



Service manual

Small Inverter Chiller R454C



EWYE019~035CZP(-)(A)A1
EWYE019~035CZN(-)(A)A1

EWYE050~070CZP(-)(A)A2
EWYE050~070CZN(-)(A)A2

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The following updates have been applied to the Service Manual:

- Safety precautions: "Warnings" updated and "Oil precautions" added.
- Troubleshooting – To retrieve error codes and check error history: "Via Daikin on Site cloud" added.
- Troubleshooting – Error based troubleshooting: Error code U016 updated and error code U020 added.
- Components – Economizer refrigerant pressure sensor: "To remove the economizer refrigerant pressure sensor" and "To install the economizer refrigerant pressure sensor" updated.
- Accessories: "EKRSC TMS – M/S Thermistor" and "EKRSCDP – Differential pressure transducers" updated.
- Technical data: "Safety devices" updated.

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1 Safety precautions

The precautions described in this document cover very important topics, follow them carefully.

All activities described in the service manual must be performed by an authorised person.

If you are NOT sure how to install, operate or service the unit, contact your dealer.

In accordance with the applicable legislation, it might be necessary to provide a logbook with the product containing at least:

information on maintenance, repair work, results of tests, stand-by periods, ...

Also, at least, following information must be provided at an accessible place at the product:

- Instructions for shutting down the system in case of an emergency
- Name and address of fire department, police and hospital
- Name, address and day and night telephone numbers for obtaining service

In Europe, EN378 provides the necessary guidance for this logbook.

1.1 Meaning of warnings and symbols



DANGER

Indicates a situation that results in death or serious injury.



DANGER: RISK OF ELECTROCUTION

Indicates a situation that could result in electrocution.



DANGER: RISK OF BURNING/SCALDING

Indicates a situation that could result in burning/scalding because of extreme hot or cold temperatures.



DANGER: RISK OF EXPLOSION

Indicates a situation that could result in explosion.



WARNING

Indicates a situation that could result in death or serious injury.



WARNING: FLAMMABLE MATERIAL



CAUTION

Indicates a situation that could result in minor or moderate injury.



NOTICE

Indicates a situation that could result in equipment or property damage.



INFORMATION

Indicates useful tips or additional information.

1.2 Dangers



DANGER: RISK OF BURNING/SCALDING

- Do NOT touch the refrigerant piping, water piping or internal parts during and immediately after operation. It could be too hot or too cold. Give it time to return to normal temperature. If you MUST touch it, wear protective gloves.
- Do NOT touch any accidental leaking refrigerant.



DANGER: RISK OF ELECTROCUTION

- Turn OFF all power supply before removing the switch box cover, connecting electrical wiring or touching electrical parts.
- Where applicable, stop the equipment's operation first and allow (refrigerant) pressure to equalise, before turning OFF the power.
- Disconnect the power supply for more than 10 minutes, and measure the voltage at the terminals of main circuit capacitors or electrical components before servicing. The voltage MUST be less than 50 V DC before you can touch electrical components. For the location of the terminals, see the wiring diagram. If the measured voltage is still higher than 50 V DC, discharge the capacitors in a safe manner by using a dedicated capacitor discharge pen to avoid possibility of sparking.
- Do NOT touch electrical components with wet hands.
- Do NOT leave the unit unattended when the service cover is removed.
- Protect electric components from getting wet while the service cover is opened.

1.3 Warnings



WARNING

Improper installation or attachment of equipment or accessories could result in electrical shock, short-circuit, leaks, fire or other damage to the equipment. ONLY use accessories, optional equipment and spare parts made or approved by Daikin unless otherwise specified.



WARNING

Do NOT apply any permanent inductive or capacitance loads to the circuit without ensuring that this will NOT exceed the permissible voltage and current permitted for the equipment in use.

**WARNING**

If a fault exists that could compromise safety, Do NOT connect electrical supply to the circuit until it is satisfactorily dealt with. If the fault CANNOT be corrected immediately but it is necessary to continue operation, an adequate temporary solution MUST be used. This MUST be reported to the owner of the equipment so all parties are advised.

Initial safety checks MUST include that:

- capacitors are discharged: this MUST be done in a safe manner to avoid possibility of sparking,
- NO live electrical components and wiring are exposed while charging, recovering or purging the system.

