Installer manual

Air/water heat pump
NIBE F2050

IHB EN 2318-2
631411

Table of Contents

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).

Fire hazard!

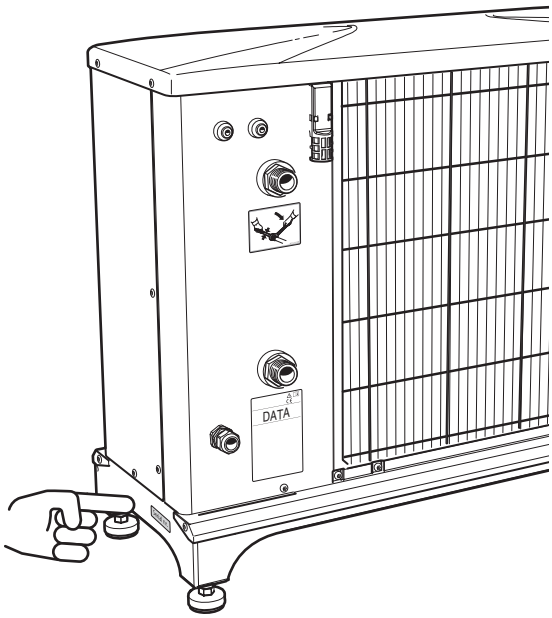
Read the User Manual.

Read the User Manual.

Read the Installer Manual.

Serial number

The serial number for F2050 can be found on the side of the foot.



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 be inspected before it is commissioned. The inspection must be carried out by a suitably qualified person. Fill in the page for information about installation data in the User manual.

✔	Description	Notes	Signature	Date
Heating medium (page 22)				
	System flushed			
	System vented			
	Particle filter			
	Shut-off and drain valve			
	Charge flow set			
Electricity (page 24)				
	Fuses property			
	Safety breaker			
	Earth circuit-breaker			
	Heating cable type/effect			
	Fuse size, heating cable (F3)			
	Communication cable connected			
	F2050 addressed (only when cascade connection)			
	Connections			
	Main voltage			
	Phase voltage			
	When installing F2050-6, check that the software version of the indoor module/control module is at least v8320.			
Miscellaneous				

Compatible indoor modules and control modules

	SMO S40	VVM S320	VVM S330
F2050-6	X	X	X
F2050-10	X	X	X

	VVM 225	VVM 310	VVM 500	SMO 20	SMO 40	MHB 05
F2050-6	X	X	X	X	X	X
F2050-10	X	X	X	X	X	X

Indoor module

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 S330
Stainless steel, 1 x 230 V
Part no. 069 249

VVM S330
Stainless steel, 3 x 400 V
Part no. 069 250

VVM 225
Enamel (DK), 3x400 V
Part no. 069 228

VVM 225
Enamel, 3x400 V
Part no. 069 227

VVM 225
Stainless steel, 3x400 V
Part no. 069 229

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

Control module

SMO S40
Control module
Part no. 067 654

SMO 20
Control module
Part no. 067 224

SMO 40
Control module
Part no. 067 225

Hydrobox

MHB 05
Part no. 067 942

Delivery and handling

Transport

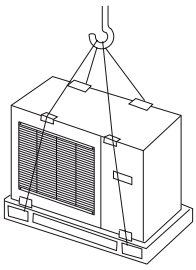
F2050 should be transported and stored vertically in a dry place.

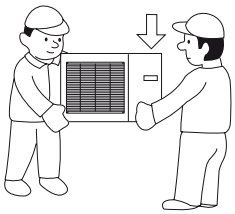
> **NOTE**
>
> Ensure that the heat pump cannot fall over during transport.

Check that F2050 has not been damaged during transport.

LIFT FROM THE STREET TO THE SET UP LOCATION

If the surface allows, the easiest method is to use a pallet truck to move the heat pump to the installation area.





If the heat pump 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 the heat pump is lifted with a crane, the packaging must be intact.

If a crane truck cannot be used, the heat pump can be transported on an extended sack truck. The heat pump must be taken hold of from its heaviest side and two people are required to lift it.

LIFT FROM THE PALLET TO FINAL POSITIONING

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

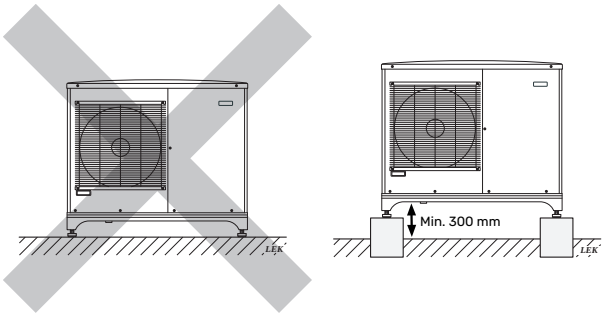
Place lifting straps around each foot. It is recommended that two people perform the lift from the pallet to the base.

SCRAPPING

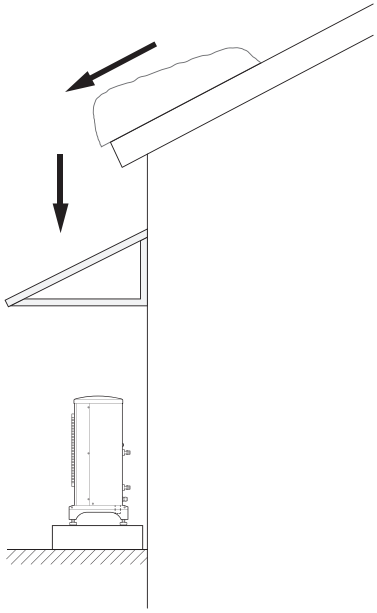
When scrapping, remove the heat pump in reverse order. In this case, lift by the base plate rather than the pallet!

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 F2050 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, or at least 300 mm above ground level. The base should be at least 70 mm tall.
- F2050 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.
- F2050 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 F2050 protected from wind / against the evaporator.
- Large amounts of condensation, as well as melt water from defrosting, may be produced. Condensation must be led off to a drain or similar (see section “Condensation water").
- Care must be exercised so that the heat pump is not scratched during installation.



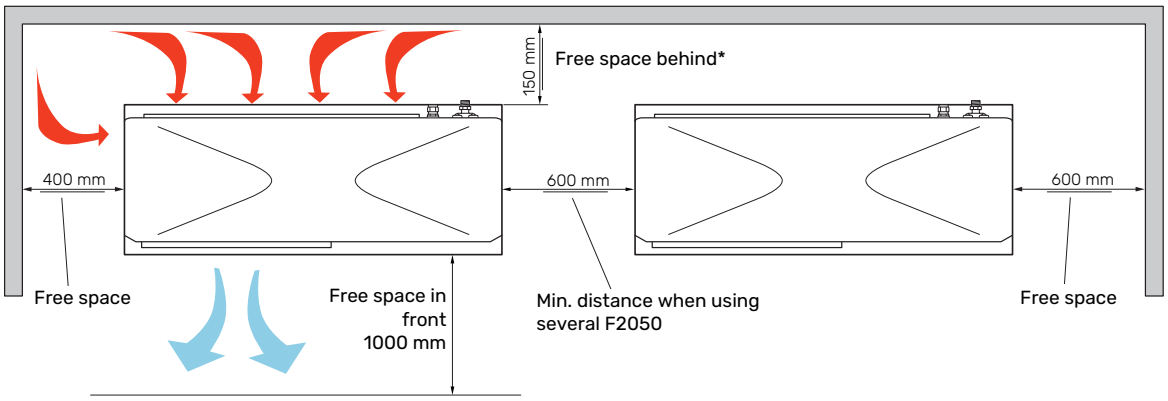
Do not place F2050 directly on the lawn or other non solid surface.



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.

INSTALLATION AREA

The distance between F2050 and the house wall must be at least 150 mm, but not more than 500 mm in locations that are exposed to the wind. The free space above F2050 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) must be routed away by a pipe to an appropriate drain, it is recommended that the shortest outdoor length 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.

> **TIP**
>
> To ensure this function, the accessory KVR should be used.

- Route the pipe downward from the heat pump.
- The outlet of the condensation water pipe must be at frost free depth.
- 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.

DRAIN PAN HEATER, CONTROL

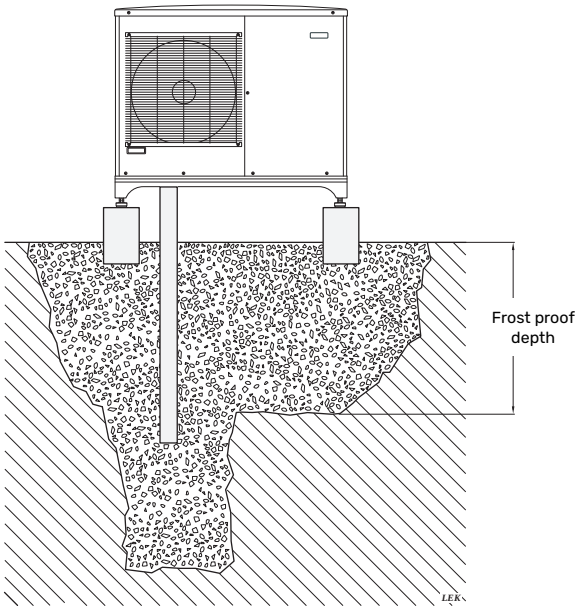
The drain pan heater is supplied with power when one of the following conditions is met:

1. The compressor has been in operation for at least 30 minutes after last start.
2. The ambient temperature is lower than 1 °C.

DRAINAGE OF CONDENSATION

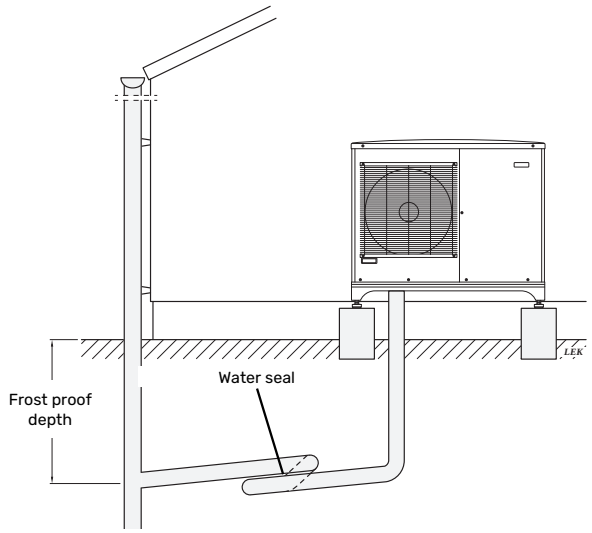
> **Caution**
>
> If none of the following recommended alternatives is used, good drainage of condensation must be provided.

Stone caisson



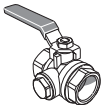
If the house has a cellar the stone caisson must be positioned so that condensation water does not affect the house. Otherwise the stone caisson can be positioned directly under the heat pump.

Gutter drainage

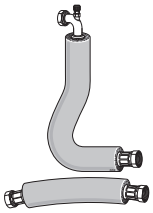


Route the pipe sloping downward from the heat pump. The condensation water pipe must have a water seal to prevent air circulation in the pipe.

Supplied components



1 x filterball (G1") (QZ2)

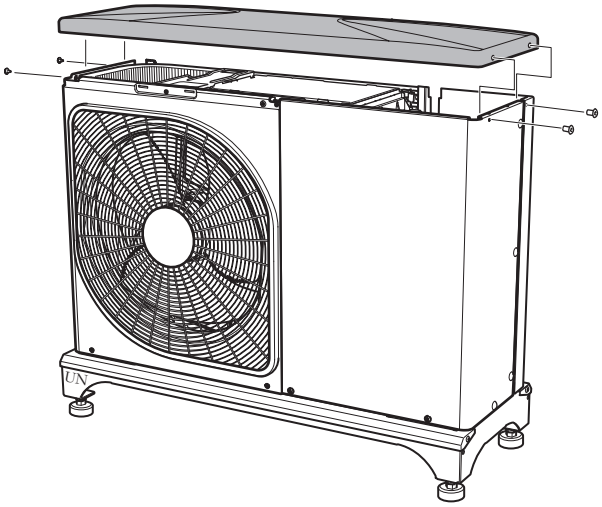


2 x flexible pipes (DN25, G1") with 4 x gaskets

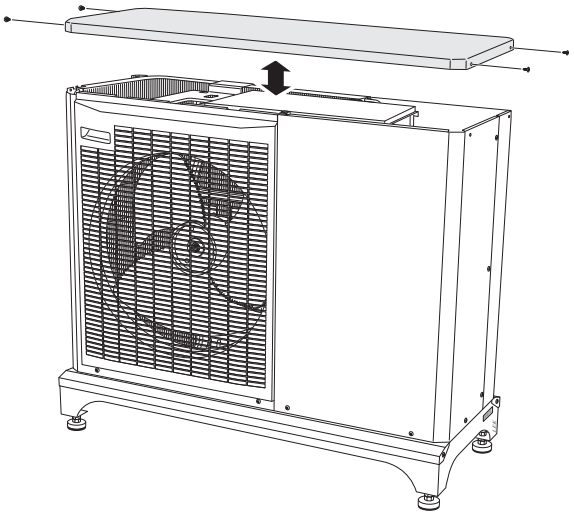
Dismantling panels

DISMANTLING TOP PANEL

F2050-6

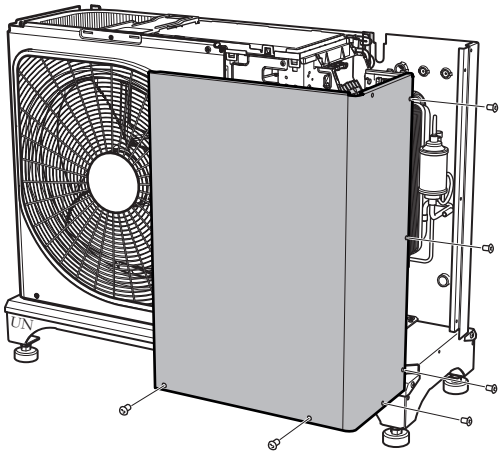


F2050-10



REMOVING THE FRONT PANEL

F2050-6



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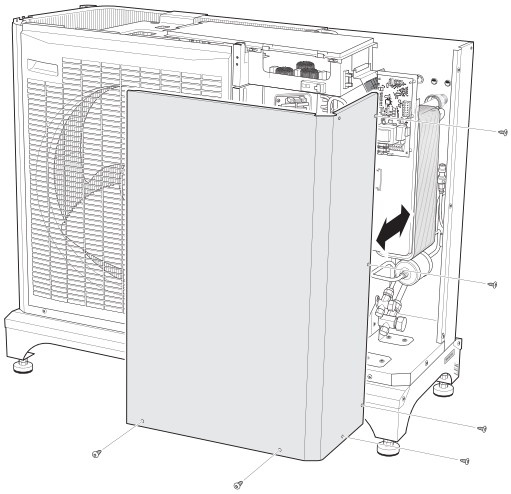
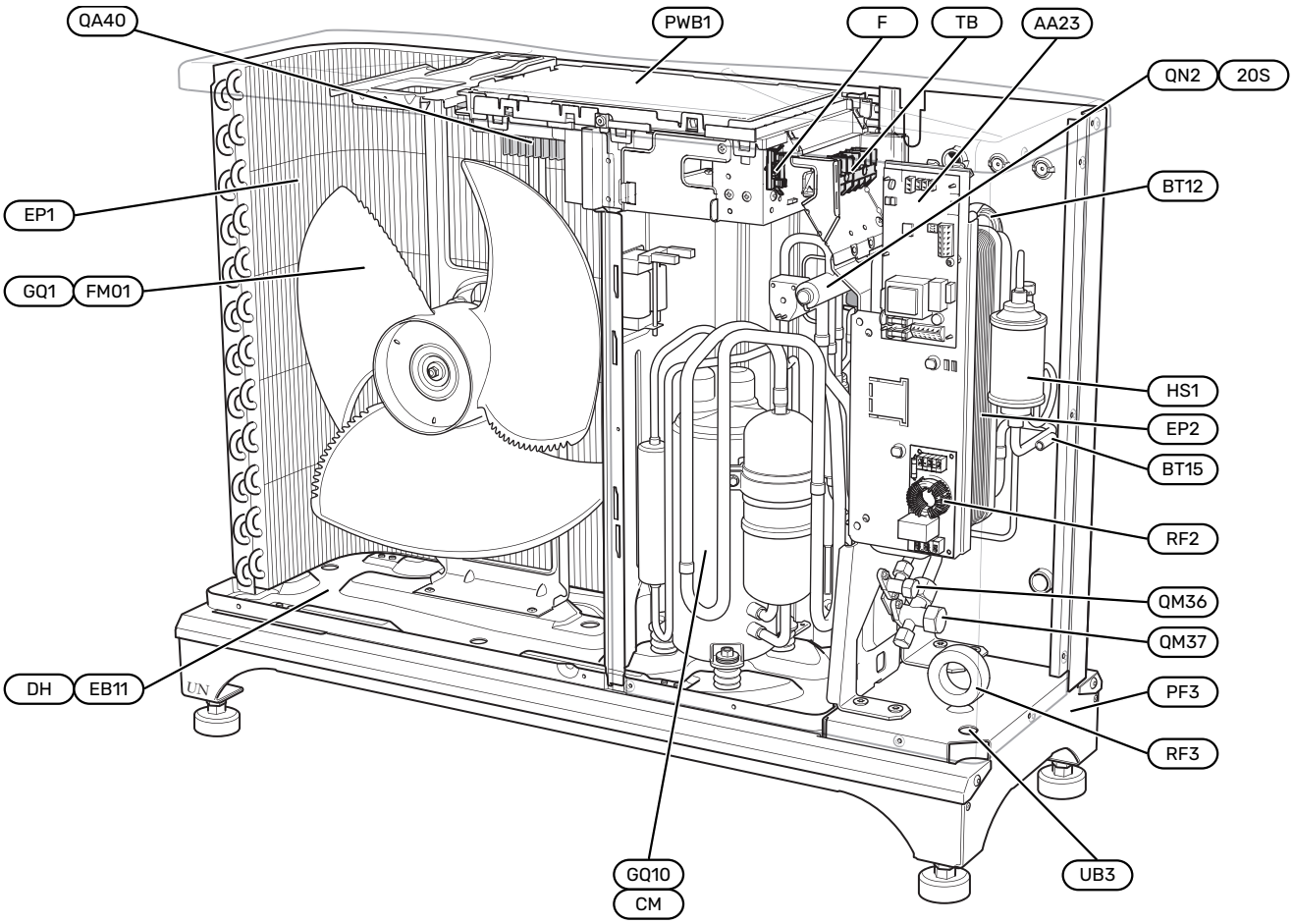
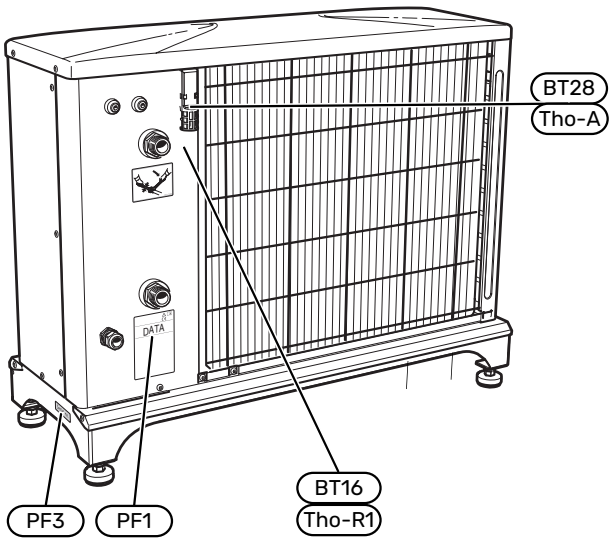


