

Installer manual
NIBE F1355
Ground source heat pump

Table of Contents

1	Important information	4
2	Delivery and handling	9
	Transport	9
	Assembly	9
	Supplied components	10
	Removing the covers	10
3	The heat pump design	11
	General	11
	Distribution boxes	12
	Cooling section	13
4	Pipe connections	14
	General	14
	Dimensions and pipe connections	15
	Brine side	16
	Heating medium side	17
	Water heater	18
	Docking alternatives	18
5	Electrical connections	20
	General	20
	Connections	20
	Optional connections	23
	Connecting accessories	30
6	Commissioning and adjusting	31
	Preparations	31
	Filling and venting	31
	Start guide	32
	Post adjustment and venting	33
7	Accessories	35
8	Technical data	37
	Dimensions and setting-out coordinates	37
	Technical specifications	38
	Energy labelling	41
	Electrical wiring diagram, 3x400V 28 kW	43
	Item register	52
	Contact information	55

1 Important information

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

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. The product is intended for use by experts or trained users in shops, hotels, light industry, farming and similar environments.

Children must be instructed/supervised to ensure that they do not play with the appliance.

Do not allow children to clean or maintain the appliance unsupervised.

This is an original manual. It may not be translated without the approval of NIBE.

Rights to make any design or technical modifications are reserved.

©NIBE 2017.

Symbols



WARNING!

This symbol indicates serious danger to person or machine.



NOTE

This symbol indicates danger to person or machine.



Caution

This symbol indicates important information about what you should observe when maintaining your installation.



TIP

This symbol indicates tips on how to facilitate using the product.

Marking

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

IP21 Classification of enclosure of electro-technical equipment.



Danger to person or machine.



Read the operating manual.

Safety precautions

Caution

Install the system in full accordance with this installation manual.

Incorrect installation can cause bursts, personal injury, water leaks, refrigerant leaks, electric shocks and fire.

Pay attention to the measurement values before working on the cooling system, especially when servicing in small rooms, so that the limit for the refrigerant's concentration is not exceeded.

Consult an expert to interpret the measurement values. If the refrigerant concentration exceeds the limit, there may be a shortage of oxygen in the event of any leak, which can cause serious injury.

Use original accessories and the stated components for the installation.

If parts other than those stated by us are used, water leaks, electric shocks, fire and personal injury may occur as the unit may not work properly.

Ventilate the working area well – refrigerant leakage may occur during service work.

If the refrigerant comes into contact with naked flames, poisonous gas is created.

Install the unit in a location with good support.

Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury. Installation without sufficient support can also cause vibrations and noise.

Ensure that the unit is stable when installed, so that it can withstand earthquakes and strong winds.

Unsuitable installation locations can cause the unit to fall and cause material damage and personal injury.

The electrical installation must be carried out by a qualified electrician and the system must be connected as a separate circuit.

Power supply with insufficient capacity and incorrect function can cause electric shocks and fire.

Use the stated cables for the electrical connection, tighten the cables securely in the terminal blocks and relieve the wiring correctly to prevent overloading the terminal blocks.

Loose connections or cable mountings can cause abnormal heat production or fire.

Check, after completed installation or service, that no refrigerant leaks from the system in gas form.

If refrigerant gas leaks into the house and comes into contact with an arotemp, an oven or other hot surface, poisonous gases are produced.

Use types of pipe and tools stated for this type of refrigerant.

Using existing parts for other refrigerants can cause breakdowns and serious accidents due to process circuit bursts.

Switch off the compressor before opening/breaching the refrigerant circuit.

If the refrigerant circuit is breached /opened whilst the compressor is running, air can enter the process circuit. This can cause unusually high pressure in the process circuit, which can cause bursts and personal injury.

Switch off the power supply in the event of a service or inspection.

If the power supply is not shut off, there is a risk of electric shocks and damage due to the rotating fan.

Do not run the unit with removed panels or protection.

Touching rotating equipment, hot surfaces or high voltage parts can cause personal injury due to entrapment, burns or electric shocks.

Cut the power before starting electrical work.

Failure to cut the power can cause electric shocks, damage and incorrect function of the equipment.

Care

Carry out the electrical installation with care.

Do not connect the ground lead to the gas line, water line, lightning conductor or telephone line's ground lead. Incorrect grounding can cause unit faults such as electric shocks due to short-circuiting.

Use main switch with sufficient breaking capacity.

If the switch does not have sufficient breaking capacity, malfunctions and fire can occur.

Always use a fuse with the correct rating in the locations where fuses are to be used.

Connecting the unit with copper wire or other metal thread can cause unit breakdown and fire.

Cables must be routed so that they are not damaged by metal edges or trapped by panels.

Incorrect installation can cause electric shocks, heat generation and fire.

Do not install the unit in close proximity to locations where leakage of combustible gases can occur.

If leaking gases collect around the unit, fire may occur.

Do not install the unit where corrosive gas (for example nitrous fumes) or combustible gas or steam (for example thinner and petroleum gases) can build up or collect, or where volatile combustible substances are handled.

Corrosive gas can cause corrosion to the heat exchanger, breaks in plastic parts etc. and combustible gas or steam can cause fire.

Do not use the unit for specialist purposes such as for storing food, cooling precision instruments, freeze-conservation of animals, plants or art.

This can damage the items.

Do not install and use the system close to equipment that generates electromagnetic fields or high frequency harmonics.

Equipment such as inverters, standby sets, medical high frequency equipment and telecommunications equipment can affect the unit and cause malfunctions and breakdowns. The unit can also affect medical equipment and telecommunications equipment, so that it functions incorrectly or not at all.

Take care when carrying the unit by hand.

If the unit weighs more than 20 kg, it must be carried by two people. Use gloves to minimize the risk of cuts.

Dispose of any packaging material correctly.

Any remaining packaging material can cause personal injury as it may contain nails and wood.

Do not touch any buttons with wet hands.

This can cause electric shocks.

Do not touch any refrigerant pipes with your hands when the system is in operation.

During operation the pipes become extremely hot or extremely cold, depending on the method of operation. This can cause burn injuries or frost injuries.

Do not shut off the power supply immediately after operation has started.

Wait at least 5 minutes, otherwise there is a risk of water leakage or breakdown.

Do not control the system with the main switch.

This can cause fire or water leakage. In addition, the fan can start unexpectedly, which can cause personal injury.

Especially for units intended for R407C

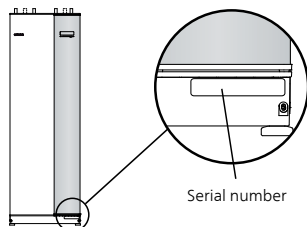
- Do not use other refrigerants than those intended for the unit.

- Do not use charging bottles. These types of bottles change the composition of the refrigerant, which makes the performance of the system worse.

- When filling refrigerant, the refrigerant must always leave the bottle in liquid form.

Serial number

The serial number can be found at the bottom right of the front cover and in the info menu (menu 3.1) and on the type plate (PF1).



Caution

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

Recovery



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

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

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

Environmental information

This unit contains a fluorinated greenhouse gas that is covered by the Kyoto agreement.

F-Gas Regulation (EU) No. 517/2014

The equipment contains R407C, a fluorinated greenhouse gas with a GWP value (Global Warming Potential) of 1,774. Do not release R407C into the atmosphere.

Inspection of the installation

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

✓	Description	Notes	Signature	Date
	Brine (page 16)			
	Non-return valves			
	System flushed			
	System vented			
	Antifreeze			
	Level/Expansion vessel			
	Filterball (particle filter)			
	Safety valve			
	Shut off valves			
	Circulation pumps set			
	Heating medium (page 17)			
	Non-return valves			
	System flushed			
	System vented			
	Expansion vessel			
	Filterball (particle filter)			
	Safety valve			
	Shut off valves			
	Circulation pumps set			
	Electricity (page 20)			
	Connections			
	Main voltage			
	Phase voltage			
	Fuses heat pump			
	Fuses property			
	Outside sensor			
	Room sensor			
	Current sensor			
	Safety breaker			
	Earth circuit-breaker			

✓	Description	Notes	Signature	Date
	Relay output for emergency mode			

2 Delivery and handling

Transport

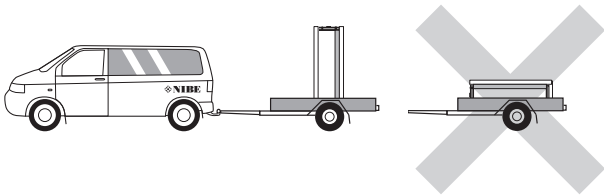
F1355 should be transported and stored vertically in a dry place. While being moved into a building, the heat pump may be tilted back 45 °.

NOTE
The heat pump is top heavy.

If the cooling modules are pulled out and transported upright, F1355 can be transported on its back.

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

TIP
The side panels can be removed for easier installation in the building.



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 F1355 to the set up location.

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

F1355 must be lifted on the heaviest side and can be moved on a sack truck. Two people are required to lift F1355.

Lift from the pallet to final positioning

Before lifting, remove the packaging and the load anchor to the pallet as well as front and side panels.

Before lifting, the heat pump must be separated by pulling the cooling modules out from the cabinet. See the service chapter in the operating manual for instructions about the separation.

Carry the heat pump by the upper cooling module's slide rails, use gloves.

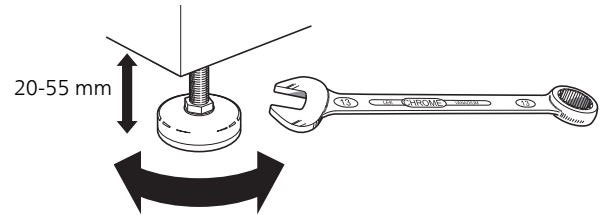
NOTE
The heat pump must not be moved when only the lower cooling module has been pulled out. If the heat pump is not secured in position the upper cooling module must always be removed before the lower one can be pulled out.

Scrapping

For scrapping, remove the product in reverse order.

Assembly

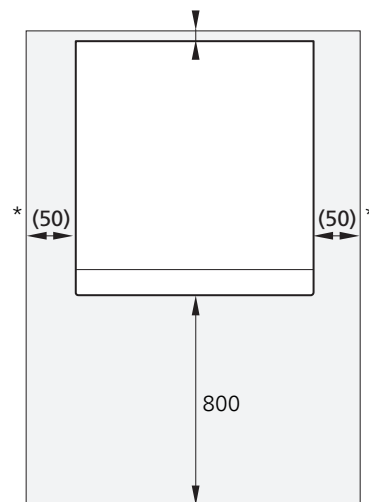
- Position F1355 on a fixed foundation that can take the weight of the heat pump. Use the product's adjustable feet to obtain a horizontal and stable set-up.



- Because water comes from F1355, the area where the heating pump is located must be equipped with floor drainage.
- Install with its back to an outside wall, ideally in a room where noise does not matter, in order to eliminate noise problems. If this is not possible, avoid placing it against a wall behind a bedroom or other room where noise may be a problem.
- Wherever the unit is located, walls to sound sensitive rooms should be fitted with sound insulation.
- Route pipes so they are not fixed to an internal wall that backs on to a bedroom or living room.

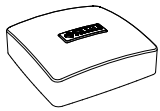
Installation area

Leave a free space of 800 mm in front of the product. Approx. 50 mm free space is required on each side, to remove the side panels (see image). The panels do not need to be removed during service. All service on F1355 can be carried out from the front. Leave space between the heat pump and the wall behind (and any routing of supply cables and pipes) to reduce the risk of any vibration being propagated.

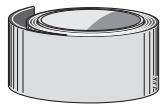


* A normal installation needs 300 – 400 mm (any side) for connection equipment, i.e. level vessel, valves and electrical equipment.

Supplied components



Outdoor temperature sensor
1 x



Insulation tape
1 x



Temperature sensor
5 x



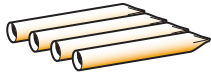
Safety valve
0.3 MPa (3 bar)
1 x



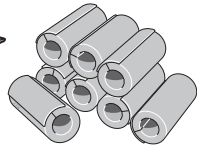
O-rings
16 x



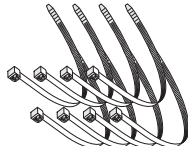
Current sensor



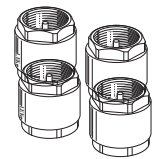
Tubes for sensors
4 x



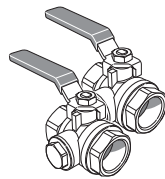
Pipe insulation



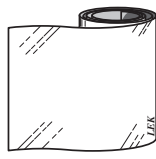
Cable tie
8 x



Non-return valves
4 x G2, internal
thread



Filterball
4 x G1 1/4 (internal
thread)



Aluminium tape
1 x



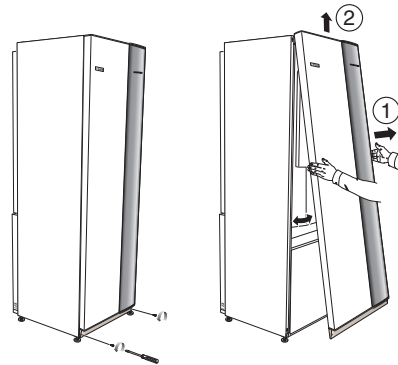
Heat conducting
paste
3 x

Location

The enclosed kit is placed in the packaging next to the heat pump.

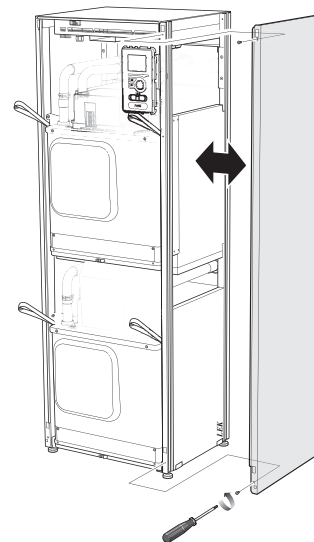
Removing the covers

Front cover



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

Side panels

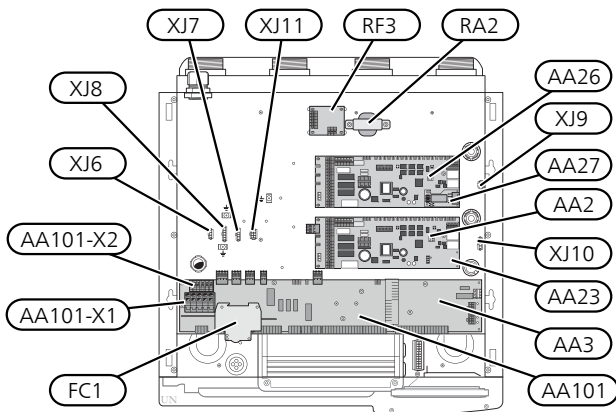
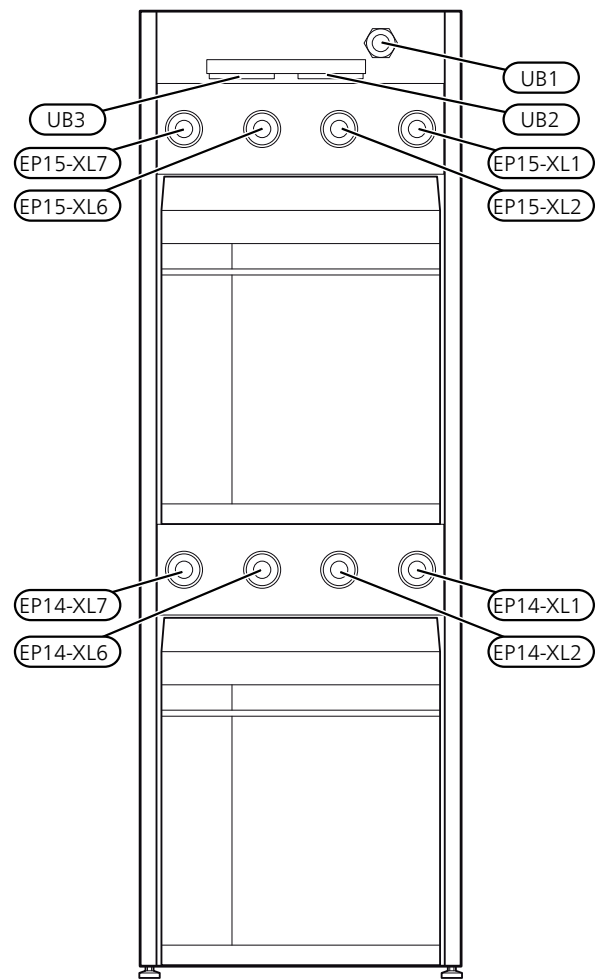
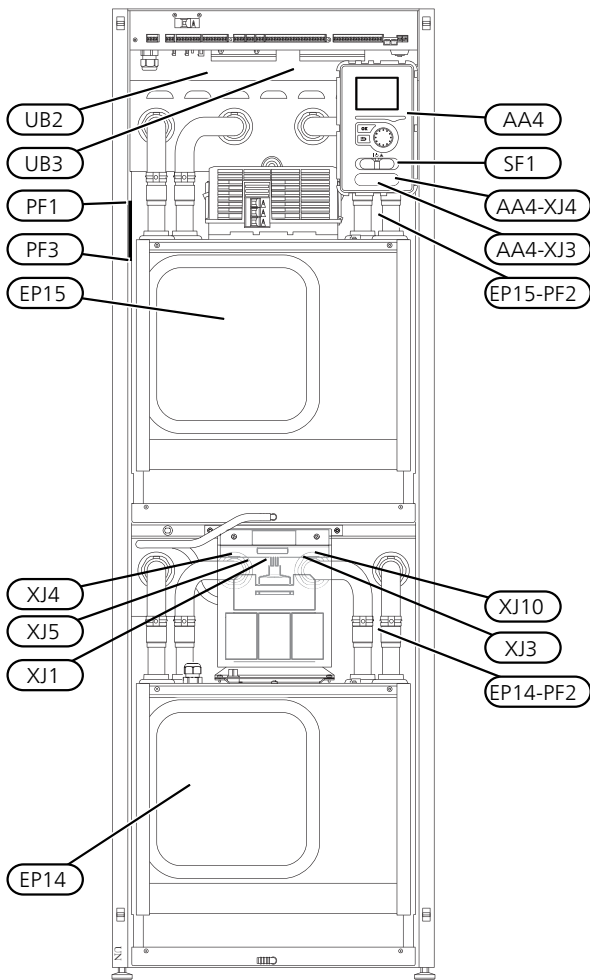
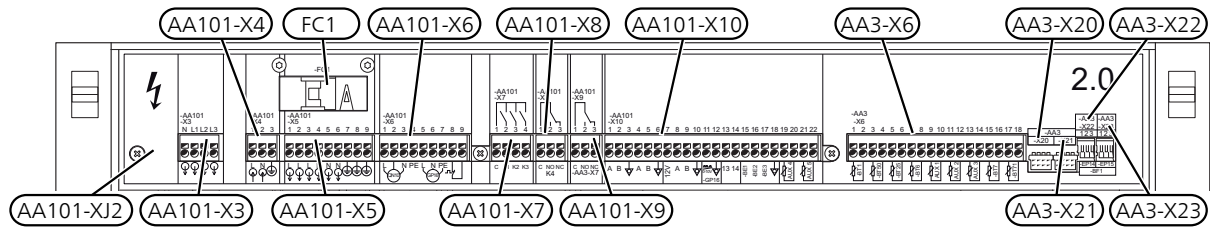


The side covers can be removed to facilitate the installation.

