

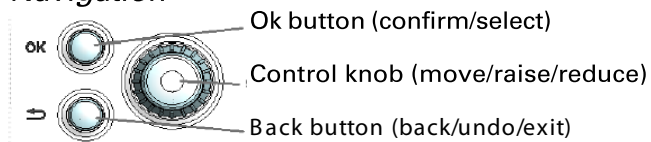
# Indoor module

## Tehowatti Air



## Quick guide

### Navigation



A detailed explanation of the button functions can be found on page 40.

How to scroll through menus and make different settings is described on page 42.

### Set the indoor climate



The mode for setting the indoor temperature is accessed by pressing the OK button twice, when in the start mode in the main menu.

### Increase hot water volume



To temporarily increase the amount of hot water, first turn the control knob to mark menu 2 (water droplet) and then press the OK button twice.

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# 1 Important information

## Safety information

This manual describes installation and service procedures for implementation by specialists.

The manual must be left with the customer.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

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<i>System pressure</i>	<i>Max</i>	<i>Min</i>
Heating medium	0.3 MPa (3 bar)	0.05 MPa (0.5 bar)
Domestic water	1.0 MPa (10 bar)	0.01 MPa (0.1 bar)

Water may drip from the safety valve. A factory-fitted overflow pipe goes from the safety valve to an overflow cup. The overflow pipe is visible, its mouth is open and is not located close to electrical components. An overflow pipe should be routed from the overflow cup to a suitable drain. The entire length of this overflow pipe is inclined to prevent water pockets, and it must also be frost-proof.

TW Air (abbreviation of Tehowatti Air) must be installed via an isolator switch. The cable area has to be dimensioned based on the fuse rating used.

## Symbols



### NOTE

This symbol indicates danger to person or machine.



### Caution

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.

## Marking



The CE mark is obligatory for most products sold in the EU, regardless of where they are made.



Classification of enclosure of electro-technical equipment.



Danger to person or machine.



Read the User Manual.

## Serial number

The serial number can be found at the middle of the top panel, in the lower right corner of the front cover in the info menu (menu 3.1).

The type plate (PF1) is located on the right front edge of the cover plate. The product serial number is printed as shown. The serial number will be requested if you contact the manufacturer.



### *Caution*

You need the product's (14 digit) serial number for servicing and support.

## Recovery



Leave the disposal of the packaging to the installer who installed the product or to special waste stations.

Do not dispose of used products with normal household waste. It must be disposed of at a special waste station or dealer who provides this type of service.

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

# Inspection of the installation

Current regulations require the heating installation to be inspected before it is commissioned. The inspection must be carried out by a suitably qualified person.

In addition, fill in the page for the installation data in the User Manual.

✓	Description	Notes	Signature	Date
	Heating medium, see section "System diagram"			
	System flushed			
	System vented			
	Expansion vessel			
	Particle filter			
	Safety valve			
	Shut off valves			
	Boiler pressure			
	Connected according to outline diagram			
	Hot water, see p. 19			
	Shut off valves			
	Mixing valve			
	Safety valve			
	Electricity, see p. 25			
	Connected communication			
	Circuit fuses			
	Fuses, indoor module			
	Fuses property			
	Outside sensor			
	Room sensor			
	Current sensor			
	Safety breaker			
	Earth circuit-breaker			
	Setting of emergency mode thermostat			
	Miscellaneous			
	Docked to			

# Outdoor modules

COMPATIBLE AIR/WATER HEAT PUMPS

*SPLIT 6 outdoor unit  
+ SplitBox 6*

*SPLIT 8, 12 outdoor  
unit + SplitBox 8-12*

*SPLIT 16  
outdoor unit +  
SplitBox 16*

*Inverter M6  
outdoor unit*

*Inverter M8  
outdoor unit*

*Inverter M12  
outdoor unit*

*Inverter M16  
outdoor unit*

*Nordic 8 outdoor  
unit 1x230V*

*Nordic 8 outdoor  
unit 3x400V*

*Nordic 12  
outdoor unit*

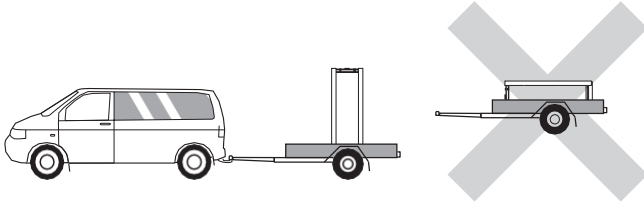
*Nordic 16  
outdoor unit*

Check the  
software version  
on compatible  
older Jäspi air-  
to-water heat  
pumps, see p.16

# 2 Delivery and handling

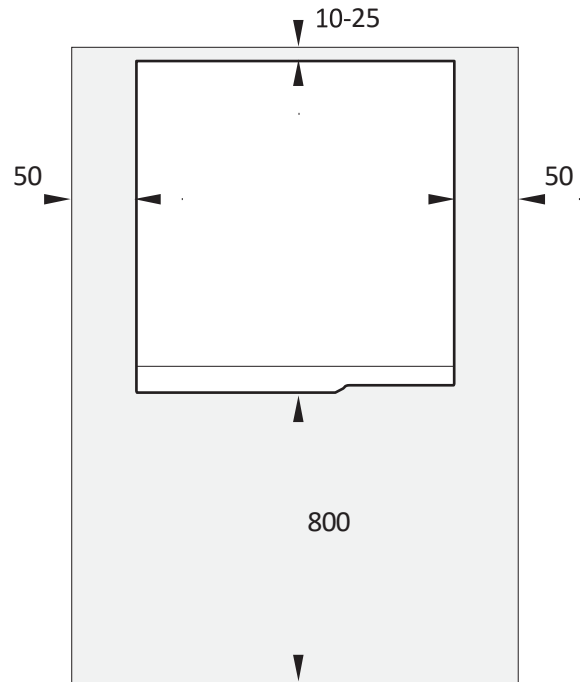
## Transport

TW Air should be transported and stored vertically in a dry place. However, the TW Air may be carefully laid on its back when being moved into a building.



### INSTALLATION AREA

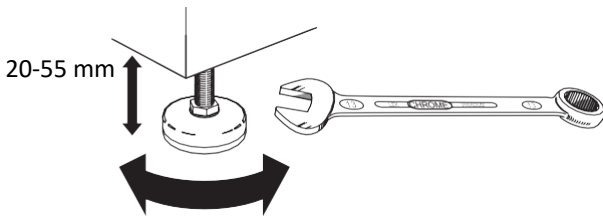
Leave a free space of 800 mm in front of the product. All service on TW Air can be carried out from the front.



## Assembly

- Place TW Air on a solid foundation indoors that can take its weight. Use the product's adjustable feet to obtain a horizontal and stable set-up.

The space where TW Air is located must be frost-free.



- Because water can emerge from the safety valve, the area where TW Air is located must be provided with floor drainage.

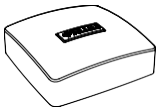


### NOTE

Leave 10 – 25 mm free space between TW Air and the wall behind for routing cables and pipes.



# Supplied components



Outside sensor



Room sensor



Current sensor\*

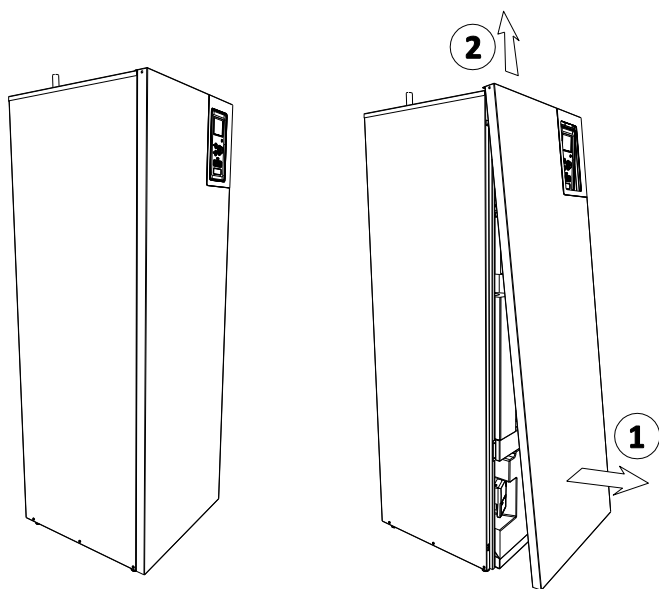
\*Only to 3X400V

## LOCATION

The kit of supplied items is placed on top of the product.

# Removing the front cover

Front cover



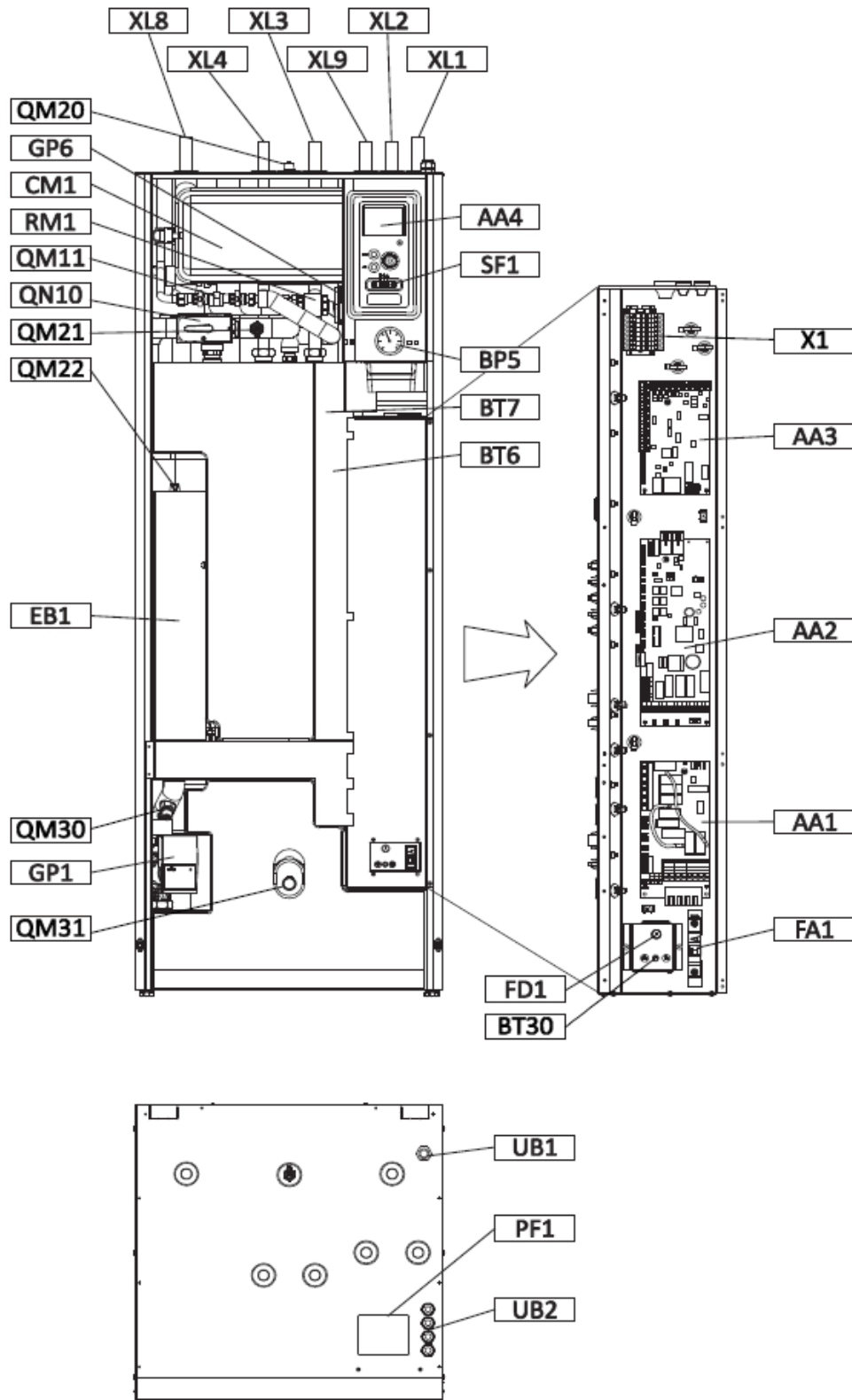
1. Remove the front panel from the bottom.
2. Lift the panel out at the bottom edge and up.

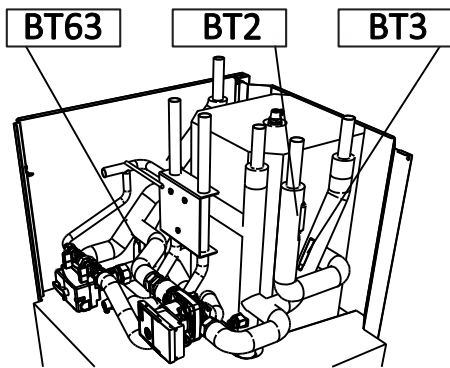
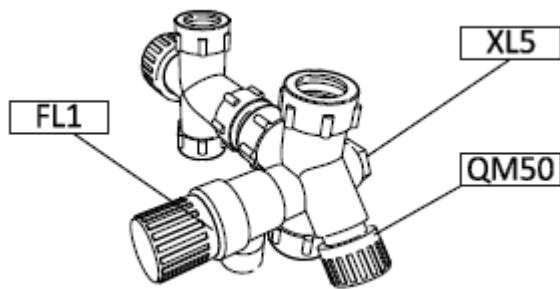


## Note

The front panel is heavy, handle it with care so that the front panel is not damaged when removed.

# 3 Indoor module's design





# List of components

## PIPE CONNECTIONS

- XL1 Connection, heating medium supply line  $\varnothing 22$  mm
- XL2 Connection, heating medium return line  $\varnothing 22$  mm
- XL3 Connection, cold water  $\varnothing 22$  mm
- XL4 Connection, hot water  $\varnothing 22$  mm
- XL5 Connection, hot water circulation  $\frac{1}{2}$ " (internal thread)
- XL8 Connection, docking from heat pump  $\varnothing 22$  mm
- XL9 Connection, docking to heat pump  $\varnothing 22$  mm

## HVAC COMPONENTS

- CM1 Expansion vessel, closed, heating medium
- FL1 Safety valve, water heater
- FL2 Safety valve, heating medium
- GP1 Circulation pump
- GP6 Circulation pump, heating medium
- QM11 Filler valve, heating medium
- QM20 Venting, buffer
- QM22 Venting valve, climate system
- QN10 Reversing valve, climate system/water heating, flow line
- RM1 Non return valve, cold water
- QM21 Venting valve, coil

## SENSORS ETC.

- AA2 Manometer, heating system
- BP5 Temperature sensors, heating medium flow
- BT2 Temperature sensors, heating medium return
- BT3 Temperature sensor, hot water, charging
- BT6 Temperature sensor, hot water, top
- BT7 Thermostat, standby mode
- BT30 Temperature sensor, heating medium supply after immersion heater
- BT63 immersion heater

## ELECTRICAL COMPONENTS

- AA1 Immersion heater card
- AA2 Input circuit board
- AA3 Input circuit board
- AA4 Display unit
- EB1 Immersion heater
- FA1 Circuit-breaker
- FD1 Temperature limiter
- SF1 Switch

## MISCELLANEOUS

- PF1 Rating plate
- UB1 Cable gland
- UB2 Cable gland

# 4 Pipe connections

## General pipe connections

Pipe installation must be carried out in accordance with current norms and directives.



### Caution

Ensure that incoming water is clean. When using a private well, it may be necessary to supplement with an extra water filter.



### NOTE

Any high points in the climate system, must be equipped with air vents.





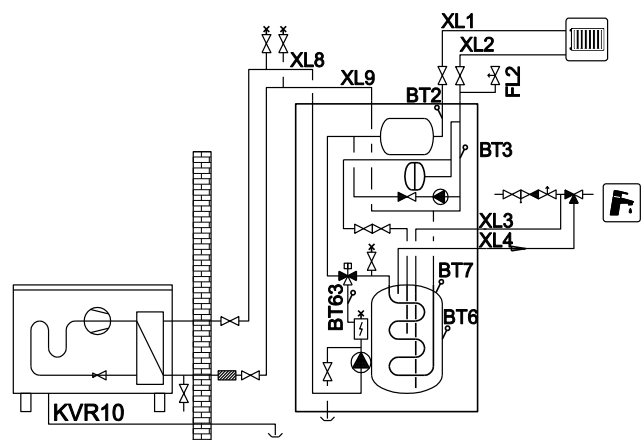
### NOTE

The pipe systems need to be flushed out before the indoor module is connected so that any debris cannot damage component parts.



### NOTE

Switch (SF1) must not be moved to  or  until TW Air has been filled with water. Otherwise the temperature limiter, thermostat and the immersion heater etc can be damaged.

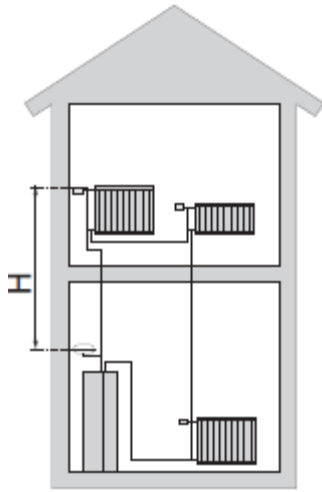


TW Air together with a compatible air/water heat pump (See chapter "Outdoor modules", p.16) constitutes a complete installation for heating and hot water.

The system requires the size of the radiator circuit to be designed for a low temperature heating medium. At the lowest dimensioned outdoor temperature, the highest recommended temperatures are 55 °C on the supply line and 45 °C on the return line, but TW Air can handle up to 65 °C on the supply line.

Overflow water from the safety valve goes via an overflow cup to a drain so that hot water splashes cannot cause injury. The entire length of the overflow water pipe must be inclined to prevent water pockets, and must also be frost-proof. The mouth of the overflow water pipe must be visible and not located close to electrical components.

KAUKORA recommends installing TW Air as close to the heat pump as possible for optimum comfort. For further information about the location of different components, see section "Installation alternatives" in this manual.



TW Air consists of water heater with charge coil, expansion vessel, safety valve, filler valve, immersion heater, circulation pumps, buffer vessel and control system. TW Air is connected to the climate system.

TW Air is directly adapted for connection and communication with a compatible KAUKORA air/water heat pump, see section "Outdoor modules" (p. 16), and together they constitute a complete heating installation.

When it is cold outdoors, the air/water heat pump works with TW Air, and if the outdoor air temperature falls below the heat pump's stop temperature, all heating is carried out by TW Air.

## BOILER AND RADIATOR VOLUMES

TW Air is equipped with a pressure expansion vessel of 12 litres.

The pre-pressure of the pressure expansion vessel must be dimensioned according to the maximum height (H) between the vessel and the highest positioned radiator, see figure. A

pre-pressure of 0.5 bar (5 mvp) means a maximum permitted height difference of 5 m.

The maximum system volume excluding the boiler is 220 litres at the above pre-pressure.

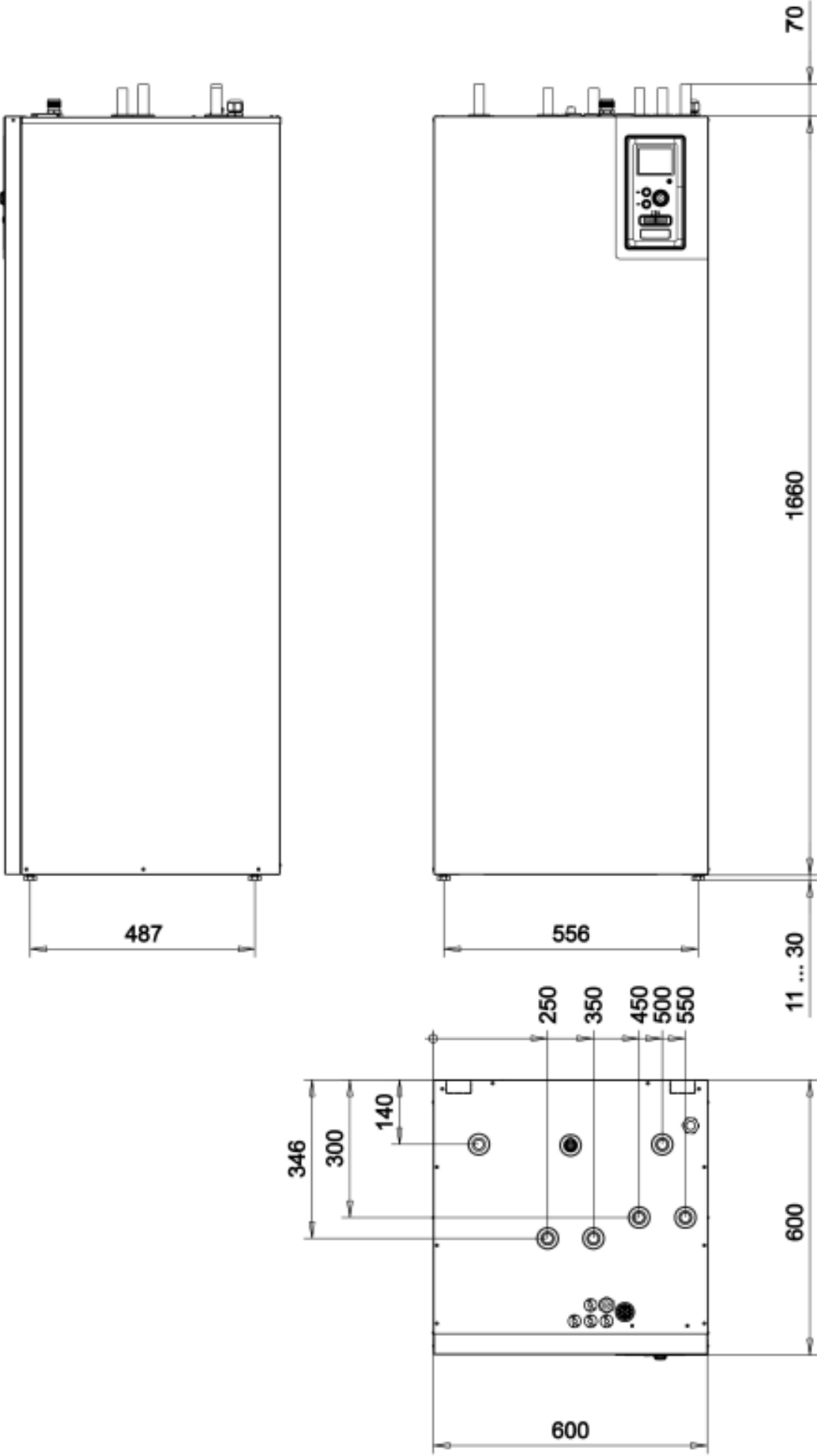
### Volume expansion

Approx. 10 l/kW is required for connection to the heat pump, and many heating systems do not have this volume. To prevent operational problems, the volume is then expanded using a Jäspi buffer vessel.

