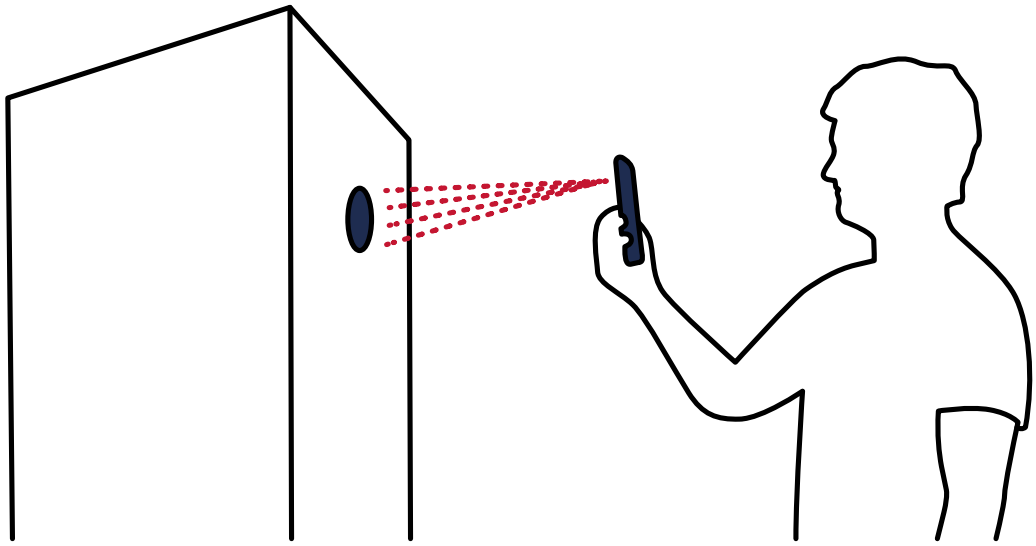
QVANTUM

Qvantum QG-7/-14

Ground/water source heat pump

Installation and user handbook

QCH EN 2615-A
1014923



QVANTUM APP

Have all the controls for your heat pump, in the palm of your hand.

The Qvantum app is a necessary companion for installing and setting up your Q unit. The app is available on both App Store and Google Play.

By scanning the QR code on your Q unit, you can connect to the unit through Wi-Fi or Bluetooth. During commissioning, you will be guided through the entire installation process.

Once the connection is established, you can use the app to access all relevant information and settings for your product.

CONTENTS

1 IMPORTANT INFORMATION

General

WARNING

Read this manual before starting the unit for the first time.

It is the owner of the product that is responsible for the system. If you suspect that the product is defective, contact your dealer.

TIP

For the latest available product documentation, visit qvantum.com.

Safety

This appliance can be used by children from 8 years and above and people with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning the use of the appliance in a safe way and understand the hazards involved. Children must not play with the appliance. Cleaning and maintenance must not be performed by children unless they are older than 8 and supervised.

The manual must be available for people who install, support or use the product.

Work must follow the instructions described in this manual. Companies and persons installing and maintaining the product must have the required certificates, licenses and qualifications.

The work must comply with current regulations and practices and be carried out professionally.

When powering up the product, there must be no frozen water in the system.

Wiring and electrical installation must be performed in compliance with national regulations.

It must be possible to safely disconnect the electrical power supply to the unit. Install the power supply with an isolator switch and size the cable area based on the fuse rating that is being used.

Operating pressures

- Distribution system
  - Min (MPa/bar): 0.05/0.5
  - Max (MPa/bar): 0.3/3
- Domestic hot water
  - Min (MPa/bar): 0.05/0.5
  - Max (MPa/bar): 0.9/9
- Source medium
  - Min (MPa/bar): 0.05/0.5
  - Max (MPa/bar): 1/10

Operating temperatures

- Distribution system
  - Min (°C): 7
  - Max (°C)[1]: 80
- Domestic hot water
  - Min (°C): 1
  - Max (°C)[1]: 60
- Source medium
  - Min (°C): -10
  - Max (°C): 40
- Ambient
  - Min (°C): 5
  - Max (°C): 35

[1] With compressor and immersion heater.

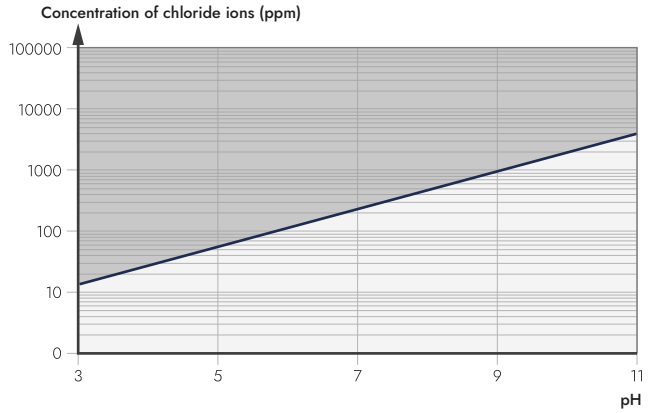
Water quality

The product has a plate heat exchanger that should not be exposed to corrosive water. To avoid corrosion, the water must meet the following quality requirements.

ELEMENT/COMPOUND/ PROPERTY		LIMIT
pH	-	7.5 – 9.0
Conductivity	µS/cm	< 500
Total hardness	°dH	4.5 – 8.5
Free chlorine	ppm	< 1.0
Ammonia (NH_3)	ppm	< 0.5
Sulphate (SO_4^{2-})	ppm	< 100
Hydrogen carbonate (HCO_3^-)	ppm	60 – 200
(HCO_3^-) / (SO_4^{2-})	-	> 1.5
(Ca + Mg) / (HCO_3^-)	-	> 0.5
Chloride (Cl^-)		See diagram.

The allowed chloride level depends on the pH of the water and the maximum temperature the plate heat exchanger is exposed to.

Do not expose the plate heat exchanger to chloride levels in the shaded area of the diagram. This can cause crevice corrosion.



Network interfaces and services

The following network interfaces and services can be exposed to the internet:

- Cloud connection (AWS IoT Hub) over Wi-Fi
- Bluetooth.

Symbols

The manual contains the following symbols

WARNING

This symbol describes information that is of great danger to people or equipment.

CAUTION

This symbol describes information that could cause danger to people or equipment.

NOTE

This symbol describes information that is crucial when installing or servicing the product.

TIP

This symbol describes information that can be helpful when installing or servicing the product.

Product labels

These labels are found on the product.

CE marking indicates that a product has been assessed by the manufacturer and deemed to meet EU safety, health and environmental protection requirements.

IP21 Protection classification against water and dust in the electrical enclosure.

Warning label that indicates that the product contains flammable material.

Warning label that indicates that open flames or other ignition sources are prohibited.

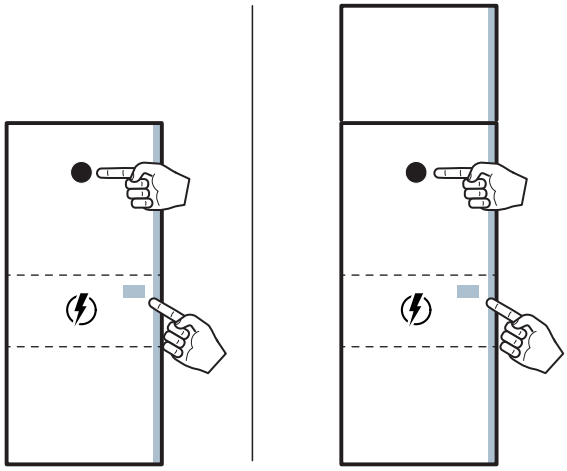
Read the supplied documentation.

Read the supplied documentation.

Serial number and QR code

The serial number and QR code of the QG are visible at the following locations.

- Electrical box cover
- Packaging
- User interface.



Product registration

The product must be registered for the warranty to take effect. The product can be registered no more than 12 months after the delivery date from the factory and no more than one month after the installation. If the product is registered at a later stage, the warranty period will be affected.

The product registration is done as part of the start-up guide in the Qvantum app.

Environmental information

Recycling

At the end of the electrical products useful life, is must not be disposed of with household waste.

Recycle at waste facility. Check with your local authority or retailer for local recycling regulations.

Packaging content

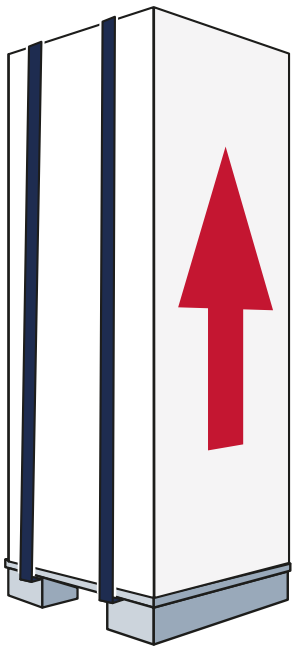
The product packaging contains the following materials.

MATERIAL	WEIGHT
Paper	3.3 kg
Plastic	0.47 kg
Wood (pallet)	6 kg
Steel (reinforcement on pallet)	0.5 kg

2 BEFORE INSTALLING

Transport

Transport the product in an upright position. Ensure that the product is adequately secured so it does not fall down during transit.



At arrival, ensure that the product was not damaged during transport and that the tilt guard has not been triggered.

If the product must be tilted after arrival, always tilt it backwards.

If using a trolley or hand truck when moving the product, always have the product standing on the pallet.

NOTE

The tilt guard ensures that the product is not exposed to inappropriate handling during transit. Once the product has been delivered, the tilt guard might be triggered when the product is moved to the installation area.

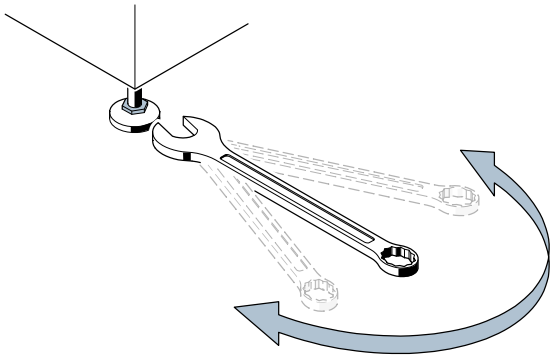
Installation area

Ensure that the following installation area requirements are fulfilled.

- The foundation withstands the weight of the product when it is filled.
- As the product may release water, the installation area should be equipped with a floor drain or equivalent water drainage solution.
- The area is frost-free.

TIP

The feet under the product must be adjusted to ensure that the product is stable and positioned in level. Use a wrench or an open end spanner (size 17) to adjust the feet.



Setup dimensions

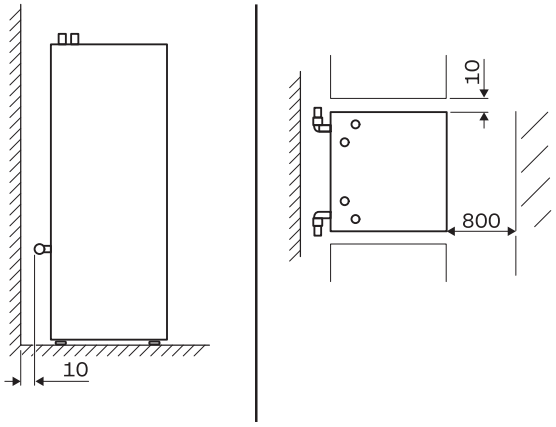
CAUTION

A minimum of 800 mm free space must be available in front of the product.

The unit must not be placed in direct connection to the background wall or in connection to adjacent interior details as it can create unwanted noise. A minimum of 10 mm of clear space should be left behind and next to the unit.

NOTE

Pipework behind the product shall not touch the wall.



Additional components

Supplied components

The supplied components package contains the following items:

#	COMPONENT
1	Indoor temperature sensor
1	Outdoor temperature sensor
1	Supply line temperature sensor
1	3-pin busbar
1	Distribution system refill hose
3	Filterball valve (internal thread)[1]
QG-7: 2	Pipe connector[2]
QG-14: 2	90-degree compression fitting (external thread)[3]
1	Vent hose
1	Snap-on ferrite core
1	Router

1 QG-7: Three G 3/4", int. thread. QG-14: Two G 3/4", one G 1", int. thread.
2 G 3/4".
3 28 mm/G 1", ext. thread.

Accessories

The product can be complemented with the following accessories.

ACCESSORY	PART NUMBER
Extension base	9330549
Top cabinet	1003365
QT - Room display	1011304

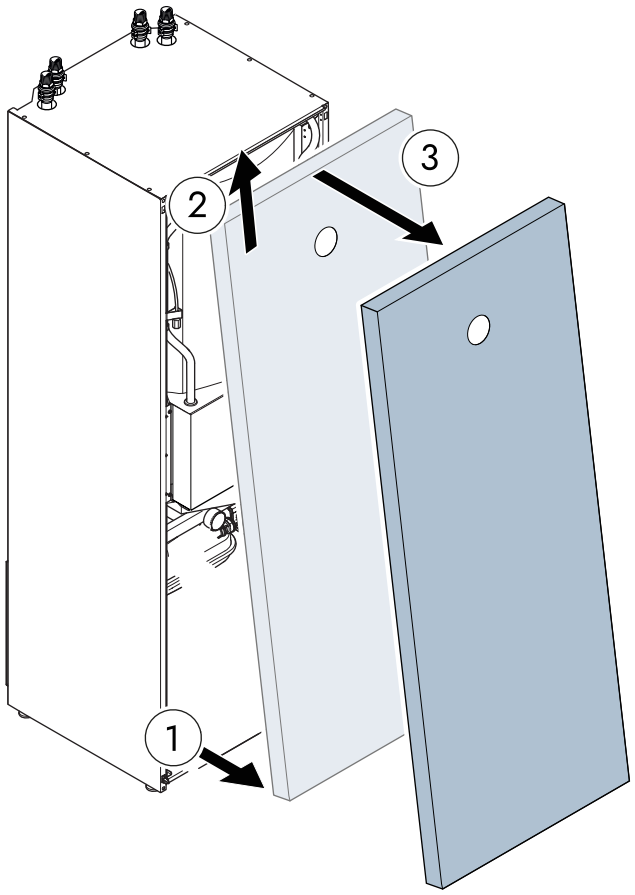
Front cover removal

The front cover of the unit is mounted with clips that are on the frame of the product. The cover rests on brackets that are on the top of the frame.

NOTE

Be careful when removing the hydronic unit cover to avoid causing damage to the ethernet cable and display unit.

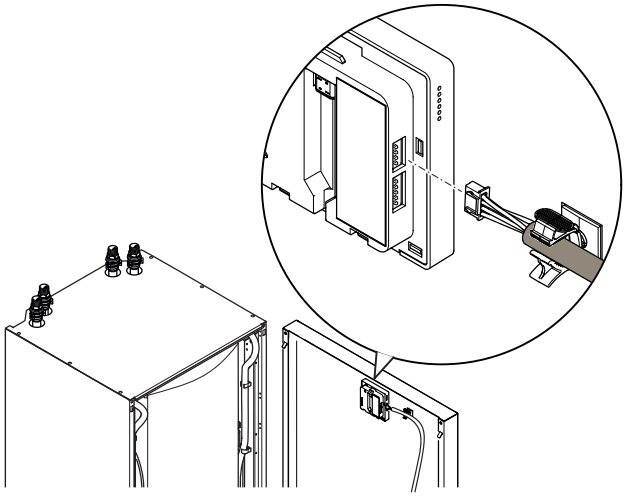
1. Carefully pull the bottom of the cover from the hydronic unit.
2. Lift the cover upwards.
3. Remove the cover from the unit.



Disconnecting the display unit

The display unit is connected with a power and communication cable on the front cover. Remove the cable before moving the front cover too far away from the hydronic unit.

For most installation and servicing tasks, disconnecting the display unit is not necessary. The display cable is long enough for placing the front cover in close proximity to the unit.