1. Remove the screws from the upper and lower edges.
2. Twist the cover slightly outward.
3. Move the hatch outwards and backwards.
4. Assembly takes place in the reverse order.

3 The heat pump design

General



Pipe connections

XL1	Connection, heating medium flow
XL2	Connection, heating medium return
XL6	Connection, brine in
XL7	Connection, brine out

HVAC components

EP14	Cooling module
EP15	Cooling module

Sensors etc.

BT1	Outdoor temperature sensor*
-----	-----------------------------

* Not illustrated

Electrical components

AA2	Base card
AA3	Input circuit board
AA3-X6	Terminal block, sensor
AA3-X20	Terminal block -EP14 -BP8
AA3-X21	Terminal block -EP15 -BP8
AA3-X22	Terminal block, flow meter -EP14 -BF1
AA3-X23	Terminal block, flow meter -EP15 -BF1
AA4	Display unit
AA4-XJ3	USB outlet (no function)
AA4-XJ4	Service outlet (No function)
AA23	Communication board
AA26	Base card 2
AA27	Relay board for base
AA101	Interface board
AA101-X1	Terminal block, incoming electrical supply
AA101-X2	Terminal block, supply -EP14
AA101-X3	Terminal block, operating voltage out -X4
AA101-X4	Terminal block, operating voltage in (tariff option)
AA101-X5	Terminal block, supply, external accessories.
AA101-X6	Terminal block, -QN10 and -GP16
AA101-X8	Emergency mode relay
AA101-X9	Alarm relay, AUX relay
AA101-X10	Communication, PWM, power supply
FC1	Miniature circuit-breaker
RA2	Choke
RF3	EMC-filter
SF1	Switch on display -AA4
XJ1	Connector, electrical supply to compressor, cooling module -EP14
AA101-XJ2	Connector, electrical supply to compressor, cooling module -EP15
XJ3	Compressor heater -EP14
XJ4	Connector, brine pump, cooling module
XJ5	Connector, heating medium pump, cooling module
XJ6	Compressor heater-EP15

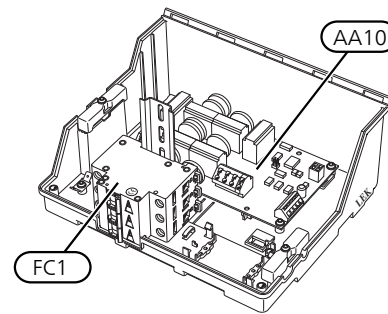
XJ7	Connector, brine pump, cooling module -EP15
XJ8	Connector, heating medium pump, cooling module -EP15
XJ9	Communication motor module -EP15
XJ10	Communication motor module -EP14
XJ11	Pumps, compressor heater -EP14
XJ13	Communication motor module

Miscellaneous

PF1	Rating plate
PF2	Type plate, cooling section
UB1	Cable gland, incoming electricity
UB2	Cable gland, power
UB3	Cable gland, signal

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

Distribution boxes



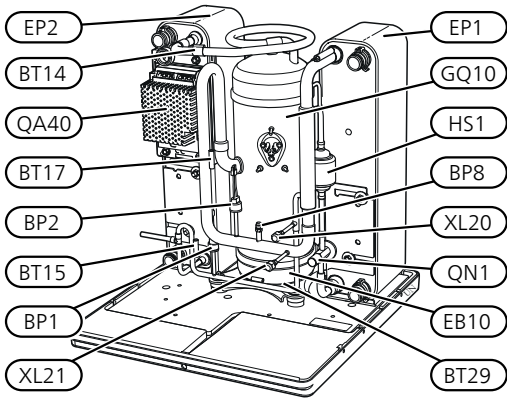
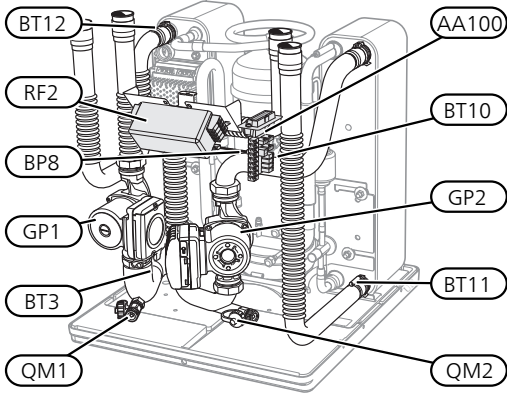
Electrical components

AA10	Soft-start card
FC1	Miniature circuit-breaker

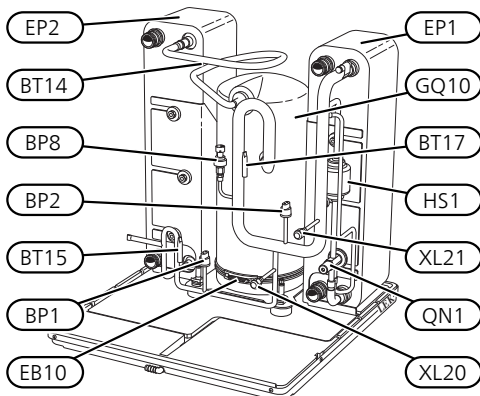
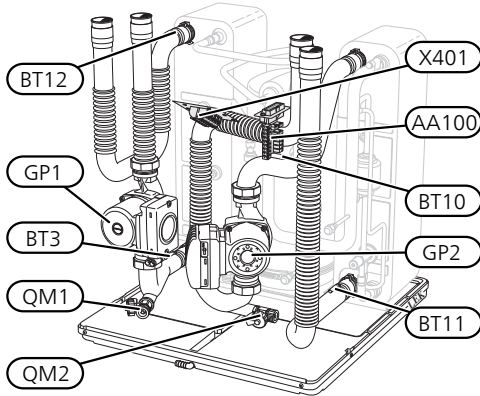
Designations in component locations according to standard IEC 81346-1 and 81346-2.

Cooling section

Cooling module EP14



Cooling module EP15



Pipe connections

- XL20 Service connection, high pressure
- XL21 Service connection, low pressure

HVAC components

- GP1 Circulation pump
- GP2 Brine pump
- QM1 Drainage, climate system
- QM2 Draining, brine side

Sensors etc.

- BP1 High pressure pressostat
- BP2 Low pressure pressostat
- BP8 Sensor, low pressure
- BT3 Temperature sensors, heating medium return
- BT10 Temperature sensor, brine in
- BT11 Temperature sensor, brine out
- BT12 Temperature sensor, condenser supply line
- BT14 Temperature sensor, hot gas
- BT15 Temperature sensor, fluid pipe
- BT17 Temperature sensor, suction gas
- BT29 Temperature sensor, compressor

Electrical components

- AA100 Joint card
- EB10 Compressor heater
- QA40 Inverter
- RF2 EMC-filter
- X401 Joint connector, compressor and motor module

Cooling components

- EP1 Evaporator
- EP2 Condenser
- GQ10 Compressor
- HS1 Drying filter
- QN1 Expansion valve

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

4 Pipe connections

General

Pipe installation must be carried out in accordance with current standards and directives. F1355 can operate with a return temperature of up to 58 °C and an outgoing temperature of 65 °C.

F1355 is not equipped with internal shut off valves; these must be installed to facilitate any future servicing.

NOTE
The pipe installations must be flushed before F1355 is connected, so that any contaminants do not damage the components parts.

NOTE
Do not solder directly on the pipes in F1355, because of internal sensors.
Compression ring coupling alternatively pressure connection should be used.

NOTE
The heating system's pipes must be earthed to prevent a potential difference between them and the building's protective earth.

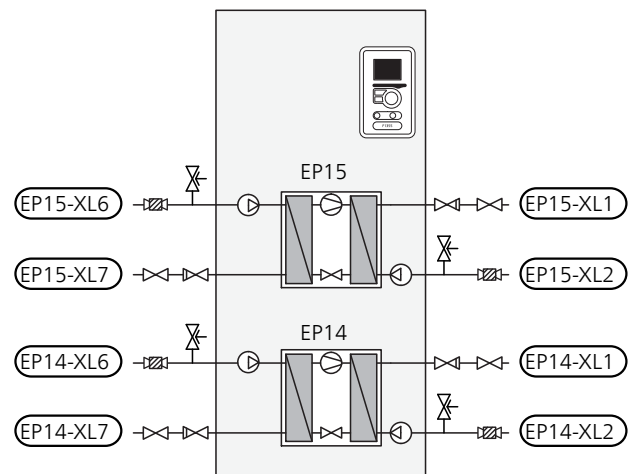
Symbol key

Symbol	Meaning
↑	Venting valve
⋈	Shut-off valve
⋈	Non-return valve
⋈←	Safety valve
📏	Temperature sensor
⊕	Expansion vessel
Ⓟ	Pressure gauge
Ⓢ	Circulation pump
⊠	Filterball (ball valve with integrated particle filter)
⊖	Compressor
▧	Heat exchanger

System diagram

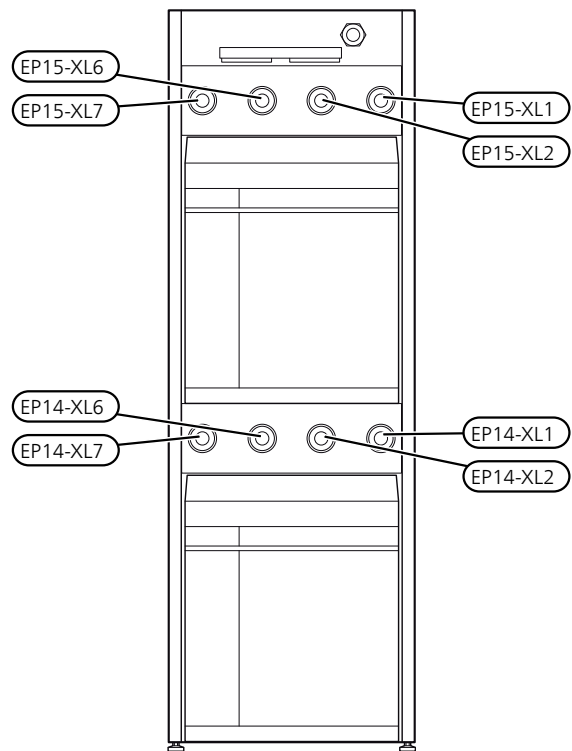
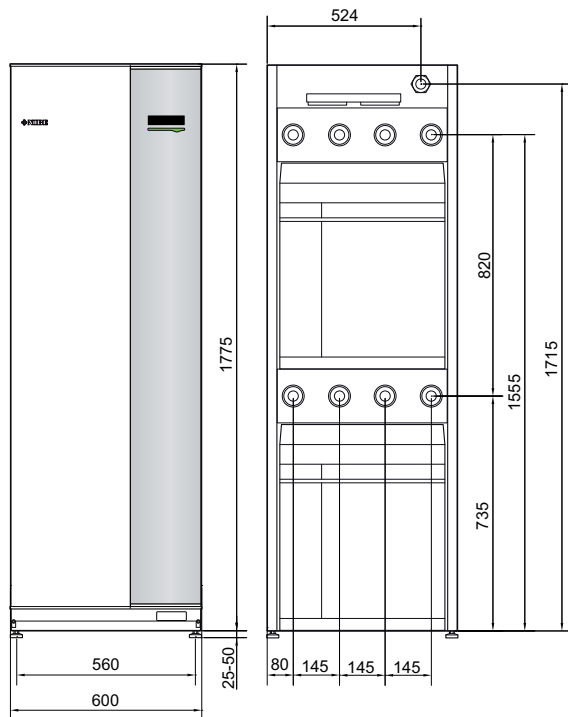
F1355 consists of two heat pump modules, circulation pumps and control system with possibility of additional heat. F1355 is connected to the brine and heating medium circuits.

In the heat pump evaporator, the brine (water mixed with anti-freeze, glycol or ethanol) releases its energy to the refrigerant, which is vaporised in order to be compressed in the compressor. The refrigerant, of which the temperature has now been raised, is passed to the condenser where it gives off its energy to the heating medium circuit and, if necessary, to any docked water heater. If there is a greater need for heating/hot water than the compressors can provide it is possible to connect an external immersion heater.



- EP14 Cooling module
- EP15 Cooling module
- XL1 Connection, heating medium flow
- XL2 Connection, heating medium return
- XL6 Connection, brine in
- XL7 Connection, brine out

Dimensions and pipe connections



Pipe dimensions

Connection	
(XL1) Heating medium supply	internal thread G1 1/2 external thread G2
(XL2) Heating medium return	internal thread G1 1/2 external thread G2
(XL6) Brine in	internal thread G1 1/2 external thread G2
(XL7) Brine out	internal thread G1 1/2 external thread G2

Brine side

Collector

Type	Surface soil heat, recommended collector length (m)	Rock heat, recommended active drilling depth (m)
28 kW	3x450-4x450	3x150-5x200

Applies to PEM hose 40x2.4 PN 6.3.

These are rough example values. At installation the correct calculations must be made according to local conditions.



Caution

The length of the collector hose varies depending on the rock/soil conditions, climate zone and on the climate system (radiators or under-floor heating).

Max length per coil for the collector should not exceed 500 m.

The collectors must always be connected in parallel with the possibility of adjusting the flow for the relevant coil.

For surface soil heat, the hose should be buried at a depth determined by local conditions and the distance between the hoses should be at least 1 metre.

For several bore holes, the distance between the holes must be determined according to local conditions.

Ensure the collector hose rises constantly towards the heat pump to avoid air pockets. If this is not possible, airvents should be used.

Because the temperature of the brine system may fall below 0 °C, it must be protected against freezing down to -15 °C. When making the volume calculation, 1 litre of ready mixed brine per meter of collector hose (applies when using PEM-hose 40x2.4 PN 6.3) is used as a guide value.



Caution

Because the temperature of the brine system varies depending on the heat source, the 5.1.7 "br pmp al set." menu must be set to a suitable value.

Connecting the brine side

- The pipe connections are on the rear of the heat pump.
- Insulate all indoor brine pipes against condensation.



NOTE

Condensation may drip from the expansion vessel. Position the vessel so that this does not harm other equipment.

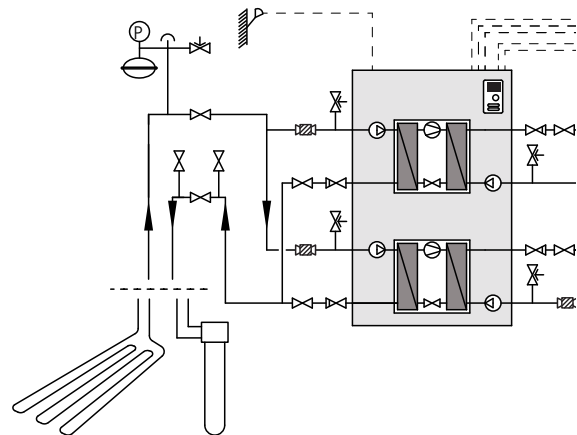


Caution

When necessary you should install venting valves in the brine system.

