GmbH** **Krackowizerstraße 4** **A 4020 Linz** **Werk A-3350 Haag**
EN	Name and address of manufacturer or its authorised representative:	
FR	Nom et adresse du fabricant ou de son représentant :	
PL	Nazwa i adres producenta lub pełnomocnika:	
IT	Nome e indirizzo del produttore o del suo rappresentante legale:	
ES	Nombre y dirección del fabricante o de su representante autorizado:	
PT	Nome e endereço do fabricante ou do seu mandatário:	
NL	Naam en adres van de fabrikant of zijn gevolmachtigde:	
CS	Název a adresa výrobce nebo jeho zplnomocněného zástupce:	

DE Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.
EN This declaration of conformity is issued under the sole responsibility of the manufacturer.
FR La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.
PL Wyłączną odpowiedzialność za wystawienie niniejszej deklaracji zgodności ponosi producent.
IT Il produttore si assume la responsabilità esclusiva dell'emissione della presente dichiarazione di conformità.
ES El fabricante es el único responsable de la elaboración de esta declaración de conformidad.
PT A presente declaração de conformidade é emitida sob a exclusiva responsabilidade do fabricante.
NL De fabrikant is als enige verantwoordelijk voor het opstellen van deze conformiteitsverklaring.
CS Odpovědnost za vystavení tohoto prohlášení o shodě nese výlučně výrobce.

DE	Gegenstand der Erklärung:	Warmwasser–Wärmepumpe	Europa 250 DK	
EN	Object of the declaration:	Hot water heat pump	Europa 250 DKL	
FR	Objet de la déclaration :	Pompe à chaleur eau chaude sanitaire	Europa 300 L	
PL	Przedmiot deklaracji:	pompa ciepła do ciepłej wody	Europa 333 Genius	
IT	Oggetto della dichiarazione:	Pompa di calore–per acqua calda	Europa Mini IWPL	
ES	Objeto de la declaración:	Bomba de calor de agua caliente	Europa Mini IWP	
PT	Objeto da declaração:	bomba de calor de água quente		
NL	Voorwerp van de verklaring:	Warmwater-warmtepomp		
CS	Předmět prohlášení:	Tepelné čerpadlo pro přípravu teplé vody		

DE Der oben beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften der Union.
EN The object of the declaration described above is in conformity with the relevant harmonisation legislation of the European Union.
FR L'objet de la déclaration décrit ci-dessus est conforme à la législation d'harmonisation en vigueur de la communauté européenne.
PL Opisany powyżej produkt objęty deklaracją spełnia obowiązujące przepisy harmonizacyjne Unii Europejskiej.
IT L'oggetto della dichiarazione sopra specificato è conforme ai requisiti delle normative di armonizzazione applicabili dell'Unione.
ES El objeto de la declaración descrita anteriormente se ajusta a la legislación de armonización pertinente de la Unión.
PT O objeto da declaração acima citado preenche os requisitos constantes da legislação correspondente da União em matéria de harmonização.
NL Het bovengenoemde voorwerp van de verklaring voldoet aan de geldende voorschriften van het harmonisatierecht van de Unie.
CS Výše popsaný předmět prohlášení splňuje příslušné harmonizační právní předpisy Unie.

Low Voltage Directive (LVD) 2014/35/EU	Regulation (EU) Fluorinated Greenhouse Gases 517/2014
Electromagnetic Compatibility (EMC) Directive 2014/30/EU	Regulation (EU) Ecodesign Requirements 814/2013
Energy-related Products Directive (ErP) 2009/125/EC	Regulation (EC) 1907/2006 (REACH)
Pressure equipment (PED) Directive 2014/68/EU	
Restriction of Hazardous Substances (RoHS) Directive (EU) 2015/863	

