IHB EN 2125-1
431990

INSTALLER MANUAL

Air/water heat pump NIBE S2125

NIBE

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.

Symbols

Explanation of symbols that may be present in this manual.

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

Explanation of symbols that may be present on the product's label(s).

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

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

IP Classification of enclosure of electrical equipment.

Fire hazard!

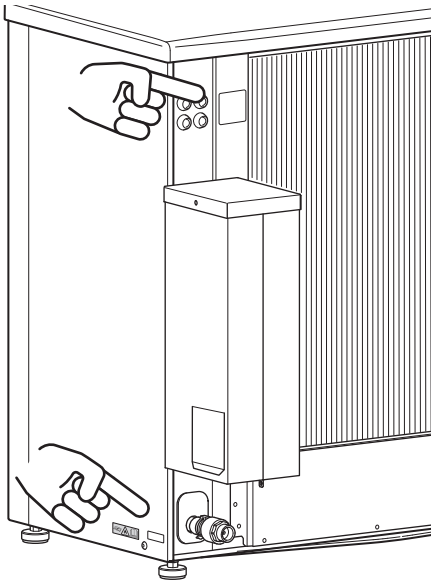
Danger to person or machine.

Read the User Manual.

Read the Installer Manual.

Serial number

The serial number can be found on the rear cover and at the bottom on the side.



Caution

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

Inspection of the installation

Current regulations require the heating installation to undergo an installation inspection before it is commissioned. The inspection must be carried out by a suitably qualified person. In addition, fill in the page for information regarding the installation data in the User Manual.

✔	*Description*	*Notes*	*Signa-ture*	*Date*
Heating medium (page 23)				
	Automatic gas separator installed			
	System flushed			
	System vented			
	Particle filter			
	Shut-off and drain valve			
	Charge flow set			
Electricity (page 25)				
	Fuses property			
	Safety breaker			
	Earth circuit-breaker			
	Heating cable type/effect			
	Fuse size, heating cable (F3)			
	Communication cable connected			
	S2125 addressed (only when cascade connection)			
	Cooling permitted			
	Connections			
	Main voltage			
	Phase voltage			
Miscellaneous				
	Condensation water pipe			
	Insulation for condensation water pipe, thickness (unless KVR 11 is used)			

NOTE

Check the connections, main voltage and phase voltage before the machine is started, to prevent damage to the heat pump electronics.

Compatible indoor modules (VVM) and control modules (SMO)

	VVM S320	*SMO S30*	*SMO S40*
S2125-8	X	X	X
S2125-12	X	X	X

	VVM 225	*VVM 310*	*VVM 320*	*VVM 500*	*SMO 20*	*SMO 40*
S2125-8	X	X	X	X	X	X
S2125-12		X	X	X	X	X

Indoor module

VVM S320
Stainless steel, 1x230 V
Part no. 069 198

VVM S320
Stainless steel, 3x230 V
Part no. 069 201

VVM S320
Enamel, 3x400 V
Part no. 069 206

VVM S320
Stainless steel, 3x400 V
Part no. 069 196

VVM S320
Copper, 3x400 V
Part no. 069 195

VVM 310
Stainless steel, 3x400 V
Part no. 069 430

VVM 310
Stainless steel, 3x400 V
With integrated EMK 310
Part no. 069 084

VVM 320
Stainless steel, 1x230 V
Part no. 069 111

VVM 320
Stainless steel, 3x230 V
Part no. 069 113

VVM 320
Enamel, 3x400 V
With integrated EMK 300
Part no. 069 203

VVM 320
Stainless steel, 3x400 V
Part no. 069 109

VVM 320
Copper, 3x400 V
Part no. 069 108

VVM 500
Stainless steel, 3x400 V
Part no. 069 400

Control module

SMO S30
Control module
Part no. 067 637

SMO S40
Control module
Part no. 067 654

SMO 20
Control module
Part no. 067 224

SMO 40
Control module
Part no. 067 225

2 Delivery and handling

Transport

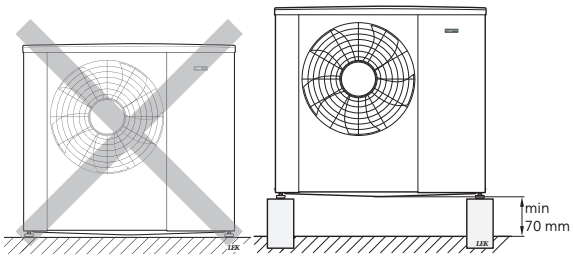
S2125 must be transported and stored vertically.

> *NOTE*
>
> Ensure that the heat pump cannot fall over during transport.

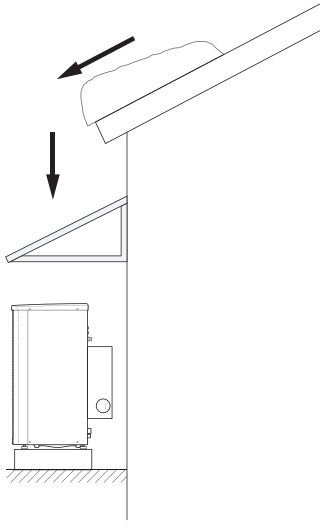
Check that the heat pump has not been damaged during transport.

Assembly

- Place the heat pump in a suitable location outdoors to prevent any risk of the refrigerant flowing in through ventilation openings, doors or similar openings in the event of a leak. It must also not constitute a hazard to people or property in any other way.
- If the heat pump is placed in a location where any refrigerant leak could accumulate, for example below ground level (in a dip or low-lying recess), the installation must satisfy the same requirements that apply for gas detection and the ventilation of engineering rooms. Requirements regarding sources of ignition must be applied where appropriate.
- Place S2125 outdoors on a solid level base that can take the weight, preferably a concrete foundation. If concrete slabs are used they must rest on asphalt or shingle.
- The lower edge of the evaporator must not be lower than the level of the average local snow depth. The base should be at least 70 mm tall.
- S2125 should not be positioned next to noise-sensitive walls, for example, next to a bedroom.
- Also ensure that the placement does not inconvenience the neighbours.
- S2125 must not be placed so that recirculation of the outdoor air is possible. Recirculation entails reduced power and impaired efficiency.
- The evaporator must be sheltered from direct wind / , which negatively affects the defrosting function. Place S2125 protected from wind / against the evaporator.
- A small amount of water may drip from the drainage hole under S2125. Make sure that the water can run away by selecting a suitable material underneath S2125 (see section "Condensation").
- Care must be exercised so that the heat pump is not scratched during installation.



Do not place S2125 directly on the lawn or other non solid surface.



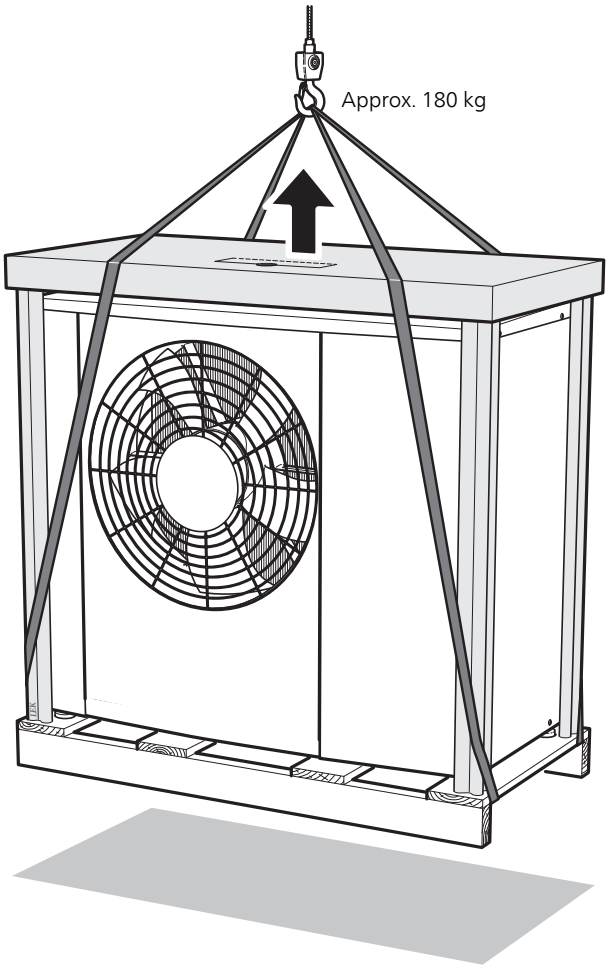
If there is a risk of snow slip from roof, a protective roof or cover must be erected to protect the heat pump, pipes and wiring.

LIFT FROM THE STREET TO THE SET UP LOCATION

If the base allows, the simplest thing is to use a pallet truck to move the S2125 to the set up location.

NOTE

The centre of gravity is offset to one side (see print on the packaging).



If S2125 needs to be transported across soft ground, such as a lawn, we recommend using a crane truck that can lift it to the installation location. When S2125 is lifted with a crane, the packaging must be untouched.

If a crane vehicle cannot be used the S2125 can be transported on an extended sack truck. S2125 must be taken from its heaviest side and two people are required to lift S2125.

LIFT FROM THE PALLET TO FINAL POSITIONING

Before lifting remove the packaging and the securing strap to the pallet.

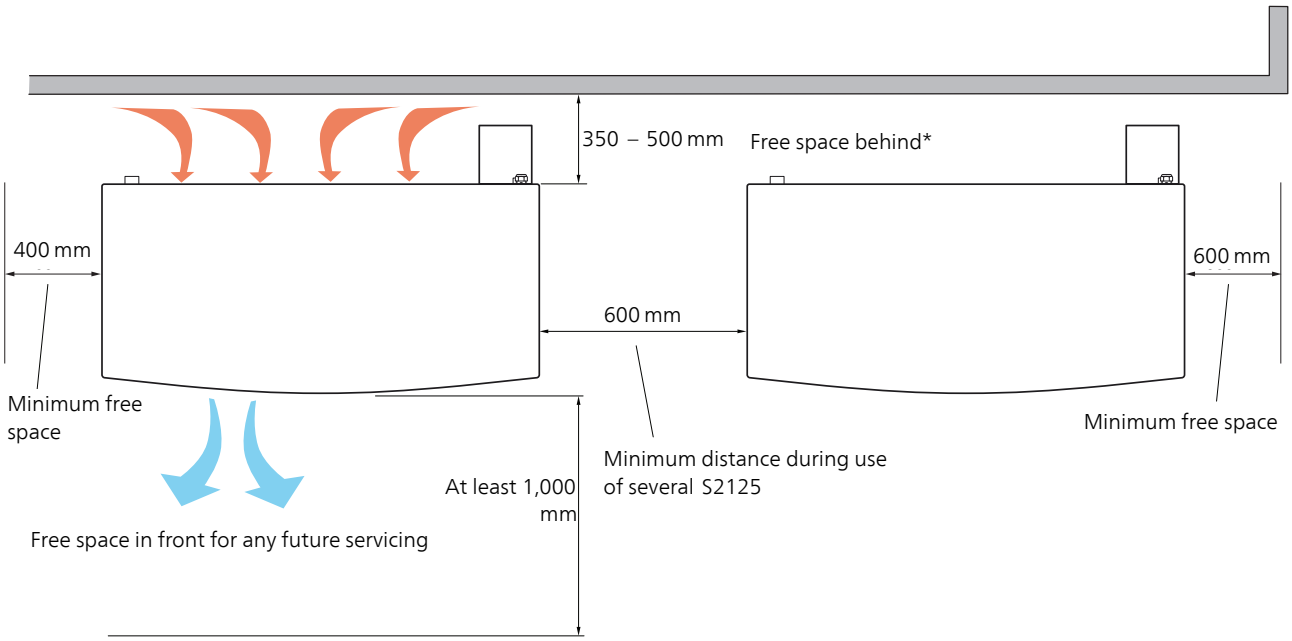
Place lifting straps around each machine foot. Lifting from the pallet to the base requires four persons, one for each lifting strap.

SCRAPPING

When scrapping, the product is removed in reverse order. Lift by the bottom panel instead of a pallet!

INSTALLATION AREA

The distance between S2125 and the house wall must be at least 350 mm, but not more than 500 mm in locations that are exposed to the wind. The free space above S2125 must be at least 1,000 mm. The free space in front must be at least 1,000 mm for any future servicing.



* The space behind must not exceed 500 mm in locations that are exposed to the wind.

Condensation

The condensate drain pan collects and leads away the condensation water.

NOTE

It is important to the heat pump function that condensation water is led away and that the drain for the condensation water run off is not positioned so that it can cause damage to the house.

Condensation run-off should be checked regularly, especially during the autumn. Clean if necessary.

- The condensation water (up to 50 litres/24 hrs) that collects in the trough should be routed away by a pipe to an appropriate drain, it is recommended that the shortest outdoor stretch possible is used.
- The section of the pipe that can be affected by frost must be heated by the heating cable to prevent freezing.

TIP

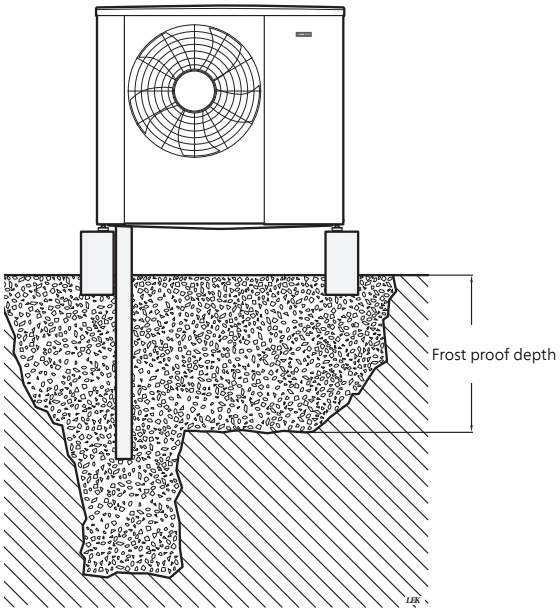
Pipe with heating cable for draining the condensation water trough is not included.

To ensure the function, the accessory KVR 11 should be used.

- Route the pipe downward from S2125.
- The outlet of the condensation water pipe must be at a depth that is frost free or alternatively indoors (with reservation for local ordinances and regulations).
- Use a water trap for installations where air circulation may occur in the condensation water pipe.
- The insulation must seal against the bottom of the condensation water trough.

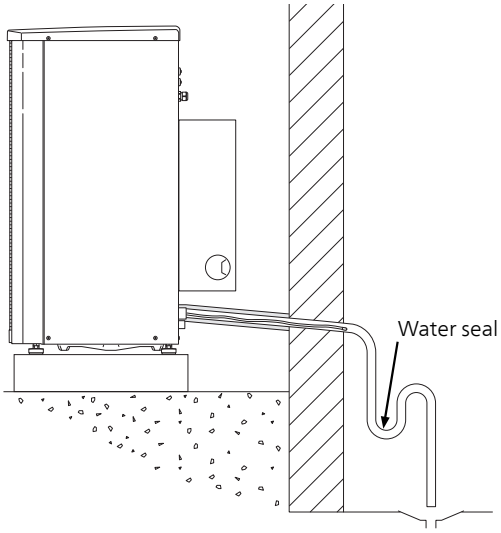
DRAINAGE OF CONDENSATION

Stone caisson



If the house has a cellar the stone caisson must be positioned so that condensation water does not affect the house. Otherwise the stone caisson can be positioned directly under the heat pump.

Drain indoors



The condensation water is lead to an indoor drain (subject to local rules and regulations).

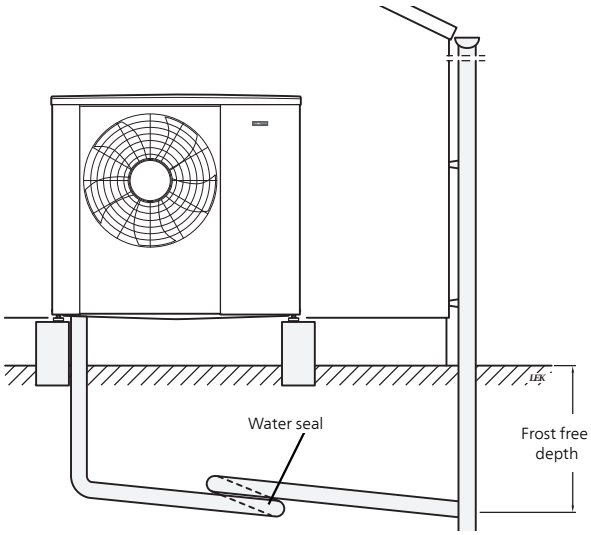
When routing pipes indoors, condensation water pipes must be insulated against condensation.

Route the pipe downward from S2125.

The condensation water pipe must have a water seal to prevent air circulation in the pipe.

Pipe routing indoors is not included.

Gutter drainage



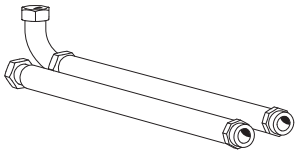
Route the pipe downward from S2125.

The condensation water pipe must have a water seal to prevent air circulation in the pipe.

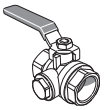
Caution

If none of the recommended alternatives is used good lead off of condensation water must be assured.

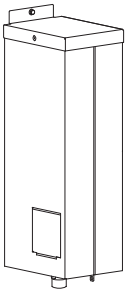
Supplied components



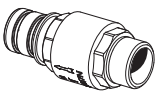
2 x flexible pipes (DN25, G1") with 4 x gaskets



1 x filterball (G1")



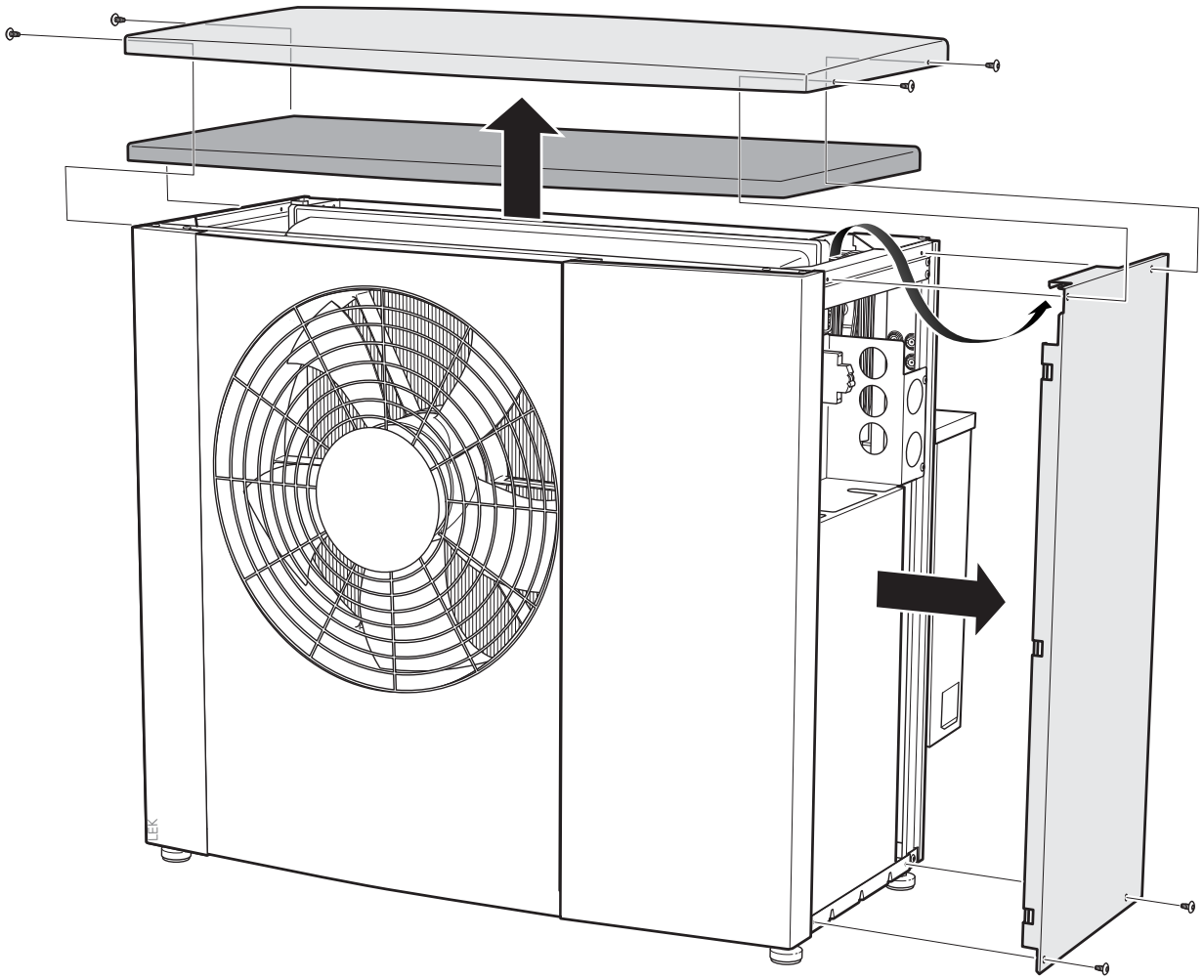
1 x automatic gas separator



1 x non-return valve

Removing the side panel and top panel

Undo the screws, lift off the top panel and the top insulation.