3 COMPONENTS

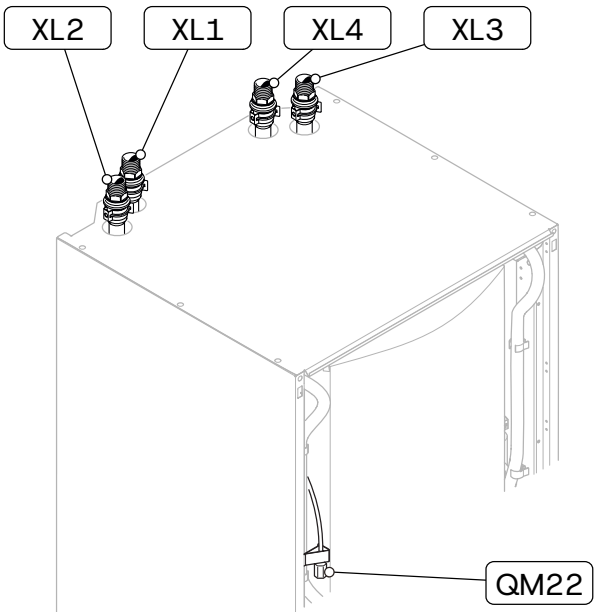
Overview

The Qvantum QG is a ground-source heat pump that consists of one hydronic unit and one or two compressor units. QG-7 has one compressor unit and QG-14 has two compressor units.

The hydronic unit is connected to the facility's distribution and domestic hot water systems through connections that are on top of the product. The hydronic unit also contains the product's electrical connections and user interface.

The source medium circuit is connected to the compressor unit(s) through connections that are on the lower back of the product.

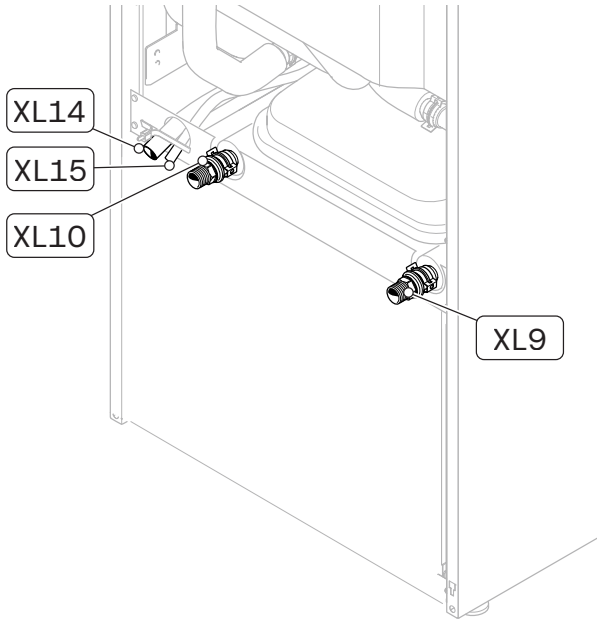
Plumbing connections



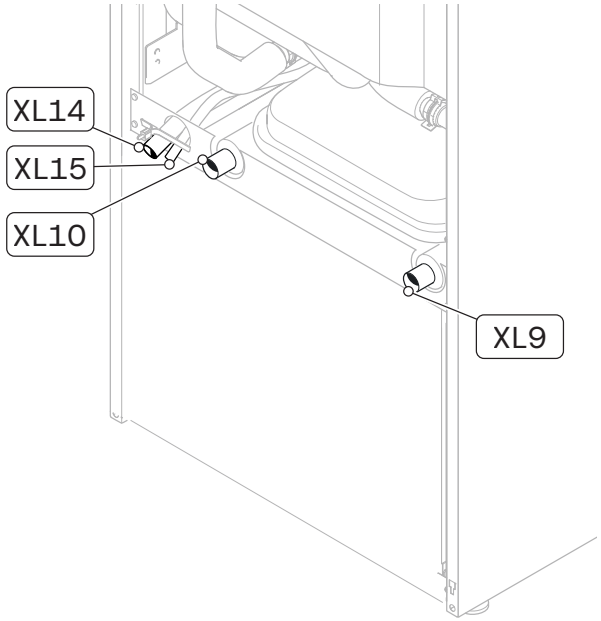
ID[1]	COMPONENT
QM22	Bleed valve, buffer tank
XL1	Connection distribution system, supply line
XL2	Connection distribution system, return line
XL3	Connection, cold water
XL4	Connection, hot water

1 Component designations in accordance with IEC 81346.

QG-7



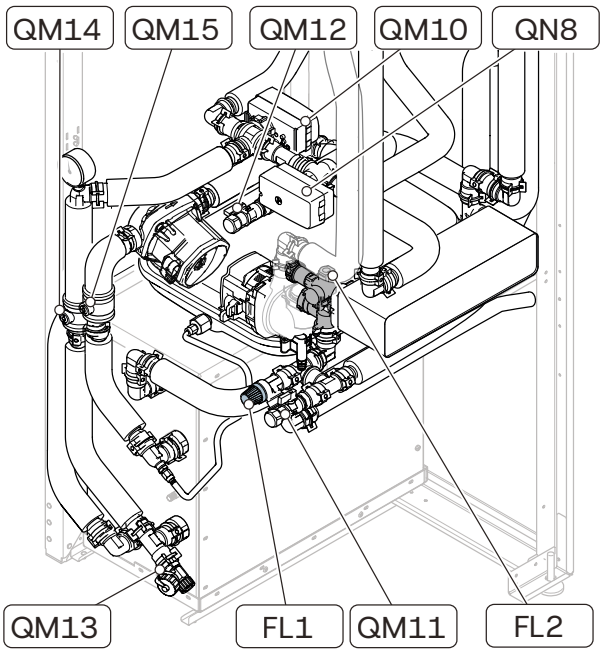
QG-14

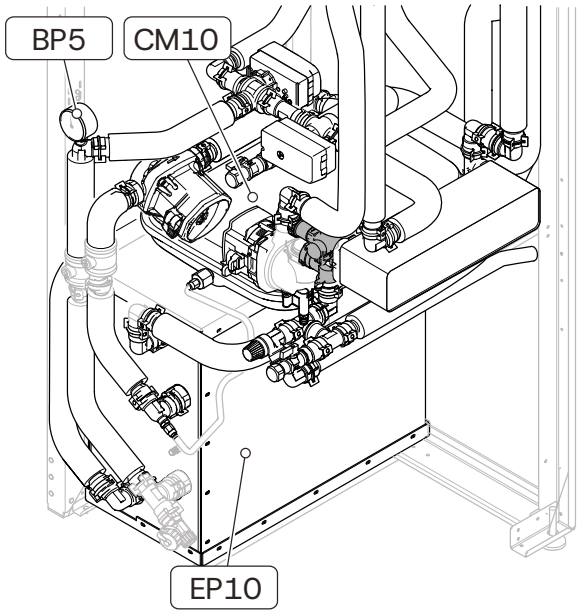


ID[1]	COMPONENT
XL9	Connection, source medium in
XL10	Connection, source medium out
XL14	Safety valve outlet, domestic hot water
XL15	Safety valve outlet, distribution system

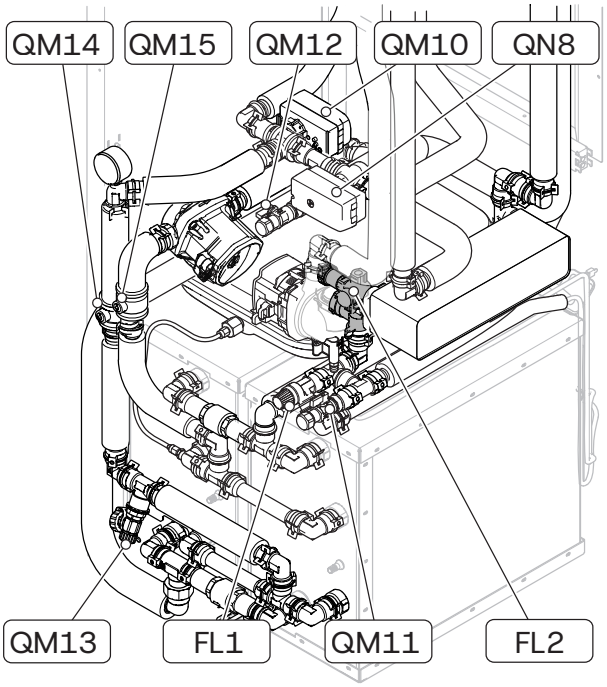
1 Component designations in accordance with IEC 81346.

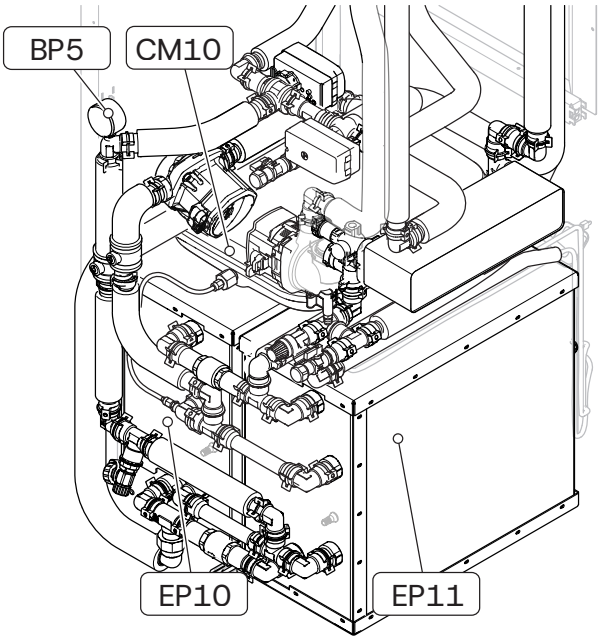
QG-7





QG-14



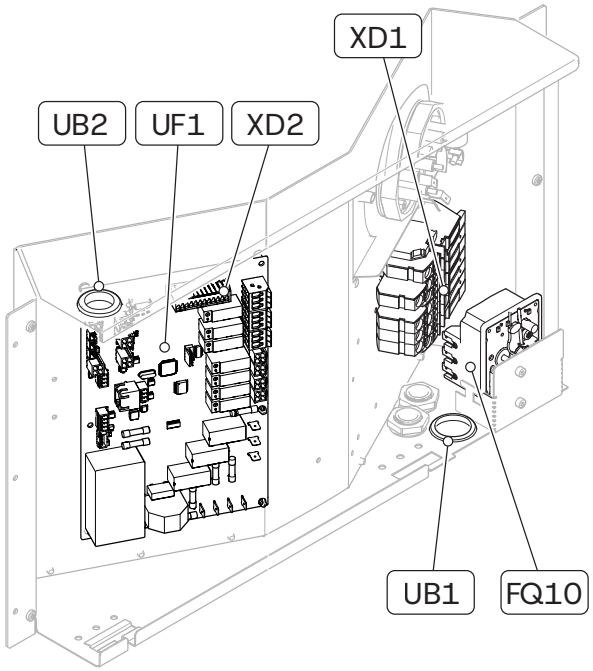


ID[1]	COMPONENT
BP5	Pressure gauge
CM10	Expansion vessel
EP10	Compressor unit 1
EP11	Compressor unit 2
FL1	Safety valve, hot water circuit
FL2	Safety valve, distribution system
QM10	Diverting valve
QM11	Primary refill valve, distribution system
QM12	Secondary refill valve, distribution system
QM13	Drain valve, buffer tank
QM14	Shut-off valve, heating medium in
QM15	Shut-off valve, heating medium out

ID[1]	COMPONENT
QM23	Bleed valve 1, source medium
QM24	Bleed valve 2, source medium
QN8	Mixing valve

1 Component designations in accordance with IEC 81346.

Electrical box



ID[1]	COMPONENT
FQ10	Safety temperature limiter (STL)
UB1	Cable entry, power supply
UB2	Cable entry, communication and sensors
UF1	Main board
XD1	Terminal block, power supply
XD2	Terminal block, communication and sensors

1 Component designations in accordance with IEC 81346.

4 PIPE INSTALLATION

Pipe installation, general

NOTE

The pipe installations must be performed in accordance with applicable regulations.

The pipe connections face the top and the back of the heat pump. The radiator system must be correctly adjusted so that the house has a balanced heat transfer.

For best performance and operational reliability, the maximum allowed supply line temperature should not exceed 55 °C.

CAUTION

The temperature settings must be adjusted to accommodate the highest allowed supply line temperature of the distribution system. Not setting the correct temperatures can cause serious structural damage.

CAUTION

To avoid damage to components, ensure that the piping system is flushed out before connecting the heat pump.

CAUTION

If a private well is present for drinking water, install an extra water filter.

NOTE

If there is a risk of sound transmission, connect the product with diffusion-tight flexible hoses.

Operating principle

The energy source medium, such as from a borehole (1), is directed to the heat pump's evaporator (2). As the source medium passes through the evaporator, the refrigerant evaporates due to its low boiling point. This causes the source medium to release energy into the refrigerant. The refrigerant is then compressed in the compressor (3) and the temperature rises considerably. The discharge is led to the condenser (4), where the refrigerant releases its energy into the water of the heating system, transforming the refrigerant from gas to liquid.

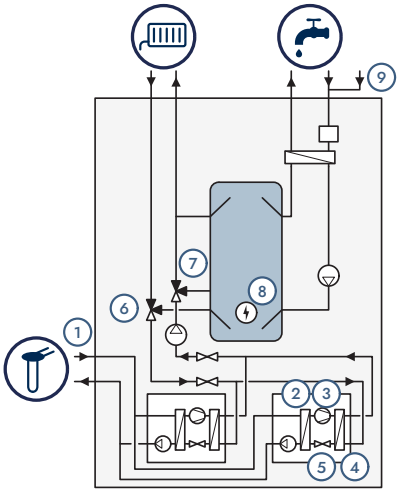
The refrigerant then passes to the expansion valve (5) where the pressure and temperature are reduced. The circuit is now complete, and the refrigerant passes back through the evaporator.

The heat pump distributes the heat to heating or domestic hot water via a diverting valve (6). If the compressor can not cover the demand in cold weather conditions, the mixing valve (7) starts to open, allowing additional heat stored in the buffer tank to be distributed. At this stage the temperature in the tank will be maintained by the built in immersion heater (8) which is switched on in stages as needed.

Hot water circulation (9) is installed and controlled outside of the unit.

NOTE

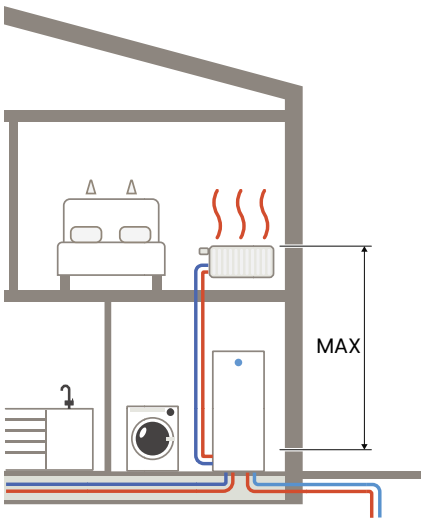
The following image is a principle picture. The locations of components do not correspond with the actual product.



System volume

The expansion vessel (CM10) in the unit has a volume of 12 litres. The vessel has a pre-charge pressure of 1 bar. It is recommended that the height difference between the expansion vessel and the highest installed radiator does not exceed 7 meters ("Max" in the following image).

The height difference is measured between the center of the expansion vessel and the top-level radiator.

