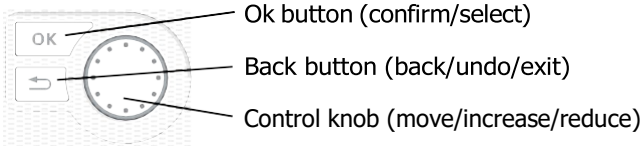
IHB FI 1344-1
231752

INSTALLER MANUAL

Control module MCU 40

Quick guide

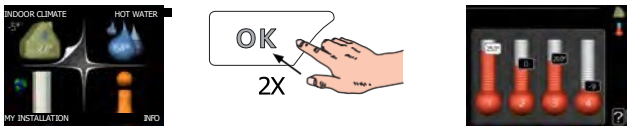
Navigation



A detailed explanation of the button functions can be found on page 25.

How to scroll through menus and make different settings is described on page 29.

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 (if a hot water heater is installed to your MCU 40), first turn the control knob to mark menu 2 (water droplet) and then press the OK button twice. How to make different settings is described on page 34.

Table of Contents

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.

Rights to make any design or technical modifications are reserved.

MCU 40 must be installed via an isolator switch. The cable area has to be dimensioned based on the fuse rating used.

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

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

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

IP21 Classification of enclosure of electro-technical equipment.

Danger to person or machine.

Read the User Manual.

Serial number

The serial number can be found on the top of the cover for the control module and in the info menu (menu 3.1).

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*
Electrical connections				
	Communication, heat pump			
	Connected supply 230 V			
	Outside sensor			
	Room sensor			
	Temperature sensor, hot water charging			
	Temperature sensor, hot water top			
	Temperature sensor, external flow line			
	Temperature sensor, external return line			
	Charge pump			
	Shuttle valve			
	AUX1			
	AUX2			
	AUX3			
	AUX4			
	AUX5			
	AUX6			
	Dipswitch			
Miscellaneous				
	Checking additional heater			
	Checking the function of the reversing valve			
	Checking charge pump function			
	Completed installation check of heat pump and associated equipment			

System solutions

COMPATIBLE PRODUCTS

The following combinations of products are recommended for control by MCU 40.

							
Control module	*Air/water heat pump*	*HW control*	*Accumulator with hot water heater*	*Circulation pump*	*Water heater*	*Addition*	*Volume vessel*
MCU 40	Split 6 / SplitBox 6	VST 05	GTV HYBRID 500	CPD 11-25/65 CPD 11-25/75	VLM STAR 300 VLM STAR 500	FIL-MINI 42 FIL-LP FIL-SPL	Buffer 50 RST Buffer 100 RST Buffer 200 RST Buffer 270 Buffer 500 Buffer 750 Buffer 1000
	Split 8 / SplitBox 8-12						
	Inverter M6						
	Inverter M8						
	Nordic 8						
	Split 12 / SplitBox 8-12	VST 11					
	Inverter M12						
	Nordic 12						
	Nordic 16						
	Split 16 / SplitBox 16	VST 20			VLM STAR 500 VLM STAR 1000		
	Inverter M16						
	Nordic 20						

COMPATIBLE AIR/WATER HEAT PUMPS

Jäspi Split

Split 6 outdoor unit	*SplitBox 6*
Split 8 outdoor unit	*SplitBox 8-12*
Split 12 outdoor unit	*SplitBox 8-12*
Split 16 outdoor unit	*SplitBox 16*

Jäspi Inverter M

Inverter M6 outdoor unit	*Inverter M8 outdoor init*
Inverter M12 outdoor unit	*Inverter M16 outdoor unit*

Jäspi Nordic

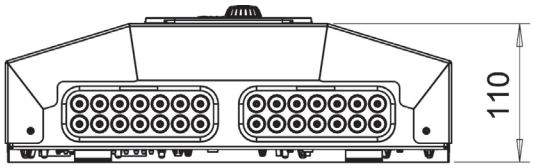
Nordic 8 outdoor unit 1x230V	*Nordic 8 outdoor unit 3x400V*
Nordic 12 outdoor unit	
Nordic 16 outdoor unit	
Nordic 20 outdoor unit	

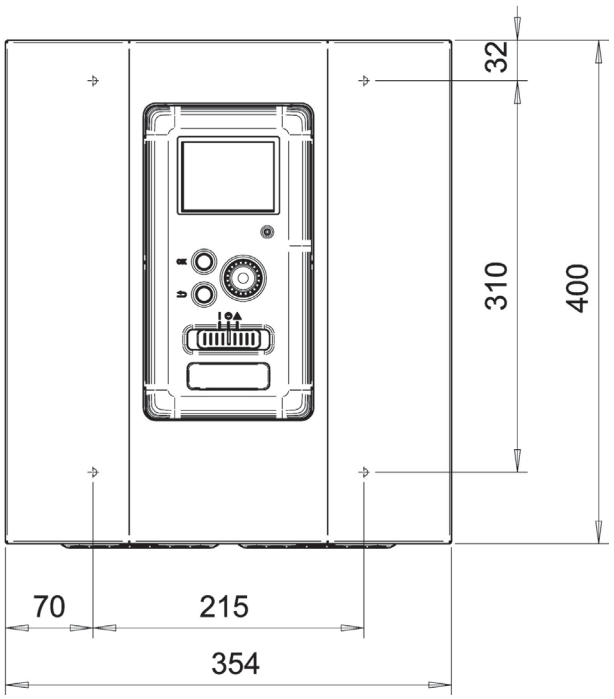
2 Delivery and handling

Wall installation

NOTE

For wall mounting, use screws suitable for the surface.





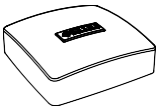
Use all mounting points and install MCU 40 upright flat against the wall without any part of the control module protruding beyond the edge of the wall.

Leave at least 100 mm free space around the control module to facilitate access and cable routing on installation and service.

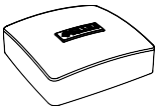
Caution

Screws for removing the front cover are reached from underneath.

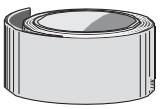
Supplied components



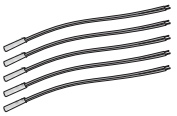
Outside sensor



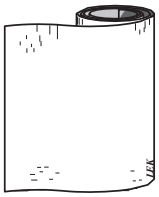
Room sensor



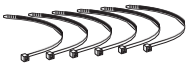
Insulation tape



Temperature sensor



Aluminium tape



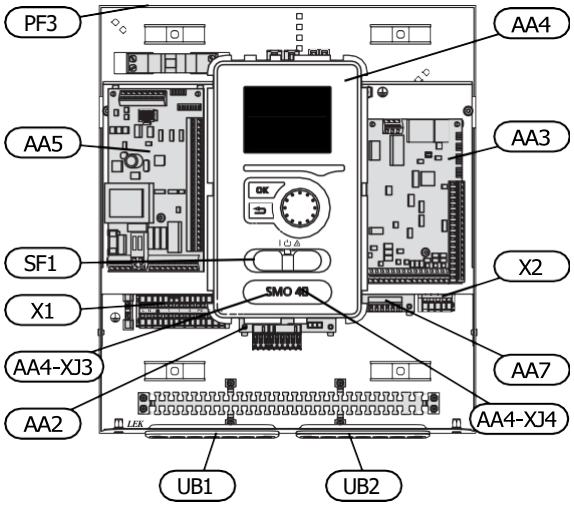
Cable ties

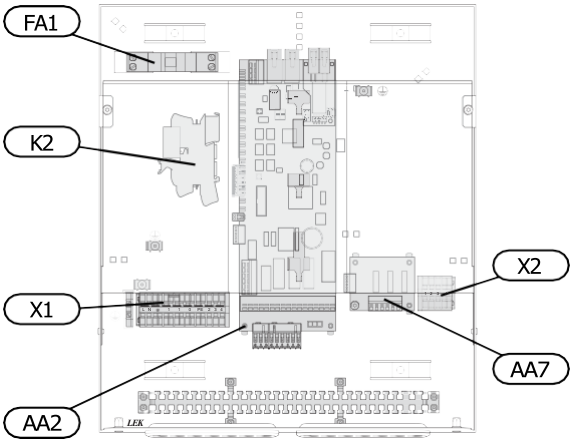
Heating pipe paste

Current sensor

3 The Control Module Design

Component positions Electrical components





AA2	Base card
AA3	Input circuit board Display
AA4	unit
	AA4-XJ3 USB socket
	AA4-XJ4 Service outlet (No function) Accessory
AA5	card
AA7	Extra relay circuit board Miniature
FA1	circuit breaker, 10 A Emergency
K2	mode relay
X1	Terminal block, incoming electrical supply
X2	Terminal block, AUX4 - AUX6
SF1	Switch
PF3	Serial number plate
UB1	Cable grommet, incoming supply electricity, power for accessories
UB2	Cable gland, signal

Designations in component locations according to standard IEC 81346- 1 and EN 81346-2.

4 Pipe connections

General

Pipe installation must be carried out in accordance with applicable regulations. See manual for compatible JÄSPI air/water heat pump for installation of the heat pump.

The pipe dimension should not be less than the recommended pipe diameter according to the table below.
However, each system must be dimensioned individually to achieve the recommended system flows.

MINIMUM SYSTEM FLOWS

The installation must be dimensioned at least to manage the minimum defrosting flow at 100% pump operation, see table.

Air/water heat pump	*Minimum flow during defrosting (100% pump speed (l/s)*	*Minimum recommended pipe dimension (DN)*	*Minimum recommended pipe dimension (mm)*
Nordic 8	0.27	20	22
Nordic 8 (1x230V)	0.27	20	22
Nordic 12	0.35	25	28
Nordic 16	0.38	25	28
Nordic 20	0.38	32	35

Air/water heat pump	*Minimum flow during defrosting (100% pump speed (l/s)*	*Minimum recommended pipe dimension (DN)*	*Minimum recommended pipe dimension (mm)*
Inverter M6	0.19	20	22
Inverter M8	0.19	20	22
Inverter M12	0.29	20	22
Inverter M16	0.39	25	28

Air/water heat pump	*Minimum flow during defrosting (100% pump speed (l/s)*	*Minimum recommended pipe dimension (DN)*	*Minimum recommended pipe dimension (mm)*
SplitBox 6/ Split 6	0.19	20	22
SplitBox 8-12/ Split 8	0.19	20	22
SplitBox 8-12/ Split 12	0.29	20	22
SplitBox 16/ Split 16	0.39	25	28

NOTE

An undersized system can result in damage to the machine and lead to malfunctions.

Compatible JÄSPI air/water heat pumps

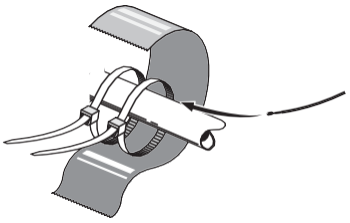
Compatible JÄSPI air/water heat pump has to be equipped with a control board that, as a minimum, has the software version given in the following list. The control board's version is shown in the heat pump's display (if applicable) at start-up.

Product	*Software version*
JÄMÄ MOON 6,8,10,14	55
JÄMÄ MOON 6,8,10 FACELIFT	55
JÄMÄ MOON 14,20	55
JÄMÄ MOON 7,9	all versions
JÄSPI Inverter M6,M8,M12,M16	all versions
JÄSPI Nordic 8,12,16,20	all versions
JÄSPI SPLIT: Split 6 + SplitBox 6 Split 8 + SplitBox 8-12 Split 12 + SplitBox 8-12 Split 16 + SplitBox 16	all versions

Symbol key

Symbol	*Meaning*
	Shut-off valve
	Tapping valve
	Trim valve
	Shunt / reversing valve
	Safety valve
	Temperature sensor
	Expansion vessel
	Pressure gauge
	Circulation pump
	Particle filter
	Auxiliary relay
	Compressor
	Heat exchanger
	Radiator system
	Domestic hot water
	Under floor heating systems
	Cooling system

Temperature sensor installation on pipe



The temperature sensors are fitted using heat conducting paste, cable ties (the first cable tie is secured to the pipe in the middle of the sensor and the other cable tie is mounted approx. 5 cm after the sensor) and aluminium tape. Then insulate them using the enclosed insulation tape.

NOTE

Sensor and communication cables must not be laid near power cables.

Docking alternatives

MCU 40 can be connected with other products from JÄSPI in several different ways, some of which are shown below (accessories may be required).

Further option information is available at nibe.eu and in the respective assembly instructions for the accessories used. See page 61 for a list of the accessories that can be used with MCU 40.

Installations with MCU 40 can produce heating and hot water. Cooling can also be produced, depending on which heat pump is used.

On cold days of the year when the access to energy from the air is reduced the additional heating can compensate and help to produce heat. The additional heating is also good to have as assistance if the heat pump ends up outside its working range or if it has been blocked for any reason.

NOTE

The heating medium side and the domestic hot water side must be fitted with the necessary safety equipment in accordance with the applicable regulations.

This is the outline diagram. Actual installations must be planned according to applicable standards.

EXPLANATION

AA25	MCU 40
BT1	Outdoor sensor[1)]
BT6	Temperature sensor, hot water charging[1)]
BT7	Temperature sensor, hot water top[1)]
BT25	Temperature sensor, external supply line[1)]
BT50	Room sensor[1)]
BT63	Temperature sensor, external supply line after electric heater
BT71	Temperature sensor, external return line[1)]
GP10	Circulation pump, Heating medium
QN10	Reversing valve, Hot water/Heating medium[2)]
RM2	Non-return valve

CL11 till 12	*Pool system 1 to 2*
AA25	Unit box with accessory card[2)]
BT51 EP5	Temperature sensor, pool[2)]
GP9	Exchanger, pool
HQ4	Circulation pump, pool
QN10	Particle filter, pool
RN10	Three way valve, pool[2)]
	Trim valve
EB1	*Additional heat*
CM5	Expansion vessel
EB1	Immersion heater
FL10	Safety valve
KA1	Auxiliary relay/Contactor[2)]
RN11	Trim valve
QM42 to 43	Shut-off valve
QN11	Shunt valve for additional heat

EB101 on 104	*Heat pump system*
AA25	Unit box with accessory card[2)]
BT3	Temperature sensor, return line[3)]
BT12	Temperature sensor, condenser supply line[3)]
HQ1	Filter[3)]
FL10	Safety valve
GP10	External circ. pump, Heating system
GP12	Charge pump[2)]
QM1	Drain valve, Heating medium
QM31	Shut-off valve, Heating medium, Flow
QM32	Shut off valve, Heating medium,
QM43	Shut off valve
RM11	Non-return valve

EP21 to 22	*Climate system 2 to 3*
AA25	Unit box with accessory card[2)]
BT2	Temperature sensor, heating medium supply[2)]
BT3	Temperature sensor, heating medium return[2)]
GP10	Circulation pump[2)]
QN25	Shunt valve[2)]

EQ1	*Cooling system*
AA25	Unit box with accessory card[2)]
BT64	Temperature sensor, cooling supply line[2)]
CP6	Single jacket accumulator tank, cooling
GP13	Circulation pump, cooling
QN12	Reversing valve, Cooling/Heating[2)]

QZ1	*Hot water circulation*
AA25	Unit box with accessory card[2)]
BT70	Temperature sensor, outgoing hot water[2)]
GP11	Circulation pump, domestic hot water circulation
FQ1	Mixer valve, hot water
RM23 to 24	Non-return valve
RN20 to 21	Trim valve

Miscellaneous	
CM1	Expansion vessel closed, Heating medium
CP5	Buffer vessel
CP10 to 11	Accumulator tank and hot water heater
EB10	Hot water/additional water heater
EB20	Immersion heater
FL2	Safety valve, Heating medium
KA1	Auxiliary relay/Contactor
RN10, RN43, RN60 to 63	Trim valve

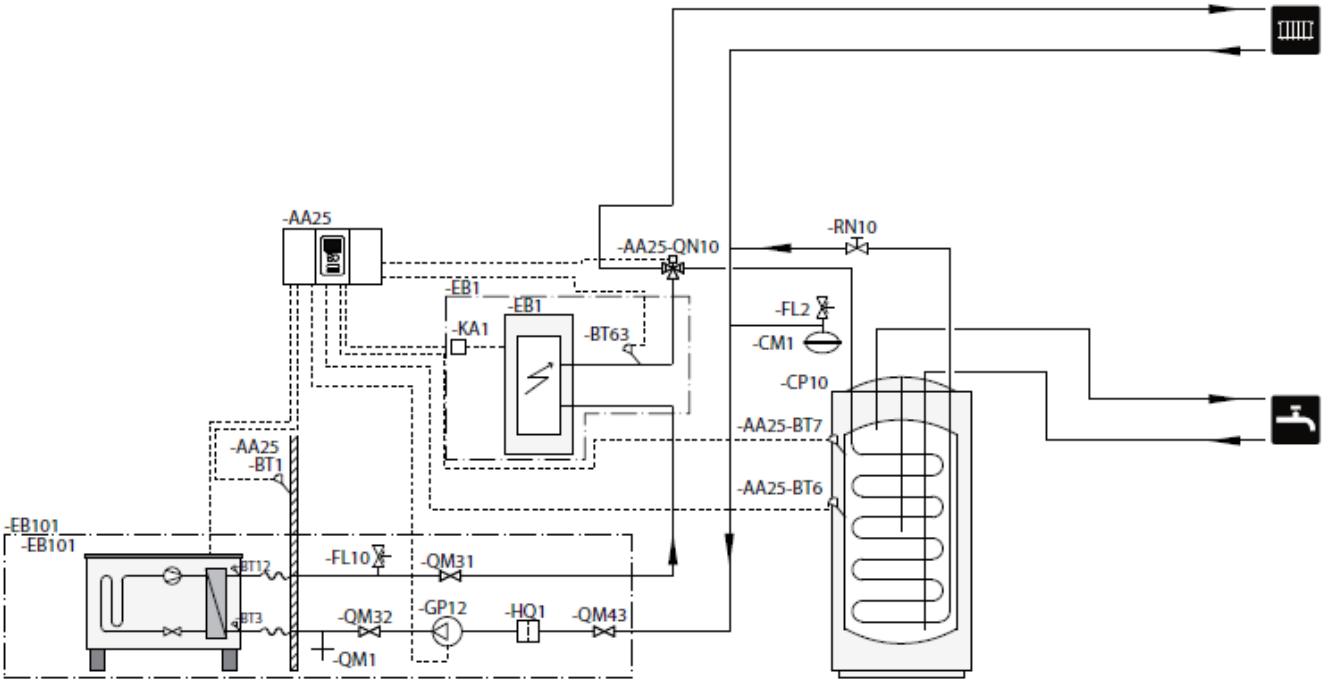
1) Included in and supplied MCU 40

2) Included in and supplied accessory

3) Included in and supplied JÄSPI heat pump (can vary depending on heat pump).

Designations according to standard IEC 61346 and EN81346-2.

COMPATIBLE JÄSPI AIR/WATER HEAT PUMP TOGETHER WITH MCU 40 – DOCKING STEP-CONTROLLED ADDITIONAL HEAT BEFORE THE REVERSING VALVE FOR HOT WATER



Caution

Kaukora Oy does not supply all components in this outline diagram.