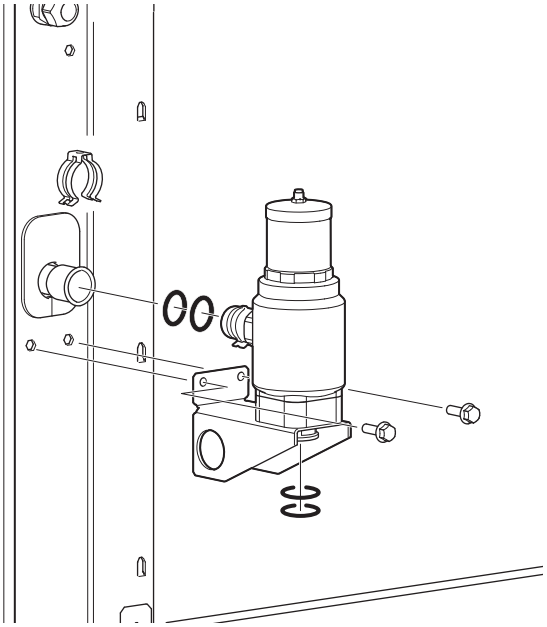


Installation of automatic gas separator

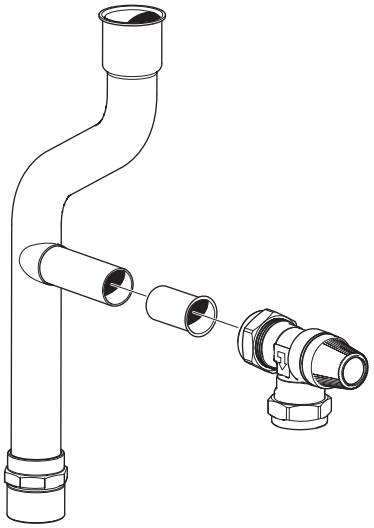
1. Check that all O-rings are present and that they are undamaged. Lubricate them with soapy water or similar to make installation easier.

   Press the gas separator into place. Fit the clip. Twist the clip to ensure that it fastens properly.

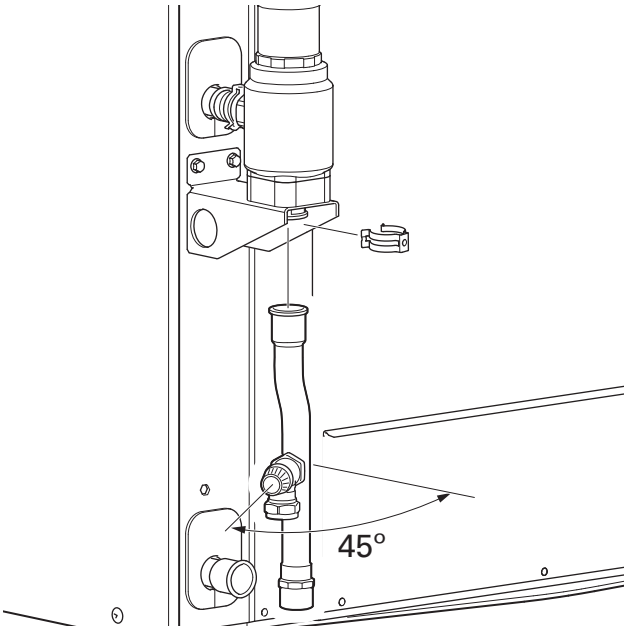
   Place the bracket in position, parallel with the outer edge. Secure the bracket with a screw. Use a socket wrench, size 10 mm.



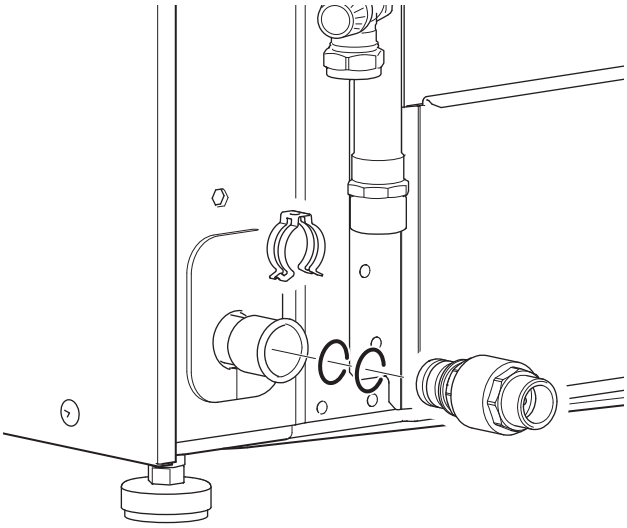
2. Assemble the parts of the safety valve. Ensure that the arrow for the outlet is pointing down, as illustrated.



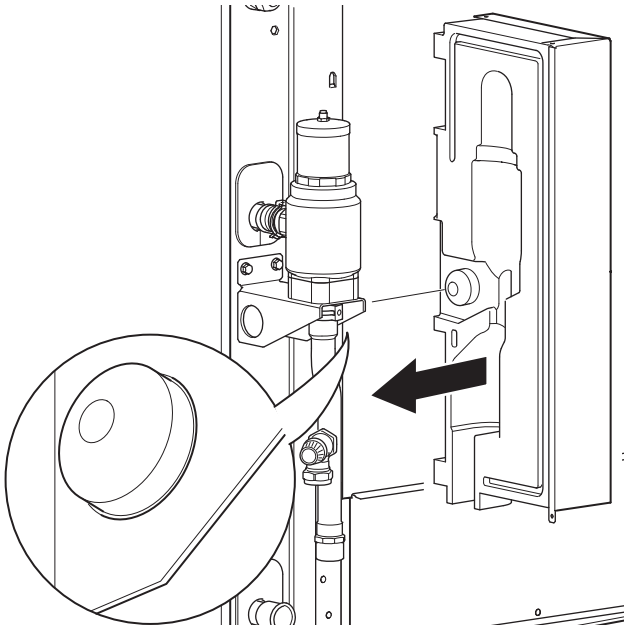
3. Then fit the safety valve with the associated pipes. The safety vale must be at an angle of 45°. Fit the clip. Twist the clip to ensure that it fastens properly.



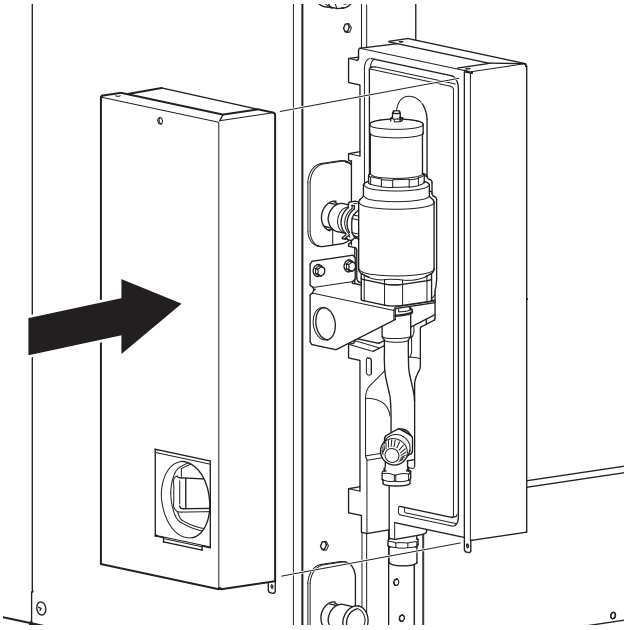
4. Install the non-return valve. Fit the clip. Twist the clip to ensure that it fastens properly.



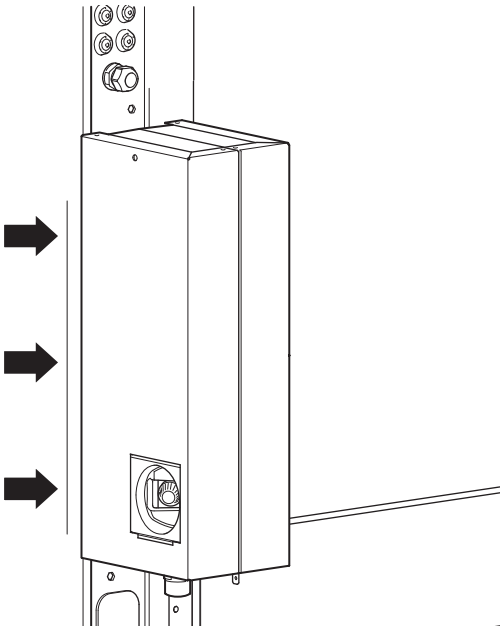
5. Place on the right-hand half of the metal box. The lug in the insulation must go into the round hole in the bracket.



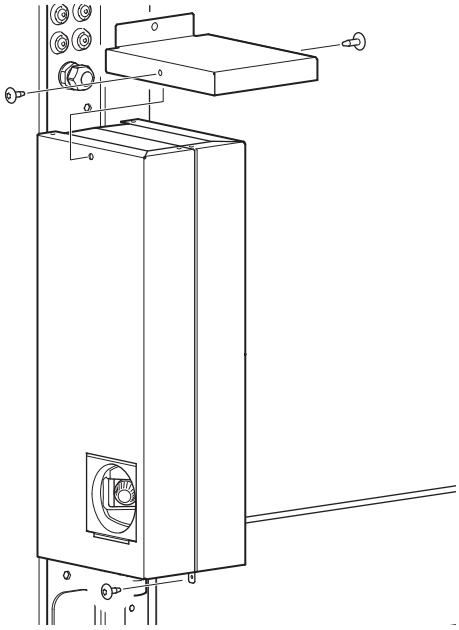
6. Fit the left-hand half in the same way.



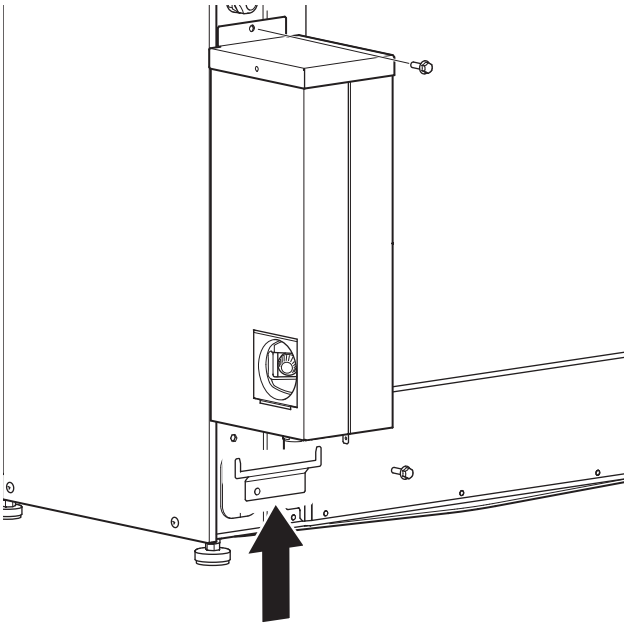
7. Check that both halves of the gas separator are properly in place, parallel with the edge of the heat pump.



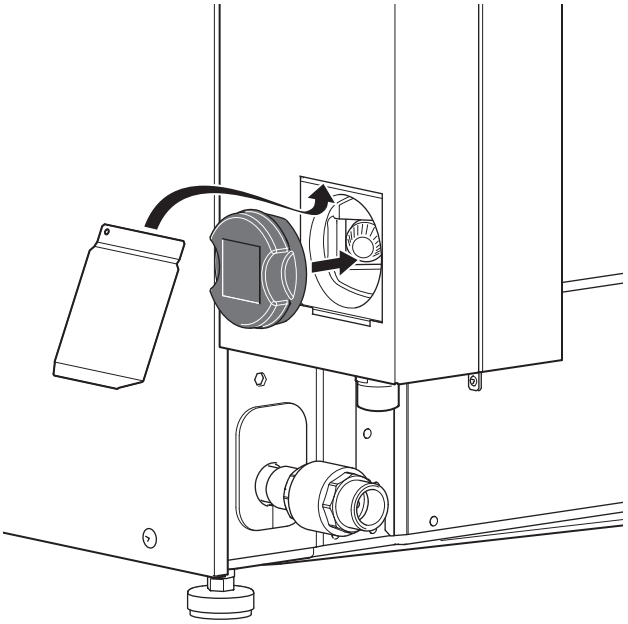
8. Put the lid on. Secure with three screws. Two screws in the lid, on the right and left-hand sides, and one screw in the bottom.



9. Secure the gas separator to the heat pump using two screws, one at the top and one at the bottom.

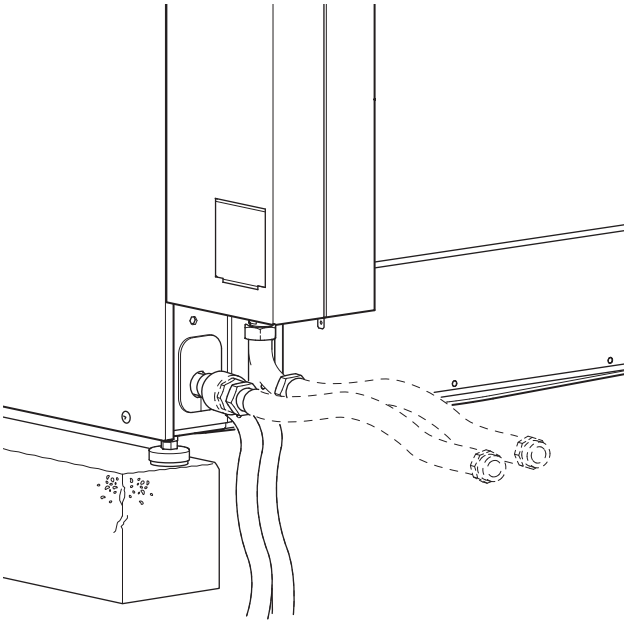


10. Install the lid that conceals the safety valve.

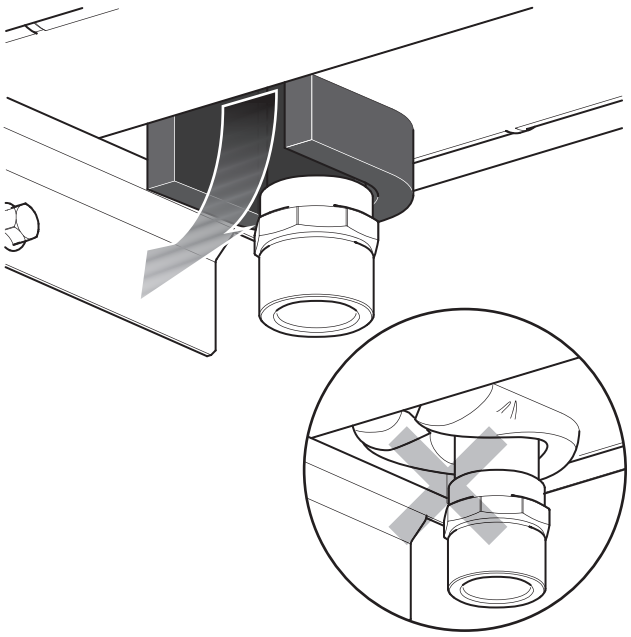


11. Screw the flexible pipes into place. The flexible pipes can be installed angled straight back or down, depending on which of the pipe connections the 90° bend is installed on. Install the flexible pipes with a slight bend, so they can absorb any vibrations that would otherwise be propagated through the building.

> *NOTE*
>
> Don't forget the flat gaskets.



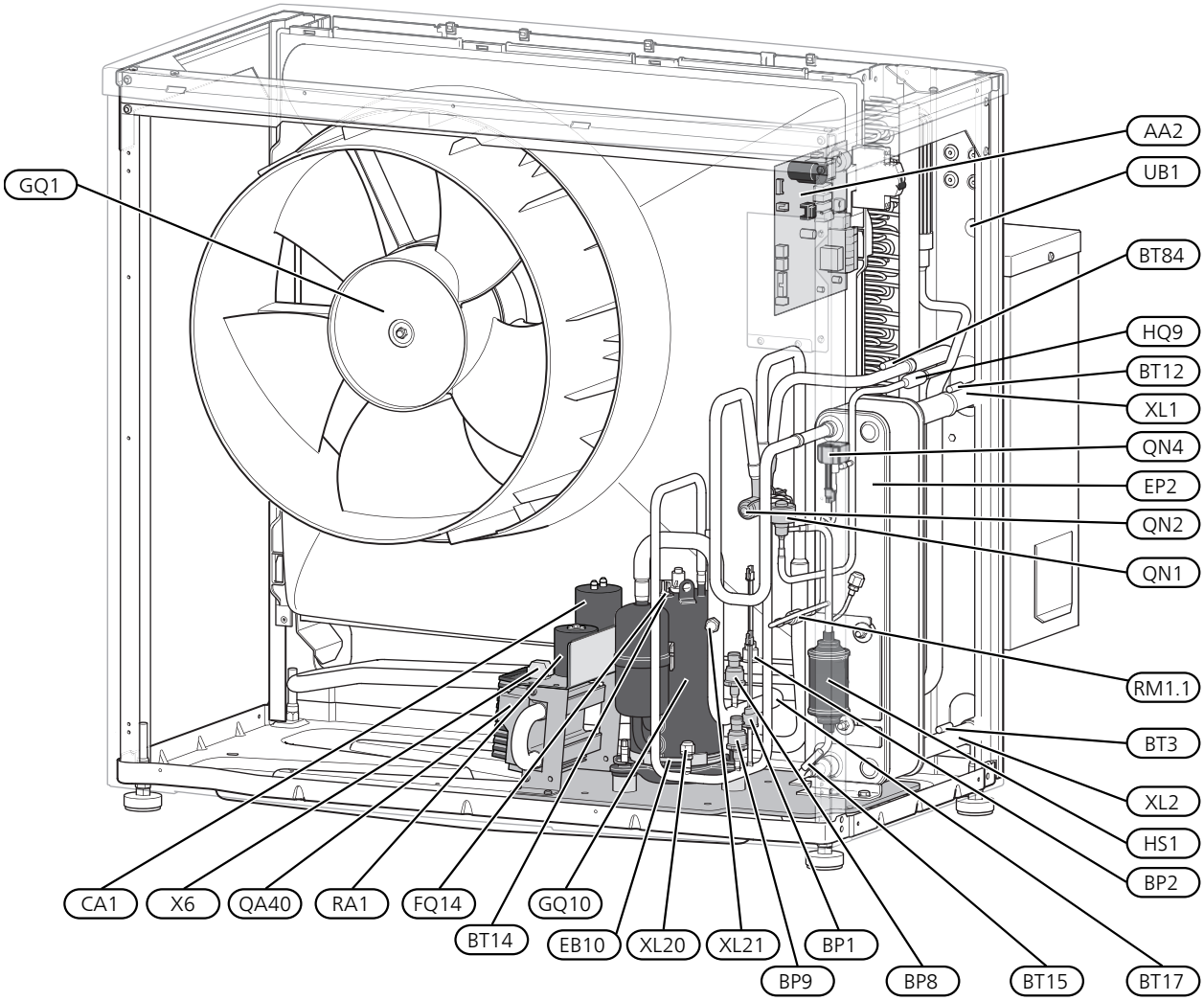
12. Check that there is an opening in the insulation, to allow any liquid and gas from the safety valve and the gas separator to escape.



