

Installer handbook

METROAIR Aqua 202

METROAIR Aqua 302

Domestic hot water heat pump
(Air to water)

EXPERTS IN HEATING, HOT WATER AND VENTILATION

METRO THERM

Thank you for choosing METRO THERM
– and congratulations on your new METROAIR Aqua.

With your new domestic hot water heat pump, you've invested in a high-quality, energy-efficient solution – developed, and manufactured in Denmark based on more than 80 years of expertise in hot water systems.

At our factory, we take pride in producing our units locally, using carefully selected materials sourced from Denmark, and neighboring countries. From the initial steel plate to the final assembly, every step – including soldering and enameling – is carried out at our own factory to ensure the highest standards in quality, environmental care, and workplace safety.

These are not just words. Our production is certified according to ISO 9001 (quality), ISO 14001 (environment), and ISO 45001 (occupational health and safety) – with regular audits by independent third parties to ensure ongoing compliance.

With our dedicated in-house R&D and quality departments, we continuously strive to improve and innovate. The result is some of the market's best COP (Coefficient of Performance) values, combining cutting-edge technology with our strong tradition for reliable, and long-lasting products.

By choosing us, you're not only securing long-term savings, and comfort in your home you're also supporting European manufacturing, and contributing to the green transition.

We appreciate your trust – and thank you for your contribution to a more sustainable future.

We reserve the right for printing errors.

TABLE OF CONTENTS

1 Important information 4
Safety information 4
Product Certifications. 7
Symbols 7
Serial number. 7
Inspection checklists 8
Versions available. 10
Compatible control modules 10

2 Delivery and handling 11
Transport. 11
Assembly. 12
Condensation. 13

3 The Heat pump design. 14

4 Pipe and ventilation connections 19
General pipe connections. 19
Dimensions and pipe connection. 20
Symbol key 21
Hot and cold water 21
Hot water circulation 21
Solar collector[1] 21
Floor heating[1] 21
General ventilation connection. 22
Adjusting ventilation. 24
Dimensions and ventilations connection . .24

5 Electrical connections. 25
General 25
Accessibility 25
Thermostat / Temperature limiter. 26
Connections. 27

6 Commissioning and adjusting. 30
Preparations 30
Filling and venting. 30
Start-up and inspection. 30
Plus functions 31

7 Control 33
General 33
Main Menus 33

8 Control - menus 34
1 Hot water temperature. 34
2 Operating mode 35
3 Info 36
4 Schedule. 38
5 Main menu. 39
5.4 Installer settings. 42

9 Service 46
Maintenance 46
Service actions. 46
Work on the refrigerant circuit 48
Decommissioning 49

10 Disturbances in comfort 50
Troubleshooting 50
Safety breakers 51
Alarm list. 52

11 Accessories 58

12 Technical data 59
Technical specifications 61
Energy labelling 63
Electrical circuit diagram. 64

13 Item register 65

1 IMPORTANT INFORMATION

Safety information

This manual describes installation, service procedures for implementation by specialists.
This manual must be left with the customer.

This appliance cannot be used by children aged from 8 years and above, and persons with reduced physical, sensory, mental capabilities, or lack of experience and knowledge unless they have been given supervision, or instruction concerning use of the appliance in a safe way and understand the hazards involved. The product is intended for use by experts, or trained users and in shops, hotels, light industry, and similar environments. Children must be instructed/supervised to ensure that they do not play with the appliance. Do not allow children to clean, or maintain the appliance unsupervised.

This is an original manual. It may not be translated without the approval of the manufacturer. Rights to make any design, or technical modifications are reserved.

Safety precautions

Caution

Install the system in full accordance with this installation manual.
Incorrect installation can cause bursts, personal injury, water leaks, refrigerant leaks, electric shocks, and fire.

Install the system in full accordance with local and nationals norms, directives and provisions
This needs to be upheld at all time for the pipe, ventilation, and electrical installation.

Work on the refrigerant circuit is advised against
Service to the refrigerant circuit should only be done by an authorized refrigeration technician.

Use original accessories, and the stated components for the installation.
If parts other than the original are used, water leaks, electric shocks, fire, and personal injury may occur as the unit may not work properly.

Ventilate the working area well – refrigerant leakage may occur during service work.
The refrigerant is flammable, and will combust if exposed to flames, or sparks.

Install the unit in a location with good structural support.
Unsuitable installation locations can cause the unit to fall, and cause material damage, and personal injury. Installation without sufficient structural support can also cause vibrations, and noise.

The electrical installation must be carried out by a qualified electrician and the system must be connected as a separate circuit.
Power supply with insufficient capacity, and incorrect function can cause electric shocks and fire.

Use the stated cables for the electrical connection, tighten the cables securely in the terminal blocks and relieve the wiring correctly to prevent overloading the terminal blocks.
Loose connections, or cable mountings can cause abnormal heat production, or fire.

Switch off the compressor before opening/breaching the refrigerant circuit.
Because if the refrigerant circuit is breached / opened whilst the compressor is running, air can enter the process circuit. This can cause unusually high pressure in the process circuit, which can cause bursts and personal injury.

Switch off the power supply in the event of mechanical service or inspection.
If the power supply is not shut off, there is a risk of electric shocks.

Do not run the unit with removed panels or protection.
Touching hot surfaces or high voltage parts can cause personal injury due to burns, or electric shocks.

Cut the power before starting electrical work.
Failure to cut the power can cause electric shocks, damage, and incorrect function of the equipment.

Be aware that the refrigerant might not contain an odour.

Detection of flammable refrigerants
Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

Use of detergerents constaining chlorine for leak detection is not permited.
Chlorine can react with the refrigerant and corrode the copper pipe-work.

The following leak detection methods are deemed acceptable for all refrigerant systems:
Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition, and is suitable for the refrigerant used.

Before working on the unit

Safety checks
Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimised. For repair to the refrigerating system, the following shall be completed prior to conducting work on the system.

Work procedure
Work shall be undertaken under a controlled procedure, so as to minimise the risk of a flammable gas, or vapour being present while the work is being performed.

General work area
All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

Checking for presence of refrigerant
The area shall be checked with an appropriate refrigerant detector prior to, and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed, or intrinsically safe.

Presence of fire extinguisher
If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

No ignition sources
No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire, or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing, and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards, or ignition risks. "No Smoking" signs shall be displayed.

Ventilated area
Ensure that the area is in the open, or that it is adequately ventilated before breaking into the system, or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant, and preferably expel it externally into the atmosphere.

Checks to the refrigeranting equipment
Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance, and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

Checks to electrical devices
Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately, but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment, so all parties are advised.

Initial safety checks shall include:

- *That capacitors are discharged - this shall be done in a safe manner to avoid possibility of sparking.*
- *That no live electrical components and wiring are exposed while charging, recovering, or purging the system.*
- *That there is continuity of earth bonding.*

Care

Carry out the electrical installation with care.
Do not connect the ground lead to the gas line, water line, lightning conductor, or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

Use main switch with sufficient breaking capacity.
If the switch does not have sufficient breaking capacity, malfunctions, and fire can occur.

Always use a fuse with the correct rating in the locations where fuses are to be used.
Connecting the unit with copper wire, or other metal thread can cause unit breakdown, and fire.

Cables must be routed, so that they are not damaged by metal edges or trapped by panels.
Incorrect installation can cause electric shocks, heat generation, and fire.

Do not install the unit in close proximity to locations where leakage of combustible gases can occur.
If leaking gases collect around the unit, fire may occur.

Do not install the unit where corrosive gas (for example, nitrous fumes) or combustible gas or steam (for example, thinner and petroleum gases) can build up or collect, or where volatile combustible substances are handled.
Corrosive gas can cause corrosion to the heat exchanger, breaks in plastic parts etc. and combustible gas, or steam can cause fire.

Do not use the unit where water splashes may occur.
The unit's electric circuit is protected from condensation, but not splashes of water from a non-vertical direction, or objects less then 12 millimeter. If placed in an unsuitable location, electric shocks, and fire can occur.

Do not use the unit when placed above an altitude of 2000 m.

Do not use the unit for specialist purposes such as for storing food, cooling precision instruments, freeze-conservation of animals, plants, or art.
This can damage the items.

Do not install and use the system close to equipment that generates electromagnetic fields, or high frequency harmonics.
Equipment such as inverters, standby sets, medical high frequency equipment, and telecommunications equipment can affect the unit and cause malfunctions and breakdowns. The unit can also affect medical equipment and telecommunications equipment, so that it functions incorrectly, or not at all.

The appliance shall be stored in a room without continuously operating igition sources
For example: open flames, an operating gas appliance or an operating electric heater.

Do not use means to accelerate the defrosting process or the clean, other than those recommended by the manufacturer

Do not pierce or burn the appliance.

The exit of the drainage pipe
Do not allow the drainage pipe to exit into channels where poisonous gases, containing sulphides for example, can occur. If the pipe exits into such a channel, any poisonous gases will flow into the room and seriously affect the user's health and safety.

Insulate the unit's connection pipes, so that the ambient air moisture does not condense on them.
Insufficient insulation can cause condensation, which can lead to moisture damage. Insulate according to national legislation.

Do not touch any buttons with wet hands.
This can cause electric shocks.

Do not touch any pipes with your bare hands, when the system is in operation.
During operation the pipes become extremely hot, or extremely cold, depending on the method of operation. This can cause burn- or frost injuries.

Do not shut off the power supply immediately after operation start.
Wait at least 5 minutes, otherwise there is a risk of damage to the compressor.

Do not control the system with the main switch.
This can cause fire, or water leakage.

Water quality in the water heater

Softened water is allowed in the unit.
But only if the conductivity of the water is above 10 (millisiemens per. m). This to ensure that the anode installed in the product will work.

The water's pH value needs to be between 6 and 9.

The chlorine content needs to be under 250 mg Cl/l.

Demineralized water is not allowed in the water heater.
If demineralized water is used, the water heater will corrode in a short time.

Desalinated, or de-ionized water is different words for demineralized water.

The water's hardness should be between 5 and 30 °dH (the german hardness limit).

Recovery



Dispose of any packaging material correctly.
Any remaining packaging material can cause personal injury as it may contain nails and wood. Leave the disposal of the packaging to the installer who installed the product or to special waste stations.

Handle the battery according to local regulations
The electrical control board includes a battery which can be harmful for people, and the environment if not handled correctly. The battery should be disposed separately from the unsorted domestic waste, according with the end-of-life schemes provided by your local goverment. This is to ensure unnecessary burden on the envirement is prevented.

Dispose of the product
When disposing of the product, the constituent materials and components such as compressors, circulation pumps, and circuit boards, must be disposed of at a special waste station or at a dealer who provides this type of service.

Be aware that the valves, connections, pumps and O-rings contains small amound of lead.

To access the seperate components, refer to the section that shows the contruction of the product. When disposing of the refrigant medium do so

according to the instruction of the manual.

Improper disposal of the product by the user results in administrative penalties in accordance with current legislation.

Recovery of the refrigerant

When removing refrigerant from a system, either for servicing or decommissioning, it is required to follow good practice that all refrigerants are removed safely.

The recovered refrigerant processed according to local legislation in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment should be in good working order with a set of instructions concerning the equipment that is at hand and suitable for the recovery of the flammable refrigerant. Consult manufacturer if in doubt. In addition, a set of calibrated weighing scales available and in good working order. Hoses complete with leak-free disconnect couplings and in good condition

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant.

The compressor body not be heated by an open flame or other ignition sources to accelerate this process. The compressor body not be heated by an open flame or other ignition sources to accelerate this process. Draining of oil from a system, shall be carried out safely.

Product Certifications

CE The CE-label is mandatory for most products sold in the EU. No matter where they are manufactured.

IP21 The Classification of the encapsulation of the electrical equipment.



A3 Warning; flammable materials



Read the technical manual



Read the operator manual

Symbols



CAUTION
This symbol indicates danger to person or machine.



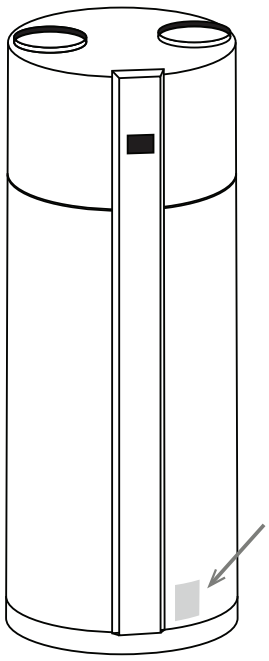
NOTE
This symbol indicates important information about what you should consider, when installing, or servicing the installation.



TIP
This symbol indicates tips on how to facilitate using the product.

Serial number

The serial number can be found at the bottom right on the type plate.



Inspection checklists

INSPECTION OF THE INSTALLATION

The inspection must be carried out by a suitably qualified person. In addition, fill in the page for the commissioning in the check list for the unit on the next side.

Use the following list to comment on the complete installation of the system.

✓	*Description*	*Notes*	*Signature*	*Date*
	Unit circuit flushed			
	System filled and vented			
	Safety valve			
	Pressure relief valve			
	Expansion relief valve			
	Pressure reduction valve			
	Check valve			
	Shut-off valves			
	Expansion vessel			
	Particle filter			
	Tundish			
	Pressure gauge			
	Circulations pump (if required)			
	Pressure reading			
Electrical installation				
	Connections			
	Main/Phase Voltage			
	Safety breaker / fuse			
	Earth circuit-breaker			

Installer information		
Pipe installation	Company name:	
	Installer name:	
	Contact information:	
Electric installation	Company name:	
	Installer name:	
	Contact information:	

CHECK LIST BEFORE COMMISSIONING

Use the following list to comment on the heat pump installation.

Subject		Checked/Notes
	Serial Number (write)	
Transport	Is the water heater intact after transport?	☐
Manual	Is the manual for the water heater included?	☐
Placement	Is the water heater placed stable, and upright?	☐
Hot water system	Is the pipe connection installed according to the manual?	☐
	Has a safety valve been installed?	☐
	Is the hot water connection installed correctly, and checked for leakage?	☐
	Does the installation comply with the maximum allowed pressure?	☐
Solar / heating coil[1]	Is the coil-connected system aerated?	☐
Ventilations system	Is there installed an external filter on the ducts before the heat pump?	☐
Electric installation	Is the electric installation performed according to the manual, and national regulations?	☐
	Is the power source 220-240V/50Hz?	☐
	Does the electric cable between the connected units have signal?	☐
	Are the sensors secured in the right places?	☐
Operating the heat pump	Is the heat pump on, and the mode set to AUTO?	☐
	Does the heat pump make any unexpected noise?	☐
	Is the periodic increase program activated?	☐

Versions available

	v	*6526-2 (302)*	*6526-5 (302[1])*
Water circulation	No	No	Yes
Solar coil	No	No	Yes
Corrosion protection	Ti anode	Ti anode	Ti anode
Smart display	No	No	No
Standard display	Yes	Yes	Yes
Part no.	6165192001	6165262001	6165265001

Notes placed as superscripted through the document:

1 Only relevant for variants with a solar coil

2 Only available with the smart display

3 Only relevant on variants with Zigbee and a smart display.

Compatible control modules

SMART DISPLAY
Includes Wi-Fi, a touch display, and is compatible with myUplink

App compatibility

myUplink (Wi-Fi)

MyUplink pro (Wi-Fi)

LS config (Bluetooth)

STANDARD DISPLAY
Includes LED's which indicates errors or operational status.

App compatibility

LS config (bluetooth)

1 Only relevant for variants with a solar coil

2 DELIVERY AND HANDLING

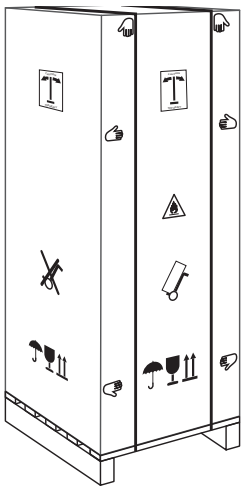
Transport

CAUTION
Due to the high center of gravity, the appliance must be secured against tipping during transportation.

CAUTION
In order to avoid damages, the unit must be unloaded, or placed on a flat surface.

CAUTION
The product shall at all time be transportet in an upright position. Transport of the product horizontally can cause damage to the product.

SIGNATURES ON THE PACKAGING




Keep Dry


Handle for support


Fragile



Caution! the item is top heavy


This way up


A3 flamable gas


Do not tip on this side


Allowed to tip on this side

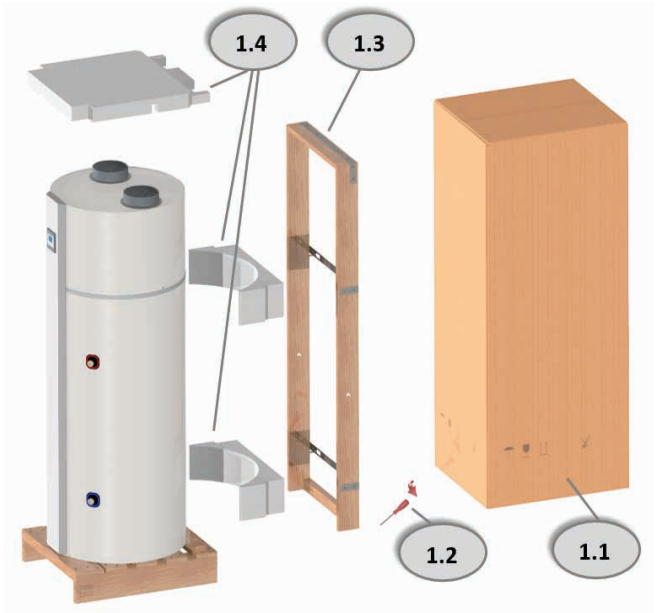
LIFT INTO PLACE

CAUTION
Water connections etc. shall not be used for transportation purposes.

Use the reinforced packaging to transport the water heater.

On the back of the packaged unit, there is installed a reinforced frame which can take the weight of the water heater, when lifting the unit into postion up the stairs.

On the packaging there is indicated 6 hands positions for where the unit can be lifted from.



LIFT FROM PALLET TO FINAL POSITIONING

CAUTION
Be careful, when removing the unit from the pallet, as the unit is top heavy.