- Mark the brine system with the antifreeze that is used.
- Install the supplied safety valve at the expansion vessel as illustrated in the outline diagram. The entire length of the overflow water pipe from the safety valves must be inclined to prevent water pockets and must also be frost-free.
- Install shut off valves as close to the heat pump as possible so that the flow to individual cooling modules can be shut off. Extra safety valves between the heat pump and filterballs (according the outline diagram) are required.
- Fit the enclosed filterballs on the incoming pipe.
- Fit the supplied non-return valves on the outgoing pipe.

In the case of connection to an open groundwater system, an intermediate frost-protected circuit must be provided, because of the risk of dirt and freezing in the evaporator. This requires an extra heat exchanger.



Expansion vessel

The brine circuit must be supplied with a pressure expansion vessel.

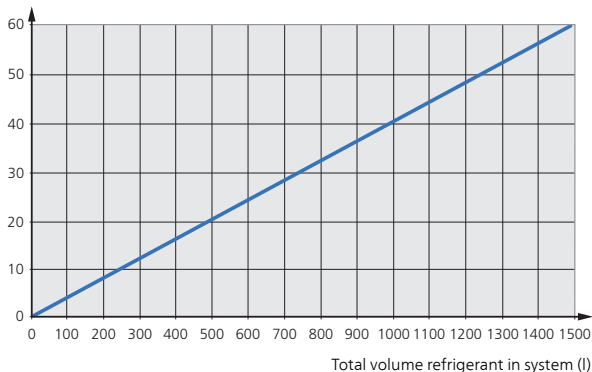
The brine side must be pressurised to at least 0.05 MPa (0.5 bar).

The pressure expansion vessel should be dimensioned as set out in the following diagram, to prevent malfunctions. The diagrams cover the temperature range from 10 °C to +20 °C at pre-pressure 0.05 MPa (0.5 bar) and the safety valve's opening pressure of 0.3 MPa (3.0 bar).

Ethanol 28% (volume percent)

In installations with ethanol (28% volume percent) as the brine the pressure expansion vessel must be dimensioned according to the following diagram.

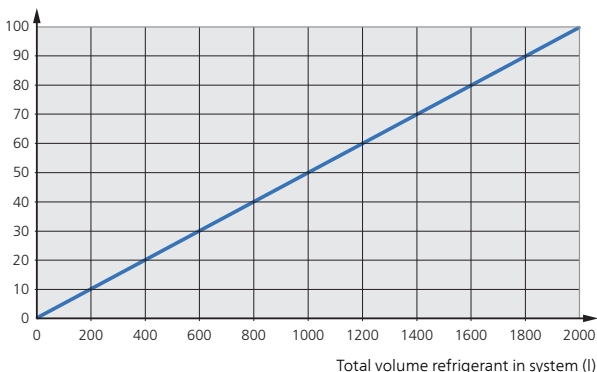
Volume pressure expansion vessel (l)



Ethylene glycol 40% (volume percent)

In installations with ethylene glycol (40% volume percent) as the brine the pressure expansion vessel must be dimensioned according to the following diagram.

Volume pressure expansion vessel (l)



Heating medium side

Connecting the climate system

A climate system is a system that regulates indoor comfort with the help of the control system in F1355 and for example radiators, underfloor heating/cooling, fan convectors etc.

- The pipe connections are on the rear of the heat pump.
- Install the necessary safety equipment and shut-off valves (installed as close to F1355 as possible so that the flow to individual cooling modules can be shut off).
- Fit the enclosed filterballs on the incoming pipe.
- The safety valve must have a maximum 0.6 MPa (6.0 bar) opening pressure and be installed on the heating medium return. The entire length of the overflow water pipe from the safety valve must be inclined, to prevent water pockets and must also be frost-free.
- When connecting to a system with thermostats on all radiators, a relief valve must be fitted, or some of the thermostats must be removed to ensure sufficient flow.
- Fit the supplied non-return valves on the outgoing pipe.



Caution

When necessary you should install vent valves in the climate system.



Caution

F1355 is designed so that heating production can be performed using one or two cooling modules. However, this entails different pipe or electrical installations.

Water heater

Connecting the hot water heater

- Any docked hot water heater must be fitted with necessary set of valves.
- The mixing valve must be installed if the setting is changed so that the temperature can exceed 60 °C.
- The setting for hot water is made in menu 5.1.1.
- The safety valve must have a maximum opening pressure of 1.0 MPa (10.0 bar) and be installed on the incoming domestic water line as illustrated. The entire length of the overflow water pipe from the safety valve must be inclined to prevent water pockets and must also be frost-free.



Caution

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



Caution

The heat pump/system is designed so that hot water production can be carried out with one or several cooling modules. However, this entails different pipe or electrical installations. Hot water production takes place via cooling module EP14 as standard.

Docking alternatives

F1355 can be connected in several different ways. Examples are shown below.

Further information about the options is available at www.nibe.eu and in the manuals for the accessories used. See page 35 for the list of the accessories that can be used with F1355.

Explanation

EB1

EB1	External electrical additional heat
FL10	Safety valve, heating medium side
QM42 - QM43	Shut-off valve, heating medium side
RN11	Trim valve

External additional heat

EB100

BT1	Temperature sensor, outdoor
BT6	Temperature sensor, hot water charging
BT25	Temperature sensor, heating medium flow, External

Heat pump system

BT71	Temperature sensor, heating medium return, External
------	---

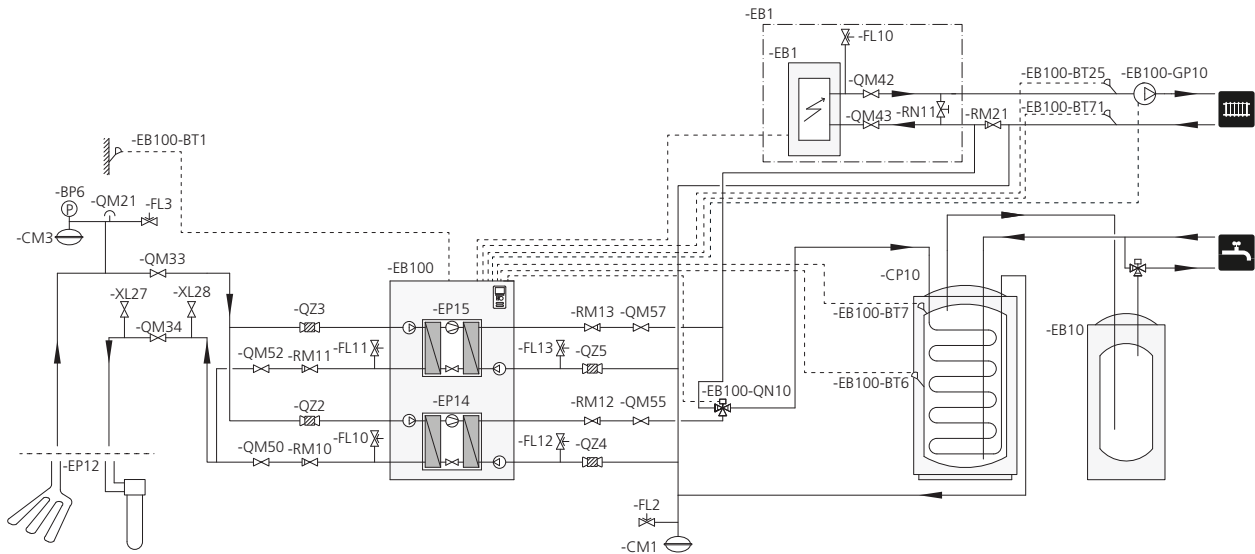
EB100	Heat pump, F1355
EP14	Cooling module A
EP15	Cooling module B
FL10 - FL11	Safety valve, collector side
FL12 - FL13	Safety valve, heating medium side
QZ2 - QZ5	Filterball (particle filter)
QM50, QM52	Shut-off valve, brine side
QM55, QM57	Shut-off valve, heating medium side
QN10	Reversing valve, heating/hot water
RM10 - RM13	Non-return valve

Miscellaneous

BP6	Manometer, brine side
BT7	Temperature sensor, hot water flow
CP10	Accumulator tank with hot water coil
CM1	Expansion vessel, closed, heating medium side
CM3	Expansion vessel, closed, brine side
EB10	Water heater
EP12	Collector, brine side
FL2	Safety valve, heating medium side
FL3	Safety valve, brine
GP10	Circulation pump, heating medium external
QM21	Venting valve, brine side
QM33	Shut off valve, brine flow
QM34	Shut off valve, brine return
RM21	Non-return valve
XL27 - XL28	Connection, filling brine

Designations according to standards 81346-1 and 81346-2.

Example - F1355 28 kW docked with electric additional heat and hot water heater (floating condensing)



The heat pump (EB100) prioritises charging of hot water with half the power (cooling module EP14) via a reversing valve (EB100-QN10). When the water heater/accumulator tank (CP10) is fully charged, (EB100-QN10) switches to the heating circuit.

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



Caution

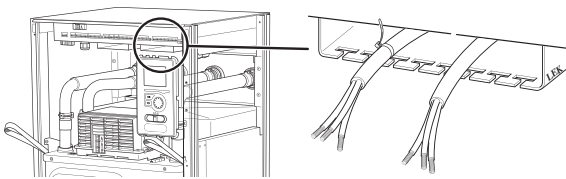
The example is an outline diagram; items included on delivery of the product are shown on "Supplied components" page 10.

5 Electrical connections

General

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

- Disconnect the heat pump before insulation testing the house wiring.
- If the building is equipped with an earth-fault breaker, each F1355 should be equipped with a separate one.
- If a miniature circuit breaker is used this should have at least motor characteristic "C". See page 38 for fuse size.
- Electrical wiring diagram for the heat pump, see page 43.
- Communication and sensor cables to external connections must not be laid close to high current cables.
- The minimum area of communication and sensor cables to external connections must be 0.5 mm² up to 50 m, for example EKKX or LiYY or equivalent.
- When cable routing in F1355, cable grommets (e.g. UB2, power cables and UB3, signal cables, marked in image) must be used. Secure the cables in the grooves in the panel using cable ties (see image).



NOTE

The switch (SF1) must not be moved to "I" or "Δ" until the boiler has been filled with water. Component parts of the product can be damaged.



NOTE

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



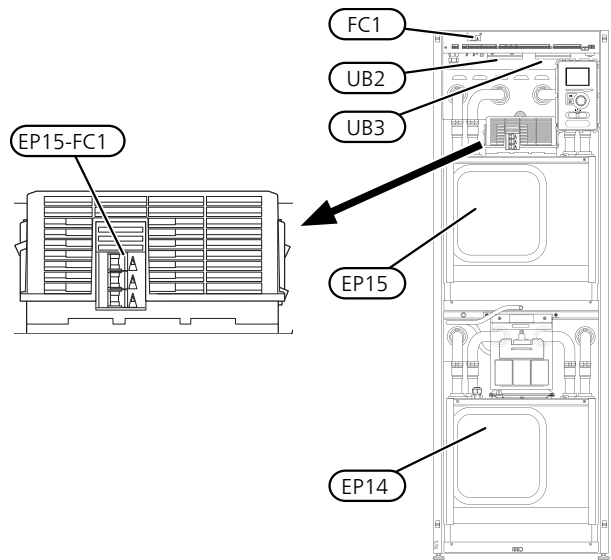
NOTE

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



NOTE

Refer to the outline diagram of your system for positioning of the temperature sensor.



Miniature circuit-breaker

The heat pump operating circuit and some of its internal components are internally fused by a miniature circuit breaker (FC1).

Fuse (EP15-FC1) cuts the power to the compressor if the current is too high.

Resetting

Fuse (EP15-FC1) is accessible behind the front cover. The miniature circuit breakers are reset by pushing back to the fused position.

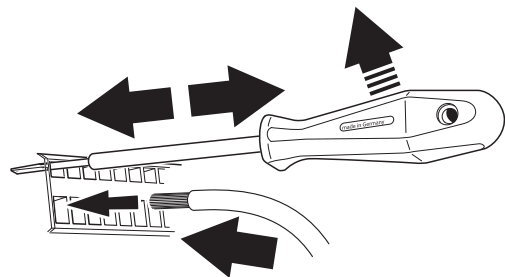


Caution

Check the miniature circuit-breakers. They may have tripped during transportation.

Cable lock

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



Connections

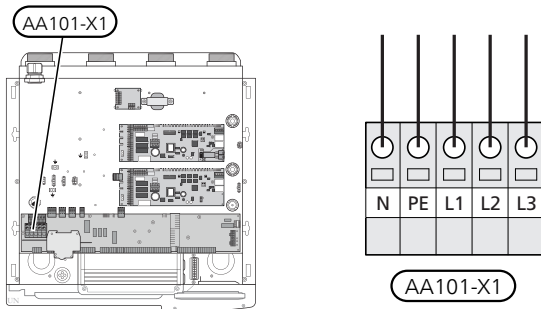


NOTE

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

Power connection

F1355 must be installed with a disconnect option on the supply cable. Minimum cable area must be sized according to the fuse rating used. Supplied cable for incoming supply electricity is connected to terminal block X1. All installation must be carried out in accordance with current norms and directives.



NOTE

It is important that the electrical connection is made with the correct phase sequence. With the incorrect phase sequence, the compressor does not start and an alarm is displayed.

Tariff control

If the voltage to the compressors disappears for a certain period, simultaneous blocking of these must take place via software controlled input (AUX input) to avoid alarm, see page 28.

At the same time, external operating voltage for the control system must be connected to F1355, see page 21.

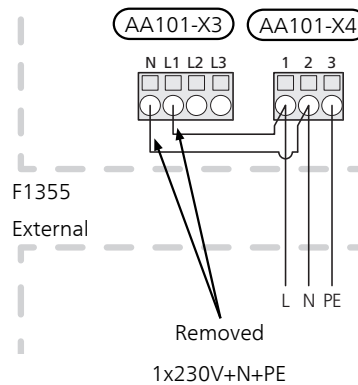
Connecting external operating voltage for the control system

NOTE

Mark up any junction boxes with warnings for external voltage.

When connecting external operating voltage with separate earth-fault breaker, remove the cables between terminal block AA101-X3:N and AA101-X4:2 and between terminal block AA101-X3:L1 and AA101-X4:1 (as illustrated).

Operating voltage (1x230V+N+PE) is connected to AA101-X4:3 (PE), AA101-X4:2 (N) and AA101-X4:1 (L) (as illustrated).

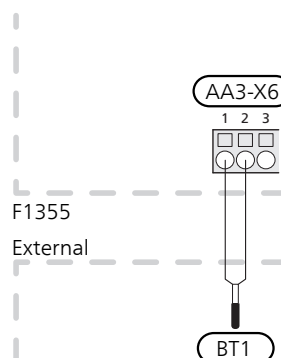


Outside sensor

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

Connect the sensor to terminal block AA3-X6:1 and AA3-X6:2. Use a twin core cable with a cable area of at least 0.5 mm².

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

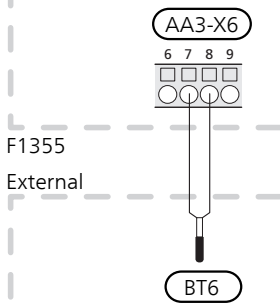


Temperature sensor, hot water charging

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

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

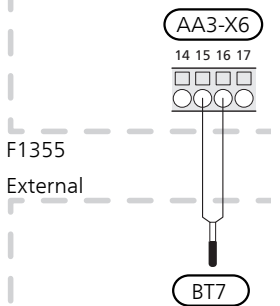
Hot water charging is activated in menu 5.2 or in the start guide.



Temperature sensor, hot water top

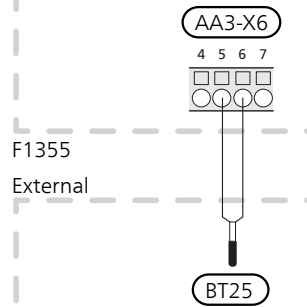
A temperature sensor for hot water top (BT7) can be connected to F1355 for showing the water temperature at the top of the tank (if possible).

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



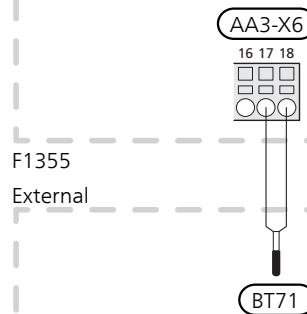
Temperature sensor, external flow line

Connect temperature sensor, external supply line (BT25) to terminal block AA3-X6:5 and AA3-X6:6. Use a twin core cable with a cable area of at least 0.5 mm².