## SYMBOL KEY

Symbol	Meaning
	Shut-off valve
	Non-return valve
	Mixing valve
	Circulation pump
	Immersion heater
	Expansion vessel
	Filterball
	Temperature gauge
	Temperature sensor
	Pressure gauge
	Control valve
	Safety valve
	Reversing valve/shunt
	Venting valve
	Under floor heating systems
	Drain valve
	Compressor
	Heat exchanger
	Radiator system
	Domestic hot water
	Mud separator

# Dimensions



# Installation alternative

A compatible JÄSPI air to water heat pumps must be equipped with a display control card with at least the following software version.

The version of the control card is shown on the heat pumps display during start-up.

Products:

All versions

Inverter M6
Inverter M8
Inverter M12
NORDIC-8
NORDIC-12
NORDIC-16
JÄSPI SPLIT
SPLIT-6 + Splitbox 6
SPLIT-8 + Splitbox 8-12
SPLIT-12+ Splitbox 8-12

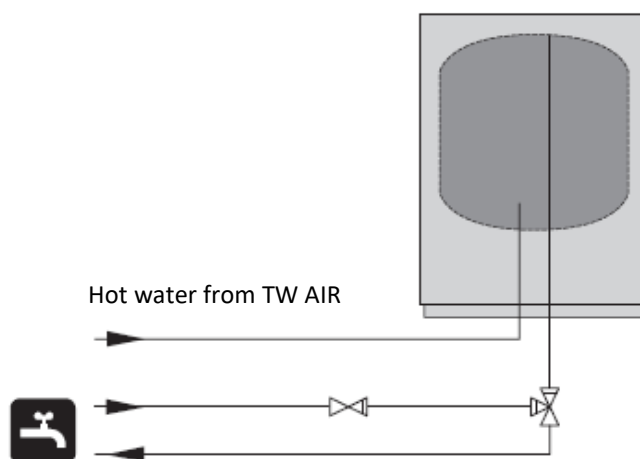
Further option information is available at [jaspi.fi](http://jaspi.fi) and in the respective assembly instructions for the accessories used. See page 68 for a list of the accessories that can be used with TW Air.

## EXTRA HOT WATER HEATERS

The system can be supplemented with an extra water heater, if a large bathtub or other significant consumer of hot water is installed. A mixer valve is then installed on the outgoing hot water from the water heater.

### *Water heater with immersion heater*

If it is possible to use a water heater with an immersion heater, connect it as illustrated below.





## CLARIFICATION

HQ1 Mud separator  
QM42 Shut-off valve  
QM43 Shut-off valve  
QM44 Shut-off valve  
RM1 Non-return valve

RN1 Control valve  
RM1 Non-return valve

### *Other*

EB1 Additional external heat

### *CL11 Pool package*

AA25 Connection box with option card  
BT51 Temperatur sensor, pool  
EP5 Heat exchanger, pool  
GP9 Pump, pool  
GP12 Charging pump  
HQ4 Mud separator  
QN19 Reversing valve, pool

### *EB15 TW AIR*

BT25 Temperatur sensor, heating, external flow line  
XL1 Connection, heating supply line 1  
XL2 Connection, heating return line 2  
XL3 Connection, cold water  
XL4 Connection, hot water  
XL8 Connection, docking from heat pump  
XL9 Connection, docking to heat pump

### *EB101 Heat pump*

FL10 Safety valve  
QM1 Drain valve  
QM40 Shut-off valve  
QZ2 Folter ball valve

### *EM1 External heat source (shunted oil, gas, pellet or wood boiler)*

AA25 Connection box with option card  
BT25 Temperatur sensor, boiler  
CM1 Closed expansion tank  
FL2 Safety valve, heating system  
KA1 Apurele  
QN11 Shunt valve

### *EP21 Heating system 2*

AA25 Connection box with option card  
BT2 Temperature sensor, heating supply line  
BT3 Temperature sensor, heating return line  
GP20 Circulation pump, heating, sub-shunt  
QN25 Shunt valve

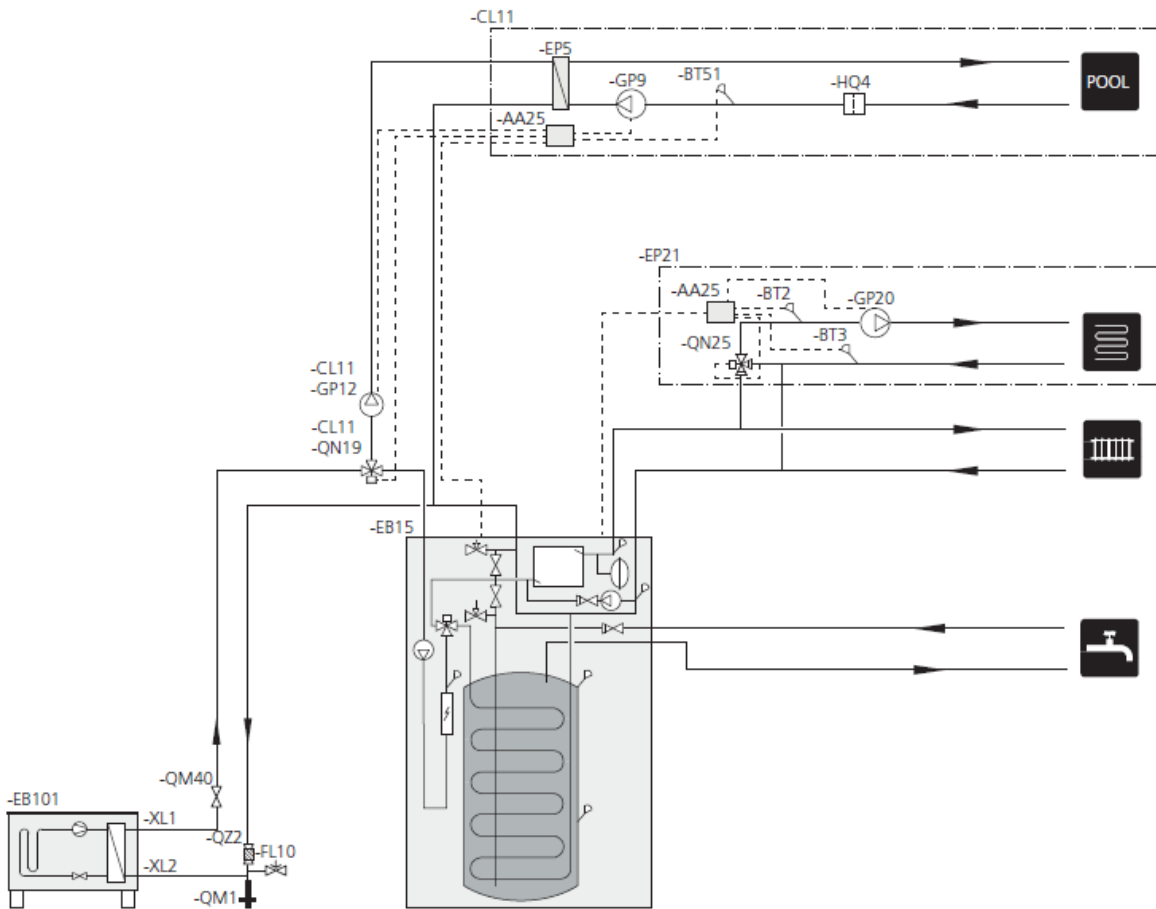
### *EQ1 Active cooling module ACS 310*

AA25 Connection box with option card  
BT64 Temperature sensor, cooling, supply line  
CP10 Single jacketed storage tank, cooling  
GP12 Charging pump  
GP13 Circulation pump, cooling  
QN12 Reversing valve, cooling / heating

### *Hot water circulation*

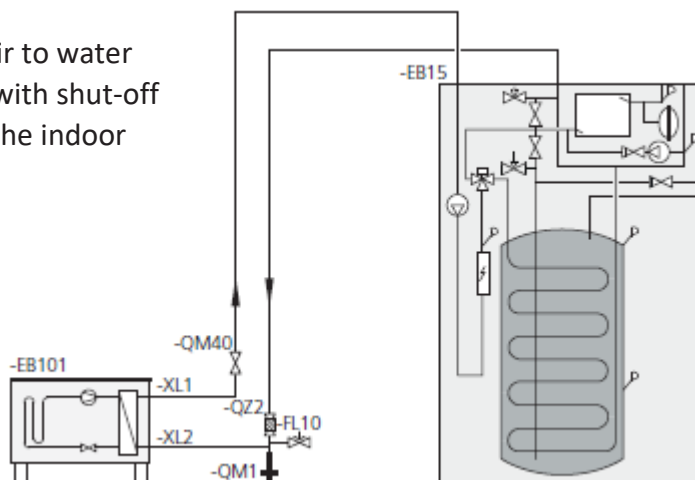
BT82 Temperature sensor, return of hot water circuit  
EB2 Water heater  
GP11 Circulation pump, hot water

## Principle scheme



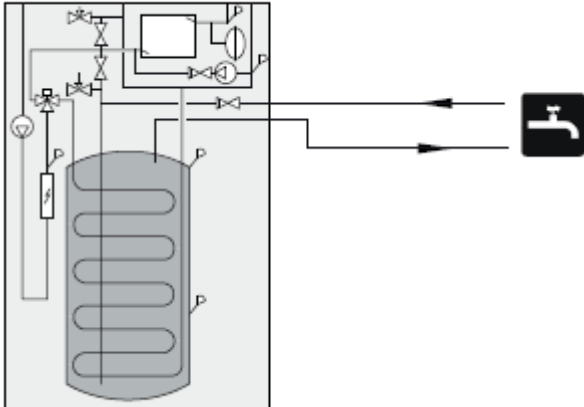
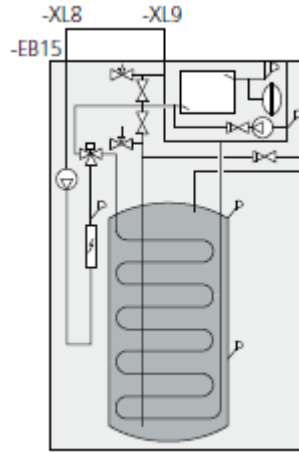
## CONNECTION TO THE HEAT PUMP

See page 16 for a list of compatible air to water heat pumps. TW Air is not equipped with shut-off valves but must be installed outside the indoor unit for easy maintenance.



### CONNECTION WITHOUT HEAT PUMP

Connect together the pipes coming from the heat pump (XL8) and going to the heat pump (XL9).

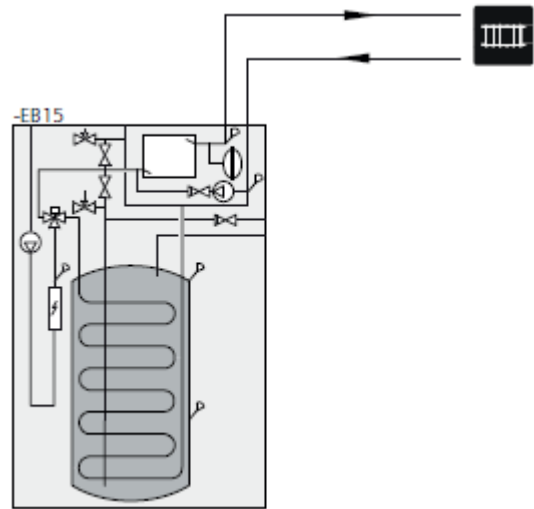


### CONNECTION OF HOT WATER

Install the supplied mixing valve in the hot water connections of the unit. The setting is made in menu 5.1.1 (see page 53).

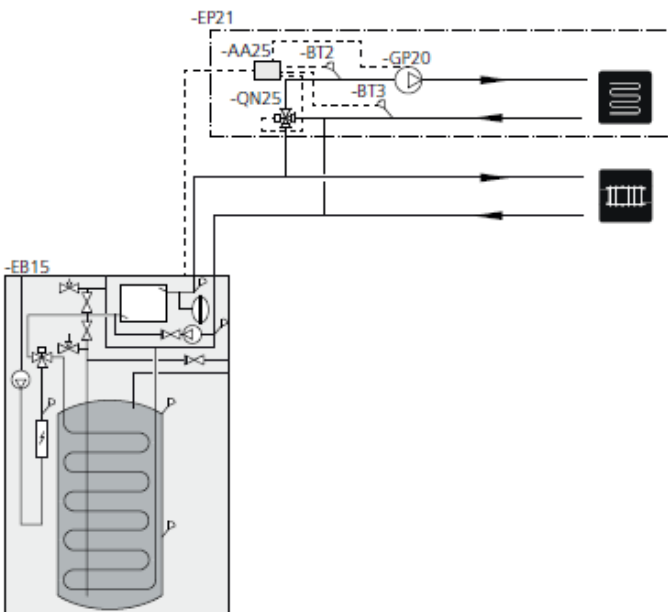
### CONNECTION THE HEATING SYSTEM

Connection to a system with thermostats requires that a bypass valve be installed on all radiators / loops or that a few thermostats be removed to ensure sufficient flow.



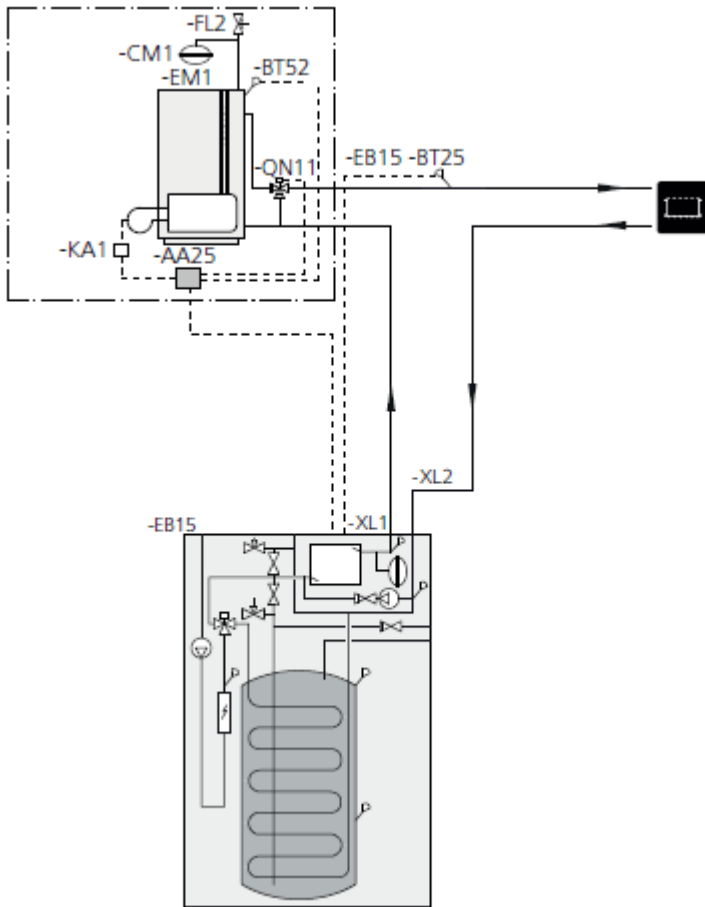
### EXTRA HEATING SYSTEM

In buildings with several heating systems that require different temperatures, the following connection can be used. The accessory ECS 40/41 is required for this connection.



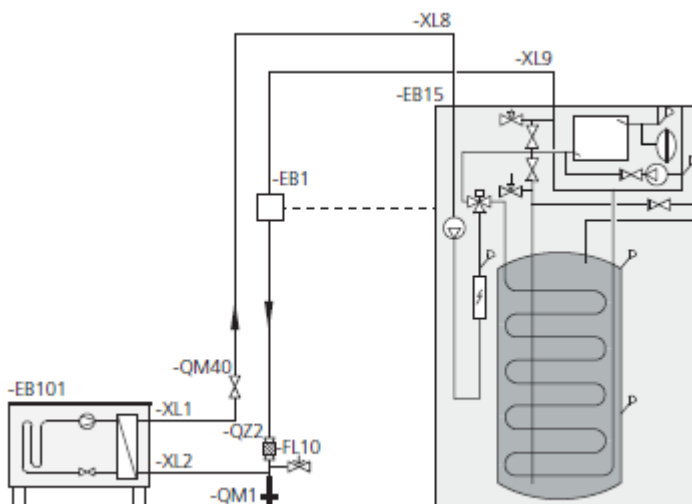
## EXTERNAL HEAT SOURCE CONNECTION

To connection an external heat source directly to the TW Air, the accessory AXC 50 is required for connection, see Accessories on page 68. The “priority additional heat source” function can be used with this connection.



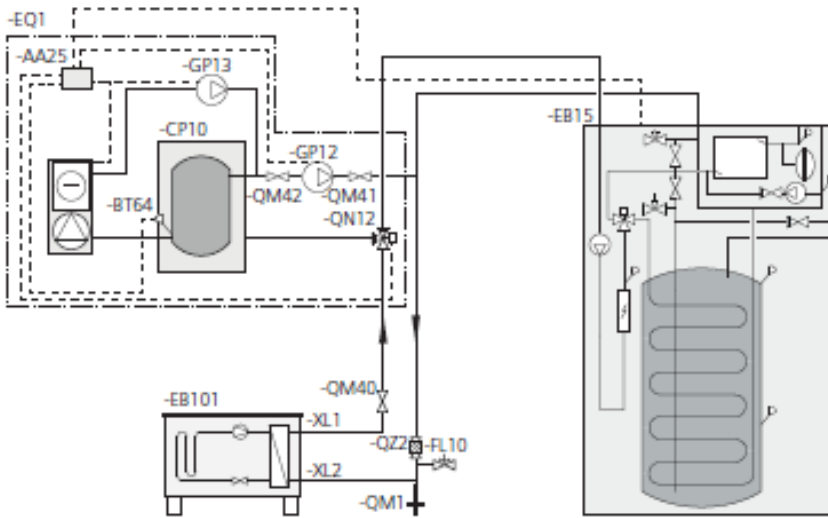
## LISÄWATTI ELECTRIC BOILER CONNECTION

Additional electric boiler for connection in one stage when the heat pumps stops due to low outdoor temperature. The power of the electric heat source must not exceed the power of the heat pump just before stopping.