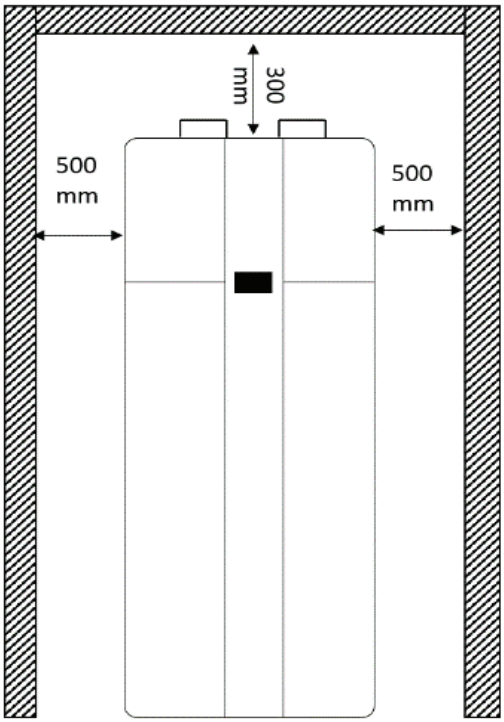
Remove the packaging and carefully lift the water heater off the pallet on to the floor.

Discard the packaging according to national standards.

Assembly

Before installation, please consider the following:

- Expansion vessels and safety valves need to be dimensioned and placed in accordance to local and national standards.
- The area where the water heater is located must be equipped with floor drainage.
- The unit should not be positioned next to noise sensitive walls, for example, next to a bedroom.
- The condensate outlet placed at the side of the unit should be connected to a tundish. The tundish is located in the top tray of the packaged unit as an accessory. Guide the tundish outlet to an external drain.
- Beware of the PI Diagram on page 19 and connections placement shown on page 20
- Care must be exercised, so that the heat pump is not scratched, or otherwise damaged during installation.



INSTALLATION AREA

The unit should be placed vertically, with a maximum inclination of 1°. The unit must be well balanced and stable on the ground surface. Use the built-in adjustable feet to level the unit.

The unit must be installed as close as possible to the hydraulic system in order to minimize heat losses in the water pipes. The water pipe outlet should be insulated for the same reason.

NOTE
The unit should not be placed in direct contact with the sunlight.

The water heater must be installed in a frost-free room and should comply with the following criteria:

- Room temperature between 5°C and 40°C.
- Drain possibility for condensation.
- No abnormal dust concentration in the air.
- A solid base capable of supporting the weight of the unit when filled with water.
- It is necessary to ensure that there is sufficient space around the unit for maintenance and service. A clearance of 500 mm around the unit is necessary for service.

NOTE
In case the unit is used without exhaust/extraction air ducts, the following should be added to the room characteristics:
- The volume of the room should be more than 30 m^3.
- The room should be well ventilated.
- There should be no other appliances that need air to operate.
- The minimum distances described should be respected.

Condensation

The drainage from the evaporator is let out through the outlet on the back of the unit. Shown on the illustration on page 17.

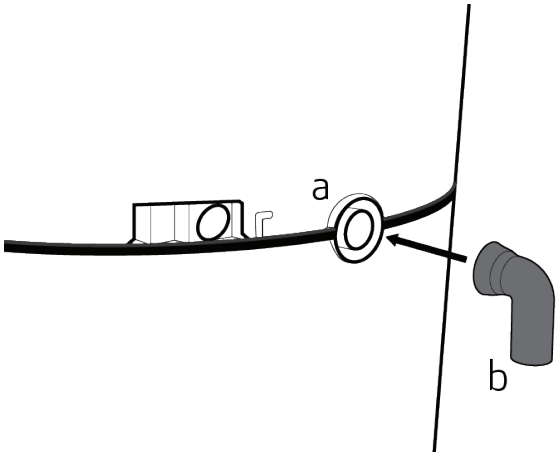
DRAINAGE OF CONDENSATION

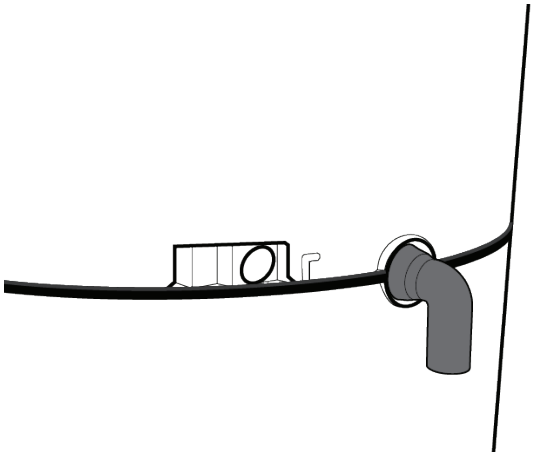
While the heat pump is running, condensate will form, which is to be discharged to the sewage drain via the condensate drain pipe, Ø 32mm connection outside. The quantity of condensate depends on the humidity, the air flow, and the temperature of the air.

Use the adaptor fitting if a Ø19 connection is preferred.

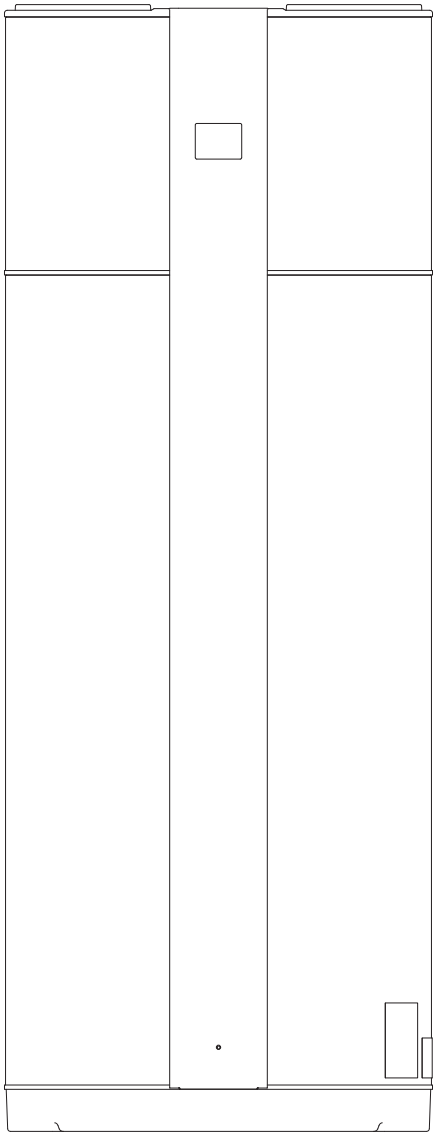
Connection	
a	Ø32
b	Ø19

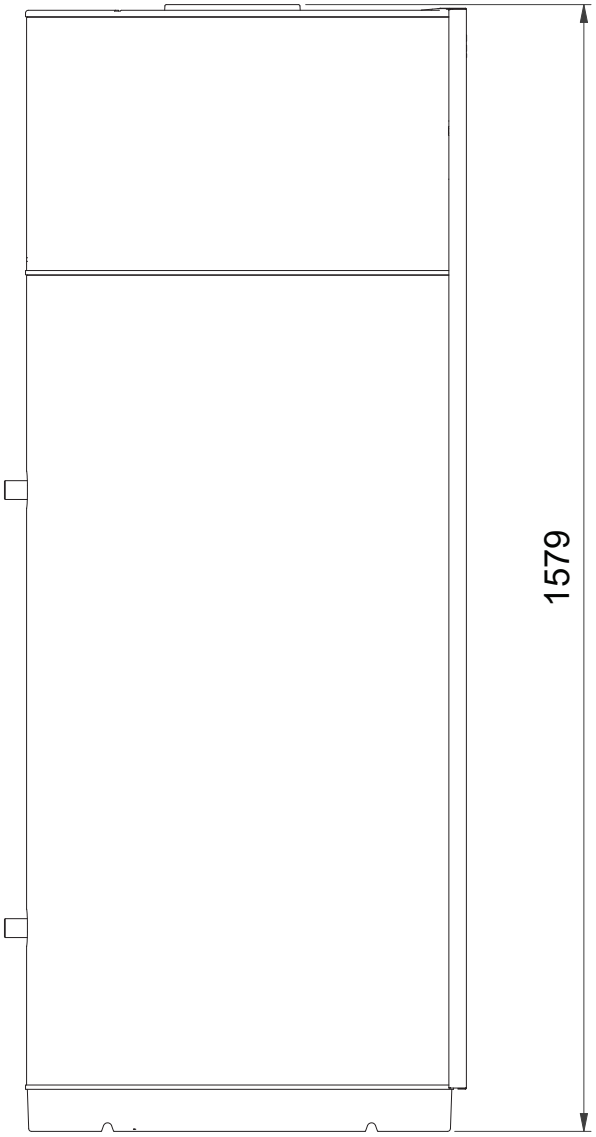
NOTE
To prevent water from getting stock an d creating condensation issues in the machine, it is recommended to install a water lock on the condensation draining tube.

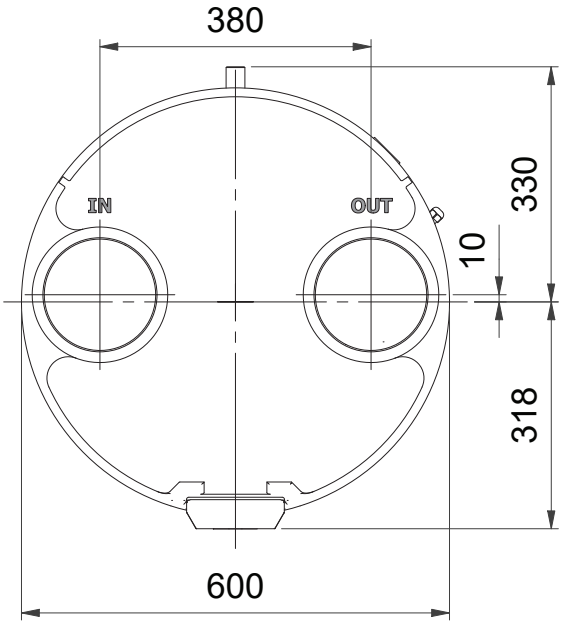




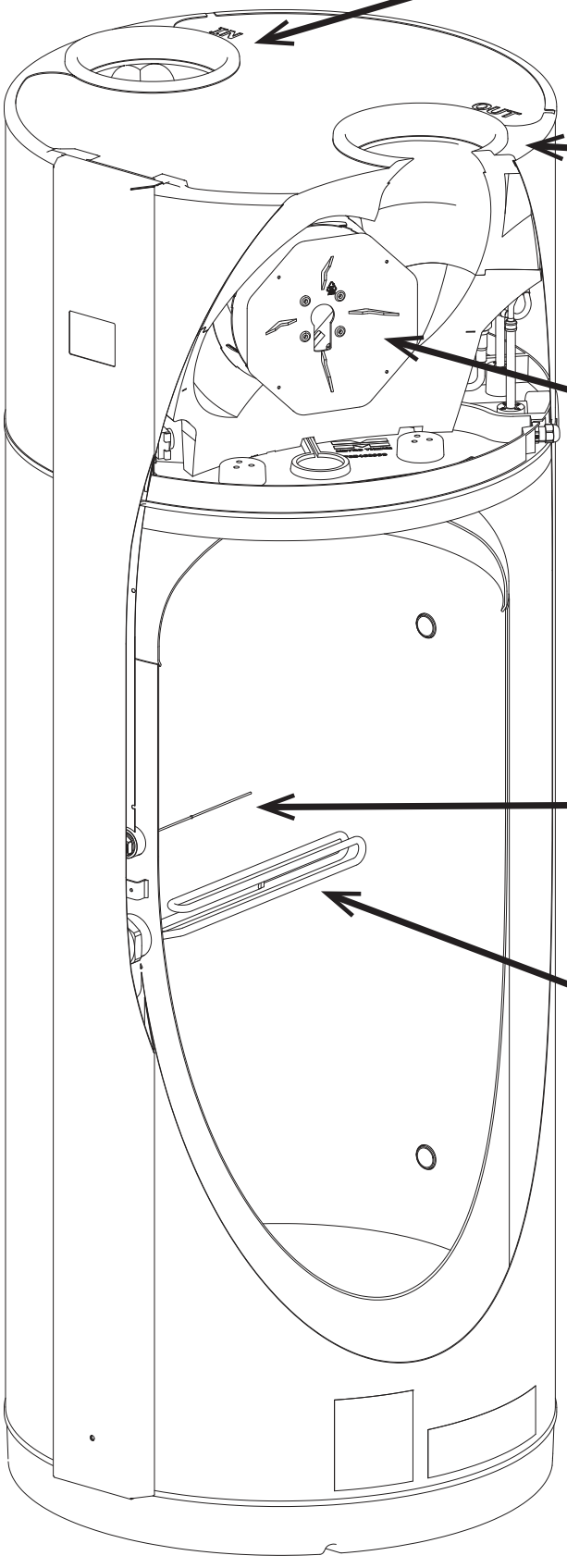
3 THE HEAT PUMP DESIGN







	Hight [mm]
190 L	1579
260 L	1935



PIPE CONNECTIONS

XL43 Connection, incoming air

XL44 Connection, outgoing air

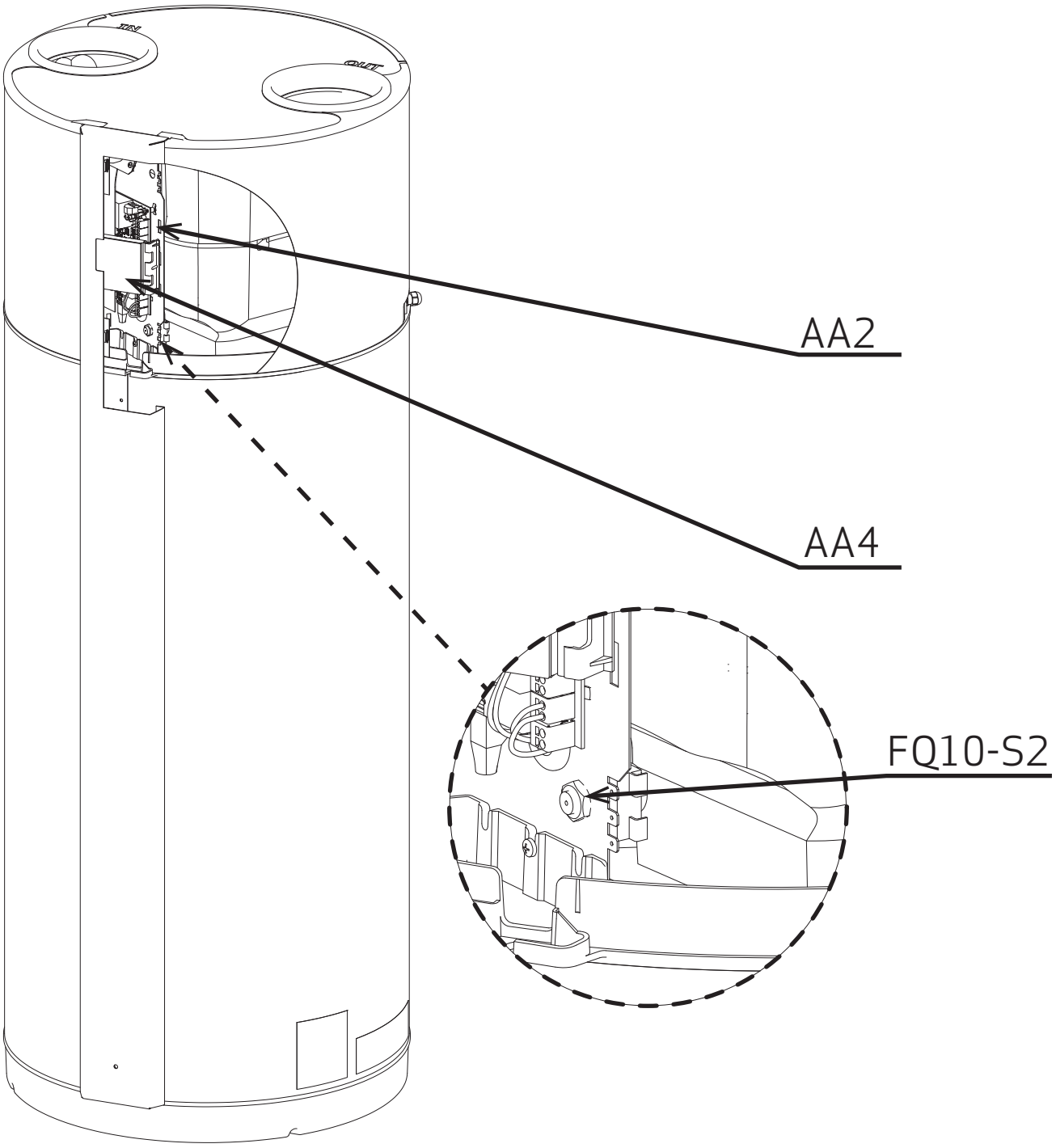
ELECTRICAL COMPONENTS

EB1 Immersion heater / Additional heat

FR1 Electrical anode

HVAC COMPONENTS

GQ1 Fan

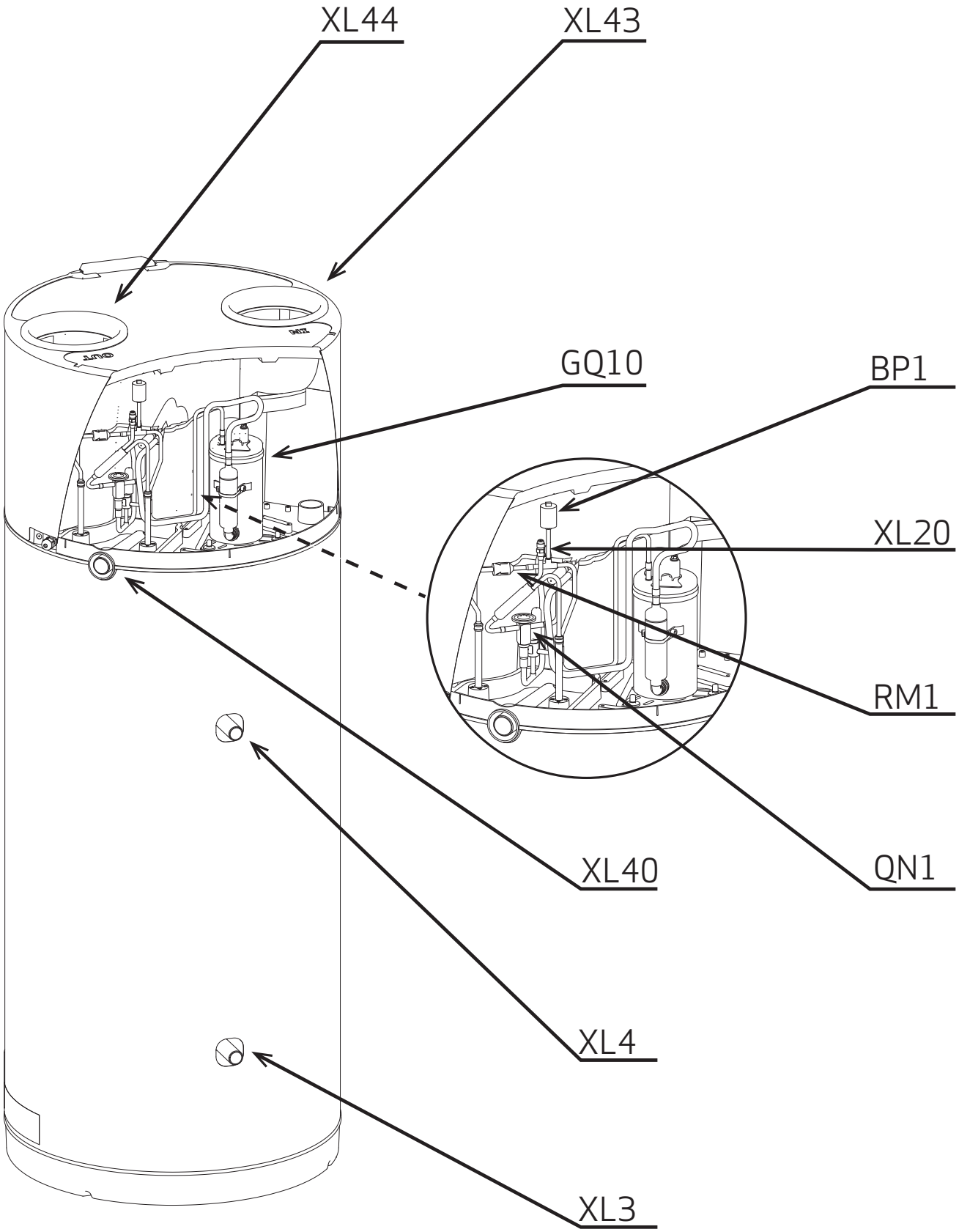


ELECTRICAL COMPONENTS

AA2 Base board

AA4 Display unit

FQ10 Thermostat/temperature limiter


XL44
XL43
GQ10
BP1
XL20
RM1
XL40
QN1
XL4
XL3

PIPE CONNECTIONS

XL3 Cold water connection

XL4 Hot water connection

XL5 HWC connection

XL8 Docking, supply[1]