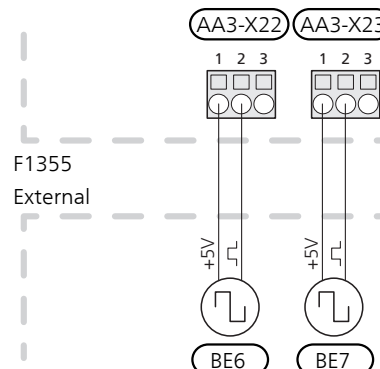
Temperature sensor, external return line

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



Connecting external energy meter

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



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

Optional connections

Load monitor

When many electrical appliances are connected in the property at the same time as the electric additional heat is operating, there is a risk of the property's main fuse tripping. F1355 has integrated load monitors that control the power steps for the electric additional heat by redistributing the power between the different phases or disengaging the electric additional heat in event of an overload in a phase. If the overload remains despite the electric additional heat being disengaged, the compressor winds down. Reconnection occurs when other current consumption is reduced.

Connecting current sensors

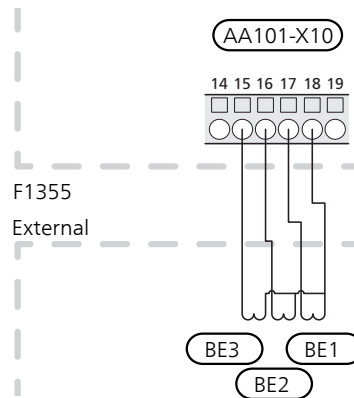
A current sensor (BE1 - BE3) must be installed on each incoming phase conductor into the electrical distribution unit, to measure the current. The electrical distribution unit is an appropriate installation point.

Connect the current sensors to a multi-core cable in an enclosure next to the electrical distribution unit. Use unscreened multi-core cable of at least 0.5 mm², from the enclosure to F1355.

Connect the cable to terminal block AA101-X10:15 to AA101-X10:16 and AA101-X10:17 as well as to the common AA101-X10:18 terminal block for the three current sensors.

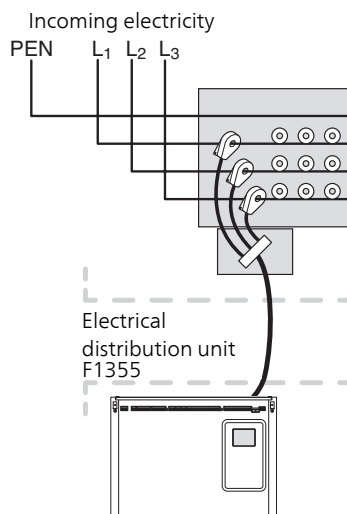
The value for the size of the fuse is set in menu 5.1.12 to correspond with the size of the property's main fuse. Here it is also possible to adjust the current sensor's transformer ratio.

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



NOTE

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



Room sensor

F1355 can be supplemented with a room sensor (BT50). The room temperature sensor has up to three functions:

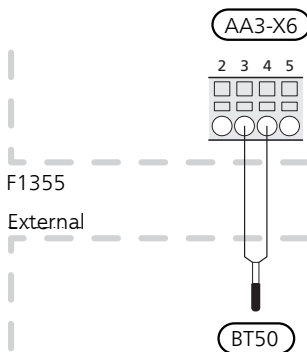
1. Show current room temperature in the heat pump's display.
2. Option of changing the room temperature in °C.
3. Makes it possible to change/stabilise the room temperature.

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

F1355 operates without the sensor, but if you want to read the home's indoor temperature from the display, the sensor must be installed. Connect the room sensor to AA3-X6:3 and AA3-X6:4.

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

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



Caution

Changes of temperature in the accommodation take time. For example, short periods of change combined with under floor heating will not result in a noticeable difference in the room temperature.

Step controlled additional heat

NOTE

Mark up any junction boxes with warnings for external voltage.

External step-controlled additional heat can be controlled by up to three potential-free relays in F1355 (3 step linear or 7 step binary). With the AXC 50 accessory, a further three potential-free relays are used for additional heat control, which then gives max 3+3 linear or 7+7 binary steps.

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

Connect the common phase to terminal block AA101-X7:1.

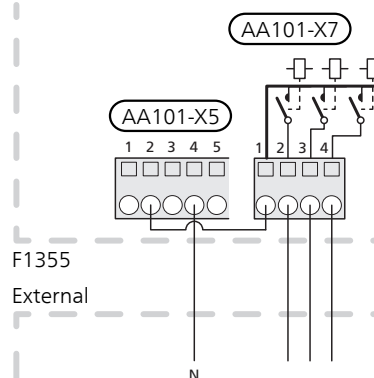
Step 1 is connected to terminal block AA101-X7:2.

Step 2 is connected to terminal block AA101-X7:3.

Step 3 is connected to terminal block AA101-X7:4.

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

All additional heat can be blocked by connecting a potential-free switch function to AUX input on terminal block AA3-X6 and AA101-X10. The function must be activated in menu 5.4.



Caution

If the additional heat's operating voltage is 230 V~, voltage can be taken from AA101-X5:1 - 3. Connect the neutral from the external additional heat to AA101-X5:4 - 6.

Shunt controlled additional heat



NOTE

Mark up any junction boxes with warnings for external voltage.

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

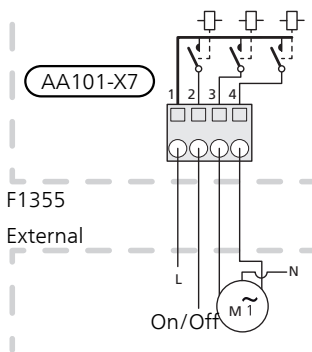
The connection requires that the boiler sensor (BT52) is connected to one of the AUX inputs in F1355, see section "External connection options (AUX)" on page 27. The sensor is only selectable when "shunt controlled add. heat" is selected in menu 5.1.12.

F1355 controls a shunt valve and start signal to the additional heating using three relays. If the installation does not manage to maintain the correct supply temperature, the additional heat starts. When the boiler sensor (BT52) exceeds the set value, F1355 transmits a signal to the shunt (QN11) to open from the additional heat. The shunt (QN11) adjusts so the true supply temperature corresponds with the control system's theoretically calculated set point value. When the heating demand drops sufficiently so that the additional heat is no longer required, the shunt (QN11) closes completely. Factory-set minimum run time for the boiler is 12 hours (can be adjusted in menu 5.1.12).

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

Connect the shunt motor (QN11) to terminal block AA101-X7:4 (230 V, open) and 3 (230 V, close).

To control switching the additional heat on and off, connect it to terminal block AA101-X7:2.



All additional heat can be blocked by connecting a potential-free switch function to AUX input on terminal block AA3-X6 and AA101-X10. The function must be activated in menu 5.4.

Additional heat in tank



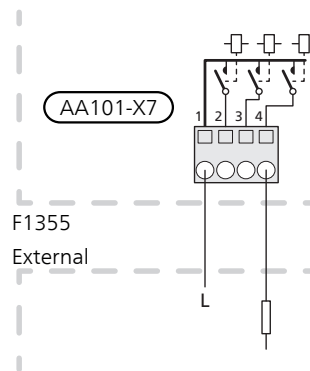
NOTE

Mark up any junction boxes with warnings for external voltage.

This connection enables an external additional heater in the tank to assist the hot water production when the compressors are busy producing heating.

Additional heat in tank is activated in menu 5.1.12.

To control switching the additional heat on and off in the tank, connect it to terminal block AA101-X7:4.



All additional heat can be blocked by connecting a potential-free switch function to AUX input on terminal block AA3-X6 and AA101-X10. The function must be activated in menu 5.4.

Relay output for emergency mode

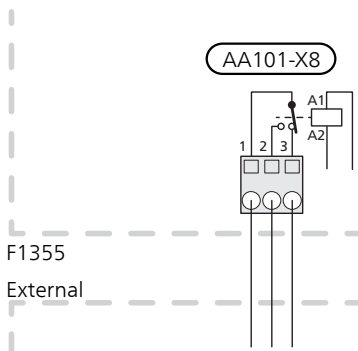


NOTE

Mark up any junction boxes with warnings for external voltage.

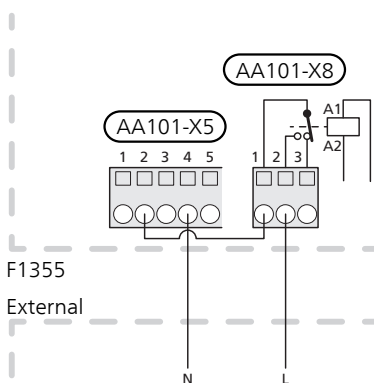
When switch (SF1) is set to “ Δ ” mode (emergency mode), the internal circulation pumps (EP14-GP1 and EP15-GP1) and the potential-free variable emergency mode relay (AA101-K4) are activated. External accessories are disconnected.

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



Caution

No hot water is produced when emergency mode is activated.



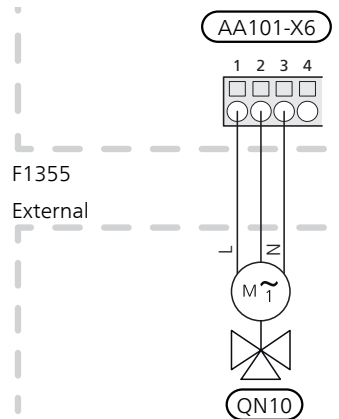
Caution

If the emergency mode's operating voltage is 230 V~, voltage can be taken from AA101-X5:1 - 3. Connect the neutral from the external additional heat to AA101-X5:4 - 6.

Reversing valves

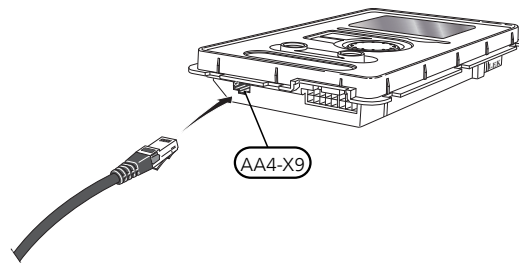
F1355 can be supplemented with an external reversing valve (QN10) for hot water control (see page 35 for accessory).

Connect the external reversing valve (QN10) to terminal block AA101-X6:3 (N), AA101-X6:2 (operation) and AA101-X6:1 (L) as illustrated.



Uplink

Connect a network-connected cable (straight, Cat.5e UTP) with RJ45 contact (male) to contact AA4-X9 on the display unit (as illustrated). Use the cable gland (UB3) in the heat pump for cable routing.



External connection options (AUX)

F1355 has five software-controlled inputs (AUX) for connecting the external switch function or sensor. This means that an external switch contact function can be connected to one of five AUX inputs, where the function for the connection must be determined in the heat pump software.



Caution

If an external switch contact function is connected to F1355, the function for use input or output must be selected in menu 5.4.

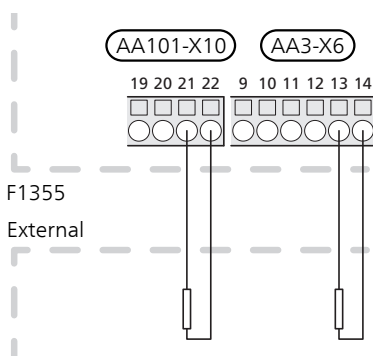
Selectable inputs on terminal block AA3-X6 for these functions are:

- AUX1 (AA3-X6:9-10)
- AUX2 (AA3-X6:11-12)
- AUX3 (AA3-X6:13-14)

Selectable inputs on terminal block AA101-X10 for these functions are:

- AUX4 (AA101-X10:19-20)
- AUX5 (AA101-X10:21-22)

	soft in/output 5.4
AUX1	activate temp lux
AUX2	block add. heat
AUX3	external adjustment
AUX4	block compressor
AUX5	activate fan speed 1
AA101-X9	hot water recirc.



The example above uses the inputs AUX3 (AA3-X6:13-14) and AUX5 (AA101-X10:21-22) on the terminal block.



Caution

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

Possible selections for AUX inputs

Following functions can be connected to the AUX inputs.

Temperature sensor, cooling/heating

An extra temperature sensor must be connected to F1355, in order to determine when it is time to switch between heating and cooling operation.

When several heating/cooling sensors are installed, you can select which one of them should be controlling in menu 1.9.5.

When the heating/cooling sensors BT74 have been connected and activated in menu 5.4, no other sensor can be selected in menu 1.9.5.

Use a 2 core cable of at least 0.5 mm² cable area.

Temperature sensor, boiler

A temperature sensor, boiler (BT52) can be connected to F1355. The alternative is only shown if shunt controlled additional heat is selected in menu 5.1.12.

Switch for external blocking of additional heat

The additional heat is disconnected by connecting a potential free switch function to the input selected in menu 5.4.

A closed contact results in the electrical output being disconnected.

Switch for external alarm

Alarms from external devices can be connected to the control and appear as an info alarm. Potential-free signal of NO or NC type can be connected.

Switch for external blocking of hot water

Hot water operation is disconnected by connecting a potential-free switch function to the input selected in menu 5.4.

A closed contact results in disconnection of the hot water operation.

Switch for external blocking of heating

Heating is disconnected by connecting a potential free switch function to the input selected in menu 5.4.

A closed switch results in blocked heating operation.



NOTE

When heating blocking is activated, min. supply is not applicable, which can entail a freezing risk for your system.

▪ **Contact for external blocking of compressor (EP14) and/or (EP15)**

In those cases external blocking of compressor (EP14) and/or (EP15) is wanted, this can be connected to terminal block AA3-X6, which is positioned behind the front cover.



Caution

That each compressor requires a AUX input. If you want to block both (EP14) and (EP15), this will occupy two AUX inputs.

The compressor (EP14) and/or (EP15) are disconnected by connecting a potential-free switch function to the input selected in menu 5.4.

External blocking of the compressor (EP14) and (EP15) can be combined.

A closed contact results in the electrical output being disconnected.

▪ **Contact for external tariff blocking**

Where external tariff blocking is required, a separate supply must be connected to terminal block AA101-X4. Strap between AA101-X3 and AA101-X4 must be removed.

Tariff blocking means that the additional heat, the compressor and heating are disconnected by connecting a potential free switch function to the input selected in menu 5.4.

A closed contact results in the electrical output being disconnected.



NOTE

When tariff blocking is activated, min. supply is not applicable, which can entail a freezing risk for your system.

▪ **Switch for "SG ready"**



NOTE

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

"SG Ready" is a smart form of tariff control, through which your electricity supplier can affect the indoor, hot water and/or pool temperatures (if applicable) or simply block the additional heat and/or compressor in F1355 at certain times of the day (can be selected in menu 4.1.5 after the function is activated). Activate the function by connecting potential-free switch functions to two inputs selected in menu 5.4 (SG Ready A and SG Ready B).

Closed or open switch means one of the following:

– **Blocking (A: Closed, B: Open)**

"SG Ready" is active. The compressor in the heat pump and additional heat is blocked like the day's tariff blocking.

– **Normal mode (A: Open, B: Open)**

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

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

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

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

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

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

▪ **Switch for external forced control of brine pump**

The brine pump can be force controlled by connecting a potential free switch function to the input selected in menu 5.4.

A closed switch means that the brine pump is active.

▪ **Contact for activation of "temporary lux"**

An external switch function can be connected to F1355 for activation of the hot water function "temporary lux". The switch must be potential-free and connected to the selected input (menu 5.4).

"temporary lux" is activated for the time that the contact is connected.

▪ **Contact for activation of "external adjustment"**

An external contact function can be connected to F1355 to change the supply temperature and the room temperature.

When the switch is closed the temperature changes in °C (if the room sensor is connected and activated). If a room sensor is not connected or not activated, the desired offset of "temperature" (heating curve offset) is set with the number of steps selected. The value is adjustable between -10 and +10.

– *climate system 1*

The switch must be potential-free and connected to the selected input (menu 5.4) on terminal block AA3-X6.

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

– *climate system 2 to 4*

External adjustment for climate systems 2 to 4 requires accessories (ECS 40 or ECS 41).

See the accessory's installer handbook for installation instructions.

▪ **Contact for activation of fan speed**



Caution

The external contact function functions only if the accessory FLM is installed and activated.

An external contact function can be connected to F1355 for activation of one of the four fan speeds. The switch must be potential-free and connected to the selected input (menu 5.4). 1-4 is normally open (NO), and fan speed 1 is normally closed (NC).

When the switch closes, the selected fan speed is activated. Normal speed is resumed when the contact is opened again.

▪ **Pressure/level/flow monitor brine**

If a pressure/level/flow monitor brine is required for the brine installation, it can be connected to the selected input (menu 5.4).

For function the input must be connected during normal operation.

Possible selection for AUX output (potential free variable relay)

There is the option of having an external connection through the relay function via a potential-free variable relay (max. 2 A) on the terminal block AA101-X9.

Optional functions for external connection:

- Alarm indication.
- Indication of buzzer alarm.
- Controlling ground water pump.
- Cooling mode indication (only applies if accessories for cooling are present or if F1355 has an integrated cooling function).
- Control of circulation pump for hot water circulation.
- Control of charge pump for hot water.
- External circulation pump (for heating medium).
- Holiday indication.