DE	Angabe der einschlägigen harmonisierten Normen, die zugrunde gelegt wurden, oder Angabe der anderen technischen Spezifikationen, in Bezug auf die die Konformität erklärt wird:
EN	References to the relevant harmonised standards used or references to the other technical specifications in relation to which conformity is declared:
FR	Indication des normes harmonisées en vigueur ou indication d'autres spécifications techniques servant de référence à la présente déclaration de conformité :
PL	Wskazanie odnośnych zastosowanych norm zharmonizowanych lub innych specyfikacji technicznych, w odniesieniu do których deklarowana jest zgodność:
IT	Indicazione delle normative di armonizzazione applicabili sulle quali si è basato il prodotto, o indicazione delle altre specifiche tecniche in riferimento alle quali si dichiara la conformità:
ES	Indicación de las normas armonizadas pertinentes utilizadas o de las demás especificaciones técnicas con respecto a las cuales se declara la conformidad:
PT	Indicação da legislação de harmonização pertinente que serviu de base ou indicação das outras especificações técnicas em relação às quais é declarada a conformidade:
NL	Vermelding van de geldende, geharmoniseerde normen die daaraan ten grondslag liggen, of vermelding van de andere technische specificaties op basis waarvan de conformiteit verklaard wordt:
CS	Uvedení příslušných harmonizovaných norem použitých jako základ nebo uvedení jiných technických specifikací, s ohledem na které je vystaveno prohlášení o shodě:

EN 378-1: 2020-12	EN 61000-3-2: 2020-01	EN 62233: 2008-11
EN 378-2: 2018-07	EN 61000-3-3: 2014-04	
EN 16147: 2017-08	EN 55014-1: 2018-09	
EN 12102-2: 2019-07	EN 55014-2: 2016-02	
	EN 60335-1:2012-11 +A11:2014	
	EN 60335-2-40:2014-02	

DE	Zusatzangaben:	Diese Erklärung beinhaltet keine Zusicherung von Eigenschaften. Bitte beachten Sie die Sicherheitshinweise in der mitgelieferten Produktdokumentation. Bei einer nicht mit uns abgestimmten Änderung des (der) Gerät(e)s verliert diese Erklärung Ihre Gültigkeit.
EN	Additional information:	This declaration contains no warranties of any product characteristics. Please observe the safety information in the product documentation supplied. Any modification to the appliance(s) that has not been approved by us effectively voids this statement.
FR	Indications supplémentaires :	La présente déclaration n'apporte aucune garantie quant aux propriétés. Veuillez tenir compte des consignes de sécurité fournies dans la documentation du produit. En cas de modification du ou des appareils sans notre accord préalable, la présente déclaration perd sa validité.
PL	Informacje dodatkowe:	Niniejsza deklaracja nie stanowi przyrzeczenia właściwości. Należy przestrzegać wskazówek dotyczących bezpieczeństwa podanych w dołączonej dokumentacji produktu. W przypadku zmiany wprowadzonej w urządzeniu (urządzeniach) nieuzgodnionej z nami niniejsza deklaracja traci ważność.
IT	Dati aggiuntivi:	La presente dichiarazione non comporta alcuna garanzia di caratteristiche. Si prega di attenersi alle avvertenze di sicurezza indicate nella documentazione fornita con il prodotto. Questa dichiarazione perde di validità in caso di modifiche del(i) dispositivo(i) apportate senza la nostra approvazione.
ES	Información adicional:	Esta declaración no incluye ninguna garantía de propiedades. Tenga en cuenta las instrucciones de seguridad de la documentación del producto suministrada. En caso de que se produzca un cambio en los aparatos no acordado con nosotros, esta declaración perderá su validez.
PT	Indicações complementares:	A presente declaração não contém qualquer garantia de características. Queira levar em conta as indicações de segurança contidas na documentação do produtofornecida com o conjunto. No caso de uma alteração do(s) aparelho(s) que não tenha sido efetuada em coordenação com os nossos serviços, a presente declaração perderá a sua validade.
NL	Aanvullende gegevens:	Deze verklaring bevat geen verzekering van eigenschappen. Neem de veiligheidsaanwijzingen in de meegeleverde productdocumentatie in acht. Deze verklaring is niet meer geldig bij een verandering van het (de) appara(a)t(en) die niet met ons overlegd is.
CS	Doplňující údaje:	Toto prohlášení neslouží jako záruka vlastností. Dodržujte bezpečnostní pokyny v dodané dokumentaci k výrobku. Provedením jakékoliv úpravy přístroje/ přístrojů bez předchozí konzultace s námi pozbývá toto prohlášení platnosti.