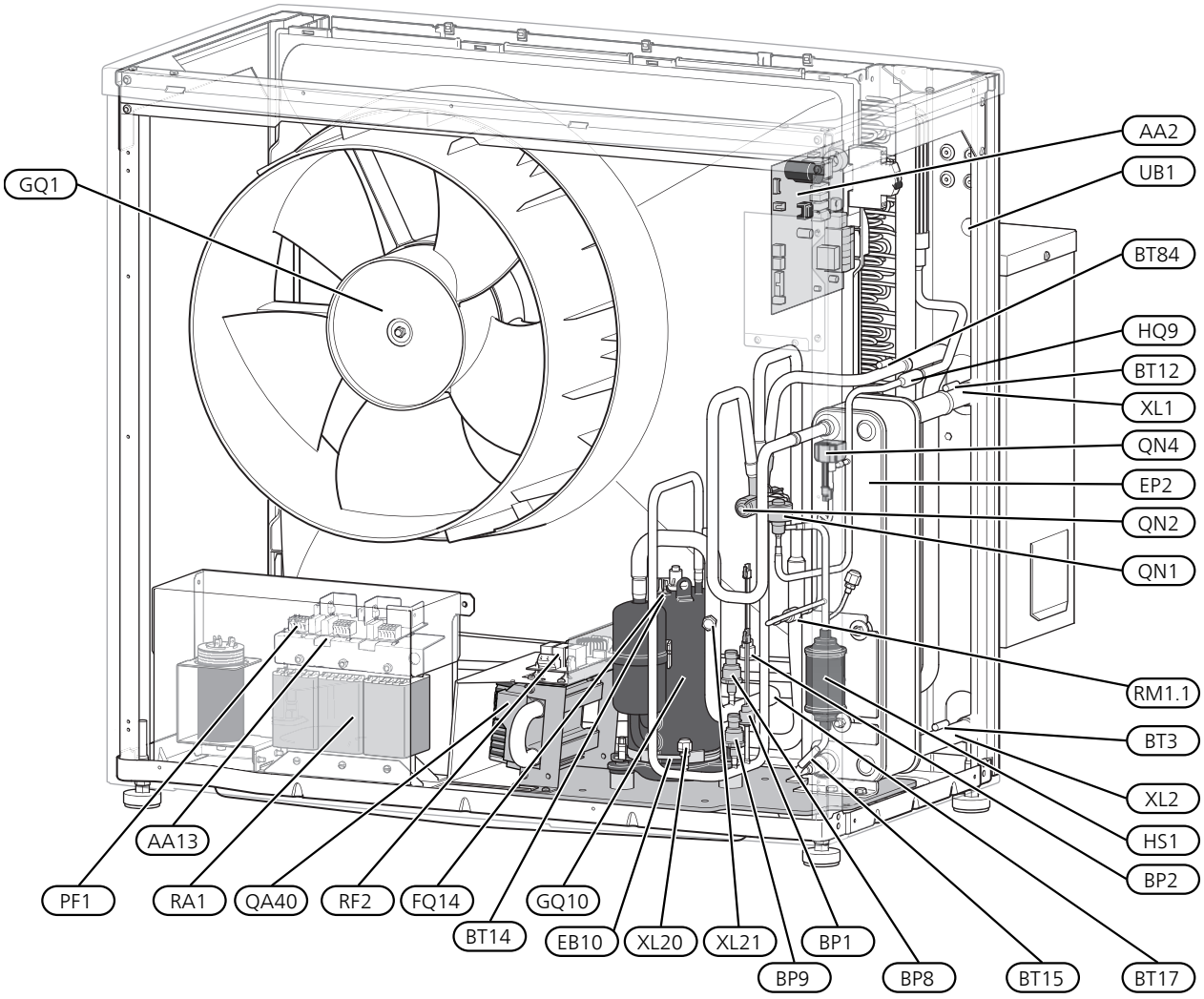
3 The heat pump design

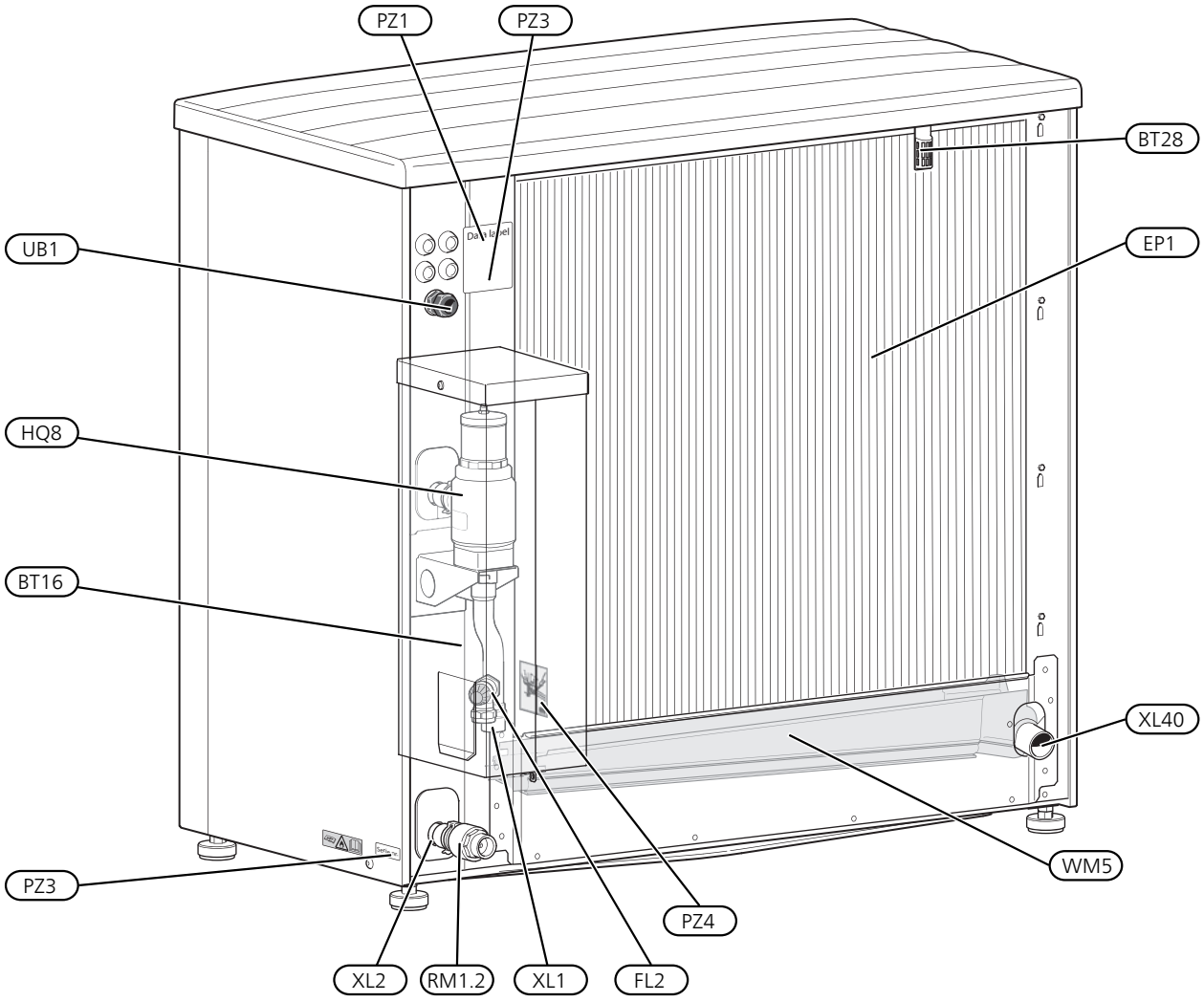
General

S2125 (1x230V)



S2125 (3x400V)




PZ1
PZ3
BT28
UB1
EP1
HQ8
BT16
XL40
WM5
PZ3
PZ4
XL2
RM1.2
XL1
FL2

PIPE CONNECTIONS

XL1	Connection, heating medium out of S2125
XL2	Connection, heating medium in to S2125,
XL20	Service connection, high pressure
XL21	Service connection, low pressure
XL40	Connection, drain condensation water trough

HVAC COMPONENTS

FL2	Safety valve, heating medium
HQ8	Automatic gas separator
RM1.2	Non-return valve
WM5	Condensation water trough

SENSORS ETC.

BP1	High pressure pressostat
BP2	Low pressure pressostat
BP8	Low pressure transmitter
BP9	High pressure sensor
BT3	Temperature sensor, return
BT12	Temperature sensor, condenser supply line
BT14	Temperature sensor, hot gas
BT15	Temperature sensor, fluid pipe
BT16	Temperature sensor, evaporator
BT17	Temperature sensor, suction gas
BT28	Temperature sensor, ambient
BT84	Temperature sensor, suction gas evaporator

ELECTRICAL COMPONENTS

AA2	Base card
AA13	Triac board
CA1	Capacitor (1x230V)
EB10	Compressor heater
FQ14	Temperature limiter, compressor
GQ1	Fan
PF1	Signal lamp (LED 201)
QA40	Inverter
RA1	Harmonic filter (3x400V)
RA1	Choke (1x230V)
RF2	EMC filter (3x400V)
X6	Terminal block (1x230V)

COOLING COMPONENTS

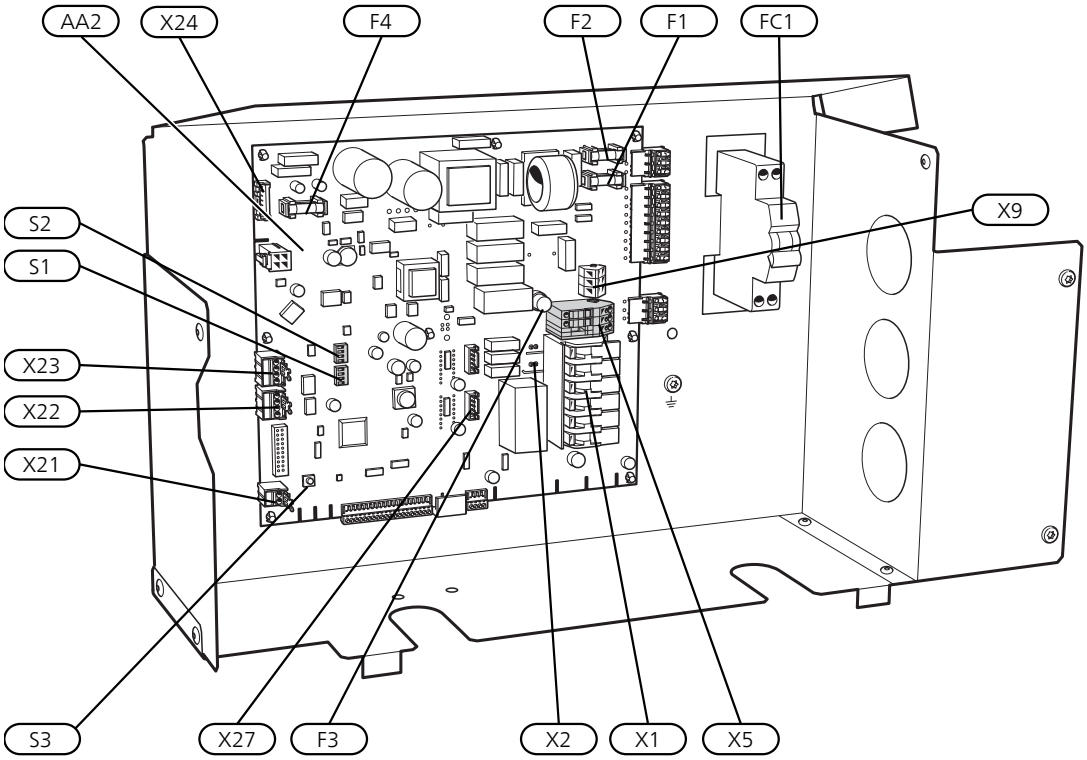
EP1	Evaporator
EP2	Condenser
GQ10	Compressor
HQ9	Particle filter
HS1	Drying filter
QN1	Expansion valve
QN2	4-way valve
QN4	Bypass valve
RM1.1	Non-return valve

MISCELLANEOUS

PZ1	Type plate
PZ3	Serial number
PZ4	Sign, pipe connections
UB1	Cable gland, incoming supply

Designations according to standard EN 81346-2.

Distribution box

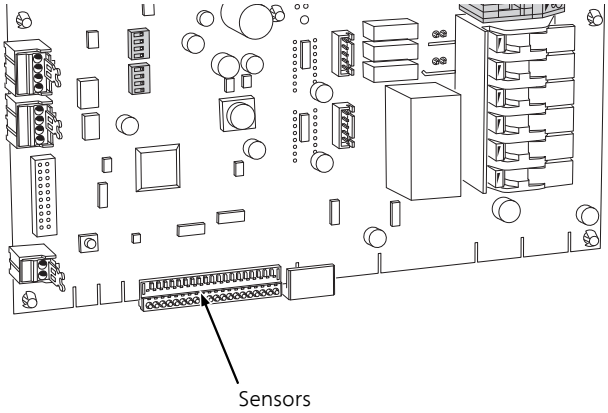


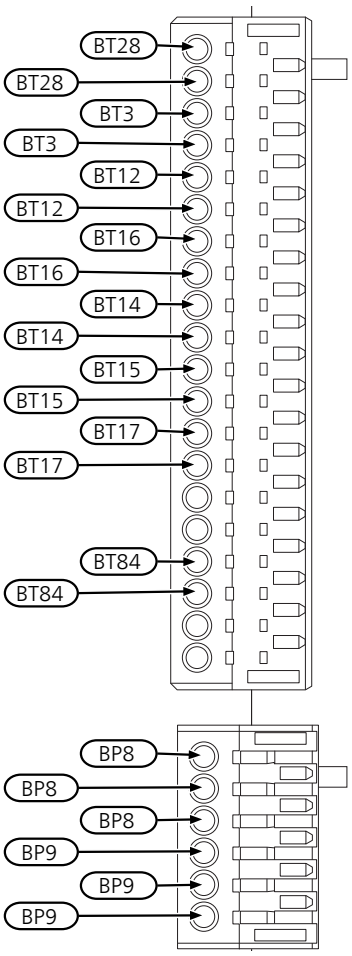
ELECTRICAL COMPONENTS

AA2 Base card
- X1 Terminal block, incoming supply
- X2 Terminal block, compressor supply
- X5 Terminal block, external control voltage
- X9 Terminal block, connection KVR
- X21 Terminal block, Compressor blocking, Tariff
- X22 Terminal block, communications
- X23 Terminal block, communications
- X24 Terminal block, fan
- X27 Terminal block, expansion valve QN1

F1 Fuse, operating 230V~, 4A
F2 Fuse, operating 230V~, 4A
F3 Fuse for external heating cable, KVR, 250mA
F4 Fuse, fan, 4A
FC1 Miniature circuit-breaker (Replaced with automatic protection (FB1) when installing accessory KVR 11.)
S1 DIP switch, addressing heat pump during multi operation
S2 DIP switch, different options
S3 Reset button

Sensor placement





BP8 Low pressure transmitter
BP9 High pressure sensor
BT3 Temperature sensor, return
BT12 Temperature sensor, condenser supply line
BT14 Temperature sensor, hot gas
BT15 Temperature sensor, fluid pipe
BT16 Temperature sensor, evaporator
BT17 Temperature sensor, suction gas
BT28 Temperature sensor, ambient
BT84 Temperature sensor, suction gas, evaporator

4 Pipe connections

General

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

The pipe dimension should not be less than the recommended pipe diameter according to the table. However, each system must be dimensioned individually to manage 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)*
S2125-8 (1x230V)	0.32	25	28
S2125-8 (3x400V)			
S2125-12 (1x230V)			
S2125-12 (3x400V)			

NOTE

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

S2125 can only operate up to a return temperature of about 65 °C and an outgoing temperature of about 75 °C from the heat pump.

S2125 is not equipped with external shut off valves on the water side; these must be installed to facilitate any future servicing. The return temperature is limited by the return line sensor.

WATER VOLUMES

To avoid short operating times and to enable defrosting, a certain available water volume is required. For the optimum operation of S2125, a minimum available water volume of 120 litres is recommended. This applies separately to heating and cooling systems.

NOTE

The pipe installation must be flushed out before the heat pump is connected so debris cannot damage component parts.

Symbol key

Symbol	*Meaning*
	Shut-off valve
	Tapping valve
	Non-return valve
	Circulation pump
	Expansion vessel
	Filterball
	Pressure gauge
	Safety valve
	Trim valve
	Reversing valve/shunt
	Control module
	Air/water heat pump
	Radiator system
	Domestic hot water
	Water heater

Pipe coupling, heating medium

You can find a list of compatible products in the section "Compatible indoor modules (HWM) and control modules (SMO)".

> *Caution*
>
> There is a difference between connection to a control module compared with connection to an indoor module. See also the Installer Manual for your control module/indoor module.

The heat pump is vented automatically with the aid of the gas separator. The gas separator closes automatically when the valve housing has been vented and filled with liquid.

Install as follows:

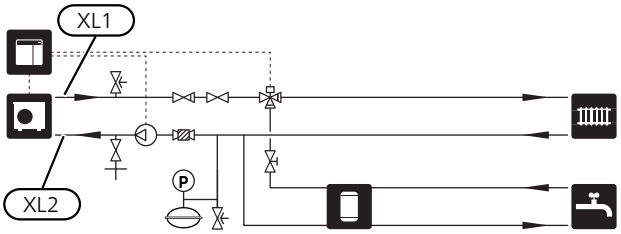
- pressure relief valve
- drain valve and shut-off valves

  For emptying the heat pump during prolonged power failures.
- non-return valve
- charge pump
- expansion vessel
- pressure gauge
- enclosed filterball

  Installed before the inlet, i.e. the lower connection (XL2) on the heat pump.
- reversing valve.

  When connecting to the control module, and if the system is to be able to work with both the climate system and the hot water heater.
- trim valve

  When connecting to control module and hot water heater.



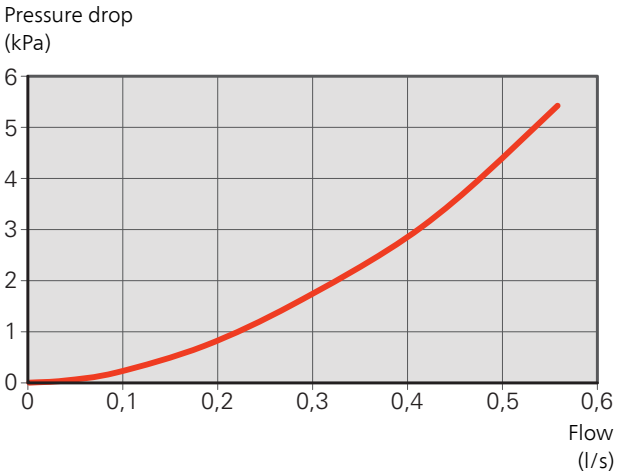
The image shows connection to the control module.

CHARGE PUMP

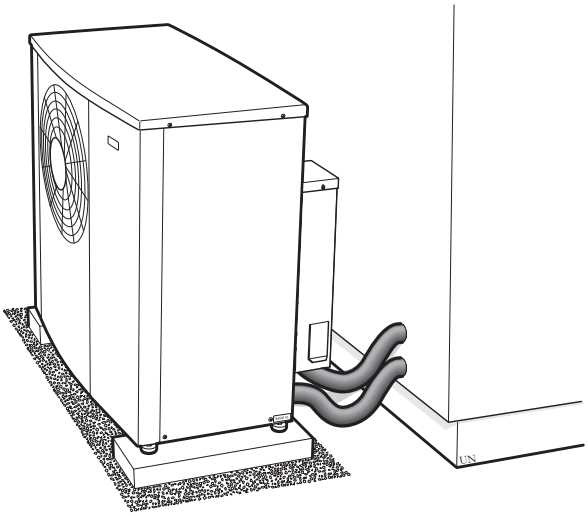
The charge pump (not included in the product) is powered and controlled from the indoor module/control module. It has a built-in frost protection function and, for this reason, must not be switched off when there is a risk of freezing.

At temperatures below +2 °C the charge pump runs periodically, to prevent the water from freezing in the charge circuit. The function also protects against excess temperatures in the charge circuit.

PRESSURE DROP, CONDENSER



PIPE INSULATION



All outdoor pipes must be insulated with at least 19 mm thick pipe insulation.