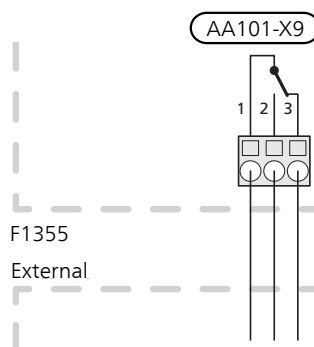
If any of the above is connected, it must be activated in menu 5.4.

Alarm output is preselected at the factory.



NOTE

An accessory board is required if several functions are to be connected to terminal block AA101-X9 at the same time that indication of the common alarm is activated (see page 35).



The picture shows the relay in the alarm position.

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

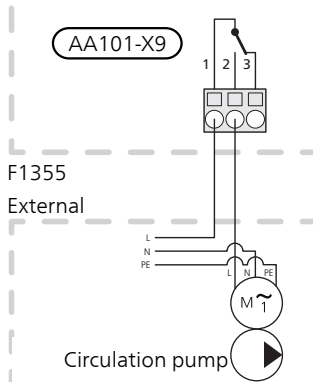
External circulation pump, ground water pump or hot water circulation pump connected to the buzzer alarm relay as illustrated below.



NOTE

Mark up any junction boxes with warnings for external voltage.

If the pump has to work in the event of alarm, the cable is moved from position 2 to position 3.



Caution

The relay outputs can have a max load of 2 A (230 V AC) in total.

Connecting accessories

Instructions for connecting accessories are in the installation instructions provided for the respective accessory. See information at www.nibe.eu for the list of the accessories that can be used with F1355.

6 Commissioning and adjusting

Preparations

1. Ensure that F1355 has not been damaged during transport.
2. Check that the switch (SF1) is in position "⏻".
3. Check for water in any hot water heater and climate system.



Caution

Check the miniature circuit-breaker. It may have tripped during transport.



NOTE

Do not start F1355 if there is a risk that the water in the system has frozen.

Filling and venting

Filling and venting the climate system

Filling

1. Open the filling valve (external, not included with the product). Fill the climate system with water.
2. Open the venting valve (external, not included with the product).
3. When the water that exits the venting valve is not mixed with air, close the valve. After a while the pressure starts to rise.
4. Close the filling valve when the correct pressure is obtained.

Venting

1. Bleed F1355 via a vent valve (external, not included in the product) and the rest of the climate system via their dedicated vent valves.
2. Keep topping up and venting until all air has been removed and the pressure is correct.



NOTE

Make sure that the heating medium system contains no air, before start-up. Failure to properly vent the system may result in damage to components.

Filling and venting the brine system

When filling the brine system, mix the water with anti-freeze in an open container. The mixture should be protected against freezing down to about -15 °C. The brine is filled by connecting a filling pump.

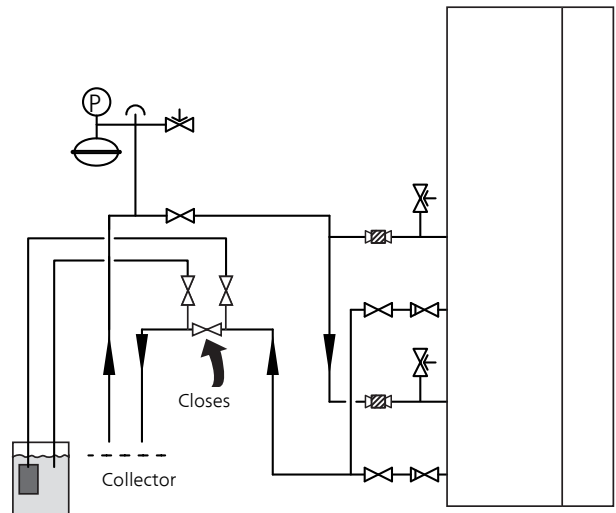
1. Check the brine system for leakage.
2. Connect the filling pump and return line on the brine system's service connections as shown in figure.
3. Close the shut-off valve between the service connections.
4. Open the service connections.
5. Start the filling pump.

6. Fill and bleed the brine system until clear, air free, liquid enters the return pipe.
7. Close the service connections.
8. Open the shut-off valve between the service connections.



NOTE

Make sure that the brine system does not contain air before it is started up.. Failure to properly vent the system may result in damage to components.



Symbol key

Symbol	Meaning
	Shut-off valve
	Safety valve
	Trim valve
	Expansion vessel
	Pressure gauge
	Filterball (particle filter)

Start guide



NOTE

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

1. Set switch (SF1) on F1355 to position "I".
2. Follow the instructions in the display's start guide. If the start guide does not start when you start the F1355, start it manually in menu 5.7.



TIP

Refer to the operating manual for a more in-depth introduction to the control system in F1355 (operation, menus, etc.).

If the building is cooled when F1355 starts, the compressor may not be able to meet the entire demand without having to use additional heating.

Commissioning

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

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



Caution

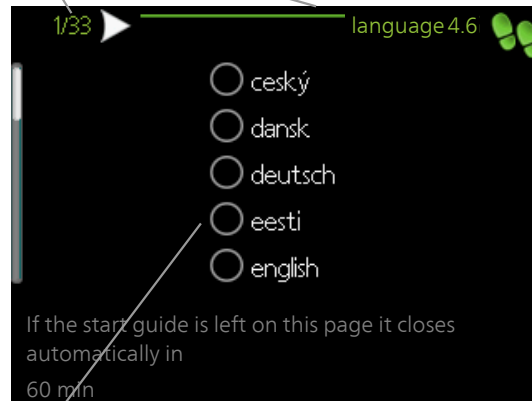
As long as the start guide is active, no function in the installation will start automatically.

The guide will appear at each installation restart until it is deselected on the last page.

Operation in the start guide

A. Page

B. Name and menu number



C. Option / setting

A. Page

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

Scroll between the pages of the start guide as follows:

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

B. Name and menu number

Read what menu in the control system this page of the start guide is based on. The digits in brackets refer to the menu number in the control system.


If you want to read more about affected menus either read off in the sub-menu or in the operating manual under the chapter "Control - Menus"

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

C. Option / setting

Make settings for the system here.

D. Help menu

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

To access the help text:

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

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

Post adjustment and venting

Pump adjustment

Brine side

F1355 has brine pumps that operate at a fixed speed. To ensure the correct flow in the brine system, the brine pumps must be adjusted.

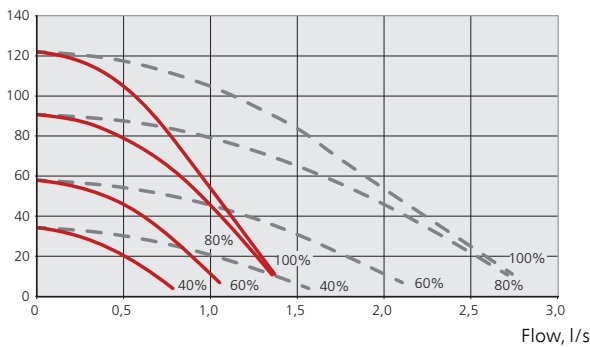
The pump speed is adjusted with both compressors in operation and EP14 at nominal speed. Wait until the system is in balance (ideally 10-15 minutes after compressor start).

Set the speed of the brine pumps in menu 5.1.9. Read off the speed that the brine pumps should have from the diagrams below.

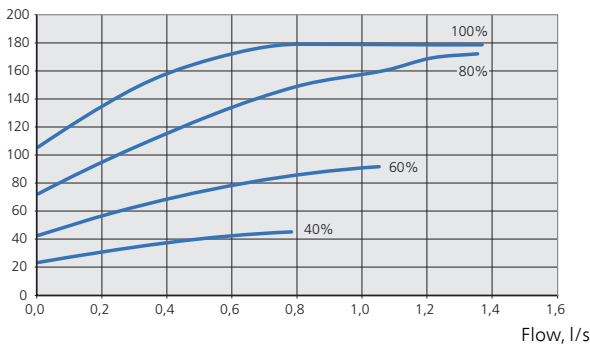
- 1 circulation pump
- - - 2 circulation pumps

F1355 28 kW

External available pressure, kPa



Electrical output per circulation pump, W



Heating medium side, automatic operation

The heating medium pump must run at the correct speed for the correct flow in the heating medium system, F1355 has a heating medium pump that can be automatically controlled in standard mode. Certain functions and accessories may require that they are run manually and the correct speed must then be set, see section .

This automatic control occurs when the compressor is running and sets the speed of the heating medium pump, for the present operating mode, to obtain the optimal temperature difference between the supply and return lines. During heating operation, the set DOT (dimensioned outdoor temperature) and temperature differential in menu 5.1.14 are used. If necessary, the maximum speed of the circulation pump can be limited in menu 5.1.11.

Heating medium side, manual operation

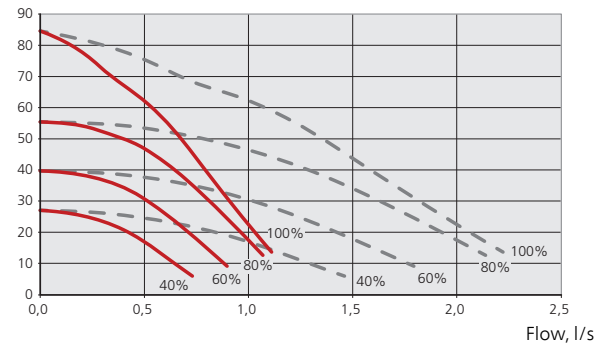
F1355 has heating medium pumps that can be automatically controlled. For manual operation: deactivate "auto" in menu 5.1.11 and then set the speed according to the diagrams below.

The flow must have a suitable temperature difference for the operating case (heating operation: 5 - 10 °C, hot water generation: 5 - 10 °C, pool heating: approx. 15 °C) between controlling supply temperature sensor and return line sensor. Check these temperatures in menu 3.1 "service info" and adjust the heating medium pump (GP1) speed until the temperature difference is attained. A high difference indicates a low heating medium supply and a low difference indicates a high heating medium supply.

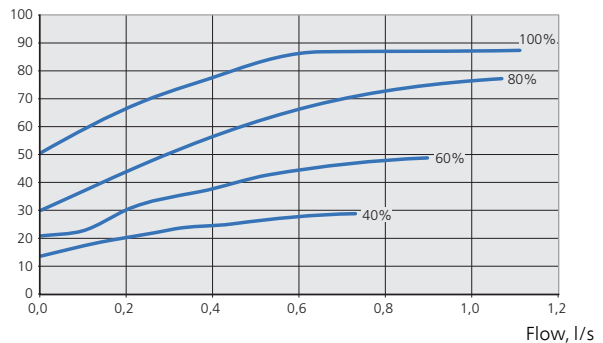
Set the speed of the heating medium pump in the menu 5.1.11, see the Operating Manual.

F1355 28 kW

External available pressure, kPa



Electrical output per circulation pump, W



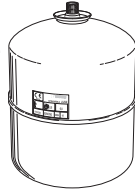
Readjusting, venting, heat medium side

Air is initially released from the hot water and venting may be necessary. If gurgling sounds can be heard from the heat pump or climate system, the entire system will require additional venting.

Readjusting, venting, collector side

Expansion vessel

If a pressure expansion vessel (CM3) is used, the pressure level is checked. If the pressure drops, the system should be replenished.



Post adjusting the room temperature

If the required room temperature is not obtained, readjustment may be necessary.

Cold weather conditions

- When the room temperature is too low, increase "heating curve" in menu 1.9.1.1 by one increment.
- When the room temperature is too high, reduce "heating curve" in menu 1.9.1.1 by one increment.

Warm weather conditions

- When the room temperature is too low, increase "temperature" (offset heating curve) in menu 1.1.1 by one increment.
- When the room temperature is too high, reduce "temperature" (offset heating curve) in menu 1.1.1 by one increment.

7 Accessories

Not all accessories are available on all markets.

Accessory card AXC 50

An accessory board is required if, for example, a ground water pump or external circulation pump is to be connected to F1355 at the same time as the indication of common alarm is activated.

Part no. 067 193

Active/Passive cooling in 2-pipe system HPAC 45

Combine F1355 with HPAC 45 for passive or active cooling. Intended for heat pumps with outputs 24 – 60 kW.

Part no. 067 446

Active/Passive cooling in 4-pipe system ACS 45

Part no 067 195

Auxiliary relay HR 10

Auxiliary relay HR 10 is used to control external 1 to 3 phase loads such as oil burners, immersion heaters and pumps.

Part no 067 309

Buffer vessel UKV

UKV 200

Part no. 080 300

UKV 300

Part no. 080 301

UKV 500

Part no. 080 302

Communications module MODBUS 40

MODBUS 40 enables F1355 to be controlled and monitored using a DUC (computer sub-centre) in the building. Communication is then performed using MODBUS-RTU.

Part no 067 144

Communications module SMS 40

When there is no internet connection, you can use the accessory SMS 40 to control F1355 via SMS.

Part no 067 073

Connection box K11

Connection box with thermostat and overheating protection. (When connecting Immersion heater IU)

Part no. 018 893

Docking kit Solar 42

Part no 067 153

Energy measurement kit EMK 500 (one per cooling module)

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

Cu pipe Ø28.

Part no. 067 178

Exhaust air module NIBE FLM

NIBE FLM is an exhaust air module designed to combine recovery of mechanical exhaust air with ground source heating.

NIBE FLM

Part no. 067 011

Bracket pack FLM

Part no. 067 083

External electric additional heat ELK

These accessories may need an accessory board AXC 50 (step controlled additional heat).

ELK 15

15 kW, 3 x 400 V
Part no. 069 022

ELK 26

26 kW, 3 x 400 V
Part no. 067 074

ELK 42

42 kW, 3 x 400 V
Part no. 067 075

ELK 213

7-13 kW, 3 x 400 V
Part no. 069 500

Extra shunt group ECS 40/ECS 41

This accessory is used when F1355 is installed in houses with two or more different heating systems that require different supply temperatures.

ECS 40 (Max 80 m²)

Part no 067 287

ECS 41 (approx. 80-250 m²)

Part no 067 288

Filling valve kit KB 32

Valve kit for filling brine in the collector hose. Includes particle filter and insulation.

KB 32 (max. 30 kW)

Part no 089 971

Gas accessory

Communications module OPT 10

OPT 10 is used to enable connection and control of gas boiler NIBE GBM 10-15.

Part no. 067 513

Hot water control

VST 11

Reversing valve, cu-pipe Ø28
(Max recommended power, 17 kW)
Part no. 089 152

VST 20

Reversing valve, cu-pipe Ø35
(Max recommended power, 40 kW)
Part no 089 388

Humidity sensor HTS 40

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

Part no. 067 538

Immersion heater IU

3 kW

Part no. 018 084

6 kW

Part no. 018 088

9 kW

Part no. 018 090

Level monitor NV 10

Level monitor for extended checks of the brine level.

Part no. 089 315

Pool heating POOL 40

POOL 40 is used to enable pool heating with F1355.

Max. 17 kW.

Part no 067 062

Room sensor RTS 40

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

Part no. 067 065

Room unit RMU 40

RMU 40 means that control and monitoring of F1355 can be carried out in a different part of your home to where it is located.

Part no 067 064

Water heater/Accumulator tank

VPA

Water heater with double-jacketed vessel.

VPA 300/200

Copper Part no. 088 710
Enamel Part no. 088 700

VPA 450/300

Copper Part no. 088 660
Enamel Part no. 088 670

VPB

Water heater without immersion heater with charging coil.

VPB 500

Copper Part no. 083 220

VPB 750-2

Copper Part no. 083 231

VPB 1000

Copper Part no. 083 240

VPAS

Water heater with double-jacketed vessel and solar coil.