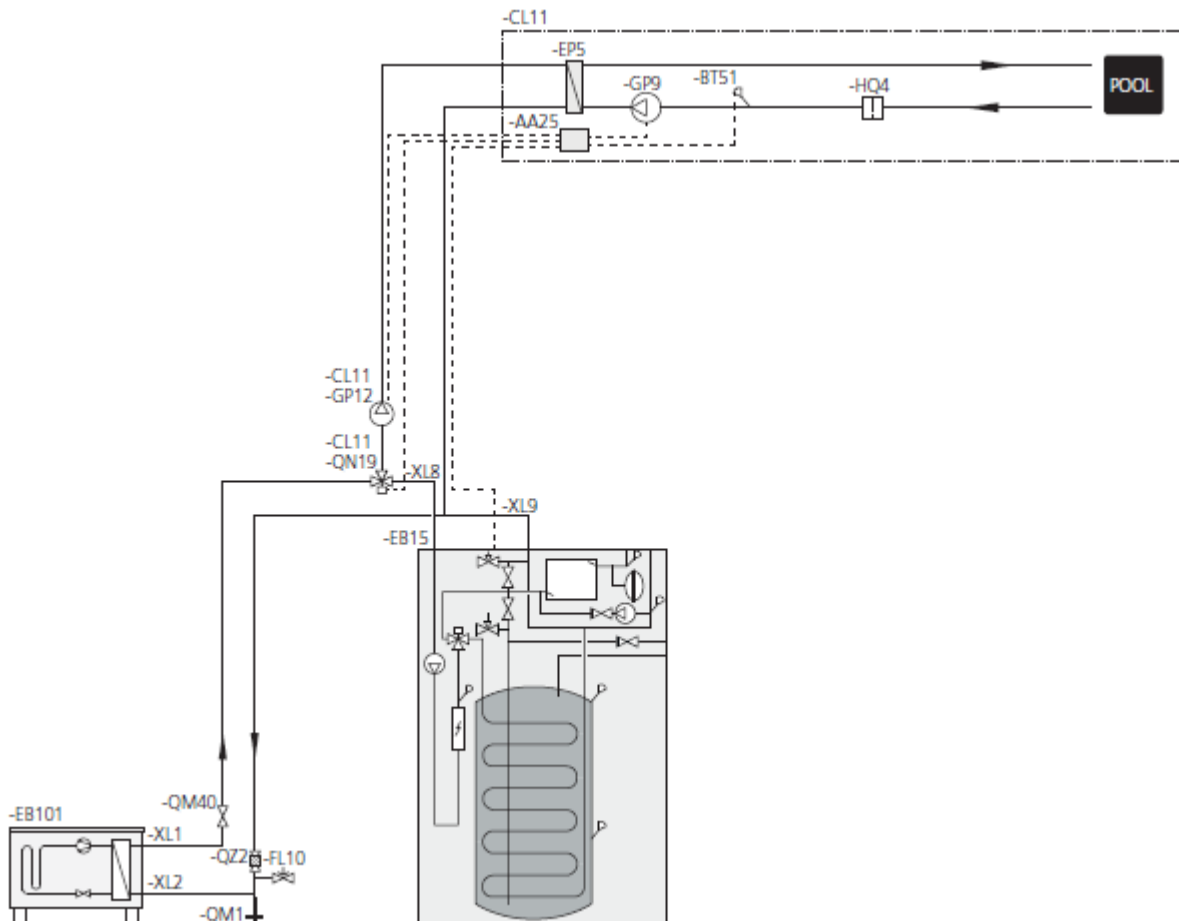
## ACS 310 CONNECTION

To connect active cooling ACS 310 see Accessories on page 68.



## CONNECTION THE POOL HEAT EXCHANGER

The pool heating is controlled by a pool sensor. When the pool temperature is low, the reversing valve changes the direction and directs the heating water to the pool exchanger. The accessory POOL 310 is required for this connection.



# 5 Electrical connections

## General

All electrical equipment, except the outdoor sensors, room sensors and the current sensors are ready connected at the factory.

- Disconnect the indoor module before insulation testing the house wiring.
- If the building is equipped with an earth-fault breaker, TW AIR should be equipped with a separate one.
- For the indoor module electrical wiring diagram, see page 74.
- Communication and sensor cables to external connections must not be laid close to high current cables.
- The minimum area of communication and sensor cables to external connections must be 0.5 mm<sup>2</sup> up to 50, for example EKKX or LiYY or equivalent.
- When cable routing in TW AIR, cable grommets UB1 and UB2, (marked in image) must be used.



### NOTE

The switch (SF1) must not be set to "I" or "△" until the boiler has been filled with water and the radiator system vented. Otherwise the temperature limiter, thermostat and the immersion heater can be damaged.



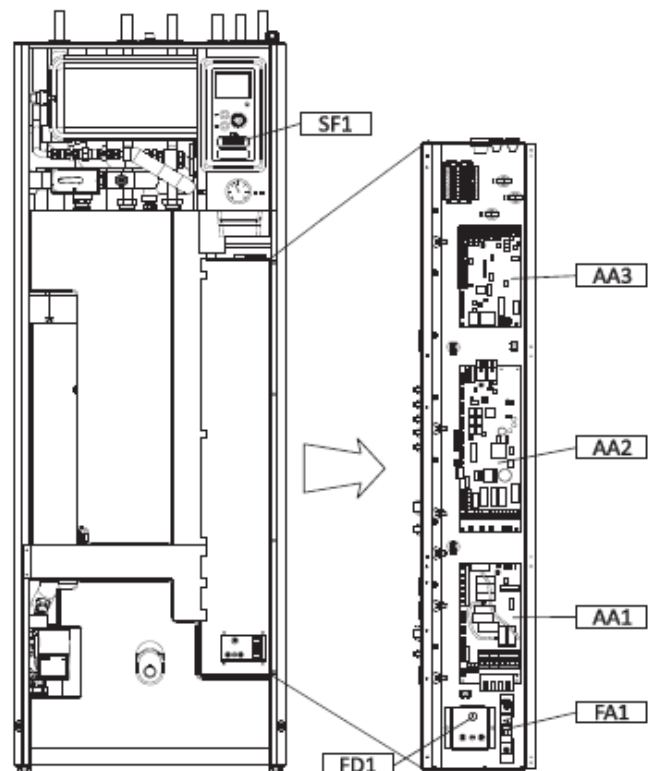
### NOTE

If the supply cable is damaged, only KAUKORA, its service representative or similar authorized person may replace it to prevent any danger and damage.



### NOTE

Electrical installation and service must be carried out under the supervision of a qualified electrician. Cut the current with the circuit breaker before carrying out any servicing. Electrical installation and wiring must be carried out in accordance with the stipulations in force.

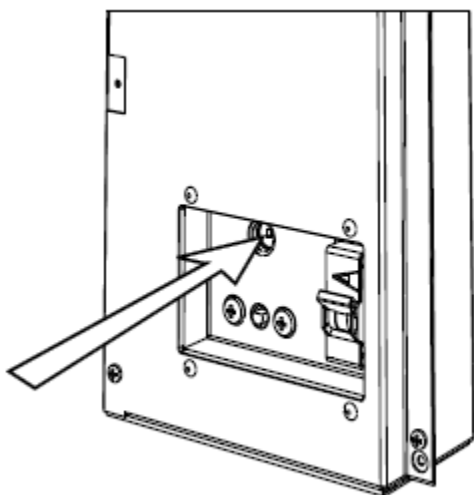


## TEMPERATURE LIMITER

The temperature limiter (FQ10) cuts the power supply to the electric additional heat, if the temperature rises to between 90 and 100 °C and it is reset manually.

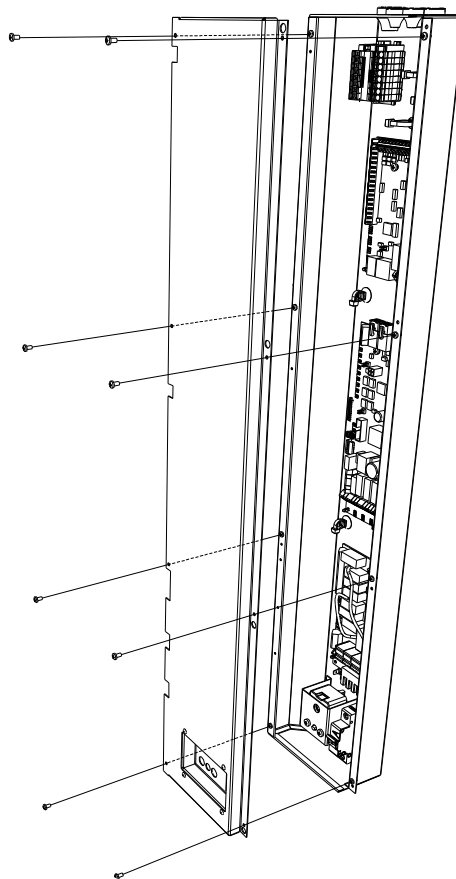
### *Resetting*

The temperature limiter (FQ10) is accessible behind the front cover. Reset the temperature limiter by pressing the button (FQ10-S2) using a small screwdriver. Press the button lightly, max. 15 N (approx. 1.5 kg).



## ACCESSIBILITY, ELECTRICAL CONNECTION

Loosen the screws on the protective cover under the front panel (8 pcs.).



## ACCESSIBILITY, ELECTRICAL CONNECTION

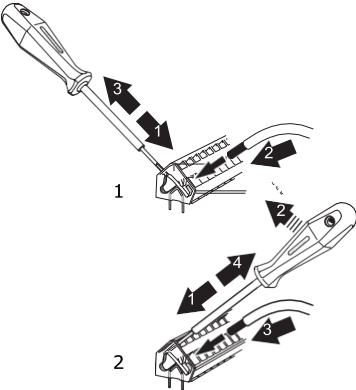
The plastic cap of the electrical boxes is opened using a screwdriver.

## CIRCUIT-BREAKER

The indoor module and a large proportion of its internal fused by a circuit breaker (FC1).

### CABLE LOCK

Use a suitable tool to release/lock cables in the indoor module terminal blocks.





# Connections



## NOTE

To prevent interference, unscreened communication and/or sensor cables to external connections must not be laid closer than 20 cm from high voltage cables.

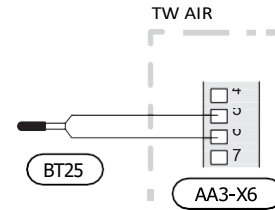
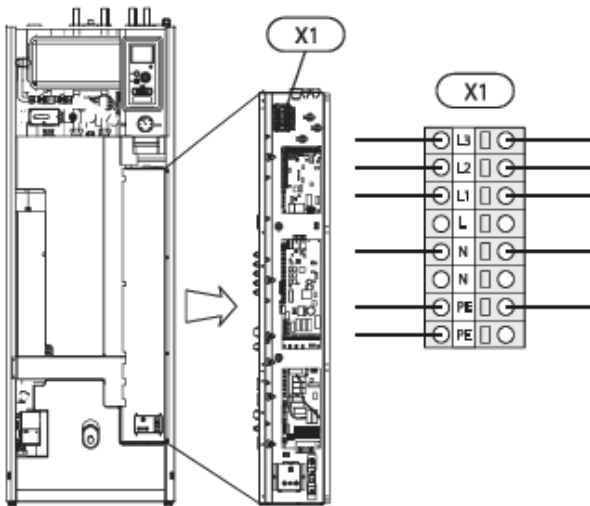
## TEMPERATURE SENSOR, EXTERNAL FLOW LINE

If temperature sensor, external flow line (BT25) needs to be used, connect it to terminal block X6:5 and X6:6 on the input card (AA3). Use a 2 core cable of at least 0.5 mm<sup>2</sup> cable area.

## POWER CONNECTION

TW AIR must be installed with a disconnection option on the supply cable. Minimum cable area must be sized according to the fuse rating used. The enclosed cable (length approx. 2 m) for incoming electricity is connected to terminal block X1 on the immersion heater board (AA1). All installations must be carried out in accordance with current norms and directives. The connection cable can be found on the reverse of TW AIR.

### Connection



## CONNECTING EXTERNAL OPERATING VOLTAGE FOR THE CONTROL SYSTEM



## NOTE

Only applies to power connection of 3x400V.

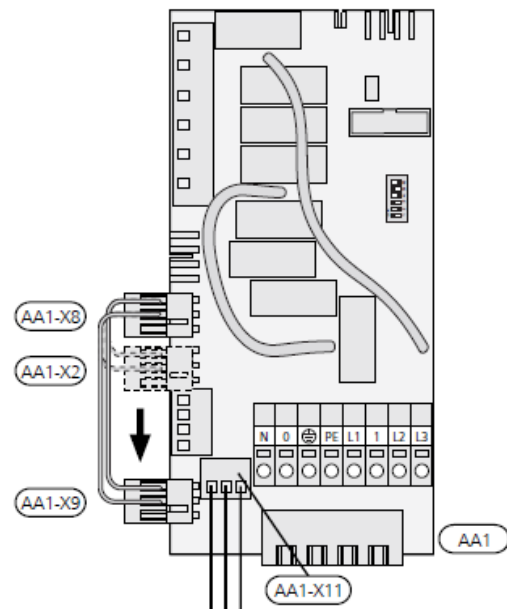


## NOTE

Mark up any junction boxes with warnings for external voltage.

If you wish to connect external operating voltage for the control system to TW AIR on the immersion heater circuit board (AA1) the edge connector at AA1:X2 must be moved to AA1:X9 (as illustrated).

Operating voltage (1x230V ~ 50Hz) is connected to AA1:X11  
TW Air



(as illustrated).

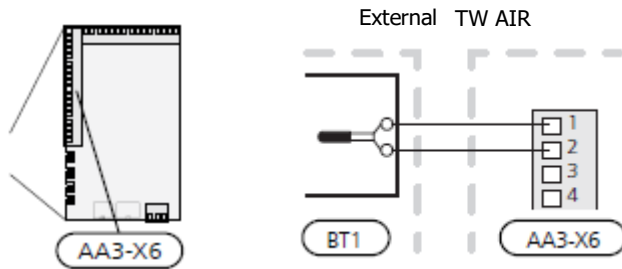
1x230V+N+PE operating voltage

### Outside sensor

Install the outdoor temperature sensor (BT1) in the shade on a wall facing north or north-west, so it is unaffected by the morning sun for example.

Connect the sensor to terminal block X6:1 and X6:2 on the input board (AA3).

If a conduit is used it must be sealed to prevent condensation in the sensor capsule. Use a 2 core cable of at least 0,5 mm<sup>2</sup> cable area.



### Room sensor

TW AIR is supplied with a room sensor enclosed (BT50). The room sensor has a number of functions:

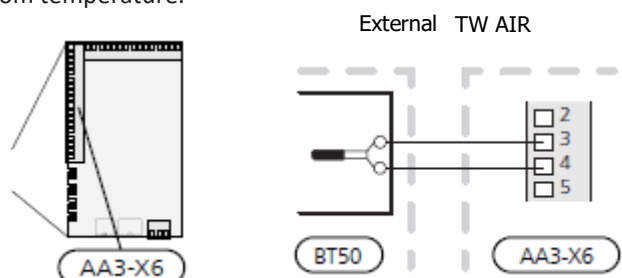
1. Shows current room temperature in the display on TW AIR.
2. Option of changing the room temperature in °C.
3. Provides the option of fine-tuning the room temperature.

Install the sensor in a neutral position where the set temperature is required. A suitable location is on a free inner wall in a hall approx. 1.5 m above the floor. It is important that the sensor is not obstructed from measuring the correct room temperature by being located, for example, in a recess, between shelves, behind a curtain, above or close to a heat source, in a draft from an external door or in direct sunlight. Closed radiator thermostats can also cause problems.

The indoor module operates without the sensor, but if one wishes to read off the accommodation's indoor temperature in TW AIR's display, the sensor must be installed. Connect the room sensor to X6:3 and X6:4 on the input board (AA3).

If the sensor is to have a controlling function, it is activated in menu 1.9.4.

If the room sensor is used in a room with underfloor heating, it should only have an indicative function, not control of the room temperature.



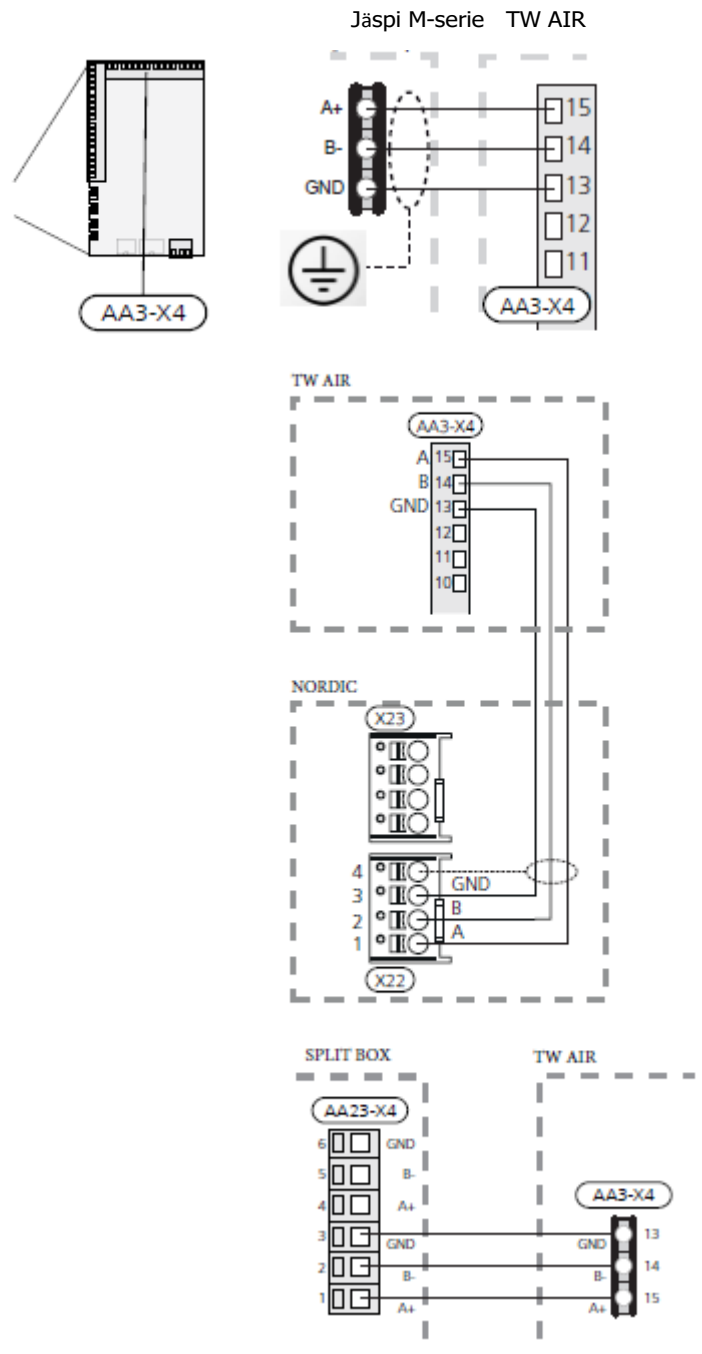


### Caution

Changes of temperature in accommodation take time. For example, short time periods in combination with underfloor heating will not give a noticeable difference in room temperature.

## COMMUNICATION

If TW AIR is to be connected to the heat pump, it is connected to terminal blocks X4:13, X4:14 and X4:15 on the input board (AA3).



# Settings

## ELECTRICAL ADDITION - MAXIMUM OUTPUT

The immersion heater output is divided into 7 steps, according to the table.

The immersion heater can be set to a maximum of 9 kW (3-phase) or 7 kW (1-phase). The settings on delivery are 9 kW (3-phase) or 7 kW (1-phase).

You reconnect to 7 kW by transferring the white cable from terminal block X3:13 to terminal block X7:23 on the electric addition PCB (AA1) (Only applies to 3x400V). (The seal on the terminal block must be broken.)

Setting maximum output in the electric additional heat is done in menu 5.1.12.

### Power steps of the immersion heater

*3x400V (maximum electrical output, connected upon delivery 9 kW)*

Electrical addition (kW)	Max L1 (A)	Max L2 (A)	Max L3 (A)
0	0.0	0.0	0.0
2	0.0	8.7	0.0
3	0.0	7.5	7.5
4	0.0	8.7	8.7
5	8.7	7.5	7.5
6	8.7	8.7	8.7
7	8.7	7.5	16.2
9	8.7	16.2	16.2

*3x400V (maximum electrical output, connected to 7 kW)*

Electrical addition (kW)	Max L1 (A)	Max L2 (A)	Max L3 (A)
0	0.0	0.0	0.0
1	0.0	0.0	4.3
2	0.0	8.7	0.0
3	0.0	8.7	4.3
4	0.0	8.7	8.7
5	8.7	0.0	13
6	8.7	8.7	8.7
7	8.7	8.7	13

The tables display the maximum phase current for the relevant electrical step for the indoor module.


If the current sensors are connected, the indoor module monitors the phase currents.



### NOTE

If the current sensors are not connected, the indoor module performs a calculation of how high the currents will be if the relevant power steps are added. If the currents are higher than the set fuse size, the power step is not allowed to cut in. See chapter Load monitor on page 34.

## EMERGENCY MODE

When the indoor module is set to emergency mode (SF1 is set to ) only the most necessary functions are activated.

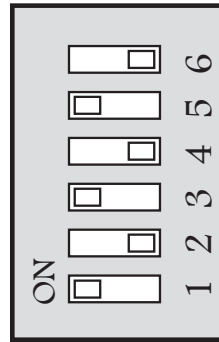
- No hot water is produced.
- The load monitor is not connected.
- Fixed temperature in the supply line, see section Emergency mode thermostat on page 32.

### Power in emergency mode

The immersion heater's output in emergency mode is set with the DIP switch (SF1) on the immersion heater board (AA1), according to the table below. The factory setting is 6 kW.

**Power in emergency mode, 3x400V (maximum electrical output, connected to 7 kW)**

kW	1	2	3	4	5	6
0	off	off	off	off	off	off
1	off	off	off	off	off	on
2	off	off	on	off	off	off
3	off	off	on	off	off	on
4	off	off	on	off	on	off
5	on	off	off	off	on	on
6	on	off	on	off	on	off
7	on	off	on	off	on	on



The image shows the dip-switch (AA1-SF1) in the factory setting for 3x400V, that is 6 kW.