5 Electrical connections

General

- Electrical installation and wiring must be carried out in accordance with national provisions.
- Disconnect S2125 before insulation testing the house wiring.
- If a miniature circuit breaker is used, this must have motor characteristic "C" as a minimum. See section "Technical specifications" for fuse size.
- If the building is equipped with an RCD, S2125 must be equipped with a separate one.
- S2125 must be installed via an isolator switch. The cable area has to be dimensioned based on the fuse rating used.

  The RCD should have a nominal tripping current of no more than 30 mA. The incoming supply must be 400V 3N~ 50Hz via an electrical distribution unit with fuses.

  For 230V~ 50Hz, the incoming supply must be 230V~ 50Hz via distribution box with fuses.
- The routing of cables for heavy current and signals should be made out through the cable glands on the heat pump's right-hand side, seen from the front.
- The communication cable must be a screened cable with three conductors.
- Connect the charge pump to the control module. See where the charge pump is to be connected in the Installer Manual for your control module.

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.

NOTE

Check the connections, main voltage and phase voltage before the product is started, to prevent damage to the heat pump electronics.

NOTE

The live external control must be taken into consideration when connecting.

NOTE

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

NOTE

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

NOTE

To prevent interference, sensor cables to external connections must not be laid close to high voltage cables.

Accessibility, electrical connection

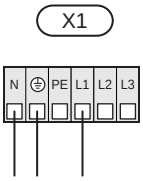
See section "Removing the side panel and top panel".

Connections

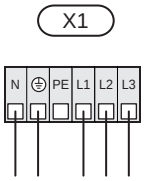
POWER CONNECTION

The enclosed cable (length 1.8 m) for incoming electricity is connected to terminal block X1. Outside the heat pump there is approx. 1.8 m of cable available.

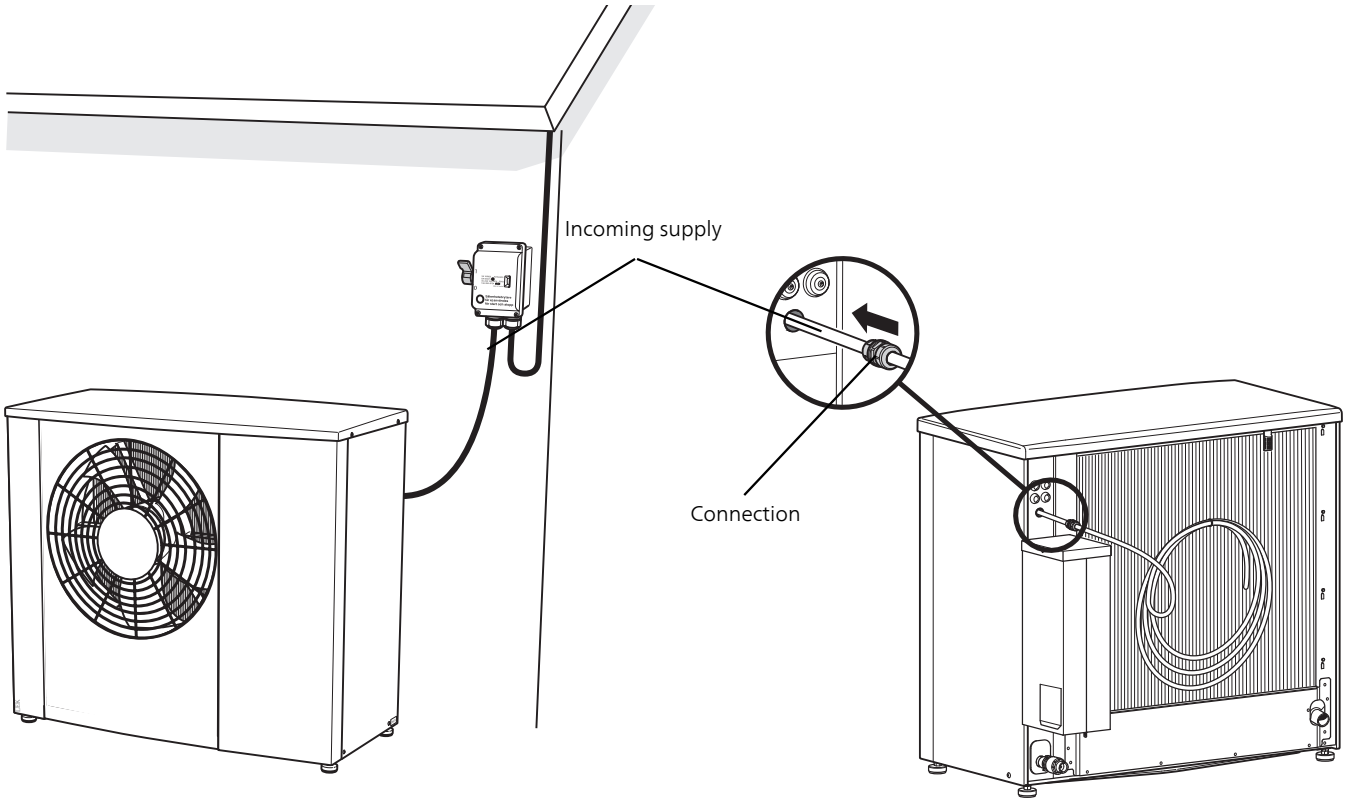
Connection 1 x 230 V



Connection 3 x 400 V



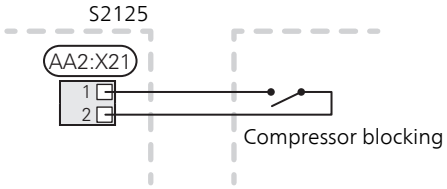
At installation, install the screwed connection on the rear of the heat pump. The part of the screwed joint that tensions the cable must be tightened to a tightening torque above 3.5Nm.



TARIFF CONTROL

If the control is to be supplied separately from other components in the heat pump (e.g. for tariff connection), a separate operating cable must be connected to terminal block (X5).

If external control voltage is used during tariff control, connect a closing contact to connection X21:1 and X21:2 (compressor blocking) to prevent an alarm. Compressor blocking must be performed either on the indoor module/control module or on the air/water heat pump, not on both simultaneously.

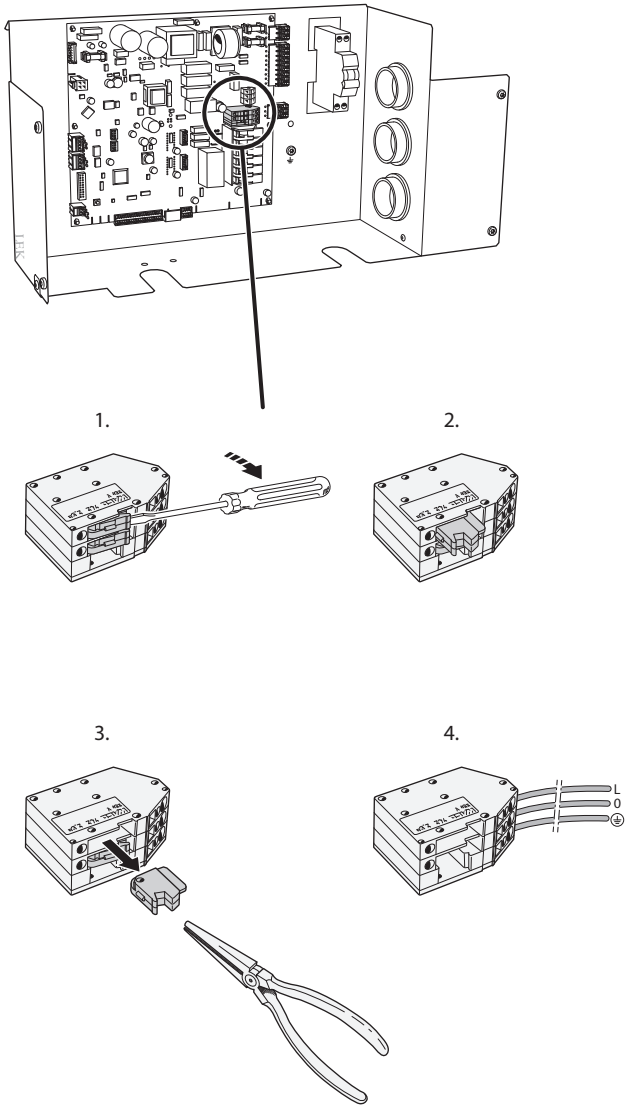


CONNECTING EXTERNAL CONTROL VOLTAGE

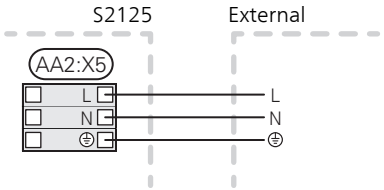
NOTE

Mark up any junction boxes with warnings for external voltage.

When connecting external control voltage, remove the bridges from terminal block X5 (see image).



Connect external control voltage (230V~ 50Hz) to terminal block X5:L, X5:N and X5:PE (as illustrated).



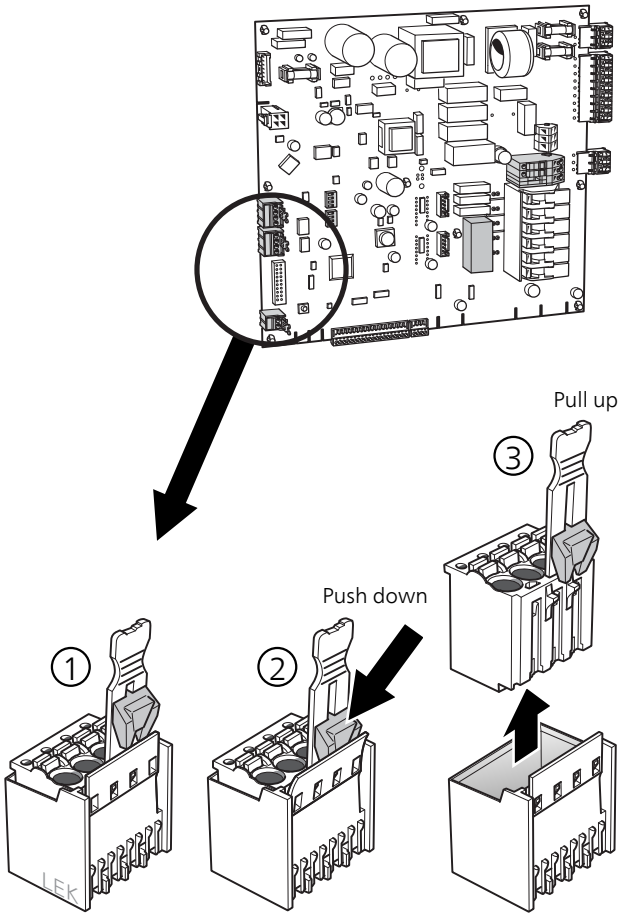
COMMUNICATION

Software version

In order for S2125 to be able to communicate with indoor module (VVM)/control module (SMO), you may need to update to a more recent software version.

Disconnect the connections in S2125

When connecting communication to an indoor module/control module, you need to disconnect the connectors in S2125.

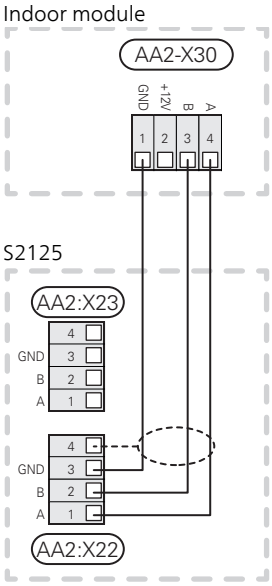


Connection to indoor module/control module

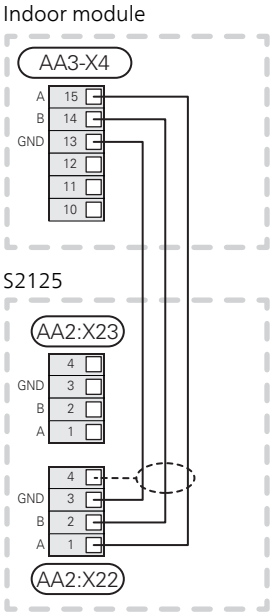
S2125 communicates with NIBE indoor modules/control modules by connecting a three-core, screened cable (max area 0.75 mm²) to terminal block X22:1–4.

For connection of indoor module/control module, see relevant manual on nibe.eu.

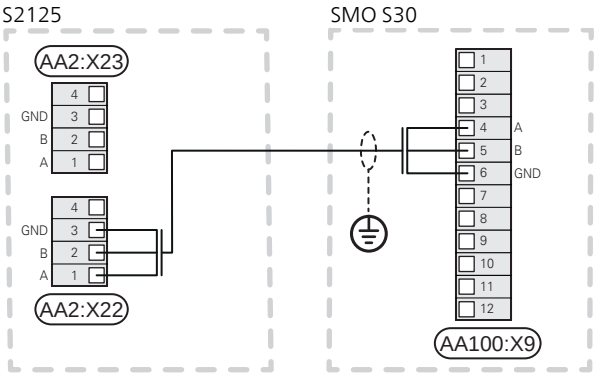
VVM S



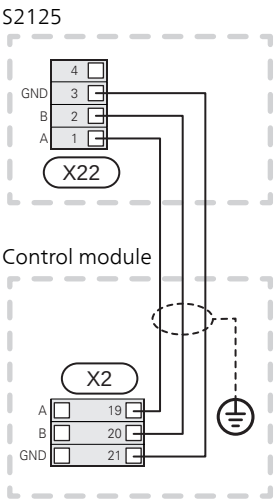
VVM



SMO S30



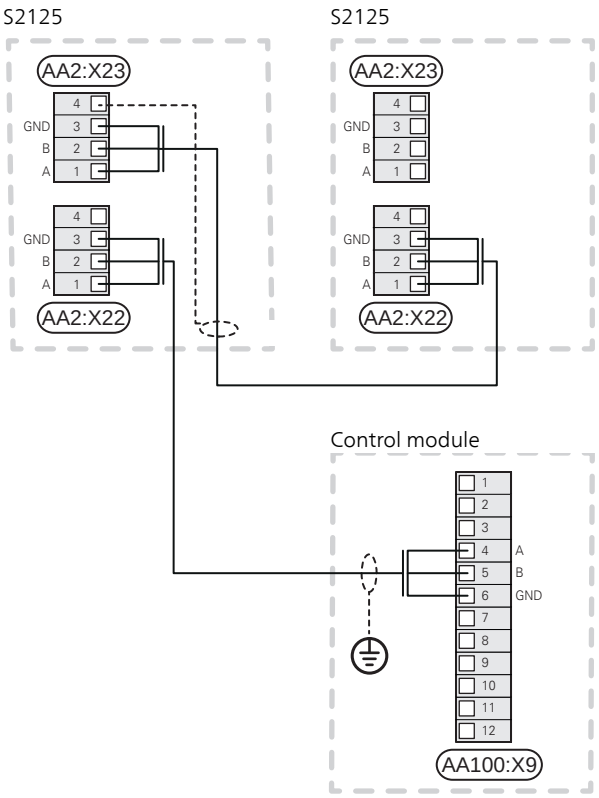
SMO 20



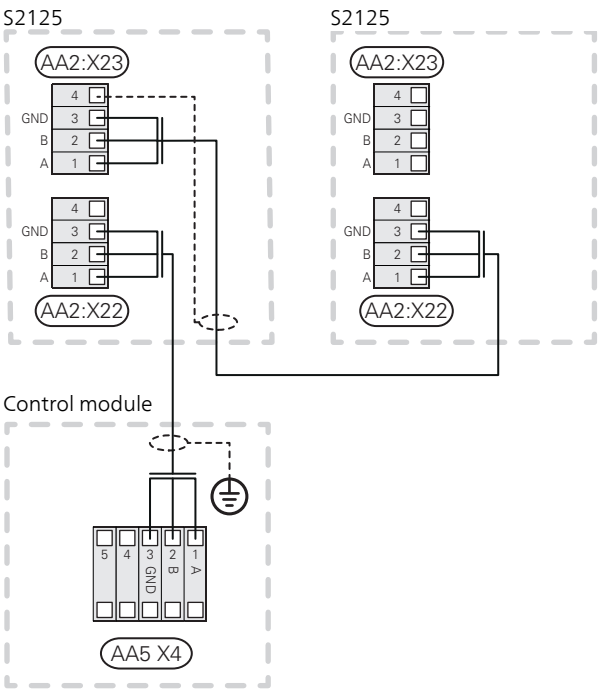
Cascade connection

For cascade connection, connect terminal block X23 with the next heat pump's terminal block X22.

SMO S40



SMO 40



COOLING

S2125 can supply cooling with cooling supply down to +7°C.

Caution

DIP S1 position 4 must be changed to ON in order to run cooling

CONFIGURATION USING DIP SWITCH

The communication address for S2125 to the indoor module / control module is selected on the base board (AA2). DIP switch S1 is used for configuration of address and functions. For cascade operation with SMO for example, addressing is required. S2125 has the address **1** as standard. In a cascade connection all S2125 must have a unique address. The address is coded in binary.

NOTE

Only change the DIP switches position when the product is not powered.

DIP S1 position (1 / 2 / 3)	*Slave*	*Address (com)*	*Default setting*
off / off / off	Slave 1	01	OFF
on / off / off	Slave 2	02	OFF
off / on / off	Slave 3	03	OFF
on / on / off	Slave 4	04	OFF
off / off / on	Slave 5	05	OFF
on / off / on	Slave 6	06	OFF
off / on / on	Slave 7	07	OFF
on / on / on	Slave 8	08	OFF

DIP S1 position	*Setting*	*Function*	*Default setting*
4	ON	Permits cooling	OFF

DIP S2 position	*Setting*	*Default setting*
1	OFF	OFF
2	OFF	OFF
3	OFF	OFF
4	OFF	OFF

Switch S3 is the reset button that restarts control.

CONNECTING ACCESSORIES

Instructions for connecting accessories can be found in the installation instructions provided for the respective accessory. See section "Accessories" for a list of the accessories that can be used with S2125.

6 Commissioning and adjusting

Preparations

Caution

Check the miniature circuit-breaker (FC1). It could have tripped during transport.

NOTE

Do not start S2125 if there is a risk that the water in the system has frozen.

COMPRESSOR HEATER

S2125 is equipped with a compressor heater that heats the compressor before start-up and when the compressor is cold.

Compressor heater (EB10) is activated when the heat pump is connected to the supply voltage. The compressor needs to be heated up before starting for the first time. From the time the indoor module/control module is connected and a heating demand arises, it may take a while before the compressor reaches the permitted start value.

NOTE

The compressor heater must have been active for a while, prior to starting for the first time, until the discharge sensor (BT14) has reached its set temperature, see section "Start-up and inspection".

Filling and venting

Fill the heating system to the necessary pressure. The heat pump is equpped with an automatic venting valve, which closes when the heat pump is filled with liquid.

Start-up and inspection

1. Communication cable must be connected.
2. If cooling operation with S2125 is wanted, DIP switch S1 position 4 must be changed according to the description in section "Cooling".
3. Turn the isolator switch on.
4. Ensure that the S2125 is connected to the power source.
5. Check that fuse (FC1) is on.
6. Reinstall the removed panels and cover.
7. After the power to S2125 has been switched on, and there is a compressor demand from the indoor module/control module, the compressor starts once it has warmed up.
8. Adjust the charge flow according to size. Also see section "Adjustment, charge flow".
9. Adjust menu settings via the indoor module/control module as necessary.
10. Fill in "Inspection of the installation", in section "Important information".

NOTE

The live external control must be taken into consideration when connecting.

Post adjustment and venting

Air is initially released from the hot water and venting may be necessary. If bubbling sounds can be heard from the heat pump, the charge pump or radiators, the entire system requires further venting. When the system has stabilised (correct pressure and all air eliminated), the automatic heating control system can be set as required.

Adjustment, charge flow

For correct function of the heat pump over the entire year, the charge flow must be correctly adjusted.

If an NIBE indoor module VVM or accessory controlled charge pump is used for the control module SMO, the control tries to maintain an optimal flow across the heat pump.

Adjustment may be required, especially for charging a separate water heater. It is therefore recommended to have the option of adjusting the flow across the water heater using a trim valve.