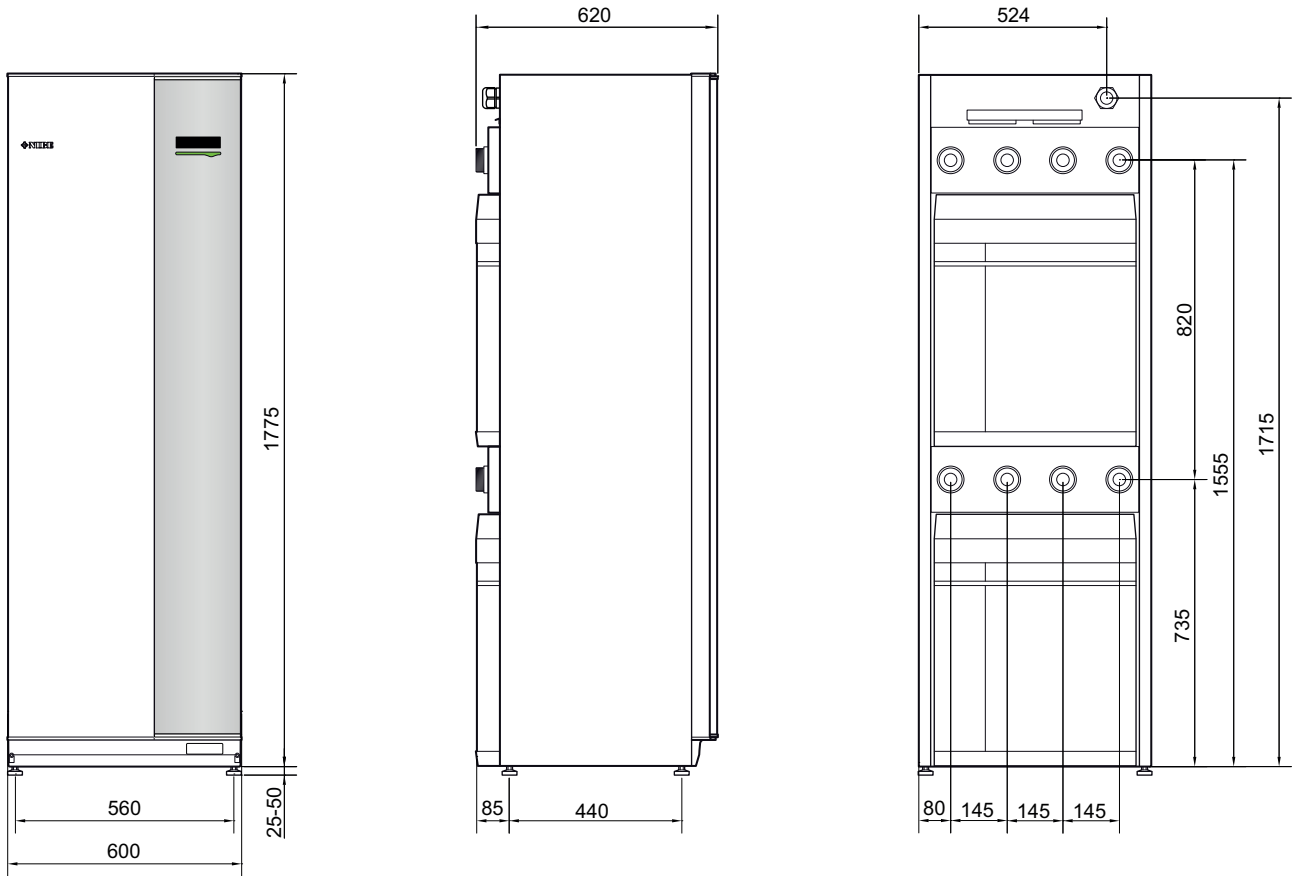
VPAS 300/450

Copper Part no. 087 720

Enamel Part no. 087 710

8 Technical data

Dimensions and setting-out coordinates



Technical specifications



3x400 V

Model		F1355-28
Output data according to EN 14511 nominal (50 Hz)		
0/35		
Rated output (P_H)	kW	20.77
Supplied power (P_E)	kW	4.56
COP	-	4.55
0/45		
Rated output (P_H)	kW	19.87
Supplied power (P_E)	kW	5.54
COP	-	3.59
10/35		
Rated output (P_H)	kW	26.68
Supplied power (P_E)	kW	4.76
COP	-	5.60
10/45		
Rated output (P_H)	kW	25.71
Supplied power (P_E)	kW	5.84
COP	-	4.40
Output data according to EN 14825		
Pdesignh	kW	28
SCOP cold climate, 35 °C / 55 °C	-	5.4 / 4.2
SCOP average climate, 35 °C / 55 °C	-	5.0 / 4.0
Electrical data		
Rated voltage		400V 3N ~ 50Hz
Max operating current, heat pump	A_{rms}	22.1
Max. operating current compressor EP14 / EP15	A_{rms}	9.5 / 8.5
Recommended fuse rating	A	25
Starting current	A_{rms}	27.7
Max permitted impedance at connection point ²⁾	ohm	-
Total output, Brine pumps	W	6 – 360
Total output, HM pumps	W	5 – 174
Enclosure class		IP 21
Refrigerant circuit		
Type of refrigerant		R407C
Fill amount EP14 / EP15	kg	2.2 / 2.0
GWP refrigerant		1,774
CO ₂ equivalent EP14 / EP15	ton	3.90 / 3.55
Cut-out value pressostat HP	MPa	3.2 (32 bar)
Difference pressostat HP	MPa	-0.7 (-7 bar)
Cut-out value, pressure switch LP EP14 / EP15	MPa	0.15 (1.5 bar) / 0.08 (0.8 bar)
Difference, pressure switch LP EP14 / EP15	MPa	0.15 (1.5 bar) / 0.07 (0.7 bar)
Cut-out value, pressure transmitter LP	MPa	0.13 (1.3 bar)
Difference, pressure transmitter LP	MPa	0.01 (0.1 bar)
Brine circuit		
Max system pressure brine	MPa	0.6 (6 bar)
Nominal flow	l/s	1.19

Model		F1355-28
Max external avail. pressure at nominal flow	kPa	95
Flow at Pdesignh	l/s	1.55
External avail. pressure at Pdesignh	kPa	80
Min/Max incoming Brine temp	°C	see diagram
Min. outgoing brine temp.	°C	-12
Heating medium circuit		
Max system pressure heating medium	MPa	0.6 (6 bar)
Nominal flow	l/s	0.48
Max external avail. pressure at nominal flow	kPa	75
Flow at Pdesignh	l/s	0.65
External avail. pressure at Pdesignh	kPa	70
Min/max HM-temp	°C	see diagram
Noise		
Sound power level (L_{WA}) according to EN 12102 at 0/35	dB(A)	47
Sound pressure level (L_{pA}) calculated values according to EN ISO 11203 at 0/35 and 1 m range	dB(A)	32
Pipe connections		
Brine diam. CU pipe		G50 (2" external) / G40 (1 1/2" internal)
Heating medium diam. CU pipes		G50 (2" external) / G40 (1 1/2" internal)

¹⁾Max. permitted impedance in the mains connected point in accordance with EN 61000-3-11. Start currents can cause short voltage dips that may affect other equipment in unfavourable conditions. If the impedance in the mains connection point is higher than that stated, it is possible that interference will occur. If the impedance in the mains connection point is higher than that stated, check with the power supplier before purchasing the equipment.

Miscellaneous

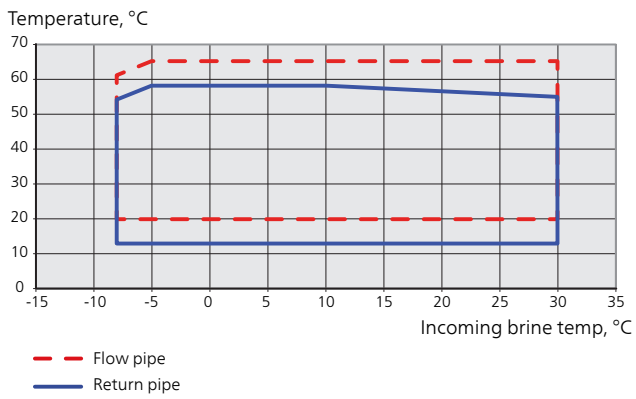
Miscellaneous		F1355-28
Compressor oil		
Oil type		POE
Volume EP14 / EP15	l	1.45 / 1.9
Dimensions and weight		
Width	mm	600
Depth	mm	620
Height	mm	1,800
Required ceiling height ¹⁾	mm	1,950
Weight complete heat pump	kg	375
Weight only cooling module EP14 / EP15	kg	125 / 130
Part no., 3x400V		065 436

¹⁾With feet removed, the height is approx. 1930 mm.

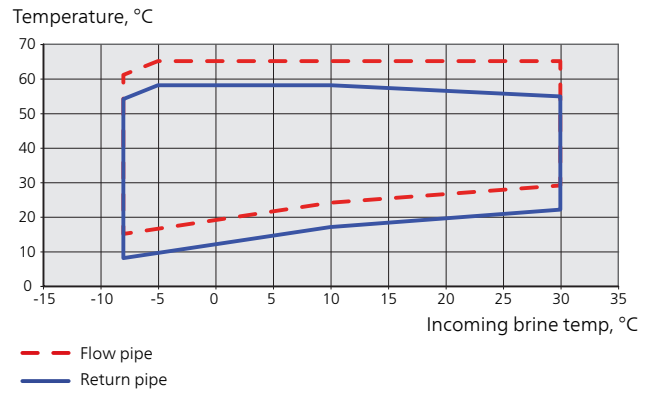
Working range heat pump, compressor operation

The compressor provides a supply temperature up to 65 °C.

Cooling module EP14



Cooling module EP15



Energy labelling

Information sheet

Supplier		NIBE
Model		F1355-28
Model hot water heater		-
Temperature application	°C	35 / 55
Declared load profile for water heating		-
Seasonal space heating energy efficiency class, average climate		A++ / A++
Water heating energy efficiency class, average climate		-
Rated heat output ($P_{\text{design,h}}$), average climate	kW	28
Annual energy consumption space heating, average climate	kWh	11,528 / 14,621
Annual energy consumption water heating, average climate	kWh	-
Seasonal space heating energy efficiency, average climate	%	198 / 155
Water heating energy efficiency, average climate	%	-
Sound power level L_{WA} indoors	dB	47
Rated heat output ($P_{\text{design,h}}$), cold climate	kW	28
Rated heat output ($P_{\text{design,h}}$), warm climate	kW	28
Annual energy consumption space heating, cold climate	kWh	12,907 / 16,450
Annual energy consumption water heating, cold climate	kWh	-
Annual energy consumption space heating, warm climate	kWh	7,237 / 9,062
Annual energy consumption water heating, warm climate	kWh	-
Seasonal space heating energy efficiency, cold climate	%	211 / 165
Water heating energy efficiency, cold climate	%	-
Seasonal space heating energy efficiency, warm climate	%	204 / 162
Water heating energy efficiency, warm climate	%	-
Sound power level L_{WA} outdoors	dB	-

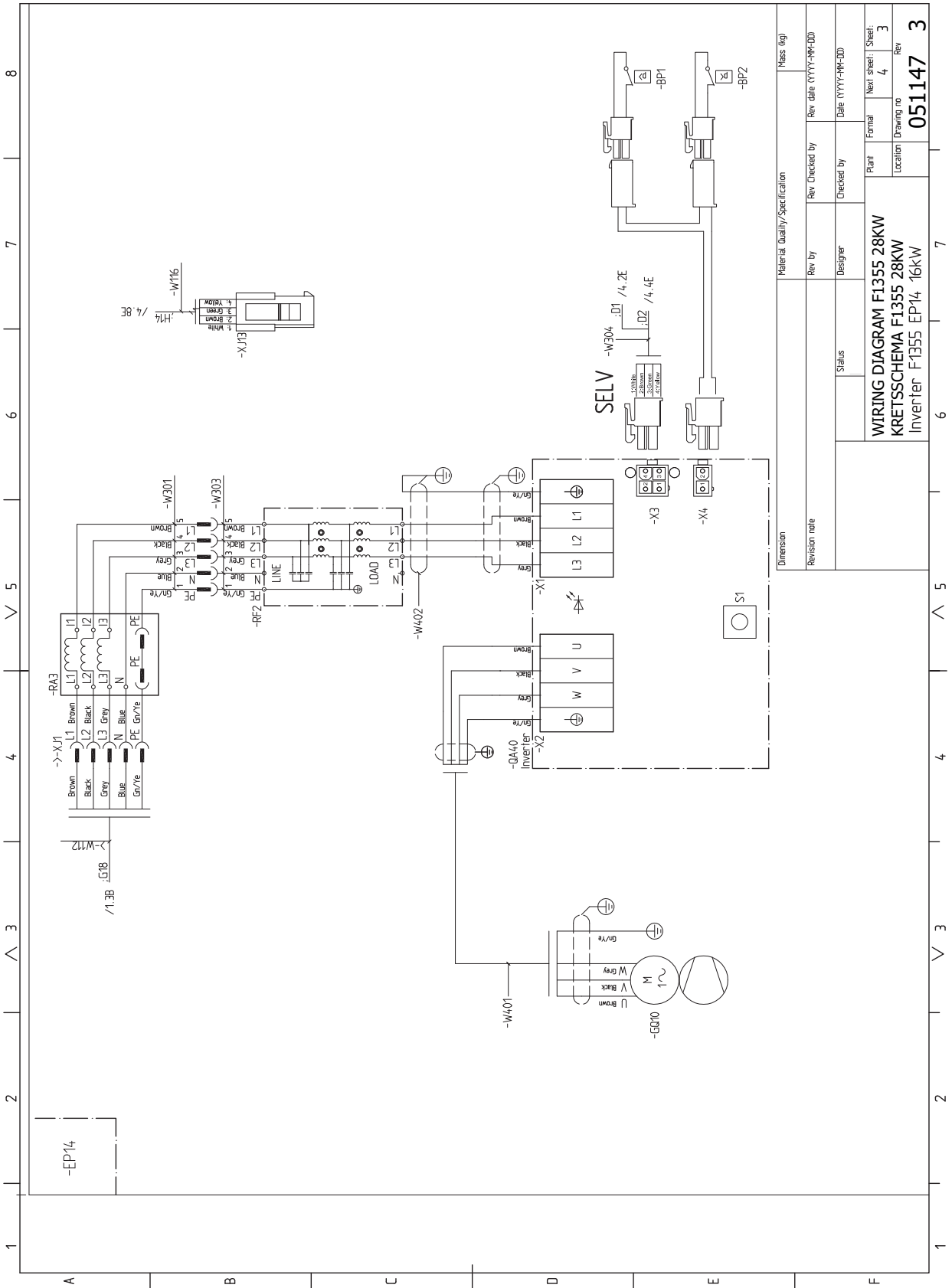
Data for energy efficiency of the package

Model		F1355-28
Model hot water heater		-
Temperature application	°C	35 / 55
Controller, class		II
Controller, contribution to efficiency	%	2
Seasonal space heating energy efficiency of the package, average climate	%	200 / 157
Seasonal space heating energy efficiency class of the package, average climate		A+++ / A+++
Seasonal space heating energy efficiency of the package, cold climate	%	213 / 167
Seasonal space heating energy efficiency of the package, warm climate	%	206 / 164

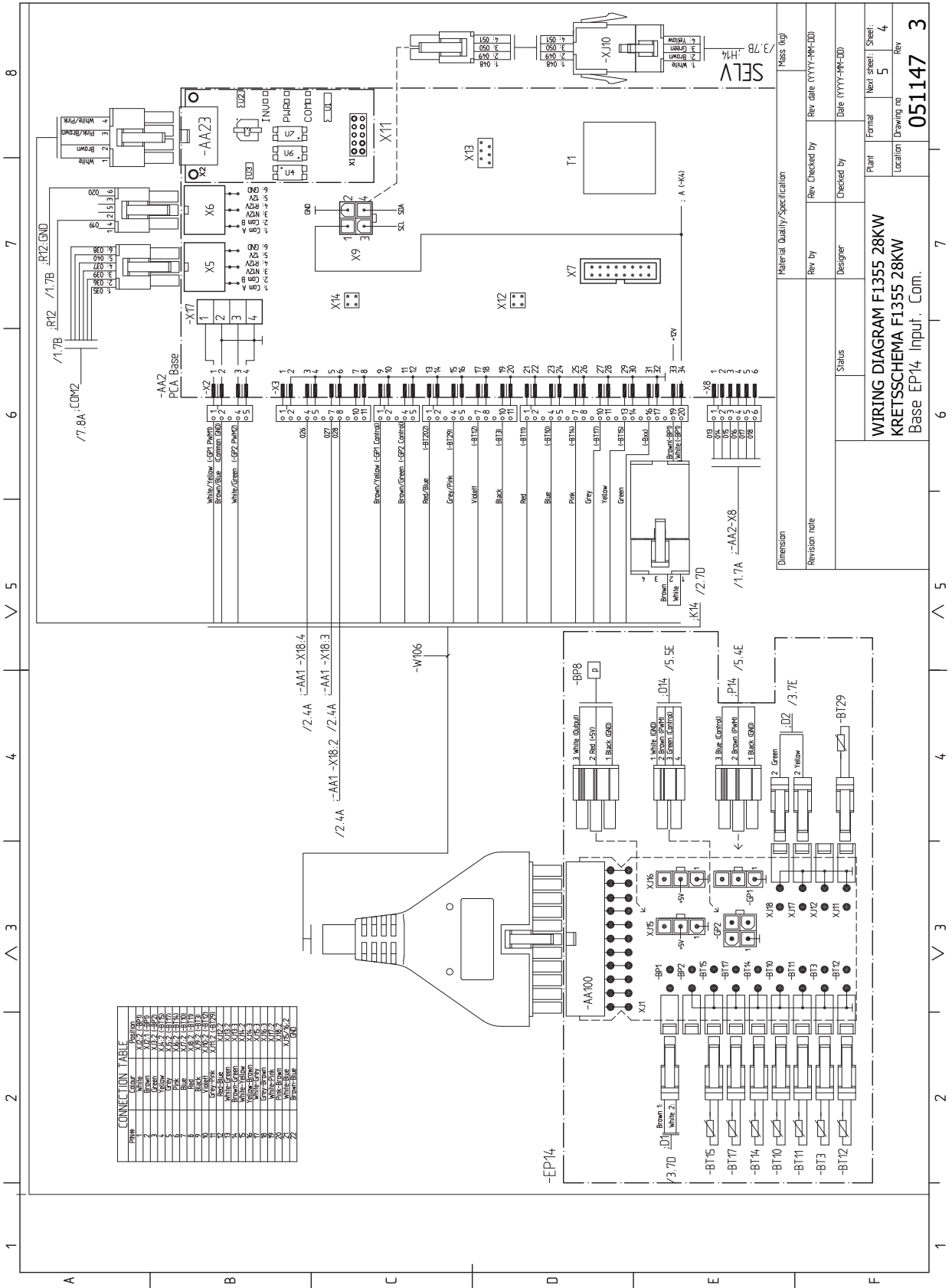
The reported efficiency of the package also takes the controller into account. If an external supplementary boiler or solar heating is added to the package, the overall efficiency of the package should be recalculated.