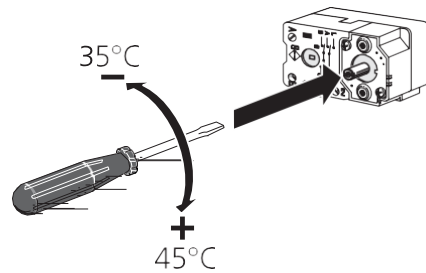
**Power in emergency mode, 3x400V (maximum electrical output, connected upon delivery 9 kW)**

kW	1	2	3	4	5	6
0	off	off	off	off	off	off
2	off	off	on	off	off	off
3	off	off	off	on	off	on
4	off	off	on	off	on	off
5	on	off	off	on	off	on
6	on	off	on	off	on	off
7	on	off	off	on	on	on
9	on	off	on	on	on	on

kW	1	2	3	4	5	6
4	on	off	on	off	off	off
5	on	off	on	off	off	on
6	on	off	on	off	on	off
7	on	off	on	off	on	on

**Emergency mode thermostat**

The supply temperature in emergency mode is set using a thermostat (FQ10-BT30). It can be set to 35 (preset, e.g. underfloor heating) or 45 °C (e.g. radiators).



# Optional connections

## LOAD MONITOR

### Integrated load monitor

VVM 320 is equipped with a simple form of integrated load monitor, which limits the power steps for the electric additional heat by calculating whether future power steps can be connected to the relevant phase without exceeding the specified main fuse. If the current would exceed the specified main fuse, the power step is not permitted. The size of the property's main fuse is specified in menu 5.1.12.

### Load monitor with current sensor

When many power-consuming products are connected in the property at the same time as the electric additional heat is operating, there is a risk that the property's main fuse will trip. TW AIR is equipped with a load monitor that, with the help of a current sensor, controls the power steps for the electric additional heat by redistributing the power between the different phases or disengages the electric additional heat if there is an overload in a phase. Reconnection occurs when the other current

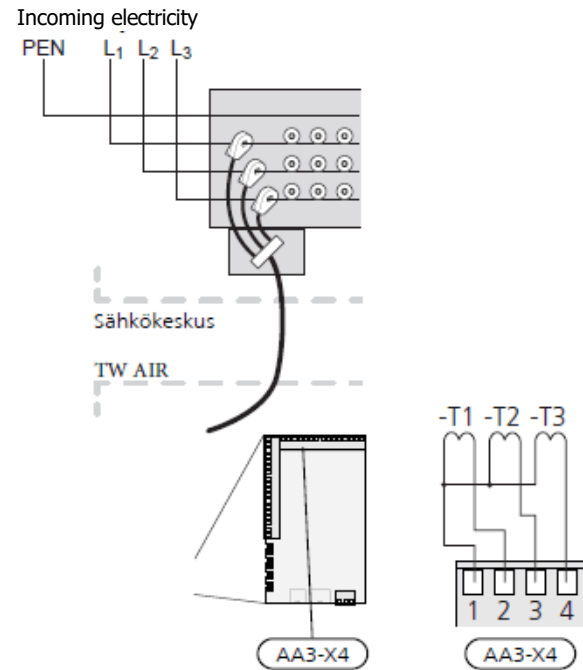
consumption drops.

### Connecting current sensors

A current sensor should be installed on each incoming phase conductor in to the distribution box to measure the current. The distribution box is an appropriate installation point.

Connect the current sensors to a multi-core cable in an enclosure directly adjacent to the electrical distribution unit. The multi-core cable between the enclosure and TW AIR must have a cable area of at least 0.5 mm<sup>2</sup>.

Connect the cable to the input board (AA3) on terminal block X4:1-4 where X4:1 is the common terminal block for the three current sensors.



Sähkökeskus – Electrical distribution unit



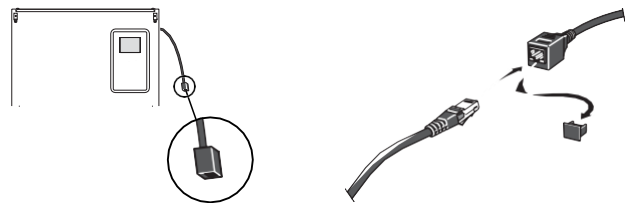
### NOTE

The control switch is not used for 1-phase connection.

If the installed heat pump is frequency controlled, it will be limited when all power stages are disengaged.

### MyUpway

Connect the network connected cable (straight, Cat.5e UTP) with RJ45-contact (male) to RJ45 contact (female) on the rear of the indoor unit.



### EXTERNAL CONNECTION OPTIONS (AUX)

TW AIR has software-controlled AUX inputs and outputs for connecting the external switch function (contact has to be potential-free) or sensor.

Go into menu 5.4 "soft in/outputs" on the display to select to which AUX connection each function connects.

Example pictured left:

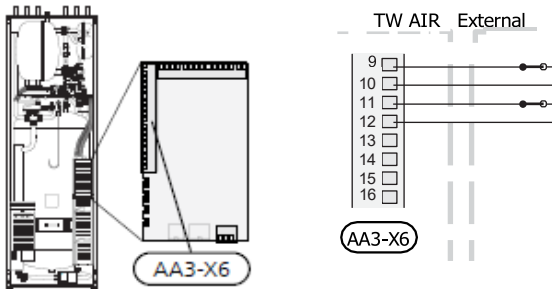
Estä lämpö – prevent heat; ei käytössä – not used; Hälytyslähtö - Alarm output

For certain functions, accessories may be required.

## Selectable inputs

Selectable inputs on the input board (AA3) for these functions are:

AUX1	AA3-X6:9-10
AUX2	AA3-X6:11-12
AUX3	AA3-X6:13-14
AUX4	AA3-X6:15-16
AUX5	AA3-X6:17-18



The example above uses the inputs AUX1 (X6:9-10) and AUX2 (X6:11-12) on the input board (AA3).

## Selectable output

A selectable output is AA3-X7.



### TIP

Some of the following functions can also be activated and scheduled via menu settings.

Available options are:

- cooling/heating/hot water, determines when it is time to switch between cooling, heating and hot water mode (selectable when the air/water heat pump is permitted to produce cooling).
- supply temperature sensor for cooling (BT64) (used when “active cooling in 4-pipe system” has been activated in the output AA3-X7)

## Monitor

Available options are:

- alarm from external units. The alarm is connected to the control, which means that the malfunction is presented as an information message in the display. Potential-free signal of type NO or NC.
- stove monitor. (A thermostat that is connected to the chimney. When the negative pressure is too low and the thermostat is connected, the fans in ERS (NC) are switched off.

## External activation of functions

An external switch function can be connected to TW AIR to activate various functions. The function is activated during the time the switch is closed.

Possible functions that can be activated:

- hot water comfort mode “temporary lux”
- hot water comfort mode “economy”
- “external adjustment”

When the switch is closed, the temperature changes in °C (if the room sensor is connected and activated). If a room sensor is not connected or not activated, the desired change of “temperature” (heating curve offset) is set with the number of steps selected. The value is adjustable between -10 and +10. External adjustment of climate systems 2 to 8 requires accessories.

### – climate system 1 to 8

The value for the change is set in menu 1.9.2, “external adjustment”.

- SG ready



### Caution

This function can only be used in mains networks that support the “SG Ready” standard. “SG Ready” requires two AUX inputs.

## Possible selection for AUX inputs

### Temperature sensor

Temperature sensor can be connected to TW AIR.

“SG Ready” is a smart form of tariff control, through which your electricity supplier can affect the indoor, hot water and/or pool temperatures (if applicable) or simply block the additional heat and/or compressor in the heat pump at certain times of the day (can be se-

lected in menu 4.1.5 after the function is activated).  
 Activate the function by connecting potential-free switch functions to two inputs selected in menu 5.4 (SG Ready A and SG Ready B).

Closed or open switch means one of the following:

– *Blocking (A: Closed, B: Open)*

"SG Ready" is active. The compressor in the heat pump and additional heat is blocked.

– *Normal mode (A: Open, B: Open)*

"SG Ready" is not active. No effect on the system.

– *Low price mode (A: Open, B: Closed)*

"SG Ready" is active. The system focuses on costs savings and can for example exploit a low tariff from the electricity supplier or over-capacity from any own power source (effect on the system can be adjusted in the menu 4.1.5).

– *Overcapacity mode (A: Closed, B: Closed)*

"SG Ready" is active. The system is permitted to run at full capacity at over capacity (very low price) with the electricity supplier (effect on the system is set- table in menu 4.1.5).

(A = SG Ready A and B = SG Ready B )

• +Adjust

Using +Adjust, the installation communicates with the underfloor heating's control centre\* and adjusts the heating curve and calculated supply temperature according to the underfloor heating system's reconnection.

Activate the climate system you want +Adjust to affect by highlighting the function and pressing the OK button.

\*Support for +Adjust required

 **Caution**


This accessory may require a software update in your TW AIR. The version can be checked in the "Service info" menu 3.1. Visit [myupway.com](http://myupway.com) and click on the "Soft- ware" tab to download the latest software to your installation.

 **Caution**

In systems with both underfloor heating and radiators, ECS 40/41 should be used for optimum operation.

**External blocking of functions**

An external switch function can be connected to TW AIR for blocking various functions. The switch must be potential-free and a closed switch results in blocking.

 **NOTE**

Blocking entails a risk of freezing.

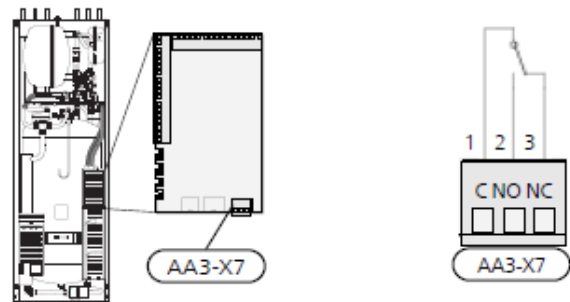
Functions that can be blocked:

- hot water (hot water production).
- heating/cooling (production or distribution)
- internally controlled additional heat
- compressor in heat pump EB101 and/or EB102
- tariff blocking (additional heat, compressor, heating, cooling and hot water are disconnected)

**Possible selections for AUX output**

Possibility of external connection with relay function with potential free changeover relay (max. 2 A) on input card (AA3), terminal X7. The function must be activated in 5.4.

The picture shows the relay in alarm mode:



 **Caution**

The relay outputs may be subjected to a max load of 2 A at resistive load (230V AC).

 **TIP**

The AXC accessory is required if more than one function is to be connected to the AUX output.

**Indications**

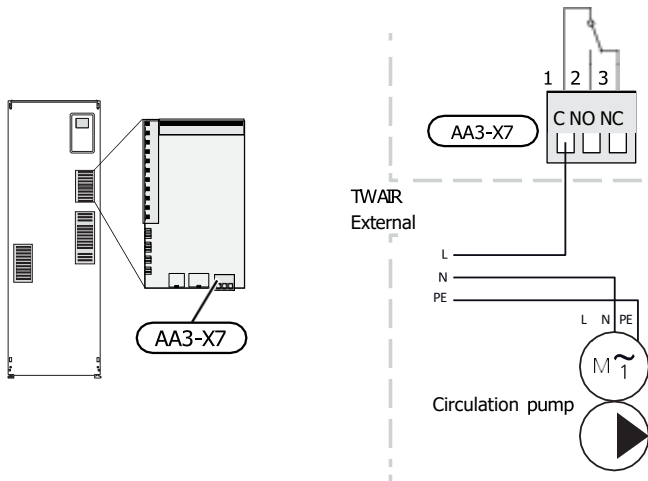
- alarm
- common alarm
- cooling mode indication (only applies if there are cooling accessories)
- holiday
- away mode for "smart home" (complement to the functions in menu 4.1.7)

**Control**

- circulation pump for hot water circulation
- active cooling in a 4-pipe system
- external heating medium pump
- additional heat in charge circuit



An external circulation pump is connected to the AUX output, as illustrated below.



**NOTE**

The relevant distribution box must be marked with a warning about external voltage.

**Integrated active cooling in 4-pipe system**

Integrated active cooling in 4-pipe system with air/water heat pump is activated via soft output.

Active cooling is produced by the air/water heat pump's compressor.

When cooling in a 4-pipe system has been selected as soft output, menu group 1.9.5 is displayed and "cooling" must be activated for the air/water heat pump in menu 5.11.X.1, or with a DIP switch on the air/water heat pump in order to determine that it is to perform cooling.

Operating mode cooling is activated by the temperature of the outdoor temperature sensor (BT1) and any room sensor (BT50), room unit or separate room sensor for cooling (BT74) (if two different rooms are to be heated or cooled at the same time, for example.) When cooling is required, the cooling reversing valve (EQ1-QN12) and the cooling circulation pump (EQ1-GP12) in the indoor module (TW AIR) are activated.

Cooling production is regulated according to the cooling sensor (BT64) and a cooling set point value that is determined by the selected cooling curve. Cooling degree minutes are calculated based on the value on the external temperature sensor (BT64) for cooling out and the cooling set point value.

If the "active cooling 4-pipes" accessory has been activated, the function is switched off. Cooling is then operated from the accessory instead.

# Connecting accessories

Instructions for connecting accessories are provided in the manual accompanying the accessory. See page 68 for the list of the accessories that can be used with TW AIR.

Connection for communication with the most common accessories is shown here.

## ACCESSORIES WITH ACCESSORY BOARD AA5

Accessories with accessory board AA5 connect to the indoor module terminal block X4:13-15 on the input board AA3.

If several accessories are to be connected or are already installed, the following instructions must be followed.

The first accessory board must be connected directly to the indoor module's terminal block AA3-X4. The following boards must be connected to the previous board in series.

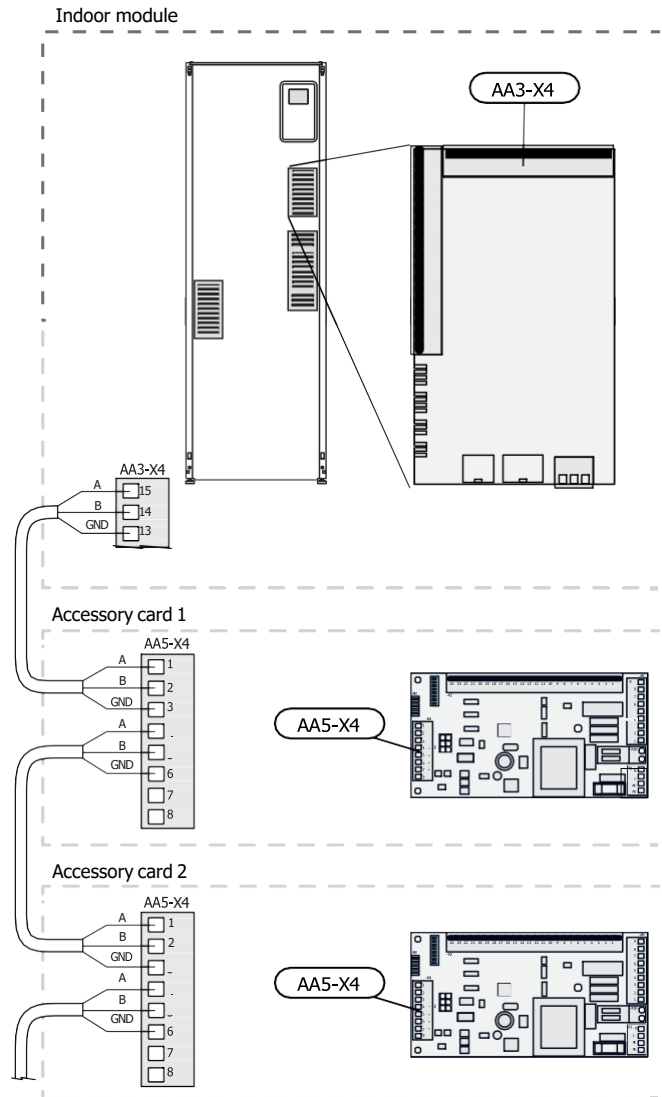
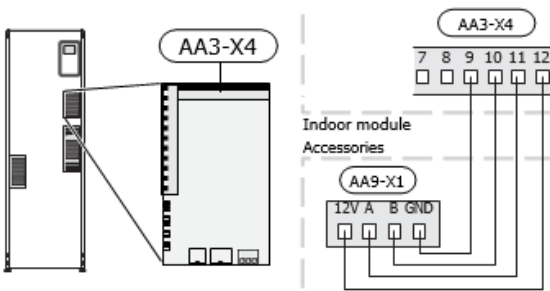
Use cable type LiYY, EKKX or similar.

Refer to the accessory manual for further instructions.

## ACCESSORIES WITH ACCESSORY BOARD AA9

The accessories containing the board AA9 are connected to the indoor module's terminal block X4:9-12 on the input board AA3. Use cable type LiYY, EKKX or equivalent.

Refer to the accessory manual for further instructions.



# 6 Commissioning and adjusting

## Preparations

1. Check that the switch (SF1) is in position "⏻".
2. Check that the drain valve is fully closed and that the temperature limiter (FQ10) has not deployed.
3. A compatible Jäspi air to water heat pump must have a control card with at least the software version listed on page 16.

## Filling and venting

### FILLING THE HOT WATER HEATER IN TW AIR

1. Open a hot water tap in the house.
2. Open the cold water supply. If necessary, open the shut-off valve of the hot water mixing valve group. This valve must be fully open during operation.
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 hot water tap can be closed.

### FILLING THE HEATING SYSTEM

1. Open the top vent valve QM20.
2. Open the filling valve QM11. TW AIR is filled with water.
3. Keep the filling valve open until no more air comes out of the top vent valve. Close the vent valve.
4. Open the lowest vent valve QM20.
5. Open the filling valve. Keep it open until no more air comes out the vent valve. Close the lower vent valve.
6. Open the vent valve QM22 (coil vent).
7. Open the filling valve. Keep it open until no more air comes out the vent valve. Close the lower vent valve.
8. Open the filling valve and adjust the system to the correct pressure. The pressure shown on the pressure gauge should start to rise after some time. Close the filling valve when the pressure is 1 bar.
9. After filling, check that the pressure in the heating system is approx. 1 bar.

### VENTING THE CLIMATE/HEATING SYSTEM

1. Turn off the power supply to TW AIR.
2. Vent TW AIR through the vent valve (QM20) and other climate systems through their relevant vent valves.
3. Keep topping up and venting until all air has been removed and the pressure is correct.

### DRAINING THE CLIMATE SYSTEM

1. Connect a hose to the lower filler valve for heating medium (QM11).
2. Open the valve to drain the climate system.

Also see section "Draining the climate system".

# Start-up and inspection

## START GUIDE



### NOTE

There must be water in the climate system before the switch is set to "I".

1. Set switch (SF1) on TW AIR to position "I".
2. Follow the instructions in the display's start guide. If the start guide does not start when you start the TW AIR, start it manually in menu 5.7.



### TIP

See the section "Control – Introduction" for a more detailed introduction to the installation's control system (operation, menus, etc.).

## Commissioning

The first time the installation is started a start guide is started. The start guide instructions state what needs to be carried out at the first start together with a run through of the installation's basic settings.

The start guide ensures that the start-up is carried out correctly and, for this reason, cannot be skipped.

During the start up guide the reversing valves and the shunt valve are run backward and forwards to help vent TW AIR.



### Caution

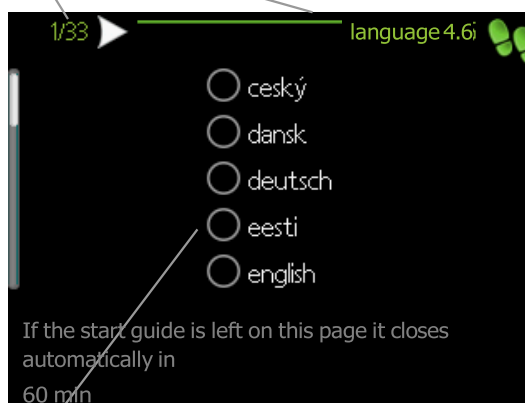
As long as the start guide is active, no function in TW AIR will start automatically.

The start guide will appear at each restart of TW AIR, until it is deselected on the last page.

## Operation in the start guide

A. Page

B. Name and menu number



C. Option / setting

### A. Page

Here you can see how far you have come in the start guide.

Scroll between the pages of the start guide as follows:

1. Turn the control knob until one of the arrows in the top left corner (at the page number) has been marked.
2. Press the OK button to skip between the pages in the start guide.

### B. Name and menu number

Here, you can see which menu in the control system this page of the start guide is based on. The digits in brackets refer to the menu number in the control system.

If you want to read more about affected menus either consult the help menu or read the user manual.

### C. Option / setting

Make settings for the system here.

### D. Help menu



Many menus have a symbol to indicate that additional instructions are available.

Access to help texts:

1. Rotate the dial to highlight the help icon.
2. Press the button OK.

Help texts often consist of several pages that you can scroll through.

## COMMISSIONING WITHOUT HEAT PUMP

The indoor module can be used without a heat pump, i.e. only as an electric boiler, to produce heat and hot water before the heat pump is installed, for example.

Connect the pipe for docking in from the heat pump (XL8) with the pipe out to the heat pump (XL9).

Enter menu 5.2.2 System settings and deactivate the heat pump.