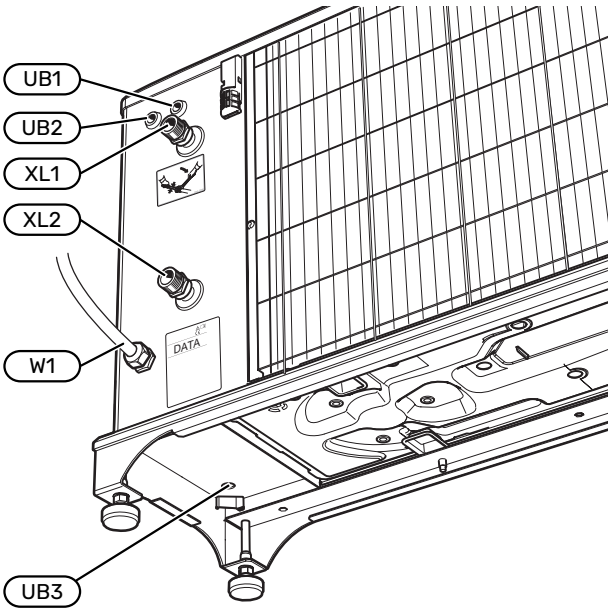
The heat pump design

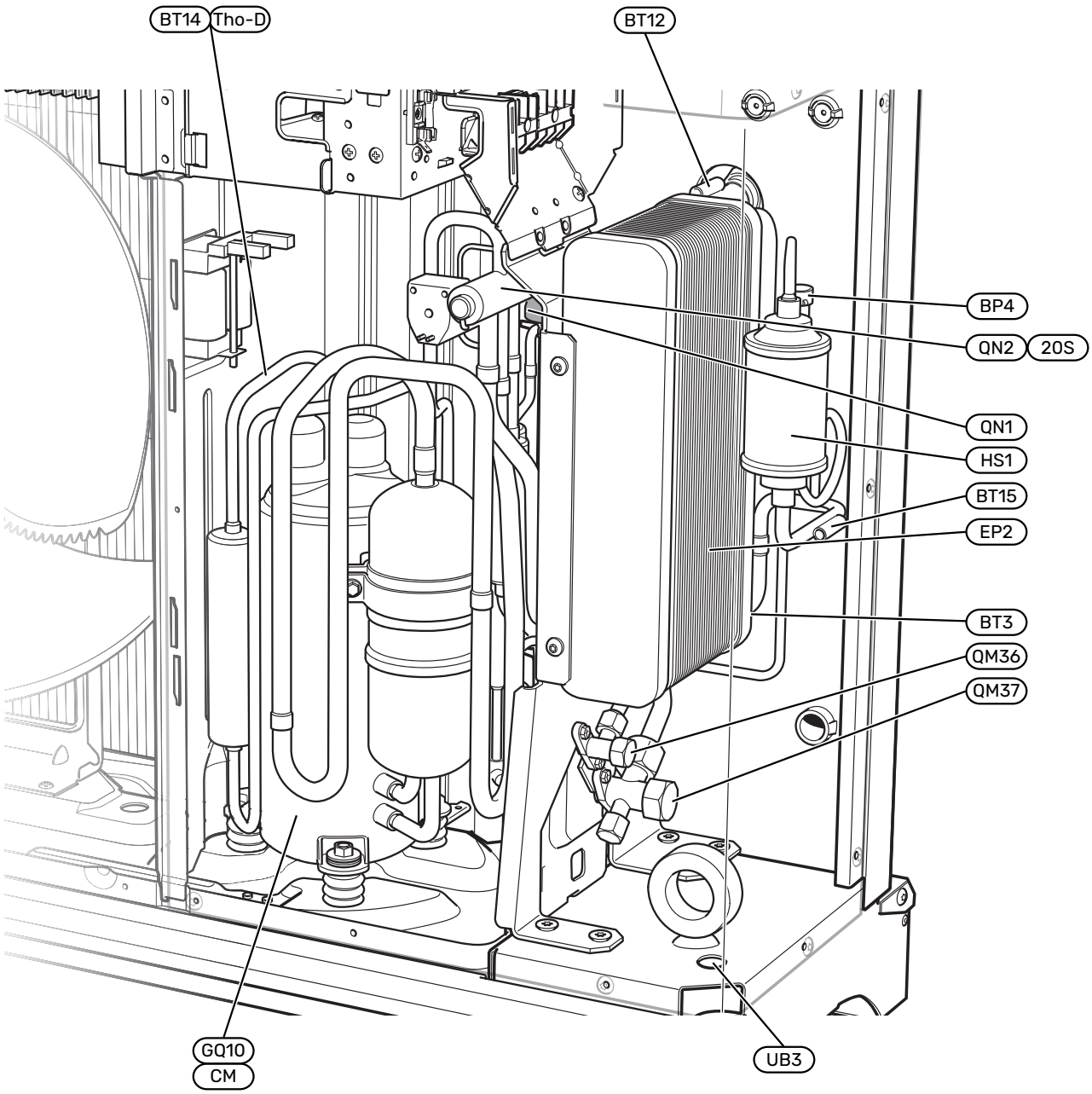
General

F2050-6

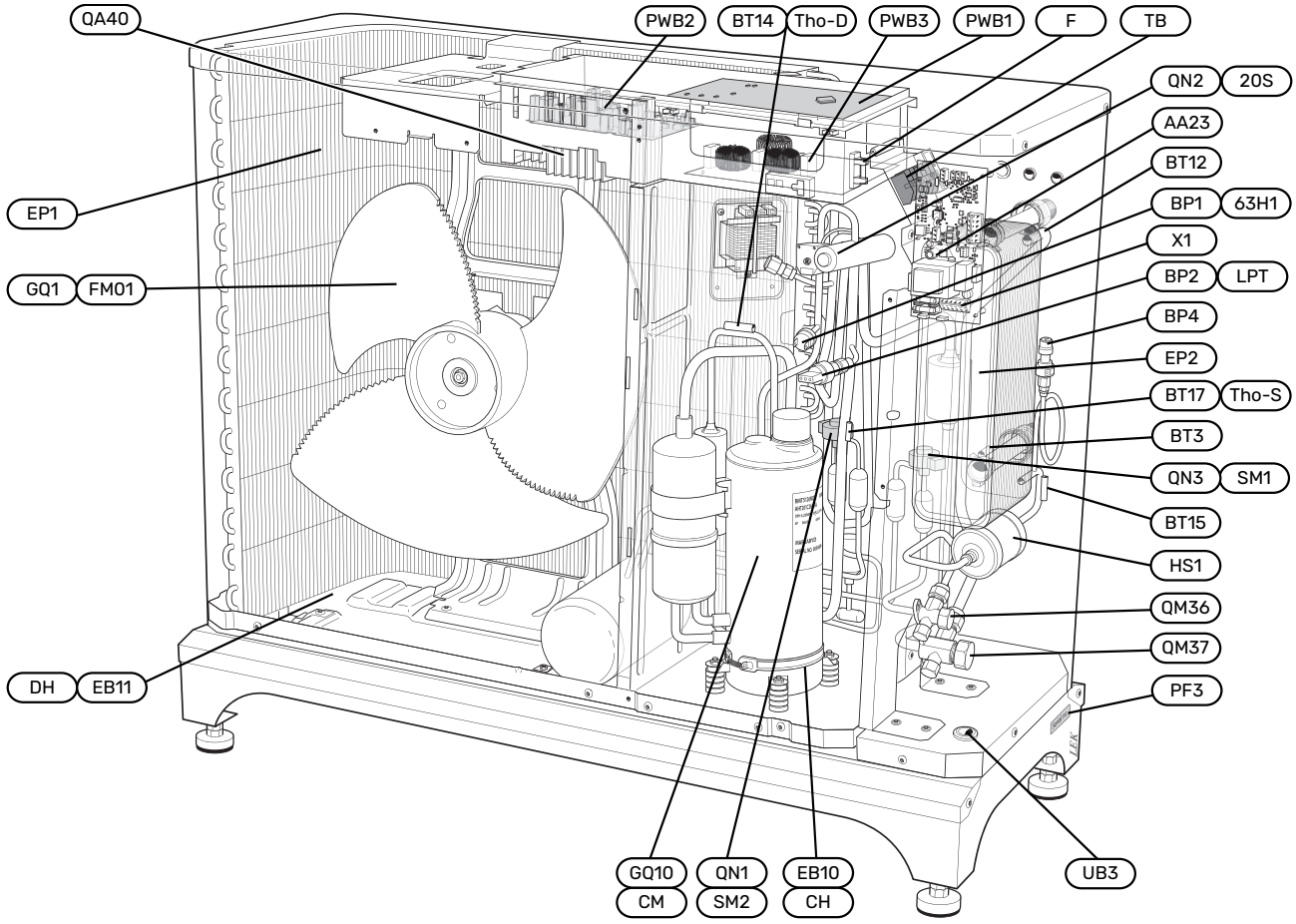


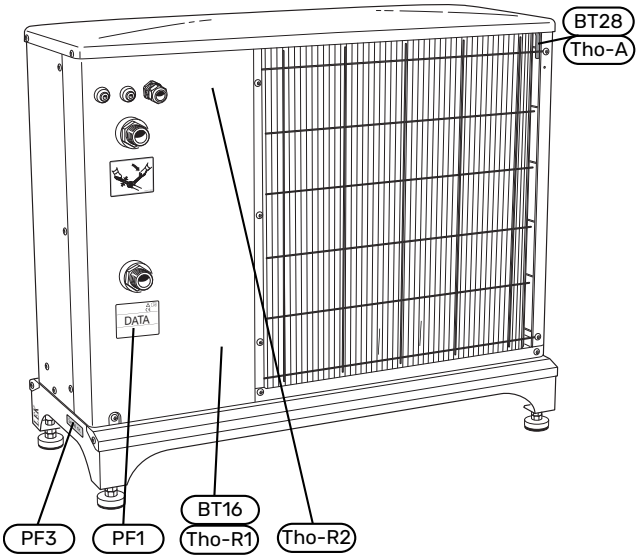


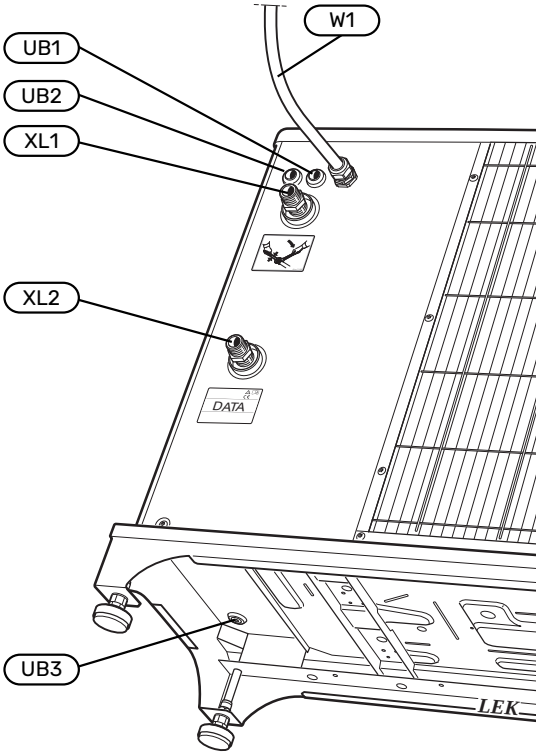



BT14
Tho-D
BT12
BP4
QN2
20S
QN1
HS1
BT15
EP2
BT3
QM36
QM37
GQ10
CM
UB3

F2050-10


QA40
PWB2
BT14
Tho-D
PWB3
PWB1
F
TB
QN2
20S
AA23
BT12
BP1
63H1
X1
BP2
LPT
BP4
EP2
BT17
Tho-S
BT3
QN3
SM1
BT15
HS1
QM36
QM37
PF3
EP1
GQ1
FM01
DH
EB11
GQ10
CM
QN1
SM2
EB10
CH
UB3


BT28
Tho-A
DATA
PF3
PF1
BT16
Tho-R1
Tho-R2


W1
UB1
UB2
XL1
XL2
DATA
UB3
LEK

Pipe connections

XL1	Heating medium connection, supply (from F2050)
XL2	Heating medium connection, return (to F2050)

Sensors etc.

BF1	Flow meter
BP1 (63H1)	High pressure pressostat
BP2 (LPT)	Low pressure transmitter
BP8	Low pressure transmitter
BP9	High pressure sensor
BT3 (Tho-W1)	Temperature sensor, return
BT12 (Tho-W2)	Temperature sensor, condenser supply line
BT14 (Tho-D)	Temperature sensor, hot gas
BT15 (Tho-L)	Temperature sensor, fluid pipe
BT16 (Tho-R1)	Temperature sensor 1, evaporator
BT16 (Tho-R2)	Temperature sensor 2, evaporator
BT17 (Tho-S)	Temperature sensor, suction gas
BT28 (Tho-A)	Temperature sensor, ambient

Electrical components

AA23	Communication board
AA23-F3	Fuse for external heating cable
AA23-S3	DIP switch, addressing of outdoor module
AA23-X1	Terminal block, KVR
AA23-X4	Terminal block, communication from indoor module
AA23-X100	Terminal block, communication outdoor module
EB10 (CH)	Compressor heater
EB11 (DH)	Drip tray heater
F	Main fuse compressor unit
GQ1 (FM01)	Fan
(PWB1)	Control board
(PWB2)	Inverter board
(PWB3)	Filter board
QA40	Inverter
RF2	EMC filter for inverter
(TB)	Terminal block, incoming supply and communication with board AA23
X1	Terminal block, incoming supply

Cooling components

EP1	Evaporator
EP2	Condenser
GQ10 (CM)	Compressor
HS1	Drying filter
QM36	Shut-off valve, liquid line
QM37	Shut-off valve, gas line
QN1 (SM2)	Expansion valve, heating and cooling
QN2 (20S)	4-way valve
QN3 (SM1)	Expansion valve, cooling

Miscellaneous

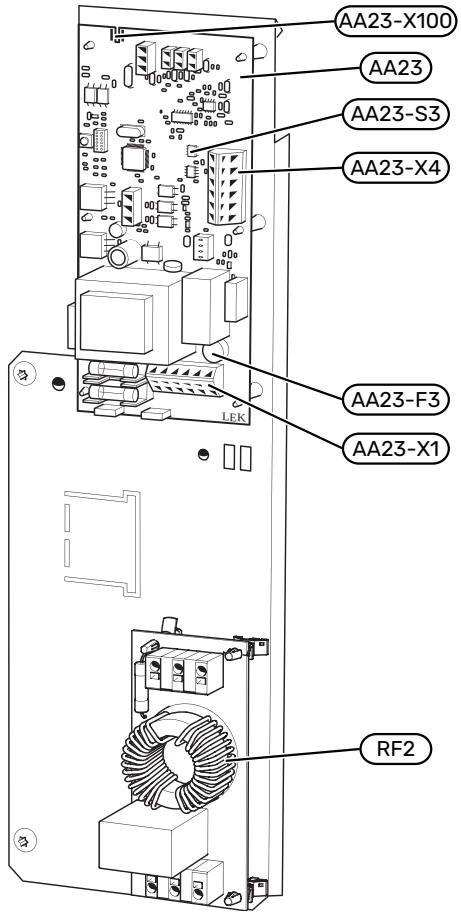
PZ1	Type plate
PZ3	Serial number
UB1	Cable gland, incoming supply
UB2	Cable grommet, communication
UB3	Cable gland, heating cable (EB14)
UB4	Cable grommet, fan

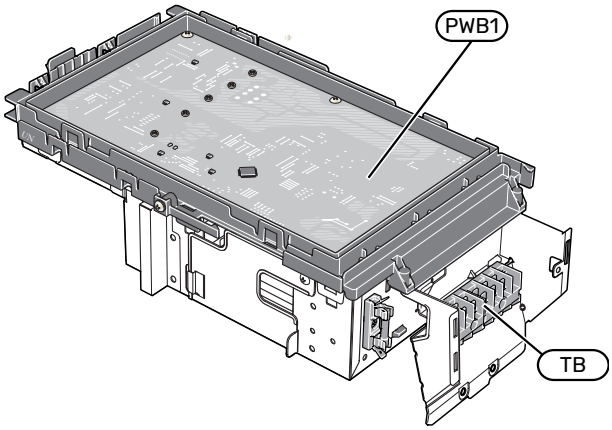
Designations according to standard EN 81346-2.