1. Recommendation if there is insufficient hot water and information message "high condenser out" during hot water charging: increase the flow
2. Recommendation if there is insufficient hot water and information message "high condenser in" during hot water charging: reduce the flow

7 Control

General

S2125 is equipped with an internal electronic controller that handles all functions necessary for operation of the heat pump, e. g. defrosting, stop at max/min temperature, connection of the compressor heater, and protective functions during operation.

The integrated control shows information via status-LEDs and can be used during servicing.

Under normal operating conditions the home owner does not need to have access to the controller.

S2125 communicates with the NIBE indoor module/control module, which means that all settings and measurement values from S2125 are adjusted and read off on the indoor module/control module.

Caution

The main product's software must be the latest version.

LED status

The base board (AA2) has six status LEDs for easy control and troubleshooting.

LED	*State*	*Explanation*
PWR (green)	Not lit	Control board without power
	Continuous light	Control board power on
CPU (green)	Not lit	CPU without power
	Flashes	CPU running
	Continuous light	CPU not running correctly
EXT COM (green)	Not lit	No communication with indoor module/control module
	Flashes	Communication with indoor module/control module
INT COM (green)	Not lit	No communication with inverter
	Flashes	Communication with inverter
DEFROST (green)	Not lit	Neither defrosting nor protection is active
	Flashes	Some protection is active
	Continuous light	Defrosting in progress
ERROR (red)	Not lit	No errors
	Flashes	Info alarm (temporary), active
	Continuous light	Continuous alarm, active
K1, K2, K3, K4, K5	Not lit	Relay in de-energised position
	Continuous light	Relay engaged
N-RELAY		No function
COMPR. ON		No function
PWR-INV (green)	Not lit	Inverter without power
	Continuous light	Inverter has power

HARMONIC FILTER (RA1)

Harmonic filter (RA1) has a status LED for easy control and troubleshooting.

When the compressor is in operation, LED 201 is lit with a steady light.

LED	*State*	*Explanation*
LED 201 (red)	Not lit	Capacitor disconnected
	Continuous light	Capacitor connected

Master control

To control S2125, a NIBE indoor module/control module is required, which calls upon S2125 according to demand. All settings for S2125 are made via the indoor module/control module. It also shows the status and sensor values from S2125.

Description	*Unit*	*Value*	*Parameter space*
Cut-out value activation passive defrosting	°C	4	4 – 14
Start temperature BT16 to calculate index	°C	-3	-5 – 5
Permit fan de-icing	(1 / 0)	No	Yes / No
Permit silent mode	(1 / 0)	No	Yes / No
Permit defrost more often	(1 / 0)	No	Yes / No

Control conditions

CONTROL CONDITIONS DEFROSTING

- If the temperature of the evaporator sensor (BT16) is below the start temperature for the defrosting function, S2125 counts the time to "active defrosting" for each minute that the compressor is running, to create a defrosting requirement.
- Time until "active defrosting" is shown in minutes on the indoor module / control module. Defrosting starts when this value is 0 minutes.
- "Passive defrosting" is started, if the compressor requirement has been fulfilled, at the same time as there is a defrosting requirement and the outdoor temperature (BT28)is greater than 4 °C.
- Defrosting occurs actively (with compressor on and fan off) or passively (with compressor off and fan on).
- If the evaporator is too cold, a "safety defrost" starts. This defrosting can start earlier than the normal defrosting. If the safety defrosting occurs ten times in a row, the evaporator (EP1) on S2125 must be checked, which is indicated by an alarm.
- If "de-icing fan" is activated in the indoor module/control module, "de-icing fan" starts at the next "active defrosting". "De-icing fan" removes the build-up of ice on the fan blades and the front fan grille.

Active defrosting:

1. The four way valve shifts to defrosting.
2. The fan stops and the compressor continues to run.
3. When defrosting is complete, the four-way valve switches back to heating operation. The compressor speed is locked for a short period.
4. The ambient temperature is locked and the high return temperature alarm is blocked for two minutes after defrosting.

Passive defrosting:

1. If there is no compressor demand, passive defrosting can start.
2. The four-way valve does not shift.
3. Fan runs at high speed.
4. If there is a compressor demand, passive defrosting stops and the compressor starts.
5. When passive defrosting is complete, the fan stops.
6. The ambient temperature is locked and the high return temperature alarm is blocked for two minutes after defrosting.

Control - Heat pump EB101

S-SERIES – VVM S / SMO S

These settings are made on the display on the indoor module/control module.

Menu 7.3.2 - Installed heat pump

Here, you make specific settings for the installed heat pump.

Silent mode permitted

Setting range: on/off

Max. frequency 1

Setting range: 25 – 120 Hz

Max. frequency 2

Setting range: 25 – 120 Hz

Compressor phase

Setting range S2125 1 x 230 V: L1, L2, L3

Detect compressor phase

Setting range S2125 1 x 230 V: off/on

Current limit

Setting range S2125 1 x 230 V: off/on

Max. current

Setting range S2125 1 x 230 V: 6 – 32 A

blockFreq 1

Setting range: on/off

From frequency

Setting range: 25 – 117 Hz

To frequency

Setting range: 28 – 120 Hz

blockFreq 2

Setting range: on/off

From frequency

Setting range: 25 – 117 Hz

To frequency

Setting range: 28 – 120 Hz

Defrosting

Start manual defrosting

Setting range: on/off

Start temperature for defrost function

Setting range: -3 – 3 °C

Cut-out value activation passive defrosting

Setting range: 2 – 10 °C

Defrost more often

Alternatives: Yes / No

Silent mode permitted: Here, you set whether silent mode is to be activated for the heat pump. Please note that you now have the option to schedule when silent mode will be active.

The function should only be used for limited periods, because S2125 possibly may not reach its dimensioned output.

Detect compressor phase: This shows in which the phase the heat pump has detected whether you have S2125 230V~50Hz. Phase detection normally occurs automatically in connection with start-up of the indoor module/control module. This setting can be changed manually.

Current limitation: Here, you set whether the current limitation function will be activated for the heat pump, if you have S2125 230V~50Hz. During active function, you can limit the value of the maximum current.

BlockFreq 1: Here, you can select a frequency range within which the heat pump is not permitted to work. This function can be used if certain compressor speeds cause noise disturbance in the house.

BlockFreq 2: Here, you can select a frequency range within which the heat pump is not permitted to work.

Defrosting: Here, you can change the settings that affect the defrost function.

Start manual defrosting: Here, you can manually start an "active defrosting", if the function needs to be tested for servicing or if necessary. This can be justified together with "fan de-icing".

Start temperature for defrost function: Here, you set the temperature (BT16) at which the defrost function will start. The value must only be changed in consultation with the installer.

Cut-out value activation passive defrosting: Here, you set the temperature (BT28) at which "passive defrosting" will be activated. During passive defrosting, the ice is melted by the energy from the ambient air. The fan is active during passive defrosting. The value must only be changed in consultation with the installer.

Defrost more often: Here, you activate whether defrosting will occur more frequently than normal. This selection can be made if the heat pump receives an alarm due to build-up of ice during operation caused, for example, by snow.

Menu 4.11.3 - Fan de-icing

Fan de-icing

Setting range: off/on

Continuous fan de-icing

Setting range: off/on

Fan de-icing: Here, you set whether the "fan de-icing" function will be activated during the next "active defrosting". This can be activated if ice/snow sticks to the fan, grille or fan cone, which may be noticed due to abnormal fan noise from S2125.

"Fan de-icing" means that the fan, grille and fan cone are heated using hot air from the evaporator (EP1).

Continuous fan de-icing: There is the option to set recurring de-icing. In this case, every tenth defrosting will be "Fan de-icing". (This can increase annual energy consumption.)

F-SERIES – VVM / SMO

These settings are made on the display on the indoor module/control module.

Menu 5.11.1.1 - heat pump

Here, you make specific settings for the installed heat pump.

Silent mode permitted

Setting range: yes / no

Detect compressor phase

Setting range S2125 1 x 230 V: off/on

Current limit

Setting range: 6 – 32 A

Factory setting: 32 A

blockFreq 1

Setting range: yes / no

blockFreq 2

Setting range: yes / no

Defrosting

Start manual defrosting

Setting range: on/off

Start temperature for defrost function

Setting range: -3 – 3 °C

Factory setting: -3 °C

Cut-out value activation passive defrosting

Setting range: 2 – 10 °C

Factory setting: 4 °C

Defrost more often

Setting range: Yes / No

Silent mode permitted: Here, you set whether silent mode is to be activated for the heat pump. Please note that you now have the option to schedule when silent mode will be active.

The function should only be used for limited periods, because S2125 possibly may not reach its dimensioned output.

Detect compressor phase: This shows in which the phase the heat pump has detected whether you have S2125 230V~50Hz. Phase detection normally occurs automatically in connection with start-up of the indoor module/control module. This setting can be changed manually.

Current limitation: Here, you set whether the current limitation function will be activated for the heat pump, if you have S2125 230V~50Hz. During active function, you can limit the value of the maximum current.

BlockFreq 1: Here, you can select a frequency range within which the heat pump is not permitted to work. This function can be used if certain compressor speeds cause noise disturbance in the house.

BlockFreq 2: Here, you can select a frequency range within which the heat pump is not permitted to work.

Defrosting: Here, you can change the settings that affect the defrost function.

Start manual defrosting: Here, you can manually start an "active defrosting", if the function needs to be tested for servicing or if necessary. This can be justified together with "fan de-icing".

Start temperature for defrost function: Here, you set the temperature (BT16) at which the defrost function will start. The value must only be changed in consultation with the installer.

Cut-out value activation passive defrosting: Here, you set the temperature (BT28) at which "passive defrosting" will be activated. During passive defrosting, the ice is melted by the energy from the ambient air. The fan is active during passive defrosting. The value must only be changed in consultation with the installer.

Defrost more often: Here, you activate whether defrosting will occur more frequently than normal. This selection can be made if the heat pump receives an alarm due to build-up of ice during operation caused, for example, by snow.

Menu 4.9.7 - tools

Fan de-icing

Setting range: off/on

Continuous fan de-icing

Setting range: off/on

Fan de-icing: Here, you set whether the "fan de-icing" function will be activated during the next "active defrosting". This can be activated if ice/snow sticks to the fan, grille or fan cone, which may be noticed due to abnormal fan noise from S2125.

"Fan de-icing" means that the fan, grille and fan cone are heated using hot air from the evaporator (EP1).

Continuous fan de-icing: There is the option to set recurring de-icing. In this case, every tenth defrosting will be "Fan de-icing". (This can increase annual energy consumption.)

8 Disturbances in comfort

In most cases, the indoor module/control module notes a malfunction (a malfunction can lead to disturbance in comfort) and indicates this with alarms and action instructions in the display.

Troubleshooting

NOTE

In the event of action to rectify malfunctions that require work within screwed hatches, the incoming supply electricity must be isolated at the safety switch by or under the supervision of a qualified electrician.

Caution

Alarms are acknowledged on the indoor module / control module (VVM / SMO).

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

BASIC ACTIONS

Start by checking the following:

- All supply cables to the heat pump are connected.
- Group and main fuses of the accommodation.
- The property's earth circuit breaker.
- The heat pump's fuse / automatic protection (FC1 / FB1). (FB1 only if KVR is installed.)
- The indoor module's/control module's fuses.
- The indoor module's/control module's temperature limiters.

S2125 DOES NOT START

- There is no demand.
  - The indoor module/control module does not call on heating, cooling or hot water.
- Compressor blocked due to the temperature conditions.
  - Wait until the temperature is within the product's working range.
- Minimum time between compressor starts has not been reached.
  - Wait for at least 30 minutes and then check if the compressor has started.
- Alarm tripped.
  - Follow the display instructions.

S2125 NOT COMMUNICATING

- Check that S2125 is correctly installed in the indoor module (VVM) or the control module (SMO).
- Check that the communication cable is correctly connected and working.

LOW HOT WATER TEMPERATURE OR A LACK OF HOT WATER

Caution

The hot water is always set on the indoor module (VVM) or the control module (SMO).

This part of the fault-tracing chapter only applies if the heat pump is docked to the hot water heater.

- Large hot water consumption.
  - Wait until the hot water has heated up.
- Incorrect hot water settings in indoor module or control module.
  - See the manual for the indoor module/control module.
- Clogged particle filter.
  - Switch off the system. Check and clean the particle filter.

LOW ROOM TEMPERATURE

- Closed thermostats in several rooms.
  - Set the thermostats to max in as many rooms as possible.
- Incorrect settings in indoor module or control module.
  - See the manual for the indoor module / control module (VVM / SMO).
- Air-filled radiators/underfloor heating coils.
  - Bleed the system.

HIGH ROOM TEMPERATURE

- Incorrect settings in indoor module or control module.
  - See the manual for the indoor module or control module.

ICE BUILD-UP IN THE FAN, GRILLE AND/OR FAN CONE ON S2125

- Activate "fan de-icing" in the indoor module/control module. Alternatively "continuous fan de-icing" if the problem recurs.
- Check that the air flow across the evaporator is correct.

LARGE AMOUNT OF WATER BELOW S2125

- The accessory KVR 11 is required.
- If KVR 11 is installed, check that the water drainage flows freely.

ACTIVE DEFROSTING IS TERMINATED

There are several possible reasons for an active defrosting to end:

- If the temperature of the evaporator sensor has reached its stop value (normal stop).
- When defrosting has gone on for longer than 15 minutes. This may be due to too little energy in the heat source, too strong a wind effect on the evaporator and/or that the sensor on the evaporator is not correct and therefore displays too low a temperature (at cold outdoor air).
- When the temperature on the return line sensor, BT3, falls below 10 °C.
- If the temperature of the evaporator (BP8) falls below its lowest permitted value. After failing to defrost ten times, S2125 must be checked. This is indicated by an alarm.

Temperature sensor data

RETURN LINE (BT3), CONDENSER SUPPLY (BT12), LIQUID LINE (BT15)

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

DISCHARGE SENSOR (BT14)

Temperature (°C)	*Resistance (kOhm)*	*Voltage (V)*
40	118.7	4.81
45	96.13	4.77
50	78.30	4.72
55	64.11	4.66
60	52.76	4.59
65	43.64	4.51
70	36.26	4.43
75	30.27	4.33
80	25.38	4.22
85	21.37	4.10
90	18.07	3.97
95	15.33	3.83
100	13.06	3.68
105	11.17	3.52
110	9.59	3.36
115	8.26	3.19
120	7.13	3.01
125	6.18	2.84
130	5.37	2.67
135	4.69	2.50
140	4.10	2.33

EVAPORATOR SENSOR (BT16), AMBIENT SENSOR (BT28), SUCTION GAS SENSOR (BT17) AND SUCTION GAS, EVAPORATOR (BT84)

Temperature (°C)	*Resistance (kOhm)*	*Voltage (VDC)*
-50	77.58	4.71
-45	57.69	4.62
-40	43.34	4.51
-35	32.87	4.37
-30	25.17	4.21
-25	19.43	4.03
-20	15.13	3.82
-15	11.88	3.58
-10	9.392	3.33
-5	7.481	3.07
0	6.000	2.80
5	4.844	2.54
10	3.935	2.28
15	3.217	2.03
20	2.644	1.80
25	2.186	1.59
30	1.817	1.39
35	1.518	1.22
40	1.274	1.07
45	1.075	0.93
50	0.911	0.81
55	0.775	0.71
60	0.662	0.62
65	0.568	0.54
70	0.490	0.47
75	0.4233	0.41
80	0.367	0.36
85	0.320	0.32
90	0.280	0.28
95	0.245	0.25
100	0.216	0.22

Alarm list

Alarms VVM/SMO (S2125)	*Alarms S-series*	*Alarm text on the display*	*Description existing alarm*	*May be due to*
156 (80)	212	Low lp cooling	5 repeated alarms for low low-pressure within 4 hours.	Poor flow. Significant wind effect.
224 (182)	233	Fan alarm from heat pump	5 unsuccessful start attempt.	Fan blocked or not connected.
225 (8)	234	Exchange Sensors flow / return	Return is hotter than flow.	Connection, supply line return line switched around,
227 (34)	530	Sensor fault from heat pump	Sensor fault BT3.	Open-circuit or short-circuit on sensor input.
227 (36)	531		Sensor fault BT12.	
227 (38)	532		Sensor fault BT14.	
227 (40)	533		Sensor fault BT15.	
227 (42)	534		Sensor fault BT16.	
227 (44)	535		Sensor fault BT17.	
227 (46)	536		Sensor fault BT28.	
227 (50)	538		Sensor fault BP8.	
227 (52)	539		Sensor fault BP9.	
227 (56)	541		Sensor fault BT84.	
228 (2)	236	Unsuccessful defrosting	10 failed consecutive defrostings.	System temperature and/or flow too low. Insufficient available system volume. Significant wind effect.
229 (4)	237	Short run times for compressor	Operation is stopped from the indoor section after less than 5 minutes.	Poor flow, poor heat transfer. Incorrect settings for heating and/or hot water.
230 (78)	238	Hot gas alarm	3 repeated alarms for high discharge within 4 hours.	Disruption in the refrigerant circuit. Lack of refrigerant.
232 (76)	240	Low evaporation temp	5 repeated alarms for low evaporation temperature within 4 hours.	Lack of refrigerant. Blocked expansion valve. Significant wind effect.
264 (203)	254	Communication fault to Inverter	Alarm 203 from heat pump for 20 seconds.	Poor connection between PCB and inverter. Inverter unpowered or broken.
298 (92)	494	Fault in inverter. Heating not working.	The inverter has tried to heat up the compressor, but has failed.	Defective inverter. Discharge sensor (BT14) has come loose from its mount.
300 (94)	495	Sensor BT14 or BP9 loose or defective	Sensor BT14 or BP9 has come loose or is otherwise defective.	The discharge sensor, BT14, or high pressure sensor, BP9, has come loose and is not giving correct measurement values.

Alarms VVM/SMO (S2125)	*Alarms S-series*	*Alarm text on the display*	*Description existing alarm*	*May be due to*
341 (6)	291	Recurring safety defr.	10 repeated defrostings according to the protection conditions.	Poor airflow, e.g. because of leaves, snow or ice. Lack of refrigerant.
344 (72)	294	Recurring low pressure	5 repeated low pressure alarm within 4 hours.	Lack of refrigerant. Blocked expansion valve. Disruption in the refrigerant circuit.
346 (74)	295	Recurring high pressure	5 repeated high pressure alarm within 4 hours.	Clogged particle filter, air or stoppage in the heating medium flow. Poor system pressure.
400 (207) 400 (209) 400 (211) 400 (213)	314	Unspecified faults	Initiation fault, inverter. The inverter is not compatible Configuration file missing. Charge error configuration.	The inverter is not compatible
425 (108)	322	Persistent pressure switch or over-temperature alarm.	2 repeated LP/HP/FQ alarms within 2.5 hours.	Poor heating medium flow. Lack of refrigerant. For FQ14, the following applies: High temperature 120 °C compressor peak.
427 (110)	323	Safety stop, inverter	Temporary fault in inverter, 2 times within 60 minutes.	Disruption in supply voltage.
429 (112)	324	Safety stop, inverter	Temporary fault in inverter, 3 times within 2 hours.	Disruption in supply voltage.
437 (120)	328	Mains disturbance	Temporary fault in inverter, 3 times within 2 hours or continuously for 1 hour.	Disruption in supply voltage. Incorrect connection in the inverter's terminal block X5.
439 (122)	329	Overheated inverter	The inverter has temporarily reached max working temperature, due to poor cooling 3 times within 2 hours or continuously for 1 hour.	Poor cooling of inverter. Defective inverter.
441 (124)	330	Current too high	Current to inverter too high, 3 times within 2 hours or continuously for 1 hour.	Too high current to inverter. Low supply voltage.
443 (126)	331	Overheated inverter	The inverter has temporarily reached max working temperature, due to poor cooling 3 times within 2 hours or continuously for 1 hour.	Poor cooling of inverter. Defective inverter.
447 (130)	333	Phase failure	Compressor phase is missing, 3 times within 2 hours or continuously for 1 minute.	Disruption in supply voltage. Incorrectly connected compressor cable.
449 (132)	334	Failed compressor starts	Compressor does not start when required, 3 times within 2 hours.	Defective inverter. Defective compressor.
453 (136)	336	High current load, compressor	The output current from the inverter to the compressor has been temporarily too high 3 times within 2 hours or continuously for 1 hour.	Disruption in supply voltage. Poor heating medium flow. Defective compressor.