XL9 Docking, return[1]

XL40 Condensation drain outlet

XL43 Connection, incoming air

XL44 Connection, outgoing air

HVAC COMPONENTS

CP1 Water heater

EP1 Evaporator

EP2 Condenser

FQ11 Temp. limiter, Compressor

GQ1 Fan

GQ10 Compressor

HS1 Drying filter

QN1 Thermostatic expansion valve

QN20 Defrosting valve

RM1 Non-return valve

XL20 Service valve

SENSORS ETC.

BP1 High pressure switch

BT5 Hot water sensor buttom[1]

BT6 Controlling hot water sensor

BT15 Fluid line sensor

BT16 Evaporator sensor

BT20 Exhaust air / Air in

BT50 Room sensor (accessory)

BT53 Brine collector, in[1]

ELECTRICAL COMPONENTS

AA2 Base board

AA4 Display unit

CA1 Capacitor

EB1 Immersion heater

FR1 Eletrical anode

FQ10 Thermostat/temperature limiter

FQ10-S2 Reset button

MISCELLANEOUS

PZ1 Type plate

W1 Cable

Designations according to standard EN 81346-2

1 Only relevant for variations with a solar coil

4 PIPE AND VENTILATION CONNECTIONS

General pipe connections

NOTE
Read the safety information at the start of the manual before starting work on the unit.

SYSTEM DIAGRAM

The unit consists of a heat pump, water heater, immersion heater, fan, and controlsystem.

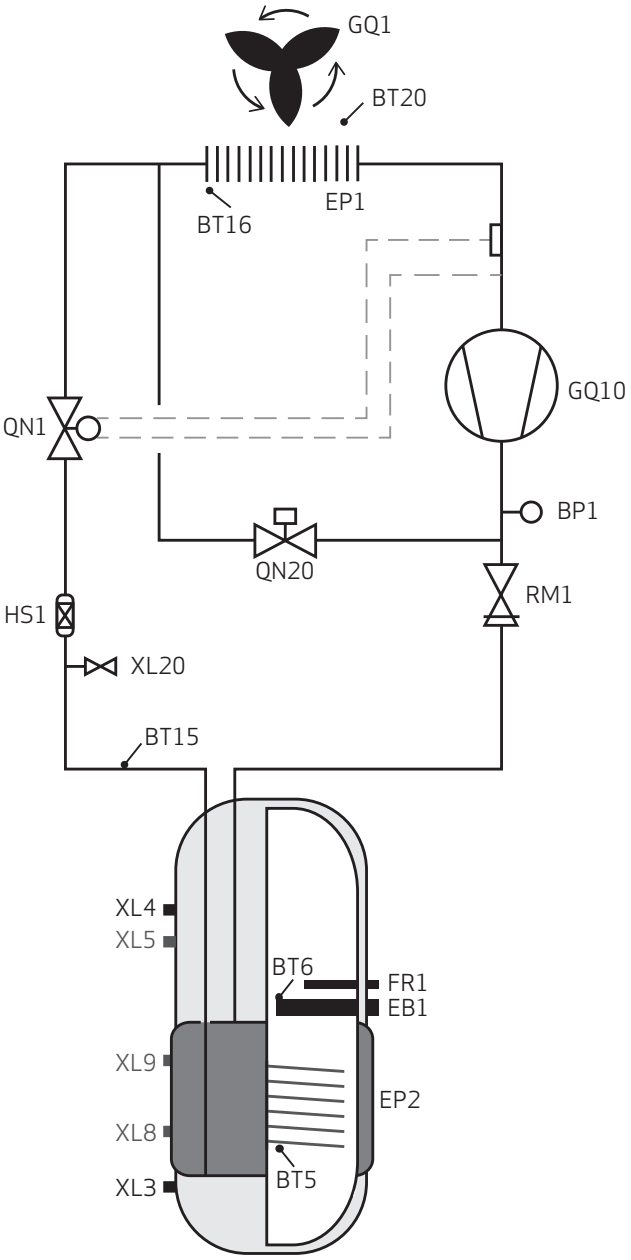
When the room temperature exhaust air, and in some cases outdoor air, passes through the evaporator, the refrigerant evaporates because of its low boiling point. In this way the energy in the air is transferred to the refrigerant.

The refrigerant is then compressed in the compressor, causing the temperature to rise considerably.

The warm refrigerant is led to the condenser. Here the refrigerant gives off its energy to the water in the water heater, whereupon the refrigerant changes state from gas to liquid.

The refrigerant then goes via a filter to the expansion valve, where the pressure and temperature are reduced.

The refrigerant has now completed its circulation, and returns to the evaporator.

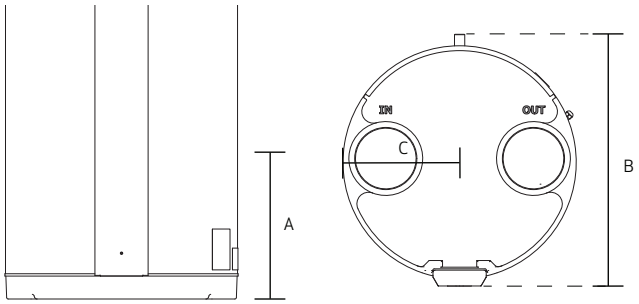


PIPE CONNECTIONS

XL3	Cold water connetion
XL4	Hot water connection
XL5	HWC connection
XL8	Docking, supply[1]
XL9	Docking, return[1]

1 Only relevant for variations with a solar coil

Dimensions and pipe connection



SETTING OUT DIMENSIONS

Connection		*A*	*B*	*C*
XL3 Cold water	(mm)	285	648	310
XL4 Hot water	(mm)	899	648	310
XL5 Hot water circulation	(mm)	719	648	310
XL8 Docking. Supply	(mm)	315	-	-
XL9 Docking. Return	(mm)	690	-	-

Measurements for the connections for the 190 L. Measurements includes the radius of the pipe connection.

Connection		*A*	*B*	*C*
XL3 Cold water	(mm)	285	648	310
XL4 Hot water	(mm)	1255	648	310
XL5 Hot water circulation	(mm)	955	648	310
XL8 Docking. Supply	(mm)	315	-	-
XL9 Docking. Return	(mm)	775	-	-

Measurements for the 260 L. Measurements includes the radius of the pipe connection.

TIP
The docking connections is offset at a 45° angle relative to the cold, and hot water connections, when viewed from above.

PIPE DIMENSIONS

Connection	
XL3 Cold water	3/4"
XL4 Hot water	3/4"
XL5 Water circulation	3/4"
XL8 Docking. Supply[1]	3/4"
XL9 Docking. Return[1]	3/4"

All pipe connection is threaded.

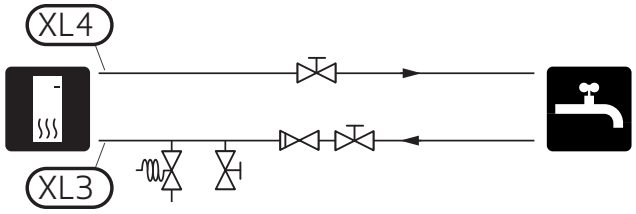
1 *Only relevant for variations with a solar coil*

Symbol key

Symbol	*Meaning*
	Trim valve
	Overflow valve
	Non-return valve
	Temperature sensor
	Circulation pumpe
	Expansions vessel
	Domestic hot wavter
	Domestic hot water heat pump
	Heating system with lower temperature
	Hot water circulation
	Solar collector

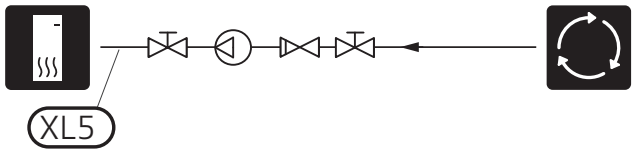
Hot and cold water

Follow the depicted diagram for installation to the hot and cold water system.



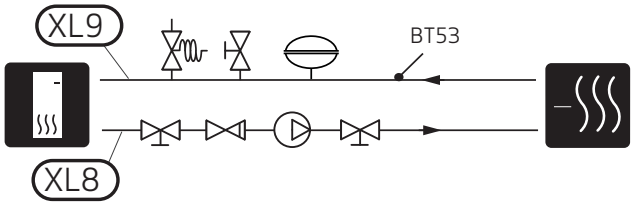
Hot water circulation

Follow the depicted diagram for installation to the hot water circulation.



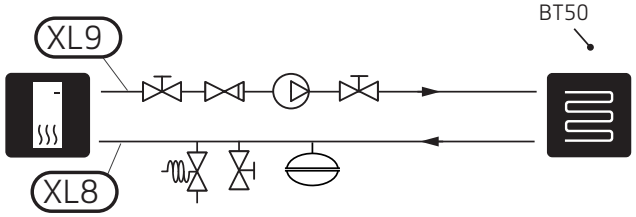
Solar collector[1]

Follow the depicted diagram for installation with a solar collector.



Floor heating[1]

Follow the depicted diagram for installation with floor heating.



1 *Only relevant for variations with a solar coil*

General ventilation connection

NOTE
Read the safety information at the start of the manual before starting work on the unit.

NOTE
Provision must be made for inspection, and cleaning of the duct.

TIP
To prevent fan noise being transferred to the ventilation equipment, install silencers in suitable locations in the duct system.

NOTE
A duct in a masonry chimney stack must not be used for extract air

NOTE
It is recommended to insulate the extract air ducts with diffusion-proof material along their entire length, as to avoid condensation damage from the low outcast temperature of the heat pump.

VENTILATIONS CONNECTIONS

The unit has two ducts at a size of 160 mm.

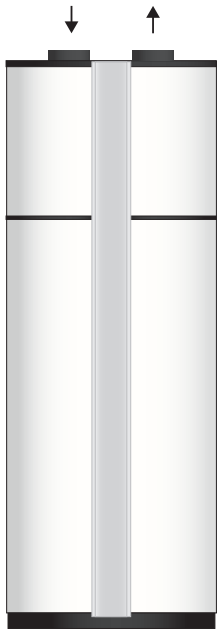
The water heater can operate either as a stand-alone unit, or be connected to a ventilation system via ducting.

CAUTION
Ducts connected to the unit and additional appliances most not contain a potential ignition source.

CAUTION
The unit does not have a safety grid in front of the fan, or evaporator, which means any object directed/falling into the duct connections will cause damage to the fan, evaporator, and potentially the object.

1) Not-ducted unit, indoor air

The water heater extracts heat from the ambient air, and lowers the air temperature by 5-15 °C, depending on the operating conditions. The cooled air is then re-directed into the room.



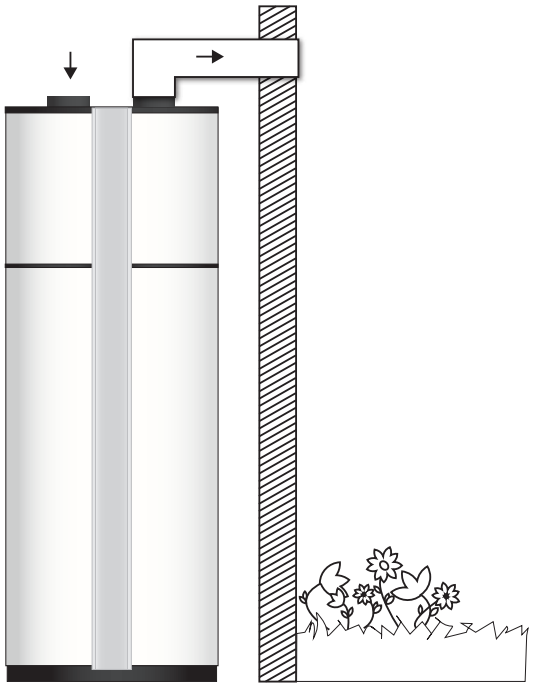
1

NOTE
It is not recommended to install the unit according to this configuration if there is no intent of cooling the ambient air of the surrounding environment.

The 190 L version with a COP (A15 - EN16147) of 3,88 at air flow rate of 300 m^3/h.

NOTE
Install a safety grid on the duct connections to prevent items from falling into the fan and evaporator.

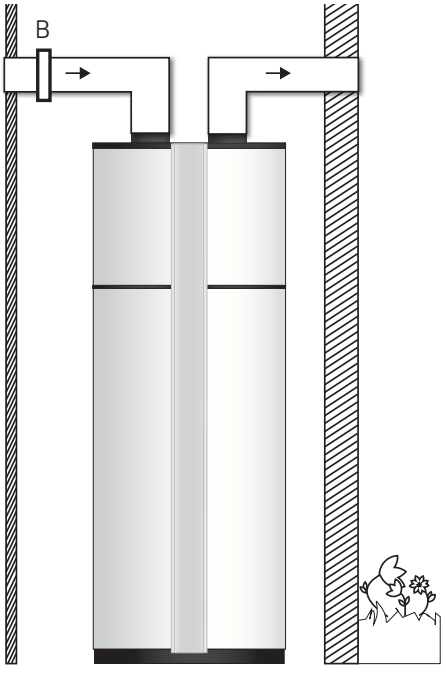
2) Partially ducted unit, indoor air
This configuration is normally preferred to configuration 1 since the cold air coming out from the unit is directed out of the house, as a bonus it also typically minimizes the unit's electricity consumption as the ambient air is normally higher than the outdoor air.



2

The 190 L version with a COP (A15 - EN16147) of 3,88 at air flow rate of 300 m^3/h.

3) Ducted unit, exhaust air
This configuration typically minimizes the unit's electricity consumption, and is especially recommended to extract air from rooms with an higher temperature for example, the kitchen or bathroom.



3

TIP
Connect the extract air duct to a bedroom, turn on cooling mode, and make sure the water heater is operating during the night to provide a nice cold bedroom, when in use.

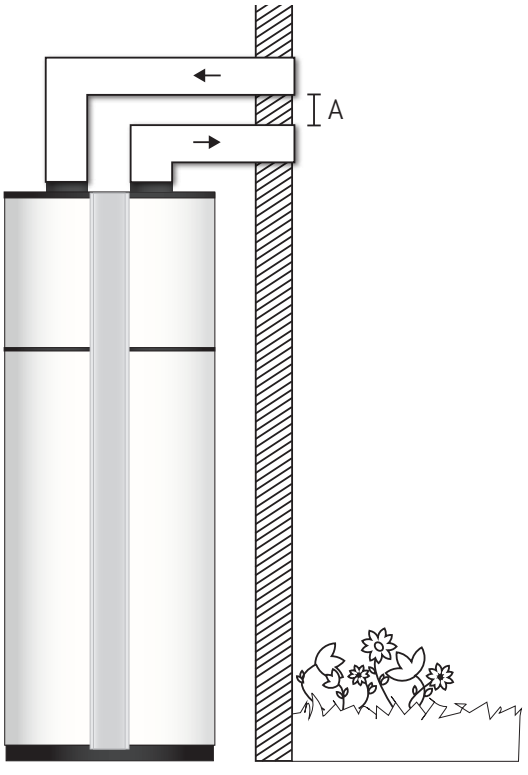
B: Filter box / silencer. Not provided as an accessory

The 190 L version with a COP (A20 - EN16147) of 4,13 at air flow rate of 190 m^3/h.

4) Ducted unit, outdoor air
This configuration minimizes the temperature decrease of the installation site, since there is no contact between the air in the room, and the air through the heat pump. It is suggested to place the inlet duct as far from, and possibly higher than the outlet duct, to minimize the recirculation of cold air into the unit.

The distance (A) between the inlet and outlet ducts, place on the facade of a building, needs to adhere to local and national standards for exhaust air installations.

If the ducts are incorrectly positioned, it may cause the air to recirculate, and lower the performance of the heat pump.