### NOTE

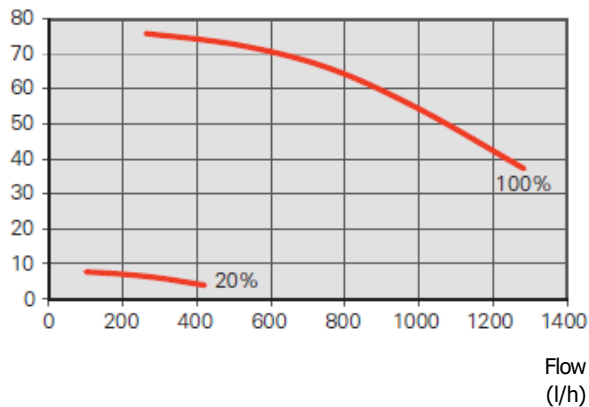
Select operating mode auto or manual when the indoor module is to be used with the heat pump again.

## PUMP SPEED

The circulation pump (GP1) in TW AIR is frequency controlled and sets itself using control and based on heating demand.

*Available pressure circulation pump, GP1*

Available pressure  
(kPa)



## POST-ADJUSTMENT, VENTING

Initially, air is released from the hot water and venting may be necessary. If gurgling sounds can be heard from the climate system, the entire system will require additional venting. The installation is vented via vent valves (QM20), (QM22) and other climate systems through their relevant vent valves. When venting, TW AIR must be off.

# Setting the heating / cooling curve

In menu **Curve**, you can view the heating curve for your house. The task of the curve is to give an even indoor temperature, regardless of the outdoor temperature, and thereby energy-efficient operation. Based on this curve, the TW AIR determines the temperature of the water to the climate system (the supply temperature) and thus the indoor temperature. If the system has cooling, the same settings can be made for the cooling curve.

## HEATING CURVE

Adjustment range: 0 – 15

Factory setting: 9

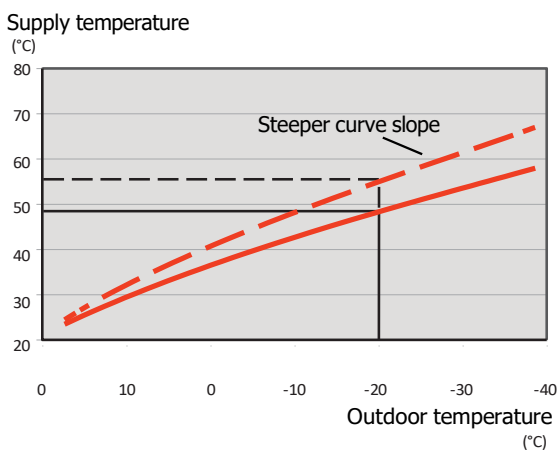
## COOLING CURVE

Adjustment range: 0 – 9

Factory setting: 0

## CURVE COEFFICIENT

The slope of the heating/cooling curve indicates how many degrees the supply temperature is to be increased/reduced when the outdoor temperature drops/increases. A steeper slope means a higher supply temperature at a certain outdoor temperature.

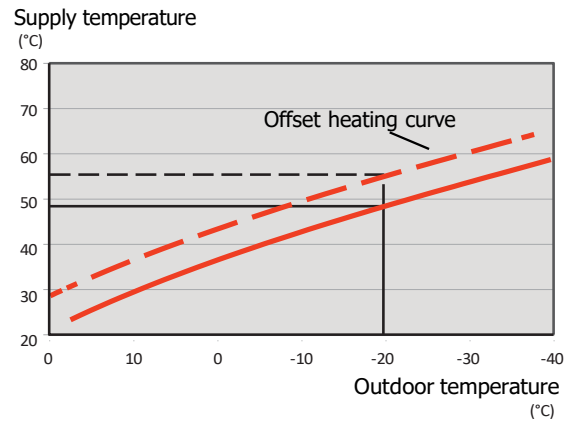


The optimum curve slope depends on the climate conditions in your location, whether the house has radiators, fan coils or underfloor heating and how well insulated the house is.

The heating curve is set when the heating installation is installed, but may need adjusting later. Normally, the curve will not need further adjustment.

## CURVE OFFSET

An offset of the heating curve means that the supply temperature is changed by the same amount for all outdoor temperatures, e.g. a curve offset of +2 steps increases the supply temperature by 5 °C at all outdoor temperatures.

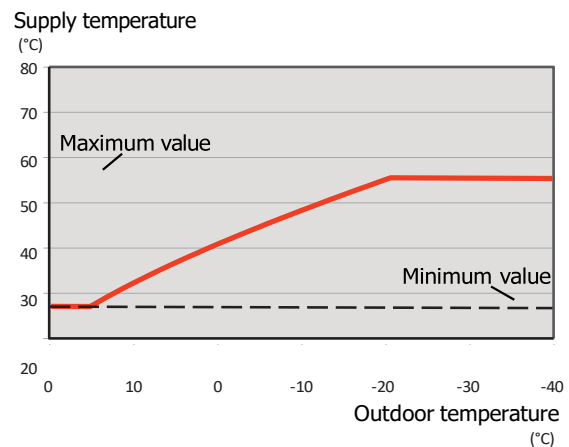


### Caution

In the case of fine-tuning the indoor temperature, the position of the curve must be moved up or down, which is done in menu 1.1 "Temperature".

## SUPPLY TEMPERATURE – MAXIMUM AND MINIMUM VALUES

Because the flow line temperature cannot be calculated higher than the set maximum value or lower than the set minimum value the heating curve flattens out at these temperatures.

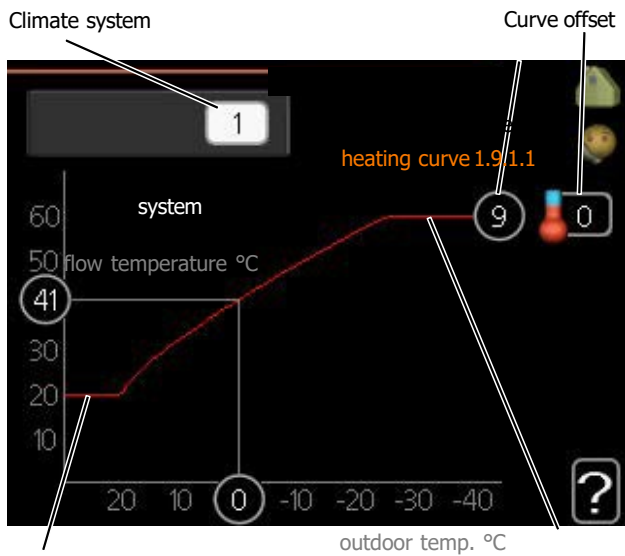


### Caution

With underfloor heating systems, the maximum supply temperature is normally set between 35 and 45 °C.

Check the max floor temperature with your floor supplier.

## ADJUSTMENT OF CURVE



### Tip

Wait a day before the new setting to allow the room temperature to settle. If it is cold outside and the room temperature is too low/high, increase/reduce the steepness of the heat curve by one step. If it is warm outside and the room temperature is too low/high, increase/reduce the change in the heat curve by one step.

Min supply temperature

Max supply temperature

1. Select the climate system (if more than one) for which the curve is to be changed.
2. Select curve slope and curve offset.



### Caution

If you need to adjust "min. flow line temp." and/or "max flow line temperature", you do this in other menus.

Settings for "min. flow line temp." in menu 1.9.3.

Settings for "max flow line temperature" in menu 5.1.2.



### Caution

Curve 0 means that **own curve** is used.

Settings for **own curve** are made in menu 1.9.7.

## TO READ OFF A HEATING CURVE

1. Turn the control knob so that the ring on the shaft with the outdoor temperature is marked.
2. Press the OK button.
3. Follow the grey line up to the curve and out to the left to read off the value for the supply temperature at the selected outdoor temperature.
4. You can now select to take read outs for different outdoor temperatures by turning the control knob to the right or left and read off the corresponding flow temperature.
5. Press the OK or Back button to exit read off mode.

## Setting hot water circulation

### USE TIME

Adjustment range: 1 – 60 min  
Factory setting: 60 min

### STANDING

Adjustment range: 0 – 60 min  
Factory setting: 0 min

Set the hot water circulation for up to three periods per day here. During the set periods the hot water circulation pump will run according to the settings above.

"operating time" decide how long the hot water circulation pump must run per operating instance.

"downtime" decide how long the hot water circulation pump must be stationary between operating instances.



### NOTE

Hot water circulation is activated in menu 5.4 "soft inputs and outputs".

# Pool

## POOL (ACCESSORY IS REQUIRED)

### *start temp*

Setting range: 5.0 – 80.0 °C

Factory setting: 22.0 °C *stop*

### *temperature* Setting

range: 5.0 – 80.0 °C Factory

setting: 24.0 °C

Select whether the pool control is to be activated and within what temperatures (start and stop temperature) pool heating must occur.

When the pool temperature drops below the set start temperature and there is no hot water or heating requirement, TW AIR starts pool heating.

Untick "activated" to switch off the pool heating.



### **Caution**

The start temperature cannot be set to a value that is higher than the stop temperature.

## SG Ready

This function can only be used in mains networks that support the "SG Ready"-standard .

Make settings for the function "SG Ready" here.

Low price mode means that the electricity supplier has a low tariff and the system uses this to reduce costs.

Over capacity mode means that the electricity supplier has set the tariff very low and the system uses this to reduce the costs as much as possible.

### ***affect room temperature***

Here you set whether room temperature should be affected when activating "SG Ready".

With low price mode on "SG Ready", the parallel offset for the indoor temperature is increased by "+1". If a room sensor is installed and activated, the desired room temperature is increased instead by 1 °C.

With overcapacity mode on "SG Ready", the parallel offset for the indoor temperature is increased by "+2". If a room sensor is installed and activated, the desired room temperature is increased instead by 2 °C.

### ***affect hot water***

Here you set whether the temperature of the hot water should be affected when activating "SG Ready".

With low price mode on "SG Ready" the stop temperature of the hot water is set as high as possible at only compressor operation (immersion heater not permitted).

With over capacity mode of "SG Ready" the hot water is set to "activate temp lux" (immersion heater permitted).

### ***affect cooling (accessory required)***

Here you set whether room temperature during cooling operation should be affected when activating "SG Ready".

With low price mode of "SG Ready" and cooling operation the indoor temperature is not affected.

With overcapacity mode on "SG Ready" and cooling operation, the parallel offset for the indoor temperature is decreased by "-1". If a room sensor is installed and activated, the desired room temperature is decreased instead by 1 °C.

### ***affect pool temperature (accessory is required)***

Here you set whether pool temperature should be affected when activating "SG Ready".

With low price mode on "SG Ready", the desired pool temperature (start and stop temperature) is increased by 1 °C.

With overcapacity mode on "SG Ready", the desired pool temperature (start and stop temperature) is increased by 2 °C.



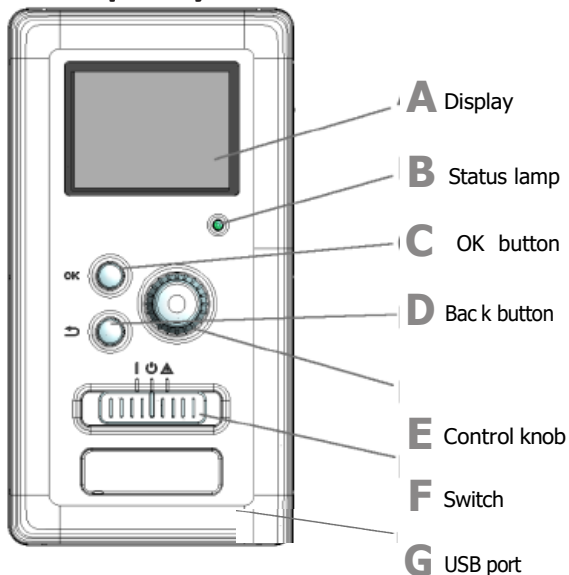
### **NOTE**

The function must be connected to two AUX inputs and activated in menu 5.4.



# 7 Control - Introduction

## Display unit



### A DISPLAY

Instructions, settings and operational information are shown on the display. You can easily navigate between the different menus and options to set the comfort or obtain the information you require.

### B STATUS LAMP

The status lamp indicates the status of the indoor module. It:

- lights green during normal operation.
- lights yellow in emergency mode.
- lights red in the event of a deployed alarm.

### C OK BUTTON

The OK button is used to:

- confirm selections of sub menus/options/set values/page in the start guide.

### D BACK BUTTON

The back button is used to:

- go back to the previous menu.
- change a setting that has not been confirmed.

### E CONTROL KNOB

The control knob can be turned to the right or left. You can:

- scroll in menus and between options.
- increase and decrease the values.
- change page in multiple page instructions (for example help text and service info).

### F SWITCH (SF1)

The switch assumes three positions:

- On (I)
- Standby (⏻)
- Emergency mode (⚠)

Emergency mode must only be used in the event of a fault on the indoor module. In this mode, the compressor switches off and the immersion heater engages. The indoor module display is not illuminated and the status lamp illuminates yellow.

### G USB PORT

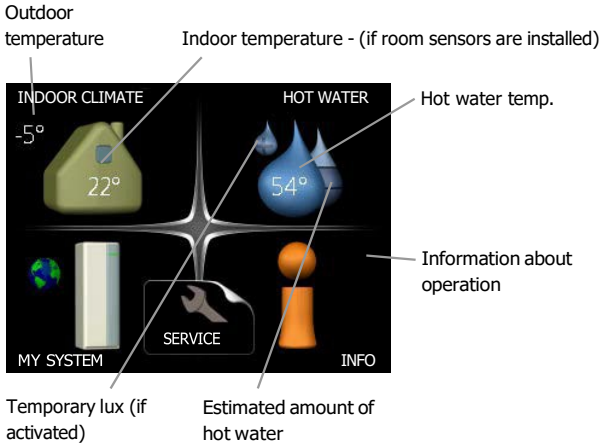
The USB port is hidden beneath the plastic badge with the product name on it.

The USB port is used to update the software.

Visit [myupway.com](http://myupway.com) and click the "Software" tab to download the latest software for your installation.

# Menu system

When the door to the indoor module is opened, the menu system's four main menus are shown in the display as well as certain basic information.



## MENU 1 - INDOOR CLIMATE

Setting and scheduling the indoor climate. See information in the help menu or user manual.

## MENU 2 - HOT WATER

Setting and scheduling hot water production. See information in the help menu or user manual.

## MENU 3 - INFO

Display of temperature and other operating information and access to the alarm log. See information in the help menu or user manual.

## MENU 4 - MY SYSTEM

Setting time, date, language, display, operating mode etc. See information in the help menu or user manual.

## MENU 5 - SERVICE

Advanced settings. These settings are not available to the end user. The menu is visible when the Back button is pressed for 7 seconds, when you are in the start menu. See page 52.

## SYMBOLS IN THE DISPLAY

The following symbols can appear in the display during operation.

Symbol	Description
	This symbol appears by the information sign if there is information in menu 3.1 that you should note.
 	These two symbols indicate whether the compressor in the outdoor module or additional heat is blocked in TW AIR.  These can, for example, be blocked depending on which operating mode is selected in menu 4.2, if blocking is scheduled in menu 4.9.5 or if an alarm has occurred that blocks one of them.  Blocking the compressor. Blocking additional heat.
	This symbol appears if periodic increase or lux mode for the hot water is activated.
	This symbol indicates whether "holiday setting" is active in 4.7.
	This symbol indicates whether TW AIR has contact with MyUpway.com.
	This symbol is visible in installations with active solar accessories.
	This symbol indicates whether pool heating is active. Accessory needed.
	This symbol indicates whether cooling is active. Heat pump with cooling function required.

## OPERATION

To move the cursor, turn the control knob to the left or the right. The marked position is white and/or has a turned up tab.




## SELECTING MENU

To advance in the menu system select a main menu by marking it and then pressing the OK button. A new window then opens with sub menus.



Select one of the sub menus by marking it and then pressing the OK button.

## SELECTING OPTIONS



In an options menu the current selected option is indicated by a green tick. 

To select another option:





1. Mark the applicable option. One of the options  is pre-selected (white).
2. Press the OK button to confirm the selected option. The selected option has a green tick. 

## SETTING A VALUE

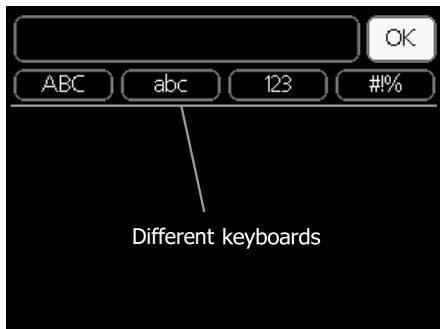


Values to be changed

To set a value:

1. Mark the value you want to set using the control knob. 
2. Press the OK button. The background of the value becomes green, which means that you have accessed the setting mode. 
3. Turn the control knob to the right to increase value and to the left to reduce the value. 
4. Press the OK button to confirm the value you have set. To change and return to the original value, press the Back button. 

## USE THE VIRTUAL KEYBOARD



In some menus where text may require entering, a virtual keyboard is available.

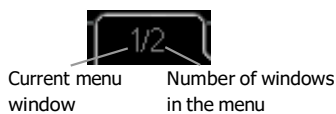


Depending on the menu, you can gain access to different character sets which you can select using the control knob. To change character table, press the Back button. If a menu only has one character set the keyboard is displayed directly.

When you have finished writing, mark "OK" and press the OK button.

## SCROLL THROUGH THE WINDOWS

A menu can consist of several windows. Turn the control knob to scroll between the windows.




### *Scroll through the windows in the start guide*



Arrows to scroll through window in start guide

1. Turn the control knob until one of the arrows in the top left corner (at the page number) has been marked.
2. Press the OK button to skip between the steps in the start guide

## HELP MENU

 In many menus there is a symbol that indicates that extra help is available.

To access the help text:

1. Use the control knob to select the help symbol.
2. Press the OK button.

The help text often consists of several windows that you can scroll between using the control knob.

# 8 Control – Menus

## Menu 1 - INDOOR CLIMATE

1 - INDOOR CLIMATE	1.1 - temperature	1.1.1 - heating	
		1.1.2 - cooling *	
		1.1.3 - rel. humidity *	
	1.2 - ventilation *		
	1.3 - scheduling	1.3.1 - heating	
		1.3.2 - cooling *	
		1.3.3 - ventilation *	
	1.9 - advanced	1.9.1 - curve	1.9.1.1 heating curve
			1.9.1.2 - cooling curve *
		1.9.2 - external adjustment	
		1.9.3 - min. flow line temp.	1.9.3.1 - heating
			1.9.3.2 - cooling *
		1.9.4 - room sensor settings	
		1.9.5 - cooling settings *	
		1.9.6 - fan return time *	
		1.9.7 - own curve	1.9.7.1 - heating
			1.9.7.2 - cooling *
		1.9.8 - point offset	
		1.9.9 - night cooling *	
		1.9.11 - +Adjust	

\* Accessories are needed.

# Menu 2 - HOT WATER

2 - HOT WATER	2.1 - temporary lux	
	2.2 - comfort mode	
	2.3 - scheduling	
	2.9 - advanced	2.9.1 - periodic increase
		2.9.2 - hot water recirc.

# Menu 3 - INFO

3 - INFO	3.1 - service info	
	3.2 - compressor info	
	3.3 - add. heat info	
	3.4 - alarm log	
	3.5 - indoor temp. log	

\* Accessories are needed.

# Menu 4 - MY SYSTEM

4 - MY SYSTEM

4.1 - plus functions

4.1.1 - pool \*

	4.1.3 - internet	4.1.3.1 - NIBE Uplink
		4.1.3.8 - tcp/ip settings
		4.1.3.9 - proxy settings
	4.1.4 - sms *	
	4.1.5 - SG Ready	
	4.1.6 - smart price adaptation™	
	4.1.7 - smart home	
	4.1.8 - smart energy source™	4.1.8.1 - settings
		4.1.8.2 - set. price
		4.1.8.3 - CO2 impact
		4.1.8.4 - tariff periods, electricity
		4.1.8.6 - tariff per, ext. shunt add
		4.1.8.7 - tariff per, ext. step add
		4.1.8.8 - tariff periods, OPT10
	Menu 4.1.10 – solar electricity *	
4.2 - op. mode		
4.3 - my icons		
4.4 - time & date		
4.6 - language		
4.7 - holiday setting		
4.9 - advanced	4.9.1 - op. prioritisation	
	4.9.2 - auto mode setting	
	4.9.3 - degree minute setting	
	4.9.4 - factory setting user	
	4.9.5 - schedule blocking	
	4.9.6 - schedule silent mode	
	4.9.7 – tools	

\* Accessory needed.

Descriptions of menu 1–4 can be found in the user handbook.

# Menu 5 - SERVICE

## OVERVIEW

5 - SERVICE

5.1 - operating settings

5.1.1 - hot water settings

		5.1.2 - max flow line temperature	
		5.1.3 - max diff flow line temp.	
		5.1.4 - alarm actions	
		5.1.12 - internal electrical addition	
		5.1.13 - max inst. el.pwr (BBR)	
		5.1.14 - flow set. climate system	
		5.1.18 - flow setting charge pump	
		5.1.22 - heat pump testing	
		5.1.23 - compressor curve	
		5.1.25 - time filter alarm*	
	5.2 - system settings	5.2.2 - installed heat pump	
		5.2.4 - accessories	
	5.3 - accessory settings	5.3.2 - shunt controlled add. heat *	
		5.3.3 - extra climate system *	
		5.3.6 - step controlled add. heat *	
		5.3.7 - external addition *	
		5.3.8 - hot water comfort *	
		5.3.11 - modbus *	
		5.3.12 - exhaust/supply air module *	
		5.3.14 - F135 *	
		5.3.15 - GBM communications module *	
		5.3.16 - humidity sensor *	
		5.3.18 - pool*	
		5.3.19 - active cooling 4 pipe*	
		5.3.21 - flow sensor / energy meter*	
	5.4 - soft in/outputs		
	5.5 - factory setting service		
	5.6 - forced control		
	5.7 - start guide		
	5.8 - quick start		
	5.9 - floor drying function		
	5.10 - change log		
	5.11 -heat pump settings	5.11.1 - EB101	
			5.11.1.1 - heat pump
			5.11.1.2 - heating medium pump (GP1)
	5.12 - country		

\* Accessory needed.