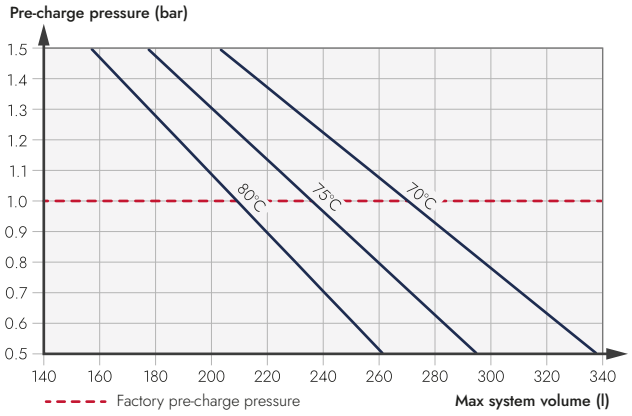


NOTE

If the pre-charge pressure is too low, the valve on the expansion vessel can be used for refilling of nitrogen. Changing the pre-charge pressure can affect the expansion vessel's capacity for accommodating the expansion of the water.

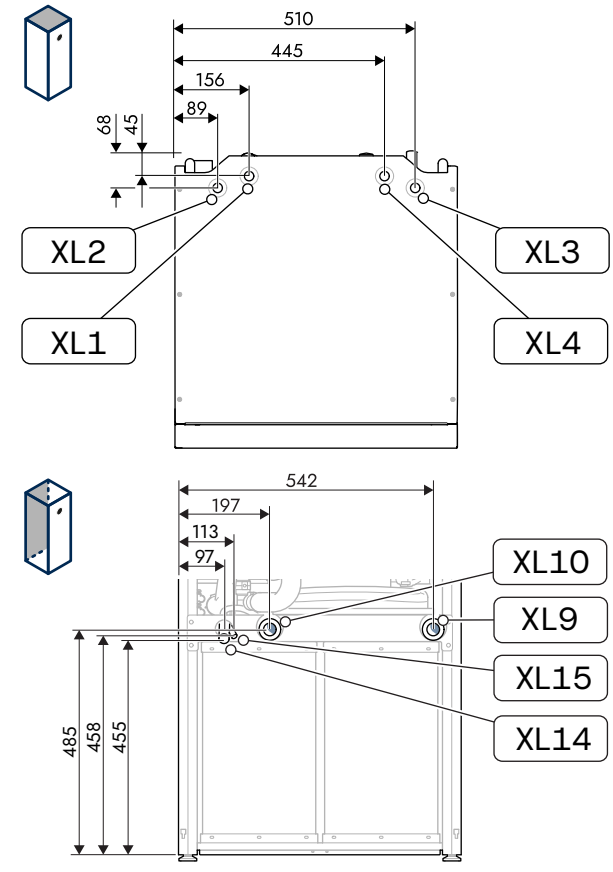
Pre-charge pressure vs. system volume

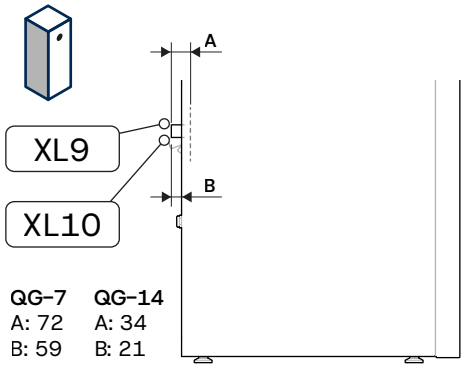
This diagram shows pre-charge pressure in relation to system volume at different system temperatures.



Pipe connections

Measurements and dimensions





> **NOTE**
>
> The supplied 90-degree compression fittings (QG-14 only) add 42 mm to dimensions A and B.

CONNECTION	Ø
XL1, distribution system supply	G 3/4"
XL2, distribution system return	G 3/4"
XL3, cold water	G 3/4"
XL4, hot water	G 3/4"
XL9, source medium in	QG-7: G 3/4" QG-14: Ø28 mm
XL10, source medium out	QG-7: G 3/4" QG-14: Ø28 mm
XL14, safety valve out (domestic hot water)	Ø22 mm
XL15, safety valve out (distribution system)	Ø12 mm

Installation

Distribution system

> **CAUTION**
>
> If the water in the distribution system is aggressive or lime-rich, use a water treatment additive to avoid damages to components.

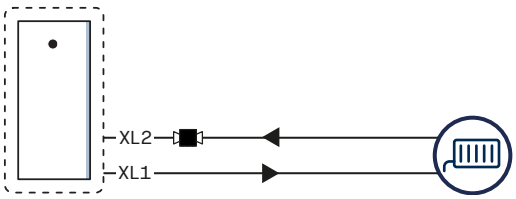
> **NOTE**
>
> Ensure that sufficient system flow passes through the product. Fully opened thermostats helps maintain sufficient system flow and reduce the risk of operational disturbances.

The distribution system is used to accommodate the indoor comfort demands of the property. The control system adjusts to the comfort demands through heating and cooling suppliers, like for example radiators, floor heating or fan coils.

- Attach the supplied filterball valve on the distribution system return line before the return connection (XL2).

> **NOTE**
>
> Install one of the two supplied filter ball valves with a straight handle in the distribution system.
>
> 

- Connect the return line from the distribution system to the return connection (XL2).
- Connect the supply line to the distribution system to the supply connection (XL1).



Cooling

The product supports active cooling through the distribution system.

Use the Qvantum app to enable and adjust cooling functionality.

CAUTION

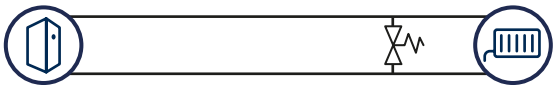
Incorrect supply line temperature settings and inadequate piping can cause condensation. Condensation can cause moisture damage to the building.

Make sure that the temperature of all cooled surfaces stays above the ambient air dew point, or install condensation insulation.

For cooling with fan coil units, provide a condensate routing solution.

Overflow valve

In cases where the required flow is not obtained along the distribution system, an overflow valve can be installed. The overflow valve maintains circulation in the distribution system so that sufficient flow is maintained.



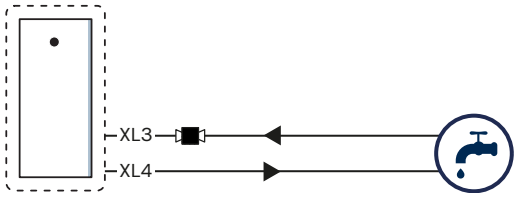
Cold and domestic hot water

- Attach the supplied filterball valve between the cold water main and the cold water connection (XL3).

NOTE

Install the supplied drinking-water-approved filter ball valve with a butterfly handle in the domestic hot water circuit.

- Connect the cold water supply to the cold water connection (XL3).
- Connect the domestic hot water system to the hot water connection (XL4).

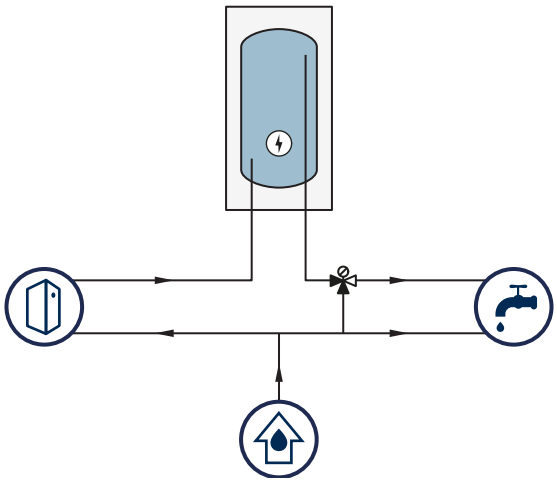


External water heater

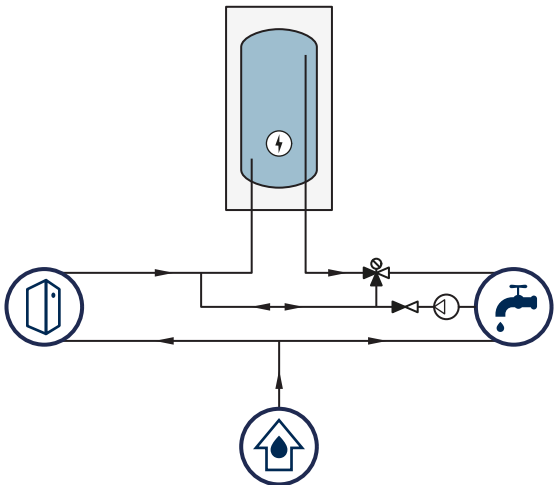
If you need a higher volume and/or flow of domestic hot water, you can install an external water heater with the product.

Use an ESBE VTA353 mixing valve or an equivalent mixing valve when you install an electric water heater.

INSTALLATION WITHOUT HOT WATER CIRCULATION



INSTALLATION WITH HOT WATER CIRCULATION



Source medium circuit

NOTE

All indoor source medium pipes must be insulated to prevent condensation.

NOTE

Install bleed valves outside the product at locations on the collector hose where air pockets can form.

NOTE

Apply thread paste to all threaded connectors and compression fittings on the source medium circuit.

NOTE

The product is not equipped with shut-off valves for the source medium circuit.

Make sure that the circuit has a filling solution (A) on the outgoing pipe. Equip the circuit with a level vessel (B) or an expansion vessel (C) on the incoming pipe. If you install a level vessel, make sure that the vessel is at the highest point of the source medium circuit.

The supplied safety valve can operate in the source medium circuit at pressures up to 3 bar.

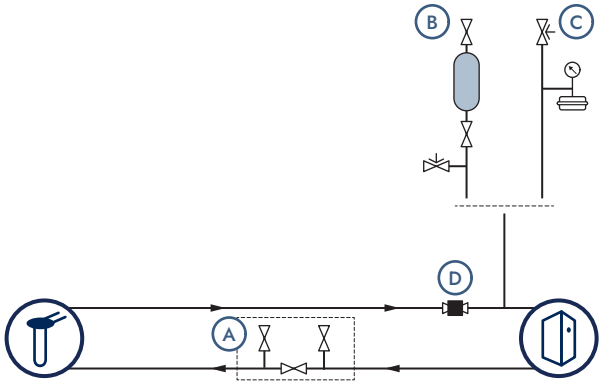
Install the supplied filter ball valve (D) on the incoming pipe. Install it in a location that is easy to access after installation.

NOTE

Install one of the two supplied filterball valves with a straight handle in the source medium circuit.

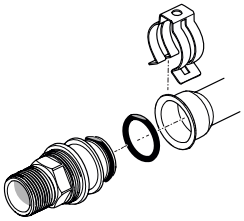
TIP

For the QG-14, install the supplied 90-degree compression fittings if necessary.

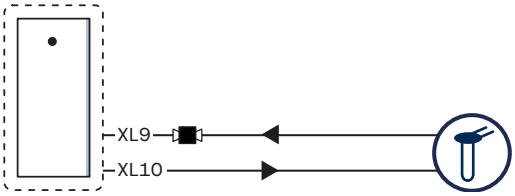


1. For the QG-7, install the supplied pipe fittings to the source medium connections.

   Lubricate the connection points to ease installation and protect the O-rings.

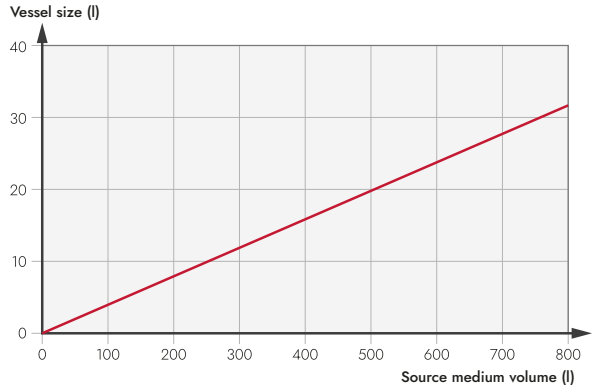


2. Connect the incoming source medium pipe to the inlet connection (XL9).
3. Connect the outgoing source medium pipe to the to the outlet connection (XL10).



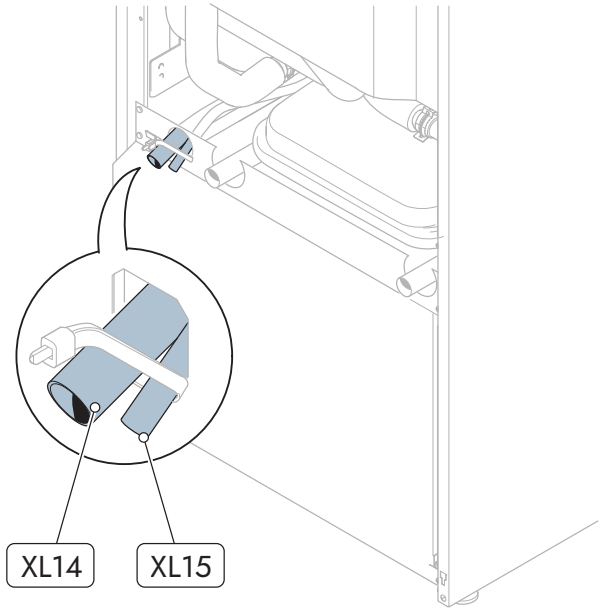
Expansion vessel dimensioning

If you install the product with an external expansion vessel, size the vessel according to the quantity of anti-freeze liquid in the source medium circuit.



Safety valve discharge

If the safety valve for the hot water circuit (FL1) or the safety valve for the distribution system (FL2) opens, water discharges from the back of the product.



Connect the pipe (A) and hose (B) from the safety valves to a floor or pipe drain.

ID	TYPE	INTERNAL Ø	EXTERNAL Ø
XL14	Pipe	20 mm	22 mm
XL15	Hose	9 mm	12 mm

NOTE

The water drainage from the safety valves must be installed sloping along its entire length; water must be allowed to flow freely.

5 ELECTRICAL INSTALLATION

Electrical installation, general

WARNING

All electrical connections must be performed by a qualified electrician and in accordance with applicable regulations.

CAUTION

Do not start the unit until it has been filled with water and all electrical connections have been checked. Premature start-up can cause damage to internal components.

- The unit must be disconnected before the house wiring is insulation tested.
- Power cables should be placed at least 200 mm from communication and sensor cables.
- It is recommended that the product is installed with a separate residual current device (RCD, type B) with a tripping current of 30 mA.

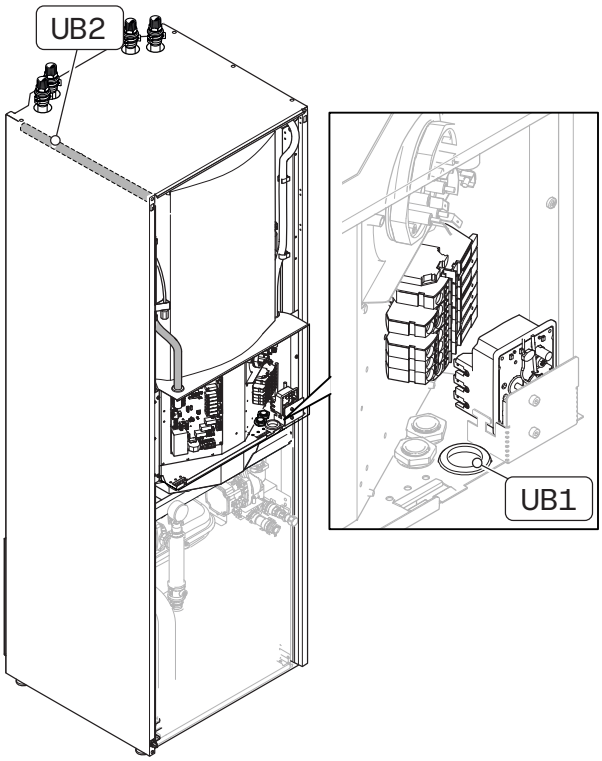
NOTE

An RCBO may be used as an alternative, provided it provides equivalent residual current protection and incorporates the required overcurrent (fuse) protection.

Cable channels

The product has a cable gland (UB1) and a cable channel (UB2) that are used to reach internal electrical connections.