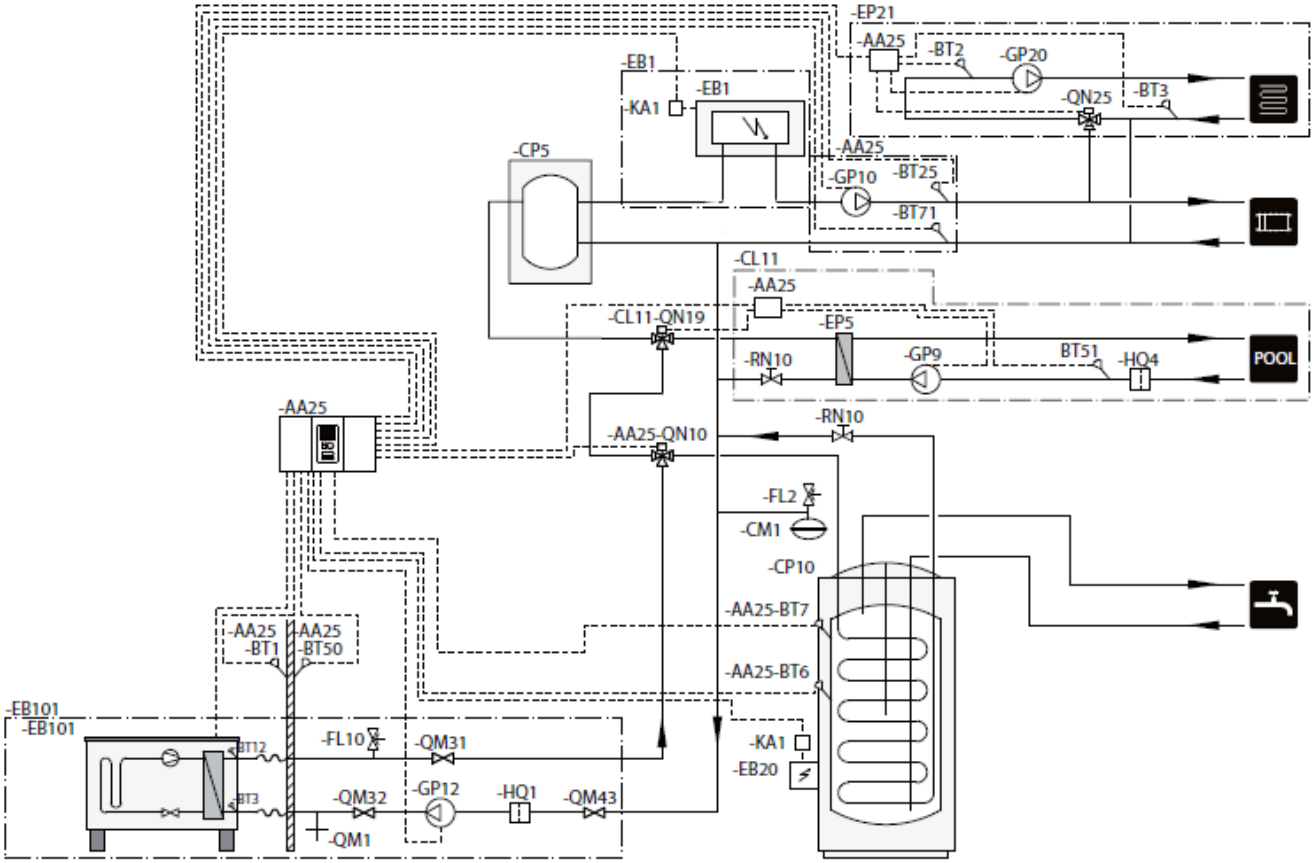
This installation alternative is suitable for simpler installations with a focus on low installation costs.

MCU 40 (AA25) starts and stops the heat pump (EB101) to meet the heat and hot water demand of the installation. At simultaneous heating and hot water demand the reversing valve switches (AA25-QN10) periodically between the climate system and the water heater/accumulator tank (CP10). When the hot water heater/accumulator tank is fully charged (CP10), the reversing valve switches (AA25-QN10) to the climate system.

Additional heat (EB1) is connected automatically when the power demand for the installation exceeds the heat pump capacity. This is used for both heating and charging hot water.

The additional heat can also be used if a higher temperature in the hot water is required than the heat pump can produce.

COMPATIBLE JÄSPI AIR/WATER HEAT PUMP TOGETHER WITH MCU 40 – DOCKING STEP-CONTROLLED ADDITIONAL HEAT AFTER REVERSING VALVE FOR HOT WATER AND ACCESSORY FOR EXTRA CLIMATE SYSTEM, POOL



> ### *Caution*
>
> Kaukora Oy does not supply all components in this outline diagram.

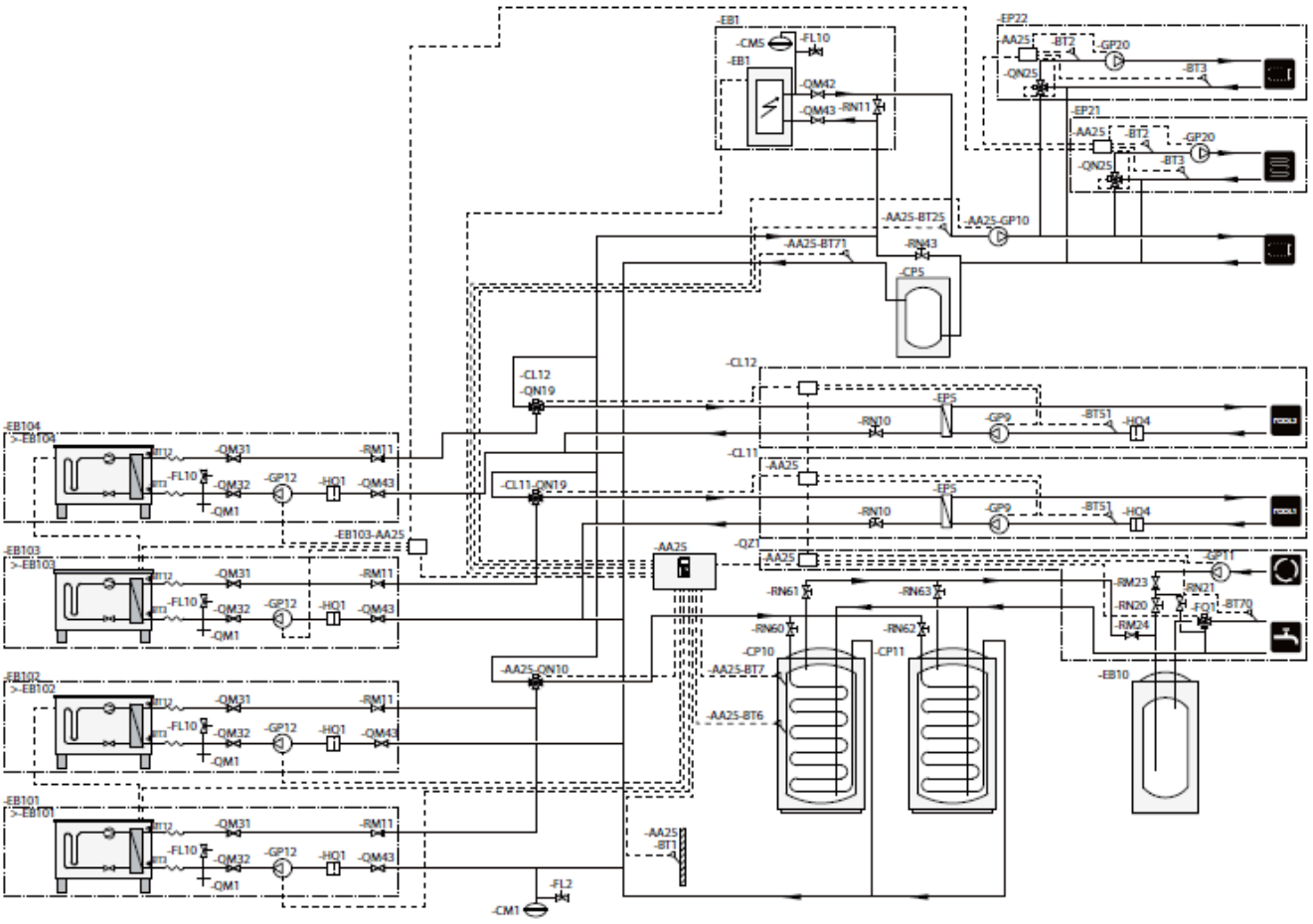
This installations alternative is suitable for more complex installations with a focus on comfort.

MCU 40 (AA25) starts and stops the heat pump (EB101) to meet the heat and hot water demand of the installation. At simultaneous heating and hot water demand the reversing valve switches (AA25-QN10) periodically between the climate system and the water heater/accumulator tank (CP10). When the water heater/accumulator tank is fully charged (CP10), the reversing valve switches (AA25-QN10) to the climate system and pool. When the pool needs heating the reversing valve (CL11-QN19) switches from the climate system to the pool system.

Additional heat (EB1) is connected automatically when the energy demand exceeds the heat pump capacity. Immersion heater (EB20) in the water heater/accumulator tank (CP10) is used during the time to produce hot water if the heat pump (EB101) is used for heating the building at the same time.

The immersion heater (EB20) can also be used if a higher temperature of hot water is required than the heat pump can produce.

COMPATIBLE JÄSPI AIR/WATER HEAT PUMPS TOGETHER WITH MCU 40 AND ELECTRIC HEATER AFTER REVERSING VALVE FOR HOT WATER AS WELL AS POOL AND EXTRA CLIMATE SYSTEM (FLOATING CONDENSING)



> ### *Caution*
>
> Kaukora Oy does not supply all components in this outline diagram.

> ### *Caution*
>
> Different types of demand (heating, hot water etc.) mean different supply and return temperatures as well as different flows to the heat pump.
>
> When connecting pipes in installations with several compressors and different heating demands, ensure that these are separated so that different return temperatures are not mixed. Otherwise this can affect the heating installation's efficiency.

This installations alternative is suitable for more complex installations with a focus on comfort.

MCU 40 (AA25) starts and stops the heat pumps (EB101) and (EB102) to meet the heating and hot water demands of the installation. The heat pump (EB103) is used for heating and pool heating and heat pump (EB104) is used for cooling, heating and pool heating.

At simultaneous heating and hot water demand the reversing valve switches (AA25-QN10) periodically between the climate system and the water heater/accumulator tank (CP10). When the hot water heater/accumulator tank is fully charged (CP10), the reversing valve switches (AA25-QN10) to the climate systems. When the pool needs heating the reversing valve (CL11-QN19) or (CL12-QN19) switches from the climate system to the pool system.

Additional heat (EB1) is connected automatically when the energy demand exceeds the heat pump capacity.

Additional water heating is obtained from the additional water heater (EB10).

5 Electrical connections

General

- Disconnect MCU 40 before insulation testing the house wiring.
- If the building is equipped with an earth-fault breaker, MCU 40 should be equipped with a separate one.
- MCU 40 must be installed via a circuit breaker with a minimum breaking gap of 3 mm.
- For the electrical wiring diagram for the control module, see page 67.
- Use a three core, screened cable for communication with the heat pump.
- 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 mm² up to 50 m, for example EKKX, LiYY or equivalent.
- When cable routing into MCU 40, cable grommets (UB1 and UB2, marked in image) must be used.

NOTE

The switch (SF1) must not be moved to "I" or "⚠" until the boiler water has been filled in the system. The compressor in the heat pump and any external additional heat can be damaged.

NOTE

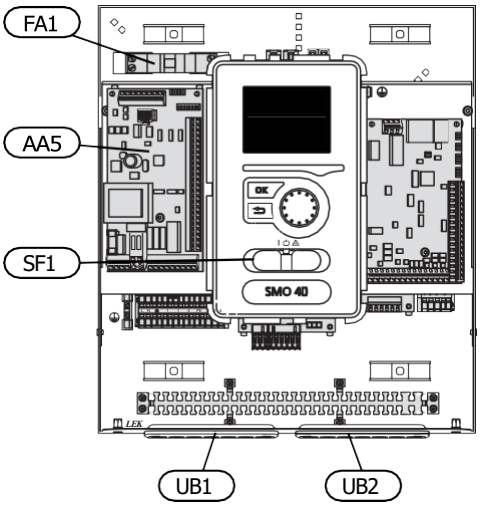
Electrical installation and any servicing must be carried out under the supervision of a qualified electrician. Disconnect the current using the circuit breaker before carrying out any servicing. Electrical installation and wiring must be carried out in accordance with the applicable provisions. When installing MCU 40, JÄSPI's air/water heat pump and any additional heat must be disconnected from the power supply.

Caution

See outline diagram for your system for physical location of the temperature sensor that is to be installed.

Caution

The relay outputs on the accessory board (AA5) may be subjected to a max load of 2 A (230 V) in total.

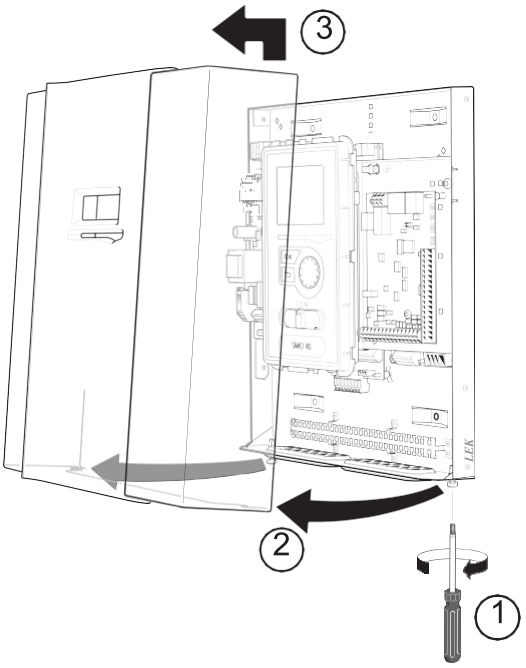


MINIATURE CIRCUIT-BREAKER

The control module operating circuit and parts of its internal components are internally fused by a miniature circuit breaker (FA1).

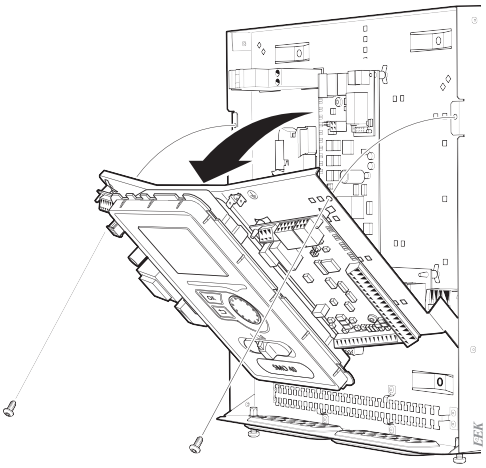
Accessibility, electrical connection

The cover of the control module is opened using a Torx 25 screwdriver. Assembly takes place in the reverse order.

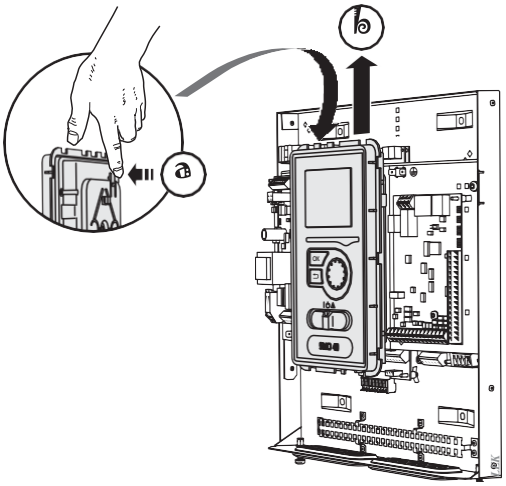


TIP

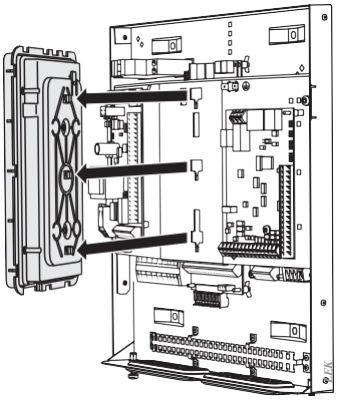
The cover to access the base board is opened using a Torx 25 screwdriver.



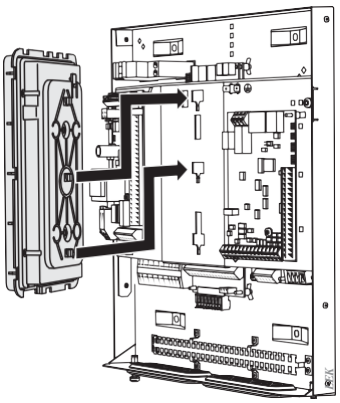
The display may need to be moved for easier access when connecting electrics. This is easily done by following these steps.

1. 

Press in the catch on the upper rear side of the display unit towards you (a) and move the display unit upwards (b) so that the mountings unhook from the panel.

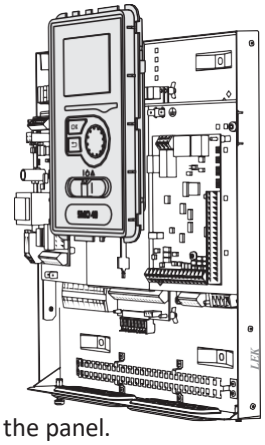
2. 

Lift the display unit from its mountings.

3. 

Align the two lower mountings on the reverse of the display unit with the two upper holes in the panel as illustrated.

4.



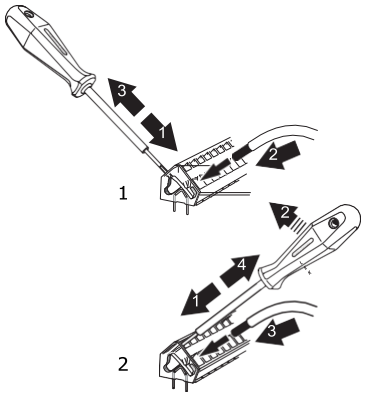
Secure the display on the panel.

5. When the electrical connection is ready the display must be reinstalled with three mounting points again, otherwise the front cover cannot be installed.

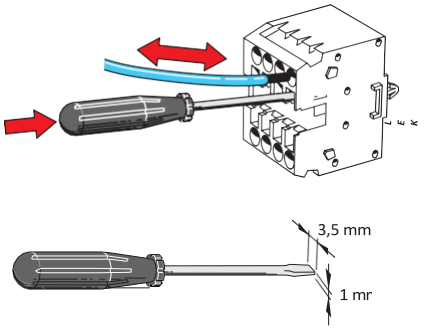
Cable lock

Use a suitable tool to release/lock cables in the heat pump terminal blocks.

TERMINAL BLOCK ON THE ELECTRICAL CARD



TERMINAL BLOCK



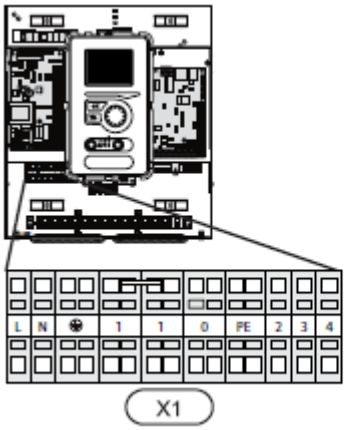
Connections

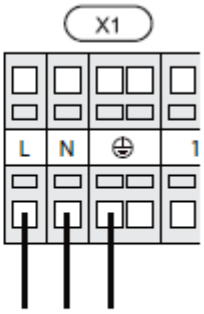
NOTE

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

POWER CONNECTION

MCU 40 must be installed via an isolator switch with a minimum breaking gap of 3mm. Minimum cable area must be sized according to the fuse rating used. The supply cable is included in the delivery and is connected to terminal X1.





TARIFF CONTROL

If there is a loss of voltage to the compressor in the heat pump for a certain period, simultaneous blocking of this must take place via a software-controlled input (AUX input) in order to avoid alarms, see page 31.

CONNECTING THE CHARGE PUMP FOR THE HEAT PUMP 1 AND 2

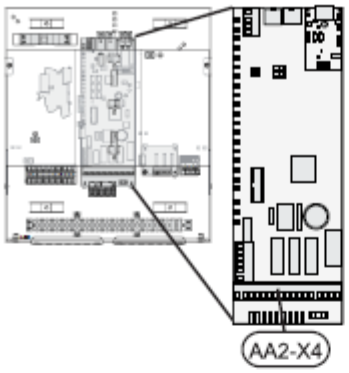
Connect circulation pump (EB101-GP12) to terminal block X4:5 (PE), X4:6 (N) and X4:7 (230 V) on the base board (AA2) as illustrated.

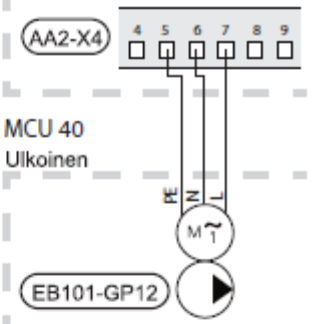
Control signal for (EB101-GP12) is connected to terminal block X4:7 (GND) and X4:8 (PWM) on the input board (AA3) as illustrated.

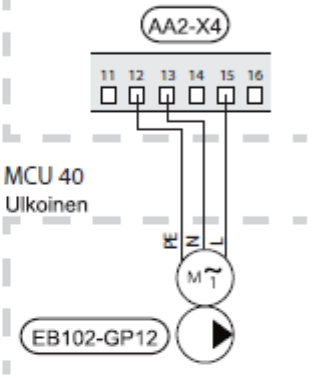
If two heat pumps are connected to MCU 40, the circulation pump (EB102-GP12) must be connected to terminal block X4:12 (PE), X4:13 (N) and X4:15 (230 V) on the base board (AA2) as illustrated. Control signal for (EB102- GP12) is then connected to terminal block X4:5 (GND) and X4:6 (PWM) on the input board (AA3) as illustrated.