Go to the main menu and hold the Back button in for 7 seconds to access the Service menu.



## Sub-menus

Menu **SERVICE** has orange text and is intended for the advanced user. This menu has several sub-menus. Status information for the relevant menu can be found on the display to the right of the menus.

**operating settings** Operating settings for the indoor module.

**system settings** System settings for the indoor module, activating accessories etc.

**accessory settings** Operational settings for different accessories.

**soft in/outputs** Setting software controlled in and outputs on the input circuit board (AA3).

**factory setting service** Total reset of all settings (including settings available to the user ) to default values.

**forced control** Forced control of the different components in the indoor module.

**start guide** Manual start of the start guide which is run the first time when the indoor module is started.

**quick start** Quick starting the compressor.



### NOTE

Incorrect settings in the service menus can damage the installation.

## MENU 5.1 - OPERATING SETTINGS

Operating settings can be made for the indoor module in the sub menus.

## MENU 5.1.1 - HOT WATER SETTINGS

### *TW AIR Stainless steel*

Setting range start temp. economy: 5 – 70 °C

Factory setting start temp. economy: 46 °C

Setting range stop temp. economy: 5 – 70 °C

Factory setting stop temp. economy: 49 °C

### *normal*

Setting range start temp. normal: 5 – 70 °C

Factory setting start temp. normal: 49 °C

Setting range stop temp. normal: 5 – 70 °C

Factory setting stop temp. normal: 52 °C

### *luxury*

Setting range start temp. lux: 5 – 70 °C

Factory setting start temp. lux: 55 °C

Setting range stop temp. lux: 5 – 70 °C

Factory setting stop temp. lux: 58 °C

### *stop temp. per. increase*

Setting range: 55 – 70 °C

Factory setting: 55 °C

Here you set the start and stop temperature of the hot water for the different comfort options in menu 2.2 as well as the stop temperature for periodic increase in menu 2.9.1.

## MENU 5.1.2 - MAX FLOW LINE TEMPERATURE

### *climate system*

Setting range: 5-80 °C

Default value: 60 °C

Set the maximum supply temperature for the climate system here. If the installation has more than one climate system, individual maximum supply temperatures can be set for each system. Climate systems 2 - 8 can not be set to a higher max supply temperature than climate system 1.



### Caution

For underfloor heating systems, max flow line temperature should normally be set to between 35 and 45°C.

Check the max floor temperature with your floor supplier.

### MENU 5.1.3 - MAX DIFF FLOW LINE TEMP.

#### *max diff compressor*

Setting range: 1 – 25 °C

Default value: 10 °C *max*

#### *diff addition* Setting

range: 1 – 24 °C Default

value: 7 °C

Here you set the maximum permitted difference between the calculated and actual supply temperature in the event of compressor or additional heat mode respectively. Max diff. additional heat can never exceed max diff. compressor

#### *max diff compressor*

If the current supply temperature *exceeds* the calculated supply by set value, the degree minute value is set to 0. The compressor in the heat pump stops if there is only a heating demand.

#### *max diff addition*

If “addition” is selected and activated in menu 4.2 and the current supply temperature *exceeds* the calculated temperature by the set value, the additional heat is forced to stop.

### MENU 5.1.4 - ALARM ACTIONS

Select if you want the indoor module to alert you that there is an alarm in the display here.



#### *Caution*

If no alarm action is selected, it can result in higher energy consumption in the event of an alarm.

### MENU 5.1.5 - FAN SP. EXHAUST AIR (ACCESSORY IS REQUIRED)

#### *normal and speed 1-4*

Setting range: 0 – 100 % Factory

setting normal: 65 % Factory

setting speed 1: 0 %

Factory setting speed 2: 30 %

Factory setting speed 3: 80 %

Factory setting speed 4: 100 %

Set the speed for the four different selectable modes for the fan here.



#### *Caution*

An incorrectly set ventilation flow can damage the house and may also increase energy consumption.

### MENU 5.1.12 - INTERNAL ELECTRICAL ADDITION

#### *max connected el. add.*

Factory setting 3x400V: 9 kW

#### *fuse size*

Setting range: 1 - 200 A Factory

setting 3x400V: 16 A Factory

Here you set the max. electrical output of the internal electrical addition in TW AIR and the fuse size for the installation.

Here you can also check which current sensor is installed on which incoming phase to the property (this requires current sensors to be installed, see page 34). Check by selecting “detect phase order” and pressing the OK button.

The results of these checks appear just below the menu selection "detect phase order".

## MENU 5.1.14 - FLOW SET. CLIMATE SYSTEM

### *presettings*

Setting range: radiator, floor heat., rad. + floor heat., DOT °C

Default value: radiator

Setting range DOT: -40.0 – 20.0 °C

Factory setting DOT: -18.0 °C *own*

### *setting*

Setting range dT at DOT: 2.0 – 20.0

Factory setting dT at DOT: 10.0 Setting range DOT: -40.0 – 20.0 °C Factory setting

DOT: -18.0 °C

The type of heating distribution system the heating medium pump (GP1) works towards is set here.

dT at DOT is the difference in degrees between flow and return temperatures at dimensioned outdoor temperature.

## MENU 5.1.18 - FLOW SETTING CHARGE PUMP

Check that the flow for the charge pump through the heat pump is sufficient. Activate the flow test to measure delta (the difference between the flow and return line temperatures from the heat pump). The test is OK if delta lies below the parameter shown in the display.



### **NOTE**

The hot water temperature (BT6) must be below 40 °C in order for the flow test to start.

## MENU 5.1.22 - HEAT PUMP TESTING



### **NOTE**

This menu is intended for testing TW AIR according to different standards.

Use of this menu for other reasons may result in your installation not functioning as intended.

This menu contains several sub-menus, one for each standard.

## MENU 5.1.23 - COMPRESSOR CURVE



### **Caution**

This menu is only displayed if TW AIR is connected to a heat pump with inverter controlled compressor.

Set whether the compressor in the heat pump should work to a particular curve under specific requirements or if it should work to predefined curves.

You set a curve for a demand (heat, hot water etc.) by unticking "auto", turning the control knob until a temperature is marked and pressing OK. You can now set at what temperatures the max. and min. frequencies, respectively will occur.

This menu can consist of several windows (one for each available demand), use the navigation arrows in the top left corner to change between the windows.

## MENU 5.1.25 - TIME FILTER ALARM

### *months btwn filter alarms*

Setting range: 1 – 24

Factory setting: 3

Here you set the number of months between alarms for a reminder to clean the filter in a connected accessory.

## MENU 5.2 - SYSTEM SETTINGS

Make different system settings for your installation here, e.g. activate the connected heat pump and which accessories are installed.

### MENU 5.2.2 - INSTALLED HEAT PUMP

If an air/water heat pump is connected to the indoor module, activate it here.

### MENU 5.2.4 - ACCESSORIES

Set which accessories are installed on the installation here.

There are two ways of activating connected accessories. You can either mark the alternative in the list or use the automatic function "search installed acc.".

#### *search installed acc.*

Mark "search installed acc." and press the OK button to automatically find connected accessories for TW AIR.

## MENU 5.3 - ACCESSORY SETTINGS

The operating settings for accessories that are installed and activated are made in the sub-menus for this.

### MENU 5.3.2 - SHUNT CONTROLLED ADD. HEAT

#### *prioritised additional heat*

Setting range: on/off

Factory setting: off

#### *start diff additional heat*

Setting range: 0 – 2000 DM

Default values: 400 DM

### *minimum running time*

Setting range: 0 – 48 h Default  
value: 12 h

### *min temp.*

Setting range: 5 – 90 °C  
Default value: 55 °C

### *mixing valve amplifier*

Setting range: 0.1 – 10.0  
Default value: 1.0

### *mixing valve step delay*

Setting range: 10 – 300 s  
Default values: 30 s

Set when the addition is to start, the minimum run time and the minimum temperature for external addition with shunt here. External addition with shunt is for example a wood/oil/gas/pellet boiler.

You can set shunt valve amplification and shunt valve waiting time.

Selecting "prioritised additional heat" uses the heat from the external additional heat instead of the heat pump. The shunt valve is regulated as long as heat is available, otherwise the shunt valve is closed.



#### **TIP**

See the accessory installation instructions for function description.

## MENU 5.3.3 - EXTRA CLIMATE SYSTEM

### *use in heating mode*

Setting range: on/off  
Factory setting: on

### *use in cooling mode*

Setting range: on/off  
Factory setting: off

### *mixing valve amplifier*

Setting range: 0.1 – 10.0  
Default value: 1.0

### *mixing valve step delay*

Setting range: 10 – 300 s  
Default values: 30 s

Here, you select which climate system (2 - 8) you wish to set.

*use in heating mode:* If the heat pump is connected to a climate system(s) for cooling, any condensation can take place in this/these. Check that "use in heating mode" has been selected for the climate system(s) that is/are not adapted for cooling. This setting means that the sub-shunt for the extra climate system closes when cooling operation is activated.

*mixing valve amplifier, mixing valve step delay:* Here, you set the shunt amplification and shunt waiting time for the various extra climate systems that are installed.

See the accessory installation instructions for function description.

## MENU 5.3.6 - STEP CONTROLLED ADD. HEAT

### *start diff additional heat*

Setting range: -2000 – -30 DM  
Default values: -400 DM

### *diff. between additional steps*

Setting range: 0 – 1000 DM  
Default values: 100 DM *max*

### *step*

Setting range  
(binary stepping deactivated): 0 – 3 Setting  
range  
(binary stepping activated): 0 – 7

Default value: 3 *binary*

### *stepping* Setting

range: on/off Factory  
setting: off

Make settings for step controlled addition here. Step controlled addition is for example an external electric boiler.

It is possible, for example, to select when the additional heat is to start, to set the maximum number of permitted steps and whether binary stepping is to be used.

When binary stepping is deactivated (off), the settings refer to linear stepping.

See the accessory installation instructions for function description.

### MENU 5.3.7 - EXTERNAL ADDITION

Make settings for external addition here. External addition is for example external oil, gas or electric boiler.

If the external addition is not step controlled, in addition to selecting when this should start also set the run time for the addition.

If the external addition is step controlled you can select when the addition is to start, set the maximum number of permitted steps and whether binary stepping is to be used.

If you select "prioritised additional heat" the heat is used from the external addition instead of the heat pump.

See the accessory installation instructions for function description.

### MENU 5.3.8 - HOT WATER COMFORT

#### *activating the mixing valve*

Setting range: on/off Factory

setting: off *outgoing hot*

*water* Setting range: 40 - 65

°C Default value: 55 °C

#### *mixing valve amplifier*

Setting range: 0.1 – 10.0

Default value: 1.0

#### *mixing valve step delay*

Setting range: 10 – 300 s

Default values: 30 s

Make settings for the hot water comfort here.

See the accessory installation instructions for function description.

*activating the mixing valve*: Activated if mixer valve is installed and it is to be controlled from TW AIR. When the option is active, you can set the outgoing hot water temperature, shunt amplification and shunt waiting time for the mixer valve.

*outgoing hot water*: Here, you can set the temperature at which the mixer valve is to restrict hot water from the water heater.

### MENU 5.3.11 - MODBUS

#### *address*

Factory setting: address 1

#### *word swap*

Factory setting: not activated

As from Modbus 40 version 10, the address can be set between 1 - 247. Earlier versions have a fixed address (address 1).

Here, you can select if you want to have "word swap" instead of the preset standard "big endian".

See the accessory installation instructions for function description.

### MENY 5.3.12 - EXHAUST/SUPPLY AIR MODULE

#### *months btwn filter alarms*

Setting range: 1 – 24

Default value: 3

#### *lowest extract air temp.*

Setting range: 0 – 10 °C

Default value: 5 °C

#### *bypass at excess temperature*

Setting range: 2 – 10 °C Default

value: 4 °C

#### *bypass during heating*

Setting range: on/off

Factory setting: off

#### *cut-out value, exh. air temp.*

Setting range: 5 – 30 °C Default

value: 25 °C

*months btwn filter alarms*: Set how often the filter alarm is to be displayed.

*lowest extract air temp.*: Set the minimum extract air temperature to prevent the heat exchanger freezing.

*bypass at excess temperature*: If a room sensor is installed, set the excess temperature at which the bypass damper is to open here.



#### **TIP**

See the installation instructions for ERS and HTS for a function description.

## MENU 5.3.14 - F135

### *charge pump speed*

Setting range: 1 – 100 %

Factory setting: 70 % *hot*

### *water at cooling*

Setting range: on/off

Factory setting: off

Here you can set the charge pump speed for F135. You can also choose whether you want to be able to charge hot water with F135 at the same time as the outdoor module



### **Caution**

It is necessary for “active cooling 4 pipe” to be selected in either “accessories” or “soft in/outputs” to enable activation of “hot water during cooling”. The heat pump must also be activated for cooling operation.

## MENU 5.3.15 - GBM COMMUNICATION MODULE

### *start diff additional heat*

Setting range: 10 – 2,000 DM

Factory setting: 400 DM

### *hysteresis*

Setting range: 10 – 2,000 DM

Factory setting: 100 DM

Make settings for the gas boiler GBM 10-15 here. For example . you can select when the gas boiler is to start. See the accessory installation instructions for a description of function.

## MENU 5.3.16 - HUMIDITY SENSOR

### *climate system 1 HTS*

Setting range: 1–4

Default value: 1

### *limit RH in the room, syst.*

Setting range: on/off

Factory setting: off

### *prevent condensation, syst.*

Setting range: on/off

Factory setting: off

### *limit RH in the room, syst.*

Setting range: on/off

Factory setting: off

Up to four humidity sensors (HTS 40) can be installed.

Here you select whether your system(s) is/are to limit the relative humidity level (RH) during heating or cooling operation.

You can also choose to limit min. cooling supply and calculated cooling supply to prevent condensation on pipes and components in the cooling system.

See the Installer Manual for HTS 40 for function description.

## MENU 5.3.18 - POOL

Here you select which pump to use in the system.

## MENU 5.3.19 - ACTIVE COOLING 4 PIPE

Here you select which pump to use in the system.

## MENU 5.3.21 - FLOW SENSOR / ENERGY METER

### *Supply temperature sensor*

#### *set mode*

Setting range: EMK150 / EMK300/310 / EMK500

Factory setting: EMK150

#### *energy per pulse*

Setting range: 0 – 10000 Wh

Factory setting: 1000 Wh

#### *pulses per kWh*

Setting range: 1 – 10000

Factory setting: 500

### *Energy meter*

#### *set mode*

Setting range: energy per pulse / pulses per kWh

Default value: energy per pulse

#### *energy per pulse*

Setting range: 0 – 10000 Wh

Factory setting: 1000 Wh

#### *pulses per kWh*

Setting range: 1 – 10000

Factory setting: 500

Up to two flow sensors (EMK) / energy meters can be connected on the input board AA3, terminal block X22 and X23. Select these in menu 5.2.4 - accessories.

### *Flow sensor (Energy measurement kit EMK)*

A flow sensor (EMK) is used to measure the amount of energy produced and supplied by the heating installation for hot water and heating in the building.

The function of the flow sensor is to measure flow and temperature differences in the charge circuit. The value is presented in the display on a compatible product.

Starting from software version 8801R2 , you can select the flow sensor (EMK) you have connected in the system.

*energy per pulse:* Here you set the amount of energy to which each pulse will correspond.

*pulses per kWh:* Here you set the number of pulses per kWh that are sent to TW AIR.

### **Caution**

The software in TW AIR must be software version 8801R2 or later. Visit [myupway.com](http://myupway.com) and click on the "Software" tab to download the latest software to your installation.

## Energy meter (Electricity meter)

The energy meter(s) is used to send pulse signals every time a certain amount of energy has been consumed.

*energy per pulse:* Here you set the amount of energy to which each pulse will correspond.

*pulses per kWh:* Here you set the number of pulses per kWh that are sent to TW AIR.

## MENU 5.4 - SOFT IN/OUTPUTS

Here you can select which input/output on the input board (AA3) the external contact function (page 34) must be connected to.

Selectable inputs on terminal block AUX 1-5 (AA3-X6:9- 18) and output AA3-X7 on the input board.

## MENU 5.5 - FACTORY SETTING SERVICE

All settings can be reset (including settings available to the user) to default values here.

### **Caution**

When resetting, the start guide is displayed the next time the indoor module is restarted.

## MENU 5.6 - FORCED CONTROL

You can force control the different components in the indoor module and any connected accessories here.

### **NOTE**

Forced control is only intended to be used for troubleshooting purposes. Using the function in any other way may cause damage to the components in your climate system.

## MENU 5.7 - START GUIDE

When the indoor module is started for the first time the start guide starts automatically. Start it manually here.

See page 40 for more information about the start guide.

## MENU 5.8 - QUICK START

It is possible to start the compressor from here.

### **Caution**

There must be a heating, cooling or hot water demand to start the compressor.



### **NOTE**

Do not quick start the compressor too many times over a short period of time, as this could damage the compressor and its surrounding equipment.

## MENU 5.9 - FLOOR DRYING FUNCTION

### *length of period 1 – 7*

Setting range: 0 – 30 days

Factory setting, period 1 – 3, 5 – 7: 2 days

Factory setting, period 4: 3 days

### *temp. period 1 – 7*

Setting range: 15 – 70 °C

Default value:

temp. period 1	20 °C
temp. period 2	30 °C
temp. period 3	40 °C
temp. period 4	45 °C
temp. period 5	40 °C
temp. period 6	30 °C
temp. period 7	20 °C

Set the function for under floor drying here.

You can set up to seven period times with different calculated flow temperatures. If less than seven periods are to be used, set the remaining period times to 0 days.

Mark the active window to activate the underfloor drying function. A counter at the bottom shows the number of days the function has been active.



### **NOTE**

During under floor drying, the heating medium pump in 100% runs, regardless of the setting in menu 5.1.10.



### **TIP**

If operating mode "add. heat only" is to be used, select it in menu 4.2.





### TIP

It is possible to save a floor drying log that shows when the concrete slab has reached the correct temperature. See section "Logging floor drying" on page 64.

## MENU 5.10 - CHANGE LOG

Read off any previous changes to the control system here.

The date, time, ID no. (unique to particular setting) and the new set value are shown for every change.



### Caution

The change log is saved at restart and remains unchanged after factory setting.

## MENU 5.11 - HEAT PUMP SETTINGS

Settings for installed heat pump can be made in the submenus.

### MENU 5.11.1 - EB101

Make settings specifically for the installed heat pump and heating medium pump here.

#### MENU 5.11.1.1 - HEAT PUMP

Make settings for the installed heat pump here. To see what settings you can make, see the installation manual for the heat pump.

#### MENU 5.11.1.2 - HEATING MEDIUM PUMP (GP1)

##### *op. mode*

Setting range: auto / intermittent

Default value: auto

Set the operating mode of the heating medium pump here.

**auto:** The heating medium pump runs according to the current operating mode for TW AIR.

**intermittent:** The heating medium pump starts and stops 20 seconds before, and after, the compressor in the heat pump.

##### *speed during operation*

*heating, hot water, pool, cooling*

Setting range: auto / manual

Default value: auto

##### *Manual setting*

Setting range: 1–100 %

Default values: 70 % *min.*

##### *allowed speed* Setting

range: 1–100 % Default

values: 1 %

##### *speed in prio. add. heat*

Setting range: 1–100 %

Default values: 70 % *speed*

##### *in wait mode* Setting

range: 1–100 % Default

values: 30 %

##### *max. allowed speed*

Setting range: 80–100 %

Default values: 100 %

Set the speed at which the heating medium pump is to operate in the present operating mode. Select "auto" if the speed of the heating medium pump is to be regulated automatically (factory setting) for optimal operation.

If "auto" is activated for heating operation, you can also make the setting "min. allowed speed" and "max. allowed speed", which restricts the heating medium pump and does not allow it to run at a higher speed than the set value.

For manual operation of the heating medium pump, deactivate "auto" for the current operating mode and set the value to between 1 and 100% (the previously set value for "max. allowed speed" and "min. allowed speed" no longer applies).

**wait mode** means heating or cooling operating mode for the heating medium pump, when the heat pump requires neither compressor operation nor electric additional heat and slows down.

## 5.12 - COUNTRY

Select here the country in which the product was installed. This allows access to country-specific settings in your product.

Language settings can be made regardless of this selection.

Caution! This option locks after 24 hours, after restarting the display and during program updating.



# 9 Service

## Service actions



### NOTE

Servicing should only be carried out by persons with the necessary expertise.

When replacing components on TW AIR only replacement parts from NIBE may be used.



### NOTE

There may be some hot water when draining the heating medium side/climate system. There is a risk of scalding.