ID	CONNECTION TYPE
UB1	Power supply
UB2	Communication and external connections

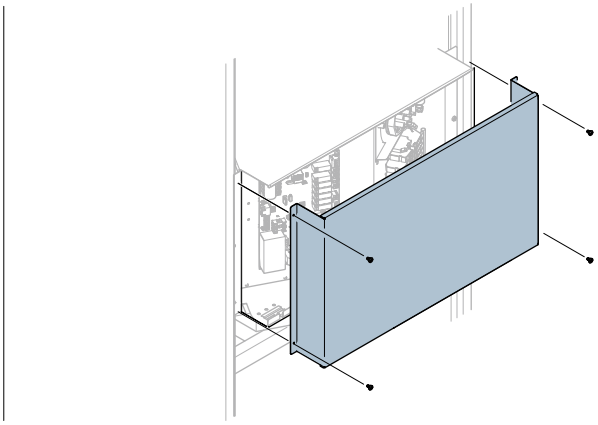


Access

Electrical box

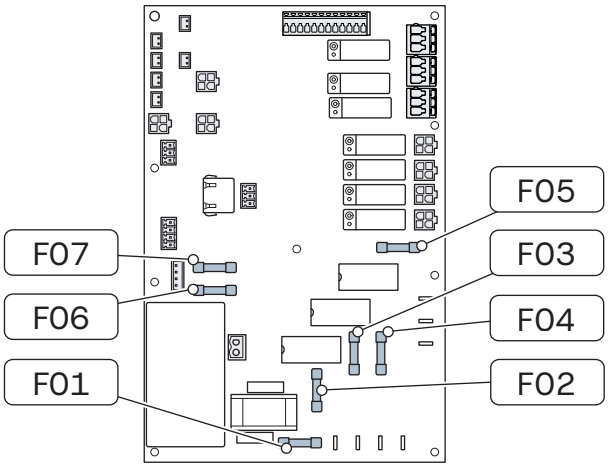
The electrical box is located behind the front cover of the hydronic unit.

Remove the screws of the electrical box cover.



Fuses

The fuses are located on the circuit board (UF1) in the electrical box.



ID[1]	DESTINATION	FUSE TYPE
UF1:F01	Internal 230 V	T4 A, 250 V
UF1:F02	Heat element (L1)	T10 A, 250 V
UF1:F03	Heat element (L2)	T10 A, 250 V
UF1:F04	Heat element (L3)	T10 A, 250 V
UF1:F05	External 230 V	T2 A, 250 V
UF1:F06	Internal 24 V	T630 mA, 250 V
UF1:F07	External 24 V	T500 mA, 250 V

1 Component designations in accordance with IEC 81346.

Electrical connections

Power connection

The QG can be installed in single or three phase applications.

An isolator switch with a 3 mm minimum breaking distance must be used to install the unit. Size the minimum cable area in accordance with the fuse rating that is being used. Dimension the fuse size (class C) according to the following table.

Depending on the fuse rating, the immersion heater output can be limited when the compressor runs at high speed.

In the Qvantum app, enter the heat pump fuse rating and select if the product uses one phase or three phases.

1X230V EB1[1]	MAX. OPERATING CURRENT	
	QG-7	QG-14
0 kW	13.0 A	25.0 A
1 kW	17.4 A	29.4 A
2 kW	21.7 A	34.7 A
3 kW	26.0 A	39.0 A
4 kW	30.4 A	43.3 A
5 kW	34.7 A	47.7 A

1 Immersion heater limit.

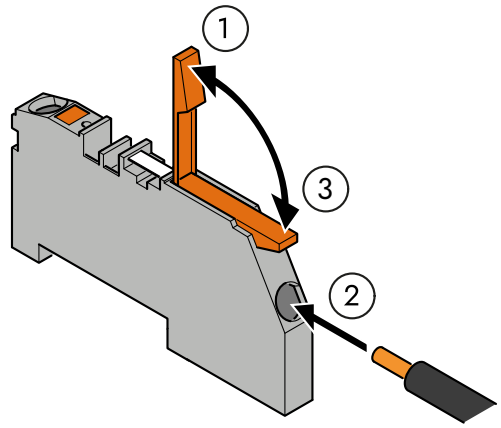
3X400V EB1[1]	MAX. OPERATING CURRENT	
	QG-7	QG-14
0 kW	13.0 A	13.0 A
1 kW	13.0 A	13.0 A
2 kW	13.0 A	13.0 A
3 kW	13.0 A	17.4 A
4 kW	13.0 A	21.7 A
5 kW	17.4 A	21.7 A

1 Immersion heater limit.

To connect the power supply, open the terminal block lever (1), insert the cable (2) and close the lever (3).

NOTE

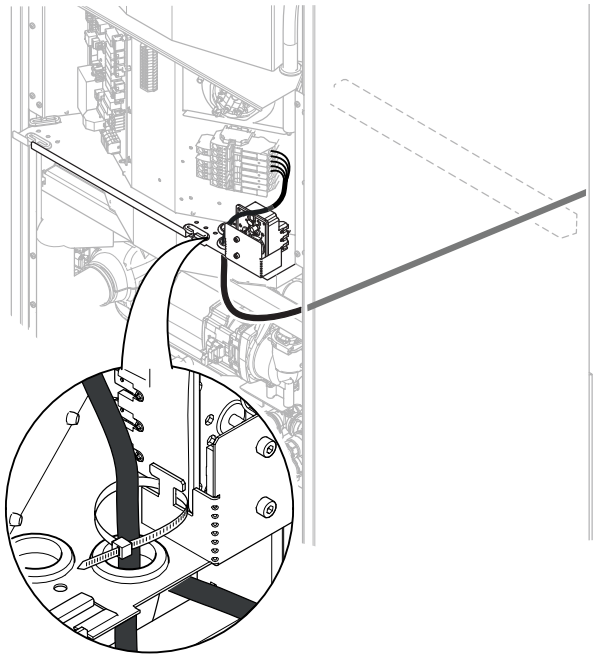
The cable strip length should be 17–19mm.



Cable routing

Route the power supply through the cable gland (UB1) at the bottom of the electrical box.

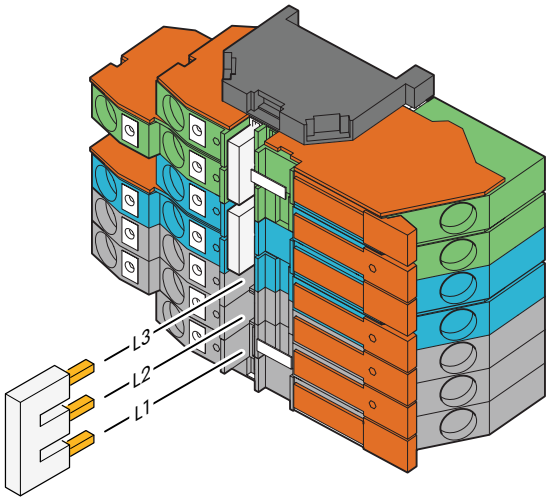
1. Draw the cable over the crossbars on the front and back of the product.
2. Secure the power cable to the crossbars. Use the supplied cable tie to secure the power cable on the bracket that holds the safety temperature limiter.



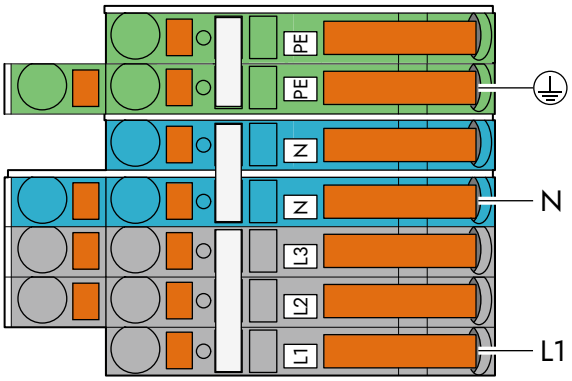
1x230V

For single-phase installations, the supplied 3-pin busbar must be used to bridge the phases on terminal block XD1.

1. Attach the supplied 3-pin busbar so it bridges connections XD1:L1, L2 and L3.



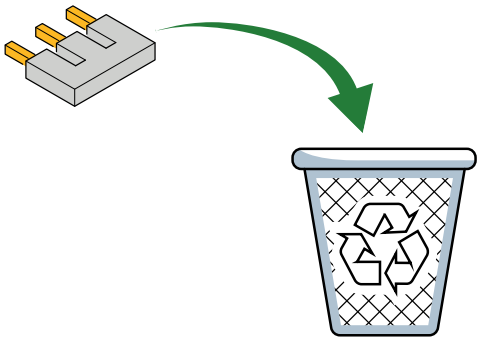
2. Connect the power supply to terminal block XD1.



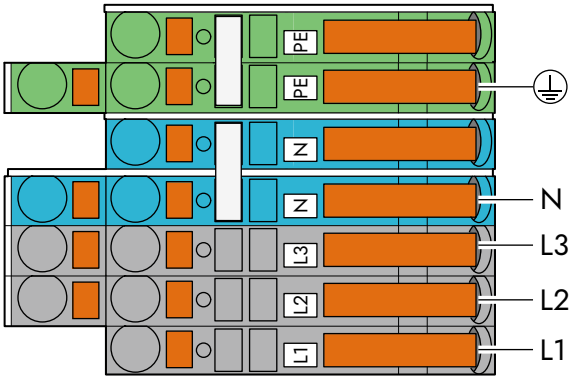
3x400V

> **NOTE**
>
> For three-phase applications, ensure that the house's distribution board is not overloaded.
>
> For the QG-7, place the compressor phase (L3) on a low-load group for best performance.
>
> For the QG-14, place the compressor phases (L2 and L3) on low-load groups for best performance.

1. Dispose of the supplied 3-pin busbar.

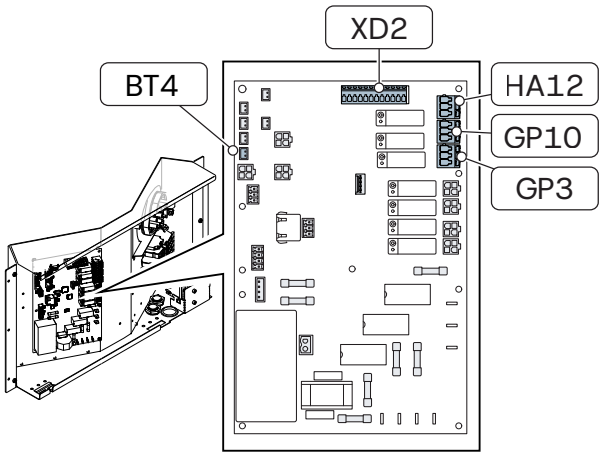


2. Connect the power supply to terminal block XD1.

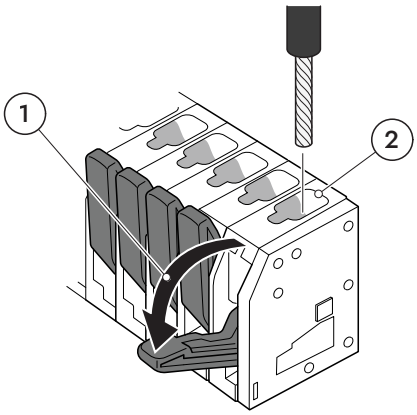


External interfaces

Connect the external interfaces to connection points BT4, GP3, GP10, HA12 and XD2 on the main control board (UF1).



To connect the cables to GP3, GP10, HA12, and XD2, open the terminal block lever (1), insert the cable (2), and close the lever.



Use a 2-pin JST XHP contact to connect to the BT4 socket.

Sensors

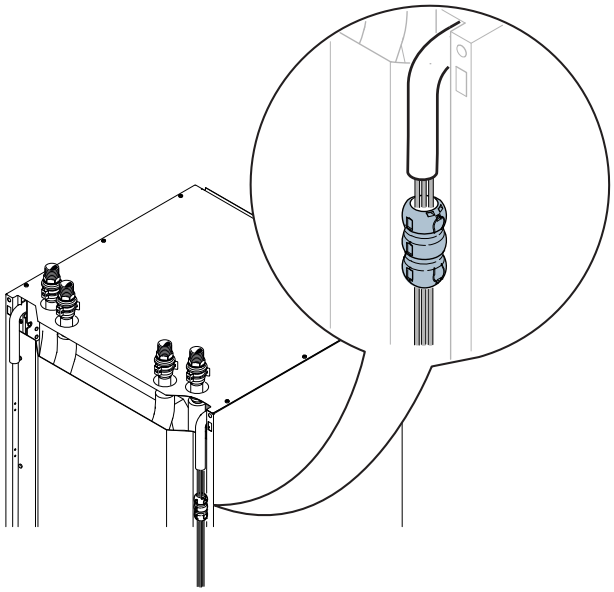
Connect the sensor cables to the terminal strip XD2 on the main board (UF1).

The cables should have an area of 0.5mm² with a cable length up to 50 m.

Ferrite core

For electrical shielding purposes, all sensor cables should be routed through the supplied ferrite core (FE1).

The supplied ferrite core (FE1) must be placed outside of the QG. It is recommended that the ferrite core is mounted at the outlet of the cable channel for external connections (UB2).



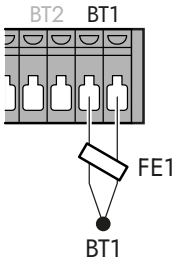
Outdoor temperature sensor

The outdoor temperature sensor (BT1) must be positioned so that it can give an accurate temperature reading. The sensor location should be protected from sun exposure and is preferably installed in a shaded area to the north or northwest.

To prevent condensation in the sensor chamber, seal the tube the cable is running through.

Route the cable through the supplied ferrite core (FE1).

Connect the outdoor temperature sensor to the BT1 terminal blocks.



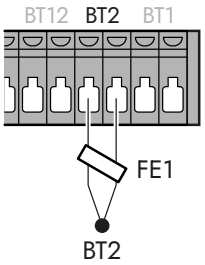
Indoor temperature sensor

The indoor temperature sensor (BT2) enables monitoring and control of the indoor temperature. Installing the indoor sensor is not mandatory, but necessary for reading the indoor temperature.

The sensor should be positioned so that it can give an accurate temperature reading, about 1.5 meters above the floor. Avoid placing it near heaters, radiators, windows, front doors, or anything else comparable. It must not be covered, exposed to air currents, or exposed to heat sources.

Route the cable through the supplied ferrite core (FE1).

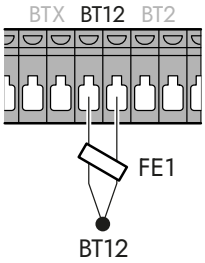
Connect the indoor temperature sensor to the BT2 terminal blocks.



External supply temperature sensor

The external supply temperature sensor (BT12) enables monitoring and control of the external supply line temperature.

If an external supply temperature sensor is used, connect it to the BT12 terminal blocks.



Configurable inputs

The product can receive digital input signals from external devices through socket BT4 or terminal blocks XD2:BTX, XD2:BTY, and XD2:BTZ on the main control board (UF1).

Set the function for each configurable input in the Qvantum app. Select if the system must take action when the contact is open or closed. The inputs provide the control functions that are described below.

FUNCTION	DESCRIPTION
Block compressor	Puts the heat pump in only-addition mode and stops the compressor.
Block heating operation state	Stops the heat pump from actively producing heating.
Block cooling operation state	Stops the heat pump from actively producing cooling.
Block domestic hot water	Blocks domestic hot water production in all operation modes.
Extra domestic hot water	Makes extra hot water when needed and uses the immersion heater if required.
Allow heating	Allows the heat pump to produce heating in manual mode.
Allow cooling	Allows the heat pump to produce cooling in manual or automatic mode.

FUNCTION	DESCRIPTION
Allow domestic hot water	Allows the heat pump to produce domestic hot water in manual mode.
Heat curve adjustment	Sets the heating curve adjustment to a user-defined value.
Max addition output	Limits or blocks immersion heater output depending on the value set.
Trigger alarm	Triggers a user-defined alarm.

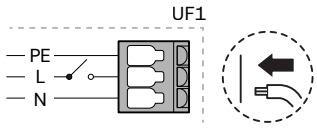
Configurable outputs

The product can send signals or power to external components through relays GP3, GP10 or HA12 on the main control board (UF1).