Designations within brackets according to the supplier's standard.

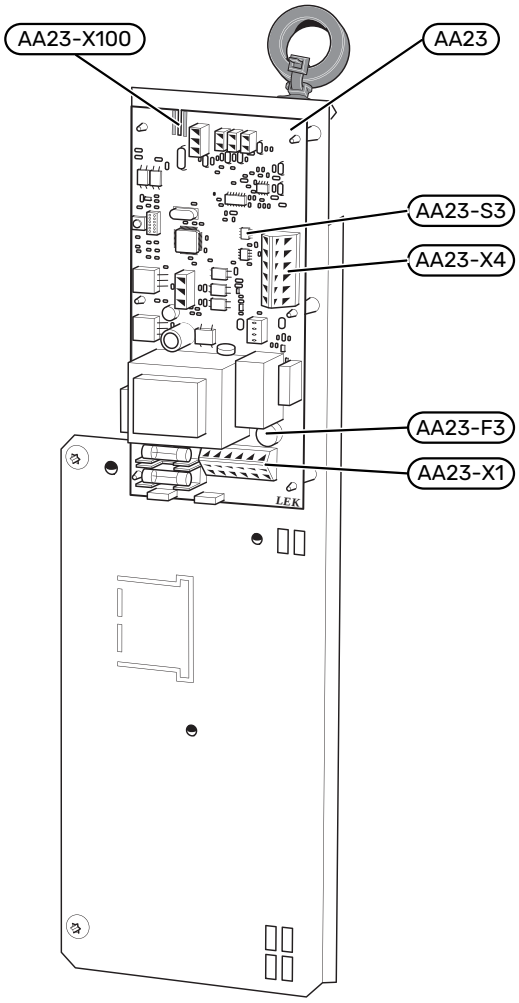
Electrical connection

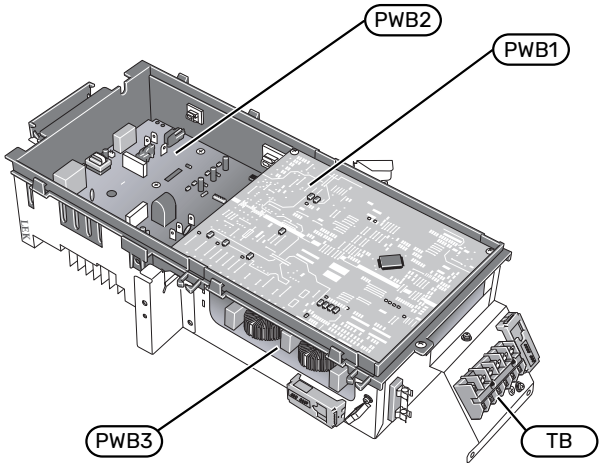
F2050-6





F2050-10





Electrical components

AA23	Communication board
AA23-F3	Fuse for external heating cable (250 mA), max 45 W.
AA23-S3	DIP switch, addressing of outdoor unit
AA23-X1	Terminal block, KVR
AA23-X4	Terminal block, communication from indoor module
AA23-X100	Communication with TB
EB10 (CH)	Compressor heater
EB11 (DH)	Drip tray heater
F	Main fuse compressor unit
GQ1 (FM01)	Fan
(PWB1)	Control board
(PWB2)	Inverter board
(PWB3)	Filter board
RF2	EMC-filter
(TB)	Terminal block, incoming supply and communication with board AA23
X1 (TB1)	Terminal block, incoming supply
X2 (TB2)	Terminal block, communications
X1	Terminal block, power supply

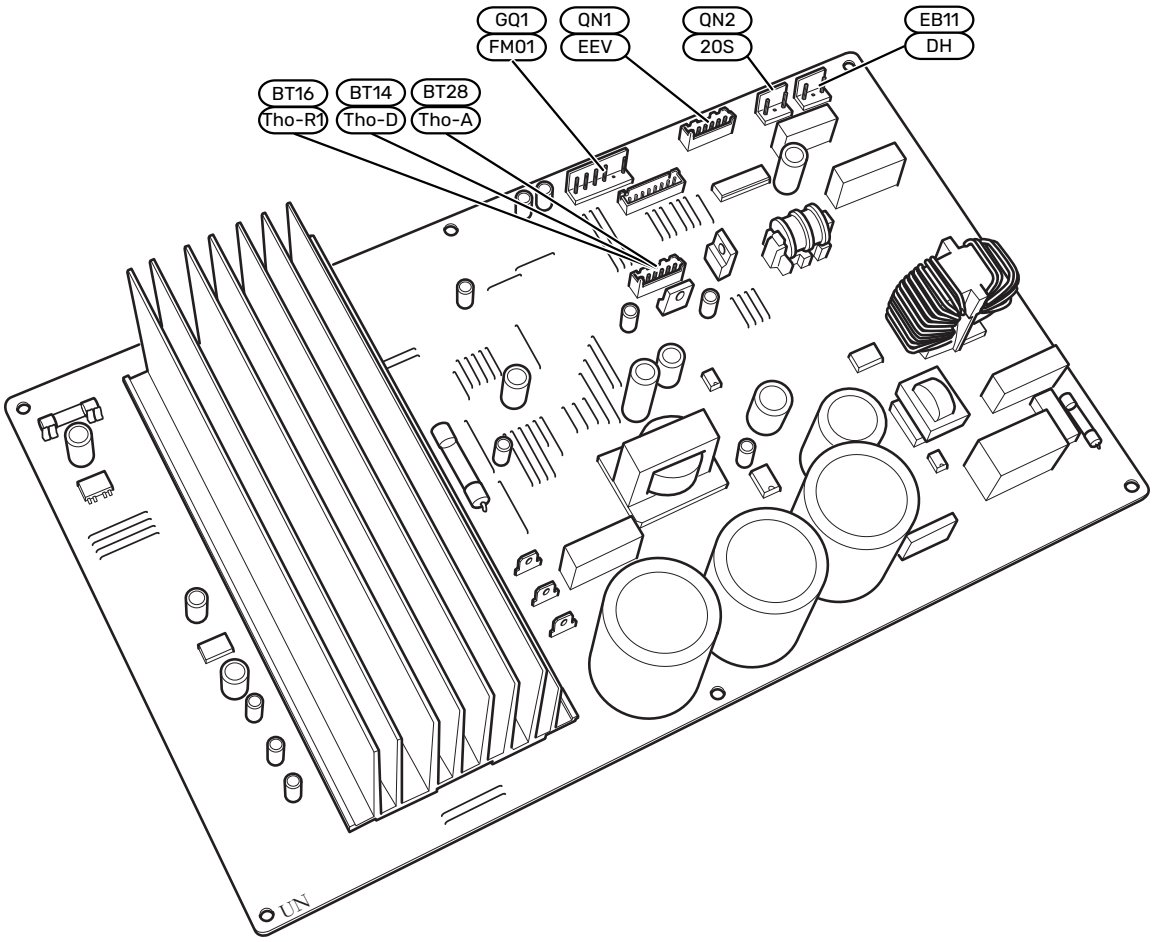
Designations according to standard EN 81346-2.

Designations within brackets according to the supplier's standard.

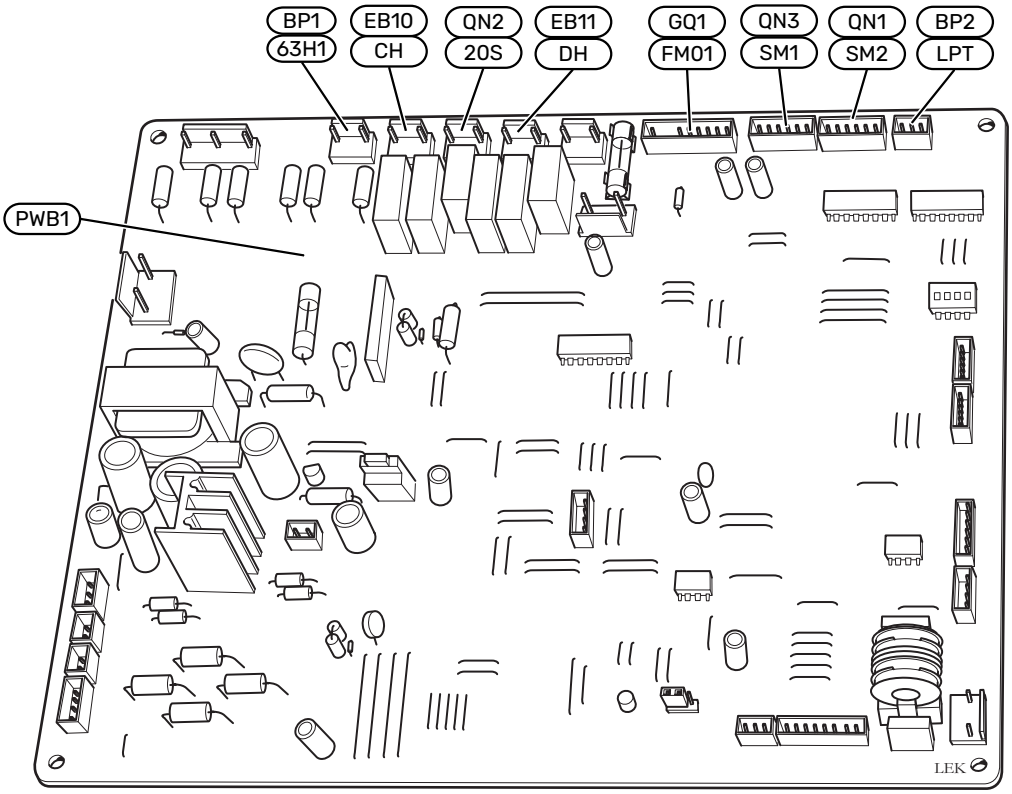
Sensor placement

CONNECTION TO BOARD (PWB1)

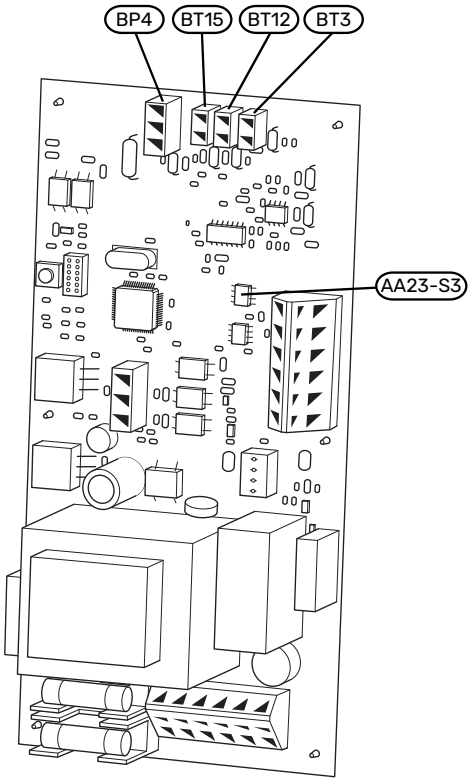
F2050-6



F2050-10

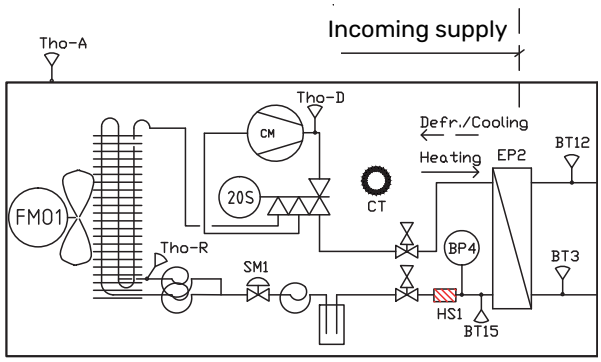


CONNECTION TO BOARD (AA23)

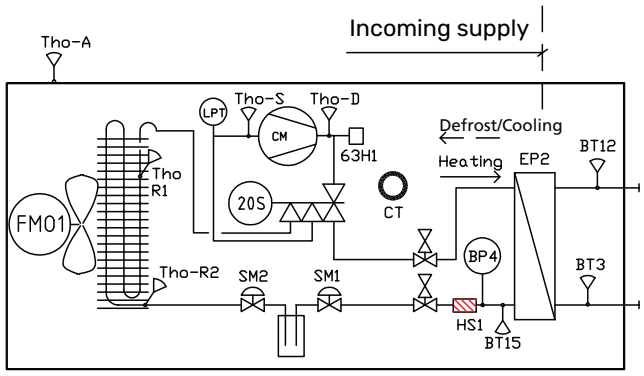


SENSOR PLACEMENT IN F2050

Outdoor module F2050-6



Outdoor module F2050-10



BE1 (CT)	Current sensor
BF1	Flow meter
BP1 (63H1)	High pressure pressostat
BP2 (LPT)	Low pressure transmitter
BT3 (Tho-W1)	Temperature sensor, heating medium return line
BT12 (Tho-W2)	Temperature sensor, condenser supply line
BT14 (Tho-D)	Temperature sensor, hot gas
BT15 (Tho-L)	Temperature sensor, fluid pipe
BT16 (Tho-R1)	Temperature sensor, heat exchanger, 1
BT16 (Tho-R2)	Temperature sensor, heat exchanger, 2
BT17 (Tho-S)	Temperature sensor, suction gas
BT28 (Tho-A)	Temperature sensor, ambient
EB10 (CH)	Compressor heater
EB11 (DH)	Drip tray heater
EP2	Condenser
GQ1 (FM01)	Fan
GQ10 (CM)	Compressor
HS1	Drying filter
QN1 (SM2)	Expansion valve, heating
QN2 (20S)	4-way valve
QN3 (SM1)	Expansion valve, cooling

Designations according to standard EN 81346-2.

Designations within brackets according to the supplier's standard.

Pipe connections

General

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

MINIMUM SYSTEM FLOWS

> **NOTE**
> An undersized climate system can result in damage to the product and lead to malfunctions.

Each climate system must be dimensioned individually to provide the recommended system flows.

The installation must be dimensioned to provide at least the minimum defrosting flow at 100 % circulation pump operation.

Air/water heat pump	Minimum flow during defrosting 100% circulation pump operation (l/s)	Minimum recommended pipe dimension (DN)	Minimum recommended pipe dimension (mm)
F2050-6	0.19	20	22
F2050-10			

F2050 can only operate up to a return temperature of about 55 °C and an outgoing temperature of about 58 °C from the heat pump.

F2050 is not equipped with shut-off valves on the heating medium side, rather these must be installed to facilitate any future servicing. The return temperature is limited by the return line sensor.

WATER VOLUMES

When docking with F2050 free flow in the climate system is recommended for correct heat transfer. This can be achieved by use of a bypass valve. If free flow cannot be ensured, it is recommended that a buffer tank (NIBE UKV) is installed.

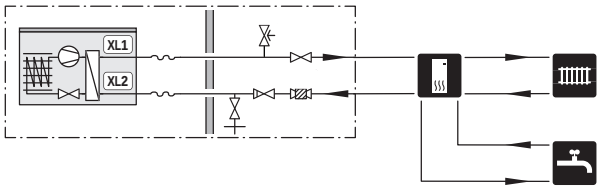
Following water volumes are recommended

F2050	-6	-10
Minimum volume, climate system during heating/cooling	20 l	50 l
Minimum volume, climate system during under floor cooling	50 l	80 l

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

SYSTEM DIAGRAM

System principles with hot water and heating system.