**WARNING**

Make sure that the refrigerating piping and components are installed in a position where they are unlikely to be exposed to any corroding substance.

**WARNING**

Make sure installation, testing and applied materials comply with applicable legislation (on top of the instructions described in the Daikin documentation).

**WARNING**

Make sure the work site environment is clean and safe to work in. Beware of spilled fluids, like water, oil or other substances.

Protect bystanders from injury and property from possible damage cause by service works.

**WARNING**

If any work is to be conducted on the refrigerating equipment or any associated parts which involves brazing, an appropriate dry powder or CO₂ fire extinguisher MUST be present.

When charging the unit, an appropriate dry powder or CO₂ fire extinguisher MUST be present.

**WARNING**

No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, MUST be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs MUST be displayed.

**WARNING**

Tear apart and throw away plastic packaging bags so that nobody, especially children, can play with them. **Possible consequence:** suffocation.

**WARNING**

During tests, NEVER pressurise the product with a pressure higher than the maximum allowable pressure (as indicated on the nameplate of the unit).



WARNING

For indoor installations: Make sure the total refrigerant charge is in accordance with the room size in which the unit is installed: please consult the detailed instructions on charging and allowed room sizes in the installation manual.



WARNING

- NEVER mix different refrigerants or allow air to enter the refrigerant system.
- NEVER charge recovered refrigerant from another unit. Use recovered refrigerant only on the same unit where it was recovered from, or have it recycled at a certified facility.



WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.



WARNING

ALWAYS recover the refrigerant. Do NOT release directly into the environment. Use a vacuum pump to evacuate the installation.



WARNING

Removal of refrigerant MUST be according to the following:

When breaking into the refrigerant circuit to make repairs, be sure to remove the refrigerant from the system first. The refrigerant charge MUST be recovered into the correct recovery cylinders.



WARNING

Take sufficient precautions in case of refrigerant leakage. If refrigerant gas leaks, ventilate the area immediately. Possible risks:

- Excessive refrigerant concentrations in a closed room can lead to oxygen deficiency.
- Toxic gas might be produced if refrigerant gas comes into contact with fire.



WARNING

- Under no circumstances, potential sources of ignition SHALL be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) MUST NOT be used.
- Ensure that the detector is NOT a potential source of ignition and is suitable for the detection of R454C.
- If a leak is suspected, all naked flames MUST be removed or extinguished.
- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine MUST be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant MUST be recovered from the system, or isolated (by means of shut-off valves) in a part of the system remote from the leak.
- Only use the electronic leak tester for R454C. The old flame leak tester CANNOT be used on a system with HFC refrigerant because there is no chlorine component in the refrigerant. In case of R454C refrigerant, any flame in contact with (leaking) refrigerant is extremely dangerous.

**WARNING**

- In order to prevent oxygen deficiency and R454C combustion, keep the room well-ventilated for a healthy work environment. Do NOT work in a confined space. If a refrigerant leak is detected in a confined room or an inadequately ventilated location, do NOT start the work until the area has been ventilated appropriately.
- If the work area is NOT located in the open air, make sure the work area is adequately ventilated before opening or entering the system or conducting any brazing. The ventilation MUST continue to operate during the period that the work is carried out to prevent accumulation of refrigerant in the work area. The ventilation should safely disperse any released refrigerant and preferably ventilate to the open air.

**WARNING**

Ensure that no external live wiring is exposed while charging, recovering or purging the system. Sparks created when live wiring is short-circuited might ignite the refrigerant if it is leaked into the room while charging, recovering or purging the system.

**WARNING**

Ensure that the unit is properly earthed prior to conducting maintenance or service or charging the system with refrigerant. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earthing may cause electrical shock.

**WARNING**

- ONLY use copper wires.
- Make sure the field wiring complies with the national wiring regulations.
- All field wiring MUST be performed in accordance with the wiring diagram supplied with the product.
- NEVER squeeze bundled cables and make sure they do NOT come in contact with the piping and sharp edges. Make sure no external pressure is applied to the terminal connections.
- Make sure to install earth wiring. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete or incorrect earthing may cause electrical shock.
- Make sure to use a dedicated power circuit. NEVER use a power supply shared by another appliance.
- Make sure to install the required fuses or circuit breakers.
- Make sure to install an earth leakage protector. Failure to do so may cause electrical shock or fire.
- When installing the earth leakage protector, make sure it is compatible with the inverter (resistant to high frequency electric noise) to avoid unnecessary opening of the earth leakage protector.