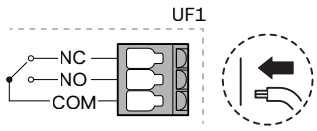
> **CAUTION**
>
> Do not connect a load of more than 2 A to the relay.

RELAY	TYPE
GP3	NO 230 V (2 A)
GP10	NO 230 V (2 A)
HA12	NO/NC change-over, potential-free (2 A)

GP3 AND GP10



HA12



Set the function for each configurable output in the Qvantum app. The outputs provide the indications and control functions described below.

FUNCTION	DESCRIPTION
Defrosting	The output is set to 1 when defrosting is active.
Alarms	The output is set to 1 when one or more alarms are active.
Scheduled output	The output is set to 1 during a user-defined time period.
Central climate system	The output is set to 1 when heating or cooling operation is active.
Cooling indication	The output is set to 1 when cooling operation is active.
Cooling addition	The output is set to 1 if the degree minutes exceed the user-defined threshold.
Delayed cooling/ heating	The output is set to 1 during the transition between domestic hot water mode and cooling mode until the BT10 (condenser out) temperature limit is reached.

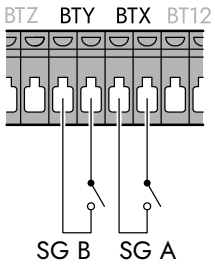
SG Ready

Enable the SG Ready function to allow the product to be controlled externally in support of the power grid. The states of SG Ready A (SG A) and SG Ready B (SG B) are used to evaluate the demand from the power grid.

SG Ready is enabled through setting **SG Ready** in the start-up guide in the Qvantum app.

SG A	SG B	PRODUCT BEHAVIOR
0	0	The product is unaffected.
1	0	The product is blocked for a maximum of two hours per day.
0	1	The product is encouraged to run, e.g if the if the current price of electricity is low. In this mode, the set values for heating and production of domestic hot water are slightly increased. If there is no active demand, this mode will make the product encounter a new demand sooner than during normal operation.
1	1	The product is ordered to run. In this mode, the product always detects a heating demand and the set values for heating and production of domestic hot water are increased.

The function requires the connection of two potential-free contacts to the inputs XD2:BTX and XD2:BTY of the product.

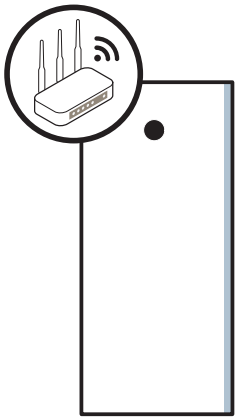


Router installation

Install the supplied router to use the connected functions.

1. Place the router on top of the product or close to it.

   The router needs to be close to the product to keep the wireless connection.
2. Connect the router power cable to a power outlet.



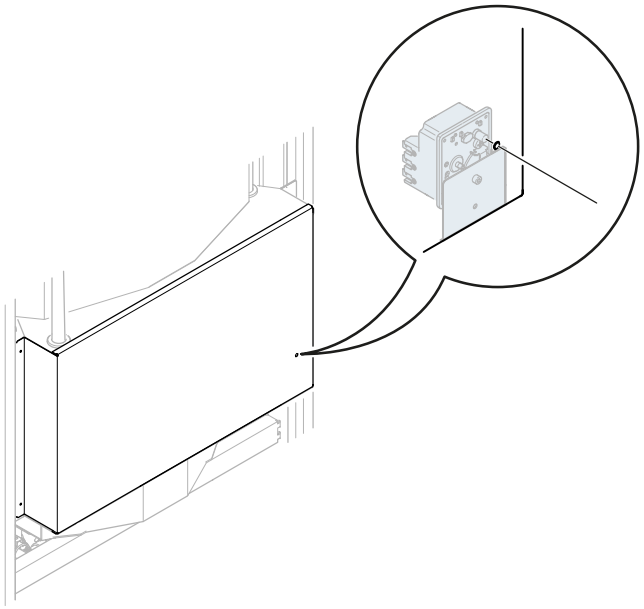
Safety temperature limiter

The unit is equipped with a safety temperature limiter that is behind the cover of the electrical box. If the temperature reaches 95 °C, the safety temperature limiter will stop the power to the immersion heater.

> **CAUTION**
>
> Verify that the safety temperature limiter has not been triggered prior to installation.

A manual reset is required if the safety temperature limiter has been triggered. By pushing the button that can be accessed through a hole in the electrical box cover, the limiter is reset.

The safety temperature limiter can be reset only when the temperature is 10 °C below the trigger temperature.

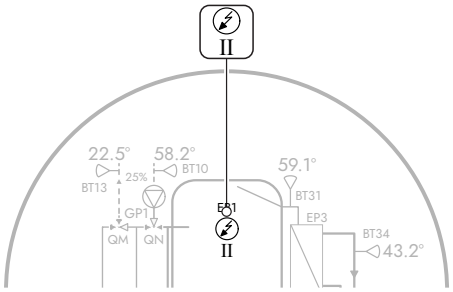


Settings

Immersion heater

The product has a built-in immersion heater. It turns on when the compressor cannot meet the current comfort demand.

Relays increase or decrease the immersion heater output in steps from 1 to 5. The **System overview** page shows an indicator for each active step. The indicators appear only when the immersion heater is active.



RELAY INDICATOR	STEP	OUTPUT
I	1	1 kW
II	2	2 kW
I, II	3	1 + 2 kW
II, III	4	2 + 2 kW
I, II, III	5	1 + 2 +2 kW

The installation checklist in the Qvantum app allows you to set the maximum immersion heater output.

6 COMMISSIONING

Qvantum app

To properly set up the unit, install the Qvantum app and follow the in-app instructions.

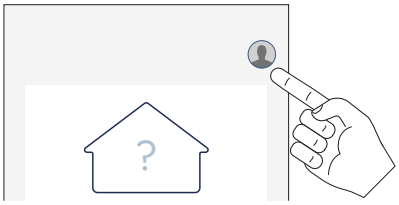
The app contains an installation checklist that helps you control all parts of the installation before starting the product for the first time.

At first start-up of the unit, the app helps you set up the machine.

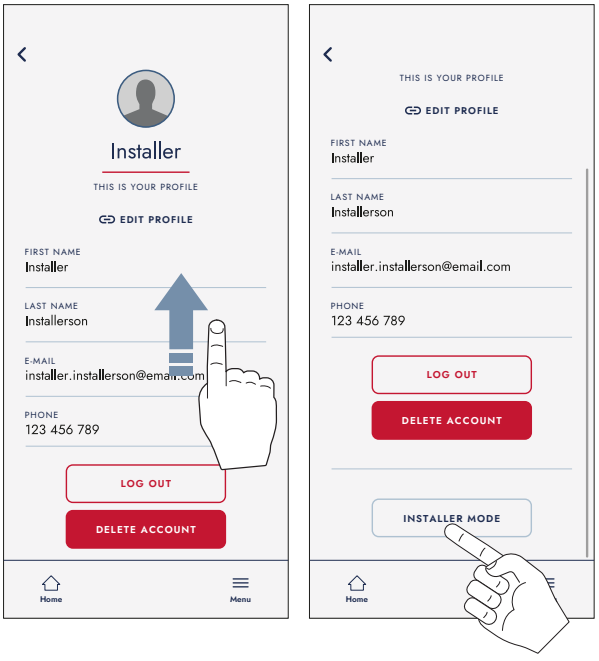
Installer mode

Setting up a unit requires setting the app to **Installer mode**.

1. Press the profile button in the upper right corner of the app.



2. On the **Profile page**, scroll downwards.
3. Press the **Installer mode** button.



TIP

If the **Installer mode** button is not visible, the app is already set to **Installer mode**.

Preparations

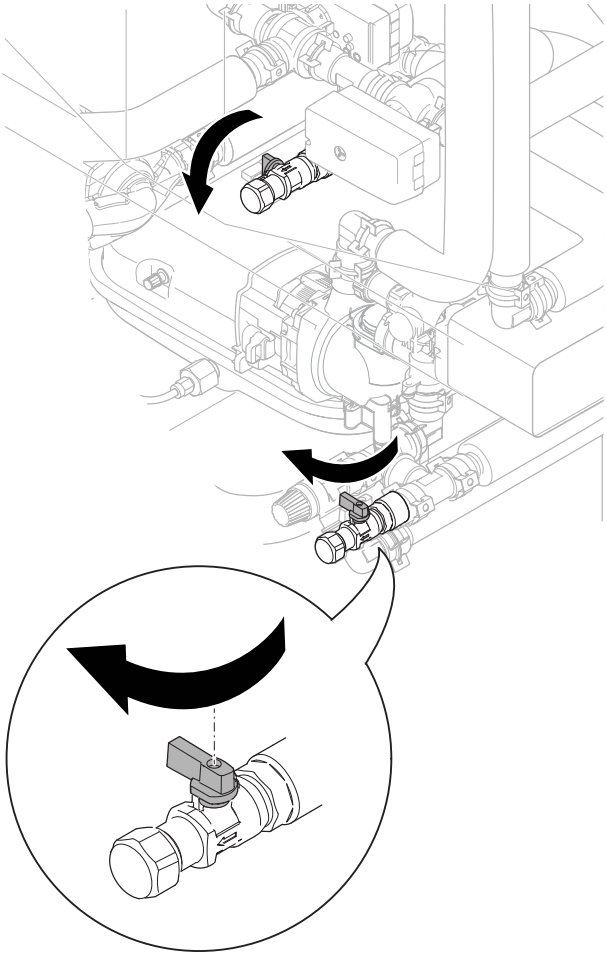
1. Ensure that the unit is turned off.
2. Ensure that the filling valves (QM11, QM12) are entirely closed.

NOTE

The filling valves must be closed during normal operation.

NOTE

The image shows the valves in closed position.

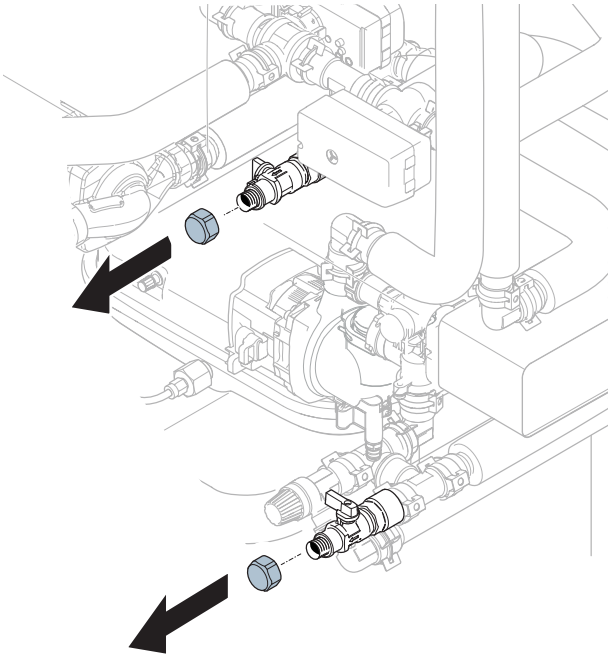


Filling hose

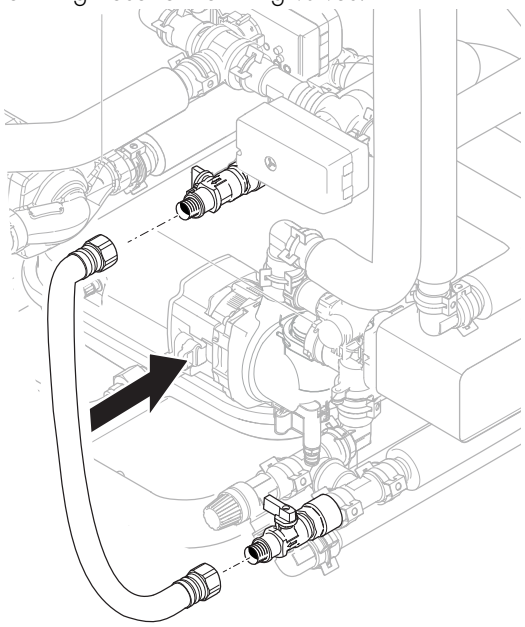
Before filling up the distribution and domestic hot water systems, the supplied filling hose must be attached to the filling valves (QM11 and QM12).

1. Remove the end caps from the filling valves.

> **TIP**
>
> Use a wrench or similar to hold the affected valve in place.



2. Attach the filling hose to the filling valves.



> **NOTE**
>
> After filling, remove the filling hose and reconnect the end caps.

Filling

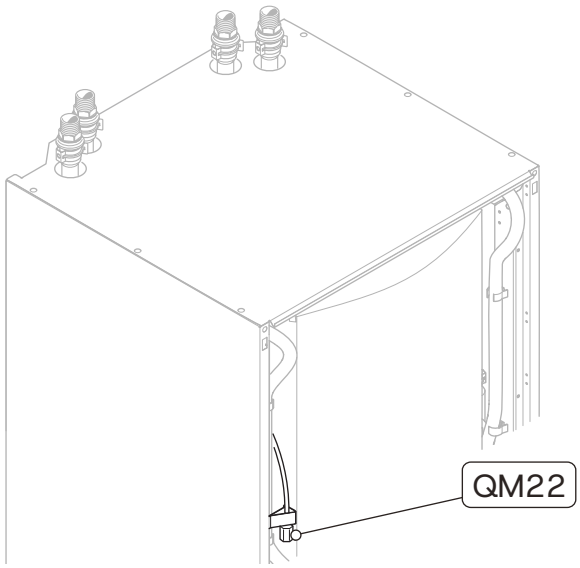
Domestic hot water

1. Ensure that the filter ball valve that is connected to the cold water connection (XL3) is open.
2. Open one of the facility's hot water taps.
3. Open the facility's main cold water valve.

When no more air comes from the hot water tap, close the tap.

Distribution system

Attach a hose to the bleed valve before opening it.



1. Open the bleed valve for the buffer tank (QM22).
2. Ensure that the hose between the filling valves is securely attached.
3. Open the filling valves (QM11 and QM12)
   The distribution system and buffer tank will be filled with water.
4. Wait until air stops coming from the bleed valve (QM22) and close it.
5. Close the filling valves.
6. Reduce the distribution system pressure to approximately 1 - 1.5 bar.
   a) Reduce the distribution system pressure by opening the bleed valves or the safety valve.
7. Start up the heat pump.
   a) Allow the heat pump to run for one heating cycle and one hot water cycle.
8. Ensure that the heat pump provides room heating and hot water.
9. Open the bleed valve.
10. Wait for the bleed valve to be completely purged.
11. Close the bleed valve.

Source medium circuit

Frost-protected source medium

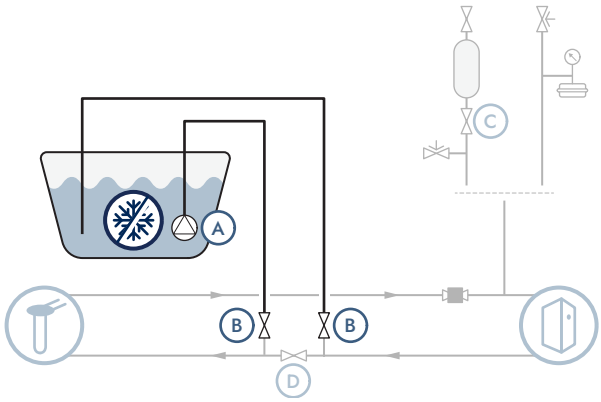
Preparations

1. Prepare a filling station with an open container and a filling pump (A).

2. Mix water and antifreeze liquid in the container until they are homogenous.

> **NOTE**
> Ensure that the mixture gives frost protection to at least -15 °C.