Alarms VVM/SMO (S2125)	*Alarms S-series*	*Alarm text on the display*	*Description existing alarm*	*May be due to*
455 (138)	337	High power load, compressor	The power output from the inverter has been too high 3 times within 2 hours or continuously for 1 hour.	Disruption in supply voltage. Poor heating medium flow. Defective compressor.
501 (184)	353	Failed start, no pressure diff.	The pressure difference between BP9 and BP8 has been too low at compressor start 3 times within 30 minutes.	Fault in pressure sensor BP8, BP9. The compressor does not compress the refrigerant sufficiently. Compressor breakdown.
503 (186)	354	Compressor speed too low	Compressor speed below lowest permitted speed.	The inverter's safety function reduces the speed outside of the compressor's working range.
523	418	Low defrosting flow	The flow is low. Check particle filter and pump.	Clogged particle filter. Defective circulation pump (charge pump). Pressure drop in the heating system is too large.
589 (216)	437	Incorrect PCB in heat pump. Change to a new PCB suitable for S2125.	The heat pump has the wrong control board.	The control board has been replaced with a control board for F2120.

9 Accessories

Detailed information about the accessories and complete accessories list available at nibe.eu.

Not all accessories are available on all markets.

CONDENSATION WATER PIPE

Condensation water pipe, different lengths.

KVR 11-10

1 metres
Part no. 067 823

KVR 11-30

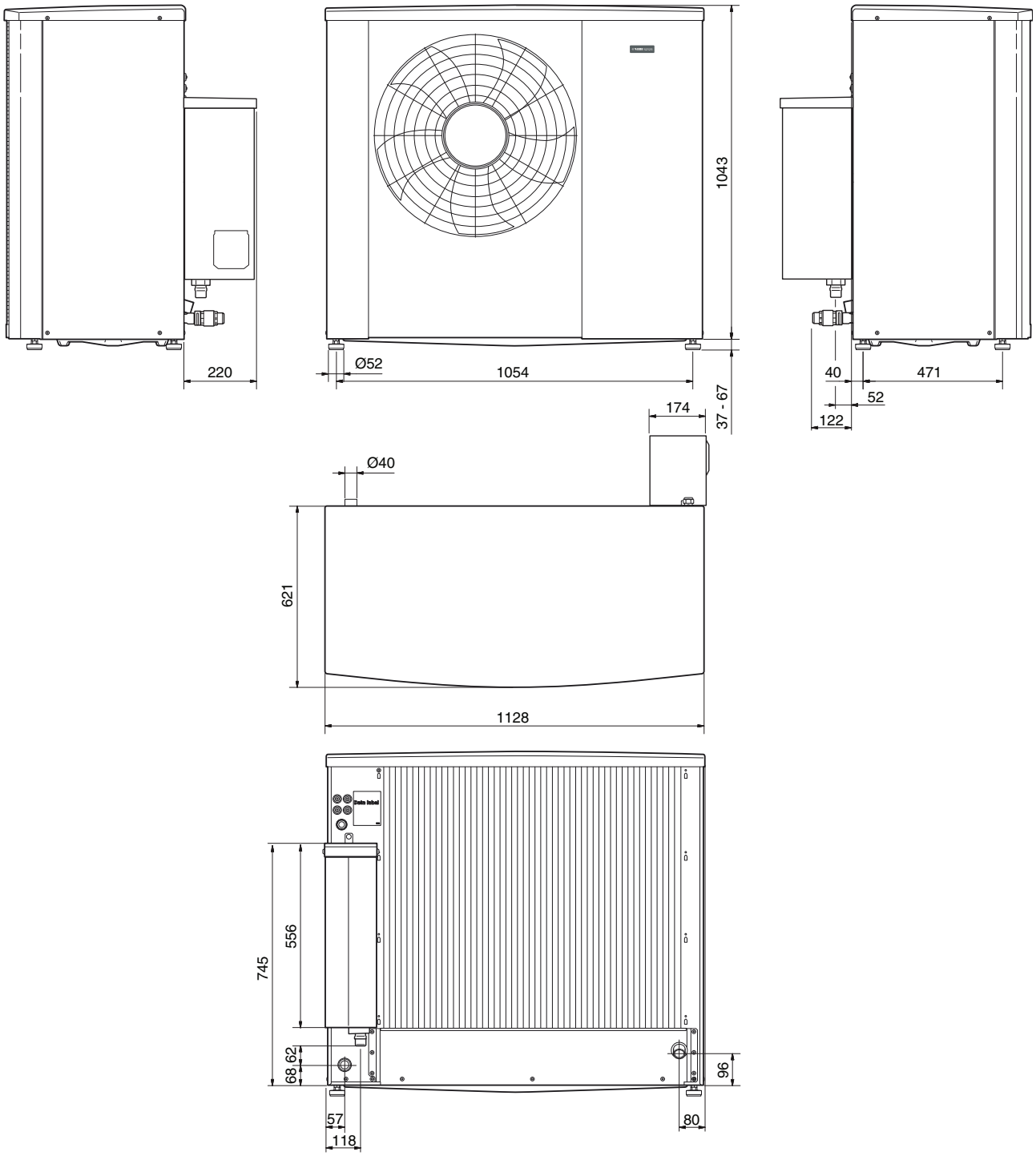
3 metres
Part no. 067 824

KVR 11-60

6 metres
Part no. 067 825

10 Technical data

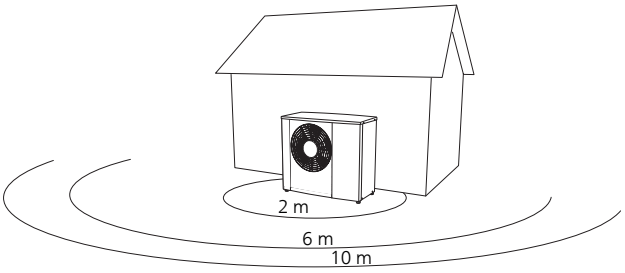
Dimensions



Sound levels

S2125 is usually placed next to a house wall, which gives a directed sound distribution that has to be taken into consideration. Accordingly, when setting up, you should always attempt to select the side that faces the least sound-sensitive neighbouring area.

The sound pressure levels are further affected by walls, bricks, differences in ground level, etc and should therefore only be seen as guide values.



		Sound power [1]	*Sound pressure at distance (m)* [2]									
			1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
S2125-8	Nominal sound value	49	44	38	34.5	32	30	28.5	27	26	25	24
	Max. sound value	55	50	44	40.5	38	36	34.5	33	32	31	30
	Max. sound value, silent mode	50	45	39	35.5	33	31	29.5	28	27	26	25
S2125-12	Nominal sound value	49	44	38	34.5	32	30	28.5	27	26	25	24
	Max. sound value	59	54	48	44.5	42	40	38.5	37	36	35	34
	Max. sound value, silent mode	54	49	43	39.5	37	35	33.5	32	31	30	29

1 Sound power level, L_W(A), according to EN12102

2 Sound pressure calculated according to directivity factor Q=4

Technical specifications

S2125		*8*	*12*	*8*	*12*
Voltage		*1 x 230 V*	*1 x 230 V*	*3 x 400 V*	*3 x 400 V*
Output data according to EN 14 511, partial load [1]					
Heating	-7 / 35 °C	4.72 / 1.72 / 2.82	7.23 / 2.73 / 2.65	4.72 / 1.72 / 2.82	7.23 / 2.73 / 2.65
Capacity / power input / COP (kW/kW/-) at nominal flow	2 / 35 °C	3.20 / 0.72 / 4.44	3.67 / 0.85 / 4.33	3.20 / 0.72 / 4.44	3.67 / 0.85 / 4.33
Outd. temp: / Supply temp.	2 / 45 °C	2.95 / 0.87 / 3.39	3.46 / 1.02 / 3.40	2.95 / 0.87 / 3.39	3.46 / 1.02 / 3.40
	7 / 35 °C	3.15 / 0.69 / 5.18	3.67 / 0.70 / 5.21	3.15 / 0.69 / 5.18	3.67 / 0.70 / 5.21
	7 / 45 °C	2.97 / 0.76 / 3.90	3.35 / 0.85 / 3.91	2.97 / 0.76 / 3.90	3.35 / 0.85 / 3.91
Cooling	35 / 7 °C	6.69 / 2.41 / 2.77	6.69 / 2.41 / 2.77	6.69 / 2.41 / 2.77	6.69 / 2.41 / 2.77
Capacity / power input / EER (kW/kW/-) at maximum flow	35 / 18 °C	8.68 / 2.60 / 3.34	8.68 / 2.60 / 3.34	8.68 / 2.60 / 3.34	8.68 / 2.60 / 3.34
Outd. temp: / Supply temp.					
SCOP according to EN 14825					
Nominal heat output ($P_{designh}$) average climate 35 °C / 55 °C (Europe)	kW	5.33 / 5.30	6.80 / 7.60	5.33 / 5.30	6.80 / 7.60
Nominal heat output ($P_{designh}$) cold climate 35 °C / 55 °C	kW	5.40 / 5.20	8.40 / 8.40	5.40 / 5.20	8.40 / 8.40
Nominal heat output ($P_{designh}$) warm climate 35 °C / 55 °C	kW	5.50 / 5.20	7.00 / 7.45	5.50 / 5.20	7.00 / 7.45
SCOP average climate, 35 °C / 55 °C (Europe)		5.00 / 3.70	5.00 / 3.80	5.00 / 3.70	5.00 / 3.80
SCOP cold climate, 35 °C / 55 °C		4.10 / 3.20	4.20 / 3.40	4.10 / 3.20	4.20 / 3.40
SCOP warm climate, 35 °C / 55 °C		6.30 / 4.50	6.30 / 4.60	6.30 / 4.50	6.30 / 4.60
Energy rating, average climate [2]					
The product's room heating efficiency class 35 C / 55 C [3]		A+++ / A++	A+++ / A+++	A+++ / A++	A+++ / A+++
The system's room heating efficiency class 35 C / 55 C [4]		A+++ / A+++			
Electrical data					
Rated voltage		230 V ~ 50 Hz	230 V ~ 50 Hz	400 V 3N ~ 50 Hz	400 V 3N ~ 50 Hz
Max operating current, heat pump	A_{rms}	13.8	20	5.5	8.2
Max operating current, compressor	A_{rms}	13.2	19.4	4.9	7.6
Max. power, fan	W	30	50	30	50
Fuse	A_{rms}	16	20	10	10
Enclosure class		IP24			
Refrigerant circuit					
Type of refrigerant		R290			
GWP refrigerant		3			
Volume	kg	0.8			
Type of compressor		Rotary			
CO_2-equivalent (The cooling circuit is hermetically sealed.)	t	0.0024			
Cut-out value pressure switch HP (BP1)	MPa	3.15			
Difference pressostat HP	MPa	2.45			
Cut-out value pressure switch LP (BP2)	MPa	0.03			
Difference pressostat LP	MPa	0.10			
Airflow					
Max airflow	m^3/h	2,400	2,950	2,400	2,950
Working area					
Min./max. air temperature, heating	°C	-25 / 38			
Min./max. air temperature, cooling	°C	15 / 43			
Defrosting system		Reverse cycle			
Heating medium circuit					
Max system pressure heating medium	MPa	0.45 (4.5)			
Cut-off pressure, heating medium	MPa	0.25 (2.5)			
Recommended flow interval, heating operation	l/s	0.08 – 0.32	0.12 – 0.48	0.08 – 0.32	0.12 – 0.48
Min. design flow, defrosting (100% pump speed)	l/s	0.32			
Min./max. HM temp, continuous operation	°C	26 / 75			
Connection heating medium S2125		G1" external thread			
Connection heating medium flex pipe		G1" external thread			

S2125		*8*	*12*	*8*	*12*
Voltage		*1 x 230 V*	*1 x 230 V*	*3 x 400 V*	*3 x 400 V*
Min. recommended pipe dimension (system)	DN (mm)	25 (28)			
Dimensions and weight					
Width	mm	1,130			
Depth	mm	820			
Height	mm	1,070			
Miscellaneous					
Substances according to Directive (EG) no. 1907/2006, article 33 (Reach)		Lead in brass components			
Part no.		064 220	064 218	064 219	064 217

1 Power statements including defrosting according to EN 14511 at heating medium supply corresponding to DT=5 K at 7 / 45.

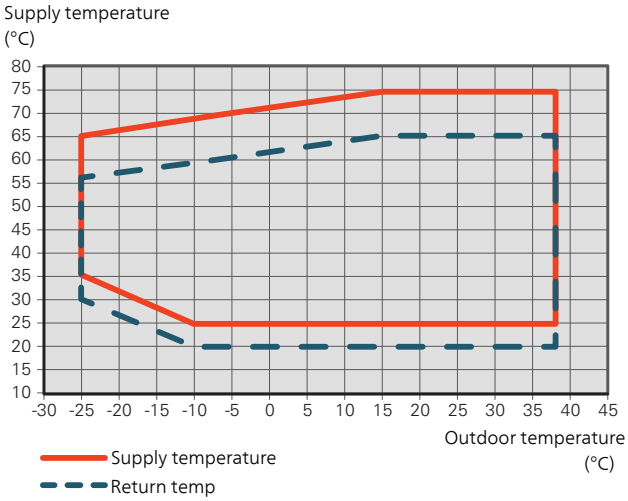
2 Reported efficiency for the system also takes the temperature regulator into account. If the system is supplemented with an external auxiliary boiler or

solar heating, the total efficiency of the system must be recalculated.

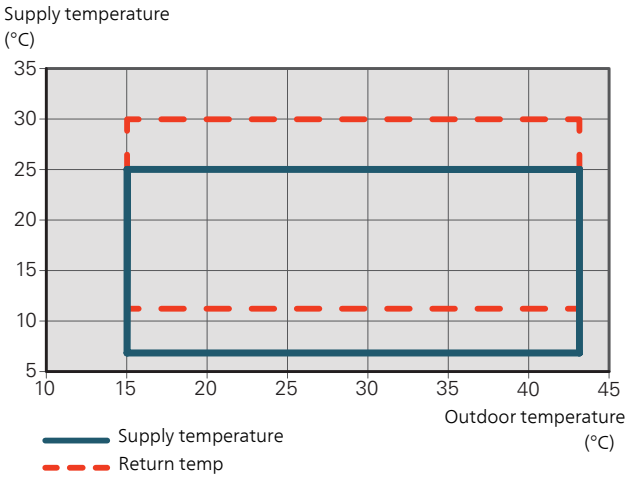
3 Scale for the product's room heating efficiency class A++ to G. Control module model SMO S

4 Scale for the system's room heating efficiency class A+++ to G. Control module model SMO S

WORKING RANGE, HEATING



WORKING RANGE, COOLING

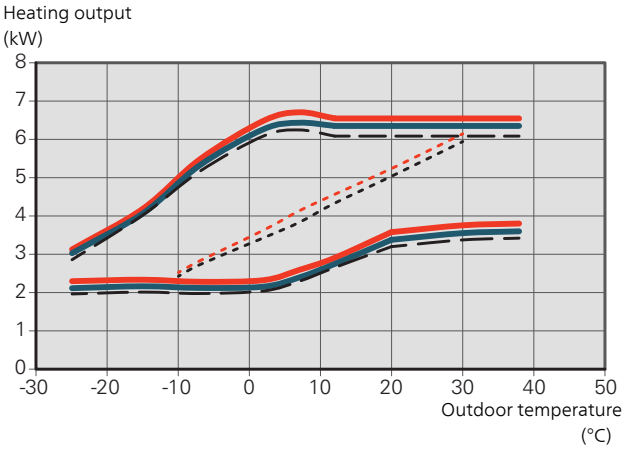


During shorter time it is allowed to have lower working temperatures on the water side, e.g. during start up.

POWER DURING HEATING OPERATION

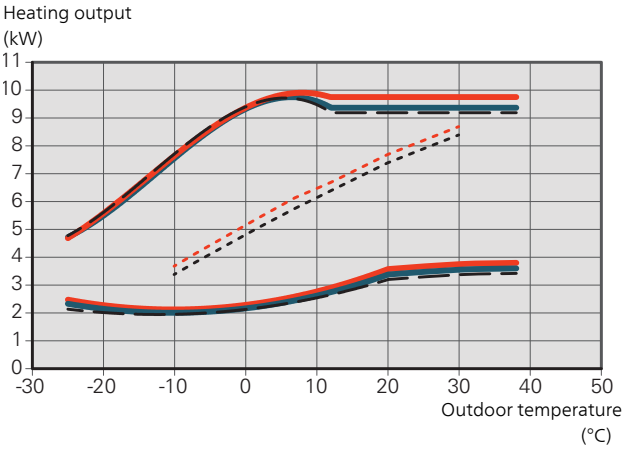
Maximum and minimum capacity during continuous operation. Defrosting is not included.

S2125-8



Flow line temperature 35 °C
Flow line temperature 45 °C
Flow line temperature 55 °C
Silent mode, supply temperature 35°C
Silent mode, supply temperature 55°C

S2125-12

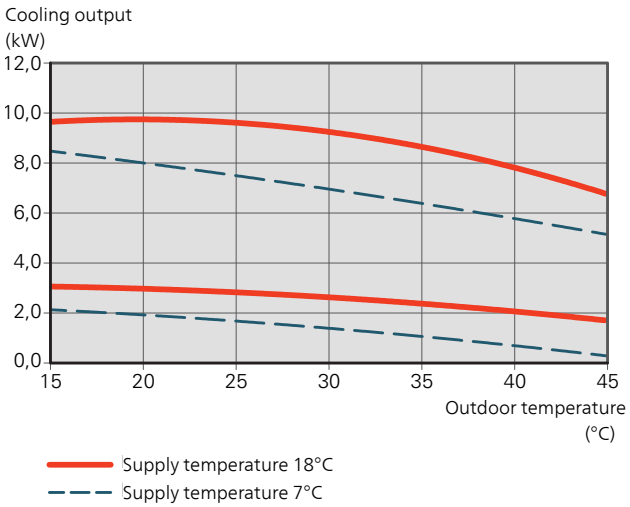


Flow line temperature 35 °C
Flow line temperature 45 °C
Flow line temperature 55 °C
Silent mode, supply temperature 35°C
Silent mode, supply temperature 55°C

POWER DURING COOLING OPERATION

Maximum and minimum capacity during continuous operation.

S2125-8, -12



Energy labelling

INFORMATION SHEET

Supplier		*NIBE*	
Model		*S2125-8*	*S2125-12*
Temperature application	*°C*	*35 / 55*	*35 / 55*
Seasonal space heating energy efficiency class, average climate		**A+++ / A++**	**A+++ / A+++**
Rated heat output ($P_{designh}$), average climate	kW	5.3 / 5.3	6.8 / 7.6
Annual energy consumption space heating, average climate	kWh	2,196 / 2,939	2,835 / 4,102
Seasonal space heating energy efficiency, average climate	%	196 / 146	195 / 150
Sound power level L_{WA} indoors	dB	-	-
Rated heat output ($P_{designh}$), cold climate	kW	5.4 / 5.2	8.4 / 8.4
Rated heat output ($P_{designh}$), warm climate	kW	5.5 / 5.2	7.0 / 7.5
Annual energy consumption space heating, cold climate	kWh	3,238 / 4,055	4,990 / 6,189
Annual energy consumption space heating, warm climate	kWh	1,161 / 1,570	1,494 / 2,180
Seasonal space heating energy efficiency, cold climate	%	161 / 123	163 / 131
Seasonal space heating energy efficiency, warm climate	%	250 / 174	247 / 180
Sound power level L_{WA} outdoors	dB	49	49

DATA FOR ENERGY EFFICIENCY OF THE PACKAGE

Model		*S2125-8*	*S2125-12*
Control module model		*SMO S*	*SMO S*
Temperature application	*°C*	*35 / 55*	*35 / 55*
Controller, class		VI	
Controller, contribution to efficiency	%	4.0	
Seasonal space heating energy efficiency of the package, average climate	%	200 / 150	199 / 154
Seasonal space heating energy efficiency class of the package, average climate		A+++ / A+++	A+++ / A+++
Seasonal space heating energy efficiency of the package, cold climate	%	165 / 127	167 / 135
Seasonal space heating energy efficiency of the package, warm climate	%	254 / 178	251 / 184

The reported efficiency of the package also takes the controller into account. If an external supplementary boiler or solar heating is added to the package, the overall efficiency of the package should be recalculated.