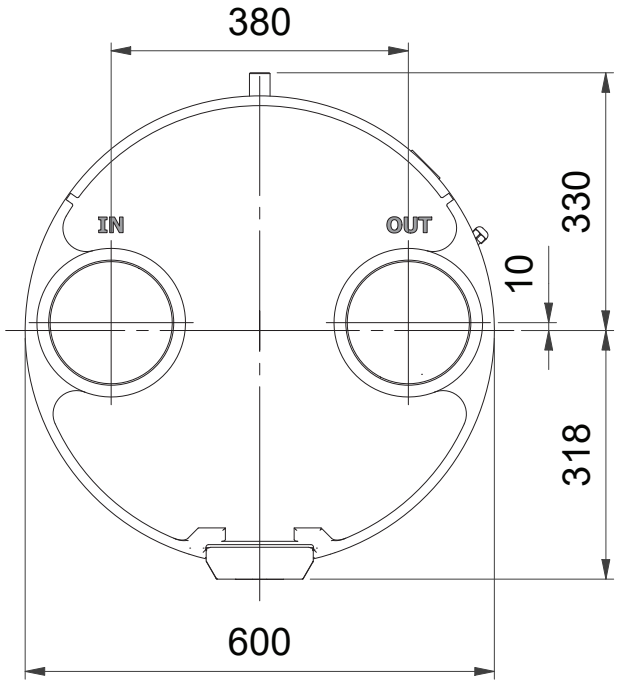
4

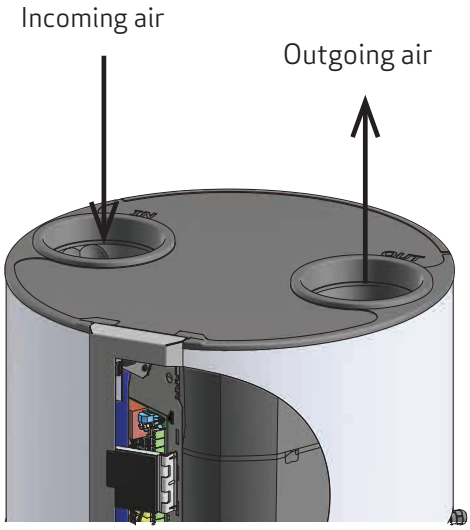
The 190 L version with a COP (A7 - EN16147) of 3,66 at air flow rate of 300 m^3/h.

Adjusting ventilation

Immediately after installation adjust the ventilation, so that it is set according to the projected value of the house. Incorrect adjustment of the ventilation may lead to reduced installation efficiency, and thus poorer operating economy, a poorer indoor climate, and moisture damage in the building. Over ventilation may on the other hand lead to increased heat demand.

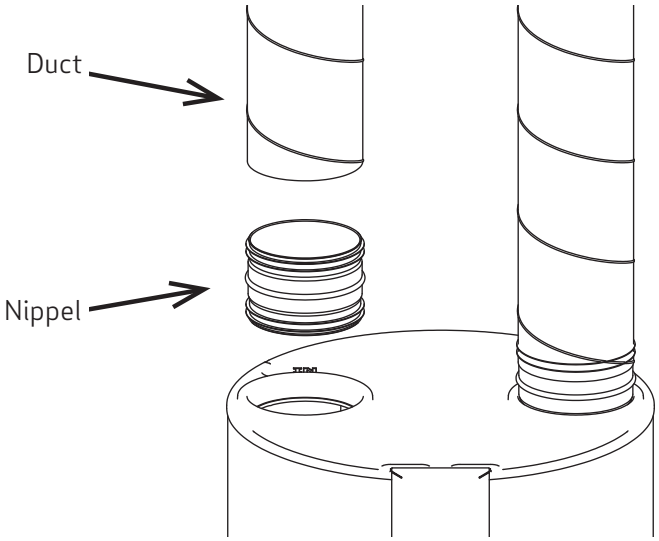
Dimensions and ventilations connection





CONNECTION WITH NIPPEL

To connect with a duct use a nippel Ø160.



NOTE
Installation without an nippel can resoult in condensation around the duct connection.

5 ELECTRICAL CONNECTIONS

General

NOTE
Read the safety information at the start of the manual before starting work on the unit.

CAUTION
Electrical installation, and any servicing must be carried out under the supervision of a qualified electrician. Turn the power off before removing the front panels of the water heater.

CAUTION
Check the connections, main voltage, and phase voltage before starting the water heater. This is to prevent damage to the heat pump electronics.

CAUTION
Do not start the system before filling the water heater. Components in the system could be damaged.

All electrical components, except for an external sensor or pump, are pre-wired at the factory.

Disconnect the water heater before insulation testing the house wiring.

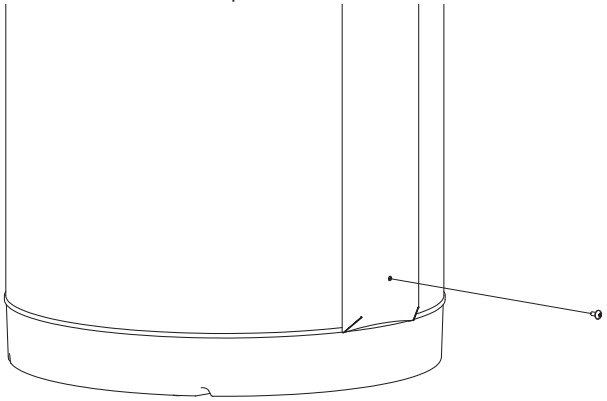
For the electrical diagram of the water heater see page 64

CAUTION
Ensure that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse enviroment over it's life time. The check should include vibration from the fan and compressor.

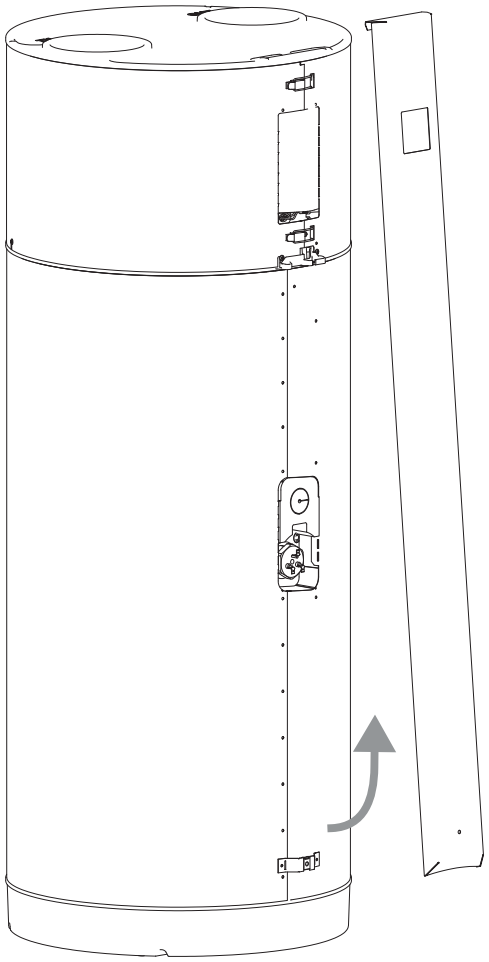
Accessibility

REMOVING THE FRONT PANEL

Using a torx 25 to remove the one screw from the bottom of the front panel.



Carefully lift the front panel away from the water heater. Be aware that one wire, and one cable, are connected to the front panel. The communication cable for the display, and the ground wiring.



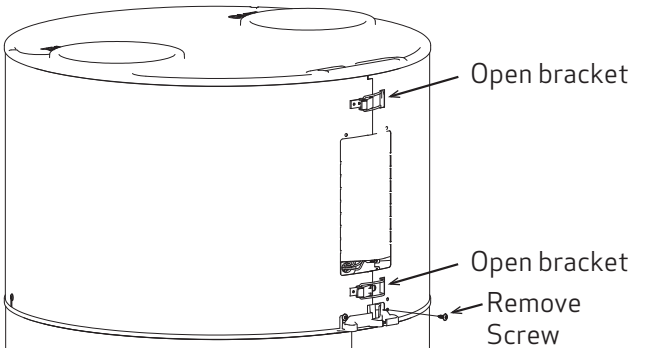
CAUTION
Do not pull the front panel away from the water heater with force.
This will result in damaging the electrical wiring connecting the display to AA2.

The base board, capacitor, and temperature limiter is placed in the top part of the water heater, just behind the front panel.

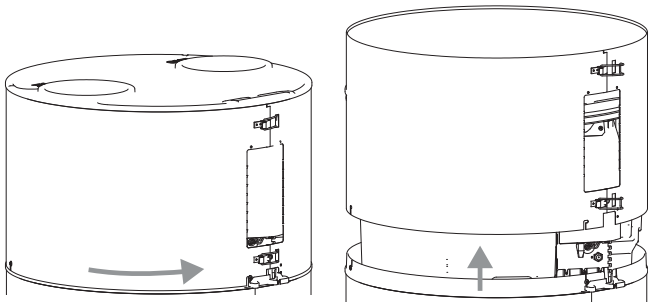
REMOVING THE TOP CABINET

After removing the front panel.

1. Remove the screw from the front panel, using a torx 20, and release the brackets.



2. Turn the top cabinet counter clock vise and lift it above the top of the unit.

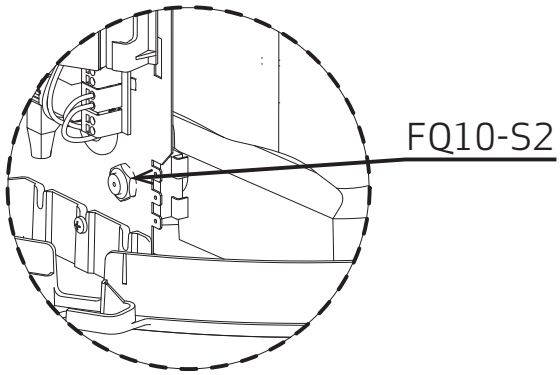


3. Carefully open the cabinet and slide it down the water heater like a jacket. Let it rest on the top pipe connection.
   To ensure no damage occur on the water heater or pipes, place a cloth between the cabinet and the pipes.
4. Carefully lift the top of the EPP to get to the evaporator and fan.

Thermostat / Temperature limiter

The temperature limiter (FQ10) cuts the voltages for the electrical immersion heater if the temperature rises above 90°C and it is reset manually.

It is placed just underneath the base board bracket.



Resetting

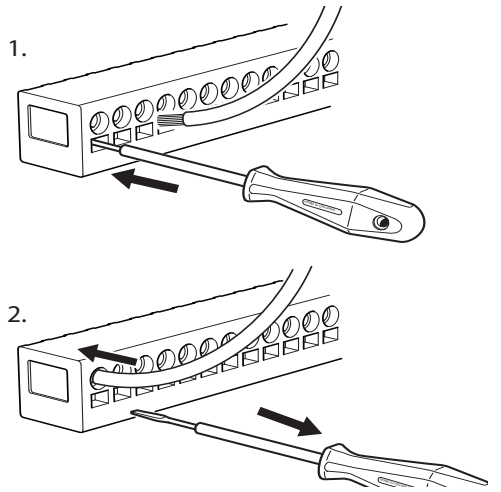
Push a pen, or a small pointy object into the temperature limiter's red dot/button (FQ10-S2)

Connections

The electrical diagram of the base board is located on page 64 in the installer handbook.

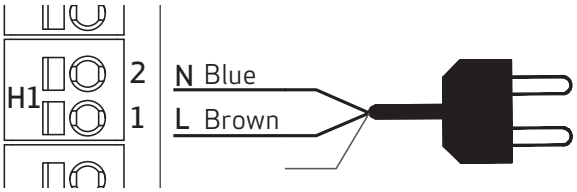
CABLE LOCK

Lock the cables into the terminal blocks by using a suitable screwdriver to release/lock the cables.



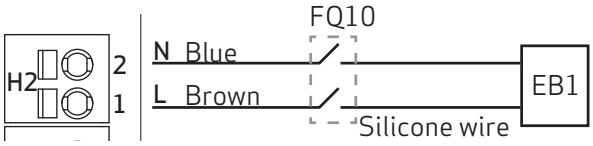
POWER CONNECTION

The power supply is connected to the base board AA2-H1.



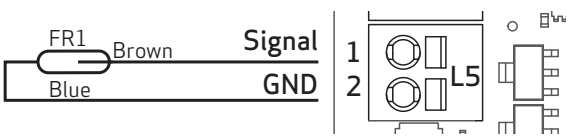
ADDITIONAL HEATER / IMMERSION HEATER

Connect the additional heater to AA2 as specificed in the drawing here under.

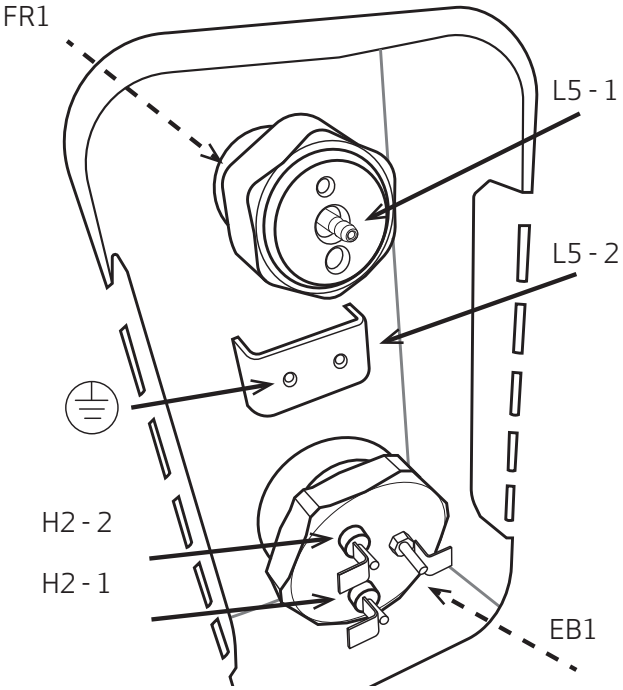


ANODE

Connect the electrical anode to AA2-L5



CONNECTION TO THE WATER HEATER

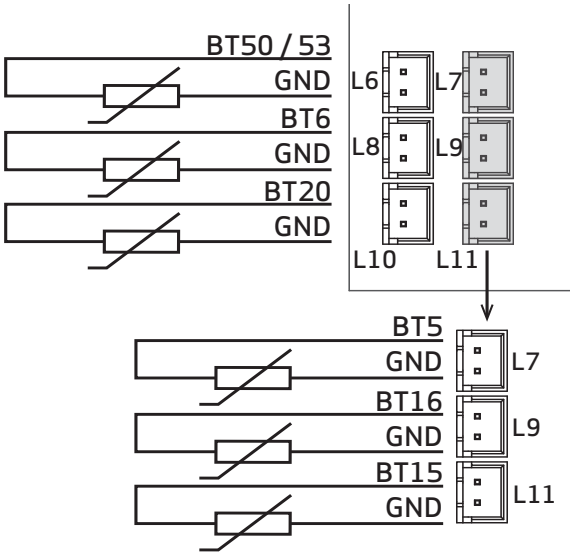


COMMUNICATION

Standard temperature sensors

All sensors are connected through the low voltage input terminals, L8, L9, L10, and L11.

BT6 (L8) is used for controlling when to start or stop production of hot water.

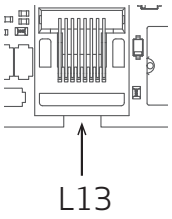


Extra sensors

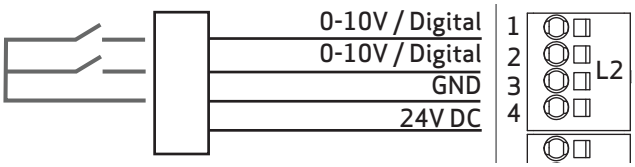
BT5 (L7) is only used for the variants with a solar coil, and BT50/BT53 (L6) is in case cooling, floor heating, or solar is applied.

Control unit / display

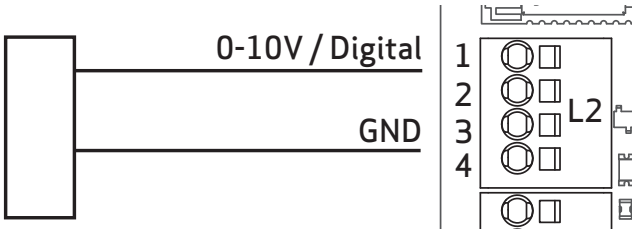
The cable to the display is connected through L13. Both the smart and standard display is connected to the base board (AA2) through L13.



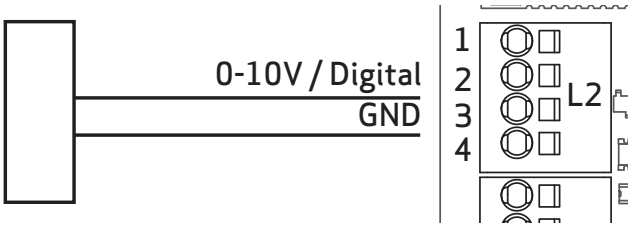
SG ready connection



PV connection

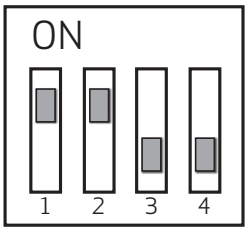


Wired Hygrostat connection



DIP switch

The DIP switch needs to be set up to either PV or SG.



	1	*2*	*3*	*4*
PV / Hygrostat	OFF	OFF	N/A	N/A
SG	ON	ON	N/A	N/A

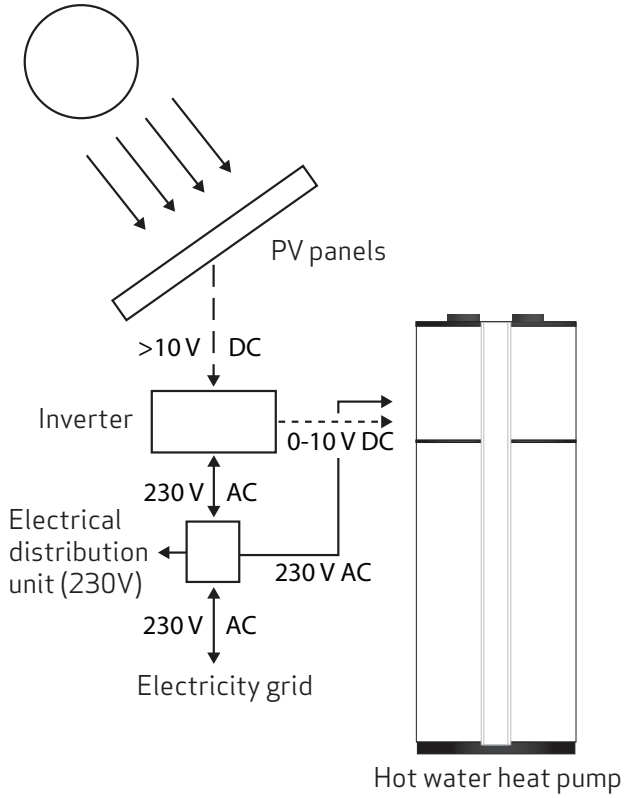
NOTE
The SG ready function cannot work simulaneously with PV or the hygrostat.