**WARNING**

Make sure the markings on the unit remain visible and legible after inspection or repair work. Markings and signs that are illegible shall be corrected.

**WARNING**

- After finishing the electrical work, confirm that each electrical component and terminal inside the switch box is connected securely.
- Make sure all covers are closed before starting up the unit.



WARNING

- For indoor installations: The area **MUST** be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres.
- Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.
- For indoor installations: Prior to and during work, the area **MUST** be checked with an appropriate refrigerant detector capable of detecting R454C refrigerant, to ensure a work environment free of refrigerant.



WARNING

- Equipment **MUST** be labelled stating that it has been de-commissioned and emptied of refrigerant.
- The label **MUST** be dated and signed.
- For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.



WARNING

Before carrying out refrigerant recovery procedure, it is essential that the technician is completely familiar with the equipment and all its details. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample **MUST** be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

- Become familiar with the equipment and its operation.
- Isolate system electrically.
- Ensure that mechanical handling equipment is available, if required, for handling refrigerant cylinders.
- Ensure that all personal protective equipment is available and is used correctly.
- Ensure that the recovery process is supervised at all times by a competent person.
- Ensure that recovery equipment and cylinders are conform to the appropriate standards.
- If a vacuum is **NOT** possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Make sure that cylinder is situated on the scales before recovery takes place.
- Start the recovery machine and operate in accordance with instructions.
- Do **NOT** overfill cylinders (no more than 60% volume liquid charge).
- Do **NOT** exceed the maximum working pressure of the cylinder, **NOT** even temporarily.
- When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed.
- Recovered refrigerant **MUST NOT** be charged into another refrigerating system unless it has been cleaned and checked.



WARNING

All maintenance staff and others working in the local area **MUST** be instructed on the nature of work being carried out.

**WARNING**

Provide adequate measures to prevent that the unit can be used as a shelter by small animals. Small animals that make contact with electrical parts can cause malfunctions, smoke or fire.

**WARNING**

Prior to start working on systems containing flammable refrigerant, safety checks are necessary to ensure that the risk of ignition is minimised. Therefore, some instructions should be followed.

Please refer to the service manual for more information.

**WARNING**

- In case refrigerant recovery is required, use the appropriate service ports.
- If applicable for your unit, use the appropriate recovery mode or field setting to smoothly recover the refrigerant.
- ONLY use leak free hoses, couplings and manifolds in good working condition.
- ONLY use recovery cylinders designated and labelled to recover R454C. Note that thread connection to the cylinder is counter clock.
- Always use a calibrated scale in good condition prior and during the refrigerant recovery process to determine the weight of the recovered refrigerant into the external refrigerant cylinder.
- Read the operation instructions of the recovery unit prior to connecting the recovery unit. Verify the recovery unit is suited for R454C refrigerant, check that it is in good working condition, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
- Do NOT overfill the refrigerant cylinder, confirm with the supplier of the refrigerant cylinder about maximum filling ratio if NOT mentioned on the refrigerant cylinder itself. Generally the maximum filling amount should be limited to 60% of the maximum volume of the cylinder.
- Do NOT exceed the maximum working pressure of the refrigerant cylinder, NOT even temporarily.
- When the cylinders have been filled correctly, and the refrigerant recovery process is completed, make sure that the cylinders and the equipment are removed from site promptly and all stop valves on the equipment are (kept) closed.
- The recovered refrigerant MUST be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do NOT mix refrigerants in recovery units and especially NOT in cylinders.
- Recovered refrigerant MUST NOT be charged into another refrigerant system unless it has been cleaned and checked.

**WARNING**

If compressor is to be removed, ensure that the compressor has been evacuated to an acceptable level to make sure that flammable refrigerant does NOT remain within the lubricant. The evacuation process MUST be carried out prior to returning the compressor to the supplier. During the refrigerant recovery, confirm that the crankcase heater of the compressor body is energised to accelerate this process. When oil is drained from a system, it MUST be carried out safely.