Technical documentation

Model		F1355-28					
Type of heat pump	<input type="checkbox"/> Air-water <input type="checkbox"/> Exhaust-water <input checked="" type="checkbox"/> Brine-water <input type="checkbox"/> Water-water						
Low-temperature heat pump	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
Integrated immersion heater for additional heat	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
Heat pump combination heater	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						
Climate	<input checked="" type="checkbox"/> Average <input type="checkbox"/> Cold <input type="checkbox"/> Warm						
Temperature application	<input checked="" type="checkbox"/> Average (55 °C) <input type="checkbox"/> Low (35 °C)						
Applied standards	EN 14825, EN 14511, EN 12102						
Rated heat output	Prated	28,0	kW	Seasonal space heating energy efficiency	η_s	155	%
<i>Declared capacity for space heating at part load and at outdoor temperature T_j</i>				<i>Declared coefficient of performance for space heating at part load and at outdoor temperature T_j</i>			
$T_j = -7\text{ °C}$	Pdh	25.0	kW	$T_j = -7\text{ °C}$	COPd	3.1	-
$T_j = +2\text{ °C}$	Pdh	15.3	kW	$T_j = +2\text{ °C}$	COPd	3.9	-
$T_j = +7\text{ °C}$	Pdh	9.7	kW	$T_j = +7\text{ °C}$	COPd	4.6	-
$T_j = +12\text{ °C}$	Pdh	4.3	kW	$T_j = +12\text{ °C}$	COPd	5.3	-
$T_j = \text{biv}$	Pdh	28.0	kW	$T_j = \text{biv}$	COPd	2.8	-
$T_j = \text{TOL}$	Pdh	28.0	kW	$T_j = \text{TOL}$	COPd	2.8	-
$T_j = -15\text{ °C}$ (if TOL < -20 °C)	Pdh		kW	$T_j = -15\text{ °C}$ (if TOL < -20 °C)	COPd		-
Bivalent temperature	T_{biv}	-10	°C	Min. outdoor air temperature	TOL	-10.0	°C
Cycling interval capacity	P _{ych}		kW	Cycling interval efficiency	COP _{yc}		-
Degradation coefficient	C _{dh}	0.99	-	Max supply temperature	WTOL	65.0	°C
<i>Power consumption in modes other than active mode</i>				<i>Additional heat</i>			
Off mode	P_{OFF}	0.007	kW	Rated heat output	P_{sup}	0.0	kW
Thermostat-off mode	P_{TO}	0.035	kW				
Standby mode	P_{SB}	0.019	kW	Type of energy input	Electric		
Crankcase heater mode	P_{CK}	0.025	kW				
<i>Other items</i>							
Capacity control	Variable			Rated airflow (air-water)			m ³ /h
Sound power level, indoors/outdoors	L_{WA}	47 / -	dB	Nominal heating medium flow			m ³ /h
Annual energy consumption	Q_{HE}	14,621	kWh	Brine flow brine-water or water-water heat pumps		3.40	m ³ /h
Contact information	NIBE Energy Systems – Box 14 – Hannabadsvägen 5 – 285 21 Markaryd – Sweden						

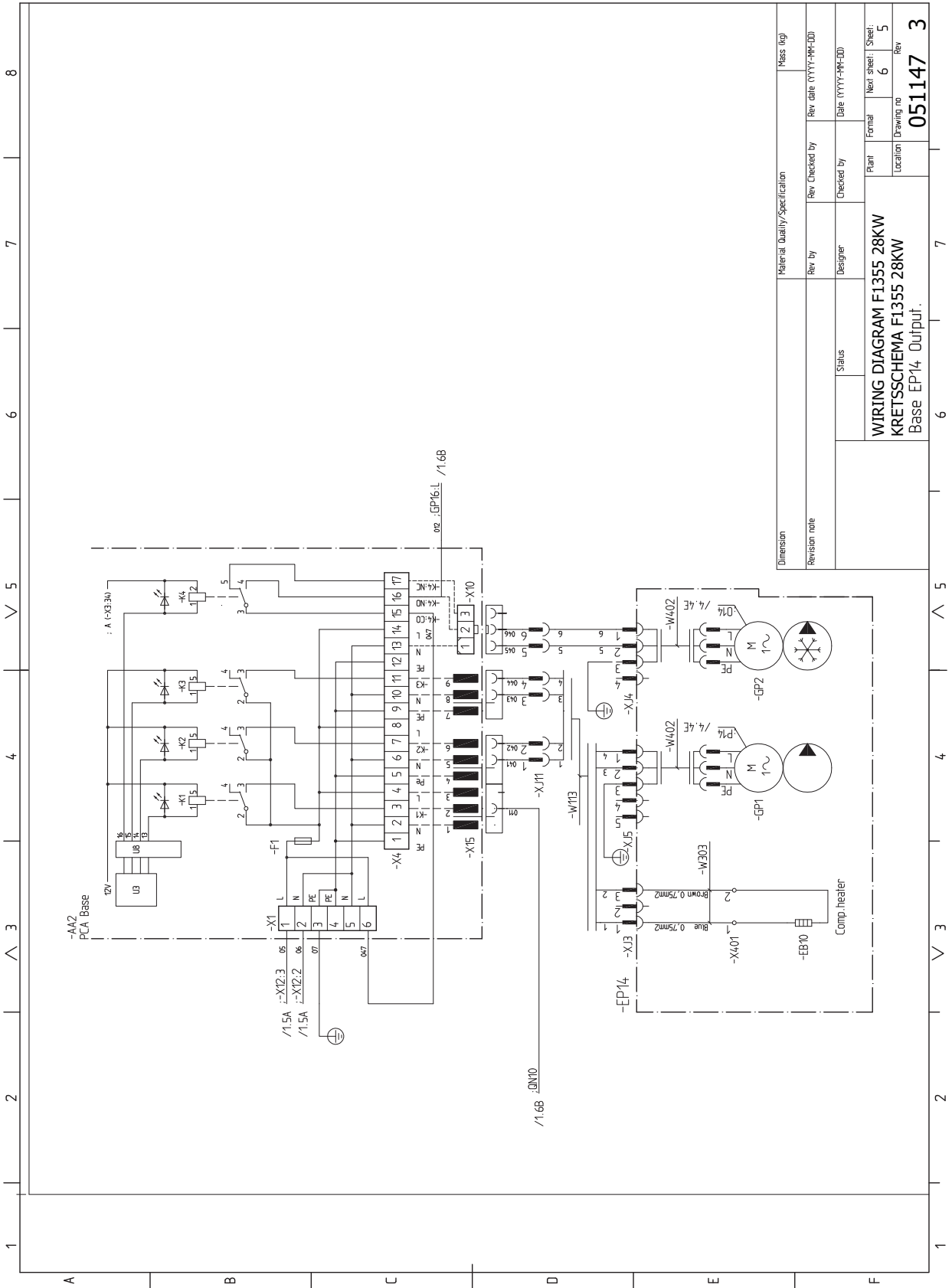


Material Quality/Specification		Mass (kg)	
Dimension	Revision note	Rev. Checked by	Rev. date (YYYY-MM-DD)
		Designer	Checked by
		Status	Date (YYYY-MM-DD)
WIRING DIAGRAM F1355 28KW KRETSSCHEMA F1355 28KW Inverter F1355 EP14 16kW		Plant	Formal
		Next sheet	Sheet
		Location	Drawing no
		051147 3	



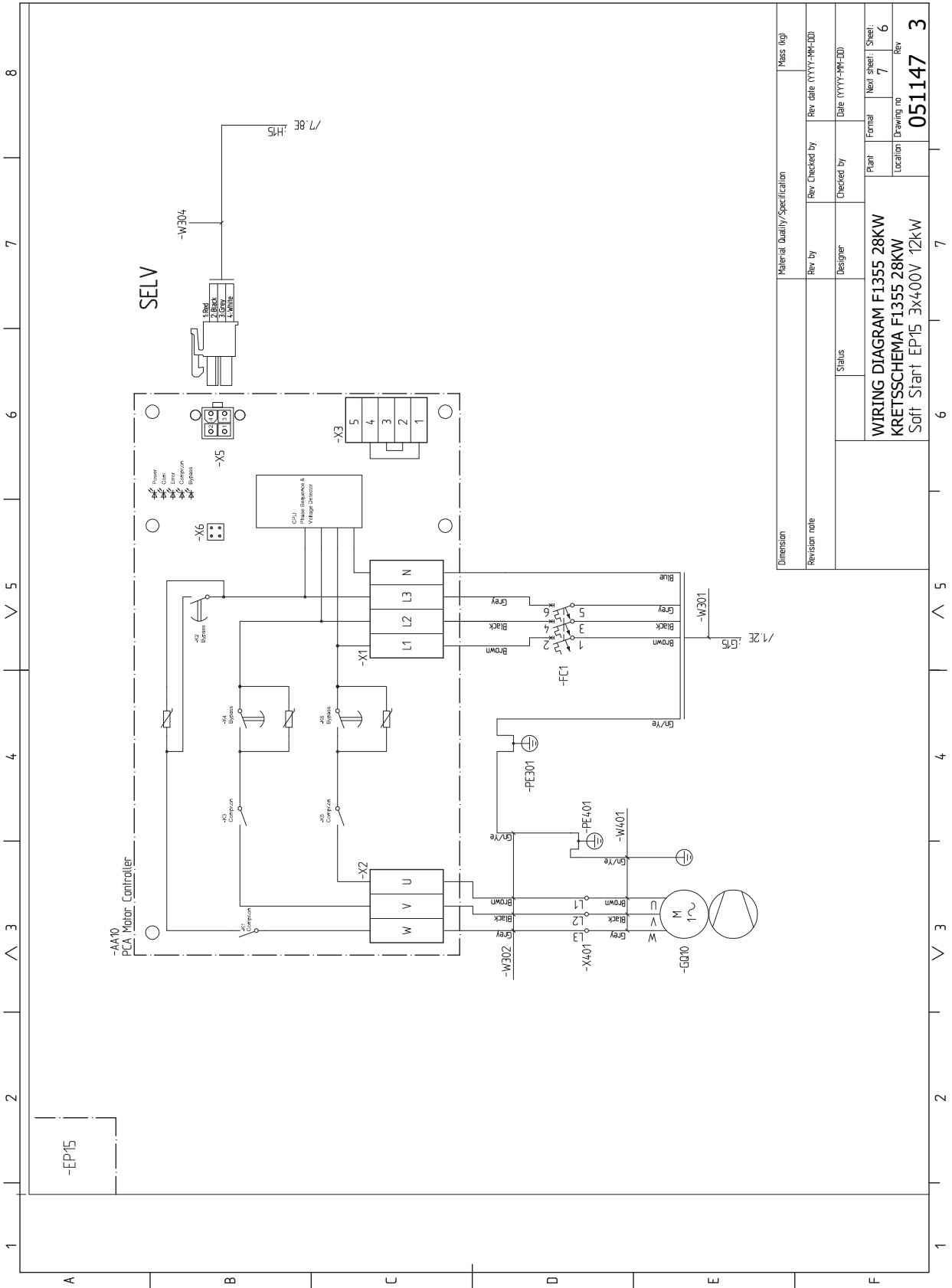
WIRING DIAGRAM F1355 28KW
KRETSCHEMA F1355 28KW
 Base EP14 Input. Com.

Material Quality/Specification	
Rev. by	Rev. date (YYYY-MM-DD)
Designer	Checked by
Status	Date (YYYY-MM-DD)
Plan	Formal
Location	Next sheet
	Sheet
	4
Drawing no	051147
Rev	3



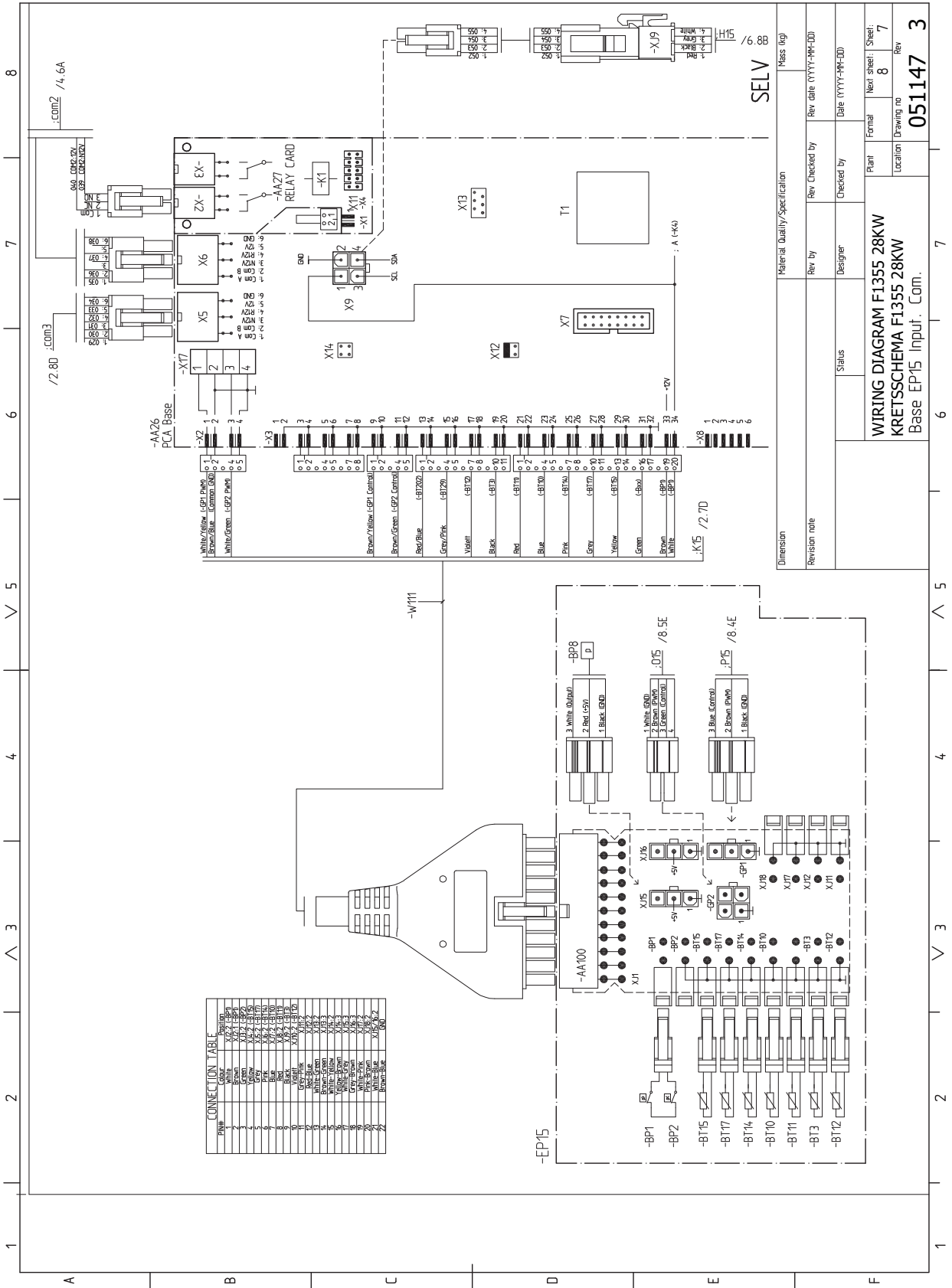
Material Quality/Specification		Mass (kg)	
Rev. by	Rev. Checked by	Rev. date (YYYY-MM-DD)	
Designer	Checked by	Date (YYYY-MM-DD)	
Status	Plan	Formal	Next sheet: 5
	Location	Drawing no	Rev
		051147	3