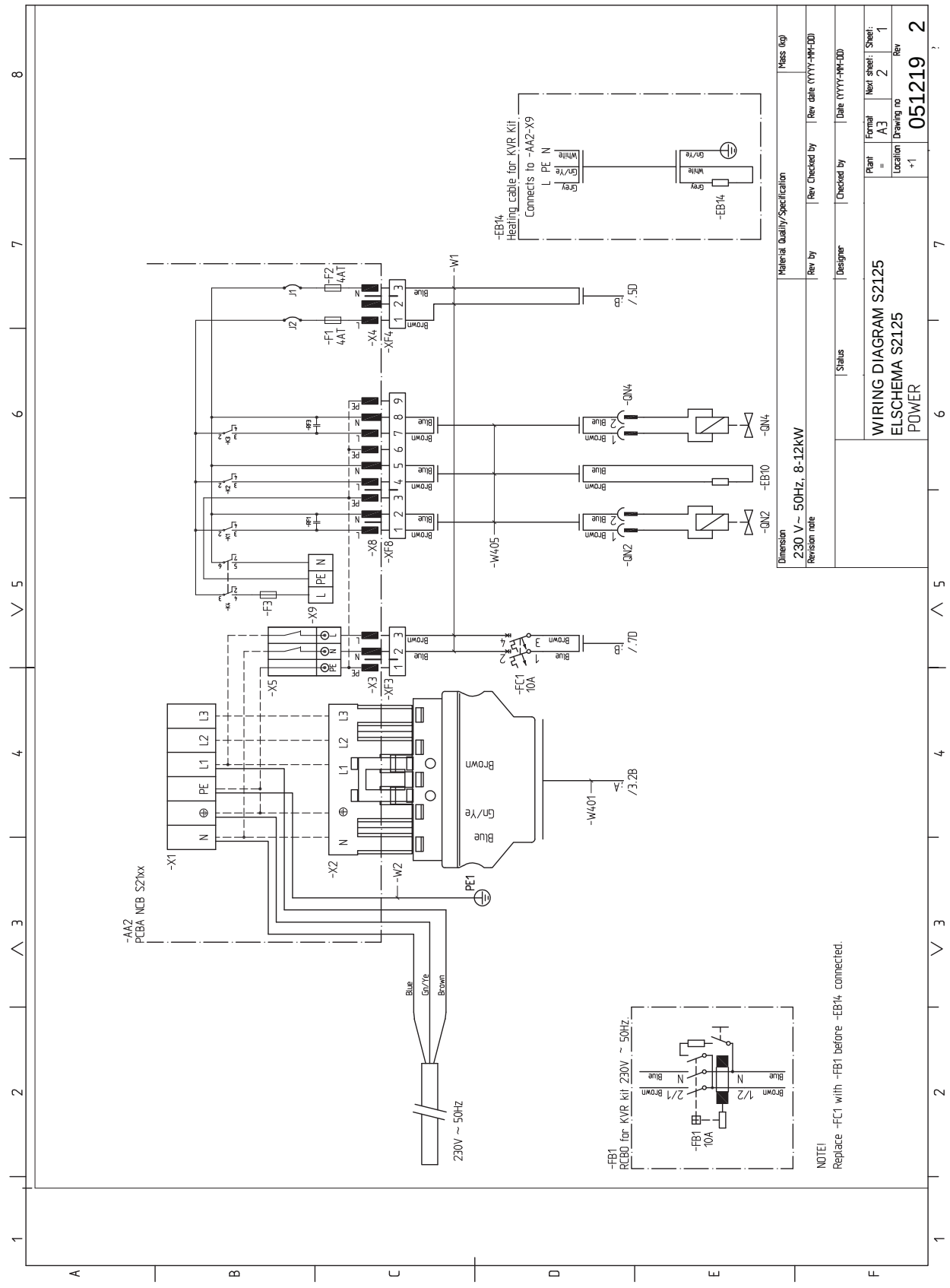
TECHNICAL DOCUMENTATION

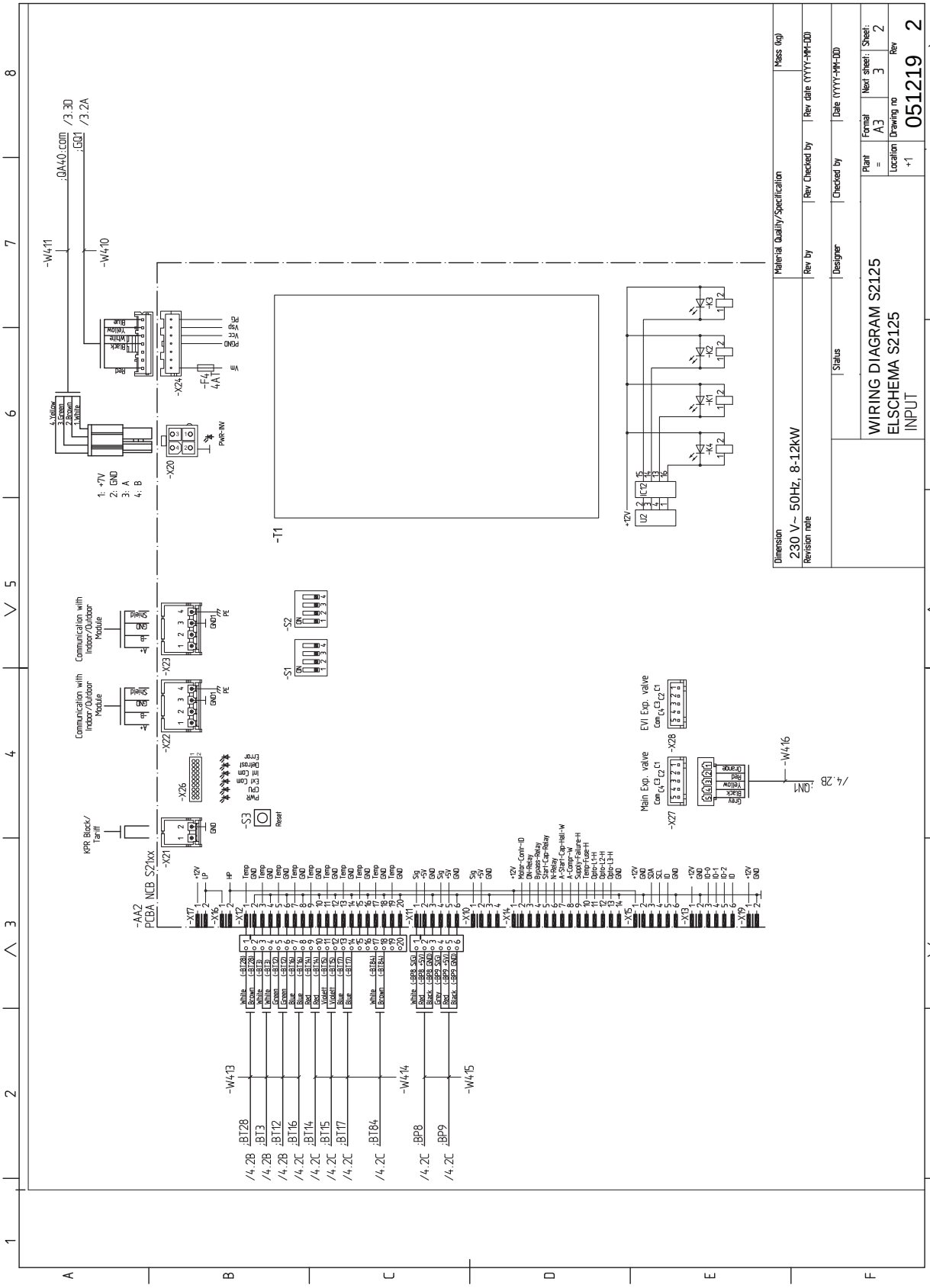
Model		*S2125-8*					
Type of heat pump		☒ Air-water ☐ Exhaust-water ☐ Brine-water ☐ Water-water					
Low-temperature heat pump		☐ Yes ☒ No					
Integrated immersion heater for additional heat		☐ Yes ☒ No					
Heat pump combination heater		☐ Yes ☒ No					
Climate		☒ Average ☐ Cold ☐ Warm					
Temperature application		☒ Medium (55 °C) ☐ Low (35 °C)					
Applied standards		EN14825 / EN14511 / EN12102					
Rated heat output	Prated	5,3	kW	*Seasonal space heating energy efficiency*	η_s	146	%
Declared capacity for space heating at part load and at outdoor temperature Tj				*Declared coefficient of performance for space heating at part load and at outdoor temperature Tj*			
Tj = -7 °C	Pdh	4.6	kW	Tj = -7 °C	COPd	2.19	-
Tj = +2 °C	Pdh	2.8	kW	Tj = +2 °C	COPd	3.77	-
Tj = +7 °C	Pdh	2.1	kW	Tj = +7 °C	COPd	4.75	-
Tj = +12 °C	Pdh	2.3	kW	Tj = +12 °C	COPd	5.70	-
Tj = biv	Pdh	4.6	kW	Tj = biv	COPd	2.19	-
Tj = TOL	Pdh	4.8	kW	Tj = TOL	COPd	2.21	-
Tj = -15 °C (if TOL < -20 °C)	Pdh		kW	Tj = -15 °C (if TOL < -20 °C)	COPd		-
Bivalent temperature	T_{biv}	-10	°C	Min. outdoor air temperature	TOL	-10	°C
Cycling interval capacity	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation coefficient	Cdh	0.97	-	Max supply temperature	WTOL	65	°C
Power consumption in modes other than active mode				*Additional heat*			
Off mode	P_{OFF}	0.008	kW	Rated heat output	Psup	0.0	kW
Thermostat-off mode	P_{TO}	0.013	kW				
Standby mode	P_{SB}	0.011	kW	Type of energy input	Electric		
Crankcase heater mode	P_{CK}	0.005	kW				
Other items							
Capacity control	Variable			Rated airflow (air-water)		2,400	m^3/h
Sound power level, indoors/outdoors	L_{WA}	- / 49	dB	Nominal heating medium flow			m^3/h
Annual energy consumption	Q_{HE}	2,939	kWh	Brine flow brine-water or water-water heat pumps			m^3/h
Contact information	*NIBE Energy Systems – Box 14 – Hannabadsvägen 5 – 285 21 Markaryd – Sweden*						

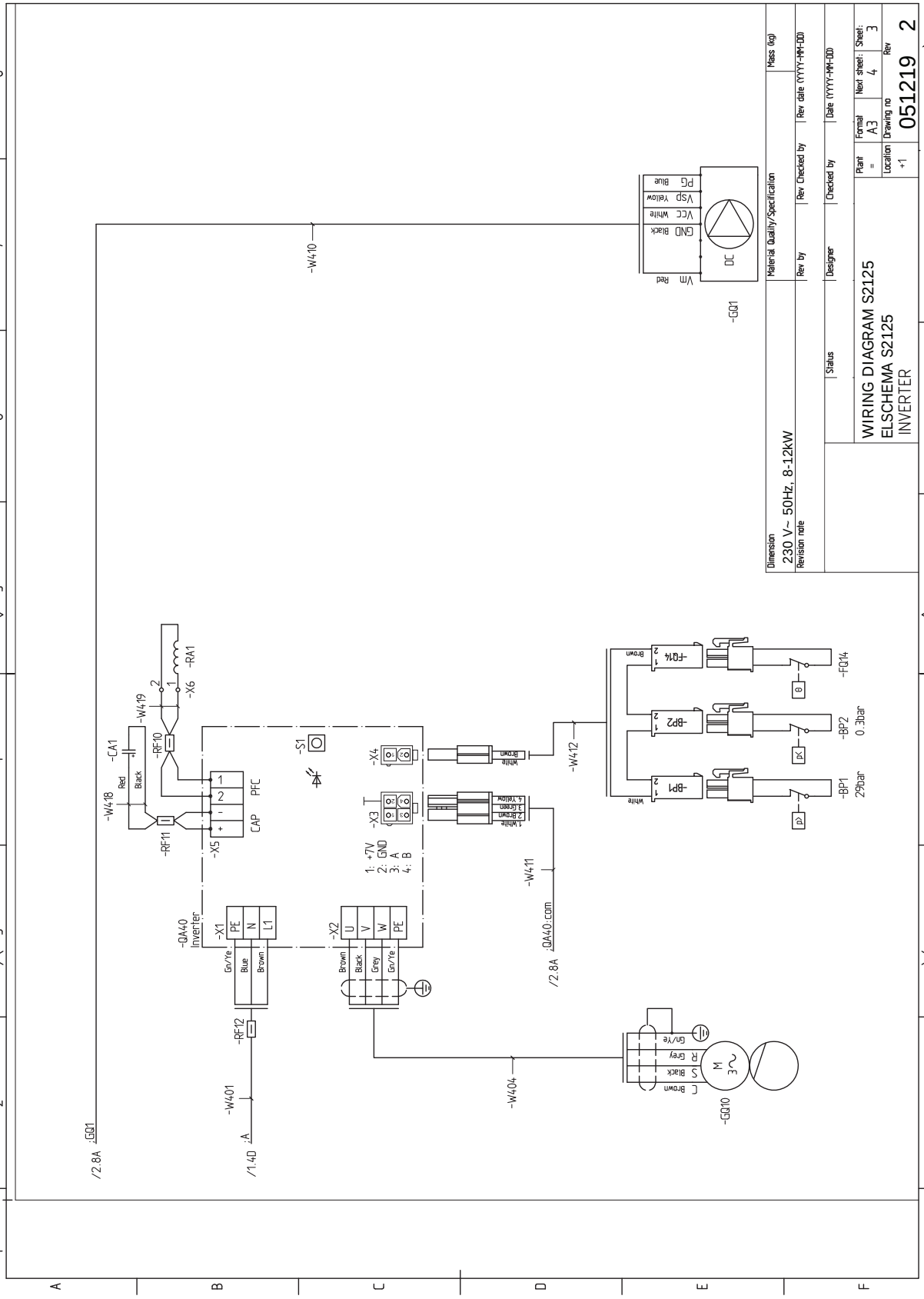
Model		*S2125-12*					
Type of heat pump		☒ Air-water ☐ Exhaust-water ☐ Brine-water ☐ Water-water					
Low-temperature heat pump		☐ Yes ☒ No					
Integrated immersion heater for additional heat		☐ Yes ☒ No					
Heat pump combination heater		☐ Yes ☒ No					
Climate		☒ Average ☐ Cold ☐ Warm					
Temperature application		☒ Average (55 °C) ☐ Low (35 °C)					
Applied standards		EN14825 / EN14511 /EN12102					
Rated heat output	Prated	7,6	kW	*Seasonal space heating energy efficiency*	η_s	150	%
Declared capacity for space heating at part load and at outdoor temperature Tj				*Declared coefficient of performance for space heating at part load and at outdoor temperature Tj*			
Tj = -7 °C	Pdh	6.7	kW	Tj = -7 °C	COPd	2.17	-
Tj = +2 °C	Pdh	4.2	kW	Tj = +2 °C	COPd	3.83	-
Tj = +7 °C	Pdh	2.7	kW	Tj = +7 °C	COPd	5.12	-
Tj = +12 °C	Pdh	2.4	kW	Tj = +12 °C	COPd	5.87	-
Tj = biv	Pdh	7.6	kW	Tj = biv	COPd	2.11	-
Tj = TOL	Pdh	7.6	kW	Tj = TOL	COPd	2.11	-
Tj = -15 °C (if TOL < -20 °C)	Pdh		kW	Tj = -15 °C (if TOL < -20 °C)	COPd		-
Bivalent temperature	T_{biv}	-10	°C	Min. outdoor air temperature	TOL	-10	°C
Cycling interval capacity	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation coefficient	Cdh	0.97	-	Max supply temperature	WTOL	65	°C
Power consumption in modes other than active mode				*Additional heat*			
Off mode	P_{OFF}	0.008	kW	Rated heat output	Psup	0	kW
Thermostat-off mode	P_{TO}	0.013	kW				
Standby mode	P_{SB}	0.011	kW	Type of energy input	Electric		
Crankcase heater mode	P_{CK}	0.005	kW				
Other items							
Capacity control	Variable			Rated airflow (air-water)		2,900	m^3/h
Sound power level, indoors/outdoors	L_{WA}	- / 49	dB	Nominal heating medium flow			m^3/h
Annual energy consumption	Q_{HE}	4,102	kWh	Brine flow brine-water or water-water heat pumps			m^3/h
Contact information	*NIBE Energy Systems – Box 14 – Hannabadsvägen 5 – 285 21 Markaryd – Sweden*						