XL1 Heating medium connection, supply (from F2050)
XL2 Heating medium connection, return (to F2050)

Symbol key

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

Pipe coupling heating medium circuit

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

Caution

There is a difference between connection to a control module compared with connection to an indoor module.

See the Installer Manual for the indoor module/control module.

Vent the heat pump by the "heating medium supply" connection (XL1) using the venting nipple on the enclosed flexible hose.

Install as follows:

- expansion vessel
- pressure gauge
- safety valves
- drain valve

  For draining the heat pump during prolonged power failures.
- non-return valve

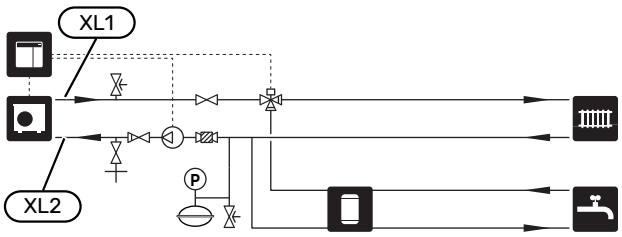
  Installations with only one heat pump: a non-return valve is only required in those cases where the placement of the products in relation to each other can cause self-circulation.

  Cascade installations: each heat pump must be fitted with a non-return valve.
- charge pump
- shut-off valve

  To facilitate any future servicing.
- enclosed filterball (QZ2)

  Installed before connection "heating medium return" (XL2) (the lower connection) on the vacuum 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.



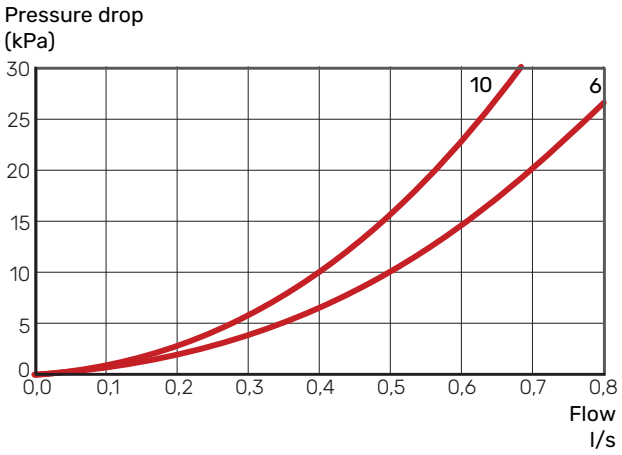
The image shows connection to the control module.

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, HEATING MEDIUM SIDE



PIPE CONNECTIONS FLEX HOSE

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

The supplied flexible hoses act as vibration dampers. The flexible pipes are fitted so an elbow is created, thus acting as vibration damping.

Installation alternative

F2050 can be installed with indoor module or control module. The necessary safety equipment must be installed in accordance with current regulations for all docking options.

The necessary safety equipment must be installed in accordance with current regulations for all of the installation options.

See nibe.eu for more installation options.

CONNECTING ACCESSORIES

Instructions for connecting accessories can be found in the installation instructions provided for each accessory. See section Accessories for a list of the accessories that can be used with F2050.

Electrical connections

General

- Electrical installation and wiring must be carried out in accordance with national provisions.
- Prior to insulation testing the house wiring, disconnect the air/water heat pump installation.
- If a miniature circuit breaker is used, this must have at least triggering characteristic "C". See section "Technical specifications" for fuse size.
- If the building is equipped with an RCD, F2050 must be equipped with a separate one.
- F2050 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 230V~ 50Hz via an electrical distribution unit 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

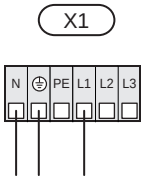
See section "Dismantling panels".

Connections

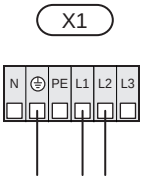
POWER CONNECTION

Incoming supply cable (W1) is enclosed and connected to terminal block X1 at the factory. Outside the heat pump there is approx. 1.8 m of cable available.

Connection 1 x 230 V

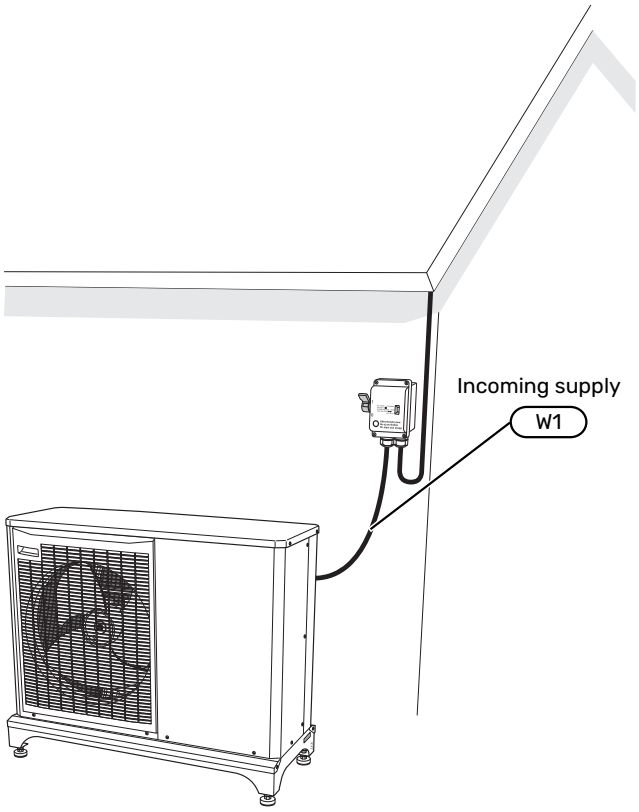


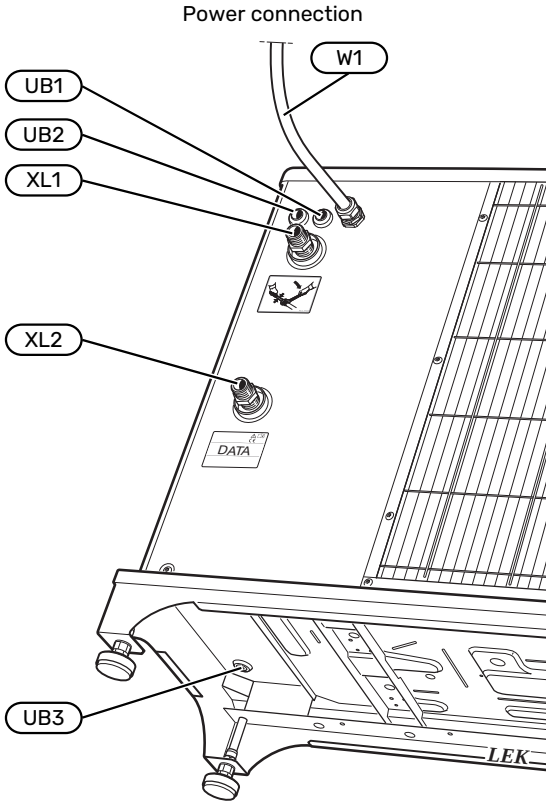
Connection 2 x 230 V



List of components

UB1	Cable grommet, cascade connection
UB2	Cable grommet, communication
UB3	Cable gland, heating cable (EB14)
XL1	Heating medium connection, supply (from F2050)
XL2	Heating medium connection, return (to F2050)

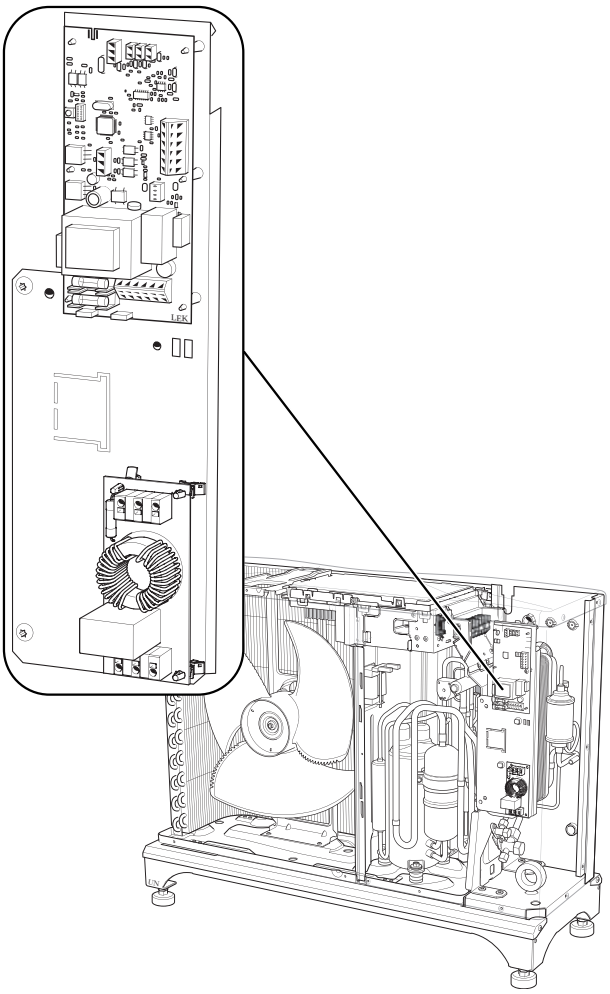




Communication cable (provided by installer) must be routed through cable grommet, communication (UB2), connected to terminal block AA23-X4 and secured with two cable ties.

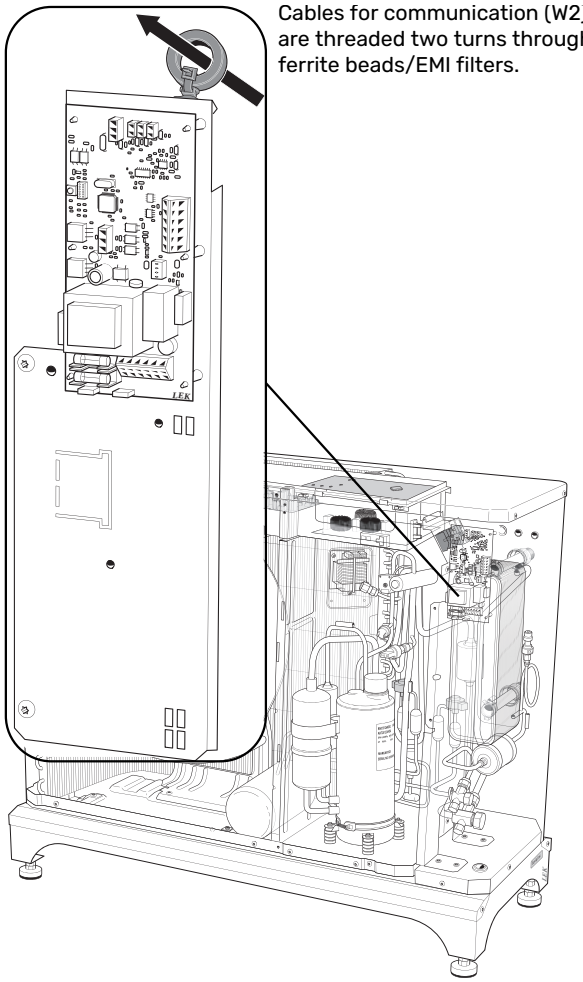
For connection of accessory KVR, heating cable (EB14) is connected via cable grommet UB3, see section "External heating cable KVR (Accessory)".

F2050-6



F2050-10

Cables for communication (W2) are threaded two turns through ferrite beads/EMI filters.



EXTERNAL HEATING CABLE KVR (ACCESSORY)

F2050-6 / -10

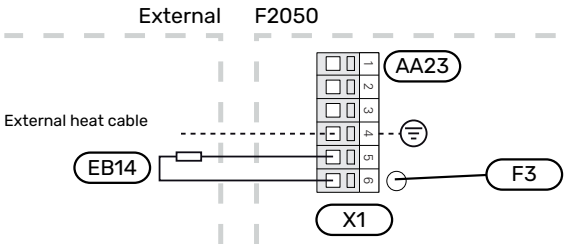
F2050 is equipped with a terminal block for external heating cable (EB14, not enclosed). The connection is fused with 250 mA (F3 on the communication board AA23). If another cable is to be used, the fuse must be replaced with a suitable one (see table).

> **NOTE**
>
> Self regulating heating cables must not be connected.

Length, heating cable (m)	P_{tot} (W)	Fuse (F3)	Part No.
1	15	T100mA/250V	718 085
3	45	T250mA/250V	518 900[1]
6	90	T500mA/250V	718 086

1 Fitted at the factory.

Connect external heating cable (EB14) to terminal block X1:4–6 as illustrated below:

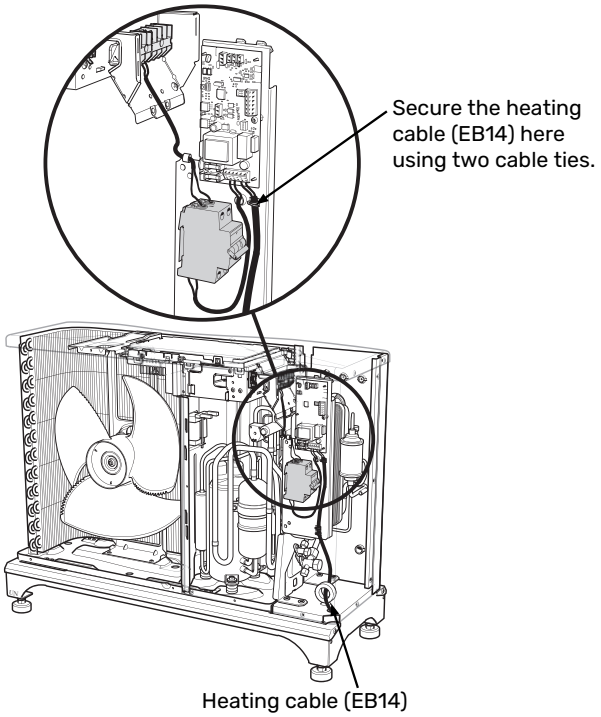


> **NOTE**
>
> The pipe must be able to withstand the heat from the heating cable.
>
> To ensure this function, the accessory KVR should be used.

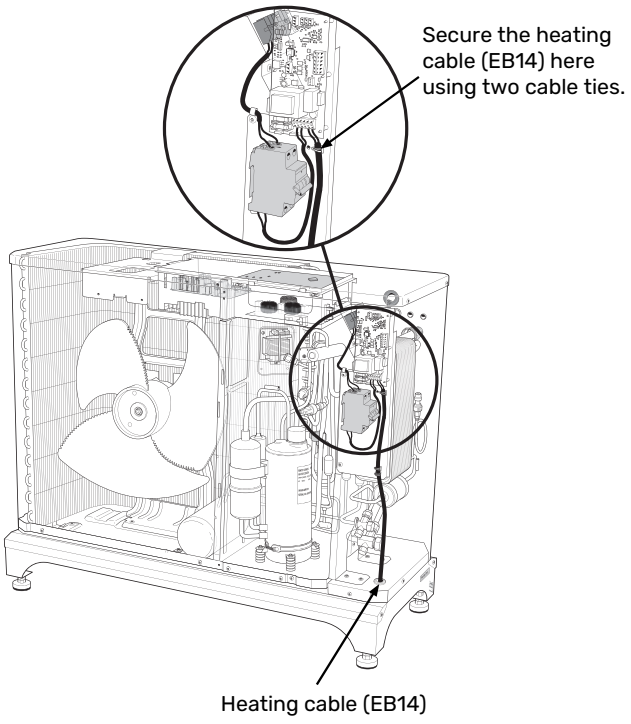
Cable routing

The following images show recommended cable routing from the electrical connection to the condensation pipe. Route the heating cable (EB14) through the gland on the underside and secure with two cable ties at the electrical connection. The transition between the electrical cable and the heating cable must occur after the gland to the condensation pipe.

F2050-6



F2050-10



AMBIENT TEMPERATURE SENSOR

An ambient temperature sensor BT28 (Tho-A) is located on the rear of F2050.

COMMUNICATION

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

Software version

To allow F2050 to communicate with indoor module/control module, you may need to update to a more recent software version.

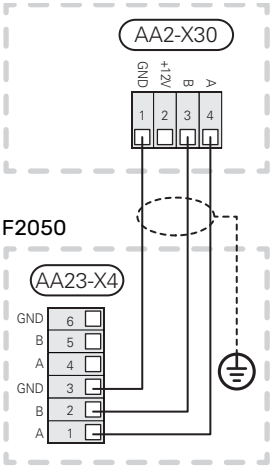
Connection to indoor module

Communication cable (W2) is inserted from the rear through "cable grommet, communication" (UB2).

F2050 can communicate with indoor modules, by connecting the indoor module to the terminal block AA23-X4:1–3.