3. Connect hoses from the filling station to the shut-off valves (B) on the filling kit of the source medium circuit.

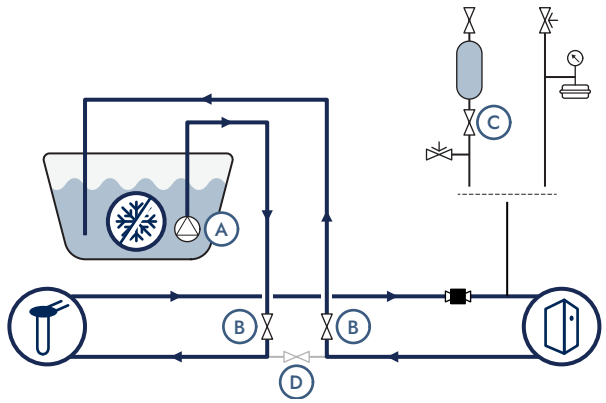


Filling

1. If the product is installed with a level vessel, close the shut-off valve (C) below the vessel.
2. Close the shut-off valve (D) between the connection points of the filling station.
3. Open the shut-off valves (B) on the hoses from the filling station.
4. Start the filling pump (A).
5. Continue until the circuit is full and no more air comes out of the return line.

> **NOTE**
> The antifreeze liquid must be clear and free of bubbles.

6. Let the filling pump run for at least one hour.



7. Close the shut-off valves (B) on the hoses from the filling station.
8. Open the shut-off valve (D) between the connection points of the filling station.
9. If the product is installed with a level vessel, open the shut-off valve (C) below the vessel

> **NOTE**
> When you fill or purge the source medium circuit, always check the filter ball valve. If necessary, clean the valve.

> **TIP**
> The bleed valves (QM23 and QM24) on the compressor units are available to purge the system after installation.

Venting

Distribution system

1. Turn off the unit and wait for at least 30 seconds.
2. Turn off the power supply to the unit.
3. Purge the unit by opening the bleed valve (QM22).
4. Refill and purge the distribution system until all air is removed and adequate system pressure is reached.

First start-up

> **CAUTION**
> Before the first start-up, ensure that there is no frozen water in the system.

> **NOTE**
> Before the first start-up, ensure that there is water in the distribution system.

> **NOTE**
> Set the app profile to **Installer mode** to set up the unit.

1. Turn on the system.
2. Open the Qvantum app.
3. Press **Install & set up unit** from the landing page.
4. Scan the QR code in the user interface.
5. Set up the system by following the steps shown in the app.
6. When all the steps in the app are completed, press **Finish installation** in the display unit.

   To adjust the settings after the first start-up, use the display unit or the Qvantum app. The most common settings are available in both the display unit and the app. To access more advanced settings, the app must be used with the app profile set to **Installer mode**.

If the property is cool at commissioning, the internal additional heating might be activated to help the compressor satisfy the heating demand.

Pump capacity, heating medium

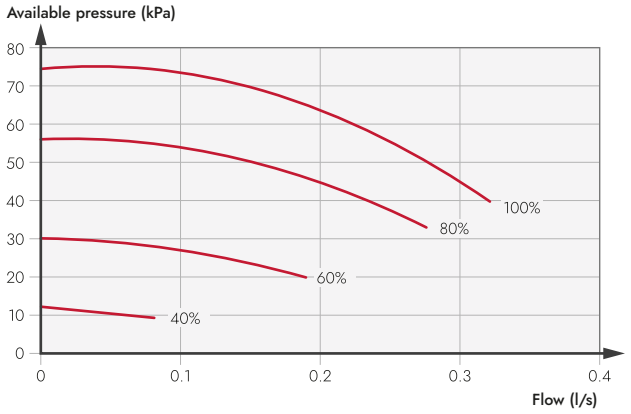
The speed of the heating medium pump is adjusted through the Qvantum app.

The speed settings **Pump speed heating** and **Pump speed idle mode** are available in the app.

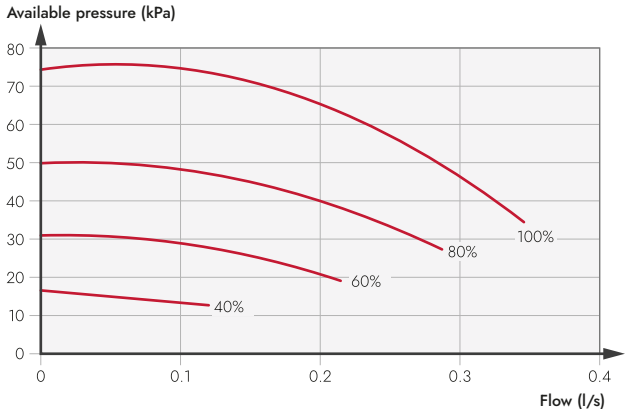
Adjust **Pump speed heating** to set the pump speed for when heating is required.

Adjust **Pump speed idle mode** to set the pump speed for when there is no heating demand.

QG-7



QG-14



Pump capacity, source medium

The speed of the source medium pump is adjusted through the Qvantum app.

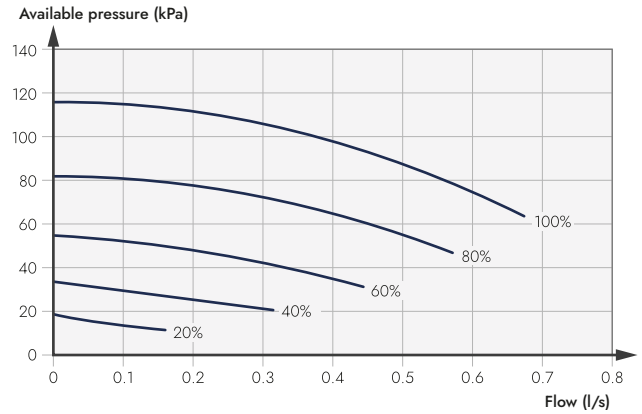
The speed settings **Min brine pump speed** and **Max brine pump speed** are available in the app.

You can set the speed settings for the source medium pump in heating operation and in cooling operation.

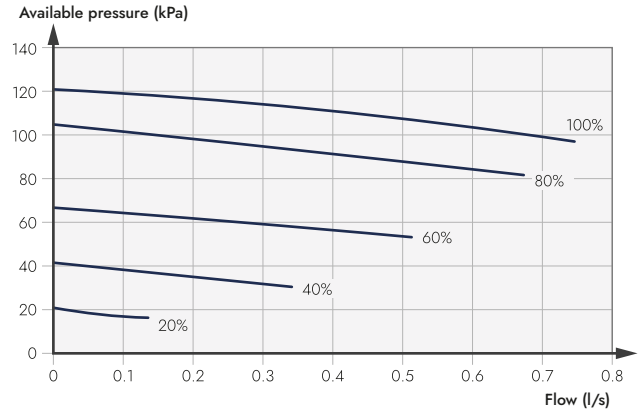
Adjust **Min brine pump speed** to set the minimum speed required for the source medium pump.

Adjust **Max brine pump speed** to set the maximum speed allowed for the source medium pump.

QG-7



QG-14



Source medium settings

The source medium settings are available through the Qvantum app.

Min source temperature

This limit is the minimum allowed outgoing source medium temperature during heating operation. The product controls the source medium pump and compressor to keep the source medium temperature above the limit.

Max source temperature

This limit is the maximum allowed outgoing source medium temperature during cooling operation. The product controls the source medium pump and compressor to keep the source medium temperature below the limit.

Frost-protection point

This setting defines the frost protection point (°C) for the anti-freeze liquid.

Heating Operation mode

For heating, the operation mode for the source medium pump can be set to **Fixed deltaT** or **Auto**.

Heating ΔT

Setting for declaring the DeltaT (K) when the **Heating Operation mode** for the source medium pump is set to **Fixed deltaT**.

Cooling Operation mode

For cooling, the operation mode for the source medium pump can be set to **Fixed deltaT** or **Auto**.

Cooling ΔT

Setting for declaring the DeltaT (K) when the **Cooling Operation mode** for the source medium pump is set to **Fixed deltaT**.

Run source pump at 100% speed for the first 96h?

This option forces the source medium pump to run at 100% speed for the first 96 hours after installation.

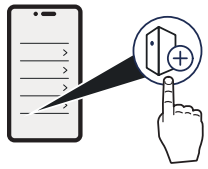
Add additional devices

If you connect an accessory to the product, you must activate the accessory in the app. The procedure to add an accessory changes if you do it during commissioning (**Installer mode**) or after commissioning (**Home profile**).

During commissioning (Installer mode)

When the QG has been set-up through the start-up guide, navigate to the installation overview.

1. Press the **Add additional unit** button.

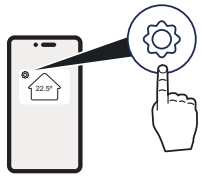


2. Press the **Add a device to heat pump** button.
3. Select the accessory.

The app guides you through the accessory installation procedure.

After commissioning (Home profile)

1. From the Qvantum app landing page, press the settings button.



2. Press the **Additional devices** button.

   This view lets you manage already installed devices as well as add new device.
3. Press the **Add a device to heat pump** button.
4. Select the accessory.

The app guides you through the accessory installation procedure.

7 USER INTERFACE

Introduction

The Qvantum QG is equipped with a user friendly touchscreen display. Through the display, the most necessary settings can be accessed and adjusted.

More settings are available through the Qvantum app.

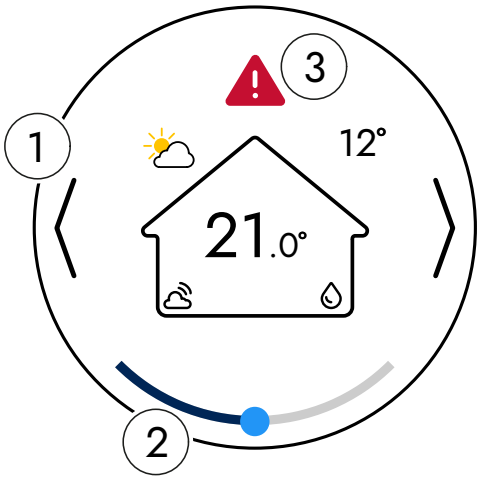
> *TIP*
>
> The layout of the display may vary depending on software version.

Using the display unit

Use the arrow buttons (1) on the sides of the interface to access the different pages in the display unit.

For display pages with settings, use the slider (2) at the bottom of the display to adjust the settings.

If an alarm is active, it shown through a warning symbol (3) at the top of the page.



Swipe upwards and downwards or use the arrow buttons to access all content on display pages that contain multiple lines of information.

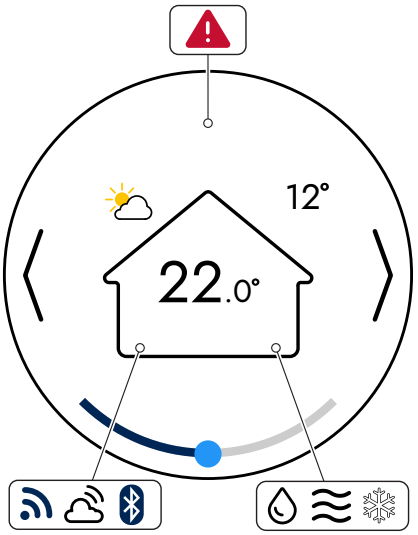
Indications

Different indicators are used to provide information to the user about the status of the product.

The middle area at the top of the screen shows if there any active operational disturbances.

The lower left-hand corner of the house symbol shows connectivity-related information.

The lower right-hand corner of the house symbol shows what demand is prioritized by the product.



Notification about an active alarm.

Wi-Fi signal strength. The symbol is shown before the product is online.

The product is online.

Bluetooth connection established through the Qvantum app.

Domestic hot water production is active.

Heating is active.

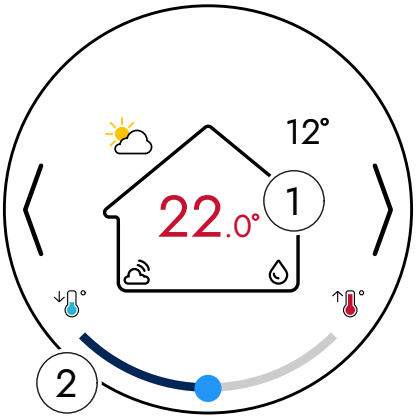
Cooling is active.

12° Current outdoor air temperature.

Weather indicator.

Indoor climate

The indoor climate is modified on the **Home page** of the display unit.



1. Desired or actual indoor temperature. If an indoor temperature sensor is set as the controlling sensor, the value inside the house is colored red when changing the setting.
2. Slider for adjusting the indoor temperature. Press the house icon to show the slider.

When adjusting the temperature, the value inside the house shows the desired value. A short time after the setting has been adjusted, the value in the house shows the actual temperature.

> **TIP**
>
> If an indoor temperature sensor is not present, the value inside the house shows the heating curve offset.

Temperature control

How the indoor temperature in the property is controlled depends on whether an indoor or outdoor temperature sensor is used for temperature control. If an indoor temperature sensor is not installed, or if it is only used for reading the indoor temperature, the temperature is controlled through the selected heating curve.

Select the controlling sensor through **Settings** > **Advanced** > **Temperature control**.

Indoor temperature sensor

When an indoor temperature sensor is set as the controlling sensor, the product compares the actual and requested indoor temperature to adjust the supply line temperature.

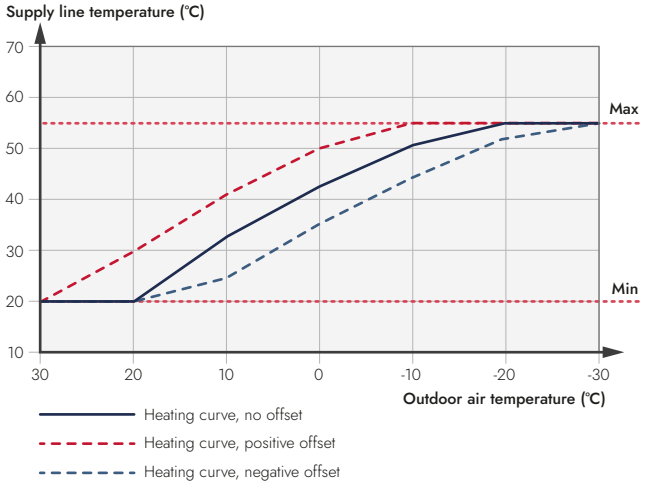
Heating curve

> **TIP**
>
> Selecting or setting up a manual heating curve is done when setting up the product during installation.

If an indoor temperature sensor is missing, or not set as a controlling sensor, the indoor temperature is controlled by the heating curve. The heating curve for the property is used to calculate the necessary supply line temperature at different outdoor temperatures.

When adjusting the indoor temperature, the heating curve offset shifts parallel downwards or upwards to decrease or increase the supply line temperature at a given outdoor temperature. The value inside the house on the **Home page** shows if the curve offset is shifted upwards or downwards, and with how many steps.

The following diagram shows the heating curve for a property with a radiator system and how the curve is affected by changing the offset.



Cooling curve

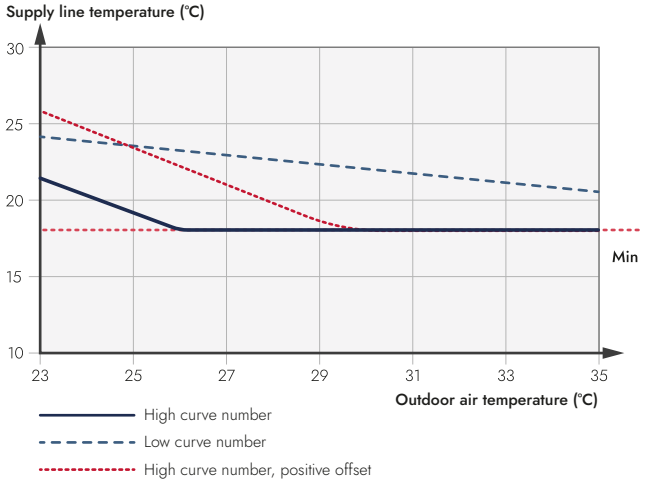
Cooling functionality must be set up in the start-up guide of the Qvantum app.