Variable signal

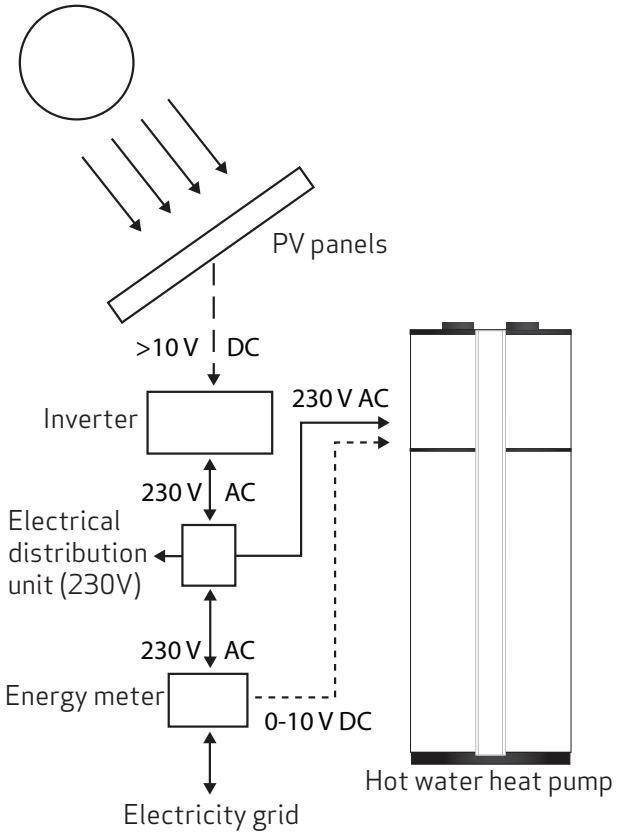
From the input voltage between 0-10 V given by the PV inveter, or energy meter, the unit will ascertain whether to start the heat pump, the additional heater, or both simultaneously.

In configuation B, it is important to place the energy meter as close to the electricity grid as possible, as it will ensure the heat pump only receives a signal when there is a surplus of power behind the energy meter.

PV OPTION A

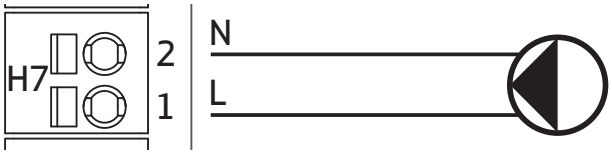


PV OPTION B



EXTERNAL PUMP[1]

For installation with a solar collector, or floor heating system, using the coil immersed in the water heater, an external pump can be controlled based on the conditions in the water heater, and the sensor BT50/ BT53.



The control signal from the unit to the external pump is given through AA2-H7 and is a 230 V on/off signal.

1 *Only relevant for variations with a solar coil*

6 COMMISSIONING AND ADJUSTING

Preparations

NOTE
Read the safety information at the start of the manual before starting work on the unit.

Filling and venting

When the pipe installation is done, then fill the water heater.

Filling the water heater

1. Open a hot water tap in the house.
2. Ensure that all trim valves in the hot water system is open.
3. When the water that comes out of the hot water tap is no longer mixed with air, the water heater is full, and the tap can be closed.

Start-up and inspection

START GUIDE

CAUTION
There must be water in the water heater before the unit is startet.

- Connect the water heater to the power supply.
  The water heater starts up automatically, when the power is connected.
- Follow the instructions in the start guide.

TIP
See the additional control handbook for a more detailed introduction to the installations control system.

SETTING THE VENTILATION

The ventilation must be set according to applicable standards and installation.

Use the illustrated fan curve on page 60 to ensure the correct power amount is applied for the installation. Go to menu [5.4.1], and ensure that the fan speed is appropriate for the low, medium, and high setpoint.

The enduser can adjust the fan speed between low, medium, or high in menu [5.1].

CAUTION
Set the maximum and minimum air temperatures according to the applied installation (Outdoor, indoor, or ambient air). The temperature can be set in menu [5.4.2].

Filter

If the unit is ducted, it is recommended to install a filter in the duct system, before the air inlet on the water heater.

Activate, and set the filter change timer in menu [5.4.1.5] and [5.4.1.6].

COMMISSIONING WITHOUT FAN

The water heater can be run without recovery, as only an electric boiler, to produce hot water. This could be relevant if the ventilation installation is not yet complete.

- Enter menu 2 - “Operating mode”, and select “Backup mode”.

The fan is now off.

Plus functions

NOTE
The solar collector, the cooling, and the floor heating function cannot be used simultaneously. Only one of the installations is applicable to each water heater as they are all dependent on the sensor input L6 on the base board.

INSTALL PV (PHOTOVOLTAIC FUNCTION)

The hot water production can be controlled by a external signal up to 10 V from either a solar photovoltaic inverter, or energy meter by a variable signal.

When the PV function [5.3.1.1] is active. The **heat pump will start** if the input voltage is higher than the set point value [5.4.3.1.1] for more then the decided time set in [5.4.3.1.3].

The **additional heater will start** if the input voltage is higher than the set point value [5.4.3.1.2] for more then the decided time set in [5.4.3.1.3].

INSTALLATION WITH A SOLAR COLLECTOR[1]

When the **solar function** [5.3.1.2] is active, the hot water production can be aided by the energy in the solar collector. The unit can control an external circulation pump connected to the solar collective system.

The solar function can be activated under the plus functions [5.3.1].

The pump starts when:
The solar collector temperature BT53 is higher than hot water temperature BT6 plus the min. temperature difference for the solar coil.

BT53 [3.2.6] > BT6 [3.2.2] + Min. temp. diff. [5.4.3.1.7]
=> Start external pump

The pump stops when:
The temperature BT6 goes above the maximum temperature difference in the solar coil, or when BT6 goes above BT53.

BT6 [3.2.2] > Max. temperature difference [5.4.3.1.7]
=> Stop external pump

BT6 [3.2.2] > BT53 [3.2.6]
=> Stop external pump.

NOTE
The max. and min. temperature difference, is in correlation to the temperature difference between the water in the water heater and the water temperature in the solar collecting system.

INSTALL FLOOR HEATING[1]

The energy stored in the water heater, can be used for floor heating in small areas. For example, bathrooms, or small kitchens.

The Floor heating function can be activated under the plus functions [5.3.1].

The energy is extracted through the internal coil (solar coil) immersed in the hot water, and the unit will provide a signal to an external circulation pump as when to start and stop under the following conditions:

The pump starts when:
The coil temperature BT5 is higher than the setpoint "start floor heating".

BT5 [3.2.1] > Start floor heating [5.4.3.1.8]
=> Start external pump

The pump stops when:
The room temperature sensor BT50 is above the floor temperature setpoint.

BT50 [3.2.6] > Floor temperature [5.3.1.4]
=> Stop external pump

TIP
Place the sensor (BT50) in the room which the set temperature will be used from, for instance a bathroom room wall at a convenient height for the user (typically between 1,3 and 1,5 m over the floor). It is important not to obstruct the sensor by e.g. placing it in a niche, between shelves, behind a curtain, above, or close to a heating source, close to an outer door, or in direct sunlight.

1 *Only relevant for variations with a solar coil*

INSTALL COOLING

The cooling function should only be activated, when the unit is ducted to ambient / exhaust air applications.

The heat pump and the fan will stop running, when both the ambient air temperature (BT50) have reached the setpoint [5.3.1.6], and when the hot water temperature (BT6) have reached the setpoint for the current mode of operation.

NOTE
When the maximum hot water temperature [5.4.2.4] or [5.4.2.3] is reached. The heat pump will stop all production. Even if the "cooling stop temperature" [5.3.1.6] has not been reached.

The function gives signal to a three-way damper, which directs the cold exhaust air to a room with cooling requirements. For example, the bedroom at night.

The function can be activated under plus functions [5.3.1]. Under the installer menu [5.4.3.1.9] choose between two options to control the three-way damper.

TIP
Place the sensor (BT50) in the room which the set temperature will be used from, for instance a bathroom room wall at a convenient height for the user (typically between 1,3 and 1,5 m over the floor). It is important not to obstruct the sensor by e.g. placing it in a niche, between shelves, behind a curtain, above, or close to the ventilation inlet duct, close to an outer door, or in direct sunlight.

Cooling 1:
When BT50 reaches above the setpoint temperature [5.3.1.6] the damper switches ON.

If the temperature BT50 goes below the setpoint [5.3.1.6] the damper switches to OFF.

Cooling 2
Does the extract opposite of Cooling 1.

This is to ensure that no matter which way the damper is installed, cooling always goes the correct way.

TIP
Test that the ventilation and cooling is working correctly before finishing the commissioning of the unit.

7 CONTROL

General

The control of the heat pump can be conducted through multiple applications.

Use the user handbook for help with handling the applied control, or connecting to the digital solution.

The menu structure is the same no matter what application is used.

To access the installer settings use the code 0045.

Main Menus

The water heater is controlled through the following menu's.

1. Hot water temperature
2. Operating mode
3. Information
4. Schedule
5. Main menu

8 CONTROL - MENUS

1 Hot water temperature

1 Hot water temperature	1.1 Temperature in Auto
	1.2 Temperature in Eco
	1.3 Temperature in Boost

Temperature in Auto
Set the temperature for when the water heater should stop all operations, when in Auto mode.

The water heater will start, when the temperature in the water heater falls 5 °C below this set point [1.1].

Temperature in Eco
Set the temperature for when the water heater should stop all operations, when in Eco mode.

The water heater will start, when the temperature in the water heater falls 5 °C below this set point [1.2].

Temperature in Boost
Set the temperature for when the water heater should stop all operations, when in Boost mode.

The water heater will start, when the temperature in the water heater falls 5 °C below this set point [1.3].

2 Operating mode

2 Operating mode	Auto
	Eco
	Boost
	Backup
	Silent
	Holiday

Here you can choose between operatings modes.

AUTO:

In auto, the water heater produces hot water with the heat pump activated. The heat pump starts up, when the hot water temperature BT6 [3.2.1] is more than 5°C below the setpoint temperature [1.1], and it stops, when the hot water temperature [1.1] is reached.

NOTE
Auto mode will only work until the maximum temperature [5.4.2.3] in the water heater is reached. Is the temperature [1.1] set higher then the maxium temperature, then the control will adjust it to the limit set in [5.4.2.3].

ECO:

The eco modes is constructed so it basically consumes as little energy as possible, by having a different hot water set point [1.2] in the water heater.

The water heaters operation will otherwise be similary to the auto mode.

BOOST:

When operating in boost mode, the heat pump, and the electrical additional heater will work simultaneously to increase the power output, and lower the heat up time.

If the hot water temperature BT6 [3.2.2] is more than 5 °C below the setpoint temperature [1.3] the heat pump, and the additional heat will turn on, and first stop, when the temperature [1.3] is reached.

If the setpoint [1.3] is set to a higher temperature than the maximum hot water temperature [5.4.2.3], the unit will stop all production at the temperature limit [5.4.2.3].

BACKUP:

Additional heat or backup mode is for emergency situations, where an error occur that prevents the water heater from operating with the heat pump.

When an error occur, the water heater will stop all production, and ask for permission, before the backup mode is turned on.

When the backup mode is on, the hot water is heated up by the electrical additional heat to a lower temperature than the desired one, and will only work for a week before the water heater again stops all production.

NOTE
When enabled, legionella mode continues to operate as usual, regardless of whether the system is in backup or holiday mode.

The hot water production will activate, when the hot water temperature BT6 [3.2.2] is more than 5°C below the setpoint for stopping the additional heat [5.4.2.8], it stops production, when the temperature [5.4.2.8] is reached.

SILENT:

The fan speed decreases to the minimum in order to minimize the sound emission of the unit in operation. The hot water production starts, when the temperature in the water heater BT6 [3.2.2] is more than 5 °C below the setpoint temperature [1.1], and it stops, when the temperature [1.1] is reached.

HOLIDAY:

The water heater is turned off and only the display is active. The heat pump does not start, when water heating is required. The compressor remains OFF, except during the legionella provention program in which it is activated.

The Holiday mode is connected to the “back from holiday” feature [4.3]. After the Holiday period is completed, the unit goes to auto mode after end holiday.

TIP
To ensure hot water at the return of the holiday. Set up the back from holiday feature [4.4] under the schedule menu.

TIP
The water heater can be set to OFF by switching to HOLIDAY mode.

3 Info

3 Info	3.1 Ventilation	3.1.1 Fan speed
		3.1.2 Input signal
		3.1.3 Fan time
	3.2 Temperatures	3.2.1 Hot water temperature BT5
		3.2.2 Hot water temperature BT6
		3.2.3 Liquid line temperature BT15
		3.2.4 Evaporator temperature BT16
		3.2.5 Air inlet temperature BT20
		3.2.6 Extra Sensor BT50/BT53
		3.2.7 Average air temperature
		3.2.8 Average evaporator temperature
	3.3 Plus functions	3.3.1 PV status
		3.3.2 SG status
		3.3.3 SG1 input
		3.3.4 SG2 input
		3.3.5 Cooling status
	3.4 Energy log	3.4.1 Heat pump ON time
		3.4.2 Additional heater
		3.4.3 Fan ON time
		3.4.4 Heat pump start/stop
		3.4.5 Momentarily consumption of additional heat.
		3.4.6 Total electrical consumption
		3.4.7 Heating capacity
		3.4.8 Hot water production
		3.4.9 Total consumption of the additional heat
	3.5 Relay	3.5.1 Extra
		3.5.2 Deicing
		3.5.3 Fan
		3.5.4 Compressor
		3.5.5 Additional heater
	3.6 Alarm	3.6.1 Alarm log
		3.6.2 Current alarms
		3.6.3 Reset alarms
	3.7 Tools	3.7.1 Is the anode mounted?
		3.7.2 Measued anode voltage
		3.3.6 External control status

All information related to the unit is shown here.

The information in this menu can not be adjusted.

3.1 VENTILATION

Current fan speed shown in %, the actual input signal from PV or the hygrostat shown in voltage, and the acumulated time the fan has ben on.

3.2 TEMPERATURES

The current temperature, and the temperature log for the last 2 weeks can be shown here.

3.3 PLUS FUNCTIONS

If PV, SG, Cooling or external control is aktivated it will show here.

3.4 ENERGY LOG

Here it is possible to see the accumulated energy consumption, includíng how many hours the additional heat or compressor has been on.

It is also possible to find the amount of compressor ON / OFF since last total reset.

3.5 RELAYS
Here it is possible to show the current status of the unit. Is the compressor on or off. The relays will show.

3.6 ALARM
Here it is possible to see the current alarms which is on, and the alarms which has been on in the past 2 weeks.

3.7 TOOLS
Information regarding tools related to the installers work are visible to view here.

4 Schedule

4 Schedule		
	4.4 Holiday	Back from holiday
	4.5 Periodic increase	On / Off
		Activate on which day
		Latest legionella run

4.4 HOLIDAY

Plan the schedule for when the heat pump should be turned off in longer periods. The periodic increase / legionella prevention operation will continue to work as long as it is not turned off.

4.5 PERIODIC INCREASE / LEGIONELLA PROGRAM

Plan which day to turn on the periodic increase during the week.

NOTE
It is not recommeded to turn off the periodic increase.
Is the periodic increase turned off the chance of the legionella bacteria increases significantly, which can affect the health of the user.

TIP
During the periodic increase turn on a tap to ensure that the pipes also gets provided with the increased temperatures.

5 Main menu

5 Main menu	5.1 Ventilation	5.1.1 Fan speed	
		5.1.2 Fan setting	
		5.1.3 Reset filter timer	
	5.2 Connection [2]	5.2.1 Wi-Fi	
		5.2.2 myUplink	
	5.3 My system	5.3.1 Plus functions	5.3.1.1 PV function
			5.3.1.2 Solar function[1]
			5.3.1.3 Floor[1]
			5.3.1.4 Floor Temperature[1]
			5.3.1.5 Cooling
			5.3.1.6 Cooling Temperature
		5.3.2 Info	
		5.3.3 Date	
		5.3.4 Time	
		5.3.5 Set back time	
		5.3.6 Reset	
		5.3.7 Language	
	5.4 Installer settings	5.4.1 Ventilation	
		5.4.2 Temperature limits	
		5.4.3 My system	5.4.3.1 Plus functions
			5.4.3.3 Reset all
		5.4.4 Tools	

SUBMENUS

5.1 Ventilation
The ventilation can be adjusted through the Fan speed, and how the speed is applied.

5.2 Connection[2]
Connect the unit to Wi-Fi or myUplink. This menu is only available on the smart display.

5.3 My system
The basic system function is adjust here, additionally the plus functionallites like PV, and air cooling .

5.4 Installer settings
This menu is locked for endusers to prevent setting up, or adjusting settings that needs an qualified technian with a good understanding of the water heater and installation.

1 Only relevant for variations with a solar coil
2 Only available with the smart display

5.1 VENTILATION

5.1.1 Fan speed

5.1.1 Fan speed
Range: Speed 1, Speed 2 or Speed 3
Factory setting: Normal

There are three ventilation level which the customer can select. To adjust the actuel fan speed for each level go to menu [5.4.1]

The speed can only be adjusted by the customer here, if the fan is set to Single or 2 speed.

5.1.2 Fan setting

5.1.2 Fan setting
Range: OFF, Single speed or 2 speeds
Factory setting: OFF

Change the setting operation of the fan to fit the installation.

OFF: The fan switches off, when the heat pump does not run.

Single speed: The fan is always running at a single fixed speed [5.1.1], both when the heat pump is operating, and when it is not.

2 speeds: The fan will run at a fixed speed [5.1.1]. Except for when the heat pump is operating, then it will perform according to the normal speed [5.4.1.4].

NOTE
If the water heater is working in backup mode. The fan will be working according to [5.1.2]

5.1.3 Reset filter timer

Alarm 222 indicates that the air filter needs to be changed.

Reset the alarm here.

5.2 CONNECTION[2]

Turn on Wi-Fi, and choose the correct internet before any connection to myUplink can be done. A more indept description is located in the user handbook.

5.3 MY SYSTEM

My System / my heat pump covers everything from plus functions to basic informations.