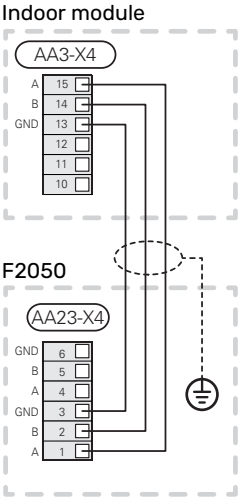
VVM S

Indoor module



VVM

Indoor module



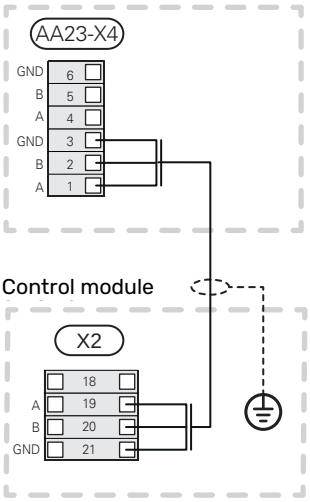
Connection to control module

SMO 20

F2050 can communicate with control module (SMO 20), by connecting the terminal block for communication (AA23-X4:1, 2, 3) in F2050 to the terminal block for communication in SMO 20, X2-19(A), -20(B), -21(GND).

Stripped length of conductor is 6 mm.

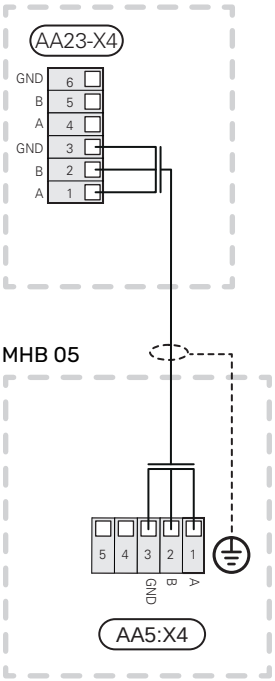
F2050



Connecting to hydrobox

F2050 can communicate with mini hydrobox (MHB 05), by connecting the terminal block for communication (AA23-X4:1, 2, 3) in F2050 to the terminal block for communication in MHB 05, AA5:X4-1(A), -2(B), -3(GND).

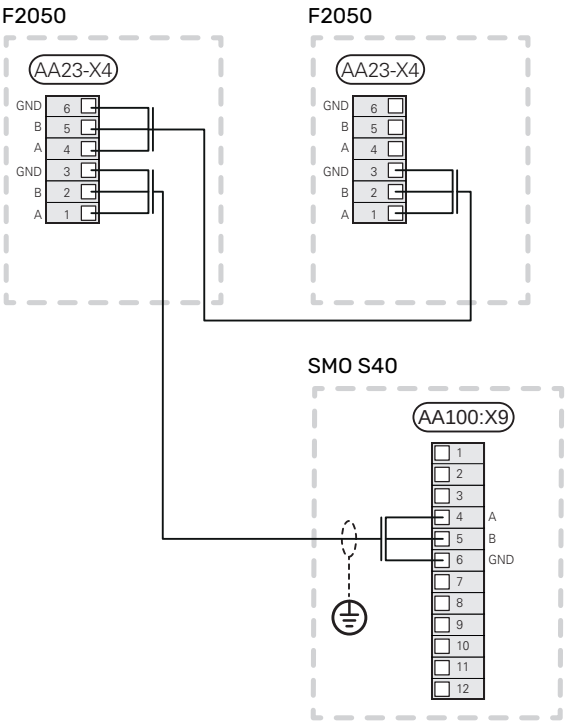
F2050



Cascade connection

SMO S40

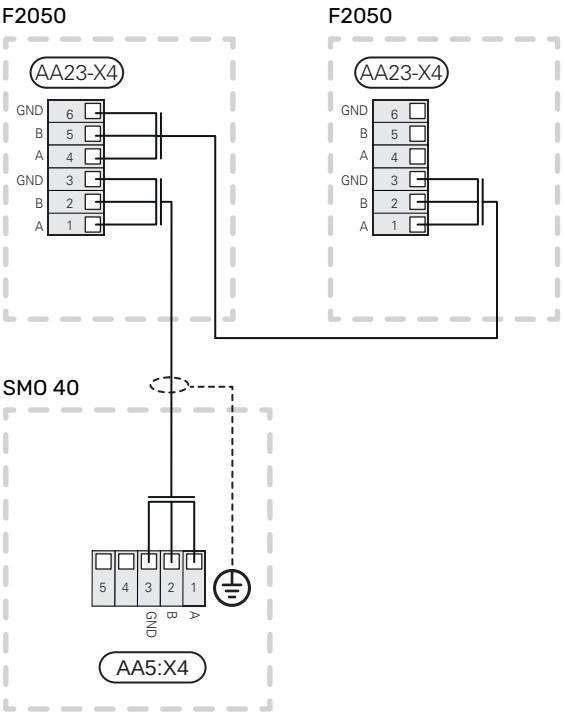
F2050 (one or more) can communicate with control module (SMO S40), by connecting the terminal block for communication (AA23-X4:1, 2, 3) in F2050 to the terminal block for communication in SMO S40, AA100:X9-4(A), -5(B), -6(GND).



SMO 40

F2050 (one or more) can communicate with control module (SMO 40), by connecting the terminal block for communication (AA23-X4:1, 2, 3) in F2050 to the terminal block for communication in SMO 40, AA5:X4-1(A), -2(B), -3(GND).

Stripped length of conductor is 6 mm.



Addressing via cascade connection

On the communication board (AA23-S3), the communication address is selected for F2050 to the control module. The default address for F2050 is **1**. In a cascade connection, all F2050 must have a unique address. The address is coded in binary.

Address	S3:1	S3:2	S3:3
1	OFF	OFF	OFF
2	On	OFF	OFF
3	OFF	On	OFF
4	On	On	OFF
5	OFF	OFF	On
6	On	OFF	On
7	OFF	On	On
8	On	On	On

Commissioning and adjusting

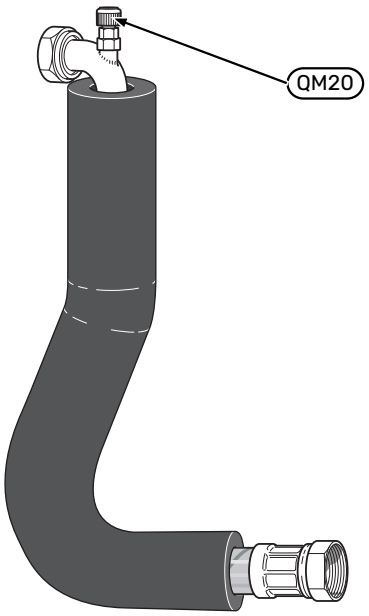
Preparations

- Before commissioning, check that the charge circuit and climate system are filled and well vented.
- Check the pipe system for leaks.

Filling and venting

Filling and venting the heating medium system.

1. The heating medium system is filled with water to the required pressure.
2. Vent the system using the venting nipple (QM20) on the enclosed flexible hose and possibly the circulation pump.



Compressor heater

F2050 (does not apply to F2050-6) is equipped with a compressor heater that heats the compressor before start-up and when the compressor is cold.

> **NOTE**
>
> The compressor heater must have been connected for 6 – 8 hours before the first start, see the section “Start-up and inspection” in the Installer Manual for the indoor section

Start-up and inspection

1. The compressor heater (CH) must have been operational for at least 6 - 8 hours before the compressor start can be initiated. This is done by switching on the control voltage and disconnecting the communication cable.
2. F2050 must be addressed, if it is to have an address other than 1. See chapter "Addressing via cascade connection".
3. The communication cable on the terminal block AA23-X4 must not be connected.
4. Turn the isolator switch on.
5. Ensure that the F2050 is connected to the power source.
6. After 6 – 8 hours, connect the communication cable (W2) to the terminal block AA23-X4.
7. Restart the indoor module. Follow the instructions for "Start-up and inspection" in the installation manual for the indoor module.

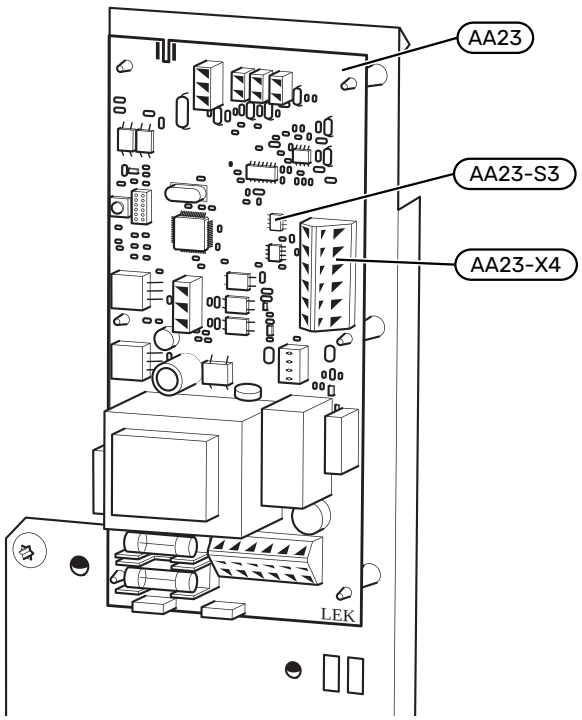
The heat pump starts 30 minutes after the outdoor unit has been powered up and the communication cable (W2) has been connected, if necessary.

If scheduled *silent operation*is required, it must be scheduled in the inner section or control unit.

> **NOTE**
>
> Do not start any electrical work until at least two minutes after cutting the power.

> **Caution**
>
> Silent mode should only be scheduled periodically because the maximum output is limited to approx. the nominal values.

F2050-6 / -10



Readjusting, heating medium side

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

Adjustment, charge flow

Instructions for adjusting hot water charging are in the Installer Manual for the relevant indoor module. See section Accessories for a list of the indoor units and accessories that can be connected to F2050.

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.

Cooling permitted
Alternative: on/off

Silent mode permitted
Alternative: on/off

Max. frequency 1
Setting range: 25 – 120 Hz

Max. frequency 2
Setting range: 25 – 120 Hz

Compressor phase
Setting range F2050 1 x 230 V: L1, L2, L3

Detect compressor phase
Alternative F2050 1 x 230 V: on/off

Current limit
Alternative F2050 1 x 230 V: on/off

Max. current
Setting range F2050 1 x 230 V: 6 – 32 A

Stop temperature compressor
Setting range -20 – -2 °C

blockFreq 1
Alternative: on/off

From frequency
Setting range: 25 – 117 Hz

To frequency
Setting range: 28 – 120 Hz

blockFreq 2
Alternative: on/off

From frequency
Setting range, cooling,
F2050-6: 20 – 106 Hz

Setting range, cooling,
F2050-10: 12 – 90 Hz

To frequency
Setting range, heating,
F2050-6: 20 – 110 Hz

Setting range, heating,
F2050-10: 20 – 120 Hz

Cooling permitted: Here, you can set whether the cooling function will be activated for the heat pump.

Silent mode permitted: Here, you set whether silent mode will be activated for the heat pump. Note, it is now possible to schedule when silent mode will be active. The function should only be used for limited periods, because F2050 might not reach its dimensioned power.

Detect compressor phase: This shows in which phase the heat pump detected that you have F2050 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 F2050 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 disturbing noise in the house.

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

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.

Cooling permitted
Setting range: off / on

Silent mode permitted
Setting range: yes / no

Detect compressor phase
Setting range F2050 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

Cooling permitted: Here, you can set whether the cooling function will be activated for the heat pump.

Silent mode permitted: Here, you set whether silent mode will 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 F2050 possibly may not reach its dimensioned output.

Detect compressor phase: This shows in which phase the heat pump detected that you have F2050 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 F2050 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 disturbing noise in the house.

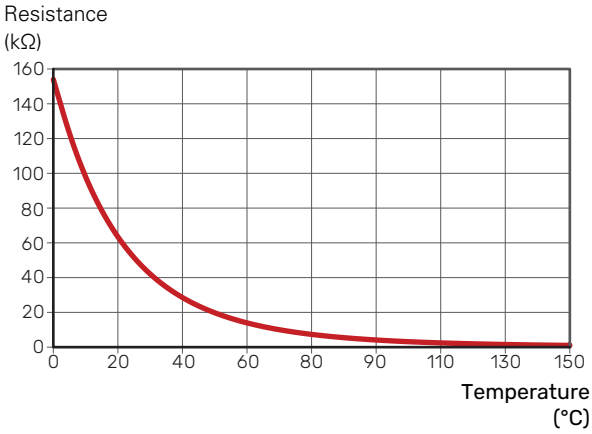
BlockFreq 2: Here, you can select a frequency range within which the heat pump is not permitted to work.

Service

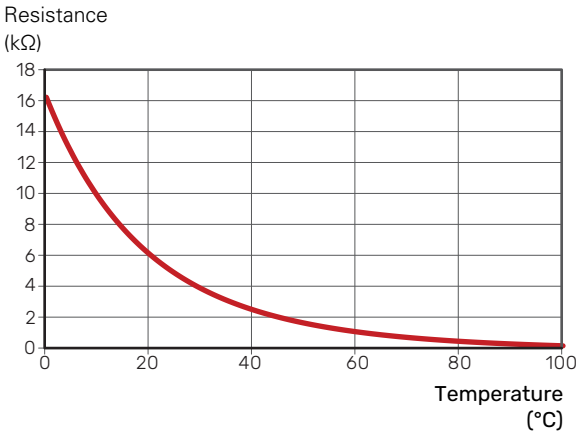
Temperature sensor data

DATA FOR TEMPERATURE SENSOR IN F2050-6

Tho-D

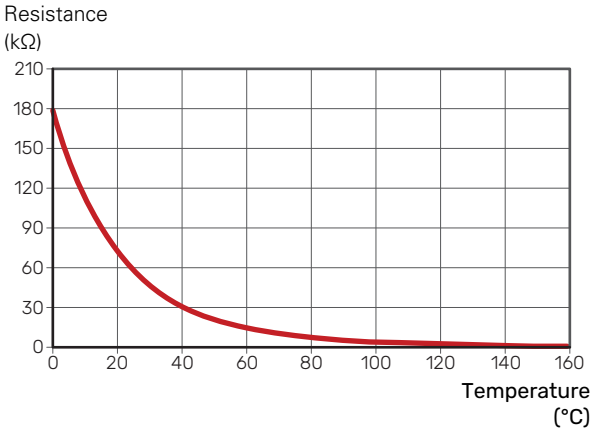


Tho-A, R

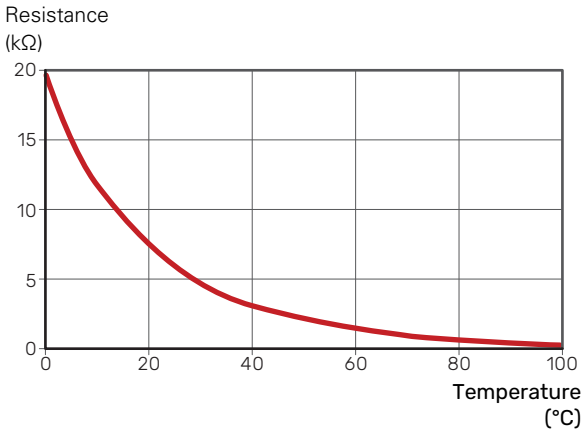


DATA FOR TEMPERATURE SENSOR IN F2050-10

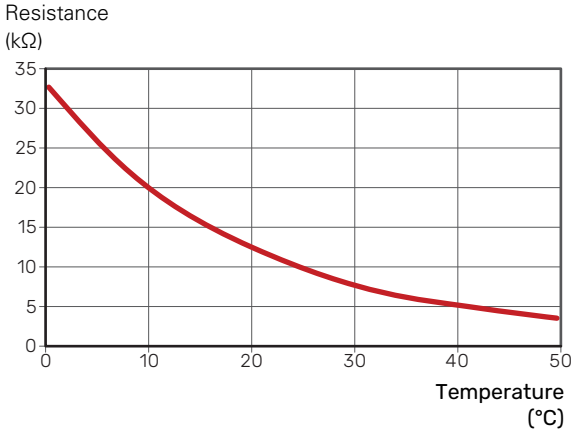
Tho-D



Tho-S, Tho-R1, Tho-R2



BT28 (Tho-A)



DATA FOR TEMPERATURE SENSOR BT3, BT12, BT15

Temperature (°C)	Resistance (kOhm)	Voltage (VDC)
-10	56.20	3.047
0	33.02	2.889
10	20.02	2.673
20	12.51	2.399
30	8.045	2.083
40	5.306	1.752
50	3.583	1.426
60	2.467	1.136
70	1.739	0.891
80	1.246	0.691

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.

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.
- That the air flow to F2050 is not blocked by foreign objects.
- That F2050 does not have any external damage.

F2050 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.

F2050 NOT COMMUNICATING

- Check that the addressing of F2050 is correct.
- Check that the communication cable is correctly connected and working.

LOW HOT WATER TEMPERATURE OR A LACK OF HOT WATER

> **Caution**
> The setting for the hot water is always performed on the indoor module or the control module.

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 Installer Manual for the indoor module/control module.
- Clogged filterball.
  - Switch off the system. Check and clean the filterball.

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 Installer Manual for the indoor module/control module.
- Air-filled radiators/underfloor heating coils.
  - Bleed the system.

HIGH ROOM TEMPERATURE

- Incorrect settings in indoor module or control module.
  - See the Installer Manual for the indoor module/control module.

LARGE AMOUNT OF WATER BELOW F2050

- The accessory KVR 10 is required.
- If KVR 10 is installed, check that the water drainage can flow freely.