If the product prioritizes cooling, it uses the selected cooling curve. The product uses the cooling curve to calculate the necessary supply line temperature at different outdoor temperatures

A high curve number gives a faster response to a cooling demand than a low curve number.

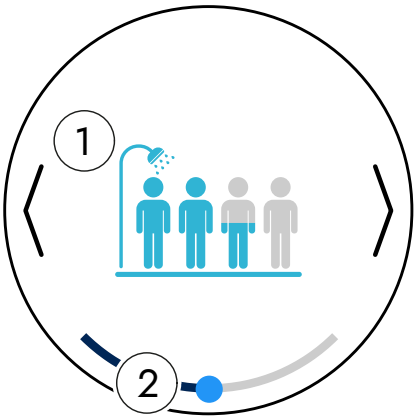
If you apply an offset to the cooling curve, the product moves the curve up or down. The offset increases or decreases the supply line temperature for a given outdoor temperature

The diagram shows high and low cooling curves. The diagram also shows how an offset changes the high curve.



Domestic hot water

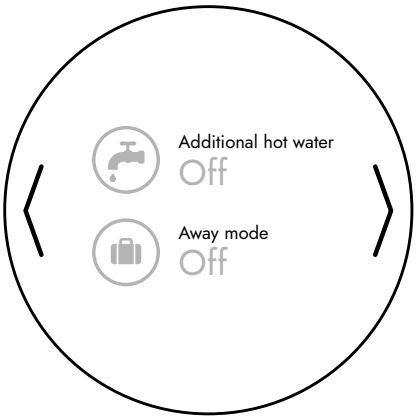
The page for domestic hot water is used to deliver information about the hot water production as well as modify the hot water capacity.



1. Indicator that shows the amount of remaining hot water. The number of characters depend on the requested hot water capacity. When the set temperature is reached, all characters are colored blue.
2. Slider for adjusting the hot water capacity.

Comfort and scheduling

The comfort and scheduling page is used to activate and control functions that accommodate needs that are outside of the heat pump's default operational modes.



Additional hot water increases the hot water production for instances where additional hot water is desired.

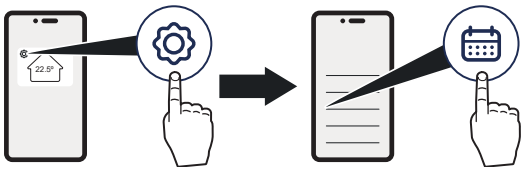
> *NOTE*
>
> Depending on the current operating mode of the unit, turning on **Additional hot water** may also temporarily activate the immersion heater.

Away mode is a scheduling function that is useful when leaving the house for longer periods of time. When the away mode is activated, the heat pump lowers the indoor temperature and the hot water production.

Scheduler

Use the **Scheduler** in the Qvantum app to set operating times for different product functions. Example: set a temporary increase for domestic hot water production during workday mornings.

Go to **Settings** > **Scheduler** to manage your schedules.

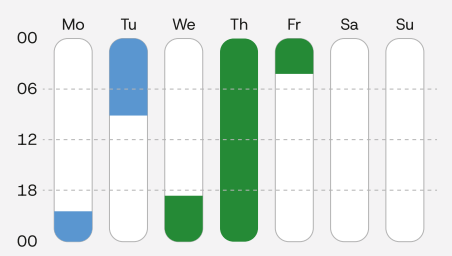


To create a schedule, you must use the **Create mode** function and the **Create block** function.

Use **Create mode** to declare the action or actions the product must do. Assign a name and a color when you create a **Mode**.

Use **Create block** to declare the time when the product must do the action.

The following schedule includes the days and hours for the green **Mode** and the blue **Mode**.



Settings

The **Settings** page has a number of sub pages that are used to retrieve product information, change display options, and configure product performance.

Settings	Device information	Open source	
	Previous alarms		
	Language		
	Service functions	Firmware update	
	Advanced	Purge air from system	
		System overview	
		Remote service	
		Overrides	
		Operation mode	
		Temperature control	
		Hot water	
		Connectivity	Modbus External
			Allow Qvantum support
		Reboot display	
	Shut down		

Device information

This page contains product-specific information related to product identification, software versions and the Wi-Fi connection.

Open-source code

This page contains a link to a web page that lists all the open-source code licenses that are used for the user interface.

Previous alarms

This page gathers all previous alarms that have been detected by the product.

Language

Use this page to set the preferred language for the user interface.

Service functions

Firmware update

This page shows if there is an available firmware update for the main control board (UF1). If a newer version is available, press the button **Update** to update the firmware.

Purge air from system

Use this page to temporarily turn off the heating medium pump before purging the distribution system.

Press the button **Turn pump off** to stop the heating medium pump.

After purging the distribution system, press the button **Turn pump on** to restart the heating medium pump.

If the **Turn pump on** button is not pressed, the heating medium pump will automatically restart after three hours.

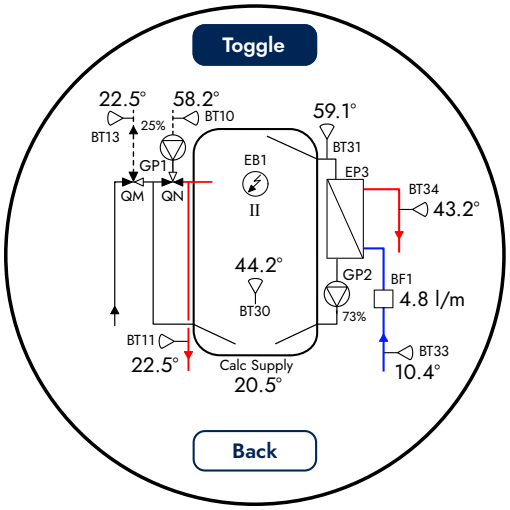
System overview

The **System overview** in the display unit provides operational information for the product.

Switch between the hydronic unit and the compressor unit views by pressing the **Toggle** button.

Exit the **System overview** by pressing the **Back** button.

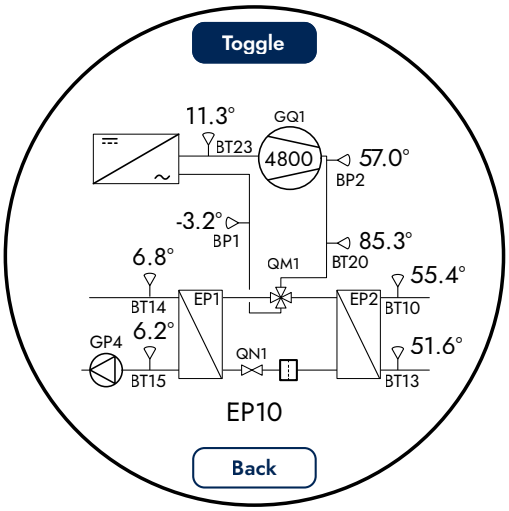
Hydronic unit



ID	DESCRIPTION
EB1	Immersion heater
EP3[1]	Plate heat exchanger
Calc Supply	Requested supply line temperature
BF1	Flow sensor
BT10	Temperature, condenser out
BT11	Temperature, supply line
BT13	Temperature, condenser in
BT30	Temperature, buffer tank
BT31	Temperature, domestic hot water primary inlet
BT33	Temperature, cold water
BT34	Temperature, hot water
GP1	Circulation pump, distribution system
GP2	Circulation pump, domestic hot water
QM	Diverting valve
QN	Shunt valve

1 Designation is not shown in the user interface.

Compressor unit



ID	DESCRIPTION
GQ1	Compressor
EP1	Evaporator
EP2	Condenser
EP10	Compressor unit 1
EP11[1]	Compressor unit 2
BP1	Pressure transmitter, suction
BP2	Pressure transmitter, discharge
BT10	Temperature, condenser out
BT13	Temperature, condenser in
BT14	Temperature, source medium in
BT15	Temperature, source medium out
BT20	Temperature, discharge line
BT23	Temperature, suction line
QM1	Four-way valve
QN1	Expansion valve

1 Only applicable for QG-14

Overrides

This page shows information about functions that are currently limiting the performance of the product.

Remote service

This function can be used to allow a technican to troubleshoot or update settings without visiting the site. The technican must request access through the Qvantum app.

Use this function to generate a remote service code and to grant or deny remote service access to the technican.

Advanced

Operation mode

Through the **Operation mode** page it is possible to set the desired prioritization of the product. The main settings allow the user to choose between automatic mode, manual mode and a mode where only electrical addition is allowed.

Auto

When the operation mode is set to **Auto**, the product automatically switches between heating and domestic hot water production, depending on the current demand. When in **Auto**, the electrical addition is engaged if necessary.

Manual

When the operation mode is set to **Manual**, it is possible to allow or prohibit heating and the user can choose to enable or disable the production of domestic hot water.

Manual mode allows for the user to enable or disable the use of electrical addition. If electrical addition is disabled, it is still allowed for production of domestic hot water and product protective functions.

Electrical addition only

This operation mode limits the product to run with only the electrical addition.

Temperature control

This page contains options related to the indoor temperature control.

Use the drop-down list to select the sensor that controls the indoor temperature. Choose between the indoor temperature sensor (BT2) and the outdoor temperature sensor (BT1).

If a Qvantum QT is installed with the product, you can set it as the controlling sensor.

Compensation:

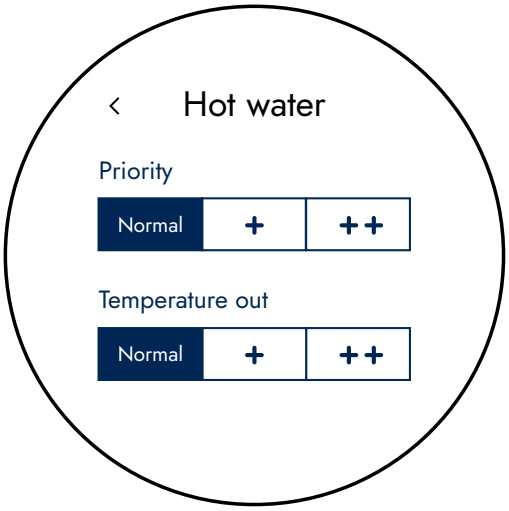
The compensation function is only available when an indoor temperature sensor is set as the controlling sensor. The compensation can be set to **Minimum**, **Normal** or **Maximum**.

The compensation controls the response time when a significant difference between the actual and the target indoor temperature is detected. If the compensation is set to **Maximum**, the response time is faster. If the compensation is set to **Minimum**, the response time is slower.

> *TIP*
>
> It is recommended to set a higher compensation in properties with high heat losses, e.g. older houses with poor insulation.

Hot water

This page shows settings to control domestic hot water production.



Priority

The product supplies heating, cooling, or domestic hot water according to the current comfort demand. Priority time is the period when the product serves this demand without switching to another function.

If more than one comfort demand is active, the product changes between the active demands. It continues to change until one demand is complete.

Increase the Priority setting to keep the product in domestic hot water mode for a longer time when more than one demand is active.

Temperature out

The Temperature out setting changes the target temperature for domestic hot water. Increase the setting to increase the target temperature.

Connectivity

Modbus External

This page contains information related to Modbus connectivity.

Modbus External must be set up using the Qvantum app.

Allow Qvantum support

This function lets a Qvantum after-sales representative access the unit remotely for troubleshooting.

Reboot display

The display is rebooted through **Settings** > **Advanced** > **Reboot display**.

Shutting down the unit

The unit is shut down through **Settings** > **Shut down**.

8 SERVICE

General

> **CAUTION**
>
> Maintenance and servicing must be performed by persons with sufficient knowledge about the task.

Remote service

This section explains how a home owner and an installer enable remote access to the product for service and troubleshooting.

The home owner must approve remote access before the installer or service technician can connect to the product.

Remote service allows a technician to troubleshoot or update settings without visiting the site. Access is granted through the Qvantum app or the product's user interface. Remote access is time-limited and automatically expires after a certain period.

1. The installer opens the Qvantum app and requests a service code from the home owner.

   Navigate to: **Remote service**.
2. The home owner generates the remote service code.
   a) Using the app: **Menu** > **Remote service**.
   b) Using the user interface: **Settings** > **Service functions** > **Remote service**.

   > **TIP**
   >
   > Through the app, the home owner can see which technicians have remote access and can revoke access for individual technicians.
3. The home owner gives the code to the installer.
4. The installer enters the code in the app.
5. The home owner grants access through the app or product interface.

The installer receives remote access to the product. The home owner is notified that remote access is active.

Maintenance

> **NOTE**
>
> The end user must be informed about necessary maintenance actions.

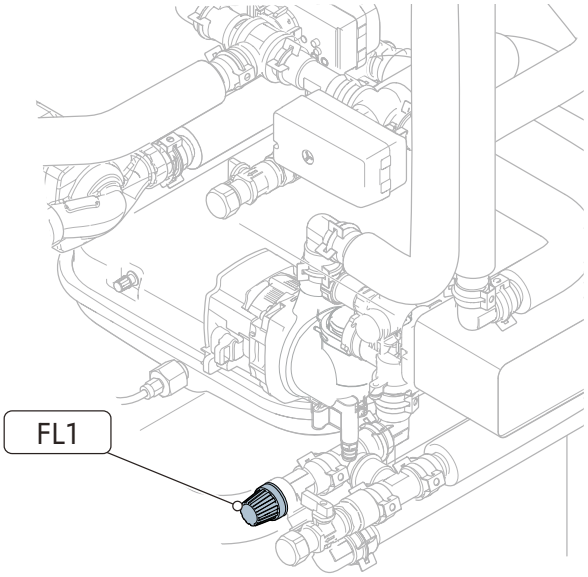
Safety valve regular exercising

Valve exercising removes deposits to ensure correct operation of the valve.

Exercise the safety valve for the hot water circuit (FL1) about one time per year.

> **NOTE**
>
> Do not exercise the safety valve for the distribution system (FL2).

> **NOTE**
>
> When the valve is exercised, water flows from the discharge pipe.

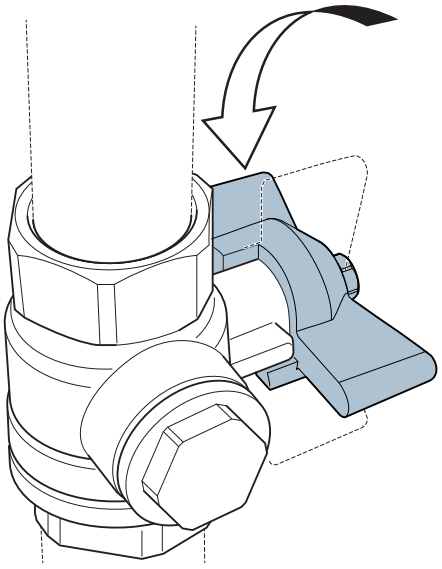


Filterball valves

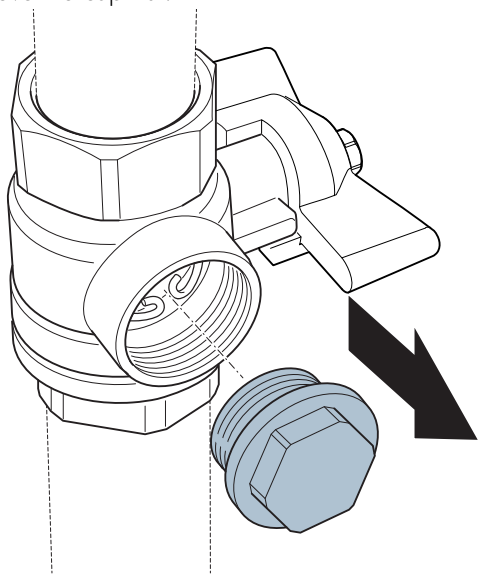
The filterball valves should be cleaned regularly to prevent clogging.

Turn off the product before cleaning the filterball valves.