5.3.1 Plus functions

PV

5.3.1.1 PV function
Range: OFF, ECO or Storage
Factory setting: ECO

OFF: The PV function is not active

ECO: The heat pumps start production of hot water until setpoint is reached. The setpoint is defined by the operating mode.

Storage: The heat pump start production of hot water until maximum temperature is reached.

NOTE
Is boost or backup mode activated, and the PV function is set to storage. The water heater will then use the additional heat to reach the maximum hot water temperature [5.4.2.3]

Solar or Floor[1]

5.3.1.2 Solar function[1]
Range: OFF or ON
Factory setting: OFF
5.3.1.3 Floor[1]
Range: OFF or ON
Factory setting: OFF
5.3.1.4 Floor temperature[1]
Range: 5 to 50 °C
Factory setting: 35 °C

The solar function, and floor function cannot be activated at the same time.

NOTE
The solar, floor, and cooling function cannot work simultaneously, as they are all dependent on the same temperature sensor input L6 on the base board.

5.3.1.4 floor temperature, determines when to stop the extraction of energy from the hot water, dependent on the temperature detected in BT50.

More information regarding the floor and solar function can be read on page 31.

1 *Only relevant for variations with a solar coil*
2 *Only available with the smart display*

Cooling

5.3.1.5 Cooling
Range: ON or OFF
Factory setting: OFF

5.3.1.6 Cooling temperature
Range: 10 to 30 °C
Factory setting: 21 °C

If the cooling function is activated, the cooling will stop, when the temperature detected in BT50 have reached the setpoint in [5.3.1.6].

To learn more of the cooling function go to page 32.

5.3.2 Info
The software version of the unit is displayed here.

5.3.3 Date
The date and day of the week can be adjusted here.

5.3.4 Time
The time can be adjusted here.

5.3.5 Set back time
The daylight saving can be turn on here.

5.3.6 Reset user settings
Reset all user data here. The information regarding running hours of the compressor, and fan cannot be reset.

5.3.7 Language
Change the language to fit.

5.4 Installer settings

5.4 Installer settings	5.4.1 Ventilation	5.4.1.1 Speed 1	
		5.4.1.2 Speed 2	
		5.4.1.3 Speed 3	
		5.4.1.4 Normal speed	
		5.4.1.5 Filter installed	
		5.4.1.6 Filter timer	
	5.4.2 Temperature limits	5.4.2.1 Minimum air temperature	
		5.4.2.2 Maximum air temperature	
		5.4.2.3 Maximum hot water temperature	
		5.4.2.5 Legionella temperature	
		5.4.2.6 Defrosting stop temperature	
		5.4.2.7 Evaporator stop at max. Temperature	
		5.4.2.8 Add. heat stop temperature	
		5.4.2.9 Boost mode activation temperature	
	5.4.3 My system	5.4.3.1 Plus functions	5.4.3.1.1 PV. Start of heat pump
			5.4.3.1.2 PV. Start of add. Heat
			5.4.3.1.3 PV. Min time
			5.4.3.1.5 Extra functions
			5.4.3.1.6 Max. Temperature in solar catcher
			5.4.3.1.7 Min. Temperature difference solar
			5.4.3.1.8 Start of floor heating
			5.4.3.1.9 Cooling
		5.4.3.3 Reset all	
		5.4.3.4 Total Reboot	
	5.4.4 Tools	5.4.4.1 External control	
		5.4.4.2 Forced operation	
		5.4.4.3 Modbus	

SUBMENUS

5.4.1 Ventilation
The limites for the air flow, fan power, speed, and filter should be set with the entire installation in mind.

5.4.2 Temperature limits
All temperature limitation for the entire water heater is set in this menu.

5.4.3 My system
To set up the operation of additional features for the system, such as PV, SG-ready, Cooling or a hygrostat the settings in this menu needs to be adressed.

5.4.4 Tools
Here is the tools for the installer to help during trouble shooting or to set up hygrostat control.

5.4.1 VENTILATION

Fan speed

5.4.1.1 Speed 1
Range: 0 - 100 %
Factory setting: 40 % (outdoor)

5.4.1.2 Speed 2
Range: 0 - 100 %
Factory setting: 50 % (outdoor)

5.4.1.3 Speed 3
Range: 0 - 100 %
Factory setting: 70 % (outdoor)

5.4.1.4 Normal speed
Range: 0 - 100 %
Factory setting: 57 % (indoor air) 48 % (outdoor air)

The fan speed should be adjusted according to whether the water heater is ducted or not.

Use the illustrated fan power graph on page 60 to ensure the fan speed is correctly adjusted.

Normal speed is used during hot water heating.

Filter

5.4.1.5 Filter installed
Range: Yes or No
Factory setting: No

5.4.1.6 Filter timer
Range: 1 to 9 months
Factory setting: 3 months

Install a filter timer, to make sure the filter is changed according to local or national regulations.

NOTE
It is recommended to install a filter, when the water heater is installed on an exhaust duct. This is to prevent corrosive particles to damage the fan, and evaporator.

5.4.2 TEMPERATURE LIMITS

Ventilation

5.4.2.1 Min. air temperature
Range: -10 to 10 °C
Factory setting: -10 °C

5.4.2.2 Max. air temperature
Range: 30 to 45 °C
Factory setting: 45 °C

The minimum and maximum air temperature allowed for the operation of the heat pump can be regulated here.

If BT20 is below [5.4.2.1] the electrical additional heat activates, and works alone until the set point is reached.

When BT20 detects a temperature below 0 °C the defrosting will begin. Defrosting will first stop when the temperature is above [5.4.2.6]. Defrosting will not occur more than once an hour.

Heat pump

5.4.2.6 Defrosting stop temperature
Range: 0 to 10 °C
Factory setting: 6 °C

5.4.2.7 Evaporator stop at max. temp.
Range: 10 to 40 °C
Factory setting: 35 °C

Here the temperature limits can be set for the evaporator.

Hot water

5.4.2.3 Max. hot water temperature
Range: 55 to 65 °C
Factory setting: 65 °C

5.4.2.5 Legionella temperature
Range: 60 to 65 °C
Factory setting: 60 °C

5.4.2.8 Additional heat stop temperature
Range: 0 to 65 °C
Factory setting: 50 °C

The legionella and maximum hot water temperature is set here.

The additional heater will stop hot water production at the setpoint [5.4.2.8].

TIP
The setpoint [5.4.2.8] will affect the maximum temperature in the water heater, when backup mode is active.

5.4.3 MY SYSTEM

5.4.3.1 PLUS FUNCTIONS

PV

5.4.3.1.1 PV. Start of heat pump
Range: 0 - 10 V
Factory setting: 0 V

5.4.3.1.2 PV. Start of add. heat
Range: 0 - 10 V
Factory setting: 0 V

5.4.3.1.3 PV. Minimum time
Range: 1 - 120 min
Factory setting: 15 min

Decide when to start the heat pump, and additional heater depending on the 0-10 V signal from the inverter or energy meter.

For more information on how to install PV go to page 31.

Extra functions

5.4.3.1.5 Extra functions
Range: Off, Solar, Floor or Cooling
Factory setting: Off

Choose if the system should control an external pump for a solar or floor system, or a ventilation damper for directing the cooling.

Solar[1]

5.4.3.1.6 Max. Temperature solar[1]
Range: 55 to 89 °C
Factory setting: 89 °C

5.4.3.1.7 Min. Temp. difference solar[1]
Range: 1 to 5 °C
Factory setting: 5 °C

Working with a external pump, and the solar coil in the water heater, the system can control when to turn on or off the pump.

The maximum temperature [5.4.3.1.6] is the allowed temperature in the solar collector (BT53).

The minimum temperature difference between the water heater and the solar collector decides, when the pump should start or stop.

For more information about the solar function go to page 31.

Floor[1]

5.4.3.1.8 Start of floor heating[1]
Range: 25 to 45 °C
Factory setting: 35 °C

When the floor function is active, the solar coil can be used for a small floor heating area. The circulation pump will be activated based on the minimum temperature in the water heater [5.4.3.1.8] with a hysteresis of 1 K.

For more information about the floor function go to page 31.

Cooling

5.4.3.1.9 Cooling
Range: Cooling 1 or Cooling 2
Factory setting: Cooling 1

If cooling is active, the heat pump, and fan will continue to work until both the water heater temp and room temperature [5.3.1.6] has been reached, or if the maximum allowed temperature for the heat pump has been reached [5.4.2.4].

Based on the room sensor (BT50) the system will turn system on or off.

For more information on how to install cooling go to page 32.

5.4.3.3 RESET ALL

Resetting of all settings.

The alarm log and the compressor timer are not reset.

5.4.3.4 TOTAL REBOOT

Resetting of all setting.

Restart of the CPU processer.

The alarm log and compressor timer are not reset.

1 Only relevant for variations with a solar coil

5.4.4 TOOLS

5.4.4.1 EXTERNAL CONTROL

5.4.4.1 External control
Range: Off, Hygrostat, Ventilation max, or start/stop
Factory setting: Off

OFF: Normal operation.

Hygrostat: The fan always runs according to the input signal from L2-2 (0-10V) and L2-3, from an external hygrostat, CO2-sensor, or similar appliances.

- If the voltage is between 0 - 3.0 V the fan speed is set to min. fan speed [5.4.1.1].
- If the voltage is between 3.0 - 8.0 the fan speed is to medium fan speed [5.4.1.2].
- If the voltage is higher than 8 V the fan speed is set to maximum [5.4.1.2].

Fan max: If the ventilation function is already selected, a signal higher than 2 V to L2-2 leads to maximum air flow.

Fan min: The minimum fan speed is determined by the settings of [5.1.2].

Start/stop: If L2-2 receives a signal higher than 2 V, the heat pump operation is stopped.

TIP
Defrost functionality is separate from the above, and will control the fan speed independet from the external controls.

5.4.4.2 FORCED OPERATION

5.4.4.2 Forced operation
Range: ON or OFF
Factory setting: OFF

The forced operation of the unit can be activated here. The heat pump starts even if there is no need for hot water. When the maximum temperature allowed by the heat pump is reached the unit will stop. This function is to use for testing purposes. It becomes OFF again after one heat up cycle is completed.

5.4.4.3 MODBUS

5.4.4.3 Modbus
Address, range: 1-274
Factory setting: 30
Baud rate, range: 9600-19200
Factory setting: 19200
Parity, range: Even, Odd or None
Factory setting: Even
Write Enable, range: On or Off
Factory setting: On

Access to modbus address, baud rate, parity, and the ability to modify advanced setpoints using a data-logger.

Zigbee[3]

5.4.3.2.5 Zigbee[3]
Range: On or Off
Factory setting: Off

Turn the connectivity on or off. This is for using myUplink connected zigbee devices like a CO2 sensor or temperature sensor.

3 *Only relevant on variants with Zigbee and a smart display.*

9 SERVICE

NOTE
Read the safety information at the start of the manual before starting work on the unit.

CAUTION
Servicing and maintenance should only be carried out by persons with the necessary expertise.
When replacing comonents use only replacement parts from the manufacturer.

NOTE
When repairing, or dismantling the domestic hot water heat pump, follow the environmental regulations, and legal requirements in relation to recycling and disposal of materials.

Maintenance

All necessary maintenance which is described in this section is of the installers responsibility to inform the user.

CLEANING THE FLOOR DRAIN

Condensation forms, when the heat pump is working. This condensation is routed out toward the side of the top tray of the water heater, and into a floor drain.

The condensation water contains a certain amount of dust and particles.

Check regularly that the floor drain is not blocked; water must be able to run through freely. Clean, if necessary.

CAUTION
If the floor drain is blocked, water can spill over onto the floor of the installation area. To prevent damage to the building, a waterproof floor, or a floor membrane is recommended.

CLEANING THE THE WATER HEATER

The surface of the water heater can be cleaned with non-chemical products. Use an ordinary wrung out cloth for cleaning of the cabinet and EPS.

Service actions

All necessary service actions is of the responsibility of an installer to perform.

TIP
Check and, if necessary, replace the air filter if it is installed.

GENERAL INSPECTION

Check the following:

- Condition of the casing
- Electrical connections
- Pipe connections

Correct any fault before continuing

EMERGENCY / BACK UP MODE

CAUTION
Do not start the water heater before filling up the system with water. Components in the system could be damaged.

Emergency mode is only used in event of operational interference, or in conjunction with service.

When the emergency mode needs to be activated, it is indicated on the display. It will not active on its own. When activated it will only be active for a week.

The Additional the add. heat/immersion heater will be activated for hot water heating. The compresssor will be off, and the Fan will work according to [5.1.2].

DRAINING THE WATER HEATER

The hot water heat is drained as follows:

1. Close the cold water supply
2. Attach a hose to the drain valve
3. Place the end of the hose near a floor drain
4. Open a hot water tap, or venting valve, to let air into the system.
5. Open the drain valve

If this is not enough, disconnect the hot water connection (XL4).

CAUTION
There may be some hot water which can result in scalding.

ACTUATING THE SAFETY VALVE

Ensure that the safety valve is working correctly by pressing the lever/turing the handle on the expansion relief valve while checking that water discharges.

NOTE
The safety release valve must be operated regularly to remove lime deposits, and to verify that it is not blocked.

Please note, that water may drip from the discharge pipe of the expansion-relief valve due to heating of the hot water.

TEMPERATURE SENSOR DATA

Ensure that the sensor data are correct. Compare the shown values to the expected values.

CLEAN THE EVAPORATOR AND FAN

Remove the front panel, top cabinet, and top part of the EPS housing to find the fan and the evaporator.

NOTE
Be careful not to remove balancing weights on the fan wheel during this
process, as this will cause fan imbalance, and lead to a higher noise level
as well as wear and tear on the fan.

CHECK FOR LEAKAGE

Ensure that there is no leakage from the immersion heater and anode.

If the insulation around/underneath the components are wet, it indicates that there is a leakages.

Empty the heater, and ensure that the anode and electric add. heat is fasten correctly.

CAUTION
Leakage from the anode and immersion heater can lead to corrosion of the condensator which will lead to urepairable damage of the unit.
If leakage from the water heater has occured, check if sensor BT15 and BT16 is within the expected limits to determined if there is a refrigerant leak. See chapter 10 on page 50 for further information.

CHECK THE ANODE

Go to the information menu [3.7] to see whether the anode is mounted.

If the anode is not working, it should be detected by a error. Check the alarm log [3.6].

CHANGE OF ANODE

In the event that the electrical anode should need to be changed. Follow the instruction on how to drain the water heater before starting work on removing the anode.

The anode is placed directly in the hot water, and sealed with a liquid jointing compund at the factory.

Use a 36 mm socket to loosen the anode.

When reinstalling the new anode, ensure that the a rubber ring is placed between the water heater and the bolt head for a water tight sealing. Tighten the bolt until it cannot turn any more.

CHANGE OF IMMERSION HEATER / ADDITIONAL HEAT

In the event that the immersion heater needs to be changed. Follow the instruction on how to drain the water heater before starting work on removing the immersion heater.

The immersion heater is place directly in the hot water, and sealed with a O-ring at the factory.

Use a 55 mm socket wrench to loosen the immersion heater.

When reinstalling the new immersion heater, ensure to use a new O-ring between the immersion heater and the plastic bushing for a water tight sealing, and tighten with a force between 20 Nm.

CHANGE OF THE ELECTRICAL SUPPLY CORD

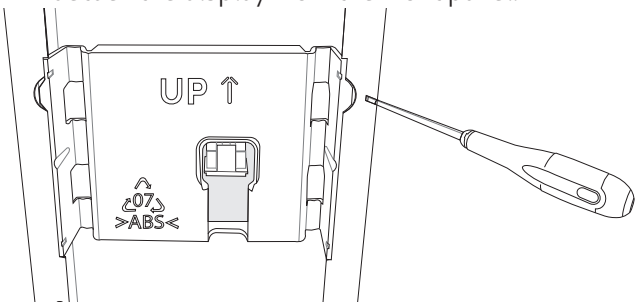
Should the supply cord be damaged, it must be replaced by the manufacturer, its service agent or similary quilified persons in order to avoid a hazard.

Only use components from the manufacturer as spare part.

REPLACING/CHANGE OF DISPLAY

In case of damage to the display. The display can easily be removed and replaced by following these steps.

1. Carefully remove the front panel according the guide in “Accessibility” on page 25
2. When all wiring has been removed. Turn the panel over, and use a flat screwdriver to carefully detach the display from the front panel.



Work on the refrigerant circuit

> **CAUTION**
> If repairs is done to the refrigerant circuit, then be aware that the compressor can not be exposed to ambient air for more then 15 mins before the humidity in the oil will be to high to maintain the same efficiency.

> **CAUTION**
> Repairs to the refrigerant circuit should only be done by certified refrigerant technicians.

Examples for needing repairs of the refrigerant circuit, could be because of refrigerant leakage or change of components.

Before starting work on the hermetically sealed refrigerant circuit, beware of the following safety checks:

- Work shall be undertaken under a controlled procedure, so as to minimise the risk of a flammable gas, or vapour being present while the work is being performed.
- There needs to be a fire extinguisher within the vicinity of the workshop.
- Check for the presence of refrigerant before, and during the work to ensure that the technician is aware of potentially toxic, or flammable atmospheres.
- All maintenance staff, and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.
- All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing, and disposal, during which refrigerant can possibly be released to the surrounding space.
- Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards, or ignition risks. “No Smoking” signs shall be displayed.
- Ensure that the area is in the open, or that it is adequately ventilated before breaking into the system, or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant, and preferably expel it externally into the atmosphere.
- Where electrical components are being changed, they shall be fit for the purpose, and to the correct specification. At all times the manufacturer, and supplier’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer, or supplier’s technical department for assistance.
- Checks to electrical devices.

Repair and maintenance to electrical components shall include initial safety checks, and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately, but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment, so all parties are advised.

Initial safety checks shall include:

- That capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- That no live electrical components, and wiring are exposed while charging, recovering, or purging the system;
- That there is continuity of earth bonding.

> **CAUTION**
> Is repairs required to be done with brazing, ensure to recover all of the refrigerant before begining work.

REMOVAL AND EVACUATION

> **CAUTION**
> Repairs to the refrigerant circuit should only be done by certified refrigerant technicians.

When breaking into the hermetically sealed refrigerant circuit to make repairs, it is important that the best practice is followed since there is a high risk of fire. The following procedure shall be adhered to:

1. Purge the refrigerant circuit with Oxygen-free nitrogen
2. Evacuate the circuit
3. Purge with oxygen-free nitrogen
4. Open the circuit by cutting.