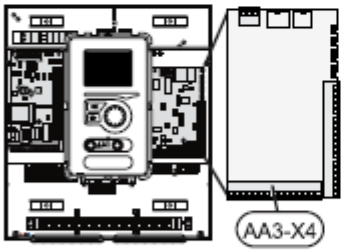
TIP

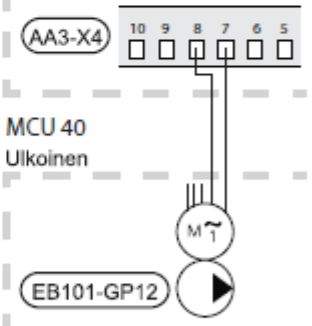
Two charge pumps (four if the internal accessory board is used) can be connected to and controlled by MCU 40. Several charge pumps can be connected if accessory boards (AXC) are used, two pumps per board.

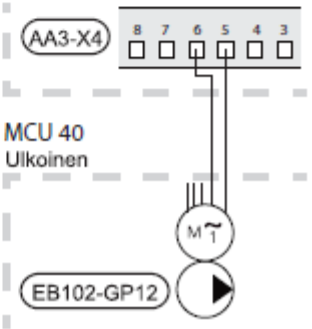












COMMUNICATION WITH HEAT PUMP

Connect the heat pump (EB101) with a screened three core cable to terminal block X4:1 (A), X4:2 (B) and X4:3 (GND) on the accessory board (AA5) as illustrated.

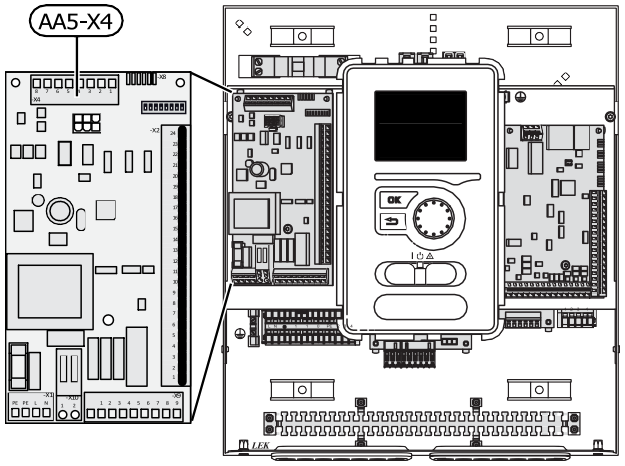
If several heat pumps are to be connected to MCU 40 these must be connected in cascade as illustrated.

Caution

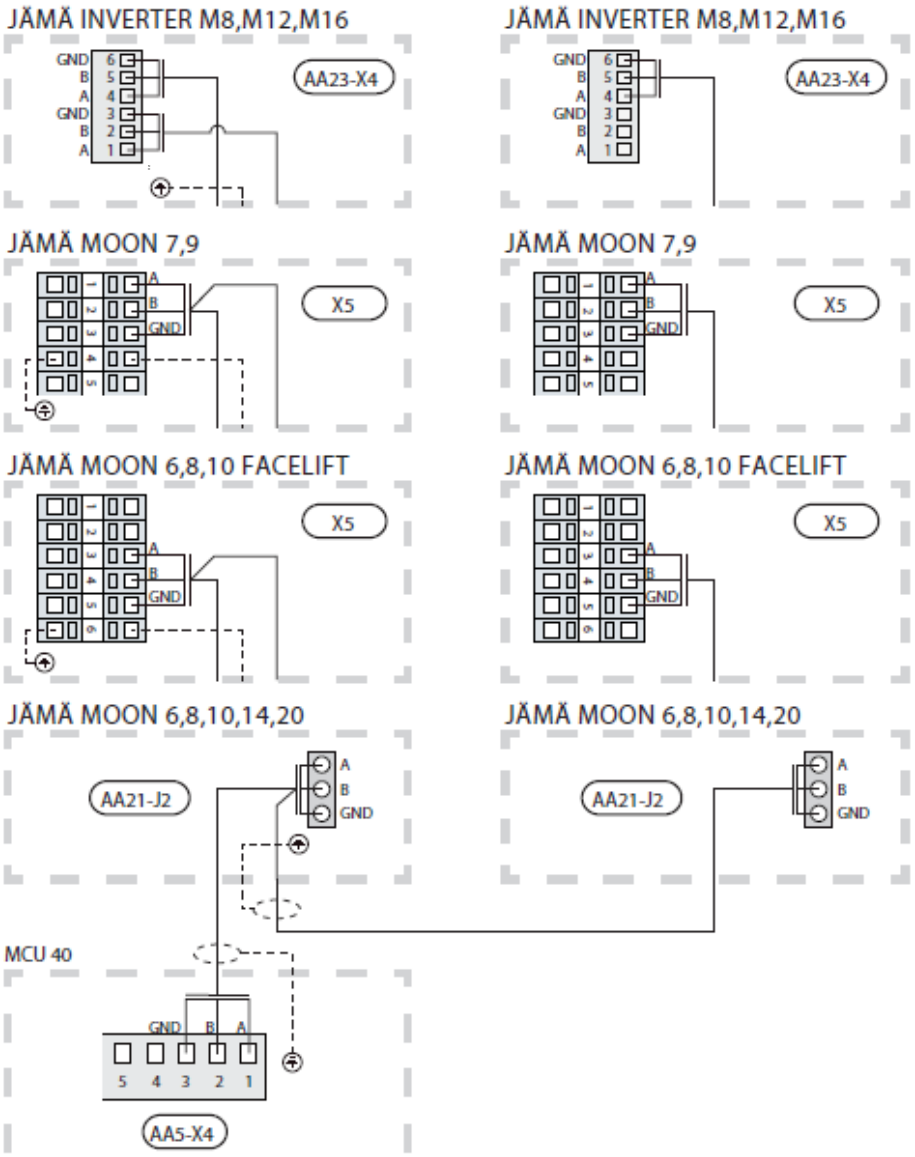
Up to 8 heat pumps can be controlled by MCU 40.

Caution

An air/water heat pump with an inverter-controlled compressor can only be combined with other inverter-controlled heat pumps of the same model.



Connecting to the heat pump Jämä / Jäspi

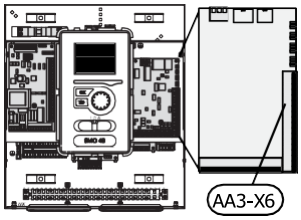


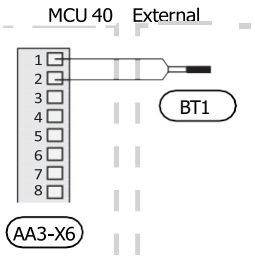
OUTSIDE SENSOR

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). Use a twin core cable with a cable area of at least 0.5 mm².

If a conduit is used it must be sealed to prevent condensation in the sensor capsule.





ROOM SENSOR

MCU 40 comes with a room sensor (BT50). The room sensor has a number of functions:

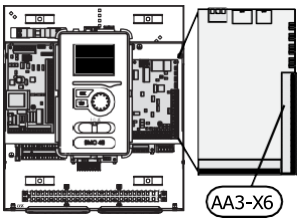
1. Shows current room temperature in the control module display.
2. Provides the option of changing the room temperature in °C.
3. Provides the option of fine-tuning the room temperature.

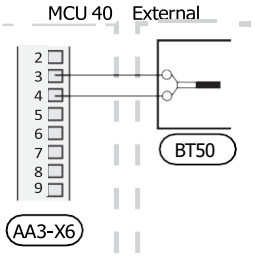
Install the sensor in a neutral position where the set temperature is required. A suitable location is on a free inner wall in a hall approx. 1.5 m above the floor. It is important that the sensor is not prevented from meas-uring the correct room temperature by being located, for example, in a recess, 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 control module operates without the sensor, but if you want to read off the home's indoor temperature in the control module's display, the sensor must be installed. Connect the room sensor to terminal block X6:3 and X6:4 on the input board (AA3).

If the sensor is to be used to change the room temperature in °C and/or to fine-tune the room temperature, the sensor must be activated in menu 1.9.4.

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





Caution

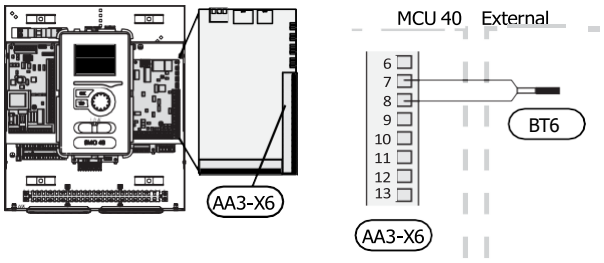
Changes of temperature in accommodation take time. For example, short time periods in combination with underfloor heating will not give a noticeable difference in room temperature.

TEMPERATURE SENSOR, HOT WATER CHARGING

The temperature sensor, hot water charging (BT6) is placed in the submerged tube on the water heater.

Connect the sensor to terminal block X6:7 and X6:8 on the input board (AA3). Use a twin core cable with a cable area of at least 0.5 mm².

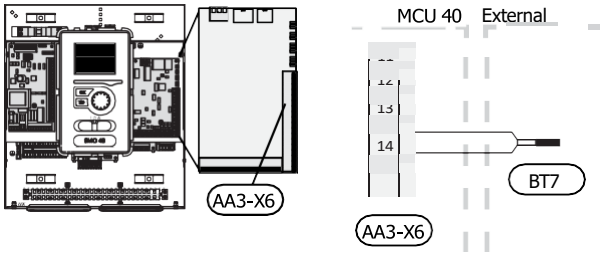
Hot water charging is activated in menu 5.2 or in the start guide.



TEMPERATURE SENSOR, HOT WATER TOP

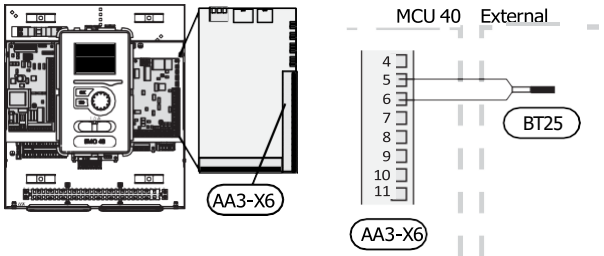
A temperature sensor for hot water top (BT7) can be connected to MCU 40 to show the water temperature at the top of the tank (if it is possible to install a sensor at the top of the tank).

Connect the sensor to terminal block X6:15 and X6:16 on the input board (AA3). Use a twin core cable with a cable area of at least 0.5 mm².



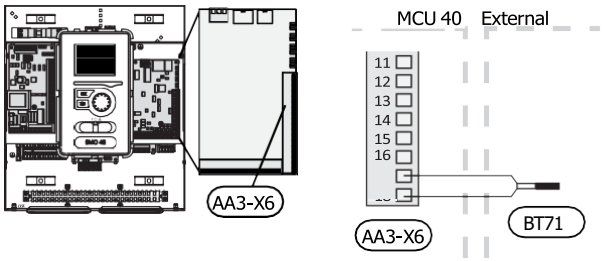
TEMPERATURE SENSOR, EXTERNAL FLOW LINE

Connect temperature sensor, external supply line (BT25) (required for additional heat after reversing valve (QN10)), to terminal block X6:5 and X6:6 on the input board (AA3). Use a twin core cable with a cable area of at least 0.5 mm².



TEMPERATURE SENSOR, EXTERNAL RETURN LINE

Connect temperature sensor, external return line (BT71) to terminal block X6:17 and X6:18 on the input board (AA3). Use a twin core cable with a cable area of at least 0.5 mm².



Caution

For docking that requires connection of other sensors, see "Possible selection for AUX in-puts" on page 30.

Optional connections

LOAD MONITOR

When many power consumers are connected in the property at the same time as the electric additional heat is in operation, there is a risk of the property's main fuses tripping. MCU 40 has an integrated load monitor that controls the power steps for the electric additional heat by disconnecting step by step in event of overload in a phase. Reconnection occurs when other current consumption is reduced.

Connecting current sensors

A current sensor (BE1 - BE3) must be installed on each incoming phase conductor into the electrical distribution unit, to measure the current. The electrical distribution unit is an appropriate installation point.

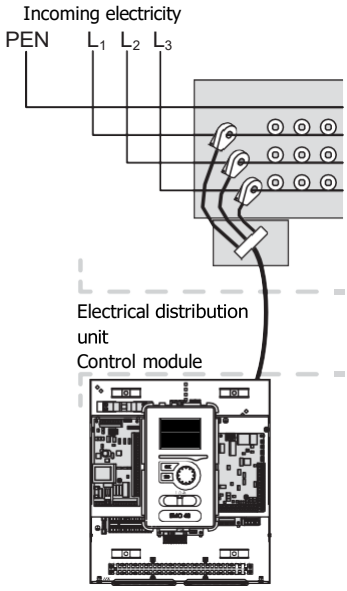
Connect the current sensors to a multi-core cable in an enclosure next to the electrical distribution unit. Use unscreened multi-core cable of at least 0.5 mm², from the enclosure to MCU 40.

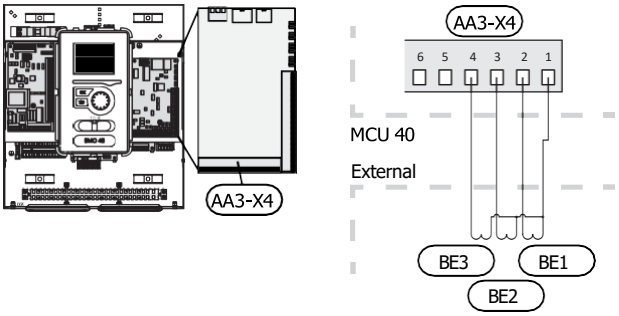
Connect the cable to the input board (AA3) on terminal block X4:1-4 where X4:1 is the common terminal block for the three current sensors.

The value for the size of the fuse is set in menu 5.1.12 to correspond with the size of the property's main fuse. Here it is also possible to adjust the current sensor's transformer ratio.

Enclosed current sensors have a transformer ratio of 300 and, if these are used, the incoming current must not exceed 50 A.

> ***NOTE***
>
> The voltage from the current sensor to the input board must not exceed 3.2 V.



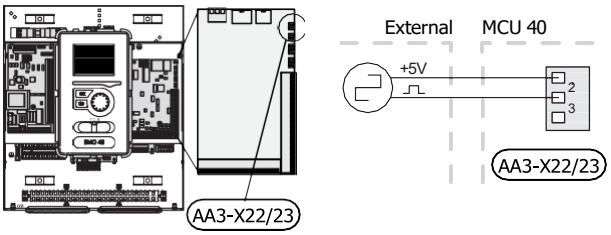


If the installed heat pump is frequency controlled, it will be limited when all power stages are disengaged.

CONNECTING EXTERNAL ENERGY METER

> ***NOTE***
>
> Connection of external energy meter requires version 35 or later on input board (AA3) as well as "display version" 8762 or later.

One or two energy meters (BE6, BE7) are connected to terminal block X22 and/or X23 on input board (AA3).



Activate the energy meter(s) in menu 5.2.4 and then set the desired value (energy per pulse) in menu 5.3.21.

STEP CONTROLLED ADDITIONAL HEAT

> ***NOTE***
>
> Mark up any junction boxes with warnings for external voltage.

Step-controlled additional heat before the reversing valve

External step-controlled additional heat can be controlled by up to three potential-free relays in the control module (3 step linear or 7 step binary).

The electric additional heat will charge with the maximum permitted immersion heater output together with the compressor to conclude the hot water charging and return to charging the heating as soon as possible. This only occurs when the number of degree minutes is below the start value for the additional heat.

Step-controlled additional heat after the reversing valve

External step-controlled additional heat can be controlled by two relays (2 step linear or 3 step binary), which means that the third relay is used to control the immersion heater in the water heater/accumulator tank.

With the AXC 30 accessory, a further three potential- free relays can be used for additional heat control, which then gives an additional 3 linear or 7 binary steps.

Step in occurs with at least 1 minute interval and step outs with at least 3 seconds interval.

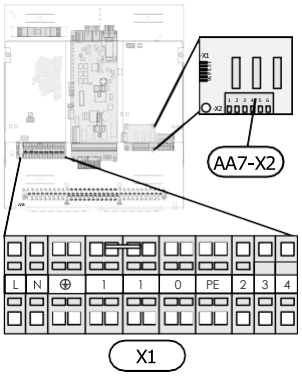
Step 1 is connected to terminal block X2:2 on the additional relay board (AA7).

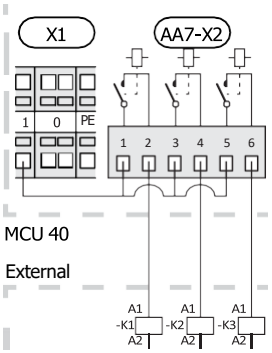
Step 2 is connected to terminal block X2:4 on the additional relay board (AA7).

Step 3 or immersion heater in the water heater/accumulator tank is connected to terminal block X2:6 on the additional relay board (AA7).

The settings for step controlled additional heat are made in menu 4.9.3 and menu 5.1.12.

All additional heat can be blocked by connecting a potential-free switch function to the software-controlled input on terminal block X6 on the input board (AA3) or terminal block X2 (see page 31), which is selected in menu 5.4.





If the relays are to be used for control voltage, bridge the supply from terminal block X1:1 toX2:1, X2:3 and X2:5 on additional relay board (AA7). Connect the neutral from the external additional heat to terminal block X1:0.

SHUNT CONTROLLED ADDITIONAL HEAT

> ***NOTE***
>
> Mark up any junction boxes with warnings for external voltage.

This connection enables an external additional heater, e.g. an oil boiler, gas boiler or district heating exchanger to aid with heating.

MCU 40 controls a shunt valve and start signal for the additional heat using three relays. If the installation cannot manage to maintain the correct supply temperature, the additional heat starts. When the boiler sensor (BT52) shows approx. 55 °C, MCU 40 sends a signal to the shunt (QN11) to open from the additional heat. The shunt (QN11) is controlled to ensure the true supply temperature corresponds with the control system's theoretically calculated set point value. When the heating demand drops sufficiently so that additional heat is no longer required, the shunt (QN11) closes completely. Factory-set minimum operating time for the boiler is 12 hours (can be adjusted in menu 5.1.12).

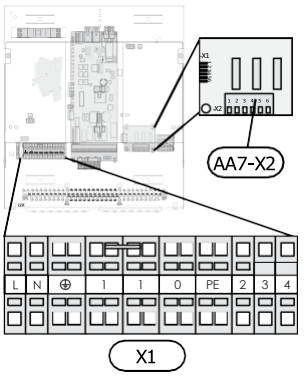
The settings for shunt controlled additional heat are made in menu 4.9.3 and menu 5.1.12.

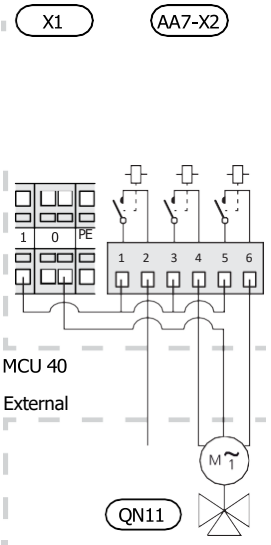
The boiler sensor (BT52) is connected to soft inputs and selected in menu 5.4.

Connect the shunt motor (QN11) to terminal block X2:4 (230 V, close) and 6 (230 V, open) on the additional relay board (AA7) and terminal block X1:0 (N).

To control switching the additional heat on and off, connect it to terminal block X2:2 on the extra relay board (AA7).

All additional heat can be blocked by connecting a potential-free switch function to the software-controlled input on terminal block X6 on the input board (AA3), or terminal block X2 (see page 31), which is selected in menu 5.4.





If the relays are to be used for control voltage, bridge the supply from terminal block X1:1 toX2:1, X2:3 and X2:5 on additional relay board (AA7).

RELAY OUTPUT FOR EMERGENCY MODE

> ⚠ *NOTE*
>
> Mark up any junction boxes with warnings for external voltage.

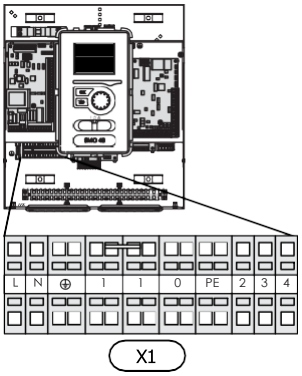
When the switch (SF1) is in "⚠" mode (emergency mode) the following components are activated (if they are connected).

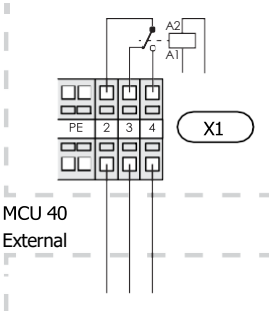
- the circulation pumps (EB101-GP12 and EB102-GP12)
- external circulation pump (GP10)
- the potential free switching emergency mode relay (K2).