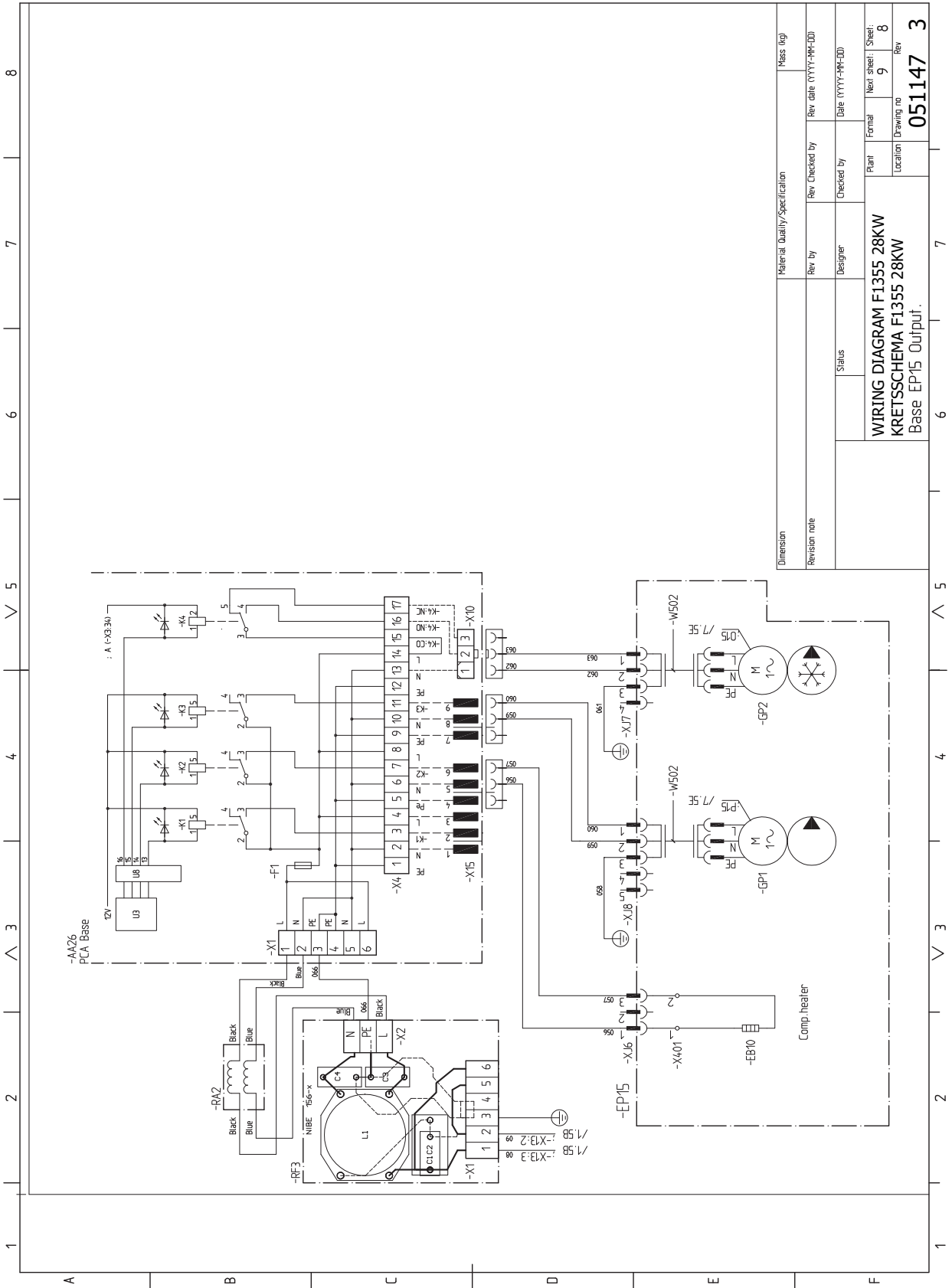
WIRING DIAGRAM F1355 28KW
 KRETSSCHEMA F1355 28KW
 Base EP14 Output.



Dimension	Material Quality/Specification	Mass (kg)
Revision note	Rev. by	Rev. date (YYYY-MM-DD)
	Designer	Checked by
	Status	Date (YYYY-MM-DD)
	Plan	Formal
		Next sheet
		Sheet
		6
		7
		8
		051147
		3

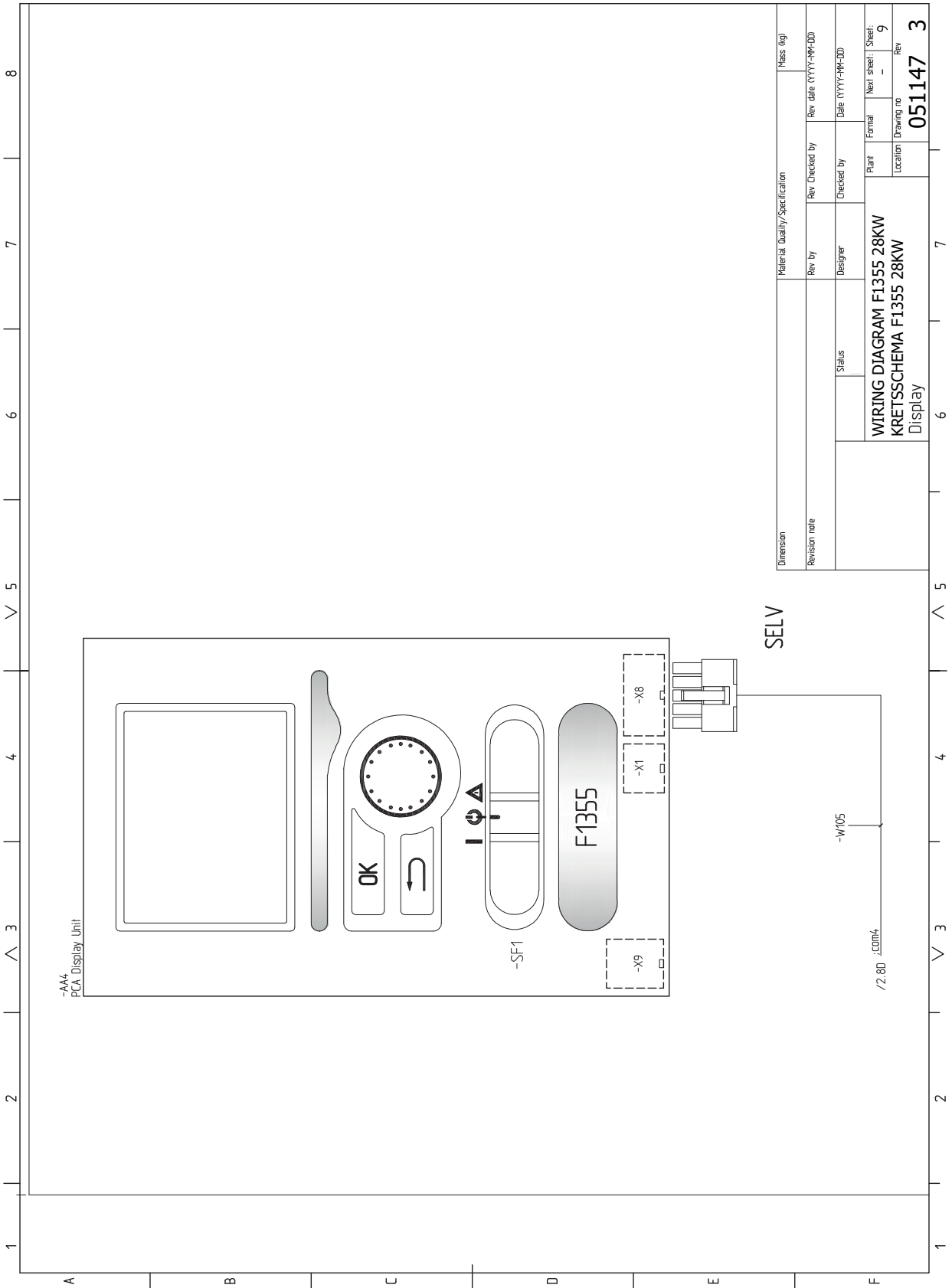
WIRING DIAGRAM F1355 28KW
 KRETSSCHEMA F1355 28KW
 Soft Start EP15 3x400V 12KW





Material Quality/Specification		Mass (kg)	
Dimension			
Revision note			
Rev. by	Rev. Checked by	Rev. date (YYYY-MM-DD)	
Status	Designer	Checked by	
Plan	Formal	Next sheet	Sheet
Location	Drawing no	051147	3

WIRING DIAGRAM F1355 28KW
KRETSSCHEMA F1355 28KW
 Base EP15 Output.



Dimension	Material Quality/Specification		Mass (kg)
Revision note	Rev. by	Rev. Checked by	Rev. date (YYYY-MM-DD)
	Status	Designer	Checked by
		Plant	Formal
		Location	Next sheet / Sheet
			051147 / 3

WIRING DIAGRAM F1355 28KW
 KRETSSCHEMA F1355 28KW
 Display

9 Item register

Item register

A

Accessories, 35
Assembly, 9

B

Brine side, 16

C

Cable lock, 20
Commissioning and adjusting, 31
 Filling and venting, 31
 Post adjustment and bleeding, 33
 Preparations, 31
 Start guide, 32
Connecting accessories, 30
Connecting current sensors, 23
Connecting external operating voltage for the control system, 21
Connecting the climate system, 17
Connecting the hot water heater, 18
Connections, 20
Contact for activation of fan speed, 29
Contact for activation of "external adjustment", 29
Contact for activation of "temporary lux", 28
Contact for external blocking of compressor (EP14) and or (EP15), 28
Contact for external tariff blocking, 28
Controlling ground water pump, 29
Cooling mode indication, 29
Cooling section, 13

D

Delivery and handling, 9
 Assembly, 9
 Installation area, 9
 Supplied components, 10
 Transport, 9
Dimensions and pipe connections, 15
Dimensions and setting-out coordinates, 37
Docking alternatives, 18

E

Electrical connections, 20
 Cable lock, 20
 Connecting accessories, 30
 Connecting external operating voltage for the control system, 21
 Connections, 20
 External connection options (AUX), 27
 General, 20
 Load monitor, 23
 Miniature circuit-breaker, 20
 Motor cut-out, 20
 Optional connections, 23
 Outdoor sensor, 21
 Power connection, 21
 Relay output for emergency mode, 26
 Reversing valves, 26
 Room sensor, 24
 Shunt controlled additional heat, 25
 Step controlled additional heat, 24
 Temperature sensor, external flow line, 22
 Temperature sensor, hot water charging, 22
 Uplink, 26
Energy labelling
 Data for energy efficiency of the package, 41
 Information sheet, 41
 Technical documentation, 42
External connection options
 Contact for activation of fan speed, 29
 Contact for activation of "external adjustment", 29
 Contact for activation of "temporary lux", 28

 Contact for external blocking of compressor (EP14) and or (EP15), 28
 Contact for external tariff blocking, 28
 NV 10, pressure/level/flow monitor brine, 29
 Switch for "Smart Grid ready", 28
 Switch for activation of external alarm, 27
 Switch for external blocking of additional heat, 27
 Switch for external blocking of heating, 27
 Switch for external forced control of brine pump, 28
 Temperature sensor, cooling/heating, 27
 Temperature sensor, flow line cooling, 27
 Temperature sensor, hot water top, 22
External connection options (AUX), 27
 Control of ground water pump, 29
 Cooling mode indication, 29
 Extra circulation pump, 29
 Hot water circulation, 29
 Optional selection for AUX output (potential-free variable relay), 29
 Possible selection for AUX inputs, 27
Extra circulation pump, 29

F

Filling and venting, 31
 Filling and venting the brine system, 31
 Filling and venting the climate system, 31
 Symbol key, 31
Filling and venting the brine system, 31
Filling and venting the climate system, 31

H

Heating medium side, 17
 Connecting the climate system, 17
Help menu, 32
Hot water circulation, 29
Hot water heater, 18
 Connecting the hot water heater, 18

I

Important information, 4
 Recovery, 6
 Safety information, 4
Inspection of the installation, 7
Installation area, 9

L

Load monitor, 23

M

Marking, 4
Menu system
 Help menu, 32
Miniature circuit-breaker, 20
Motor cut-out, 20
 Resetting, 20

N

NV 10, pressure/level/flow monitor brine, 29

O

Optional connections, 23
Outdoor sensor, 21

P

Pipe connections, 14
 Brine side, 16
 Dimensions and pipe connections, 15
 Docking alternatives, 18
 General, 14
 Heating medium side, 17
 Hot water heater, 18

- Pipe dimensions, 15
 - Symbol key, 14
 - System diagram, 14
- Pipe dimensions, 15
- Possible selection for AUX inputs, 27
- Possible selection for AUX output (potential free variable relay), 29
- Post adjusting the room temperature, 34
- Post adjustment and bleeding, 33
 - Post adjusting the room temperature, 34
- Pump adjustment, automatic operation, 33
- Pump adjustment, manual operation, 33
- Readjusting, venting, heat medium side, 33–34
- Power connection, 21
- Preparations, 31
- Pump adjustment, automatic operation, 33
 - Heating medium side, 33
- Pump adjustment, manual operation, 33
 - Heating medium side, 33

R

- Readjusting, venting, heat medium side, 33–34
- Relay output for emergency mode, 26
- Reversing valves, 26
- Room sensor, 24

S

- Safety information, 4
 - Inspection of the installation, 7
 - Marking, 4
 - Safety precautions, 5
 - Serial number, 6
 - Symbols, 4
 - Symbols on F1355, 4
- Safety precautions, 5
- Serial number, 6
- Shunt controlled additional heat, 25
- Start guide, 32
- Step controlled additional heat, 24
- Supplied components, 10
- Switch for "Smart Grid ready", 28
- Switch for activation of external alarm, 27
- Switch for external blocking of additional heat, 27
- Switch for external blocking of heating, 27
- Switch for external forced control of brine pump, 28
- Symbol key, 14, 31
- Symbols, 4
- Symbols on F1355, 4
- System diagram, 14

T

- Technical data, 37, 43
 - Dimensions and setting-out coordinates, 37
 - Technical Data, 38
- Technical Data, 38
 - Working range heat pump, 40
- Temperature sensor, cooling/heating, 27
- Temperature sensor, external flow line, 22
- Temperature sensor, flow line cooling, 27
- Temperature sensor, hot water charging, 22
- Temperature sensor, hot water top, 22
- The heat pump design, 11
 - Component list cooling section, 13
 - Component location cooling section, 13
 - Component locations, 11
 - List of components, 11
- Transport, 9

U

- Uplink, 26

W

- Working range heat pump, 40

Contact information

- AT** **KNV Energietechnik GmbH**, Gahberggasse 11, AT-4861 Schörfling
Tel: +43 (0)7662 8963 E-mail: mail@knv.at www.knv.at
- CH** **NIBE Wärmetechnik c/o ait Schweiz AG**, Industriepark, CH-6246 Altishofen
Tel: +41 58 252 21 00 E-mail: info@nibe.ch www.nibe.ch
- CZ** **Druzstevni zavody Drazice s.r.o.**, Drazice 69, CZ - 294 71 Benátky nad Jizerou
Tel: +420 326 373 801 E-mail: nibe@nibe.cz www.nibe.cz
- DE** **NIBE Systemtechnik GmbH**, Am Reiherpfahl 3, 29223 Celle
Tel: +49 (0)5141 7546-0 E-mail: info@nibe.de www.nibe.de
- DK** **Vølund Varmeteknik A/S**, Member of the Nibe Group, Brogårdsvej 7, 6920 Videbæk
Tel: +45 97 17 20 33 E-mail: info@volundvt.dk www.volundvt.dk
- FI** **NIBE Energy Systems OY**, Juurakkotie 3, 01510 Vantaa
Tel: +358 (0)9-274 6970 E-mail: info@nibe.fi www.nibe.fi
- FR** **NIBE Energy Systems France Sarl**, Zone industrielle RD 28, Rue du Pou du Ciel, 01600 Reyrieux
Tel : 04 74 00 92 92 E-mail: info@nibe.fr www.nibe.fr
- GB** **NIBE Energy Systems Ltd**, 3C Broom Business Park, Bridge Way, S419QG Chesterfield
Tel: +44 (0)845 095 1200 E-mail: info@nibe.co.uk www.nibe.co.uk
- NL** **NIBE Energietechniek B.V.**, Postbus 634, NL 4900 AP Oosterhout
Tel: 0168 477722 E-mail: info@nibenl.nl www.nibenl.nl
- NO** **ABK AS**, Brobekkveien 80, 0582 Oslo, Postadresse: Postboks 64 Vollebakk, 0516 Oslo
Tel: +47 23 17 05 20 E-mail: post@abkklima.no www.nibe.no
- PL** **NIBE-BIAWAR Sp. z o. o.** Aleja Jana Pawła II 57, 15-703 BIALYSTOK
Tel: +48 (0)85 662 84 90 E-mail: sekretariat@biawar.com.pl www.biawar.com.pl
- RU** © "EVAN" 17, per. Boynovskiy, RU-603024 Nizhny Novgorod
Tel: +7 831 419 57 06 E-mail: kuzmin@evan.ru www.nibe-evan.ru
- SE** **NIBE AB Sweden**, Box 14, Hannabadsvägen 5, SE-285 21 Markaryd
Tel: +46 (0)433 73 000 E-mail: info@nibe.se www.nibe.se

For countries not mention in this list, please contact Nibe Sweden or check www.nibe.eu for more information.

NIBE AB Sweden
Hannabadsvägen 5
Box 14
SE-285 21 Markaryd
info@nibe.se
www.nibe.eu



331996