DE	Unterzeichnet für und im Namen von:	**OCHSNER Wärmepumpen GmbH**
EN	Signed for and on behalf of:	
FR	Signé pour et au nom de :	
PL	Podpisano w imieniu i na rzecz:	
IT	Firma per e per conto di:	
ES	Firmado por y en nombre de:	
PT	Assinado para e em nome de:	
NL	Ondertekend voor en in naam van:	
CS	Podepsán/a za a jménem:	

DE	Ort und Datum der Ausstellung:	**Haag, 01.04.2021**
EN	Place and date of issue:	
FR	Lieu et date de l'implantation :	
PL	miejscowość i data wystawienia:	
IT	Luogo e data di emissione:	
ES	Lugar y fecha de elaboración:	
PT	Local e data da emissão:	
NL	Plaats en datum van opmaak:	
CS	Místo a datum vystavení:	

DE	Name, Funktion, Unterschrift:	**Karl Ochsner** **CEO - Chief Executive Officer**	**Clemens Birklbauer** **CTO – Chief Technology Officer**
EN	Name, position, signature:		
FR	Nom, fonction, signature :		
PL	Imię i nazwisko, stanowisko, podpis:		
IT	Nome, funzione, firma:		
ES	Nombre, función, firma:		
PT	Nome, função, assinatura:		
NL	Naam, functie, handtekening:		
CS	Jméno, funkce, podpis:		

22. Discharge

22.1 Safety device

To comply with the Building Regulations for England and Wales, the Water Supply (Water Fittings) Regulations and the Scottish Water Bye-laws, a hot-water system with a storage vessel must incorporate precautions to: (a) prevent the temperature of the water stored in the vessel exceeding 100°C; and (b) ensure that any discharge from safety devices is conveyed safely to where it is visible, but will not cause a danger to people.

To prevent the temperature of stored water exceeding 100°C and escaping dangerously as steam, a temperature and pressure relief valve is installed to discharge water from the storage vessel in the event that the hot-water system overheats.

As set out in BS EN 1490: 2000 Building valves; Combined temperature and pressure-relief valves; Tests and requirements, the nominal fixed temperature range at which relief valves are set to operate is 90-95°C. Under these conditions, safety relief discharge pipework from unvented hot-water storage systems up to 410l (500l nominal) capacity can be drained to plastic sanitary pipework.

22.2 Practical guidance

The guidance includes advice on selecting the correct plastic pipes for use as discharge pipes, and the essentials for good plumbing design. It also highlights practical aspects for installers, such as properly supporting pipework and the importance of the soil stack remaining vented to atmosphere. Specific points of good practice include:

- Using tested and approved, self-sealing, waterless valves for connecting to internal sanitary pipework when it is impractical to route the discharge pipework directly to an external point in a visible location

- Self-sealing, waterless valves should be used because they prevent foul sewer gases from entering the building. Water traps, which dry out, are not suitable

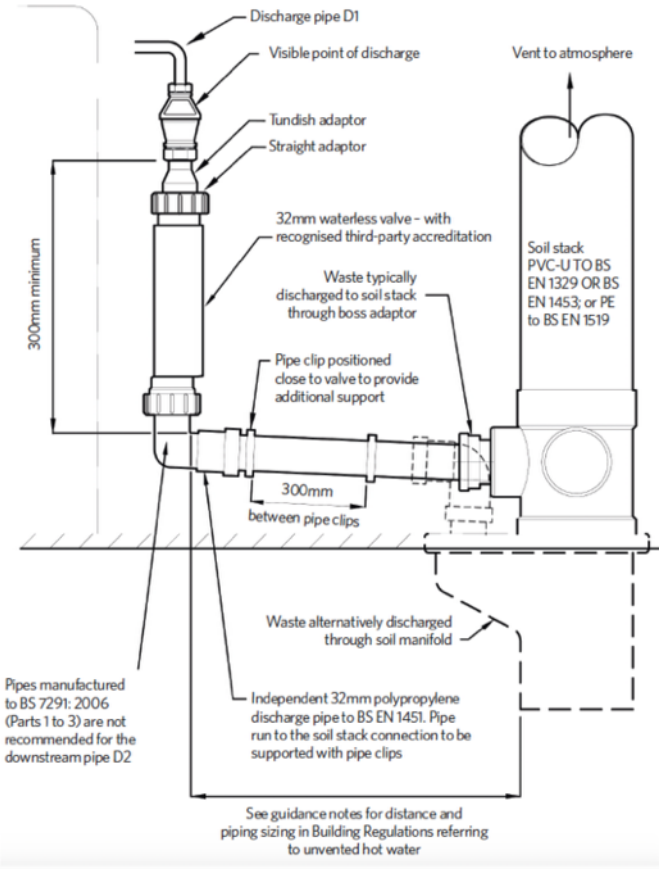
- A tundish adaptor ensures the minimum 300mm below the tundish – before elbows or bends in the pipework recommended in Approved Document G – is achieved

- The waterless valve needs to be installed vertically, adjacent to the storage cylinder, and be visible and accessible

- A suitable plastic pipe – such as polypropylene, complying with BS EN 1451-1:2000 – supported at maximum 300mm intervals, may be used for downstream pipe D2
- Pipes manufactured to BS 7291: 2006 (Parts 1 to 3) are not to be used for the downstream pipe D2.