**WARNING**

Make sure the ventilation machinery and outlets are operating adequately and are NOT obstructed.

1.4 Cautions



CAUTION

Wear adequate personal protective equipment (protective gloves, safety glasses,...) when installing, maintaining or servicing the system.



CAUTION

To avoid injury, do NOT touch the air inlet or aluminium fins of the unit.



CAUTION

- Do NOT place any objects or equipment on top of the unit.
- Do NOT sit, climb or stand on the unit.

1.5 Notices



NOTICE

- Make sure water quality complies with EU directive 2020/2184.
- Check the system for leaks after each repair/modification of the water side.
- Check drainage system(s) after repairs.
- Be careful when tilting units as water may leak.



NOTICE

Make sure refrigerant piping installation complies with applicable legislation. In Europe, EN378 is the applicable standard.



NOTICE

Make sure the field piping and connections are NOT subjected to stress.

1.6 Oil precautions



INFORMATION

The unit uses FVC56EAm oil.

Measures to be taken in case of fire

Suitable extinguishing media:	Powder extinguishing agents, foam, carbon dioxide, atomized reinforcing liquid, etc. is effective.
Fire extinguishing agents that should NOT be used:	Mist water CAN be used for cooling purposes. Do NOT use stick water to extinguish the fire as this MAY spread fire and CAN be dangerous.
Specific fire hazards:	In the event of a fire, prevent water for firefighting from flowing into drains or waterways. There are NO known hazardous combustion products.
Special fire extinguishing methods:	Firefighting operations MUST be carried out from upwind as far as possible. Prohibit ALL unauthorized people from entering the area around the fire. Cut off the source of combustion to the fire source, and extinguish the fire using appropriate extinguishing media. In case of an initial fire, use powder fire extinguishers or carbon dioxide extinguishers. In case of a large fire, it is effective to use foam to cut off the air. Water injection CAN be dangerous because it can spread the fire.
Special protective equipment and precautions for firefighters:	When extinguishing a fire, do so from upwind and be sure to wear protective equipment. Possibility of toxic gases (carbon monoxide, etc.) being generated by combustion or high temperatures. Wear respiratory protective equipment.

Measures to be taken in case of leakage

Precautions, protective equipment, and emergency measures for human body:	Be sure to wear appropriate protective equipment during removal work. In the case of large quantities, rope off the area around the leakage site, and use a rope to protect the workers from the spillage. No outside entry.
Environmental precautions:	The product is discharged into rivers, sewers, etc., causing an impact on the environment. Be careful not to rub.
Methods and equipment for containment and remediation:	Shut off the source of the leak and stop the leak. If the amount is small, collect the leaked liquid in an empty container by absorbing it with sand, soil, or a rag, and then wipe it off completely with a rag. In case of a large amount, stop the flow of the leaked liquid with earth, sand, etc., guide it to a safe place, and collect it in an empty container as much as possible, taking care NOT to discharge it into rivers, sewers, etc. If the leak is on the sea, deploy an oil fence to prevent its spread, and absorb it with an absorbent mat or similar device. If chemicals are used, use the following measures as specified by Ordinances of the Ministry of Land, Infrastructure, Transport and Tourism. The product MUST conform to the technical standards.
Measures to prevent secondary disasters:	Clean contaminated objects and places well according to environmental regulations.

2 General operation



The new Daikin BLUEEVOLUTION chiller & heat pump series (EWYE-CZP-A) is the result of careful design aimed to optimize the energy efficiency and thus the total life cycle cost of the unit, with reduced operating cost thanks to outstanding performances and reliability.

The units feature high efficiency scroll compressor arranged in single configuration on each module, optimized condensing section with advanced technology condensing fans and plates evaporator with low refrigerant content and reduced pressure drops.

The units offer a capacity from 19 to 70 kW and can have up to 4 fans divided into two modules. The whole range of the unit will provide a single water inlet/outlet and there are multiple choices for the pump.