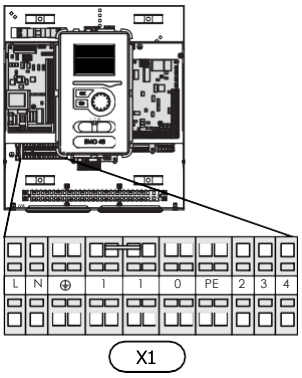
> *Caution*
>
> External accessories are disconnected.

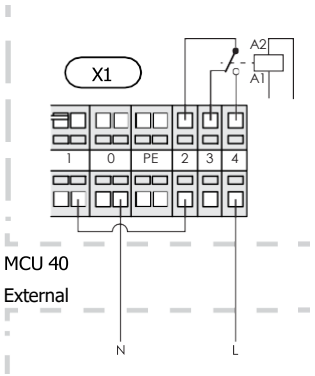
> *Caution*
>
> No hot water is produced when emergency mode is activated.

The emergency mode relay can be used to activate external additional heat, an external thermostat must then be connected to the control circuit to control the temperature. Ensure that the heating medium circulates through the external additional heating.





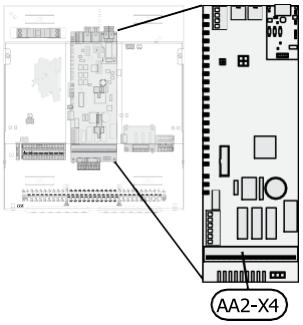


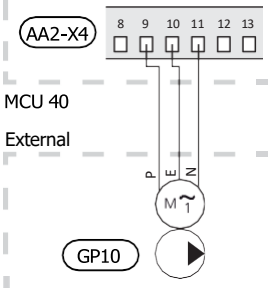


If the relay is to be used for control voltage, bridge the supply from terminal block X1:1 to X1:2 and connect neutral and control voltage from the external additional heat to X1:0 (N) and X1:4 (L).

EXTERNAL CIRCULATION PUMP

Connect the external circulation pump (GP10) to terminal block X4:9 (PE), X4:10 (N) and X4:11 (230 V) on the base board (AA2) as illustrated.



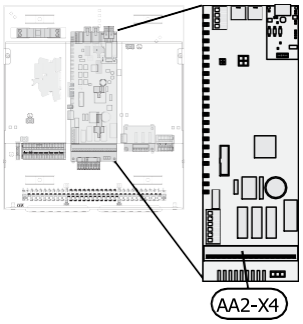


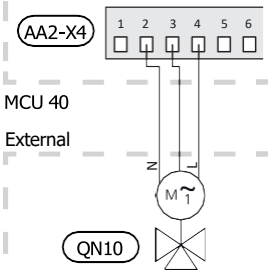
SHUTTLE VALVE

MCU 40 can be supplemented with an external reversing valve (QN10) for hot water control. (See page 61 for accessory)

Hot water production can be selected in menu 5.2.4.

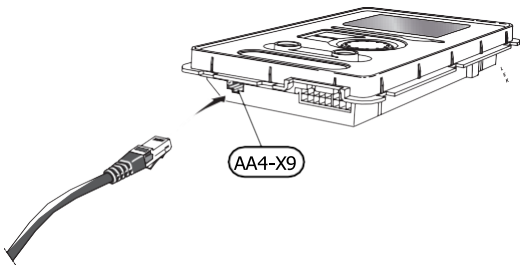
Connect the external reversing valve (QN10) as illustrated to terminal block X4:2 (N), X4:3 (control) and X4:4 (L) on the base board (AA2).





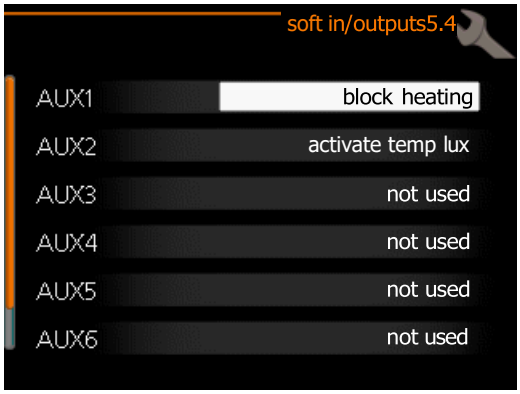
MyUpway

Connect the network connected cable (straight, Cat.5e UTP) with RJ45 contact (male) to contact AA4-X9 on the display unit (as illustrated). Use the cable grommet (UB2) in the control module for cable routing.



EXTERNAL CONNECTION OPTIONS (AUX)

On the input board (AA3-X6) and terminal block (X2), MCU 40 has software-controlled AUX inputs and outputs for connecting the external switch function or sensor. This means that when an external switch function (the switch must be potential-free) or sensor is connected to one of the six special connections, this function for the connection must be selected in menu 5.4.



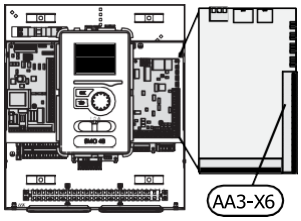
For certain functions, accessories may be required.

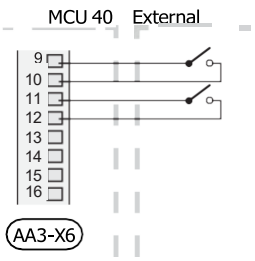
Selectable inputs

Selectable inputs on the input board for these functions are:

AUX1	AA3-X6:9-10
AUX2	AA3-X6:11-12
AUX3	AA3-X6:13-14
AUX4	X2:1
AUX5	X2:2
AUX6	X2:3

GND for AUX4-6 is connected to terminal block X2:4.





Selectable output

A selectable output is AA3-X7.

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

Possible selection for AUX inputs

Temperature sensor

Temperature sensor can be connected to MCU 40. Use a 2-core cable of at least 0.5 mm² cable area.

Available options are:

- if the flow temperature sensor after the additional heat source (BT63) has to be used, it is connected to the selected input (menu 5.4), terminal block X2.

Contactor for external blocking of additional heat

When external additional heat blocking is to be used, it is connected to input card (AA3) or terminal block X2. The additional heat is switched off by connecting the potential-free contact to the input selected menu 5.4. Power is turned off when the contact is closed.

Contactor for external blocking of compressor

When external blocking of the heat pump compressor is to be used, it is connected to input card (AA3) or terminal block X2.
The heat pump compressor is switched off by connecting the potential-free contact to the input selected menu 5.4. The external blocking of the compressors of several heat pumps can be combined.
Power is turned off when the contact is closed.

Contactor for external tariff blocking

When external tariff blocking is to be used, it is connected to input card (AA3) or terminal block X2. Tariff blocking means that the additional heat, compressor and heating are switched off by connecting the potential-free contact to the input selected menu 5.4. Power is turned off when the contact is closed.

Contact for activation "external control"

An external switch function can be connected to MCU 40 to activate various functions. The function is activated during the time the switch is closed.

To change the supply temperature and in doing so change the room temperature, an external switch function can be connected to MCU 40.

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.

– *climate system 1*

The contact must be potential-free and connected to the selected input (menu 5.4) on the input card (AA3) or to terminal X2. The value for the change is set in menu 1.9.2, "external control (adjustment)"

- *climate system 2-4*

  External control for heating systems 2 to 4 requires an accessory (ECS 40 or ECS 41).
  See the accessory installer's manual for installation.

> **Caution**
>
> In systems with both under floor heating and radiators, ECS 40/41 should be used for optimum operation.

Connector for SG ready

> **Caution**
>
> This function can only be used in mains networks that support the "SG Ready" standard.
>
> "SG Ready" requires two AUX inputs.

In cases where this function is required, it must be connected to terminal block X6 on the input board (AA3) or to terminal block X2.

"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 selected 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 like the day's tariff blocking.

– *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).

Contactor for external blocking of heating

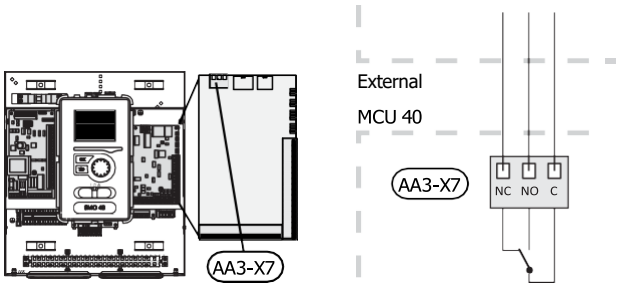
When external heating blocking is to be used, it is connected to input card (AA3) or terminal block X2.
The heating is switched off by connecting the potential-free contact to the input selected menu 5.4.
Closing the contact prevents heating operation.

Contactor for activation of "temporary luxury"

An external contact function can be connected to the MCU 40 heat pumps to activate the jot water function "temporary luxury". The contact must be potential-free and connected to the input selected menu 5.4 on the input card (AA3) or terminal block X2.
"Temporary luxury" is activated when the contact is closed.

Possible selections for AUX output

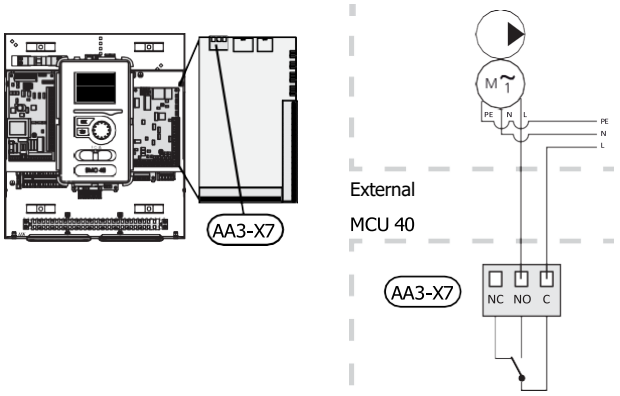
It is possible to have an external connection through the relay function via a potential-free switching relay (max. 2 A) on the input board (AA3), terminal block X7. The function must be activated in menu 5.4.



The picture shows the relay in the alarm position.

When switch (SF1) is in the "⏻" or "⚠" position the relay is in the alarm position.

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



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 terminal block X7.

Connecting accessories

Instructions for connecting other accessories are in the installation instructions provided. See page 61 for a list of those accessories that can be used for MCU 40.

Optional functions for external connection:

Indications

- indication of common alarm

The common alarm is activated at the factory.

Control

- control of circulation pump for hot water circulation

NOTE

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

6 Commissioning and adjusting

Preparations

- Compatible Jäspi air/water heat pump must be equipped with a control board that, as a minimum, has the software version as listed on page 12. The control board's version is shown in the heat pump's display (if applicable) at start-up.
- MCU 40 must be ready-connected.
- The climate system must be filled with water and bled.

Caution

When commissioning without Jäspi air/water heat pump an alarm communication error may appear in the display.

The alarm is reset if the relevant air/water heat pump is deactivated in menu 5.2.2 ("installed slaves").

Commissioning

WITH JÄSPI AIR/WATER HEAT PUMP

Follow the instructions in the heat pump's Installer Manual under section "Commissioning and adjustment" – "Start-up and inspection".

MCU 40

1. Power the heat pump.
2. Power MCU 40.
3. Follow the start guide in the display on MCU 40 alternatively start the start guide in menu 5.7.

Commissioning with additional heating only

At first start follow the start guide, otherwise follow the list below.

1. Configure the additional heat in menu 5.1.12.
2. Go to menu 4.2 op. mode.
3. Mark ”add. heat only” using the control knob and then press the OK button.
4. Return to the main menus by pressing the Back button.

Check the reversing valve

1. Activate "AA2-K1 (QN10)" in menu 5.6.
2. Check that the reversing valve opens or is open for hot water charging.
3. Deactivate "AA2-K1 (QN10)" in menu 5.6.

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 MCU 40 to position "I".
2. Follow the instructions in the display's start guide. If the start guide does not start when you start the MCU 40, 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 carried out at the first start together with a run through of the installation's basic settings.

The start guide ensures that start-up is carried out correctly and cannot be bypassed. The start guide can be started later in menu 5.7.

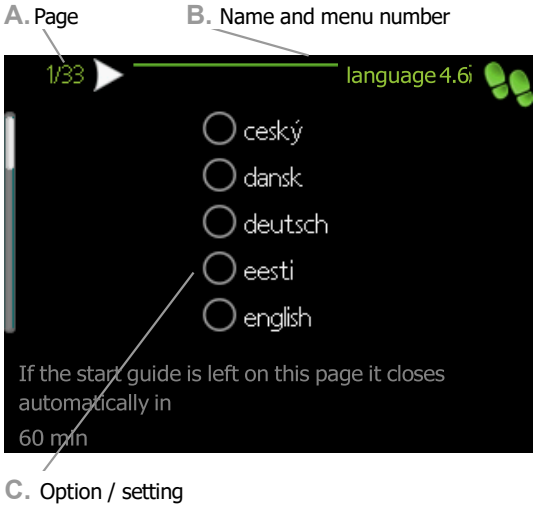
During the start-up guide, the reversing valves and the shunt are run back and forth to help vent the heat pump.

Caution

As long as the start guide is active, no function in MCU 40 will start automatically.

The start guide will appear at each restart of MCU 40, until it is deselected on the last page.

Operation in the start guide



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

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

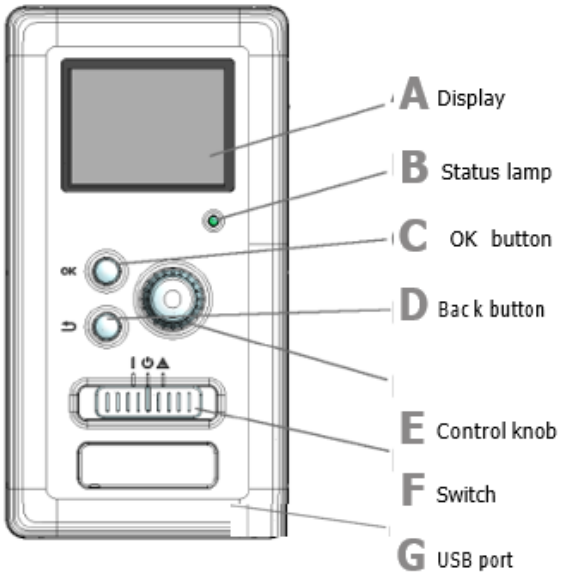
To access the help text:

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.

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 control 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 (⚠)

The emergency mode must only be used in the event of a fault in the control module. In this mode, the compressor in the heat pump switches off and any immersion heater engages. The control module display is not lit and the status lamp shines yellow.

G USB PORT

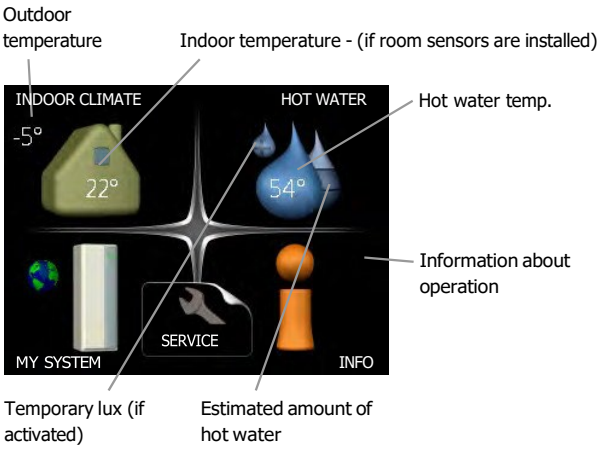
The USB port is hidden beneath the plastic badge with the product name on it.

The USB port is used to update the software.

Visit nibeuplink.com and click the "Software" tab to download the latest software for your installation.

Menu system

When the door to the control 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.

This menu only appears if a water heater is installed in the system.

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.

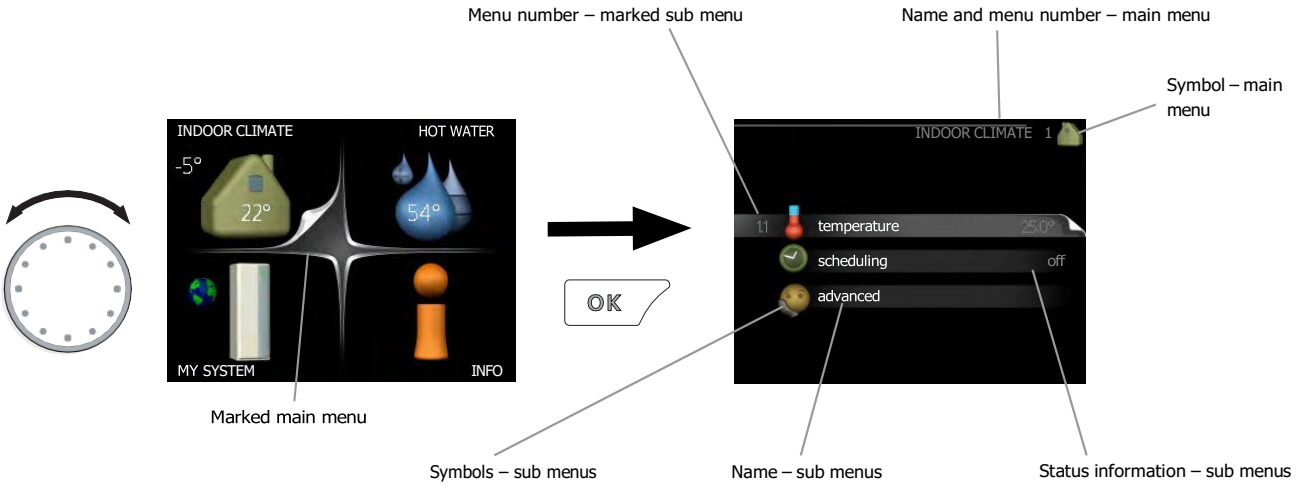
MENU 5 - SERVICE

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 43.

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 if the compressor in the outdoor module or the additional heat in the installation is blocked via MCU 40. 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 MCU 40 has contact with MyUpway.
	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

To set a value:

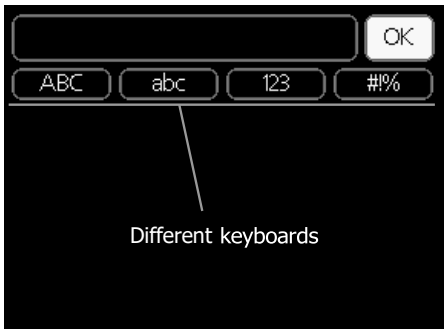
1. Mark the value you want to set using the control knob.

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 the 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.

Current menu window

Number of windows in the menu

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.

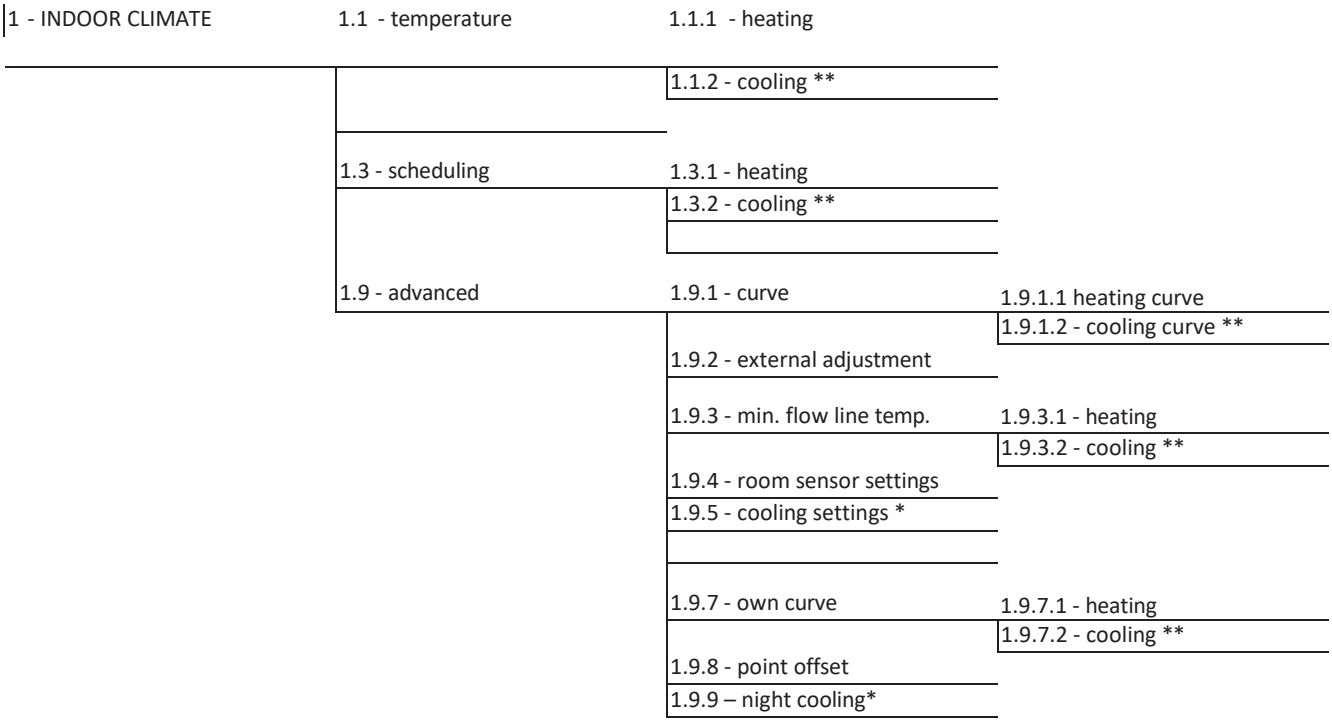
To access the help text:

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

Menu 1 - INDOOR CLIMATE



* Accessories are needed.