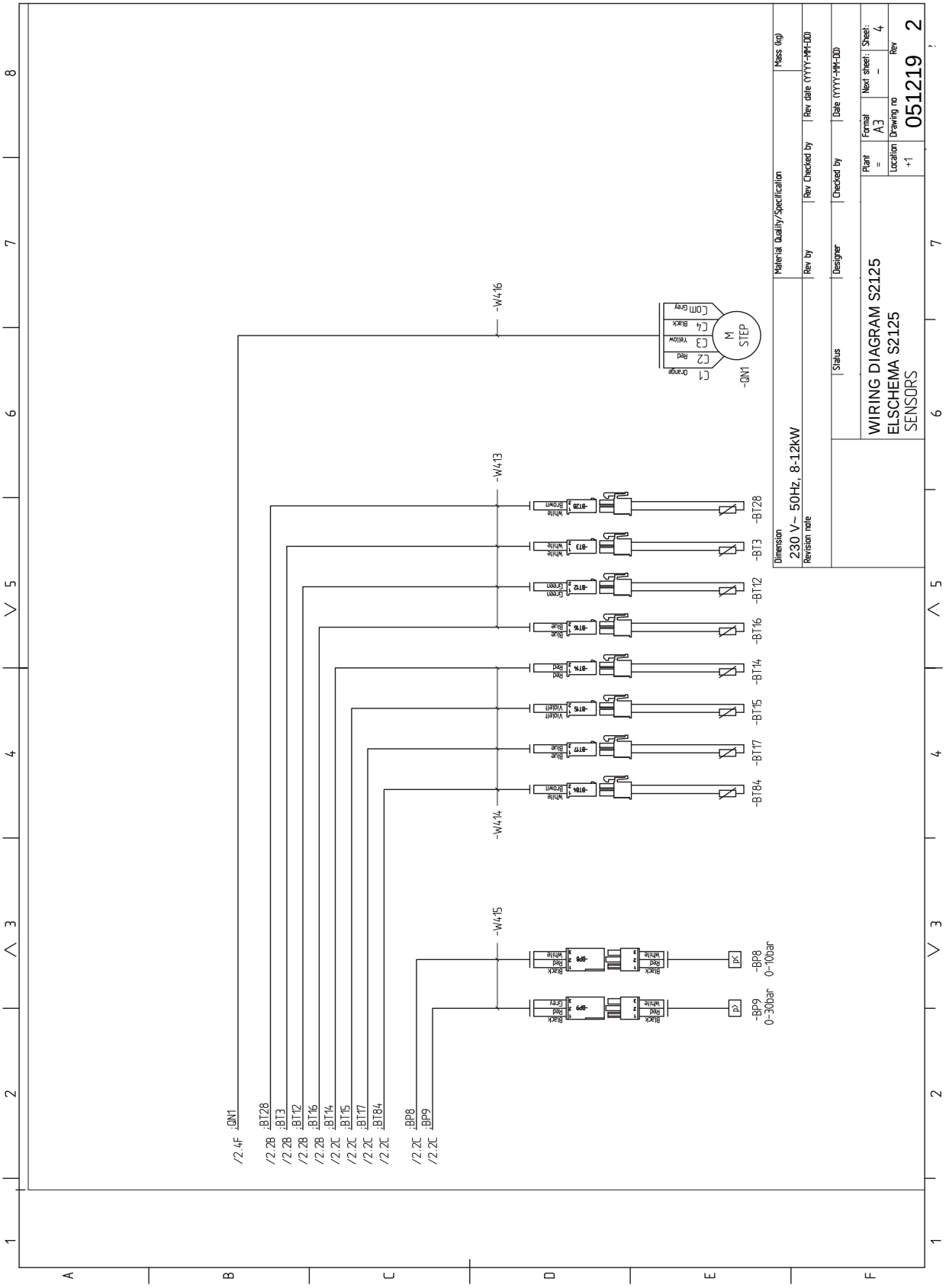
Electrical circuit diagram

1 X 230 V

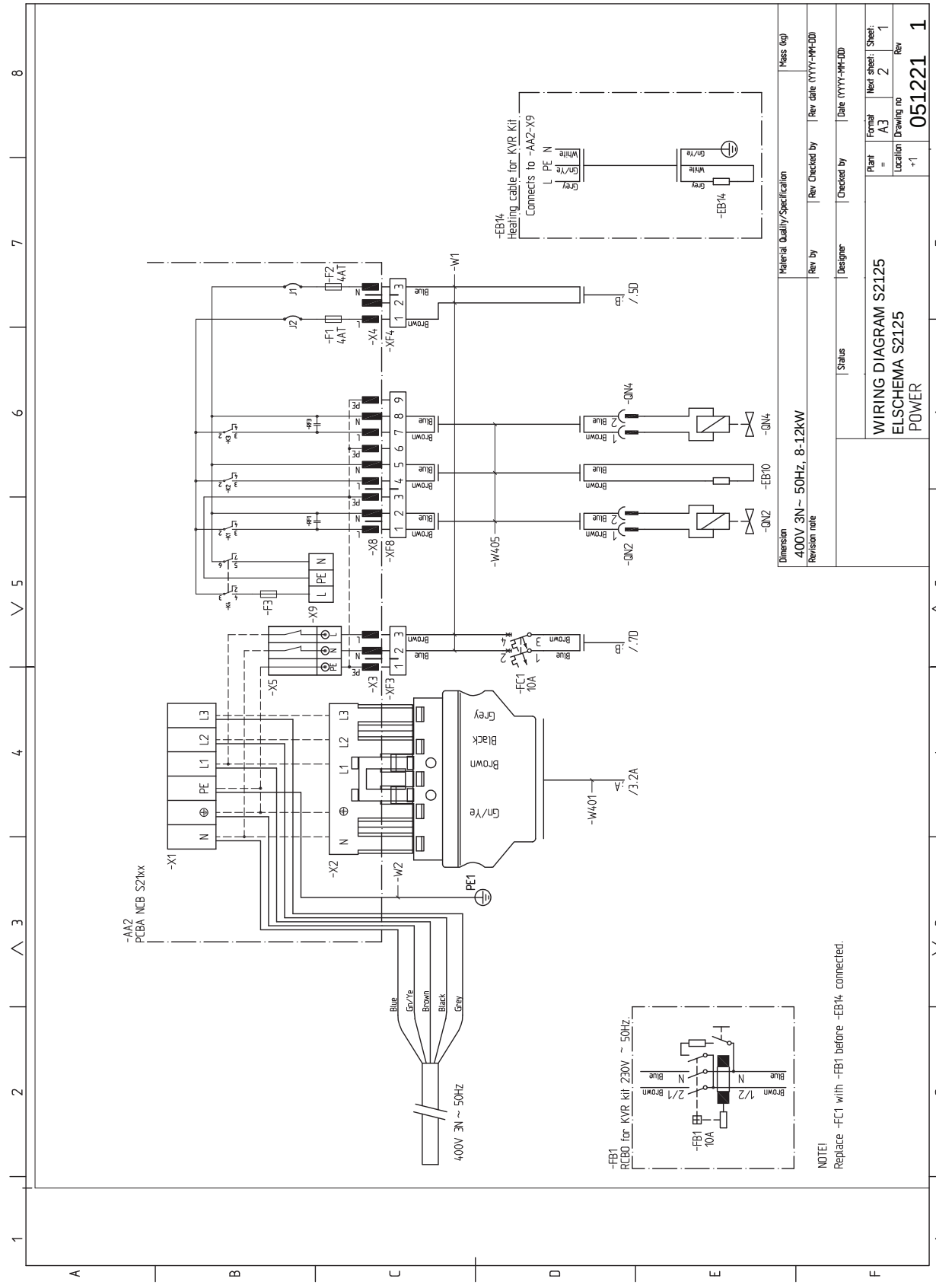


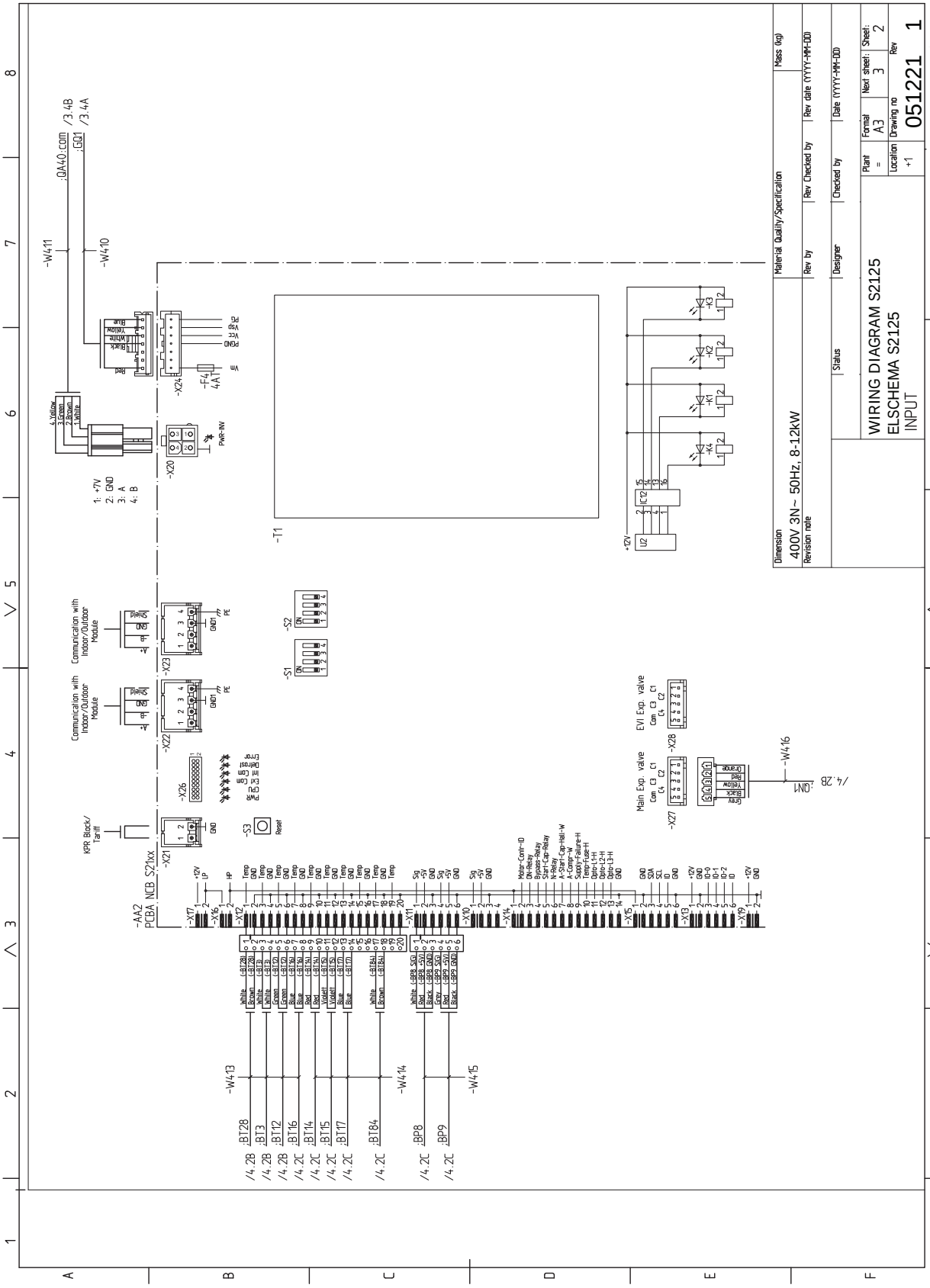

WIRING DIAGRAM S2125
ELSCHEMA S2125
INPUT
051219 2
230 V~ 50Hz, 8-12kW
-AA2
PCBA NCB S21xx
-T1
-W411
-W410
-W413
-W414
-W415
-W416
-X1
-X2
-X3
-X4
-X5
-X6
-X7
-X10
-X11
-X12
-X13
-X14
-X15
-X16
-X17
-X19
-X20
-X21
-X22
-X23
-X24
-X26
-X27
-X28
-S1
-S2
-S3
-F4
-K1
-K2
-K3
-K4
-BT3
-BT12
-BT14
-BT15
-BT16
-BT17
-BT28
-BT64
-BP8
-BP9
Communication with Indoor/Outdoor Module
KRP, Block/ Tariff
Main Exp. valve
EVI Exp. valve
Reset
Material Quality/Specification
Dimension
Revision note
Designer
Checked by
Status
Date (YYYY-MM-DD)
Rev by
Rev Checked by
Rev date (YYYY-MM-DD)
Mass (kg)
Plant
Formal
A3
Next sheet:
3
Sheet:
2
Location
Drawing no
Rev


WIRING DIAGRAM S2125
ELSCHEMA S2125
INVERTER
051219 2
Dimension
230 V~ 50Hz, 8-12kW
Material Quality/Specification
Revision note
Rev by
Rev Checked by
Rev date (YYYY-MM-DD)
Status
Designer
Checked by
Date (YYYY-MM-DD)
Plant
Formal
A3
Next sheet:
4
Sheet:
3
Location
+1
Drawing no
Rev
-GQ1
DC
VM Red
GND Black
VCC White
VSP Yellow
PG Blue
-W410
-W418
-CA1
Red
Black
-W419
-RF10
-RF11
-RA1
-X6
-X5
PFC
CAP
-S1
-X4
-X3
1: +7V
2: GND
3: A
4: B
-W412
-FQ14
-BP2
0..3bar
-BP1
29bar
-W411
-QA40
Inverter
-X1
PE
N
L1
Grn/Ye
Blue
Brown
-X2
U
V
W
PE
Brown
Black
Grey
Grn/Ye
-RF12
-W401
-W404
-GQ10
M
3~
Brown
Black
Grey
Grn/Ye
/2.8A :GQ1
/1.4D :A
/2.8A :QA40:com


WIRING DIAGRAM S2125
ELSCHEMA S2125
SENSORS
051219 2
230 V~ 50Hz, 8-12kW
-W416
-W413
-W414
-W415
-QN1
-BT28
-BT3
-BT12
-BT16
-BT14
-BT15
-BT17
-BT84
-BP8
-BP9
0-10bar
0-30bar

3 X 400 V


WIRING DIAGRAM S2125
ELSCHEMA S2125
POWER
051221 1
400V 3N~ 50Hz, 8-12kW
-AA2
PCBA NCB S2Xx
-EB14
Heating cable for KVR Kit
Connects to -AA2-X9
-FB1
RCBO for KVR kit 230V ~ 50Hz
400V 3N ~ 50Hz
NOTE!
Replace -FC1 with -FB1 before -EB14 connected.


WIRING DIAGRAM S2125
ELSCHEMA S2125
INPUT
400V 3N~ 50Hz, 8-12kW
-AA2
PCBA NCB S21xx
-T1
-W411
-W410
-W413
-W414
-W415
-W416
-X1
-X2
-X3
-X4
-X5
-X6
-X7
-X10
-X11
-X12
-X13
-X14
-X15
-X16
-X17
-X19
-X20
-X21
-X22
-X23
-X24
-X26
-X27
-X28
-S1
-S2
-S3
-F4
-K1
-K2
-K3
-K4
-U2
-BT28
-BT3
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-BT14
-BT15
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-BP8
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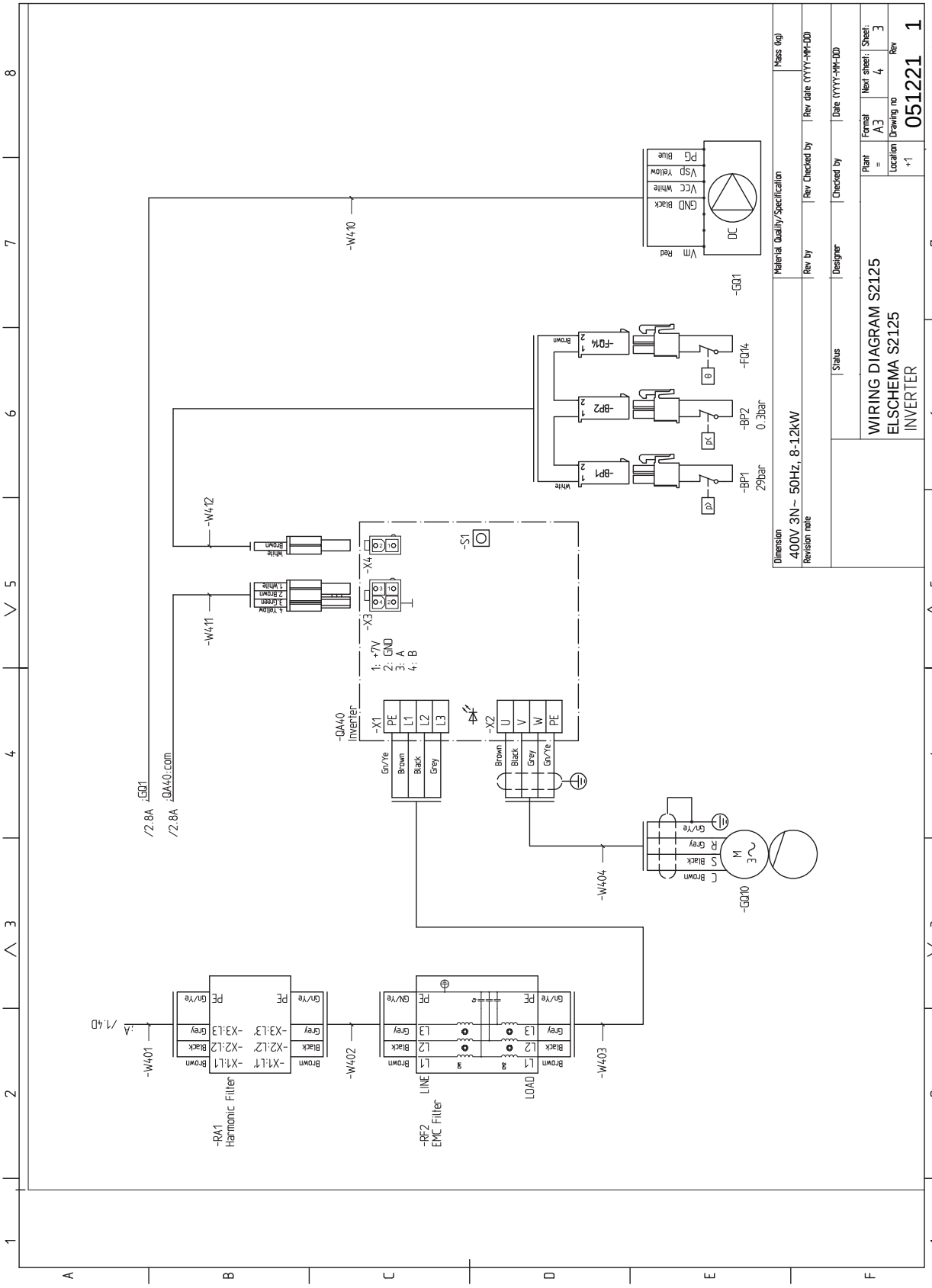
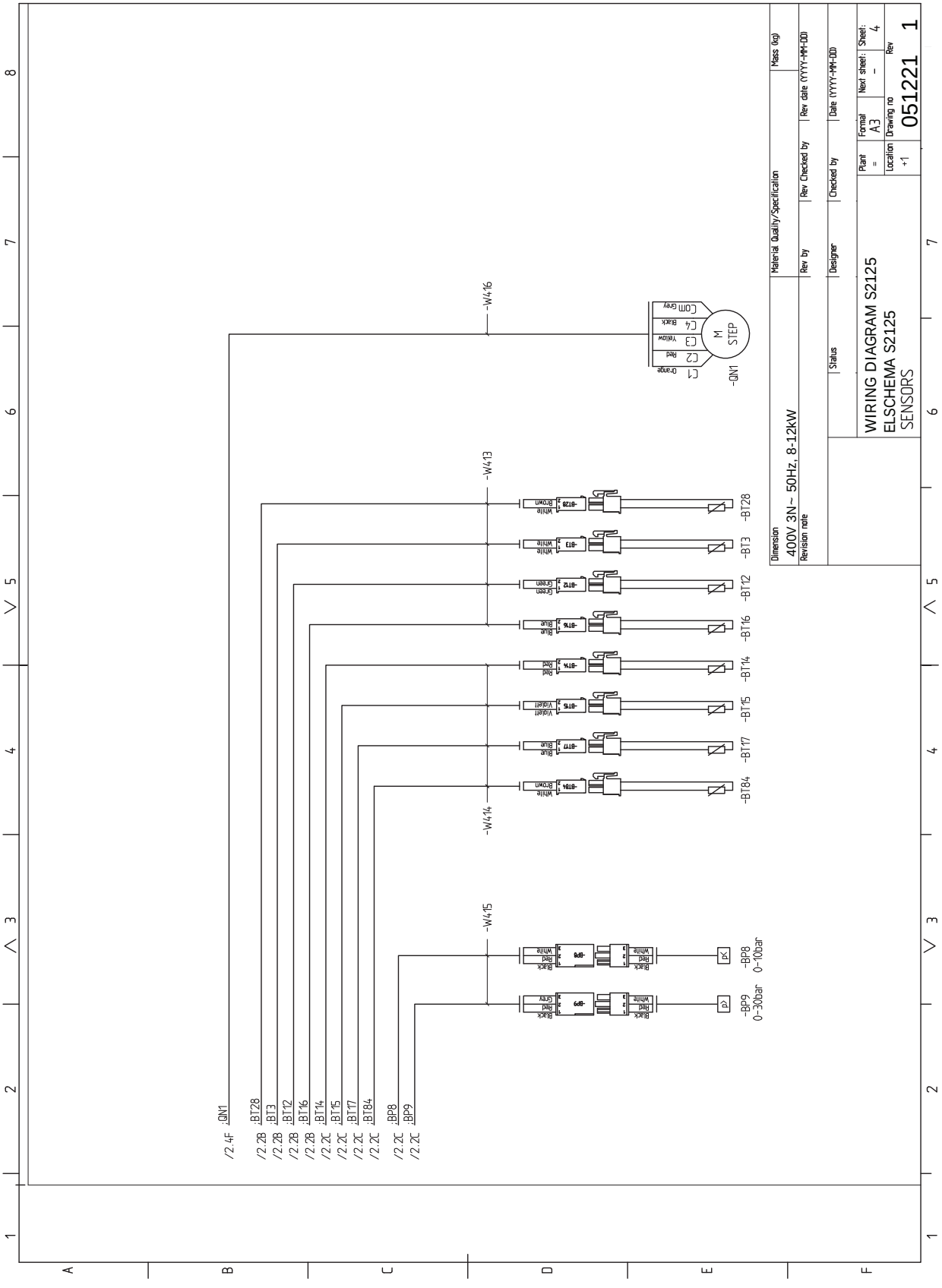
Communication with Indoor/Outdoor Module
KRP, Block/Tariff
Reset
Main Exp. valve
EVI Exp. valve
Material Quality/Specification
Mass (kg)
Dimension
Revision note
Rev by
Rev Checked by
Rev date (YYYY-MM-DD)
Designer
Checked by
Date (YYYY-MM-DD)
Status
Plant
Formal
A3
Next sheet:
3
Sheet:
2
Location
+1
Drawing no
051221
Rev
1


WIRING DIAGRAM S2125
ELSCHEMA S2125
INVERTER
051221 1
400V 3N~ 50Hz, 8-12kW
-GQ1
-GQ10
-QA40 Inverter
-RA1 Harmonic Filter
-RF2 EMC Filter
-BP1 29bar
-BP2 0.3bar
-FQ14
-S1
-W401
-W402
-W403
-W404
-W410
-W411
-W412
LINE
LOAD


WIRING DIAGRAM S2125
ELSCHEMA S2125
SENSORS
051221 1
400V 3N~ 50Hz, 8-12kW
-QN1
-W413
-W414
-W415
-W416
-BT28
-BT3
-BT12
-BT16
-BT14
-BT15
-BT17
-BT84
-BP8 0-10bar
-BP9 0-30bar
STEP
COM Grey
C4 Black
C3 Yellow
C2 Red
C1 Orange

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