Unit	Sizes	Modules	Fans
EWYE019~025CZ(N/P)-A1	19~25	1	1
EWYE030~035CZ(N/P)-A1	30~35	1	2
EWYE050~060CZ(N/P)-A2	50~60	2	3
EWYE070CZ(N/P)-A2	70	2	4

- 1 module – 1 fan:



- 1 module – 2 fans:



- 2 module – 3 fans:



- 2 module – 4 fans:



The new Daikin BLUEEVOLUTION series uses R454C refrigerant to drastically reduce the carbon footprint of the unit. The selection of R454C minimizes the global warming impact of scroll compressor units thanks to the lower Global Warming Potential in combination with high-energy efficiency.

The Global Warming Potential of R454C is 145.5, which is ONLY one fifteenth of the commonly used refrigerant R410A (Global Warming Potential=2087.5).

The units have one or two truly independent refrigerant circuits with one or two compressors to assure maximum safety for any maintenance, whether planned or not.

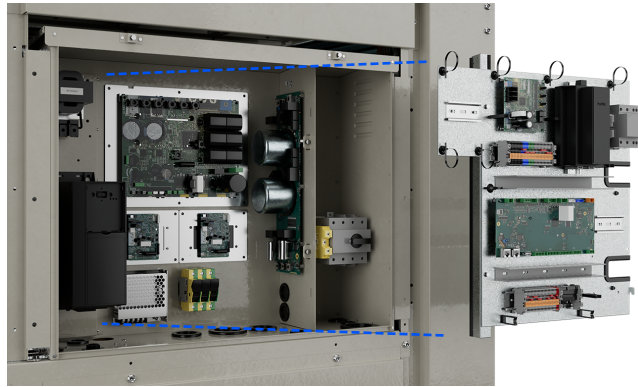
Units are equipped with fan speed modulation.

Main components	Specifications
Refrigerant	R454C
Water	Brine version is standard for all models
Load	19~70 kW
Compressor	ONLY inverter compressor (1 per circuit)
Fan	Inverter
Brazed plate heat exchanger	1 per unit. Plate heat exchanger can have 2 refrigerant circuits but NOT mixed inside. Inlets/outlets: - Single circuit: 1 refrigerant and 1 water. - Double circuit: 2 refrigerant and 1 water.



The control logic is designed to provide maximum efficiency, to continue operation in unusual operating conditions and to provide history of unit operation. Easy interface with, BACnet, Ethernet TCP/IP or Modbus communications. Master/Slave operation is provided as standard allowing to connect up to 4 units working as single system.

Controls	Specifications
Switch box	1 per module
Controller	Integrated HMI
BMS	BACnet and Modbus from main PCB (some require license, check databook for compatibilities)
IoT	Daikin on site
Master/Slave	Up to 3 slaves sequenced with standard main PCB
Main PCB	Siemens POL 468



2.1 Unit operation modes

Possible operation modes are:

- Cool
- Cool with glycol
- Heat/cool
- Heat/cool with glycol



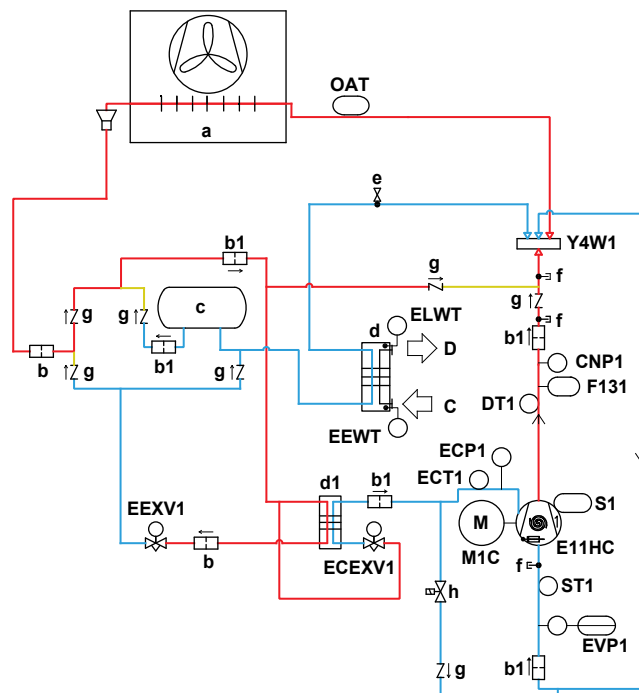
INFORMATION

In order to avoid plate freezing the minimum cooling setpoint of the unit is limited to the glycol status.