** Heat pump with cooling function required.

Sub-menus

The INDOOR CLIMATE menu has several submenus. From the menus the status information for each menu is displayed on the right.

Temperature Heating system temperature control. Status information display the heating system setpoints.

Programming Heating programming. Status information “set” is displayed if you have set the program, but it is not currently active, the “holiday settings” is displayed, if the holiday setting is active at the same time than program (holiday program is prioritized), “active” is displayed if any part of the program is active, otherwise “off” displayed.

Advanced settings Setting the heat curve, external adjustment with contact, minimum flow temperature, own curve and point shift.

MENU 1.1 – TEMPERATURE

If the house has multiple heating systems, this will be displayed on the display as each system’s own thermometer.

Temperature settings (room sensor installed and activated):

Adjustment range: 5 - 30 °C

Factory setting: 20

The display shows the temperature (°C) if the heating system is controlled by a room sensor.
The room temperature is changed by setting the desired temperature with the control knob. Press OK to confirm the new setting. The new temperature is shown on the right side of the display icon.

Temperature settings (without activated room sensor):

Adjustment range: -10 - +10

Factory setting: 0

The display shows the set value for heating (curve change). The indoor temperature is raised or lowered by increasing or decreasing the value shown on the display.
Use the control knob to set the new value. Press OK to confirm the new setting.
The amount, by which the value must be changed to achieve a one degree change in the indoor temperature depends on the heating system in the house. Usually one step is enough, but in some cases more steps may be needed.
Set the desired value. The new temperature is shown on the right side of the display icon.

Caution

Radiator or underfloor heating thermostats may slow down the rise in room temperature.

Open the thermostatic valves completely (except in rooms that for some reason are to be kept cooler, for example bedrooms).

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 in menu 1.9.1. If it is warm outside and the room temperature is too low/high, increase/reduce the change in the heat curve by one step in menu 1.1.

MENU 1.3 – PROGRAMMING

The Programming menu the interior comfort (heating) is programmed for each day of the week.
You can also program a longer time for the selected period (holiday) in menu 4.7.

MENU 1.3.1 – HEATING

Here you can program the increase or decrease of the house temperature for three different periods of the day. If the room sensor is installed and activated, the desired room temperature (°C) is set for the period. If the room sensor is not activated, the desired change is made (for the setting in menu 1.1). A one degree change in room temperature is usually accomplished in a single step, but in some cases more steps may be required.

Program: Here you select the program to be changed.

Activated: Here the program is selected for the selected period. Deactivation does not affect the set times.

System: Here you select which heating system the program applies to. This option is only displayed if there are several heating systems.

Day: Here you select which days of the week the program applies to. The programming for a specific day is canceled by resetting the times for that day by setting the start time to the same as the stop time. If the line “all” is used, all the days of the period are programmed according to the line.

Time period: Here you select the start time and stop time on the selected day for programming.

Adjustment: Here you set how much the heat curve changes during the program with respect to menu 1.1. If a room sensor is installed, the desired room temperature is set in C-degrees.

Conflict: If two different settings conflict, it will be displayed with a red exclamation mark.

Tip

If you want to set similar programs for each day of the week, first mark “all” and then change the desired days.

Tip

If the cycle is to continue beyond midnight set the end time before the start time. The program will then stop at the end time set the next day.
The program always starts on the day which the start time is set.

> **Caution**
>
> Changing the temperature of the house takes time. For example in the case of underfloor heating a short period of time does not cause a significant change in room temperature.

MENU 1.9 – ADVANCED SETTINGS

The Advanced settings menu has orange text which means that it is intended for use by the installer. This menu has several submenus.

Heat curve Sets the slope of the heat curve.

External control Control of the change in the heat curve when an external contact is connected.

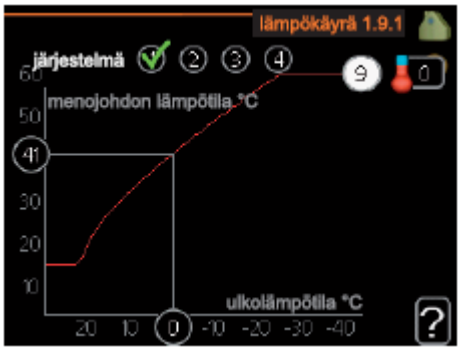
Minimum flow temperature Setting of the minimum permissible flow temperature.

Room sensor settings Room sensor settings.

Own curve Define your own heat curve.

Point shift Adjusting the change in the heat curve at a specific outdoor temperature.

MENU 1.9.1 – HEAT CURVE



Heat curve

Adjustment range: 0 - 15

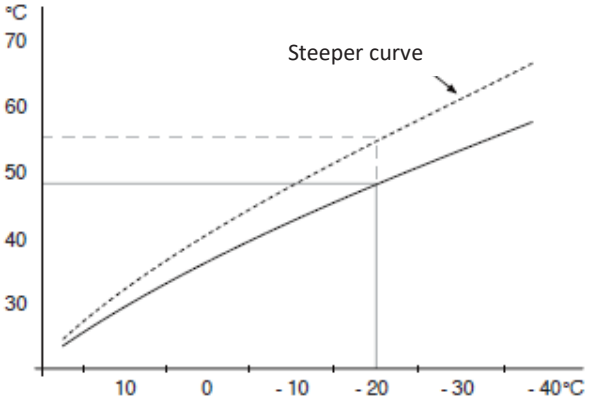
Factory setting: 9

In the menu Heat curve you can see the so-called heat curve of the house.

The function of the heat curve is to ensure a uniform indoor temperature at all outdoor temperatures and thus save energy. Based on this heat curve the control unit of the control module determines the temperature of the water entering the heating system, the flow temperature, and thus the indoor temperature. Here you can select a heat curve and read how the flow temperature changes at different outdoor temperature.

Steepness of the heat curve

Flow temperature



Outdoor temperature

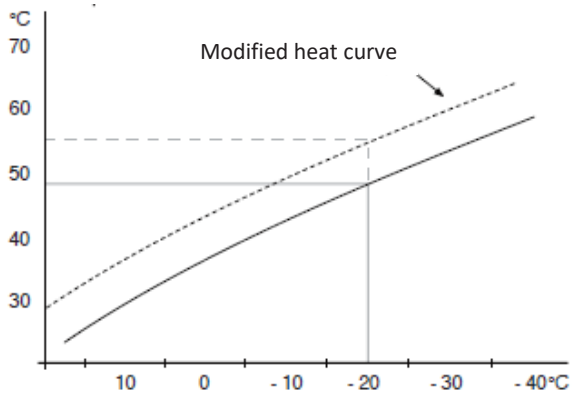
The steepness of the heat curve indicates how many degrees the flow temperature of the heating line is raised / lowered when the outdoor temperature decreases / rises. The steeper curve means a higher flow temperature at a colder outdoor temperature.

The ideal steepness of the curve depends on the local climatic conditions, the heating system of the house (radiator or underfloor heating) and how well the house is insulated.

The heat curve is set during the installation of the heat system, but may need to be adjusted afterwards. After that, the heat curve does not normally need to be changed.

> **Caution**
>
> When fine-adjust the indoor temperature, the heat curve is moved up or down.
> This is done in menu 1.1 Temperature.

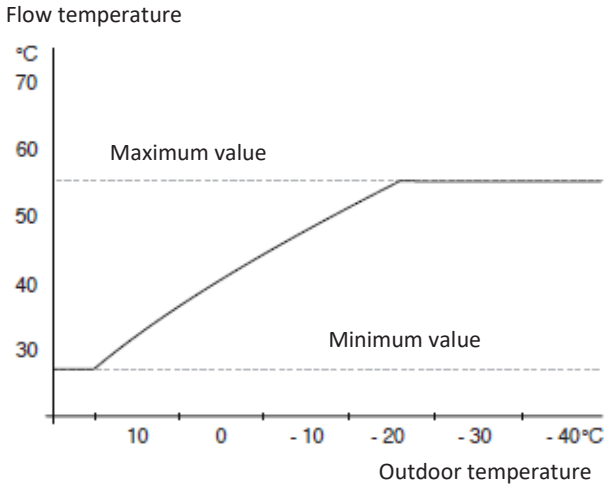
Flow temperature



Outdoor temperature

A change in the heat curve means that the flow temperature changes equally at all outdoor temperatures, for example +2 change raises the flow temperature by 5°C at all outdoor temperatures.

Flow temperature – maximum and minimum values



Since the flow temperature of the flow line cannot rise above the set maximum value and cannot fall below the set minimum value, the heat curve turns horizontally at these temperatures.

> ***Caution***
>
> In the case an underfloor heating system, the Maximum flow temperature is usually set between 35 and 45°C.
> Check the maximum allowable floor temperature with your floor supplier.

The number at the end of the curve indicates the steepness of the curve. The number next to the thermometer indicates the change in the heat curve. Use the selector to set the new value. Press OK to confirm the new setting.
Curve 0 is own heat curve created in menu 1.9.7.

To select another heat curve (heat curve steepness):

> ***NOTE***
>
> If there is only one heating system, the curve number is already marked when the menu window opens.

1. Select the system (if more than one) whose curve is to be changed.
2. When the system selection is confirmed, the heat curve number is entered.
3. Press the OK button to return to the adjustment mode.
4. Select a new curve. The heat curves are numbered from 0 to 15, the higher the number, the steeper the curve and the higher the flow temperature. Heat curve 0 means that the own curve (menu 1.9.7) is active.
5. Press OK to finish configuring the settings.

Reading the heat curve:

1. Turn the selector so that the ring on the outdoor temperature shaft is marked.
2. Press the OK button.
3. Follow the gray line to the heat curve and read the flow temperature at the selected outdoor temperature from the end of the horizontal line.
4. Now you can read the different temperatures by turning the selector to the right or left and read the corresponding flow temperature.
5. Press OK or Back to exit read mode.

> ***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.

MENU 1.9.2 – EXTERNAL ADJUSTMENT

Heating system
Adjustment range: -10 - +10 or the desired room temperatur if a room sensor is installed.
Factory setting: 0

By connecting an external contact, for example a room thermostat or timer, the room temperature can be raised or lowered temporarily or intermittently. When the contact is closed, the change in the heat curve changes the number of steps selected in the menu. If the room sensor is installed and activated, the desired room temperature (°C) is set for the period.
If there are several heating systems, each can be make your own settings.

MENU 1.9.3 – MINIMUM FLOW TEMPERATURE

Heating system
Adujstment range: 5-70 °C
Factory setting: 20 °C

The lowest flow temperature of the heating system is set here. This means that the MCU 40 will never use a lower temperature in the calculations than the one set here.
If there are several heating systems, individual settings can be made for each.

Tip

The value can be increase if the house, for example, wants to keep the underfloor heating on in damp rooms also in summer.
You may need to increase the value “Stop heating” in menu 4.9.2 “Auto mode settings”.

MENU 1.9.4 – ROOM SENSOR SETTINGS

system factor
Adjustment range: 0,0 - 0,6
Factory setting: 2,0

Here you can activate the room sensor for room temperature control.
Here you can also set a factor (mathematical value) that determines how much the flow temperature is affected by the overtemperature or undershoot of the room (the difference between the desired and actual room temperature). A higher value gives a larger and faster change in the heat curve.

NOTE

Too high value can cause fluctuations in the room temperature (depending on your heating system).

If there are several heating systems, the setting described above can be made for each system.

MENU 1.9.7 – OWN CURVE

Flow temperature
Adjustment range: 0 – 80 °C

Here you can create your own heat curve for specific needs by setting the desired flow temperatures at different outdoor temperatures.

Caution

Curve 0 in menu 1.9.1 must be selected for this curve to be valid.

MENU 1.9.8 – POINT TRANSFER

Outdoor temperature point
Adjustment range: -40 – 30 °C
Factory setting: 0 °C

Curve change
Adjustment range: -10 – 10 °C
Factory setting 0 °C

Here you can select the change in the heat curve at a specific outdoor temperature. A one degree change in room temperature is usually accomplished in a single step, but in some cases more steps may be required.
The heat curve is affected when the temperature deviates from the set outdoor temperature point by ± 5°C.
It is important that the heat curve is chosen so that the room temperature feels even.

Tip

If the house feels cold, for example at -2°C, set the “outdoor temperature point” to “-2” and increase the “curve change” until the desired room temperature is reached.

Caution

Wait a day before the new setting in order the room temperature has time to settle.

Menu 2 - HOT WATER

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

* Accessories are needed.

Sub-menus

This menu only appears if a water heater is connected to the heat pump.

There are several submenus in the Hot water menu. The status information for each menu is displayed on the right side of the menus.
Temporary luxury Actiovation of a temporary increase in hot water temperature. Status information shows “off” or how long the temporary temperature increase is valid.

Comfort mode Hot water comfort adjustment. Status information shows the selected mode: “Economy”, “Normal” or “Luxury”.
Programming Programming hot water comfort. Status information “set” is only displayed if you have set the program, but it is not currently active. “Holiday setting” is displayed if the holiday setting is active at the same time as the program (and the holiday function is prioritized). “Active” is displayed if any part of the program is active, otherwise “off” is displayed.
Advanced settings Activation of the periodic increase of the DHW temperature.

MENU 2.1 – TEMPORARY LUX

Adjustment range: 3, 6 and 12 hours and mode "off"
Factory setting: "off"

In the event of a temporary increase in hot water demand, you can use this menu to select the hot water temperature increase to the luxury level for the set time.

> *Caution*
>
> If the comfort mode “luxury” is selected in menu 2.2, no further increase can be made.

The function is activated as soon as the time period is selected and confirmed with OK button.The remaining time with the selected setting is displayed on the right.
When the time has elapsed, the MCU 40 returns to menu 2.2. to the set state.
Select “off” to turn off Temporary luxury.

MENU 2.2 – COMFORT MODE

Adjustment range: Economy, Normal, Luxury
Factory setting: Normal

The difference between the selected modes is the hot water temperature.
At higher temperatures the hot water output is longer.
Economy: This mode provides less hot water than others, but at the same time it is the most economical. This mode can be used in smaller economies where needed little hot water.
Normal: The normal mode provides more water and is suitable for most households.
Luxury: The luxury mode provides the maximum possible amount of hot water. In this mode the hot water is heated not only by the compressor but also by an electric heater, which increases the operating costs.

MENU 2.3 – SCHEDULING

Here you can program the hot water status of the system for up to two different times per day.
The program is activated / deactivated by checking / unchecking “activated”. Deactivation does not affect the set times.

Program: Here you select the program to be changed.
Activated: Here the program is selected for the selected period. Deactivation does not affect the set times.
Day: Here you select which days of the week the program applies to. The programming for a specific day is canceled by resetting the times for that day by setting the start time to the same as the stop time. If the line “all” is used, all the days of the period are programmed according to the line.
Time period: Here you select the start time and stop time on the selected day for programming.
Adjustment: Here you set which hot water mode is used during the program.
Conflict: If two different settings conflict it will be displayed with a red exclamation mark.

Tip

If you want to set similar programs for each day of the week, first mark “all” and then change the desired days.

Tip

If the cycle is to continue beyond midnight set the end time before the start time. The program will then stop at the end time set the next day.
The program always starts on the day which the start time is set.

MENU 2.9 – ADVANCED SETTINGS

The Advanced settings menu contains orange text which means that it is intended for use by the installer. This menu has several submenus.

MENU 2.9.1 – PERIODIC INCREASE

Time period
Adjustmentrange: 1 - 90 days
Factory setting: 14 days

Start time
Adjustment range: 00:00 - 23:00
Factory setting: 00:00

To prevent bacterial growth in the tank the heat pump together with a possible additional heat source can raise the hot water temperature at regular intervals.
You can also set the interval for hot water temperature increases. The adjustment range is 1 to 90 days. The factory setting is 14 days. Uncheck “activated” to deactivate the function.

MENU 2.9.2 – HOT WATER RECIRCULATION (accessories are needed)

Operating time
Adjustmentrange: 1 - 60 min
Factory setting: 60 min

Standing
Adjustmentrange: 0 - 60 min
Factory setting: 0 min

Here you can set the hot water circulation for up to three periods per day. During the period the DHW circulation pump operates according to the settings.
The “operating time” determines how long the DHW circulation pump runs per operating cycle.
“Standby” determines how long the DHW circulation pump stops between runs.

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.

Sub-menus

The Info menu has several submenus. You cannot make settings in these menus, they only display information. The status information for each menu is displayed on the right side of the menus.
Service info shows equipment temperatures and settings.

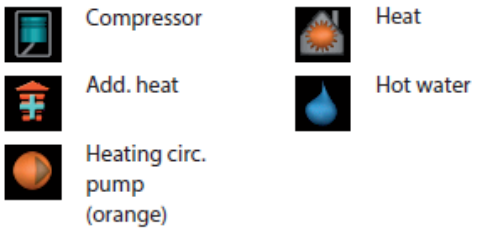
Compressor info shows heat pump compressor operating times, start numbers, etc.
Add. heat info shows information about the operating times of the additional heat source, etc.
Alarm log shows the last alarm.

Indoor temp. log average indoor temperature weekly during the previous year.

MENU 3.1 – SERVICE INFO

Information about the operating status of the equipment (for example current temperatures, etc) is displayed here. No changes can be made.
The information is displayed on several pages. Rotate the selector to move between pages.

Menu symbols:



MENU 3.2 – COMPRESSOR INFO

Here you will find information about the operating status and statistics of the equipment. No changes can be made.
The information can be displayed on several pages. Rotate the selector to move between pages.

MENU 3.3 – ADD. HEAT INFO

Here you will find information about the settings, operating mode and statistics of the additional heat source. No changes can be made.
The information can be displayed on several pages. Rotate the selector to move between pages.

MENU 3.4 – ALARM LOG

To facilitate troubleshooting the operating status of the hardware when an alarm is triggered is stored here. You can information about the last 10 alarms.
To see the operating status in the event of an alarm, highlight the alarm and press OK.

MENU 3.5 – INDOOR TEMP. LOG

Here you can see the average indoor temperature for the previous year. The dashed line is the average indoor temperature for the year.
The average indoor temperature is only displayed if a room sensor / room unit is installed.

Reading the average temperature:

1. Turn the selector so that the week number ring on the shaft is marked.
2. Press the OK button.
3. Follow the gray line to the curve and read the average indoor temperature for the selected week from the left end of the horizontal line.
4. Now you can read the average temperatures for different weeks by turning the selector to the right or left and read the average temperature in the same way.
5. Press OK or Back to exit read mode.

Menu 4 - MY SYSTEM

- 4 - MY SYSTEM
  - 4.1 - plus functions
    - 4.1.1 - pool *
    - 4.1.2 - pool 2 *
    - 4.1.3 - internet
      - 4.1.3.1 – Jäspi MyUpway
      - 4.1.3.8 - tcp/ip settings
      - 4.1.3.9 - proxy settings
    - 4.1.4 - sms *
    - 4.1.5 - SG Ready
  - 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. prioritization
    - 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

* Accessories are needed.

Sub-menus

The My system menu has several submenus. The status information for each menu is displayed on the right side of the menus.
Plus functions Settings for possible additional functions of the heating system.

Operating mode Activation of manual or automatic operating mode. The status information shows the selected operating mode.
My icons Settings for the control model user interface icons that appear in the door when the door is closed.
Time and date Setting the time and date.

Language Here you can select the language in which display information is displayed. Status information shows the selected language.
Holiday setting for heating and DHW. Status information ”set” is displayed if you have set a holiday setting but is not currently active, “active” is displayed if any part of the holiday setting is active, otherwise “off” is displayed.
Advanced settings for the control unit mode.