Additional installation considerations include:

- Given the high temperatures reached during valve operation, the connection of pipework to the soil stack should be achieved using an appropriately sized boss-pipe fitting, fixed in place with a bracket. This is preferable to strap, clip or patch bosses. An acceptable alternative would be to connect to a soil pipe manifold.
- Where a waterless valve and plastic pipework (pipe D2) are used, the connecting pipework should not be connected to a stack unless the stack is capable of withstanding temperatures of the water discharged.
- The soil stack should be vented to the atmosphere and constructed from a suitable plastic pipe – such as PVC-U to BS EN 1329-1 or PE to BS EN 1519-1. PVC-U pipes to BS EN 1453-1 – with two solid PVC layers or two solid PVC layers with a non-foamed PVC intermediate layer – may also be used.
- Safety devices on the unvented hot water storage systems must be annually safety checked to prevent any risk of failure.



Configuration of safety relief discharge pipework for discharge of hot water from a valve through a metal discharge pipe (D1) – with diameter up to DN22 – into plastic sanitary pipework

23. System installer

We reserve the right to change technical data without notice

This instruction describes appliances which are not always in the scope of supply in series. Therefore deviations to your heat pump are possible.

Installer to complete information below on handover

System installer:	
Company	
Address	
Tel. no.	
Service engineer:	

24. Commissioning checklist

The commissioning checklist is to be completed in full by the competent person who commissioned the storage system as a means of demonstrating compliance with the appropriate Building Regulations and then handed to the customer to keep for future reference. Failure to install and commission this equipment to the manufacturers instructions may invalidate the warranty but does not affect you statutory rights.

Customer name _____ Telephone number _____

Address _____

Commissioned by (print name) _____ Commissioning date _____

Company name _____ Company telephone number _____

Company address _____

Has combined temperature and relief valve been fitted and discharge tested _____

Has tundish and pipe work been connected and terminated to Part G of Building Regulations _____

Has the expansion vessel been installed according to system design _____

What is maximum primary flow temperature (deg C) _____

What is incoming static cold water pressure (bar) _____

Is the installation in a hard water area (above 200ppm) _____

If yes has a water scale reducer been fitted _____

What type of water scale reducer has been fitted _____

What is the maximum hot water flow rate (l/min) _____

What is water temperature at the nearest outlet (deg C) _____

All appropriate pipes have been insulated _____

The hot water system complies with the appropriate buildings regulations _____

System has been installed & commissioned in accordance with the manufacturer's instructions _____

The system controls have been demonstrated to and understood by the customer _____

All manuals have been explained and left with the customer _____

Commissioning Engineer's Signature _____

Customer's Signature _____

(to confirm satisfactory demonstration and receipt of manufacturers literature)

To be completed by the customer on receipt of a Building Regulations Compliance Certificate

Building Regulations Notification Number (if applicable) _____

25. Service Record

It is recommended that your 310 Air is serviced annually by an authorised service engineer and that the Service Record below is completed as a record.

SERVICE 1 Date _____

Engineers Name _____

Company Name _____

Telephone number _____

Comments _____

_____

_____

Signature _____

SERVICE 2 Date _____

Engineers Name _____

Company Name _____

Telephone number _____

Comments _____

_____

_____

Signature _____

SERVICE 3 Date _____

Engineers Name _____

Company Name _____

Telephone number _____

Comments _____

_____

_____

Signature _____

SERVICE 4 Date _____

Engineers Name _____

Company Name _____

Telephone number _____

Comments _____

_____

_____

Signature _____

SERVICE 5 Date _____

Engineers Name _____

Company Name _____

Telephone number _____

Comments _____

_____

_____

Signature _____

SERVICE 6 Date _____

Engineers Name _____

Company Name _____

Telephone number _____

Comments _____

_____

_____

Signature _____

SERVICE 7 Date _____

Engineers Name _____

Company Name _____

Telephone number _____

Comments _____

_____

_____

Signature _____

SERVICE 8 Date _____

Engineers Name _____

Company Name _____

Telephone number _____

Comments _____

_____

_____

Signature _____