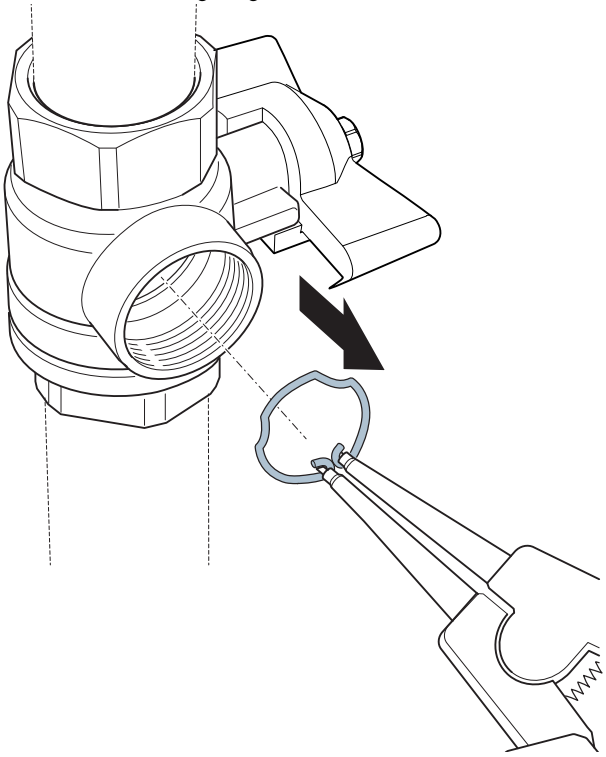
1. Close the filterball valve.



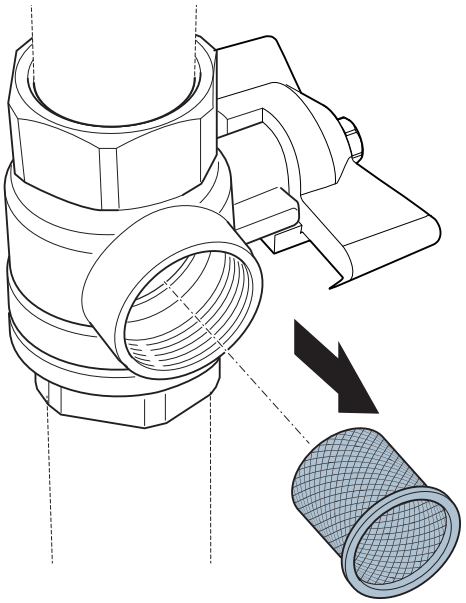
2. Remove the cap nut.



3. Remove the locking ring.



4. Remove the filter.



5. Clean the filter.

After cleaning the filter, reassemble the filterball valve and open it before turning on the product.

> *NOTE*
>
> When reassembling the filterball valve, ensure that the locking ring is positioned properly.

9 TROUBLESHOOTING

Before troubleshooting

If the system does not inform about an active fault, check the following components before troubleshooting:

> ⚠ *WARNING*
>
> The incoming supply electricity must be isolated at the safety switch by or under the supervision of a trained electrician in the event that corrective action is needed to address faults that call for work inside screwed hatches.

- Power supply.
- Group and main fuses of the property.
- Residual current device (RCD).
- Internal fuses (*F01—F08*).
- Safety temperature limiter (*FQ10*).

Low room temperature during heating

The room temperature is undesirably low when a heating demand is active

Closed thermostats

- Ensure that the thermostats are fully open. Keep in mind that individual thermostats can be turned down if a certain space needs to be cooler than the set target temperature.

Incorrect operational mode

- If operational mode **Auto** is active, set a higher value for setting **Stop heating temperature**.
- If operational mode **Manual** is active, select **Heating**.
  a) If selecting **Heating** is insufficient, enable setting **Allow addition**.

Too low target settings for automatic heat control

- Set a higher value for the offset heating curve.
  a) If the room temperature is only insufficient in cold weather, increase the **Heating curve** setting with one step.

Away mode is active

- Turn off **Away mode**.

Heating medium pump(s) have stopped

- Check speed settings for circulation pumps.

Air in the distribution system

- Purge the distribution system.

Shut-off valve for heating medium supply is closed

- Open the shut-off valve for heating medium supply.

Allow addition setting is turned off

- Use the Qvantum app and set **Allow addition** to **Yes**.

Too low value set for Allow addition temperature

- Use the Qvantum app and increase the setting for **Allow addition temperature**.

Obstructed filterball valve

- Clean the filterball valve that is connected to the distribution system return line.

Diverting valve in incorrect position

- Check the function of the diverting valve.
- Check the actuator control signal from the main board (UF1).

High room temperature during heating

The room temperature is undesirably high when a heating demand is active

Too high target settings for automatic heat control

- Set a lower value for the offset heating curve.
  a) If the room temperature is only too high in cold weather, decrease the **Heating curve** setting with one step.

Incorrectly positioned indoor temperature sensor

- If an indoor temperature sensor is set as the controlling sensor, ensure that it is positioned so that a correct temperature reading is possible.

Low room temperature during cooling

The room temperature is undesirably low when a cooling demand is active

Too high target settings for automatic cooling control

- Set a higher value for the offset cooling curve.
  a) If the room temperature is only too low in cold weather, increase the **Cooling curve** setting with one step.

Cooling is controlled by external input

- Check external switches.

Insufficient hot water production

Lack of domestic hot water

Hot water demand is temporarily higher than in normal operation

- Temporarily increase the hot water production through setting **Additional hot water.**

Too low target temperature for hot water production

- Through display page **Domestic hot water**, increase the capacity for hot water production.

Faulty pipe installation

- Verify that the pipes for the hot and cold water connections are installed correctly.

The external mixing valve is set too low

- If present, verify that the mixing valve is set correctly.

Increased hot water consumption

- Wait until the domestic hot water reaches a sufficient temperature. The hot water production can be temporarily increased by activating the function **Additional hot water** for hot water capacity.

High room temperature during cooling

The room temperature is undesirably high when a cooling demand is active

Closed thermostats

- If present, ensure that the thermostats are fully open.

Incorrect operational mode

- If operational mode **Auto** is active, set a lower value for setting **Start cooling temperature**.
- If operational mode **Manual** is active, select **Cooling**.
  a) If selecting **Cooling** is insufficient, enable setting **Allow addition**.

Too low target settings for automatic cooling control

- Set a lower value for the offset cooling curve.
  a) If the room temperature is only too high in cold weather, decrease the **Cooling curve** setting with one step.

Away mode is active

- Turn off **Away mode**.

Cooling circulation pump has stopped

- Check speed settings for circulation pump

Low system pressure

Insufficient amount of water in the heating system

1. Purge the distribution system.
2. Refill the water in the distribution system.

Compressor not starting

An alarm is active

- Follow the instructions that are shown on the display or in the Qvantum app.

No comfort demand is active

- Neither heating, cooling or hot water production is requested.

The compressor cannot start because of temperature limitations

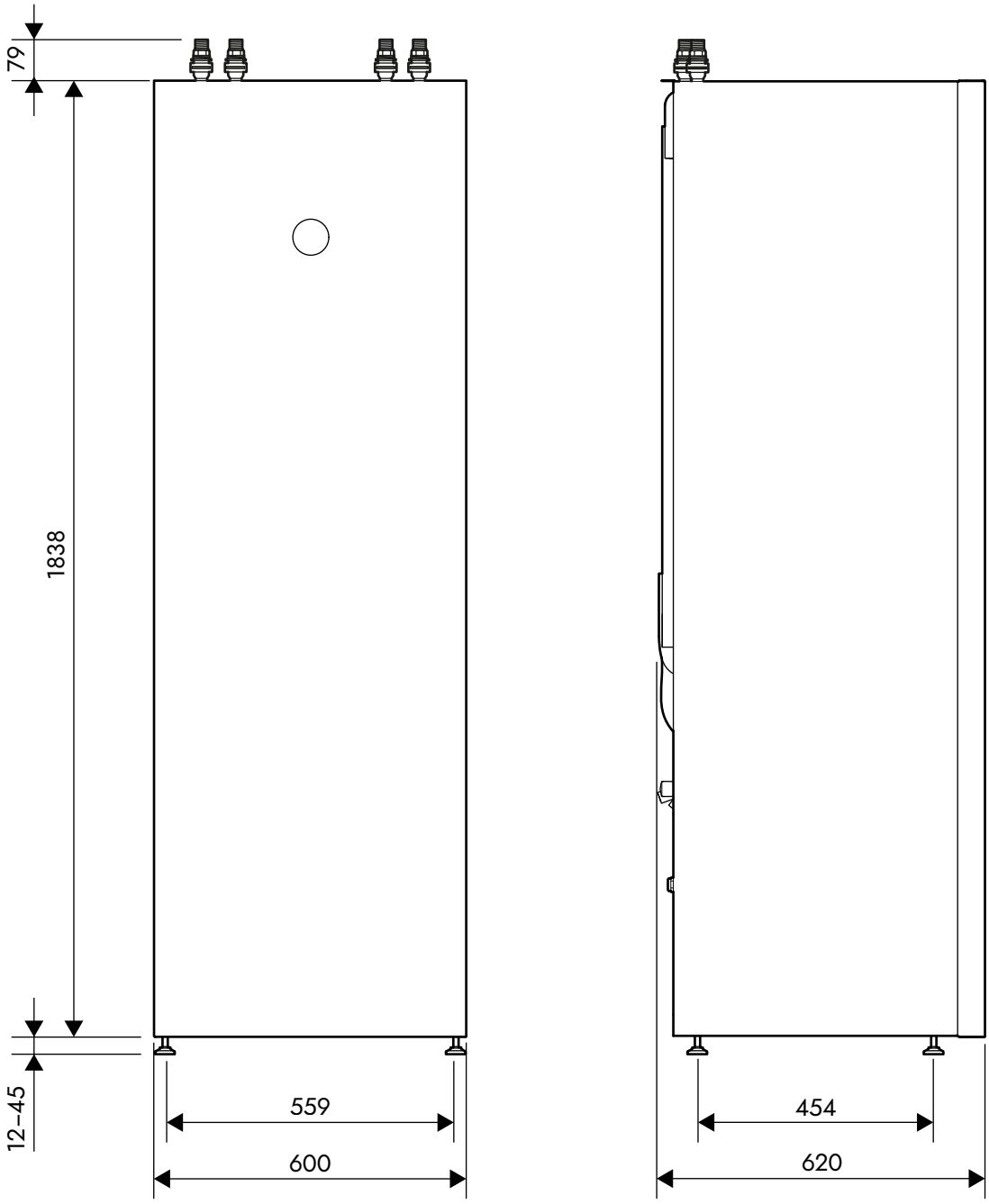
- Wait until the heat pump is within its operational temperature range.

Too little time has passed since last compressor start

- Wait until at least 30 minutes has passed.
  a) Check if the compressor has started.

10 TECHNICAL SPECIFICATIONS

Dimensions and installation coordinates



Technical data

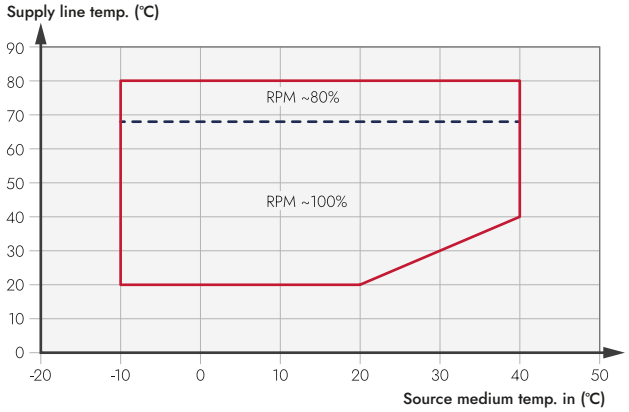
MODEL		QG-7	QG-14
Energy efficiency, average climate			
The product's efficiency class room heating, average climate 35 / 55 °C		A+++ / A+++	A+++ / A+++
The system's efficiency class room heating, average climate 35 / 55 °C		A+++ / A+++	A+++ / A+++
Efficiency class hot water heating/declared tap profile		A+ / XL	A+ / XL
ErP output data (EN14825)			
Nominal heating output ($P_{designh}$), 35 °C / 55 °C	kW	6 / 6	12 / 12
SCOP cold climate, 35 °C / 55 °C		5.10 / 3.97	5.10 / 3.97
SCOP average climate, 35 °C / 55 °C		4.96 / 3.97	4.96 / 3.97
SCOP warm climate, 35 °C / 55 °C		5.05 / 4.05	5.05 / 4.05
Refrigerant circuit			
Type of refrigerant (GWP)		R290 (0.02)	
CO_2 equivalent	kg	0.003	0.006
Refrigerant quantity	g	152	2 x 152
Cut-out value pressure switch HP	MPa (bar)	3.1 (31)	
Heating medium circuit			
Buffer tank volume	l	175	
Opening pressure, safety valve	MPa (bar)	0.3 (3)	
Max pressure, buffer tank	MPa (bar)	0.3 (3)	
Max temperature, buffer tank[1]	°C	90	
Minimum flow	l/s	0.08	0.17
Operational range[2]		20 - 80	
Source medium circuit			
Internal source medium volume	l	1.99	4.02
Operational range (source medium in)	°C	-10 - 40	
Minimum flow, borehole / ground loop	l/s	0.17	0.33
Minimum flow, grid	l/s	0.08	0.17
Min / max pressure	MPa (bar)	0 / 1 (10)	
Min. outgoing temperature, anti-freeze / no anti-freeze	°C	-10 / 7	
Domestic hot water			
Plate heat exchanger volume	l	< 0.9	
Opening pressure, safety valve	MPa (bar)	0.9 (9)	
Amount of domestic hot water (40 °C) EN16147[3]	l	255	275
Max amount of domestic hot water (40 °C)[3, 4]	l	350	350
Electrical data			
Rated voltage	V	400V 3N ~ 50Hz / 230V 1N ~ 50Hz	
Max power immersion heater	kW	5.0 (1+2+2)	
Recommended fuse, 3x400V / 1x230V[5]	A	20 / 35	25 / 50
Minimum fuse, 3x400V / 1x230V[6]	A	13 / 13	13 / 25
Recommended RCD type		B	
Enclosure class		IP 21	
Operation mode EN60730		1	
Sound data			
Sound power level ($L_{W(A)}$)EN12102	dB(A)	39	41
Communication			
WLAN, 2.412 - 2.472 GHz max power	dBm	15.46	
Bluetooth, 2.402 - 2.480 GHz max power	dBm	3.02	
Connection dimensions			
Distribution system Ø	mm	G 3/4"	
Cold water Ø	mm	G 3/4"	
Hot water Ø	mm	G 3/4"	
Source medium [7]	mm	G 3/4"	28 mm
Weight and dimensions			
Weight, empty / filled	kg	180 / 355	237 / 412
Weight with packaging	kg	190	247
Weight, compressor unit	kg	53	2 x 53
W x D x H[8]	mm	600 x 620 x 1850	
W x D x H with packaging	mm	610 x 650 x 2010	
Service clearance height	mm	1995	

MODEL		QG-7	QG-14
Misc.			
Part no.		1007461	9330061

1 With internal immersion heater.
2 Max 63 °C without internal immersion heater.
3 At tap flow rate 10 l/min and an incoming cold water temperature of 10 °C.
4 When operating mode Additional hot water is active.
5 Minimum required fuse size for unlimited immersion heater output.
6 This fuse size limits immersion heater operation at compressor peak load.
7 QG-14 with supplied compression fittings: G25 (ext. thread).
8 Height with feet fully inserted.

Operational data

Compressor operational range



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HEAT PUMPS FOR SUSTAINABLE CITIES

WE CHANGE THE WAY THE CITIES OF EUROPE ARE HEATED

Qvantum, founded in Sweden in 1993, develops high-quality heat pumps for individual buildings and innovative heat pump-based solutions for densely populated areas to enable everybody to benefit from emission free heating and cooling. The company has deep knowledge in both heat pump technology and energy systems engineering and works in close collaboration with engineering consultants, installers, project developers and utilities.

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