Alarm list

Alarm	Alarm text on the display	Description	May be due to
3	Sensor fault BT3	Sensor fault, Sensor incoming water in F2050 (BT3).	• Open circuit or short circuit on sensor input • Sensor does not work (see section "Disturbances in comfort") • Defective control board AA23 in F2050
12	Sensor fault BT12	Sensor fault, Sensor outgoing water in F2050 (BT12).	• Open circuit or short circuit on sensor input • Sensor does not work (see section "Disturbances in comfort") • Defective control board AA23 in F2050
15	Sensor fault BT15	Sensor fault, Sensor fluid pipe in F2050 (BT15).	• Open circuit or short circuit on sensor input • Sensor does not work (see section "Disturbances in comfort") • Defective control board AA23 in F2050
162	High condenser out	Too high temperature out from the condenser. Self-resetting.	• Low flow during heating operation • Too high set temperatures
163	High condenser in	Too high temperature into the condenser. Self-resetting.	• Temperature generated by another heat source
183	Defrosting in progress	not an alarm, but an operating status instead.	• Set when the heat pump runs the defrosting procedure
220	HP alarm	The high pressure switch (63H1) deployed 5 times within 60 minutes or for 60 minutes continuously.	• Insufficient air circulation or blocked heat exchanger • Open circuit or short circuit on input for high pressure switch (63H1) • Defective high pressure switch • Expansion valve not connected correctly • Service valve closed • Defective control board in F2050 • Low or no flow during heating operation • Defective circulation pump • Defective fuse, F(4A)
221	LP alarm	Too low value on the low pressure sensor 3 times within 60 minutes.	• Open circuit or short circuit on input for low pressure sensor • Defective low pressure sensor • Defective control board in F2050 • Open circuit or short circuit on input for suction gas sensor (Tho-S) • Defective suction gas sensor (Tho-S)
223	OU Com. error	Communication between the control board and the communication board is interrupted. There must be 22 volt direct current (DC) at the switch CNW2 on the control board (PWB1).	• Any circuit breakers for F2050 off • Incorrect cable routing
224	Fan alarm	Deviations in the fan speed in F2050.	• The fan cannot rotate freely • Defective control board in F2050 • Defective fan motor • Control board in F2050 dirty • Fuse (F2) blown
230	Continuously high hot gas	Temperature deviation on the hot gas sensor (Tho-D) twice within 60 minutes or for 60 minutes continuously.	• Sensor does not work (see section "Ambient temperature sensor") • Insufficient air circulation or heat exchanger • Blocked • If the fault persists during cooling, there may be an insufficient amount of refrigerant. • Defective control board in F2050
254	Communication error	Communication fault with accessory board	• F2050 not powered • Fault in the communication cable.
261	High temperature in heat exchanger	Temperature deviation on the heat exchanger sensor (Tho-R1/R2) five times within 60 minutes or for 60 minutes continuously.	• Sensor does not work (see section "Disturbances in comfort") • Insufficient air circulation or blocked heat exchanger • Defective control board in F2050 • Too much refrigerant
262	Power transistor too hot	When IPM (Intelligent power module) displays FO-signal (Fault Output) five times during a 60-minute period.	• Can occur when 15V power supply to the inverter PCB is unstable.
263	Inverter error	Voltage from the inverter outside the parameters four times within 30 minutes.	• Incoming power supply interference • Service valve closed • Insufficient amount of refrigerant • Compressor fault • Defective circuit board for inverter in F2050

Alarm	Alarm text on the display	Description	May be due to
264	Inverter error	Communication between circuit board for inverter and control board broken.	• Open circuit in connection between boards • Defective circuit board for inverter in F2050 • Defective control board in F2050
265	Inverter error	Continuous deviation on power transistor for 15 minutes.	• Defective fan motor • Defective circuit board for inverter in F2050
266	Not enough refrigerant	Not enough refrigerant is detected on start-up in cooling mode.	• Service valve closed • Loose connection sensor (BT15, BT3) • Defective sensor (BT15, BT3) • Too little refrigerant
267	Inverter error	Failed start for compressor	• Defective circuit board for inverter in F2050 • Defective control board in F2050 • Compressor fault
268	Inverter error	Overcurrent, Inverter A/F module	• Sudden power failure
271	Cold outdoor air	Temperature of BT28 below the value that permits operation	• Cold weather conditions • Sensor fault
272	Hot outdoor air	Temperature of BT28 above the value that permits operation	• Warm weather conditions • Sensor fault
277	Sensor fault Tho-R	Sensor fault, heat exchanger in F2050(Tho-R).	• Open circuit or short circuit on sensor input • Sensor does not work (see section "Disturbances in comfort") • Defective control board in F2050
278	Sensor fault Tho-A	Sensor fault, outdoor temperature sensor in F2050 (Tho-A).	• Open circuit or short circuit on sensor input • Sensor does not work (see section "Disturbances in comfort") • Defective control board in F2050
279	Sensor fault Tho-D	Sensor fault, hot gas in F2050 (Tho-D).	• Open circuit or short circuit on sensor input • Sensor does not work (see section "Disturbances in comfort") • Defective control board in F2050
280	Sensor fault Tho-S	Sensor fault, suction gas in F2050 (Tho-S).	• Open circuit or short circuit on sensor input • Sensor does not work (see section "Disturbances in comfort") • Defective control board in F2050
281	Sensor fault LPT	Sensor fault, low pressure transmitter in F2050.	• Open circuit or short circuit on sensor input • Sensor does not work (see section "Disturbances in comfort") • Defective control board in F2050 • Fault in the refrigerant circuit
294	Non-compatible air/water heat pump	Heat pump and indoor module do not function together properly due to technical parameters.	• Outdoor module and indoor module are not compatible.
404	Sensor fault BP4	Sensor fault, Sensor high pressure heating/low pressure cooling in F2050 (BP4).	Open circuit or short circuit on sensor input Sensor does not work (see section "Disturbances in comfort") Defective control board AA23 in F2050

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 KVR

Condensation water pipe, different lengths.

KVR 10-10

1 metres

Part no. 067 614

KVR 10-30

3 metres

Part no. 067 616

KVR 10-60

6 metres

Part no. 067 618

STAND AND BRACKETS

Ground stand GSU 30

F2050-6, -10

Part no. 067 653

Wall bracket BAU 30

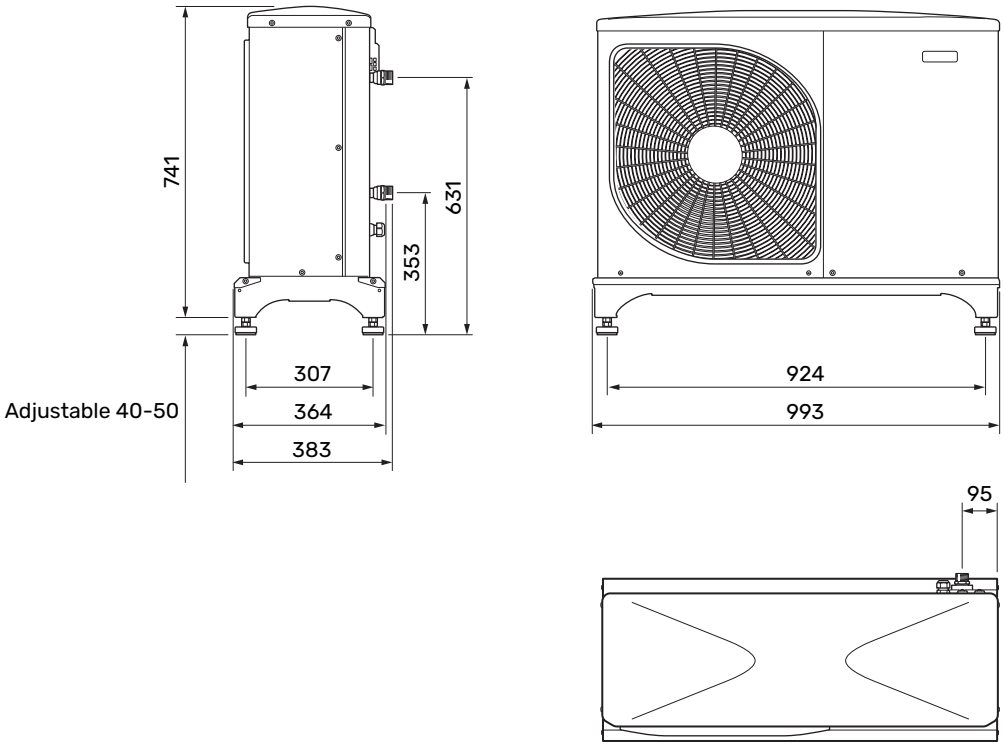
For wall mounting F2050-6, -10

Part no. 067 832

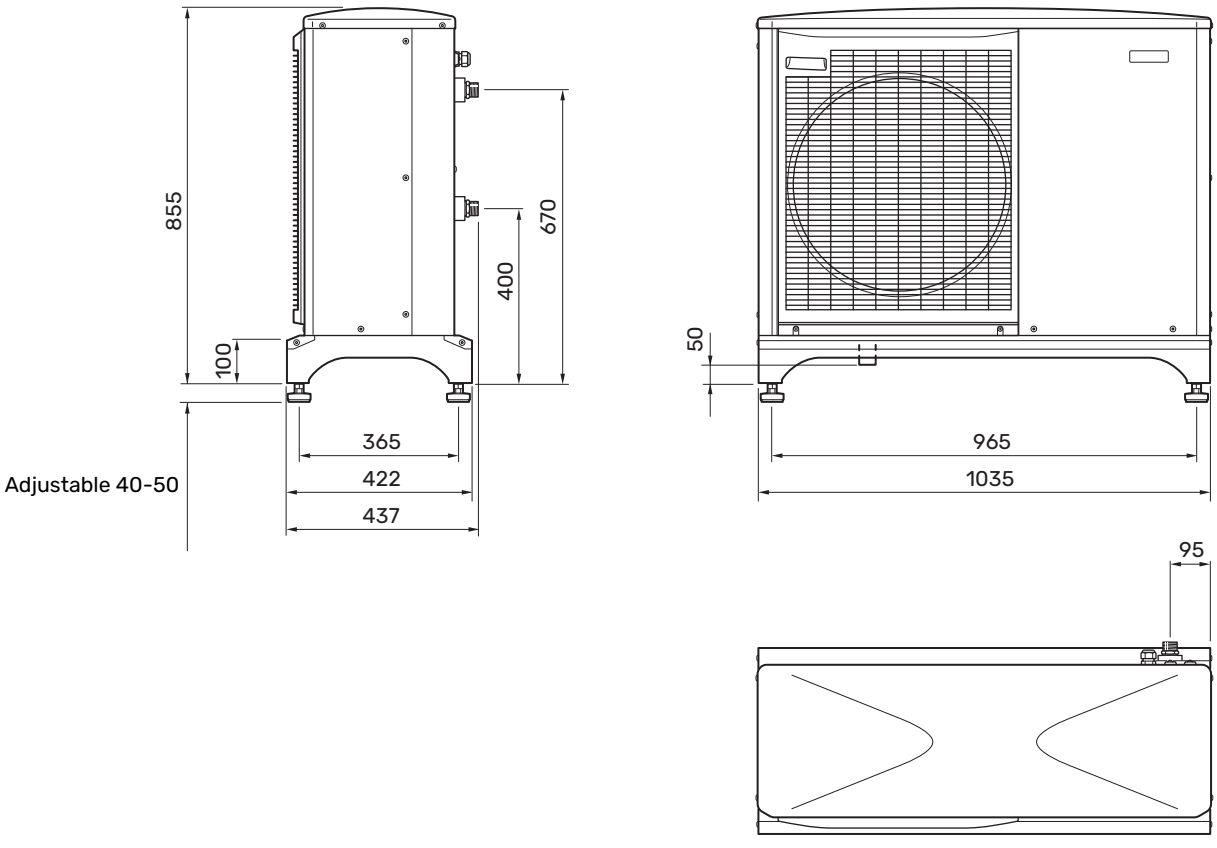
Technical data

Dimensions

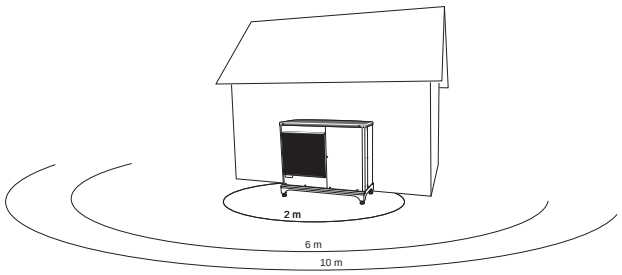
F2050-6



F2050-10



Sound levels



F2050 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.

F2050 adjusts the fan speed depending on the ambient temperature and evaporation temperature.

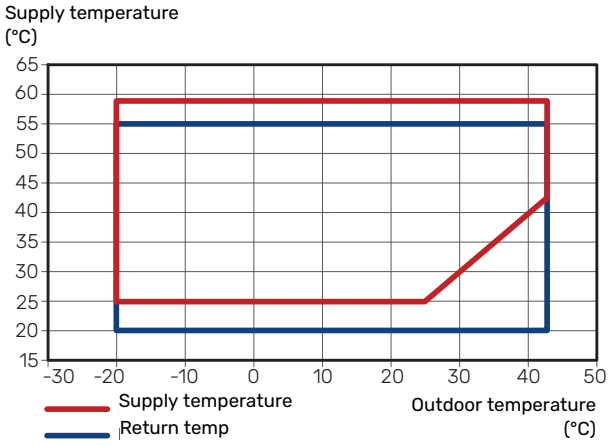
		Sound power [1]	Sound pressure at distance (m) [2]									
			1	2	3	4	5	6	7	8	9	10
F2050-6	Nominal sound value	53	48.0	42.0	38.5	36.0	34.0	32.5	31.1	30.0	28.9	28.0
	Max. sound value	62	57.0	51.0	47.5	45.0	43.0	41.5	40.1	39.0	37.9	37.0
	Max. sound value, silent mode	53	48.0	42.0	38.5	36.0	34.0	32.5	31.1	30.0	28.9	28.0
F2050-10	Nominal sound value	53	48.0	42.0	38.5	36.0	34.0	32.5	31.1	30.0	28.9	28.0
	Max. sound value	65	60.0	54.0	50.5	48.0	46.0	44.5	43.1	42.0	40.9	40.0
	Max. sound value, silent mode 60 Hz	53	48.0	42.0	38.5	36.0	34.0	32.5	31.1	30.0	28.9	28.0

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

2 Sound pressure calculated according to directivity factor Q=4

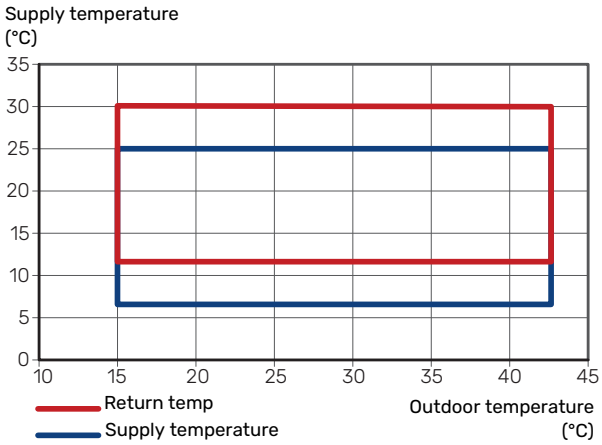
Technical specifications

WORKING RANGE, HEATING



The supply temperature is permitted to be lower for a short period, e.g. at start-up.

WORKING RANGE, COOLING



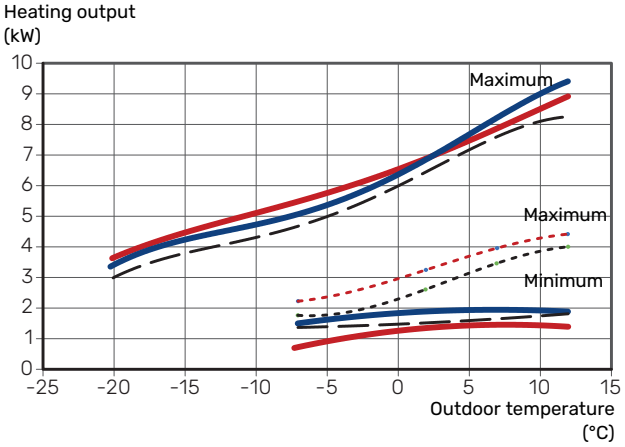
CAPACITY AND COP

Power and COP at different supply temperatures during continuous operation (excluding defrosting).

Power during heating operation

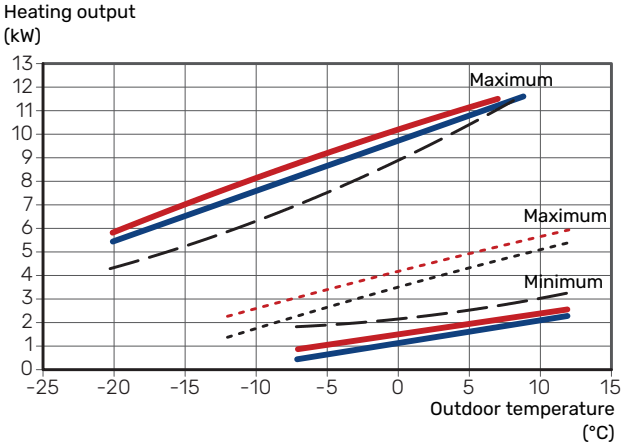
Maximum and minimum capacity during continuous operation.