MENU 4.1 – PLUS FUNCTIONS

In this submenu the settings for the additional functions of the MCU 40 are made.

MENU 4.1.1 – 4.1.2 – POOL 1 – POOL 2 (requires accessory)

Start temperature
Adjustment range: 5,0 - 80,0 °C
Factory setting: 22,0 °C

Stop temperature
Adjustment range: 5,0 - 80,0 °C
Factory setting: 24,0 °C

Here you select whether pool control is active, at which temperatures (start and stop temperature) Pool heating takes place and how many compressors are allowed to heat this pool at the same time.
When the pool temperature has dropped below the set start temperature and there is no need for hot water or heating the MCU 40 will start heating the pool water.
Uncheck “activated” to turn off the pool heating.

Caution

The start temperature cannot be higher than the stop temperature.

MENU 4.1.3 – INTERNET

Here you set up the MCU 40 to connect to Internet.

NOTE

For these functions to work a network cable must be connected.

MENU 4.1.3.1 – MyUpway

Here you manage the connection of the hardware to MyUpway and see the number of users connected via the Internet.
The connected user has a MyUpway™ user account which gives the right to control and / or monitor the hardware.

Request a new connection string:

To associate a MyUpway™ user account with your hardware, you must request a unique connection string.

1. Highlight “request new connection string” and press the OK button.
2. The hardware is now communicating with MyUpway™ to configure the connection string.
3. Once the connection string has been created, it will be displayed in this menu as “connection string” and will be valid for 60 minutes.

Delete all users:

1. Mark “close all users” and press the OK button.
2. The hardware is now communicating with MyUpway™ to free your hardware from all users connected via the Internet.

NOTE

Once you have deleted all users, they will not be able to monitor or control your hardware through MyUpway™ without requesting a new connection string.

MENU 4.1.3.8 – TCP/IP SETTINGS

Here you can configure the TCP/IP settings for your hardware.

Automatic settings (DHCP):

1. Mark “automatically”. The hardware now obtains TCP / IP settings using DHCP.
2. Mark “confirm” and press OK button.

Manual settings:

1. Uncheck “automatically”, you have a choice now several settings options.
2. Mark “ip-address” and press the OK button.
3. Enter the correct information using the virtual keyboard.
4. Highlight “OK” and press the OK button .
5. Repeat 1-3 for “netmask”, “gateway” and “dns”.
6. Mark confirm and press the OK button.

Caution

The hardware cannot connect to the Internet without the correct TCP / IP settings. If you unsure of the settings, use auto mode or contact your network administrator for more information.

Tip

All settings made after opening the menu can be restored by marking “restore” and pressing the OK button.

MENU 4.1.3.9 – PROXY SETTINGS

Here you set the proxy settings for your hardware.
Proxy settings determinate the connection information between the hardware and the Internet proxy. These settings are mainly used when the hardware is connected to the internet through a corporate network. The hardware supports HTTP Basic and HTTP Digest type proxy authentications.
If you are unsure about the settings, use ready-made settings or contact your network administrator for more information.

Settings:

1. Check “use proxy” if you want to use a proxy server.
2. Highlight “server” and press the OK button.
3. Enter the correct information using the virtual keyboard.
4. Highlight “OK” and press the OK button .
5. Repeat 1-3 for “port”, “user ID” and “password”.
6. Mark “Confirm” and press the OK button.

Tip

All settings made after opening the menu can be restored by marking “restore” and pressing the OK button.

MENU 4.1.4 – SMS (requires accessory)

The settings for the optional SMS 40 are made here.
Enter the mobile phone number from which the status of the control module can be changed and read. The number must be entered in the format +358 XXXXXXXXX.
If you want to receive an SMS message when an alarm occurs, check the box to the right of the phone number.

NOTE

The number must be able to send SMS messages.

MENU 4.1.5 – SG READY

This function can only be used on an electrical network that supports the “SG Ready” standard (Germany).
Here you make the settings for the “SG Ready” function.

Effect of room temperature:

Here you select whether the room temperature can be influenced when activating “SG Ready”.
In the low-cost mode of “SG Ready”, the parallel transfer of the indoor temperature is increased by “+1”. If the room sensor is installed and activated, the desired room temperature is raised by 1°C.
In the overcapacity mode of “SG Ready”, the parallel temperature transfer is increased by “+2”. If the room sensor is installed and activated, the desired room temperature is raised by 2°C.

Effect of hot water:

Here you select whether the DHW temperature can be influenced when activating “SG Ready”.
In the low-cost mode of “SG Ready”, the hot water stop temperature is set as high as possible in compressor operation only (no electrical heater is allowed).
In the overcapacity mode of “SG Ready”, the hot water temperature is set to “luxury” (electrical heater is allowed)

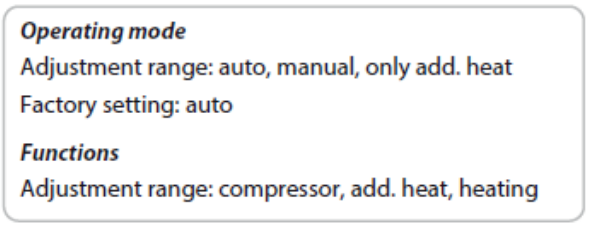
Effect of pool temperature (requires accessory):

Here you select whether the pool temperature can be influenced when activating “SG Ready”.
In the low-cost mode of “SG Ready”, the desired pool temperature is increased by 1°C.
In the overcapacity mode of “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.

MENU 4.2 – OPERATING MODE



The operating mode of the control module is usually set in the “auto” menu. You can also set the control module to “only add. heat”, in which case only the additional heat source or “manual control” is used and choose which functions are allowed.
To change the operating mode highlight the desired mode and press the OK button. When the operating mode is selected, the permitted (crossed out = not allowed) and selectable options of the control module are displayed on the right. Select the permitted function by highlighting the function with the control wheel and pressing the OK button.

Operating mode "Auto":

In this operating mode, the control module automatically selects which functions are allowed.

Operating mode "Manual control":

In this operating mode you can choose which functions are allowed. You cannot deactivate the "compressor" in manual mode.

Operating mode "Only add. heat":

In this operating mode the compressor is not active and heating takes place only with an electric heater.

Caution

If you select the "only add. heat" mode, the compressor will be disabled and operating costs will increase.

Caution

You cannot deactivate additional heat alone unless you have a heat pump connected (see menu 5.2.2).

Functions:

The "compressor" produces hot water and heating water. If the "compressor" is deactivated, it is indicated by the symbol in the main menu of the control module. You cannot deactivate the "compressor" in manual mode.
"Only add. heat" helps the compressor to heat the house and / or hot water when the heat pump alone cannot meet the entire need.
"Heating" to heat the house. You can deactivate the function when you do not want the heating to be on.

MENU 4.3 – MY ICONS

Here you can select which icons are displayed when the door of the MCU 40 is closed. You can select up to 3 icons. If you select more than three, the first one will be lost. The icons appear in the order of selection.

MENU 4.4 – TIME & DATE

Here you set the time, date, display mode and time zone.

Tip

The time and date are set automatically if the heat pump is connected to MyUpway™. To set the correct time, you need to set the time zone.

MENU 4.6 – LANGUAGE

Here you can select the language in which the display information is displayed.

MENU 4.7 – HOLIDAY SETTING

To reduce energy consumption during the holidays, you can program a lower indoor temperature and hot water temperature. Pool heating and solar cooling can also be programmed if the functions are switched on.
If the room sensor is installed and activated, the desired room temperature (°C) is set for the period. This setting applies to all heating systems with a room sensor.
If the room sensor is not activated, the desired change in the heat curve is set. This setting applies to all heating systems without the room sensor. A one degree change in room temperature is usually accomplished in one step, but in some cases more steps may be required.
The holiday program starts at 00.00 on the start date and ends at 23.59 on the end date.

Tip

Set the end date of the holiday setting approximately one day before returning home to allow the room temperature and hot water temperature to return.

Tip

Program your holiday program in advance and activate it just before you leave to maintain comfort.

Caution

If you deactivate hot water production during the holiday, a "periodic increase" (prevents any bacterial growth) will be prevented during this time.
The "periodic increase" will be triggered when the holiday program ends.

MENU 4.9 – ADVANCED SETTINGS

The Advanced settings menu contains orange text, which means that it is intended for use by the installer. This menu has several submenus.

MENU 4.9.1 – OPERATING PRIORITIZATION

Operating prioritization
Adjustmentrange: 0 - 180 min
Factory setting: 30 min

Here you select how long the hardware will run in each mode if there are two or more simultaneous needs. If there is only one need, the hardware will work in that use. The cursor indicates which section the hardware is.
0 minutes means that the need is not prioritized but is only activated when there is no other need.

MENU 4.9.2 – AUTO MODE SETTINGS

Stop heating
Adjustment range: -20 – 40 °C
Factory setting: 20

Stop additional heating
Adjustment range: -25 – 40 °C
Factory setting: 15

Filtering time
Adjustment range: 0 – 48 h
Factory setting: 24 h

When the operating mode is set to “auto”, the control module itself selects, based on the average outdoor temperature, when the start and stop additional heat and heat production is allowed.
These average outdoor temperatures are selected in this menu.
You can also specify how long (filter time) the average temperature is calculated. If you select 0, the current outdoor temperature will be used.

Caution

The value “stop additional heating” cannot be set higher than “stop heating”.

MENU 4.9.3 – DEGREE MINUTES SETTINGS

Current value
Adjustment range: -3000 – 3000

Start compressor
Adjustment range: -1000 – -30
Factory setting: -60

Start difference compressors
Adjustment range: 10 – 2000
Factory setting: 60

Start difference additional heat
Adjustment range: 100 – 1000
Factory setting: 400

Difference in additional heat steps
Adjustment range: 0 – 1000

Degree minutes indicate the current heating demand of the house and determine when the compressor and additional heating start / stop.

Caution

A higher (toward zero) “start compressor” value increases starts, which increases compressor consumption. Too low value (away from zero) can cause an unstable room temperature.

MENU 4.9.4 – FACTORY SETTINGS USER

Here you can reset all the settings available to the user (including the advanced settings menu) to the factory defaults.

Caution

After restoring the factory settings, your own settings, such as the heat curve etc., must be reset.

MENU 4.9.5 – SCHEDULE BLOCKING

Here you can program the additional heat inhibition for two different time period.
When the program is active, the blocking symbol appears in the main menu of the control module.

Program: Here you select the program to be changed.
Activated: Here the program is selected for the selected period. Deactivation does not affect the set times.
Day: Here you select which days of the week the program applies to. The programming for a specific day is canceled by resetting the times for that day by setting the start time to the same as the stop time. If the line “all” is used, all the days of the period are programmed according to the line.
Time period: Here you select the start time and stop time on the selected day for programming.
Blocking: Select the desired blocking here.
Conflict: If two different settings conflict it will be displayed with a red exclamation mark.

 Blocking outdoor unit compressor.

 Blocking additional energy.

Tip

If you want to set similar programs for each day of the week, first mark “all” and then change the desired days.

Tip

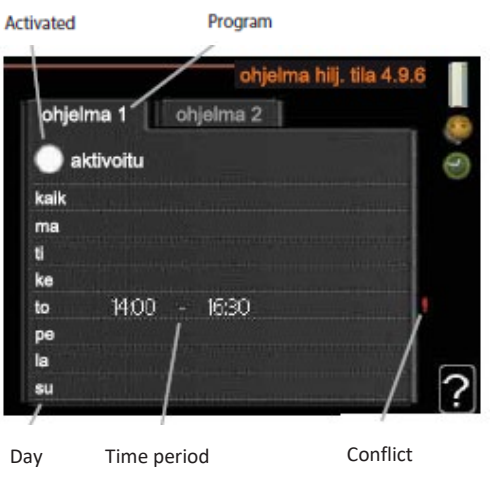
If the cycle is to continue beyond midnight set the end time before the start time. The program will then stop at the end time set the next day.
The program always starts on the day which the start time is set.

Caution

Prolonged blocking can impair comfort and economy.

MENU 4.9.6 – SCHEDULE SILENT MODE

Here you can program the silent operation of the heat pump for two different periods (provided that the heat pump supports the function).
When the program is active, the silent operation symbol is displayed in the main menu of the control module.



Program: Here you select the program to be changed.
Activated: Here the program is selected for the selected period. Deactivation does not affect the set times.
Day: Here you select which days of the week the program applies to. The programming for a specific day is canceled by resetting the times for that day by setting the start time to the same as the stop time. If the line “all” is used, all the days of the period are programmed according to the line.
Time period: Here you select the start time and stop time on the selected day for programming.
Conflict: If two different settings conflict it will be displayed with a red exclamation mark.

Tip

If you want to set similar programs for each day of the week, first mark “all” and then change the desired days.

Tip

If the cycle is to continue beyond midnight set the end time before the start time. The program will then stop at the end time set the next day.
The program always starts on the day which the start time is set.

Caution

Prolonged silent operation can impair comfort and economy.

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 - addition		
		5.1.14 - flow set. climate system		
		5.1.22 - heat pump testing		
		5.1.23 - compressor curve		
	5.2 - system settings	5.2.2 - installed slaves		
		5.2.3 - docking		
		5.2.4 - accessories		
	5.3 - accessory settings	5.3.2 - shunt controlled add. heat *		
		5.3.3 - extra climate system *		
		5.3.4 - solar heating *		
		5.3.6 - step controlled add. heat		
		5.3.8 - hot water comfort *		
	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 - slave settings	5.11.1 - EB101		
			5.11.1.1 - heat pump	
			5.11.1.2 - charge pump	
		5.11.2 - EB102		
		5.11.3 - EB103		
		5.11.4 - EB104		
		5.11.5 - EB105		
		5.11.6 - EB106		
		5.11.7 - EB107		
		5.11.8 - EB108		
	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 control module.

system settings System settings for the control module, activating accessories etc.

accessory settings Operational settings for different accessories.

soft in/outputs Setting software controlled in and outputs on the input card (AA3) and terminal block (X2).

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 control module is started.

quick start Quick starting the compressor.

> ⚠ *NOTE*
>
> Incorrect settings in the service menus can damage the installation.

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

MENU 5.1.1 - HOT WATER SETTINGS

The hot water settings require that hot water production is activated in menu 5.2.4 accessories.

economy

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

Factory setting start temp. economy: 44 °C Setting range stop temp. economy: 5 – 70 °C Factory setting stop temp. economy: 47 °C

normal

Setting range start temp. normal: 5 – 70 °C Factory setting start temp. normal: 47 °C Setting range stop temp. normal: 5 – 70 °C Factory setting stop temp. normal: 50 °C

luxury

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

Factory setting start temp. lux: 52 °C

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

Factory setting stop temp. lux: 55 °C

stop temp. per. increase

Setting range: 55 – 70 °C

Factory setting: 55 °C

step difference compressors

Setting range: 0.5 – 4.0 °C

Factory setting: 1.0 °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.

The charge method for hot water operation is selected here. “delta temp” is recommended for heaters with charge coil.

MENU 5.1.2 - MAX FLOW LINE TEMPERATURE

climate system

Setting range: 5-70 °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.

> ☞ *Caution*
>
> Underfloor heating systems are normally max flow line temperature set 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 during compressor respectively add. heat mode. 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 how you want the control module to alert you that there is an alarm in the display here. The different alternatives are; the heat pump stops producing hot water and/or reduces the room temperature.

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

MENU 5.1.12 - ADDITION

Make settings for connected additional heat (step controlled or shunt controlled additional heat) here.

Select whether step controlled or shunt controlled additional heat is connected. Then you can make settings for the different alternatives.

add.type: step controlled

max step

Setting range (binary stepping deactivated): 0 – 3

Setting range (binary stepping activated): 0 – 7

Default value / factory setting: 3

fuse size

Setting range: 1 - 200 A

Factory setting: 16 A

Select this option if the step controlled additional heat is connected and is positioned before or after the reversing valve for hot water charging (QN10). Step controlled additional heat is for example an external electric boiler.

Here, you can set the maximum number of permitted additional heat steps, whether there is internal additional heat in the tank (only accessible if the additional heat is positioned after the reversing valve for hot water charging (QN10)), whether binary stepping is to be used, the size of the fuse.

> ***TIP***
>
> In order to select location before or after QN10, you need to tick "hot water production" in menu 5.2.4 - accessories and add a docking in menu 5.2.3 - docking. (Only one air/water heat pump in the system applies for this option.)

add.type: shunt controlled

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

fuse size

Setting range: 1 - 200 A

Factory setting: 16 A

Select this option if shunt controlled additional heat is connected.

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.

Tip

See the accessory installation manual for a description of the operation.

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

The factory setting of DOT value depends on the country that has been given for the product's location. The example below refers to Finland.

Factory setting DOT: -18.0 °C

own setting

Setting range dT at DOT: 0.0 – 25.0

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 works towards is set here.

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

MENU 5.1.22 - HEAT PUMP TESTING

NOTE

This menu is intended for testing MCU 40 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 MCU 40 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 5.2 - SYSTEM SETTINGS

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

MENU 5.2.2 - INSTALLED SLAVES

If one or more air/water heat pumps are connected to the control module, you set it here.

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

search installed slaves

Mark “search installed slaves" and press the OK button to automatically find connected slaves for the master heat pump.

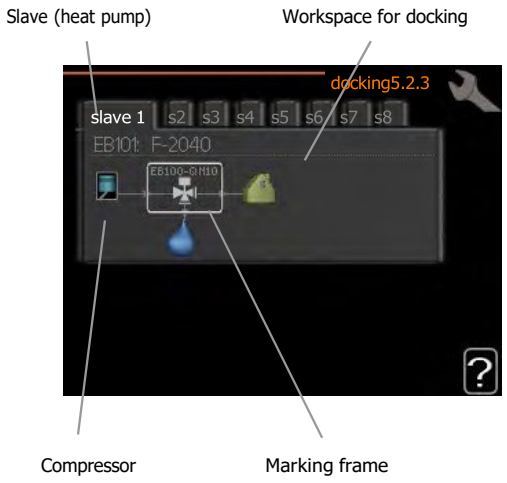
MENU 5.2.3 - DOCKING

Enter how your system is docked regarding pipes, for example to pool heating, hot water heating and heating the building.

This menu has a docking memory which means that the control system remembers how a particular reversing valve is docked and automatically enters the correct docking the next time you use the same reversing valve.

Tip

Examples of connection options can be found at www.jaspi.fi.



Slave: Here you select the heat pump for which the docking setting is to be adjusted.

Compressor: Here, you select whether the compressor in the heat pump is blocked (factory setting) or standard (docked, for example, to pool heating, hot water charging and heating the building).

Marking frame: Move around the marking frame using the control knob. Use the OK button to select what you want to change and to confirm the setting in the options box that appears to the right.

Workspace for docking: The system docking is drawn here.

Symbol	*Description*
	Compressor (blocked)
	Compressor (standard)
	Reversing valves for hot water, cooling respectively pool control. The designations above the reversing valve indicate where it is electrically connected (EB101 = Slave 1, CL11 = Pool 1 etc.).
	Hot water charging
	Pool 1
	Pool 2
	Heating (heating the building, includes any extra climate system)
	Cooling

MENU 5.2.4 - ACCESSORIES

Set which accessories are installed on the installation here.

If the water heater is connected to MCU 40 hot water charging must be activated 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 MCU 40.

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

start diff additional heat

Setting range: -2000 – -30 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.

TIP

See the accessory installation instructions for function description.

MENU 5.3.3 - EXTRA CLIMATE SYSTEM

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

TIP

See the accessory installation instructions for function description.

The shunt amplification and shunt waiting time for the different extra climate systems that are installed are set here.

MENU 5.3.4 - SOLAR HEATING

start delta-T

Setting range: 1 – 40 °C

Default value: 8 °C

stop delta-T

Setting range: 0 – 40 °C

Default value: 4 °C

max. tank temperature

Setting range: 5 – 110 °C

Default value: 95 °C

max. solar collector temp.

Setting range: 80 – 200 °C

Default value: 125 °C

anti-freeze temperature

Setting range: -20 – +20 °C

Default value: 2 °C

start solar collector cooling

Setting range: 80 – 200 °C

Default value: 110 °C

start delta-T, *stop delta-T*: Here, you can set the temperature difference between solar panel and solar tank at which the circulation pump will start and stop.

max. tank temperature, *max. solar collector temp.*: Here, you can set the maximum temperatures in the tank and solar panel respectively at which the circulation pump will stop. This is to protect against excess temperatures in the solar tank.