Cooling

Refrigerant Flow for single circuit unit.

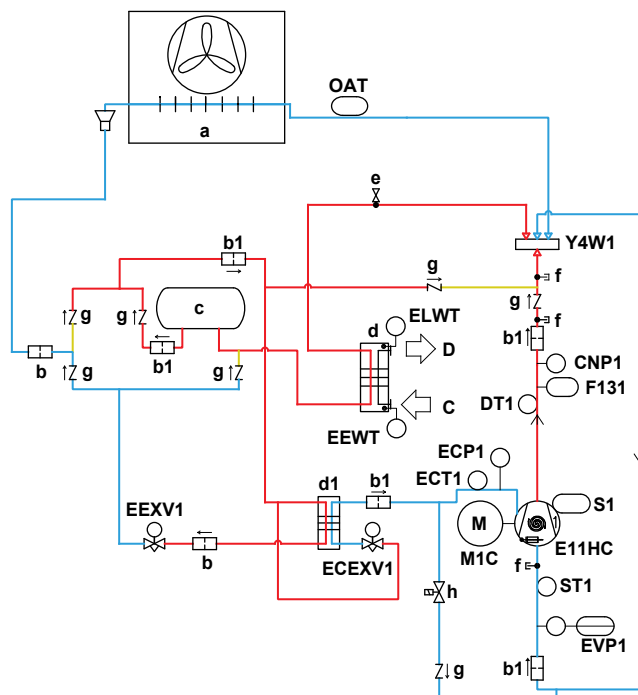
On a 2 circuit unit the flow is the same, but with 2 independent circuits (Refrigerant of circuits is not mixed in the plate heat exchanger)



Heating

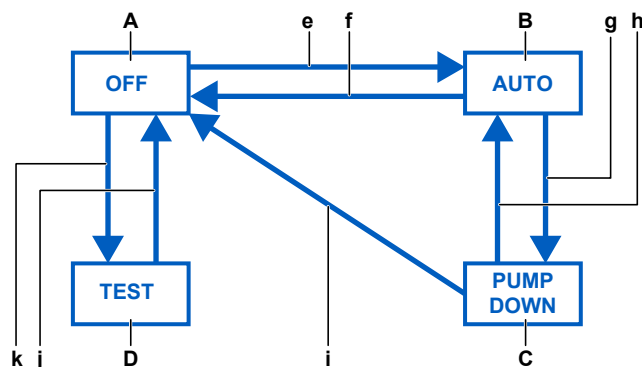
Refrigerant Flow for single circuit unit.

On a 2 circuit unit the flow is the same, but with 2 independent circuits (Refrigerant of circuits is not mixed in the plate heat exchanger).



2.2 Unit and circuit status

Unit status



- A OFF status
- B AUTO status
- C PUMP DOWN status
- D TEST status
- e Any:
 - Operation start possible
 - Circuits available
 - No unit alarm
 - No test mode
- f Rapid unit alarm
- g Any:
 - Pumpdown alarm
 - Unit disabled while in auto
 - Mode change
 - Unit stop due to operation
 - Scheduler OFF activated
 - Disabled by BMS or M/S

- h** And:
 - Pumpdown final
 - Unit enabled
- i** And:
 - Pumpdown final
 - Unit rapid alarm
- j** Test mode deactivated
- k** And:
 - Unit is disabled
 - Test mode active

The unit has the following main statuses:

- **OFF:** Unit is NOT running
 - Can happen during Auto due to a rapid stop error or power being cut.
 - Unit will automatically go OFF after pump down has been performed.
 - **AUTO:** Unit can be running in Chiller (Cooling) mode or Heat pump (Heating) mode. It requires the following:
 - No active alarms (unit/circuit off alarms).
 - Low outdoor air thermistor (OAT) lockout NOT active.
 - Test mode NOT active.
 - Circuits available.
 - Unit configuration done.
 - **PUMP DOWN:** Unit is in a pump down status (when it concerns the unit, both circuits will simultaneously pump down). Can be triggered by any of the following:
 - Unit disabled (both circuits simultaneously).
 - Pump down alarm is active.
 - Mode change activated.
 - Low outdoor air thermistor (OAT) activated.
- Note:** Pump down will NOT happen during defrost.
- **TEST mode:** manually activate components:
 - Normal operation is disabled while test mode is active.
 - Unit MUST be out of service (disabled setting and/or disabled input) in order to set the test mode.