F2050-6



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

F2050-10

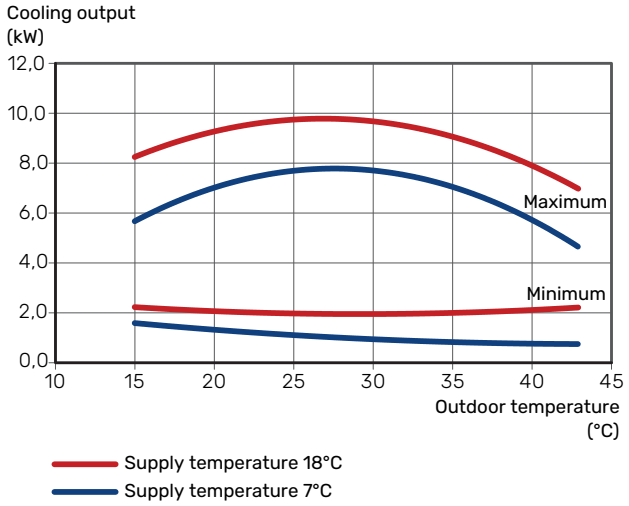


Flow line temperature 35 °C
Flow line temperature 45 °C
Flow line temperature 55 °C
Silent mode, supply temperature 35°C
Silent mode, supply temperature 55°C

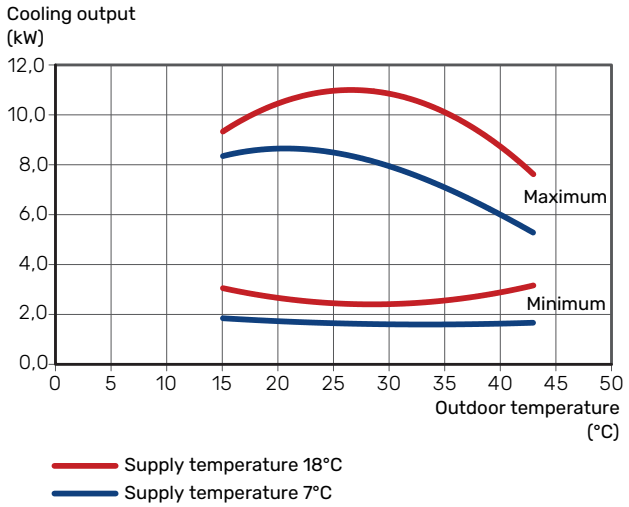
Power during cooling operation

Maximum and minimum capacity during continuous operation.

F2050-6

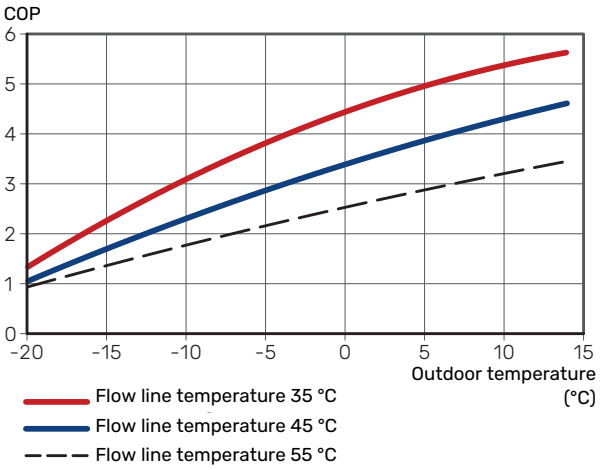


F2050-10

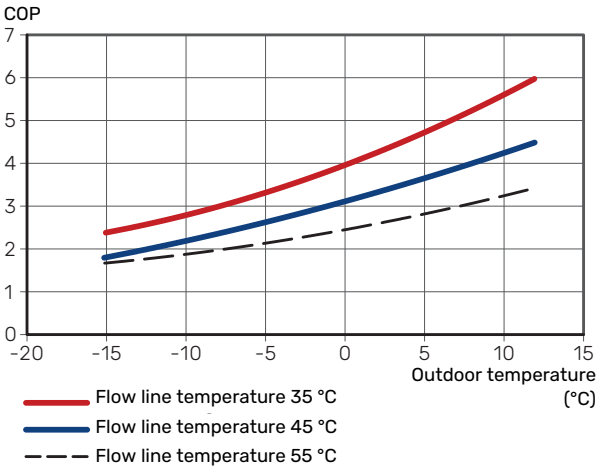


COP during heating operation

F2050-6



F2050-10



F2050		6	10
Output data according to EN 14 511, partial load [1]			
Heating Capacity / power input / COP (kW/kW/-) at nominal flow Outdoor temp: / Supply temp.	-7 / 35 °C	5.55 / 2.05 / 2.71	7.18 / 2.93 / 2.45
	2 / 35 °C	2.31 / 0.56 / 4.13	3.46 / 0.83 / 4.17
	2 / 45 °C	2.02 / 0.67 / 3.01	3.24 / 1.12 / 3.24
	7 / 35 °C	2.65 / 0.49 / 5.41	4.00 / 0.75 / 5.33
	7 / 45 °C	2.43 / 0.65 / 3.74	5.00 / 1.28 / 3.91
Cooling Capacity / power input / EER (kW/kW/-) at maximum flow Outdoor temp: / Supply temp.	35 / 7 °C	5.32 / 1.94 / 2.74	7.07 / 2.40 / 2.95
	35 / 18 °C	7.55 / 2.11 / 3.58	10.79 / 3.00 / 3.60
SCOP according to EN 14825			
Nominal heat output ($P_{designh}$) average climate 35 °C / 55 °C (Europe)	kW	5.20 / 5.60	6.3 / 6.5
Nominal heat output ($P_{designh}$) cold climate 35 °C / 55 °C	kW	5.80 / 5.70	6.5 / 6.2
Nominal heat output ($P_{designh}$) warm climate 35 °C / 55 °C	kW	5.57 / 5.48	6.9 / 6.6
SCOP average climate, 35 °C / 55 °C (Europe)		5.08 / 3.58	4.6 / 3.4
SCOP cold climate, 35 °C / 55 °C		4.10 / 3.05	3.9 / 2.9
SCOP warm climate, 35 °C / 55 °C		6.76 / 4.55	6.4 / 4.4
Energy rating, average climate [2]			
The product's room heating efficiency class 35 °C / 55 °C [3]		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 2 ~ 50 Hz	
Max operating current, heat pump	A_{rms}	15	16
Max operating current, compressor	A_{rms}	14	15
Max. power, fan	W	50	86
Fuse	A_{rms}	16	16
Enclosure class		IP24	
Refrigerant circuit			
Type of refrigerant		R32	
GWP refrigerant		675	
Volume	kg	1.3	1.84
Type of compressor		Twin Rotary	
CO_2-equivalent (The cooling circuit is hermetically sealed.)	t	0.88	1.24
Cut-out value pressure switch HP (BP1)	MPa (bar)	-	4.15 (41.5)
Cut-out value pressure switch LP (BP2)	MPa (bar)	-	0.079 (0.79)
Airflow			
Max airflow	m^3/h	2,530	3,000
Working area			
Min./max. air temperature, heating	°C	-20 / 43	-20 / 43
Min./max. air temperature, cooling	°C	15 / 43	
Defrosting system		Reverse cycle	
Heating medium circuit			
Max system pressure heating medium	MPa (bar)	0.6 (6.0)	
Recommended flow interval, heating operation	l/s	0.08 – 0.32	0.12 – 0.38
Recommended flow interval, cooling operation	l/s	0.11 – 0.29	0.15 – 0.38
Min. design flow, defrosting (100% pump speed)	l/s	0.19	
Min./max. HM temp, continuous operation	°C	25 / 58	
Connection heating medium F2050 external thread		G1 (Ø28 mm)	
Connection heating medium flex pipe		G1 (Ø28 mm)	
Min. recommended pipe dimension (system)	DN (mm)	20 (22)	
Dimensions and weight			
Width	mm	993	1,035
Depth	mm	383	422
Height (with stand)	mm	781 (+10/-0)	895 (+10/-0)
Net weight	kg	76	83
Miscellaneous			
Part no.		064 328	064 318

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

Energy labelling

INFORMATION SHEET

Supplier		NIBE	
Model		**F2050-6**	**F2050-10**
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 / 6	6 / 6
Annual energy consumption space heating, average climate	kWh	2,116 / 3,250	2,834 / 3,961
Seasonal space heating energy efficiency, average climate	%	200 / 139	181 / 132
Sound power level L_{WA} indoors	dB	-	-
Rated heat output ($P_{designh}$), cold climate	kW	6 / 6	7 / 6
Rated heat output ($P_{designh}$), warm climate	kW	6 / 5	7 / 7
Annual energy consumption space heating, cold climate	kWh	3,487 / 4,604	4,059 / 5,204
Annual energy consumption space heating, warm climate	kWh	1,110 / 1,617	1,379 / 1,964
Seasonal space heating energy efficiency, cold climate	%	161 / 119	155 / 114
Seasonal space heating energy efficiency, warm climate	%	265 / 178	260 / 177
Sound power level L_{WA} outdoors	dB	53	53

DATA FOR ENERGY EFFICIENCY OF THE PACKAGE

Model		F2050-6	F2050-10
Control module model		**SMO**	**SMO**
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	%	204 / 143	185 / 136
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 / 123	159 / 118
Seasonal space heating energy efficiency of the package, warm climate	%	269 / 182	264 / 181

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.

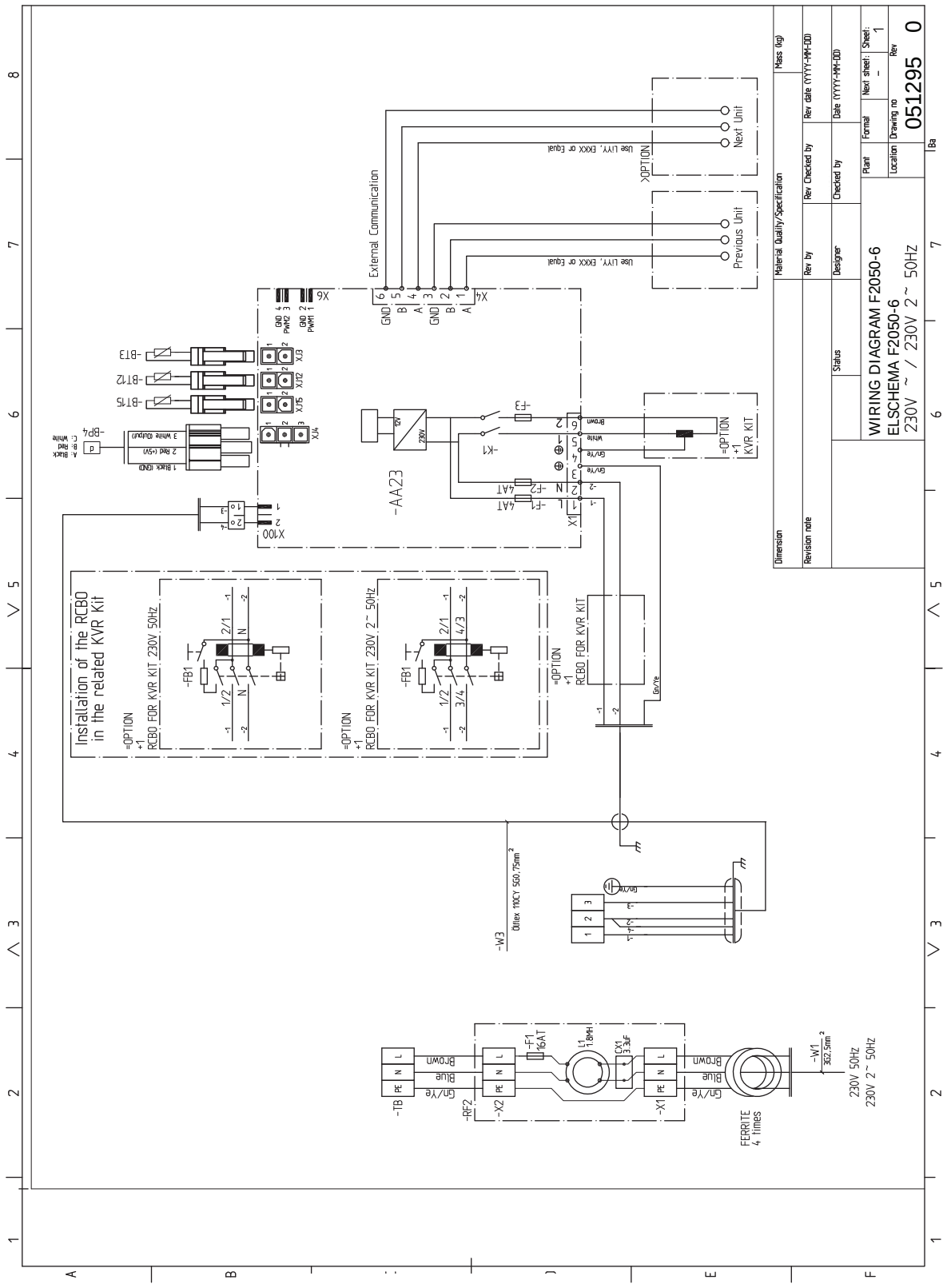
TECHNICAL DOCUMENTATION

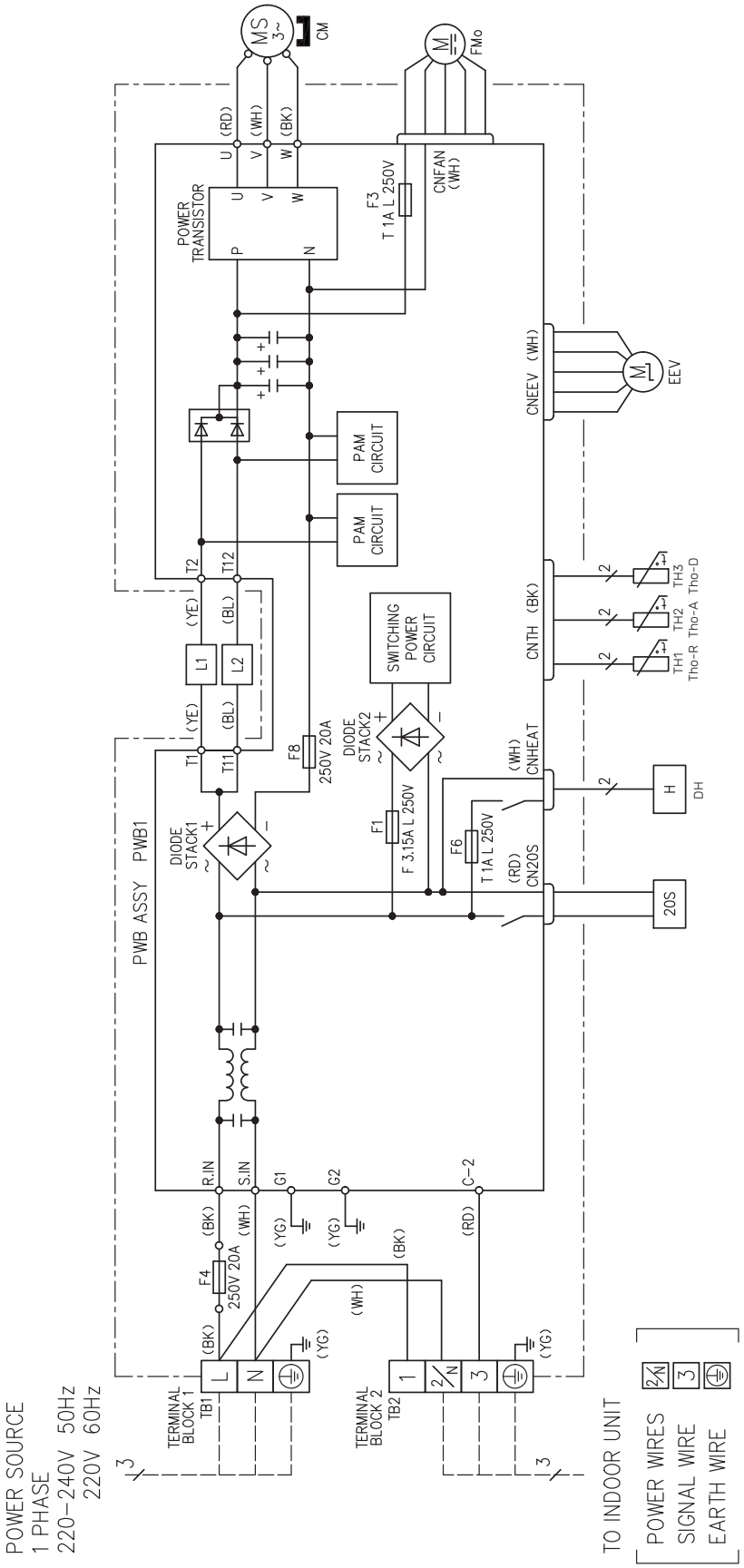
Model		F2050-6					
Type of heat pump		☒ Air-water ☐ Exhaust-water ☐ Brine-water ☐ Water-water					
Low-temperature heat pump		☐ Yes ☒ No					
Integrated immersion heater for additional heat		☐ Yes ☒ No					
Heat pump combination heater		☐ Yes ☒ No					
Climate		☒ Average ☐ Cold ☐ Warm					
Temperature application		☒ Medium (55°C) ☐ Low (35°C)					
Applied standards		EN14511 / EN14825 / EN12102					
Rated heat output	Prated	5.6	kW	*Seasonal space heating energy efficiency*	η_s	139	%
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	5.0	kW	Tj = -7 °C	COPd	1.95	-
Tj = +2 °C	Pdh	2.9	kW	Tj = +2 °C	COPd	3.51	-
Tj = +7 °C	Pdh	1.9	kW	Tj = +7 °C	COPd	4.99	-
Tj = +12 °C	Pdh	1.7	kW	Tj = +12 °C	COPd	6.33	-
Tj = biv	Pdh	5.0	kW	Tj = biv	COPd	1.95	-
Tj = TOL	Pdh	4.6	kW	Tj = TOL	COPd	1.75	-
Tj = -15 °C (if TOL < -20 °C)	Pdh		kW	Tj = -15 °C (if TOL < -20 °C)	COPd		-
Bivalent temperature	T_{biv}	-7	°C	Min. outdoor air temperature	TOL	-10	°C
Cycling interval capacity	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation coefficient	Cdh	0.96	-	Max supply temperature	WTOL	58	°C
Power consumption in modes other than active mode				*Additional heat*			
Off mode	P_{OFF}	0.007	kW	Rated heat output	Psup	1.0	kW
Thermostat-off mode	P_{TO}	0.011	kW				
Standby mode	P_{SB}	0.011	kW	Type of energy input	Electric		
Crankcase heater mode	P_{CK}	0.000	kW				
Other items							
Capacity control	Variable			Rated airflow (air-water)		2,340	m³/h
Sound power level, indoors/outdoors	L_{WA}	- / 53	dB	Nominal heating medium flow			m³/h
Annual energy consumption	Q_{HE}	3,250	kWh	Brine flow brine-water or water-water heat pumps			m³/h
Contact information	*NIBE Energy Systems – Box 14 – Hannabadsvägen 5 – 285 21 Markaryd – Sweden*						