1. Connect a hose to the QM30 valve and open the valve.
2. Open the vent valve QM20.

### EMERGENCY MODE

Emergency mode is used in event of operational interference and in conjunction with service. Hot water capacity is reduced in this mode.

Emergency mode is activated by setting switch (SF1) in mode "△". This means that:

- The status lamp illuminates yellow.
- The display is not lit and the control computer is not connected.
- The temperature by the immersion heater is controlled by the thermostat (FQ10-BT30). It can be set to 35 or 45 °C.
- Only the circulation pumps and electric additional heat are active. The electrical additional heat power in emergency mode is set in the immersion heater board (AA1). See page 32 for instructions.

### DRAINING THE HOT WATER HEATER

The hot water tank can be emptied from the valve QM31. Before opening the valve, the hot water supply valve QM50 must be closed.

1. Remove the cap from the drain valve QM31
2. Connect the hose connector and hose to the drain valve
3. Open the valve with a chisel screwdriver
4. Open safety valve FL1 to speed up draining

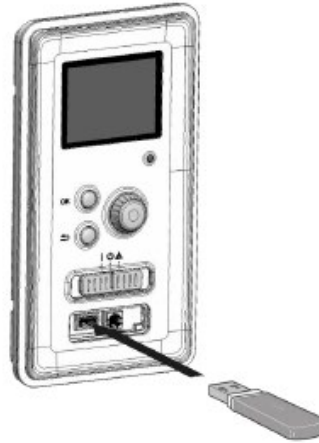
### DRAINING THE CLIMATE SYSTEM

In order to carry out service on the climate system, it may be easier to drain the system first using the drain valve (QM30). To speed up draining, it is also advisable to open the vent valve QM20.

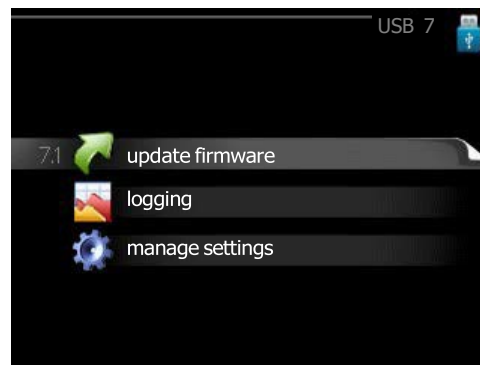
## TEMPERATURE SENSOR DATA

Temperature (°C)	Resistance (kOhm)	Voltage (VDC)
-40	351.0	3.256
-35	251.6	3.240
-30	182.5	3.218
-25	133.8	3.189
-20	99.22	3.150
-15	74.32	3.105
-10	56.20	3.047
-5	42.89	2.976
0	33.02	2.889
5	25.61	2.789
10	20.02	2.673
15	15.77	2.541
20	12.51	2.399
25	10.00	2.245
30	8.045	2.083
35	6.514	1.916
40	5.306	1.752
45	4.348	1.587
50	3.583	1.426
55	2.968	1.278
60	2.467	1.136
65	2.068	1.007
70	1.739	0.891
75	1.469	0.785
80	1.246	0.691
85	1.061	0.607
90	0.908	0.533
95	0.779	0.469
100	0.672	0.414

## USB SERVICE OUTLET

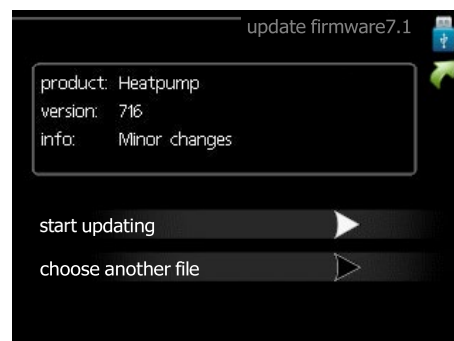


The display unit is equipped with a USB socket that can be used to update the software and save logged information in TW AIR.



When a USB memory is connected, a new menu (menu 7) appears in the display.

### Menu 7.1 - update firmware



This allows you to update the software in TW AIR.



## NOTE

For the following functions to work the USB memory must contain files with software for TW AIR from KAUKORA.

The fact box at the top of the display shows information (always in English) of the most probable update that the update software has selected from the USB memory.

This information states the product for which the software is intended, the software version and general information about it. If you want a file other than the one selected, the correct file can be selected through "choose another file".

### start updating

Select "start updating" if you want to start the update. You are asked whether you really want to update the software. Respond "yes" to continue or "no" to undo.

If you responded "yes" to the previous question the update starts and you can now follow the progress of the update on the display. When the update is complete TW AIR restarts.



## TIP

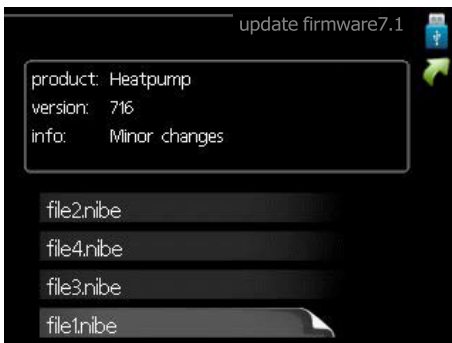
A software update does not reset the menu settings in TW AIR.



## Caution

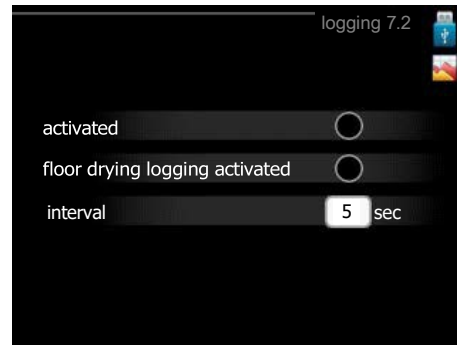
If the update is interrupted before it is complete (for example power cut etc.), the software can be reset to the previous version if the OK button is held in during start up until the green lamp starts to illuminate (takes about 10 seconds).

### choose another file



Select "choose another file" if you do not want to use the suggested software. When you scroll through the files, information about the marked software is shown in a fact box just as before. When you have selected a file with the OK button you will return to the previous page (menu 7.1) where you can choose to start the update.

## Menu 7.2 - logging



Setting range: 1 s – 60 min

Factory setting range: 5 s

Here you can choose how current measurement values from TW AIR should be saved onto a log file on the USB memory.

1. Set the desired interval between loggings.
2. Tick "activated".
3. The present values from TW AIR are saved in a file in the USB memory at the set interval until "activated" is unticked.



## Caution

Untick "activated" before removing the USB memory.

### Logging floor drying

Here you can save a floor drying log on the USB memory and in this way see when the concrete slab reached the correct temperature.

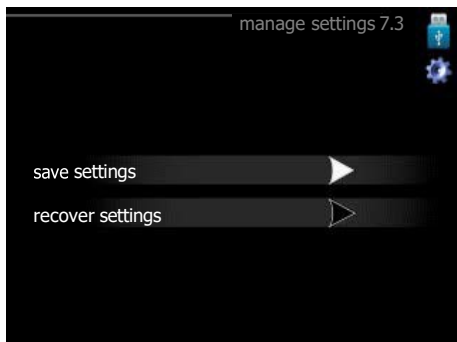
- Make sure that "floor drying function" is activated in menu 5.9.
- Select "logging floor drying activated".
- A log file is now created, where the temperature and the immersion heater output can be read off. Logging continues until "logging floor drying activated" is deselected or until "floor drying function" is stopped.



## Caution

Deselect "logging floor drying activated" before you remove the USB memory.

## Menu 7.3 - manage settings



Here you can manage (save as or retrieve from) all the menu settings (user and service menus) in TW AIR with a USB memory.

Via "save settings" you save the menu settings to the USB memory in order to restore them later or to copy the settings to another TW AIR.



### **Caution**

When you save the menu settings to the USB memory you replace any previously saved settings on the USB memory.

Via "recover settings" you reset all menu settings from the USB memory.



### **Caution**

Reset of the menu settings from the USB memory cannot be undone.

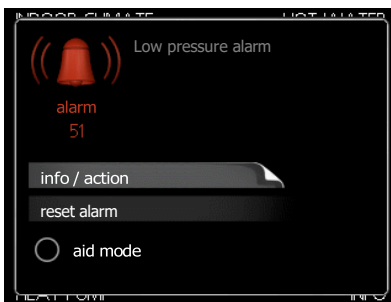
# 10 Disturbances in comfort

In most cases, TW AIR notes a malfunction (a malfunction can lead to disruption in comfort) and indicates this with alarms, and instructions for action, in the display.

## Info-menu

All the installation's measurement values are gathered under menu 3.1 in the indoor module's menu system. Examining the values in this menu can often make it easier to identify the source of the fault.

## Manage alarm



In the event of an alarm, some kind of malfunction has occurred, which is indicated by the status lamp changing from green continuously to red continuously. In addition, an alarm bell appears in the information window.

### ALARM

In the event of an alarm with a red status lamp a malfunction has occurred that the indoor module cannot remedy itself. In the display, by turning the control knob and pressing the OK button, you can see the type of alarm it is and reset it. You can also choose to set the indoor module to aid mode.

*info / action* Here you can read what the alarm means and receive tips on what you can do to correct the problem that caused the alarm.

*reset alarm* In many cases, it is sufficient to select "reset alarm" for the product to revert to normal operation. If a green light comes on after selecting "reset alarm", the alarm has been remedied. If the red light is still on, and a menu called "alarm" is visible in the display, the problem causing the alarm still remains.

*aid mode* "aid mode" is a type of emergency mode. This means that the indoor module produces heat and/or hot water, even though there is some kind of problem. This could mean that the heat pump's compressor is not in operation. In this case, the immersion heater produces heat and/or hot water.



### Caution

To select aid mode an alarm action must be selected in the menu 5.1.4.



### Caution

Selecting "aid mode" is not the same as correcting the problem that caused the alarm. The status lamp will therefore continue to be red.

## Troubleshooting

If the operational interference is not shown in the display the following tips can be used:

### Basic actions

Start by checking the following items:

- The switch's (SF1) position.
- Group and main fuses of the accommodation.
- The property's earth circuit breaker.
- Miniature circuit breaker for TW AIR (FA1).
- Temperature limiter for TW AIR (FD1).
- Correctly set load monitor (if installed).

## ***Low hot water temperature or a lack of hot water***

- Closed or choked filling valve for the hot water.
  - Open the valve.
- Mixing valve (if there is one installed) set too low.
  - Adjust the mixer valve.
- TW AIR in incorrect operating mode.
  - Enter menu 4.2. If mode "auto" is selected, select a higher value on "stop additional heat" in menu 4.9.2.
  - If mode "manual" is selected, select "addition".
  - Hot water is produced with TW AIR in "manual" mode. If there is no air/water heat pump, "addition" must be activated.
- Large hot water consumption.
  - Wait until the hot water has heated up. Temporarily increased hot water capacity (temporary lux) can be activated in menu 2.1.
- Too low hot water setting.
  - Enter menu 2.2 and select a higher comfort mode.
- Low hot water access with the "Smart Control" function active.
  - If the hot water usage has been low, less hot water than normal will be produced. Restart the product.
- Too low or no operating prioritisation of hot water.
  - Enter menu 4.9.1 and increase the time for when hot water is to be prioritised. Note that, if the time for hot water is increased, the time for heating production is reduced, which can give lower/uneven room temperatures.
- "Holiday mode" activated in menu 4.7.
  - Enter menu 4.7 and select "Off".

## ***Low room temperature***

- Closed thermostats in several rooms.
  - Set the thermostats to max, in as many rooms as possible. Adjust the room temperature via menu 1.1, instead of choking the thermostats.
  - See the "Saving tips" section in the User manual for more detailed information about how to best set the thermostats.
- TW AIR in incorrect operating mode.
  - Enter menu 4.2. If mode "auto" is selected, select a higher value on "stop heating" in menu 4.9.2.
  - If mode "manual" is selected, select "heating". If this is not enough, select "addition".
- Too low set value on the automatic heating control.

- Enter menu 1.1 "temperature" and adjust the offset heating curve up. If the room temperature is only low in cold weather the curve slope in menu 1.9.1 "heating curve" needs adjusting up.
- Too low or no operating prioritisation of heat.
  - Enter menu 4.9.1 and increase the time for when heating is to be prioritised. Note that if the time for heating is increased the time for hot water production is reduced, which can give smaller amounts of hot water.
- "Holiday mode" activated in menu 4.7.
  - Enter menu 4.7 and select "Off".
- External switch for changing room temperature activated.
  - Check any external switches.
- Air in the climate system.
  - Vent the climate system (see page 39).
- Closed valves to the climate system.
  - Closed valves to the climate system or heat pump.
  - Open the valves.

## ***High room temperature***

- Too high set value on the automatic heating control.
  - Enter menu 1.1 (temperature) and reduce the offset heating curve. If the room temperature is only high in cold weather the curve slope in menu 1.9.1 "heating curve" needs adjusting down.
- External switch for changing room temperature activated.
  - Check any external switches.

## ***Low system pressure***

- Not enough water in the climate system.
  - Fill the climate system with water and check for leaks (see page 39).

### *The air/water heat pump's compressor does not start*

- There is no heating or cooling demand (accessory is required for cooling).
  - TW AIR does not call on heating, cooling or hot water.
- Compressor blocked due to the temperature conditions.
  - Wait until the temperature is within the product's working range.
- Minimum time between compressor starts has not been reached.
  - Wait for at least 30 minutes and then check if the compressor has started.
- Alarm tripped.
  - TW AIR temporarily blocked, see menu 3.2 "Compressor information".

## Electrical addition only

If you are unsuccessful in rectifying the fault and are unable to heat the house, you can, whilst waiting for assistance, continue running the heat pump in "add. heat only". This means that additional heating only is used to heat the house.

### SET THE INSTALLATION TO ADDITIONAL HEAT MODE

1. Go to menu 4.2 op. mode.
2. Mark "add. heat only" using the control knob and then press the OK button.
3. Return to the main menus by pressing the Back button.

# 11 Accessories

Detailed information about the accessories and complete accessories list available at [nibe.eu](http://nibe.eu).

Not all accessories are available on all markets.

## ACCESSORY CARD AXC 50

An accessory card is required if step controlled addition (e.g. external electric boiler) or if shunt controlled addition (e.g. wood/oil/gas/pellet boiler) is to be connected to TW AIR.

An accessory card is also required if for example an external circulation pump is connected to TW AIR at the same time that the buzzer alarm is activated.

Part no. M02923

## ACTIVE COOLING ACS 310

ACS 310 is an accessory that enables TW AIR to control the production of cooling.

Part no. 5058527

## AUXILIARY RELAY AR 1

Auxiliary relay AR 1 is used to control external 1 to 3 phase loads such as oil burners, immersion heaters and pumps.

Part no 5360154

## COMMUNICATION MODULE FOR SOLAR ELECTRICITY EME 20

EME 20 is used to enable communication and control between inverters for solar cells and TW AIR.

Part no. M04185

## COMMUNICATIONS MODULE MODBUS 40

MODBUS 40 enables TW AIR to be controlled and monitored using a DUC (computer sub-centre) in the building. Communication is then performed using MODBUS-RTU.

Part no M02924

## COMMUNICATIONS MODULE SMS 40

When there is no internet connection, you can use the accessory SMS 40 to control TW AIR via SMS.

Part no M02853

## ENERGY MEASUREMENT KIT EMK 300

This accessory is installed externally and used to measure the amount of energy that is supplied for the pool, hot water, heating and cooling in the building.

Part no.

## EXTERNAL ELECTRIC ADDITIONAL HEAT

*Jäspi*  
*Lisäwatti*

Part no. T000744



## EXTRA SHUNT GROUP ECS 40/ECS 41

This accessory is used when TW AIR is installed in houses with two or more different heating systems that require different supply temperatures.

*ECS 40 (Max 80 m<sup>2</sup>)*      *ECS 41 (approx.*  
Part no M02566                      *80-250 m<sup>2</sup>)*

Part no M02691

## HUMIDITY SENSOR HTS 40

This accessory is used to show and regulate humidity and temperatures during both heating and cooling operation.

Part no. M03786

## POOL HEATING POOL 310

POOL 310 is an accessory that enables pool heating with TW AIR.

Part no. M03199

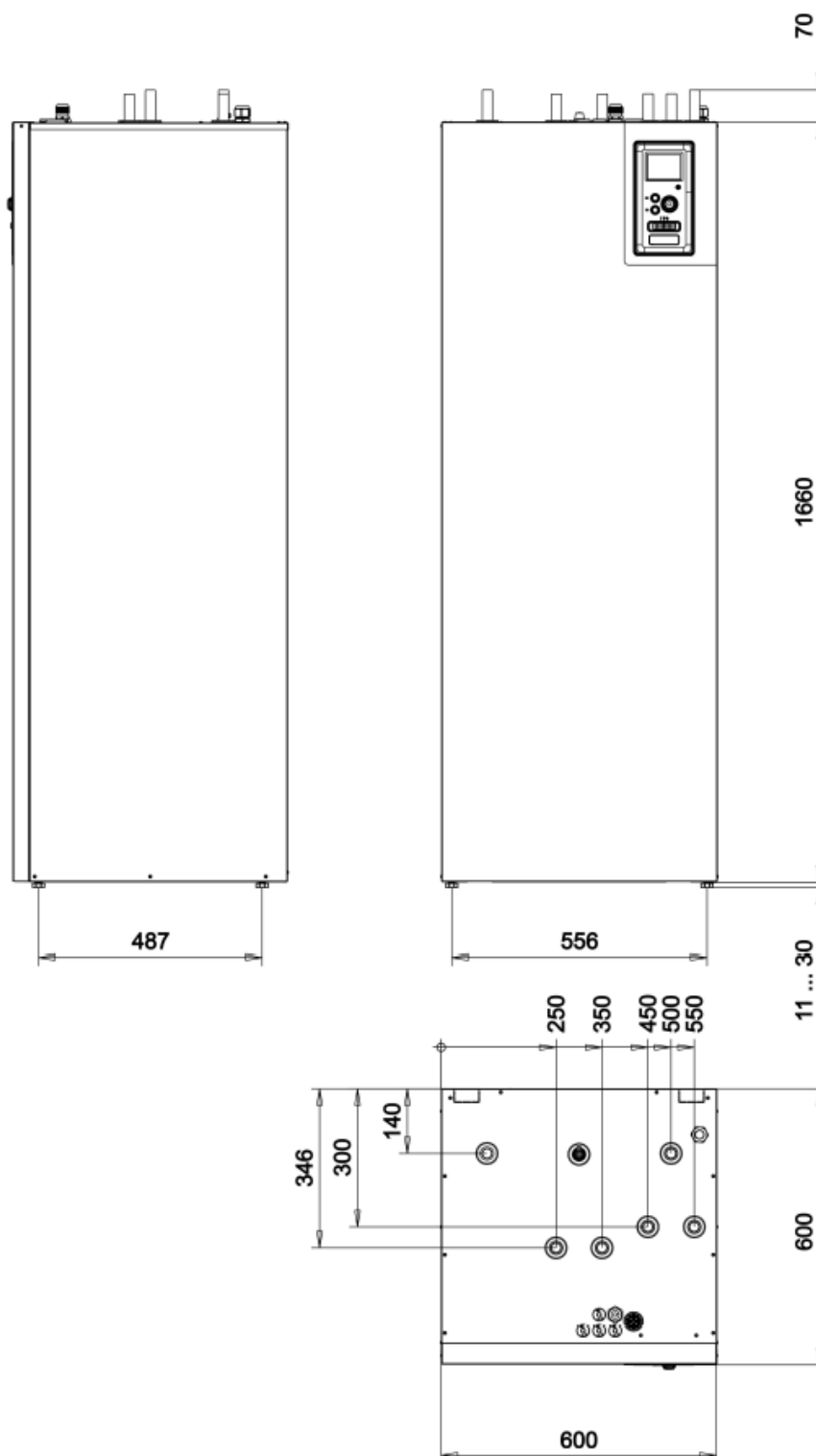
## ROOM UNIT RMU 40

The room unit is an accessory that allows the control and monitoring of TW AIR to be carried out in a different part of your home to where it is located.