If the unit has an anti-freeze function and/or solar panel cooling you can activate them here. When the function has been activated, you can make settings for them.

freeze protection

anti-freeze temperature: Here, you can set the temperature in the solar panel at which the circulation pump is to start to prevent freezing.

solar panel cooling

start solar collector cooling: If the temperature in the solar panel is higher than this setting, at the same time as the temperature in the solar tank is higher than the set maximum temperature, the external function for cooling is activated.

See the accessory installation instructions for function description.

MENU 5.3.6 - STEP CONTROLLED ADD. HEAT

start diff additional heat

Setting range: 0 – 2000 DM

Default values: 400 DM

diff. between additional steps

Setting range: 0 – 1000 DM

Default values: 30 DM

max step

Setting range
(binary stepping deactivated): 0 – 3

Setting range
(binary stepping activated): 0 – 7

Default value: 3

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 5.3.8 - HOT WATER COMFORT

activating imm heater

Setting range: on/off

Factory setting: off

activ. imm heat in heat mode

Setting range: on/off

Factory setting: off

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 imm heater: The immersion heater is activated here, if installed in the water heater.

activ. imm heat in heat mode: Activate here whether the immersion heater in the tank (requires the above alternative to be activated) is to be permitted to charge hot water, if the compressors in the heat pump are prioritising heating.

activating the mixing valve: Activated if mixer valve is installed and it is to be controlled from MCU 40. 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 5.4 - SOFT IN/OUTPUTS

Here you can select which to in/output on the input board (AA3) and the terminal block (X2) the external contact function (page 30) must be connected.

Selectable inputs on terminal blocks AUX 1-6 (AA3-X6:9- 14 and X2:1-4) and output AA3-X7.

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 control module is restarted.

MENU 5.6 - FORCED CONTROL

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

MENU 5.7 - START GUIDE

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

See page 35 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.

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 57.

MENU 5.10 - CHANGE LOG

Read off any previous changes to the control system here.

The date, time and ID no. (unique to certain settings) and the new set value is shown for every change.

Caution

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

MENU 5.11 - SLAVE SETTINGS

Settings for installed slaves can be made in the sub menus.

MENU 5.11.1 - EB101 - 5.11.8 - EB108

Make settings for the installed slaves here.

MENU 5.11.1.1 - HEAT PUMP

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

MENU 5.11.1.2 - CHARGE PUMP (GP12)

op. mode

Heating/cooling

Setting range: auto / intermittent

Default value: intermittent

Set the operating mode for the charge pump here.

auto: The charge pump runs according to the current operating mode for MCU 40.

intermittent: The charge 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 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 charge pump is to operate in the present operating mode. Select "auto" if the speed of the charge 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 charge pump and prevents it from running at a lower or higher speed than the set value.

For manual operation of the charge 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).

Speed in wait mode (only used if "auto" has been selected for "Operating mode") means the charge pump operates at the set speed during the time when neither compressor operation nor additional heat are required.

9 Service

Service actions

NOTE

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

When replacing components on MCU 40 only replacement parts from KAUKORA may be used.

EMERGENCY MODE

NOTE

Switch (SF1) must not be put into mode "" or I ⚠ before the installation is filled with water. The compressor in the heat pump can be damaged.

Emergency mode is used in event of operational interference and in conjunction with service. Hot water is not produced in emergency mode.

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

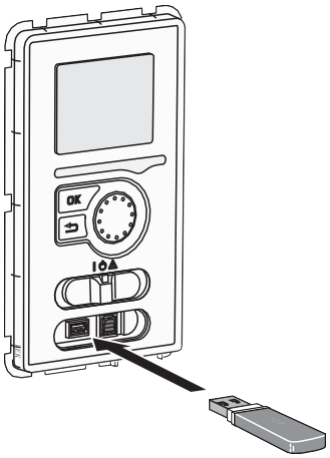
- The status lamp illuminates yellow.
- The display is not lit and the control computer is not connected.
- Hot water is not produced.
- The compressors in the heat pumps are switched off. Charge pump (EB101-GP12) and charge pump (EB102- GP12) (if installed) are running.
- Accessories are switched off.
- The heating medium pump is active.
- The emergency mode relay (K2) is active.

External additional heat is active if it is connected to the emergency mode relay (K2, terminal block X1). Ensure that the heating medium circulates through the external additional heat.

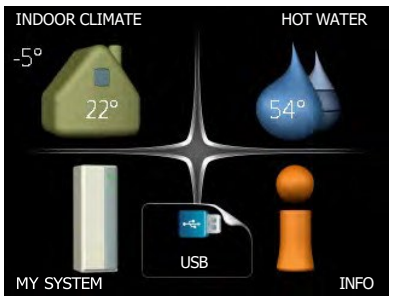
TEMPERATURE SENSOR DATA

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

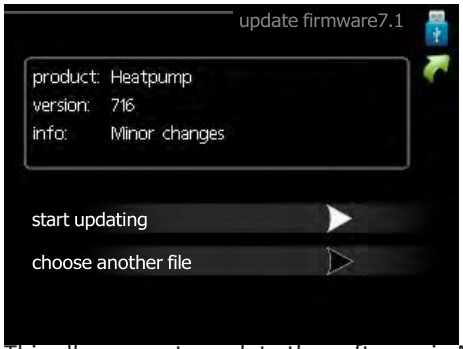


The display unit is equipped with a USB socket that can be used to update the software and save logged information in MCU 40.



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 MCU 40.

> ***NOTE***
>
> For the following functions to work the USB memory must contain files with software for MCU 40 from KAUKORA OY.

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 form 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 MCU 40 restarts.

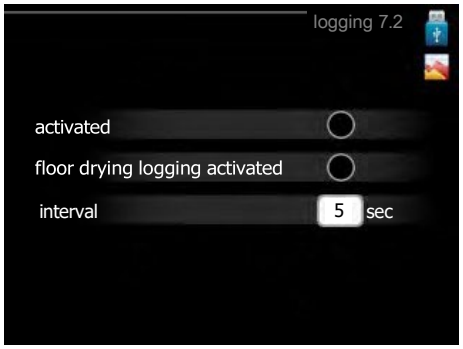
> ***TIP***
>
> A software update does not reset the menu settings in MCU 40.

> ***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 MCU 40 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 MCU 40 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 MCU 40 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 MCU 40.

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.

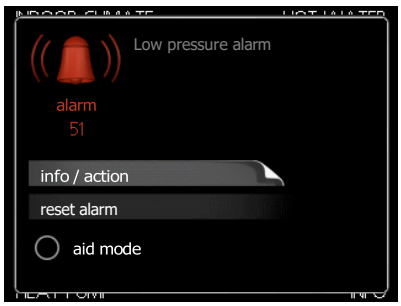
10 Disturbances in comfort

In most cases, MCU 40 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 control 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 heat pump and/or control 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 installation 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 installation produces heat and/or hot water even if there is some kind of problem. This could mean that the heat pump's compressor is not in operation. In this case, any electric additional heat 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.

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.
- Miniature circuit breaker for MCU 40 (FA1).
- The property's earth circuit breaker.
- Correctly set load monitor (if installed).

LOW HOT WATER TEMPERATURE OR A LACK OF HOT WATER

This part of the fault-tracing chapter only applies if the water heater is installed in the system.

- 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.
- MCU 40 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".
- 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, the installation will produce less hot water than normal. Restart the installation
- 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.
- MCU 40 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 the room heating activated.
  - Check any external switches.
- Air in the climate system.
  - Vent the climate system.
- Closed valves (QM20, QM32) 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 the room heating 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. In event of repeated filling, contact the installer.

THE AIR-WATER HEAT PUMP’S COMPRESSOR DOES NOT START

- There is no heating requirement.
  - MCU 40 does not call on heating 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.
  - Follow the display instructions.

Additional heating 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.

Caution

When commissioning without JÄSPI air/water heat pump, the "communication error" alarm may appear in the display.

The alarm is reset if the relevant air-water heat pump is deactivated in menu 5.2.2 ("installed slaves").

11 Accessories

Not all accessories are available on all markets.

ACCESSORY CARD AXC 30

An accessory board for active cooling (4-pipe system), extra climate system, hot water comfort or if more than four charge pumps are to be connected to MCU 40. It can also be used for step controlled additional heat (e.g. external electric boiler), shunt controlled additional heat (e.g. wood/oil/gas/pellet boiler).

An accessory board is required if for example an HWC pump is to be connected to MCU 40 at the same time that the common alarm indication is activated.

Part no. 067 304

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

CHARGE PUMP CPD 11

Charge pump for heat pump

CPD 11-25/65

Part no. M03372

CPD 11-25/75

Part no. M03368

COMMUNICATIONS MODULE MODBUS 40

MODBUS 40 enables MCU 40 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 MCU 40 via SMS.

Part no M02853

ENERGY MEASUREMENT KIT EMK 300

ENERGY MEASUREMENT KIT EMK 500

IMMERSION HEATER JÄSPI J-VASTUS

3 kW

Part no. 5087000

6 kW

Part no. 5087010

4,5 kW

Part no. 5087005

7,5 kW

Part no. 5087012

POOL HEATING POOL 40

POOL 40 is used to enable pool heating with MCU 40.

Part no M02786

EXTRA SHUNT GROUP ECS 40/ECS 41

This accessory is used when MCU 40 is installed in houses with two or more different heating systems that require different supply temperatures.

ECS 40 (Max 80 m²)

Part no b02556

ECS 41 (approx. 80-250 m²)

Part no b02691

REVERSING VALVE FOR COOLING

VCC 05

Reversing valve, Cu pipe Ø22 mm Part no. 067 311

VCC 11

Reversing valve, Cu pipe Ø28 mm Part no. 067 312

HOT WATER CONTROL

VST 05

Reversing valve, Cu pipe Ø22 mm

Max. heat pump size 8 kW

Part no. 089 982

VST 11

Reversing valve, Cu pipe Ø28 mm
Max. recommended power, 17 kW
Part no. M02248

VST 20

Reversing valve, Cu pipe Ø35 mm
(Max. recommended capacity, 40 kW)
Part no M02785

ROOM SENSOR RTS 40

This accessory is used to obtain a more even indoor temperature.

Part no. M02925

ROOM UNIT RMU 40

The room unit is an accessory that allows the control and monitoring of MCU 40 to be carried out in a different part of your home to where it is located.

Part no M02757

WATER HEATER/ACCUMULATOR TANK

VLM 300 STAR

Accumulator tank with an immersion heater, with integrated hot water coil (stainless steel).

Part no. 5360120

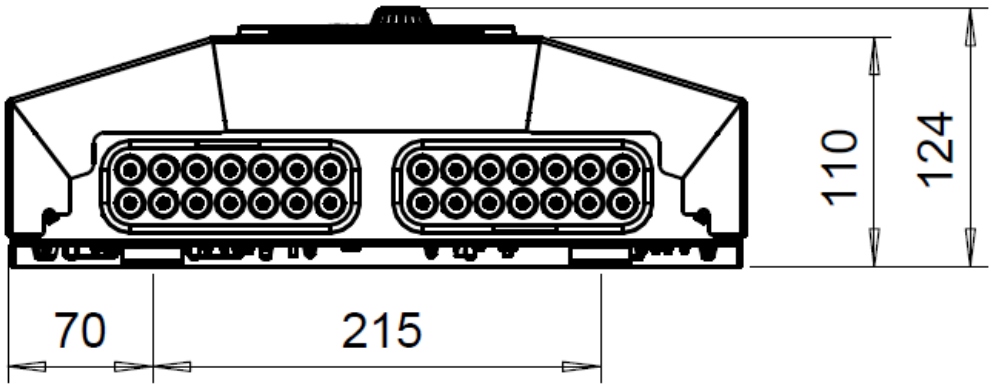
VLM 500 STAR

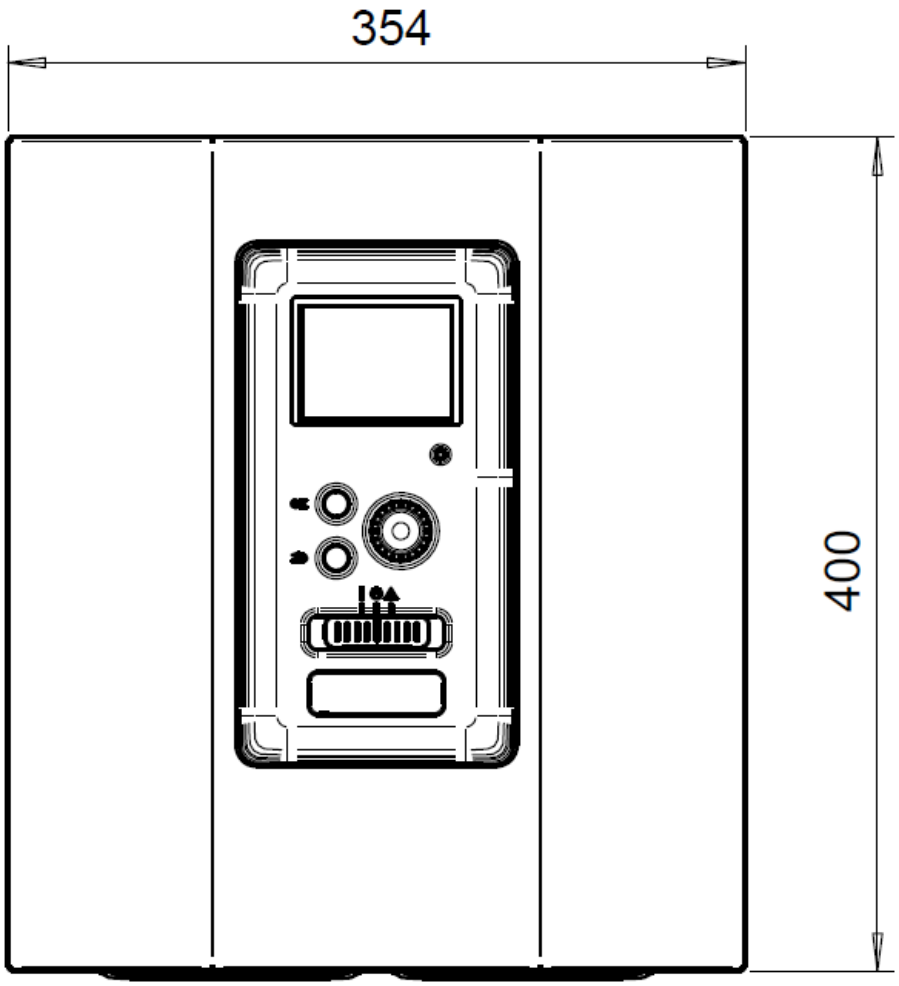
Accumulator tank with an immersion heater, with integrated hot water coil (stainless steel).

Part no. 5360121

12 Technical data

Dimensions



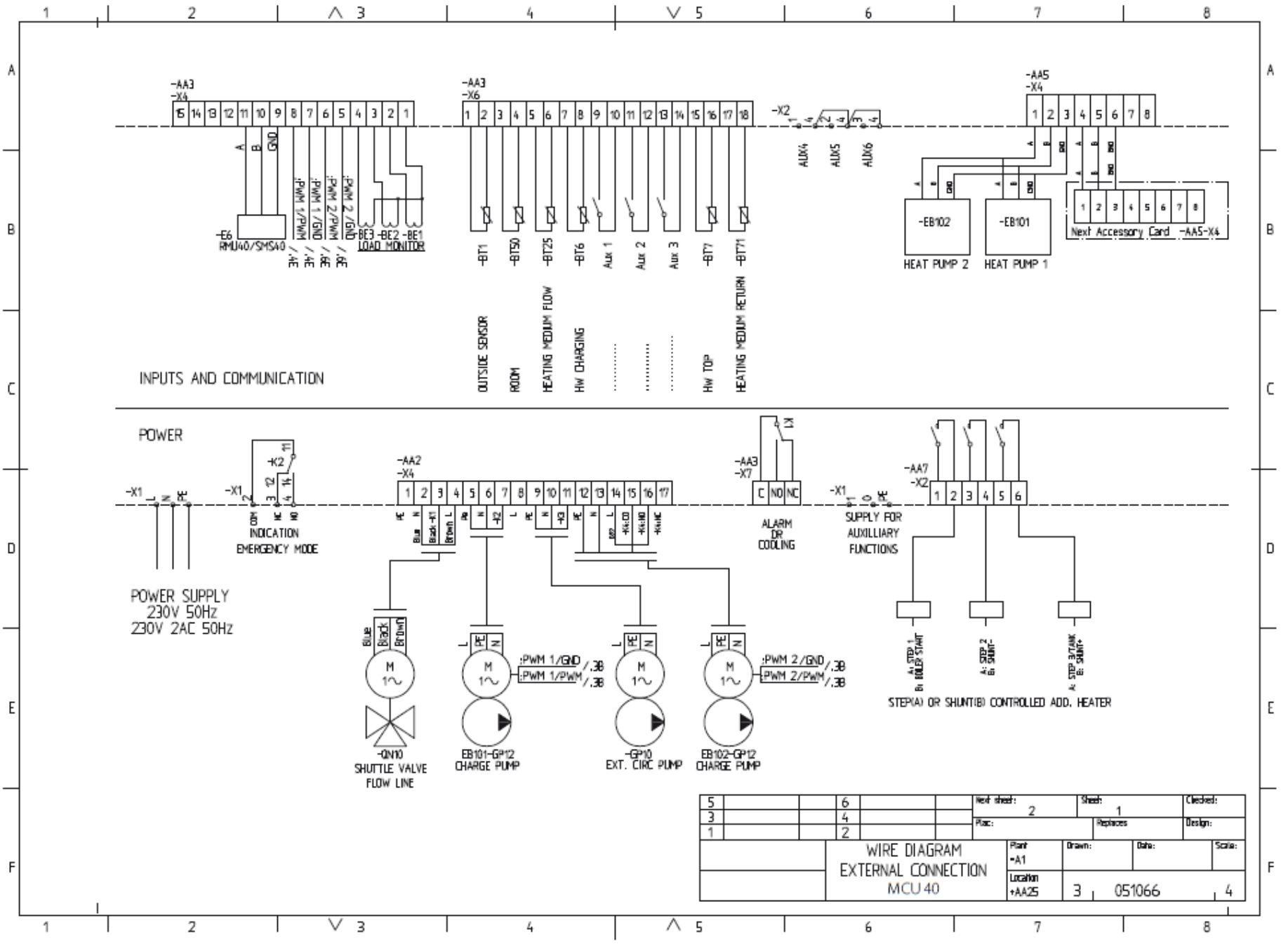


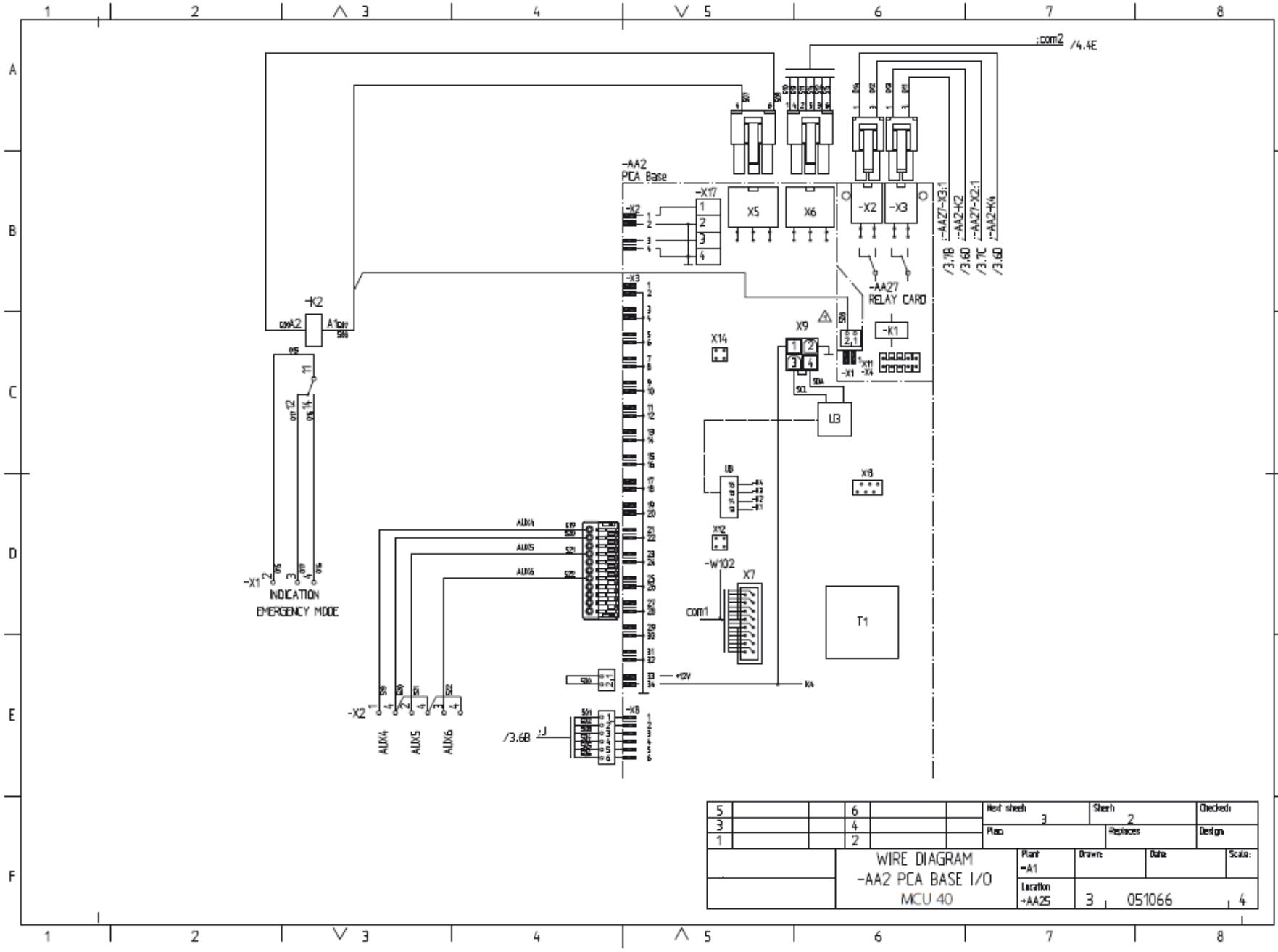
Technical specifications

MCU 40		
Electrical data		
Supply voltage		230V~ 50Hz
Enclosure class		IP21
Rated value for impulse voltage	kV	4
Pollution degree		2
Fuse	A	10
Optional connections		
Max number air/water heat pumps		8
Max number of sensors		7
Max number of charge pumps with internal accessory cards		2
Max number of charge pumps with external accessory cards		8
Max number of outputs for additional heat step		3