> **CAUTION**
> The refrigerant charge shall be recovered into the correct recovery cylinders.

Refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen, and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place.

Ensure that the outlet for the vacuum pump is not close to any potential ignition sources, and that ventilation is available.

TIP
For a better end result, and to quicken the evacuation, the following points must be followed.

- The connection lines must be as large and short as possible.
- Evacuate the system down to 4 mbar, and fill the system with dry nitrogen to atmospheric pressure to finish the evacuation.

CHARGING PROCEDURES

In addition to conventional charging procedures, the following requirements shall be followed.

Ensure that contamination of different refrigerants does not occur, when using charging equipment. Hoses, or lines shall be as short as possible to minimise the amount of refrigerant contained in them.

Cylinders shall be kept in an appropriate position according to the instructions.

Ensure that the refrigerating system is earthed prior to charging the system with refrigerant.

Label the system, when charging is complete (if not already).

Extreme care shall be taken not to overfill the refrigerating system.

Prior to recharging the system, it shall be pressure-tested with oxygen-free nitrogen. The system shall be leak-tested on completion of charging, but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

Refrigerant circuit	
Refrigerant type	R290
Refrigerant charge	150 g
Circuit pressure	28 bar

Decommissioning

HOT WATER HEATER

1. Disconnect the unit from the power supply by unplugging the power cord from the socket.
2. Empty the water heater. Follow the guide under the service, and maintenance chapter for correct procedure.
3. Disconnect, and remove the ducts and pipes from the unit.
4. Close all supply and extract air dampers, so that no condensation forms in the ducts.
5. Dispose of the product in accordings to national and local waste removal regulations. Beaware that the product contains batteries placed on the base board.

REFRIGERENT

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment, and all its detail.

It is recommended good practice that the oil are recovered safely. Prior to the task being carried out, an oil sample shall be taken in case analysis is required prior to re-use of recovered oil.

It is essential that electrical power is available before the task is commenced.

1. Become familiar with the equipment and its operation.
2. Isolate system electrically.
3. Before attempting the procedure, ensure that:
   - Mechanical handling equipment is available for handling refrigerant cylinders.
   - All personal protective equipment is available and being used correctly;
   - The recovery process is supervised at all times by a competent person;
   - Recovery equipment and cylinders conform to the appropriate standards.
4. Remove the refrigerant from the circuit, if possible.
5. If a vacuum is not possible, make a manifold so the refrigerant can be removed from various parts of the system.
6. It is recommended that cylinder is situated on the scales before recovery takes place.
7. Start the recovery machine and operate in accordance with instructions.
8. Do not overfill cylinders (no more than 80% volume liquid charge).
9. Do not exceed the maximum working pressure of the cylinder, even temporarily.
10. When the cylinders have been filled correctly and the process completed, make sure that the cylinders, and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
11. Recovered refrigerant shall not be charged into another refrigeranting system unless it has been cleaned, and checked.
12. The unit shall be labelled stating it has been decommisioned and emptied of refrigerant. The label needs to contain date of decommision and signed by the responsible person.

10 DISTURBANCES IN COMFORT

Troubleshooting

BASIC ACTIONS

- Is the cold water supply open?
- Has the periodic cleaning of the evaporator, condensation drain, and the fan, as described in the maintenance section, been followed?
- Has any of the safety features disengaged the heat pump/electrical immersion heater?
- Has external short-circuiting of terminals disengaged the heat pump?
- Has factory resetting been tested?

If it is not one of the above errors, please contact:

- In the warranty period (0-2 years): The installer, from which the unit was purchased.
- After the warranty period (> 2 years): The installer from which the unit was purchased, or partners of the manufacturer.

TIP
When contacting the installer be ready with the information on the type plate / silver label.

DOES NOT START

Possible reason:

= Thermal fuse turns on/off (click sound)

= Wrong power and voltage supply 10/13A (230 V)

= No sound emission from the compressor, no heating of hot water, and no pressure difference, when the heat pump is on means the compressor is blocked.

= Humming sound from the compressor.

→ The capacitor is faulty, or the wiring is disconnected.

If one, or all of the above applies do the following:

1. Ensure that the wiring is identical, and placed right.
2. Change the capacitor
3. Change the compressor.

NOT COMMUNICATING

Possible reason:

= Does the display not work?

→ Use the app to control the unit

→ If needed change the display.

LOW HOT WATER TEMPERATURE OR LACK OF HOT WATER

Possible reason:

= The unit is not connected to the power supply

→ Make sure the display turns ON

= Alarms from the controller stop the operation of the heat pump

→ Turn backup mode on. (will only be activated for 1 week)

→ Check the alarms in the Info menu [3.6]

→ Call a technician to help solve the issue.

= Low water temperature set points

→ Increase all temperature set points in menu [1] Hot water temperatures

= Low airflow in evaporator

→ Clean the evaporator, and the air ducts

= Fan does not work

→ Make sure that the fan is connected to the base board, or substitute the component.

= SG Ready function is active

→ Switch OFF SG Ready function

LARGE AMOUNT OF WATER BELOW UNIT

Possible reason:

= Anode or immersion heater is not properly tightened.

→ Retighten the anode to the bottom.

→ Check to see if the O-ring is okay.

→ Tighten the electric heating element again with a 55 mm socket wrench to a force of 20 Nm.

= The condensation pipe is not connected, or connected incorrectly.

→ The condensation pipe is to be connected to a hose directed to a drain.

HIGH SOUND EMISSIONS

Possible reason:

- Too high maximum fan speed

  → Reduce the fan maximum speed in the Installer menu [5.4.1.2]

  → Activate the Silent mode [2]

- Obstruction of the air ducts.

  → Remove the obstruction

- Dirt on fan, or evaporator.

  → Clean the evaporator, and the fan. Do not use cleaning spray that can be damage the EPS housing

- Components vibration

  → Make sure all components including compressor and solenoid valve are well fastened, and placed as instructed by the manufacturer.

DEFROST ALARM

Possible reason:

Pop up window will show on the display, but the unit will not stop production.

Occur frequently with Alarm 240 (cold evaporator).

- Airflow a lot lower than normal operation, could be caused by high pressure drop i the airvent, or low ventilation velocity.

  → Increase the airflow.

  → Ensure that the installation is done correctly

- The installation area have to low of a ambient temperature (< 5 °C)

  → Check that the BT16 sensor is placed in the evaporator.

  → Increase the ambient temperature to over 5 °C

- The condensation drain not connected, or blocked.

  → Ensure the condensation drain is correctly installed

  → Flush the drain to remove any blockage.

- The defrost valve error

  → Ensure the valve is working, if not change the solenoid vale.

When the problem have been resolved, reset the alarm in [3.6.3].

ANODE FAULT

Beaware that if the product should show an anode fault. Contact the installer immediately.

> ⚠ **CAUTION**
> If the anode has been malfunctioning for an extended amount of time. Irreversible damage can have happend to the water heater.

Safety breakers

In the event of a failure on the immersion heater, the safety breakers will shut down the unit. If the set value (90 °C +/- 10 °C) is exceeded, the immersion heater will disconnect. The immersion heater can be reactivated, when the temperature is below 90°C.

To do this, the power to the unit must be switched off, and the front panel carefully removed. Then the reset button in the center of the safety breaker can be pressed. This must only be performed by skilled personnel.

Alarm list

Code	*Problem description*	*Unit reaction and possible solution*
Alarm 104 **Alarm 113** **Alarm 124** **Alarm 153** **Alarm 533** **Alarm 534** **Alarm 550** (Sensor problem)	Temperature sensor BT5, BT6, BT15, BT16, BT20, or BT50/BT53 is showing a value outside the expected area.	**Unit reaction** If Alarm 104 (BT6), 113 (BT20) or 534 (BT16) occur the unit will stop all production of hot water and ask for permission to start the backup mode. If Alarm 550 (BT5), 153 (BT15), or 124 (BT53) occur the unit will continue in normal operation. **To solve the problem, try the following:** 1. Check that the temperature sensor is placed right. 2. Ensure that wire is not damaged, and connected correctly 3. -30 °C means no connection. 4. Change the sensor.
Alarm 164 (Problem with water heater)	**High pressure switch activated** The pressure switch opens, when the pressure in the refrigerant circuit is above 28 bar. **Possible cause:** • Hot water vessel is not completely filled with water • Temperature sensor BT6 is not placed correctly = The BT6 sensor is not placed in the immersion tube in the water heater. = The BT6 sensor is not correctly pluged into the base board. • Component defect / no connection = The wiring and plug for the pressure switch (BP1) is damaged = The plug is not placed into the base board. • Temperature setpoint is set to high?	**Unit reaction** Production of hot water is stopped. Error message will appear on display until reset. **Possible solution:** 1. Open a hot water tap to let air out 2. Open the valve on the cold water inlet 3. When there is no air coming out of the tap. The water heater is filled. → Reset alarm [3.6.3] and check if the issue is solved. If not solved check the following: 4. Check that the temperature sensor is placed correct. → Place the temperature sensor correct in the immersion tube 5. Ensure that the sensor is correctly plugged into the base board. If this is not the issue, then check: 6. Is the wiring and plug for the pressure switch (BP1) damaged? → If yes, replace and inset the plug into the base board (H3) 7. Reset alarm [3.6.3] / unit [5.4.3.3] 8. Check if the water heater is now operating correctly If this not the issue, then check: 9. Is the temperature set too high? → Reduce the temperature for Auto mode [1.1] → Reduce the temperature for Boost mode [1.3] → Reduce the temperature for max HP temperature [5.4.2.4] Have it not been solved. → Then change the baseboard.

Code	*Problem description*	*Unit reaction and possible solution*
Alarm 217	**Anode fault** The anode current has exceeded beyond the threshold for 180 sec. The anode voltage deviation should be between 0,05 V and 0,5 V. The default value is set to 2.30 V. **Possible cause:** • Anode not connected = Go to [3.7.1] and check if the software registere the anode as mounted. • Anode burned off = Go to [3.7.2] and check if the software registere a low voltage from the anode.	**Unit reaction** The control auto reset's the error, and the unit continues to work normally. If the error occure more then three times in 24 hours the heat pumps stops production of hot water. Hot water will not be available before an installer has checked the product. **Possible solutions:** 1. Ensure that the wiring is connected correctly and no damage has occured. If problem is not solved. 2. Manually check the current/power to the anode. 3. If the anode is faulty, replace the anode. 4. If the base board is faulty, replace it. 5. Replace the anode with a new one.
Alarm 222	**The air filter needs to be replaced**	**Unit reaction** The unit will run as normal, but not changing the filter can cause the effiency to fall. Check the following: 1. Change the air filter 2. Reset the alarm [5.1.3]

Code	*Problem description*	*Unit reaction and possible solution*
Alarm 240	**Cold evaporator** Low temperature in evaporator warning. Temperature sensor BT16 is lower than -25 °C, and above -29 °C	**Unit reaction** At first occurrence of error: The fan speed is increased by 15 %. At second occurrence: Defrosting frequency is increased. At third occurrence with in a week: The unit stops productions of hot water and the alarm is shown. Backup mode can be activated to produce hot water with the immersion heater. *To help analyse the problem; Measure the temperature at various points:* • *Before and after the TCV [BT15] and [BT16]*
	Possible cause: • Air flow to low = High temp. difference between BT20 and BT16 = Low effect output = To high pressure loss in the air ducts. = Cold evaporator = Cold after the TCV = Fan not runing	**Possible solution:** 1. Check if the RPM (fan speed) fits the installation. • Is the temperature difference between BT16 and BT20 high? • Is the temperature after the TCV [BT16] low? • Could the duct system have a high a pressure loss? → Increase the RPM → Reset alarm [3.6.3] Is this not the issue, check the following: 2. No noise from the fan or air ducts? • Check to see if the fan is runing • Check that wiring is not damaged and correctly plugged in for the fan. → Change the fan, if this is the issue.
	• Defrosting blocked = Condensation drain blocked	Check the following, if the fan is not the issue 3. Ensure that the condensation drain is not blocked. = If it is blocked. → Remove blockage. → Ensure that no water is left under the evaporator. If the condensation is not blocked. 4. Check if the liquid line [BT15] after the evaporator is cold. → Increase the defrost setpoint [5.4.2.6] from 4 °C to 10 °C. → Set the min. ambient temperature [5.4.2.1] to 5 °C. (the immersion heater will now turn on, when the inlet air temp. is under this setpoint) → Reset alarm [3.6.3]
	• Ambient temperature low = Air inlet to cold. The unit is placed in an environment which is too cold.	If defrost is not the issue, then check: 5. Ensure that the product is placed in an ambient temperature not under 5 °C. 6. Check the air inlet temperature is not below -10 °C. = If indicated that the ambient temperature is low then: → Set the min. ambient temperature [5.4.2.1] to 5 °C. (the immersion heater will turn on, when the inlet air temp. is under [5.4.2.1]) If the ambient temperature is not an issue, then check:
	• Solenoid magnet valve / bypass valve = Magnet is missing a screw	7. Check wiring of the solenoid magnet valve. 8. Ensure that the screw is tighten securely. → If not, tighten it. → Replace screw if missing.

Code	*Problem description*	*Unit reaction and possible solution*
Alarm 359 Most often the cause	**Max temperature in evaporator has been exceeded!** The maximum allowed evaporator temperature, BT16, has been exceeded. [?] **Possible cause:** • Refrigerant leakage = Low Temp. after the TCV, and high airflow and temperature on the vent input. = Low effect = High compressor temp. = Low evaporator pressure • Wrong placement of the BT16 sensor = Normal heating of hot water = BT16 fault (Alarm 534) • Hot sommer day = Vent output over 30 °C	**Unit reaction** The unit blocks production of hot water with the heat pump. **Possible solutions:** 1. Check if the temperature after the TCV is low in comparison to BT16 (for ex. 10 °C under), while having a high air flow and low temp. vent input [BT20]? 2. Is the temperature after the compressor high? 3. But the heat up time is long? = It is properly a refrigerant leakage. → Check for a visible leakage on the refrigerant circuit → Follow the instructions for service on the refrigerant before working on fixing the problem. → Or replace the unit. If the issue is not a leakage, then check the following: 4. Check that the sensor is placed correctly in the evaporator. 5. Ensure that the wiring is identical and not damaged. → Try to unplug and replug the sensor to the baseboard once more. → Reset alarm [3.6.3] → If non of that worked change the sensor. If it is not the placement of the sensor then check the following: 6. Check the ventilation output temperature. = If it exceeds 30 °C → Turn the ventilator speed [5.1.1] down to cool the air more. This will result in a lower evaporator temperature in the refrigerant circuit.

Code	*Problem description*	*Unit reaction and possible solution*
Alarm 631 (Problem in the refrigerant circuit)	**High temperature in the evaporator.** The temperature sensor BT16 is higher than BT20 - 2 °C for more then 20 minutes. Which means no refrigerant effect/no flow in the refrigerant circuit.	**Unit reaction** At first occurrence of error: The unit opens and closes the solenoid. - Operation continues At second occurrence: The unit starts the additional heat to reach setpoint. At third occurrence within a week: The unit stops all operation, and an alarm is displayed. (Call service provider!) Active the backup mode to get hot water in the meantime.
	Possible cause • Refrigerant leak = Hot compressor = Very low heating capacity = Low temperature after TCV = Low refrigerant pressure measured	**Possible solution** 1. Find the leaking component 2. If a leaking component can't be localized visionally, check if the data fits: • Higher temperature before evaporator than after. • Long heat up time (compare to relevant installation) • High temperature after compressor • Low evaporator pressure • Low subcooling; Temperature difference between water heater [BT6] and [BT15] is less then 3 K. If the data indicates a leakage, then check if the leakage is caused by the expansion valve or magnetvalve.
	If the expansion valve won't shut or is leaking, then the following should be evident: = Small temp. difference before and after the TCV. = Temp. difference before and after the compressore is less than 10-15 °C = Low temp. difference before and after the condensator, and evaporator	3. Check if the temperature difference is small, before and after the TCV [BT15-BT16] ? 4. And if the temperature difference before and after the compressor is less then 10-15 °C? → If both are evident, then the issue is the TCV valve. If it is not the TCV valve, then check the magnet valve.
	If the magnet valve is leaking the following should be evident: = Temperature higher before evaporator then after (in the refrigerant circuit) = Temp. difference before and after the compressore is less than 10-15 °C = Won't happen daily, but weekly.	5. Check if the temperature [BT16] is higher then the temperature after the evaporator? 6. Is there a small temperature difference before and after the TCV [BT15-BT16] ? 7. Is the temperature difference before and after the compressor less then 10-15 °C? 8. Any detected leakage from the valve? (do not use live fire!!) → If everything is evident, then the magnet valve is the issue. If a leakage is detected: → Follow instructions on removal, and evacuation of the refrigerant → Replace components → Follow instructions on how to fill the system. If no leakage is detected, then check:
	• Filter blocked = High temperature difference before and after the filter.	9. Is the temperature difference high before and after the filter [BT15-BT16]? = The a blockage is located in the filter. → Replace the filter Still not the issue, then check the following:

Code	*Problem description*	*Unit reaction and possible solution*
	• Expansion valve blocked or not working = Is it the TCV which is the problem, then there will be a low temp. after the TCV, plus a high compressor temperature.	10. Is the bulb placed correctly after evaporator? → If no, then correct the placement and reset error. 11. Is the temperature after the TCV low, and after the compressor the temperature is high? → If yes, check the following to confirm if the problem is the bulb or the TCV. 12. Does the bulb and the TCV work? → Move the bulb to a place with a high temperature. → Measure the temperature after the TCV again. → If the temperature has not increased then = The TCV is not working → Replace the TCV If this is not the issue, check the following:
	• BT16 placed wrong = Alarm 534	13. Check if alarm 534 have occured under the alarm log [3.6.1]. If yes, do the following: → Ensure the sensor is placed correctly. → Ensure that the wiring is identical, and placed right. → Reset alarm [3.6.3] → Change the sensor if point 1-3 have not helped. If alarm 534 have not been activated, then this is not the problem, check if the issue is with the compressor:
	• Safety breaker on compressor activated = A click sound can be heard. Which is the fuse turning on and off. (Compressor outlet should not exceed 160 °C)	14. Is a clicking sound evident? = If yes, then the safety breaker on the compressor have actived. → Change the compressor. If no clicking sound is heard then check:
	• Compressor blocked from operation = The voltage supplied could be too low or too high = Compressor emits an uneven sound. = The temperature in the water heater does not rise under heat pump production. = When the heat pump is running check pressure difference before and after compressor. (No pressure difference = compressore is blocked)	15. Ensure that the wiring is identical, and placed right. 16. Ensure that the correct power supply is used. 17. Set the product in forced operation [5.4.3.2.2] → Check if the compressor emits an uneven sound. → Check if the hot water temperatur is rising under hot water production. → Check the pressure difference before and after the compressor. If the compressor is the issue. → Replace the compressor

11 ACCESSORIES

Detailed information about the accessories and complete accessories list available at www.metrotherm.dk

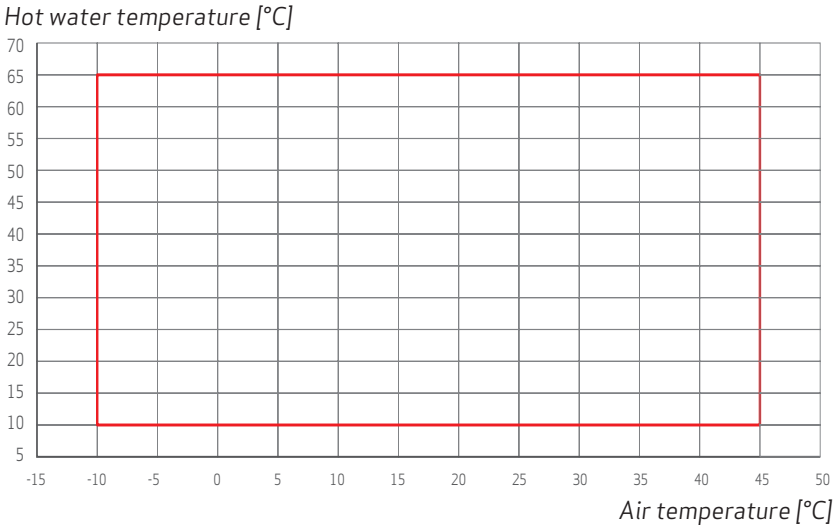
Not all accessories are available on all markets.