Part no M02757

# 12 Technical data

## Dimensions and setting-out coordinates



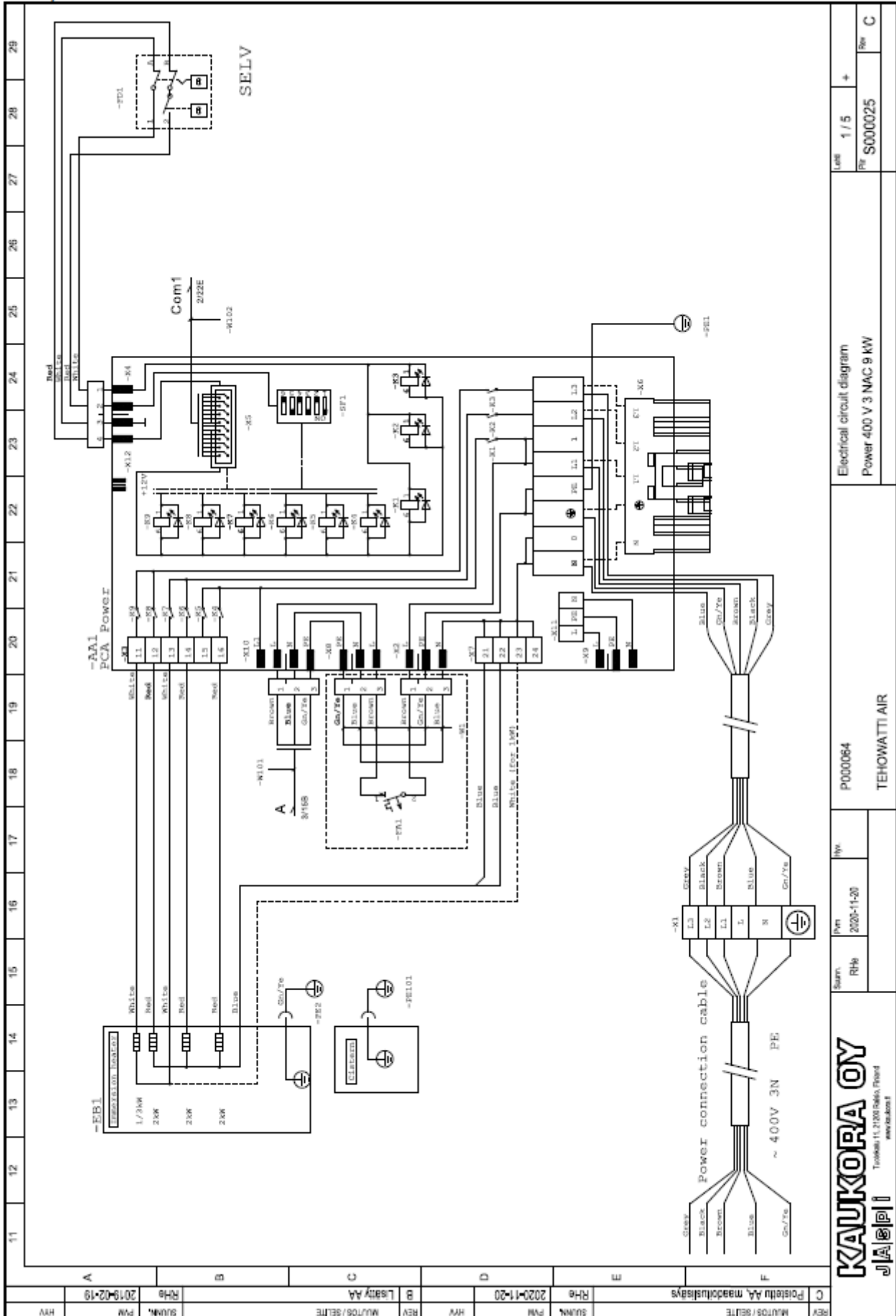
# Technical specifications

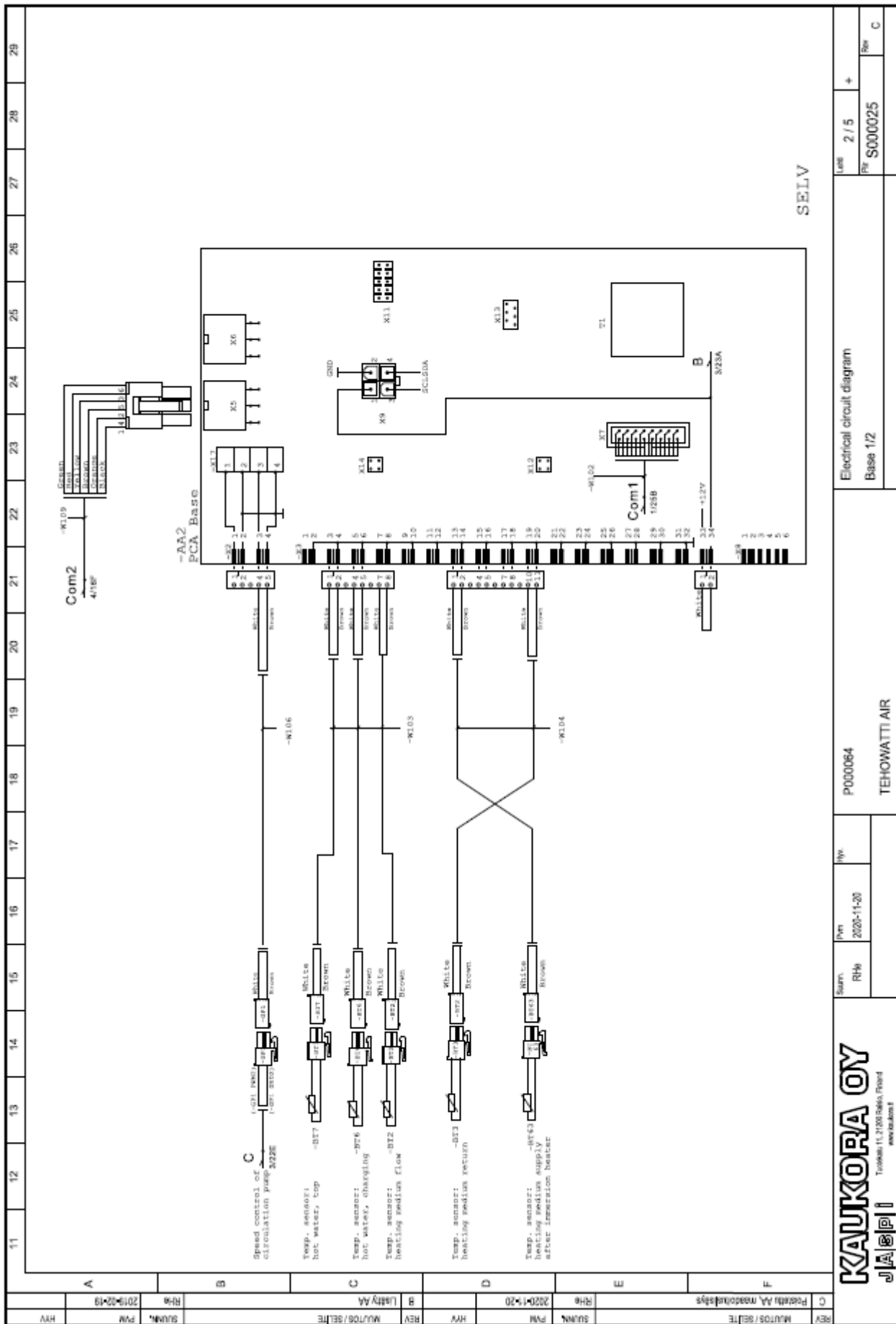
## 3X400V

<b>3x400V</b>		
<i>Compatible JÄSPI air/water heat pumps</i>		
M-serie		6 / 8 / 12
Nordic-serie		8 / 12 / 16
SPLIT-serie		6 / 8 / 12
<b>Electrical data</b>		
Additional power	kW	9
Rated voltage		400V 3N~50Hz
Max operating current	A	16
Fuse	A	16
Output, GP1	W	3 – 76
Output, GP6	W	3 – 45
Enclosure class		IP21
<b>Heating medium circuit</b>		
Energy class, GP1		low energy
Energy class, GP6		low energy
Max system pressure heating medium	MPa	0.3 (3 bar)
Max HM temp	°C	70
<b>Pipe connections</b>		
Heating medium	mm	Ø22
Hot water connection	mm	Ø22
Cold water connection	mm	Ø22
Heat pump connections	mm	Ø22
<b>Miscellaneous</b>		
<b>Indoor module</b>		
Volume, hot water heater	l	220
Volume, total indoor module	l	240
Volume buffer vessel	l	16
Max. permitted pressure, water heater	MPa (bar)	1.0 (10 bar)
Cut-off pressure, hot water heater	MPa (bar)	1.0 (10 bar)
Max permitted pressure in indoor module	MPa (bar)	0.25 (2,5 bar)
Cut-off pressure, indoor module	MPa (bar)	0.25 (2.5 bar)
<b>Capacity, hot water heating According to EN16147</b>		
Tap volume 40°C at Economy comfort	l	220
Tap volume 40 °C during Normal comfort	l	250
Tap volume 40 °C during Lux comfort	l	280
<b>Dimensions and weight</b>		
Width	mm	600
Depth	mm	600
Height (without base)	mm	1730
Height (with base)	mm	1742 – 1760
Required ceiling height	mm	1910
Weight (excl. packaging and without water)	kg	131

# Electrical circuit diagram

3X400V





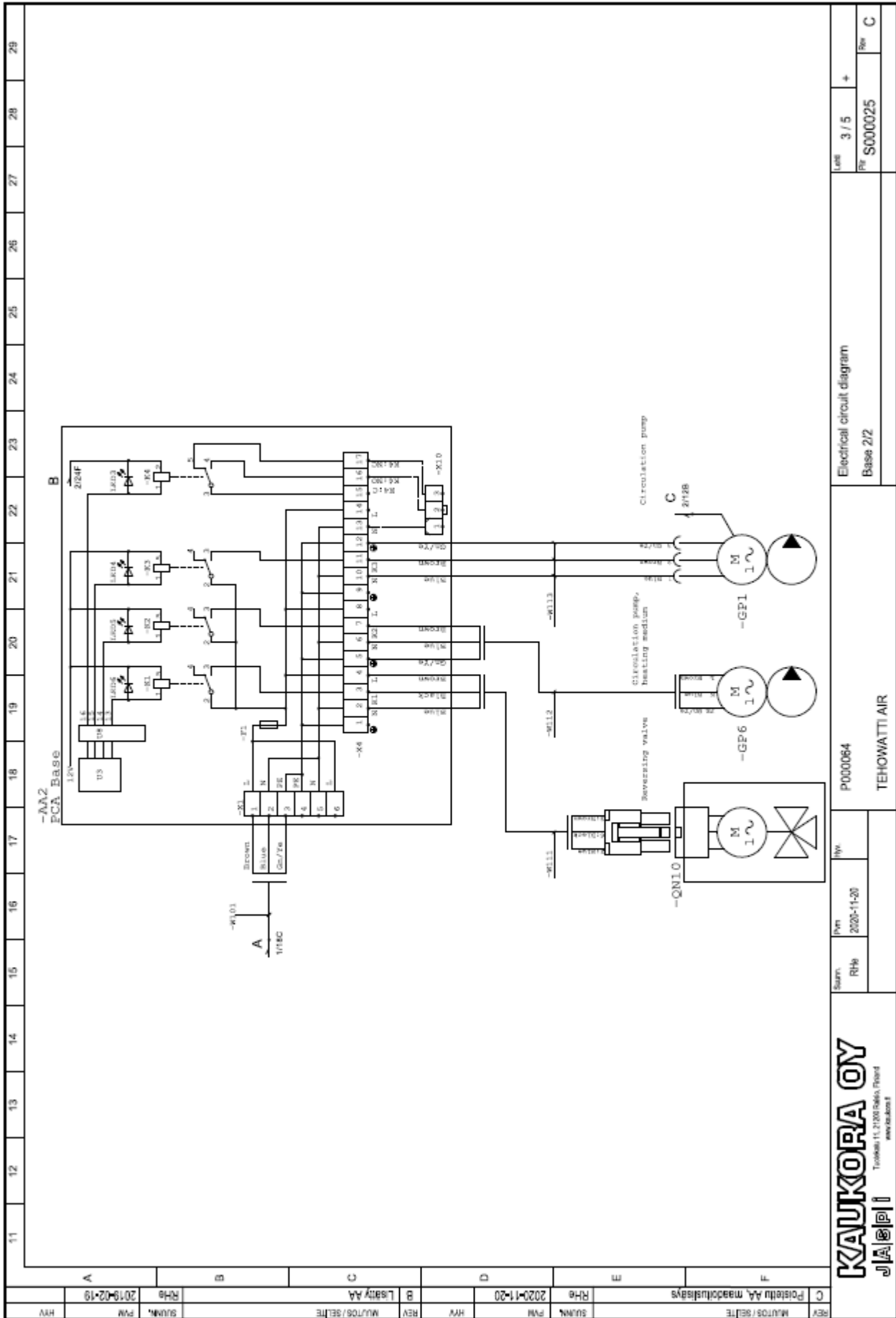
SELV

REV	MUTOS / SELVE	PJM	2020-11-20	RHe	P000064	Electrical circuit diagram		
						Base 1/2		
						Level	2 / 5	+
						Rev	C	

KAUKORA OY  
J|A|B|i  
Toukoku 11, 2000 Rauma, Finland  
www.kaukora.fi

TEHOWATTI AIR

REV	MUTOS / SELVE	PJM	2020-11-20	RHe	P000064	Electrical circuit diagram	
REV	MUTOS / SELVE	PJM	2020-11-20	RHe	P000064		Base 1/2
							Level
						Rev	C



Electrical circuit diagram  
Base 2/2

Rev 3 / 5 +  
Rev S000025

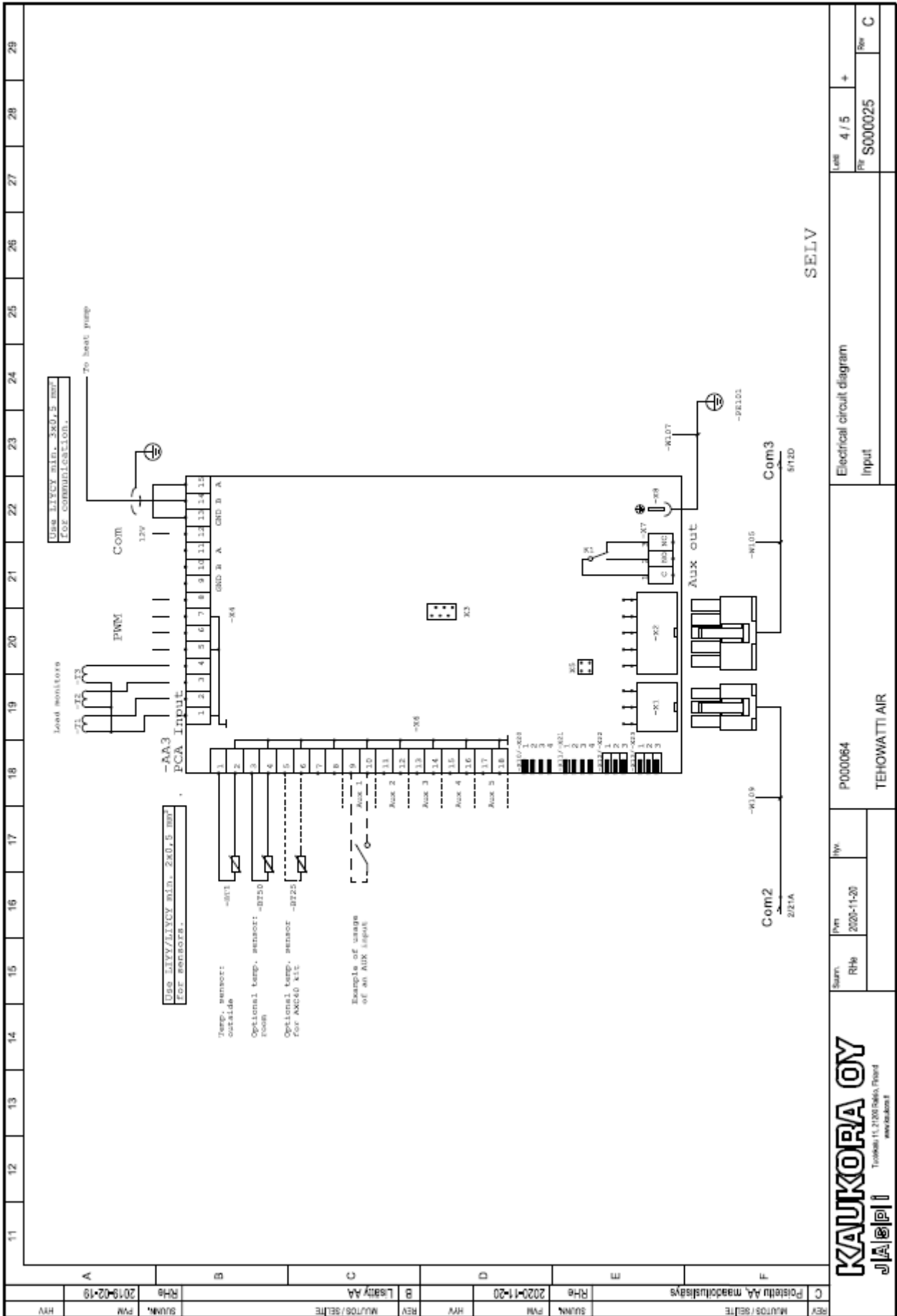
P000064  
TEHOWATTI AIR

Sum. RHe  
Pvm 2020-11-20

**KAUKORA OY**  
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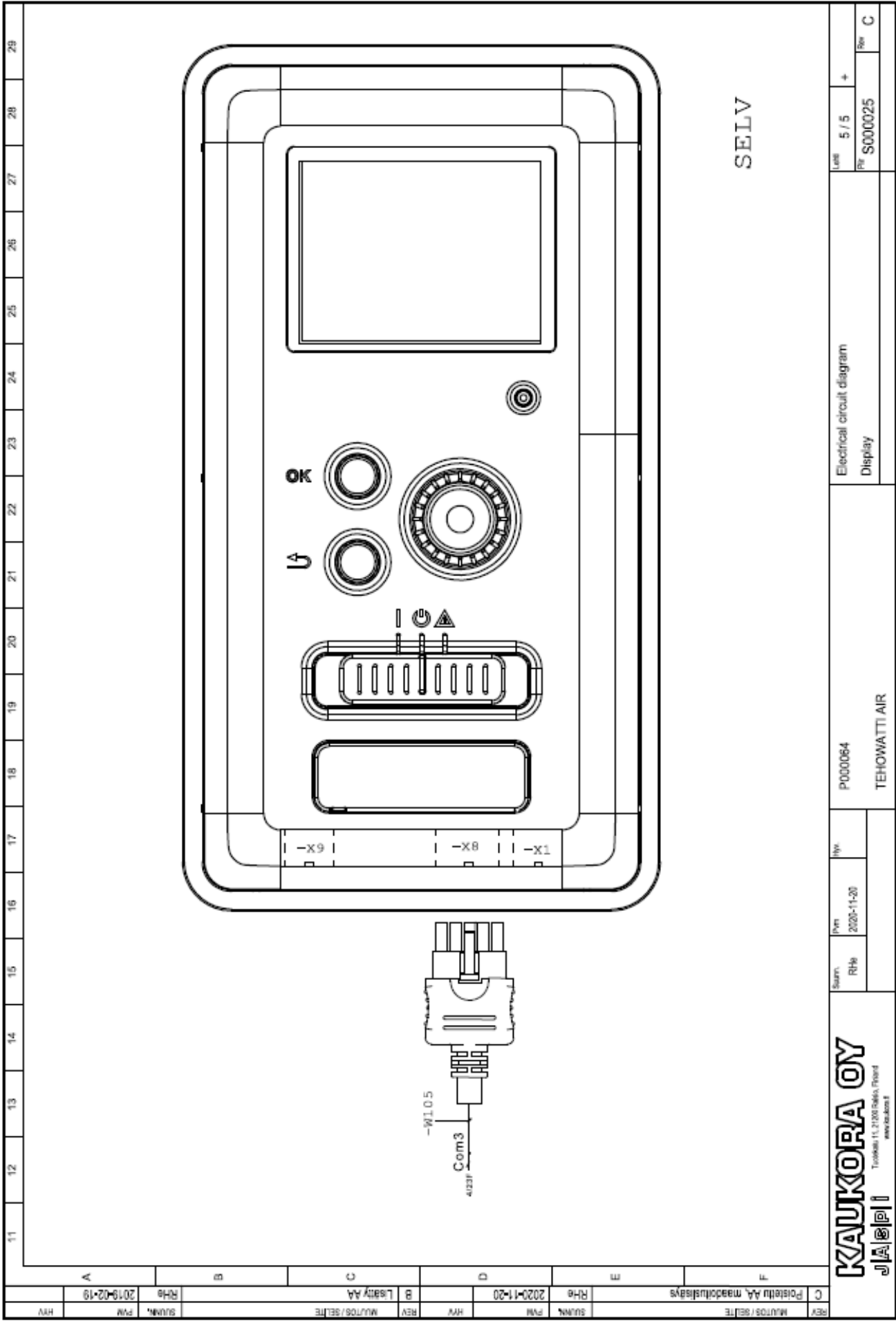
**JALPI**

REV	MUTOS / SELTE	2020-11-20	RHe	2020-11-20	RHe	2019-02-19	RHe	2019-02-19	RHe
B	Lesityy AA								
C	Poistettu AA, maadollisuitys								



SELV

REV	MULTOS/SELTE	Sum.	RHe	Rev	2020-11-20	P000064	TEHOWATTI AIR	Electrical circuit diagram	Rev	C
C	Posistitu AA, maadilushays	RHe	2020-1-20	B	Liberty AA				Let	4 / 5 +
									Pr	SC00025



SELV

REV	MUTOS/SELTE	SUNN	PVM	2020-11-20	RHE	2020-11-20	RHE	Sum.	2020-11-20	RHE	P000064	TEHOWATTI AIR	Electrical circuit diagram	Leht	5 / 5	+	Rev	C
C	Posteittu AA, maadokussävy			2020-11-20	RHE	2020-11-20	RHE	Sum.	2020-11-20	RHE	P000064	TEHOWATTI AIR	Display					
B	Lesäty AA																	
A	2019-02-19																	

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