Miscellaneous		
Operation mode (EN60730)		Type 1
Area of operation	°C	-25 – 70
Ambient temperature	°C	5 – 35
Program cycles, hours		1, 24
Program cycles, days		1, 2, 5, 7
Resolution, program	min.	1
Dimensions and weight		
Width	mm	354
Depth	mm	124
Height	mm	400
Weight, (without packaging and enclosed components)	kg	5.15
Miscellaneous		
Part no. MCU 40		5360153

Electrical circuit diagram





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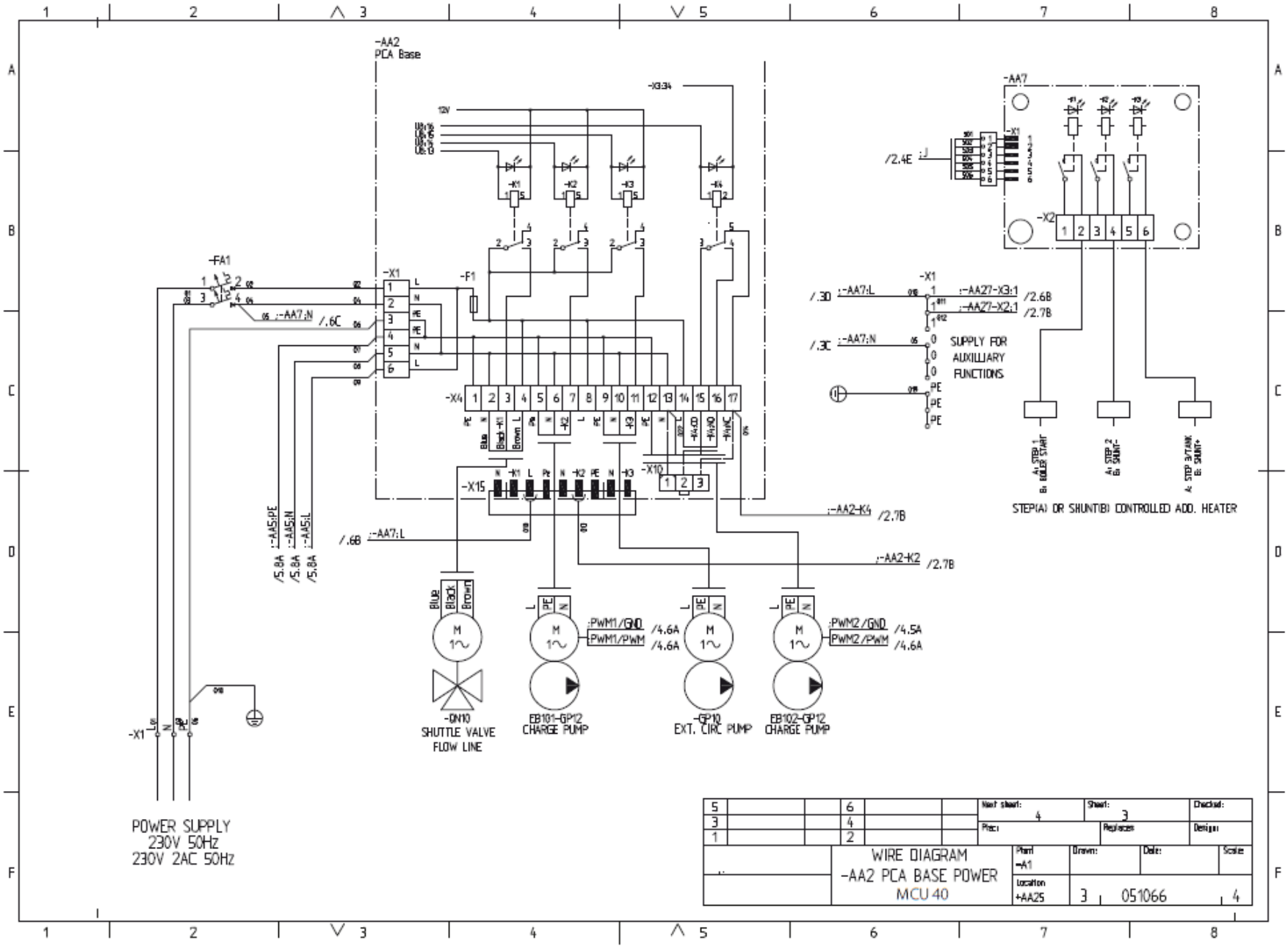
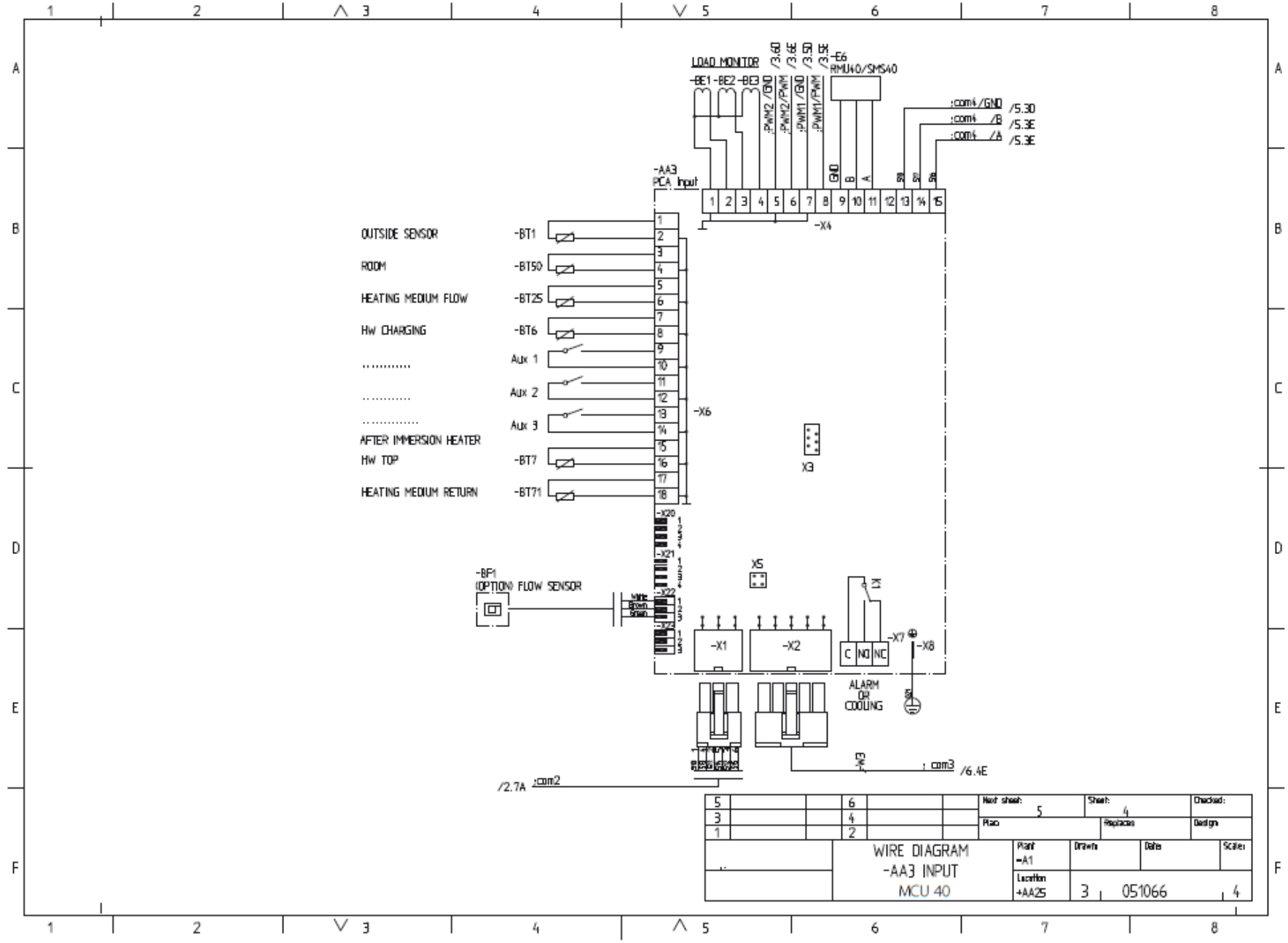
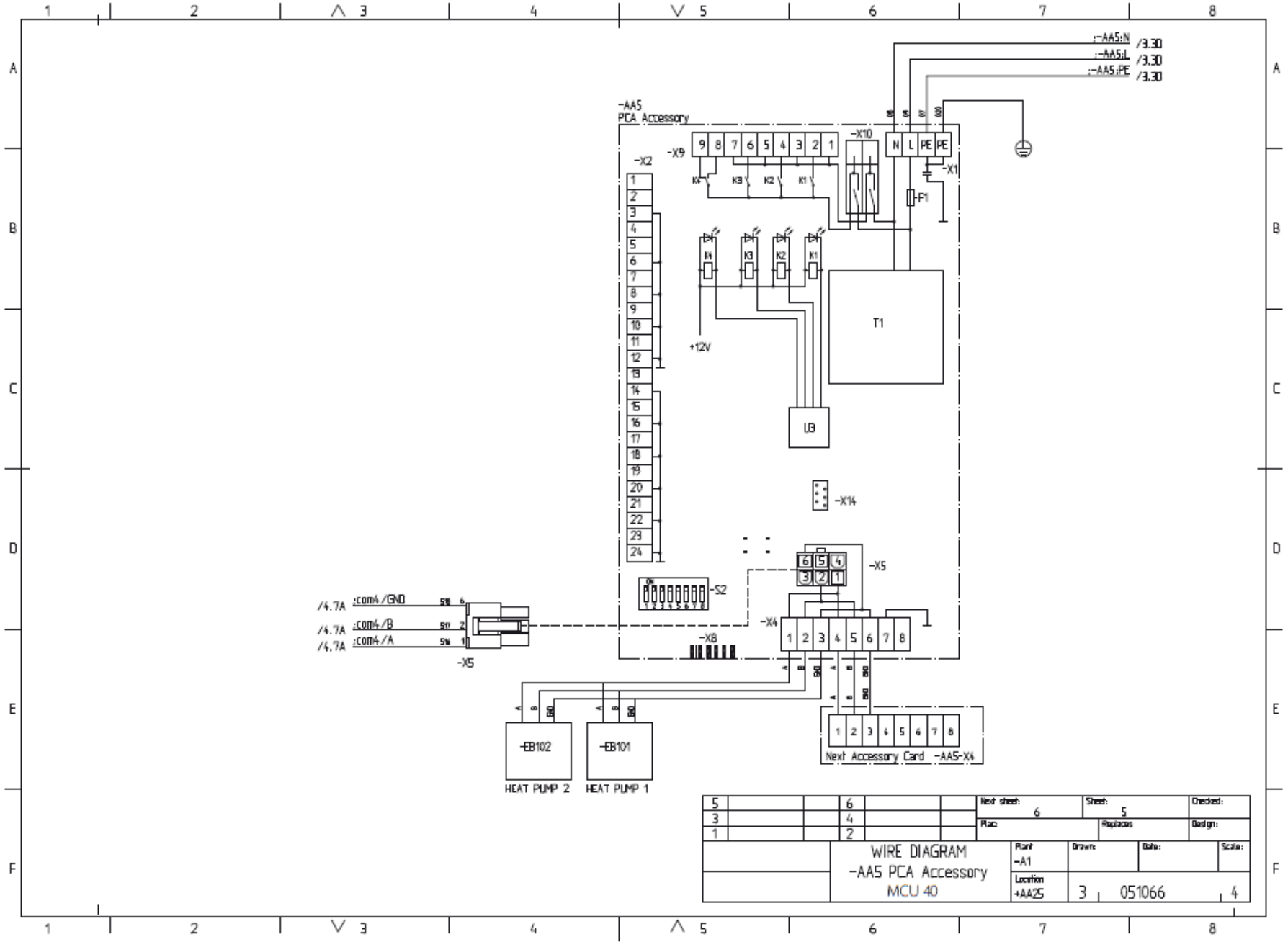
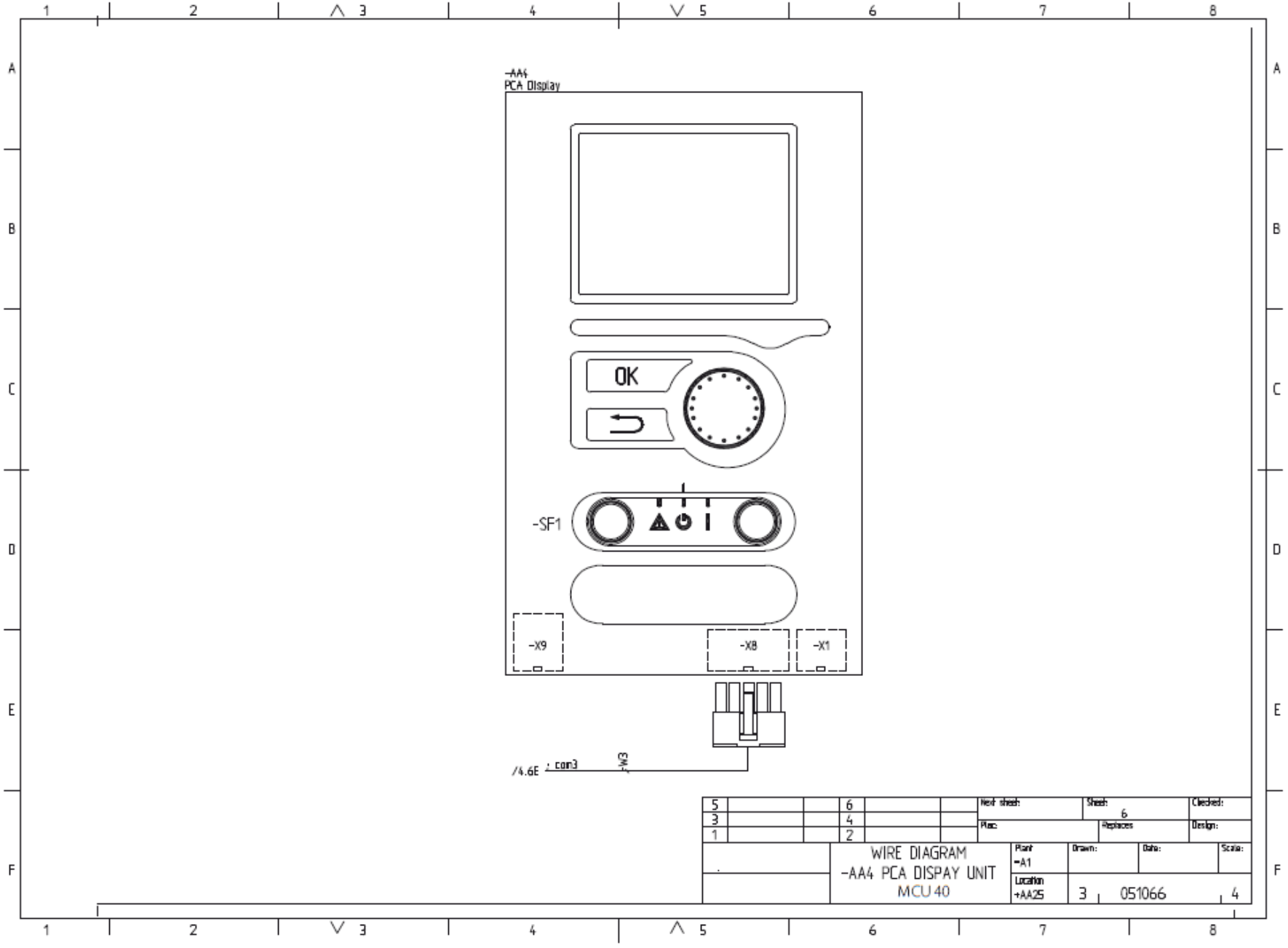
3			4			Place	Replaces	Design
1			2					
			WIRE DIAGRAM -AA2 PCA BASE I/O MCU 40			Plant =A1	Drawn	Date / Scale
						Location +AA25	3 051066 4	


-AA2
PCA Base
-AA7
-FA1
-F1
-X1
-X2
-X3:34
-X4
-X10
-X15
-GP10
EXT. CIRC PUMP
-GN10
SHUTTLE VALVE
FLOW LINE
EB101-GP12
CHARGE PUMP
EB102-GP12
CHARGE PUMP
STEP(A) OR SHUNT(B) CONTROLLED ADD. HEATER
SUPPLY FOR
AUXILLIARY
FUNCTIONS
POWER SUPPLY
230V 50Hz
230V 2AC 50Hz
WIRE DIAGRAM
-AA2 PCA BASE POWER
MCU 40
051066


LOAD MONITOR
-BE1 -BE2 -BE3
-E6
RMU40/SMS40
:com4/GND /5.3D
:com4 /B /5.3E
:com4 /A /5.3E
-AA3
PCA Input
-X4
OUTSIDE SENSOR -BT1
ROOM -BT50
HEATING MEDIUM FLOW -BT25
HW CHARGING -BT6
..... Aux 1
..... Aux 2
..... Aux 3
AFTER IMMERSION HEATER
HW TOP -BT7
HEATING MEDIUM RETURN -BT71
-X6
X3
X5
-BF1
(OPTION) FLOW SENSOR
-X1
-X2
-X7
-X8
K1
C NO NC
ALARM
OR
COOLING
-X3
: com3 /6.4E
/2.7A :com2
WIRE DIAGRAM
-AA3 INPUT
MCU 40
Next sheet: 5
Sheet: 4
Checked:
Place
Replaces
Design
Plant =A1
Drawn
Date
Scale:
Location +AA25
3 051066 4


:-AA5:N /3.30
:-AA5:L /3.30
:-AA5:PE /3.30
-AA5
PCA Accessory
-X10
-X9
-X2
-X1
-F1
K4
K3
K2
K1
+12V
T1
LB
-X14
-X5
-S2
-X4
-X8
/4.7A :com4/GND
/4.7A :com4/B
/4.7A :com4/A
-X5
-EB102
-EB101
HEAT PUMP 2
HEAT PUMP 1
Next Accessory Card -AA5-X4
WIRE DIAGRAM
-AA5 PCA Accessory
MCU 40
Next sheet: 6
Sheet: 5
Checked:
Place:
Replaces
Design:
Plant =A1
Drawn:
Date:
Scale:
Location +AA25
3 051066 4



5			6			Next sheet:		Sheet: 6		Checked:	
3			4			Plac:		Replaces		Design:	
1			2								
	WIRE DIAGRAM -AA4 PCA DISPAY UNIT MCU 40					Plant =A1	Drawn:	Date:		Scale:	
						Location +AA25	3	051066		4	

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