SMART DISPLAY
Part no. 6166441012

2 Only available with the smart display

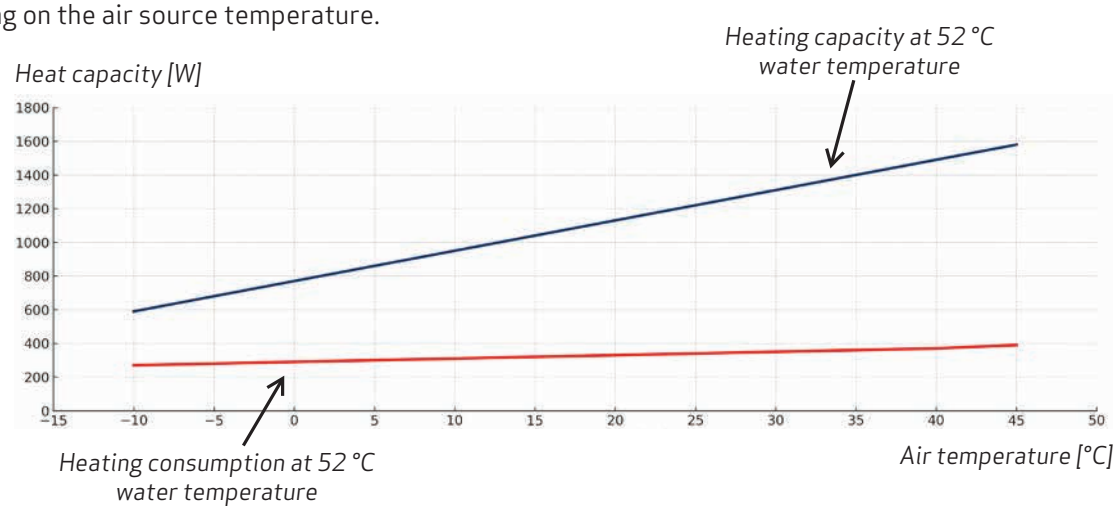
12 TECHNICAL DATA

WORKING RANGE, HOT WATER PRODUCTION



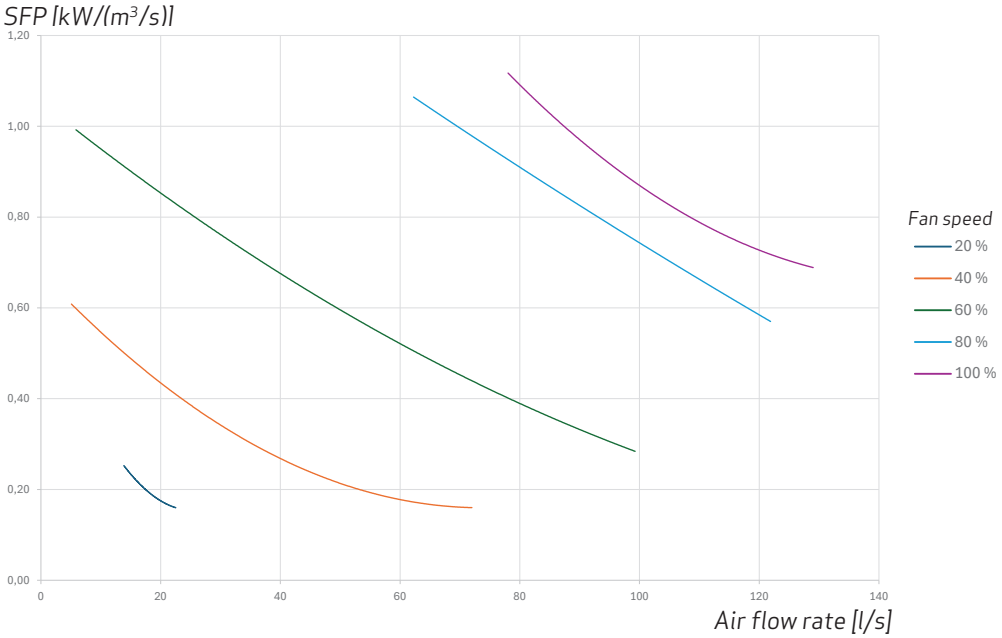
HEAT CAPACITY

Depending on the air source temperature.



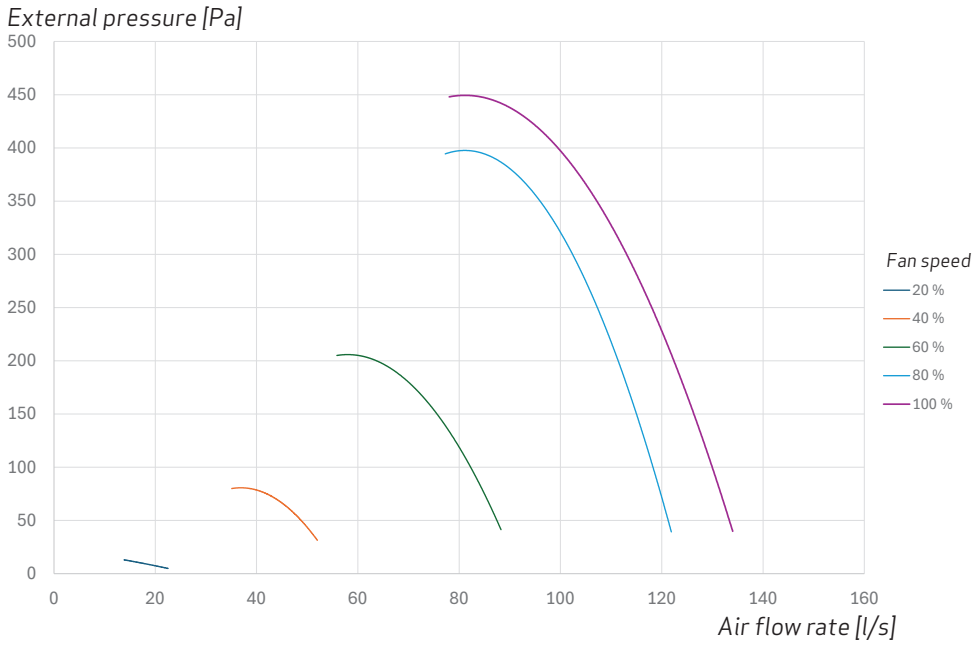
SFP VS. AIR FLOW RATE

SFP is the electrical power consumption required to move a specified air volume.



EXTERNAL PRESSURE

Available external pressure at a given air volume, depending on the selected fan speed.



1 *Only relevant for variations with a solar coil*

Technical specifications

Type		*6519*	*6526*
Electrical data			
Rated voltage	V	230 V - 50 Hz	
Max operating current (Recommended fuse rating).	A	10 (13)	
Driving power fan	W	90	
Compressor driving power	W	270	
Additional heater / immersion heater	W	1500	
Total driving power	W	2060	
Enclosure class	-	IP21	
Wireless 2412 - 2484 MHz max power	dBm	18	
Refrigerant circuit			
Type of refrigerant	-	R290	
GWP refrigerant	-	0,02	
Filling amount	kg	0,150	
CO_2 Equivalent	ton	0,000003	
Ventilation			
Min. airflow (exhuast air)	m^3/h	60	
Min. airflow (outdoor air)	m^3/h	150	
Max. air flow rate	m^3/h	450	
Min. temperature	°C	-10	
Max. temperature	°C	45	
Connections			
XL3 Cold water	-	3/4"	
XL4 Hot water	-	3/4"	
XL5 Water circulation	-	3/4"	
XL8 Coil connection. Supply[1]	-	3/4"	
XL9 Coil connection. Return[1]	-	3/4"	
XL43 incomning air	mm	160	
XL44 outgoing air	mm	160	

Type		*6519*	*6526*
Water heater			
Volume, water heater	litre	192	260
Volume, coil[1]	litre	4	5
Volume, water heater with coil[1]	litre	187	252
Surface area of coil[1]	m^2	0,9	1,2
Corrosion protection	-	Ti - Impressed current anode	
Material of the water heater vessel		Enameled steel	
Min. Pressure in water heater	barg	0 (0)	
Max. Pressure in water heater	barg	0,1 (10)	
Min. temperature	°C	10	
Max. temperature	°C	65	
Capacity, hot water heating according to EN16 147 *(Air temp. 7 °C, Water temp. 55 °C)*			
Tapping load profile	-	L	XL
Air flow rate	m^3/h	300	350
Tap volume 40 °C (V_{max})	litre	247	340
COP (COP_t)	**-**	**3,66**	**3,7**
Heatloss (P_{es})	W	23	24
Heat up time (HP only)	h:m	09:29	14:05
Heat up time (Boost mode)	h:m	02:59	05:00
Heating capacity (HP only)	W	1050	1050
Capacity, hot water heating according to EN16147 *(Air temp. 14 °C, Water temp. 55 °C)**			
Tapping load profile	-	L	XL
Air flow rate	m^3/h	300	350
Tap volume 40 °C (V_{max})	litre	247	340
COP (COP_t)	**-**	**3,88**	**3,9**
Heatloss (P_{es})	W	20	23
Heat up time (HP only)	h:m	08:10	12:33
Heat up time (Boost mode)	h:m	02:53	04:16
Heating capacity (HP only)	W	1170	1170
Capacity, hot water heating according to EN16147 *(Air temp. 20 °C, Water temp. 55 °C)*			
Tapping load profile	-	L	XL
Air flow rate	m^3/h	190	180
Tap volume 40 °C (V_{max})	litre	247	340
COP (COP_t)	**-**	**4,13**	**4,16**
Heatloss (P_{es})	W	18	22
Heat up time (HP only - Auto mode)	h:m	07:45	11:00
Heat up time (Boost mode)	h:m	02:35	03:32
Heating capacity (HP only)	W	1280	1280
Dimensions and weight			
Width	mm	600	600
Depth	mm	648	648
Height, incl. feet	mm	1579	1935
Gross ceiling height (tiping high)	mm	1909	2224
Gross height	mm	1760	2120
Gross depth	mm	670	670
Gross width	mm	610	610
Gross weight (coil version)	kg	91 (107)	106 (112)
Netto weight, dry (coil version)	kg	79 (95)	93 (109)
Netto weight, wet (coil version)	kg	270 (290)	351 (371)

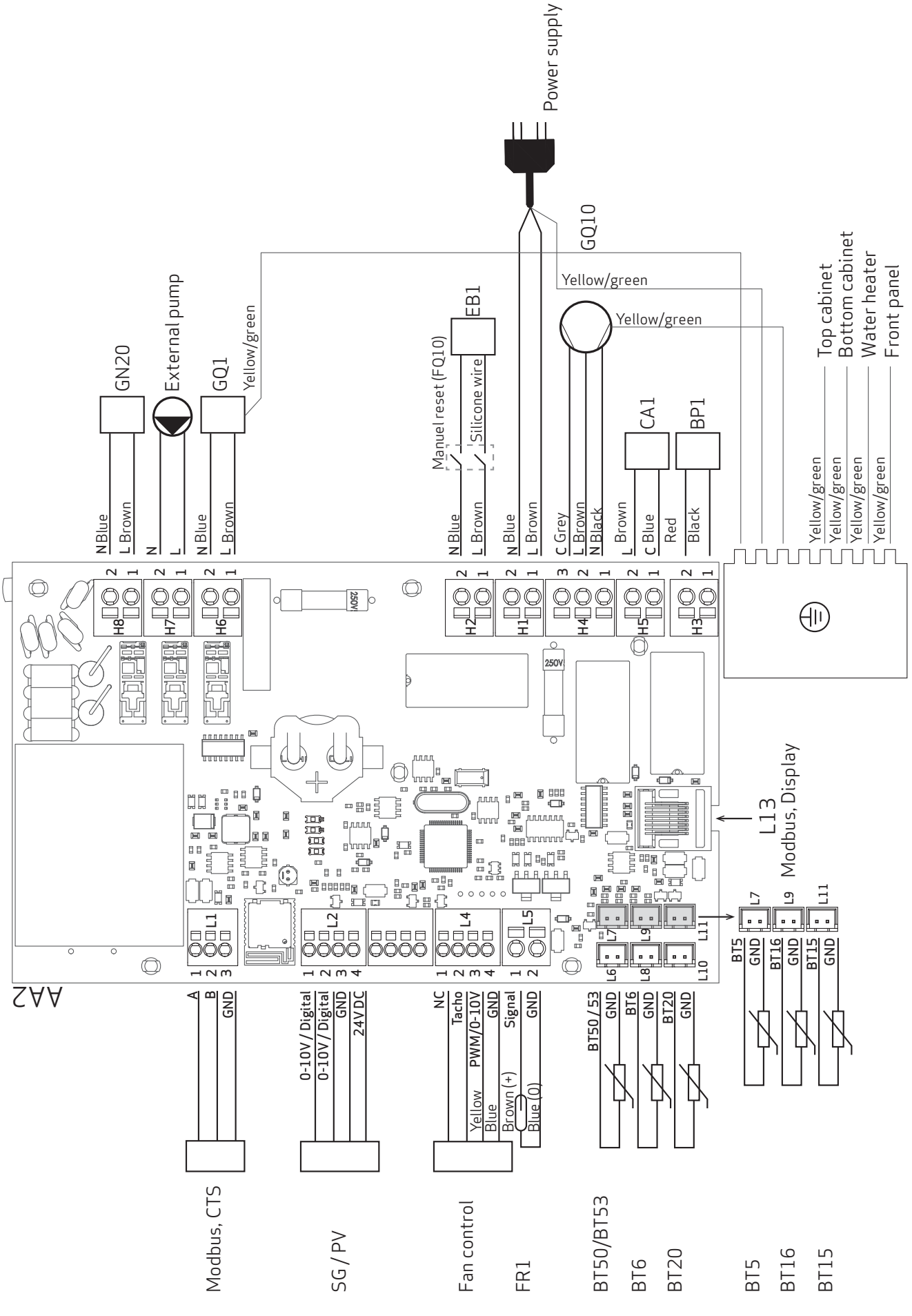
**Interpolation values based on external and internal test performance data.*

Energy labelling

INFORMATION SHEET

Producent		*METRO THERM*	
Type		*6519*	*6526*
Temperature application	°C	55	55
Declared load profile for water heating		L	XL
Water heating energy efficiency class, average climate		A+	A+
Annual energy consumption water heating, average climate	kWh	614	1043
Water heating energy efficiency, average climate	%	167	161
Sound power level L_{WA} indoors	dB	47	47
Annual energy consumption water heating, cold climate	kWh	-	-
Annual energy consumption water heating, warm climate	kWh	-	-
Water heating energy efficiency, cold climate	%	-	-
Water heating energy efficiency, warm climate	%	-	-
Sound power level L_{WA} outdoors	dB	-	-

Electrical circuit diagram



13 ITEM REGISTER

A
Accessories 58
  CO2 sensor 58
  Condensation adaptor 58
  Control panels 58
  Humidity sensor 58
  myUplink 58
Anode 36, 47, 53

C
Cabinet 26
  Removing the top cabinet 26
Cleaning 46, 47
Cold and hot water
  Connecting cold and hot water 21
Commissioning and adjusting 30
  Filling and venting 30
  Preparations 30
  Start-up and inspection 30
Connecting sensors 27
Control - Menus 34
  Menu 1 - Hot water temperature 34
  Menu 2 - Operating mode 35
  Menu 3 - Info 36
  Menu 4 - Schedule 38
  Menu 5 - Main menu 39
    Menu 5.4 - Installer settings 42
Cooling 41, 44

D
Display
  Change of display 47
  Smart display 10, 58

E
Electrical circuit diagram 64
Electrical supply cable 47
Energy labelling 63
  Information sheet 63
External control 45

F
Filter 30, 43
Floor heating 40, 44
  Pump 29
Forced operation 45
Front panel 25
  Removing the front panel 25

H
Hygrostat 45

M
Modbus 45

O
Operating mode 35

P
Pipe connections 16, 19
PV 31, 40, 44

R
Recovery 6
Refrigerant 48
  Charging procedures 49
  Removal and evacuation 48

S
Safety information 4
  Before working on the unit 5
  Care 5
  Caution 4
SG ready 44
Solar collector 40
  Pump 29
Start-up and inspection 30
  Setting the ventilation 30
Supply cord 47
System diagram 19

T
Technical specifications 61
Temperature limiter 26
Troubleshooting 50

V
Ventilation 36, 43
Ventilations connections 22
Ventilation settings
  Air temperatures 43
  Fan setting 40
  Fan speed 40, 43

W
Working range 59

METRO THERM A/S
RUNDINSVEJ 55
DK3200 HELSINGE
SOS@METROTHERM.DK
WWW.METROTHERM.DK

08:970-2609