Model		F2050-10					
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		EN14511 / EN14825 / EN12102					
Rated heat output	Prated	6.5	kW	*Seasonal space heating energy efficiency*	η_s	132	%
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	5.8	kW	Tj = -7 °C	COPd	1.98	-
Tj = +2 °C	Pdh	3.5	kW	Tj = +2 °C	COPd	3.17	-
Tj = +7 °C	Pdh	2.3	kW	Tj = +7 °C	COPd	4.98	-
Tj = +12 °C	Pdh	2.2	kW	Tj = +12 °C	COPd	5.50	-
Tj = biv	Pdh	5.8	kW	Tj = biv	COPd	1.98	-
Tj = TOL	Pdh	5.8	kW	Tj = TOL	COPd	1.69	-
Tj = -15 °C (if TOL < -20 °C)	Pdh		kW	Tj = -15 °C (if TOL < -20 °C)	COPd		-
Bivalent temperature	T_{biv}	-7	°C	Min. outdoor air temperature	TOL	-10	°C
Cycling interval capacity	Pcych		kW	Cycling interval efficiency	COPcyc		-
Degradation coefficient	Cdh	0.98	-	Max supply temperature	WTOL	60	°C
Power consumption in modes other than active mode				*Additional heat*			
Off mode	P_{OFF}	0.003	kW	Rated heat output	Psup	0.7	kW
Thermostat-off mode	P_{TO}	0.008	kW				
Standby mode	P_{SB}	0.008	kW	Type of energy input	Electric		
Crankcase heater mode	P_{CK}	0.000	kW				
Other items							
Capacity control	Variable			Rated airflow (air-water)		3,000	m³/h
Sound power level, indoors/outdoors	L_{WA}	- / 53	dB	Nominal heating medium flow			m³/h
Annual energy consumption	Q_{HE}	3,961	kWh	Brine flow brine-water or water-water heat pumps			m³/h
Contact information	*NIBE Energy Systems – Box 14 – Hannabadsvägen 5 – 285 21 Markaryd – Sweden*						

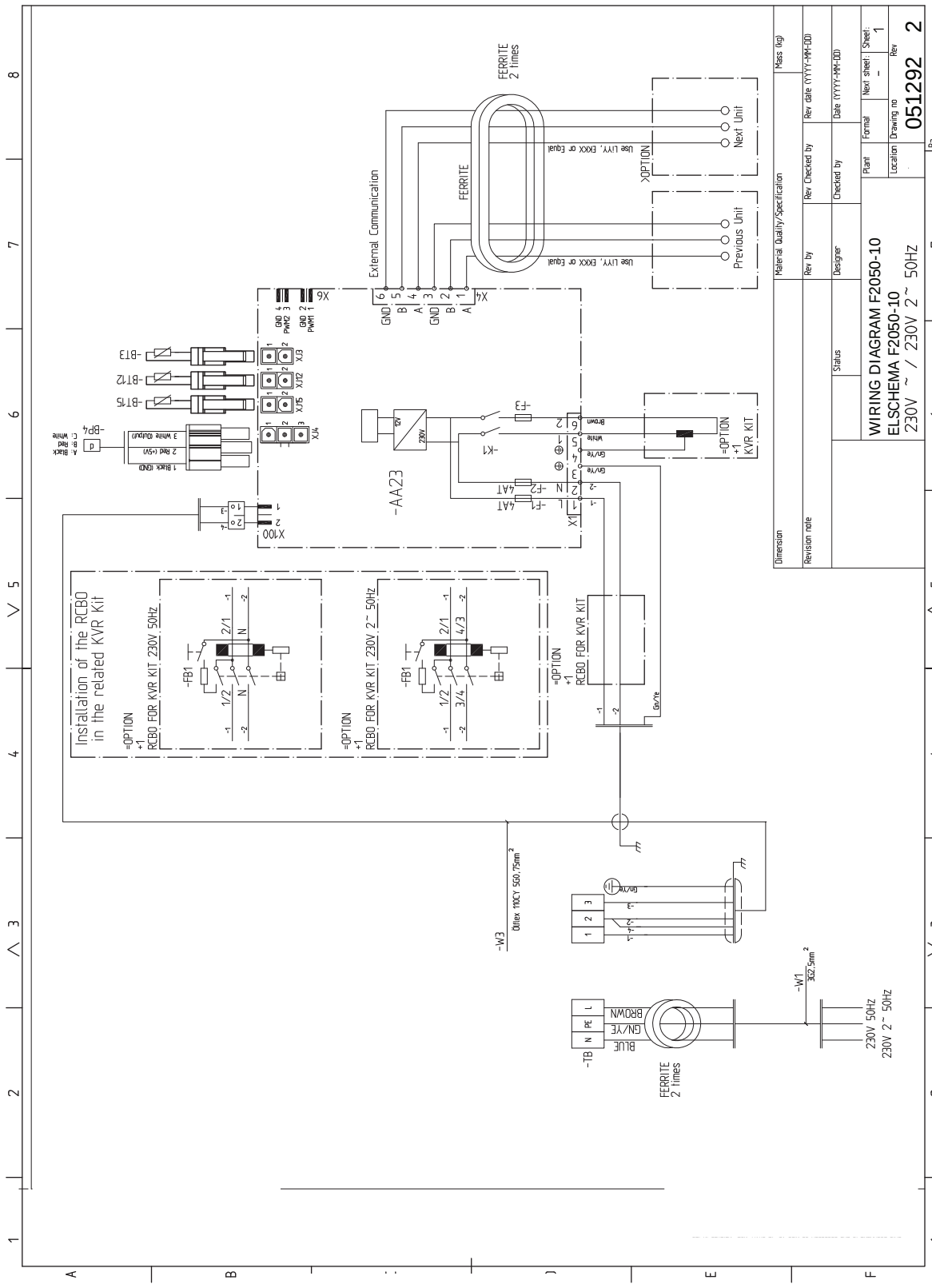
Electrical circuit diagram

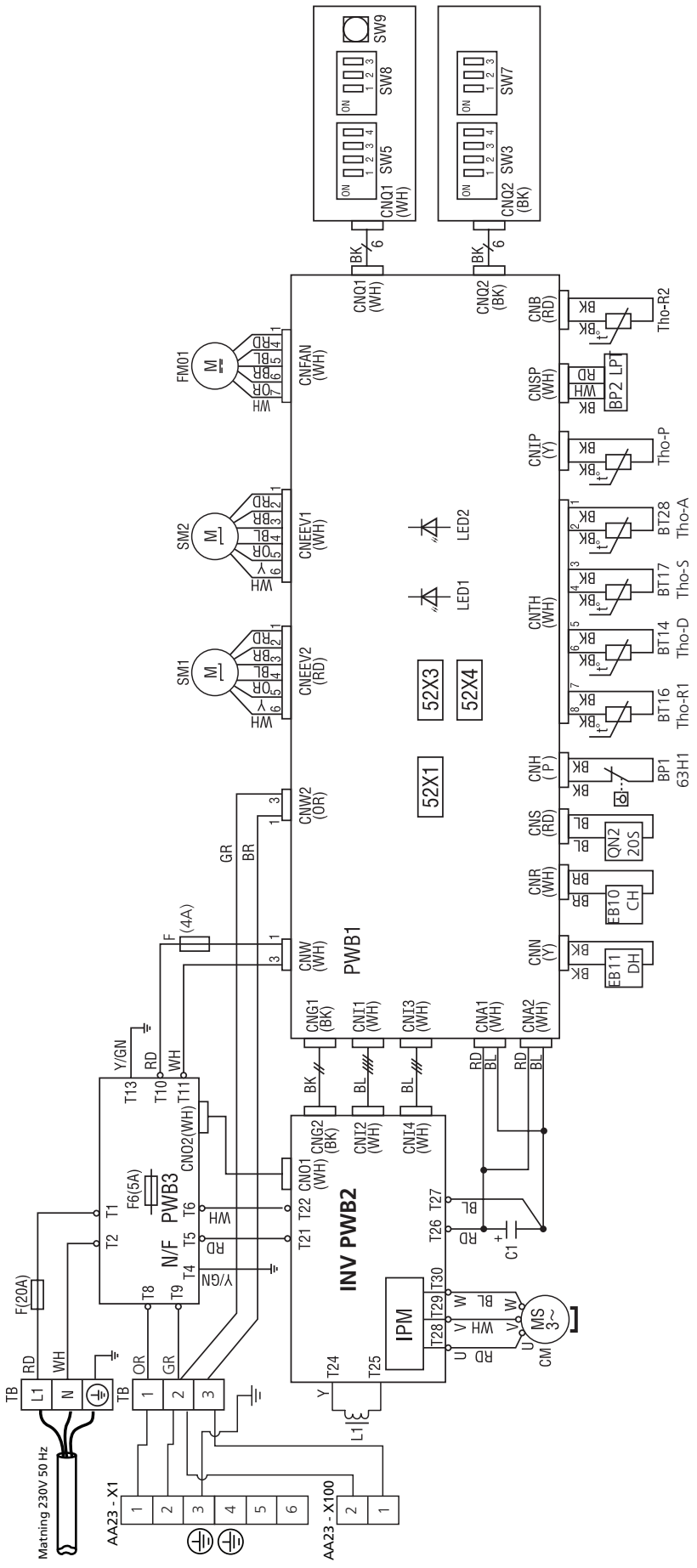
F2050-6




POWER SOURCE
1 PHASE
220–240V 50Hz
220V 60Hz
3
TERMINAL BLOCK 1 TB1
L
N
TERMINAL BLOCK 2 TB2
1
2/N
3
PWB ASSY PWB1
F4 250V 20A
F8 250V 20A
F1 F 3.15A L 250V
F6 T 1A L 250V
F3 T 1A L 250V
DIODE STACK1
DIODE STACK2
SWITCHING POWER CIRCUIT
PAM CIRCUIT
PAM CIRCUIT
POWER TRANSISTOR
MS 3~
CM
FMo
CNFAN (WH)
CNEEV (WH)
EEV
CNTH (BK)
TH1 Tho-R
TH2 Tho-A
TH3 Tho-D
CNHEAT (WH)
H
DH
CN20S (RD)
20S
(RD)
(WH)
(BK)
(YE)
(BL)
(YG)
R.IN
S.IN
G1
G2
C-2
T1
T11
T2
T12
L1
L2
U
V
W
P
N
TO INDOOR UNIT
POWER WIRES
SIGNAL WIRE
EARTH WIRE

F2050-10


WIRING DIAGRAM F2050-10
ELSCHEMA F2050-10
230V ~ / 230V 2~ 50Hz
051292 2
External Communication
FERRITE
FERRITE 2 times
Next Unit
Previous Unit
=OPTION
-AA23
-BT3
-BT12
-BT15
-BP4
-FB1
-K1
-F1
-F2
-F3
-TB
-W1
-W3
Installation of the RCBO in the related KVR Kit
=OPTION +1 RCBO FOR KVR KIT 230V 50Hz
RCBO FOR KVR KIT
KVR KIT
230V 50Hz
230V 2~ 50Hz


Matning 230V 50 Hz
AA23 - X1
AA23 - X100
F(20A)
F6(5A)
F (4A)
PWB3
N/F
INV PWB2
PWB1
IPM
MS 3~
C1
L1
52X1
52X3
52X4
LED1
LED2
SW3
SW5
SW7
SW8
SW9
CNQ1 (WH)
CNQ2 (BK)
CNFAN (WH)
CNEEV1 (WH)
CNEEV2 (RD)
CNTH (WH)
CNTP (Y)
CNSP (WH)
CNB (RD)
CNH (P)
CNS (RD)
CNR (WH)
CNN (Y)
CNW (WH)
CNW2 (OR)
CNG1 (BK)
CNG2 (BK)
CNI1 (WH)
CNI2 (WH)
CNI3 (WH)
CNI4 (WH)
CNA1 (WH)
CNA2 (WH)
CNO1 (WH)
CNO2(WH)
FM01
SM1
SM2
BP1
BP2 LPT
63H1
BT16
BT14
BT17
BT28
Tho-R1
Tho-D
Tho-S
Tho-A
Tho-P
Tho-R2
EB10 CH
EB11 DH
QN2 20S

Item register

S

T

Contact information

AUSTRIA
KNV Energietechnik GmbH
Gahberggasse 11, 4861 Schörfling
Tel: +43 (0)7662 8963-0
mail@knv.at
knv.at

CZECH REPUBLIC
Družstevní závody Dražice - strojírna s.r.o.
Dražice 69, 29471 Benátky n. Jiz.
Tel: +420 326 373 801
nibe@nibe.cz
nibe.cz

DENMARK
Vølund Varmeteknik A/S
Industrivej Nord 7B, 7400 Herning
Tel: +45 97 17 20 33
info@volundvt.dk
volundvt.dk

FINLAND
NIBE Energy Systems Oy
Juurakkotie 3, 01510 Vantaa
Tel: +358 (0)9 274 6970
info@nibe.fi
nibe.fi

FRANCE
NIBE Energy Systems France SAS
Zone industrielle RD 28
Rue du Pou du Ciel, 01600 Reyrieux
Tél: 04 74 00 92 92
info@nibe.fr
nibe.fr

GERMANY
NIBE Systemtechnik GmbH
Am Reiherpfahl 3, 29223 Celle
Tel: +49 (0)5141 75 46 -0
info@nibe.de
nibe.de

GREAT BRITAIN
NIBE Energy Systems Ltd
3C Broom Business Park,
Bridge Way, S41 9QG Chesterfield
Tel: +44 (0)330 311 2201
info@nibe.co.uk
nibe.co.uk

NETHERLANDS
NIBE Energietechniek B.V.
Energieweg 31, 4906 CG Oosterhout
Tel: +31 (0)168 47 77 22
info@nibenl.nl
nibenl.nl

NORWAY
ABK-Qviller AS
Brobekkveien 80, 0582 Oslo
Tel: (+47) 23 17 05 20
post@abkqviller.no
nibe.no

POLAND
NIBE-BIAWAR Sp. z o.o.
Al. Jana Pawla II 57, 15-703 Bialystok
Tel: +48 (0)85 66 28 490
biawar.com.pl

SWEDEN
NIBE Energy Systems
Box 14
Hannabadsvägen 5, 285 21 Markaryd
Tel: +46 (0)433-27 30 00
info@nibe.se
nibe.se

SWITZERLAND
NIBE Wärmetechnik c/o ait Schweiz AG
Industriepark, CH-6246 Altishofen
Tel. +41 (0)58 252 21 00
info@nibe.ch
nibe.ch

For countries not mentioned in this list, contact NIBE Sweden or check nibe.eu for more information.

NIBE Energy Systems
Hannabadsvägen 5
Box 14
SE-285 21 Markaryd
info@nibe.se
nibe.eu

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