Each one of these statuses is triggered by different conditions and has a different priority. Only the triggered status with the highest priority is active.

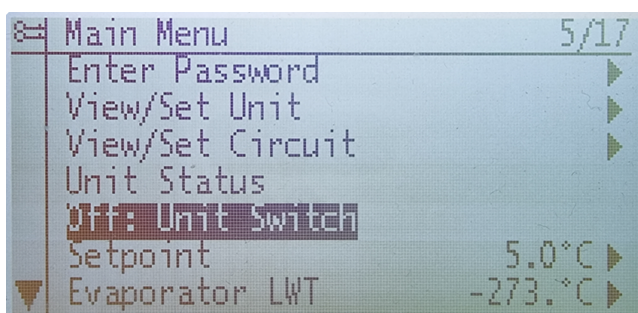
Each one of these statuses has different secondary statuses that can be active simultaneously.

Priority	Status	Trigger condition
0	Auto	Unit is enabled and running as expected.
1	Off: Scheduler Disable	Unit is disabled due to a command from the scheduler.
2	Off: OAT Lockout	Unit is disabled due to the OAT lockout being active. OAT lockout value is fixed at -20. Wait for OAT increase for unit to run.
3	Off: All Cir Disabled	All circuits are disabled, hence the unit too.
4	Off: Unit Alarm	Rapid alarm has happened disabling the unit. Go to active alarms to clear alarm.
5	Off: Keypad Disable	Unit disabled: check the unit mode.
6	Off: Master Disable	Unit disabled due to the master slave function.

2 | General operation

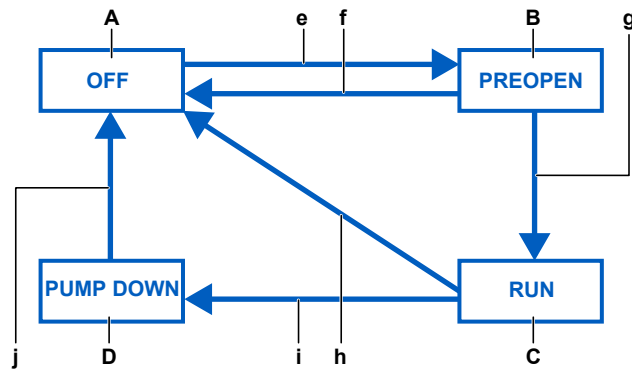
Priority	Status	Trigger condition
7	Off: BAS Disable	Network control is active, and unit must be enabled from the Building Automation System. For Modbus, check holding register 9.
8	Off: Unit Switch	Unit disabled: check the external switch ON/OFF input status or unit mode.
9	Off: Unit Not Configured	Set unit configuration type correctly.
10	Off: Test Mode	Test mode is active, and you can set components operation manually.
11	Auto: Wait for Load	Setpoint is reached and unit is currently thermo OFF, waiting for the thermo ON to be triggered.
12	Auto: Evap Recirculation	During the start period where pump starts to build enough flow. By default, this is 30 seconds but can be modified.
13	Auto: Wait for Evap Flow	Unit has started but no flow detected.
14	Auto: Current Limit	Unit is running and the current limit has been reached.
15	Auto: Max Pulldown	Maximum pull-down limit reached during cooling. Slope is limiting the pull-up.
16	Auto: Max PullUp	Maximum pull-up limit reached during heating. Slope related limit reached.
17	Auto: Unit Capacity Limit	Unit has reached the capacity limit set from network.
18	Auto: Noise Reduction	Unit running while noise reduction is also active.
19	Auto: DHW On	Domestic Hot Water operation ongoing.
20	Auto: DHW Antileg On	Anti Legionella operation ongoing
21	Pumpdown	Pump down operation ongoing.

Only the triggered status with the highest priority is visualized in the Main Menu at the service tool:



For example, the unit could be OFF due to scheduler and unit alarm, but on screen we will only see that it is disabled due to alarm.

Circuit status



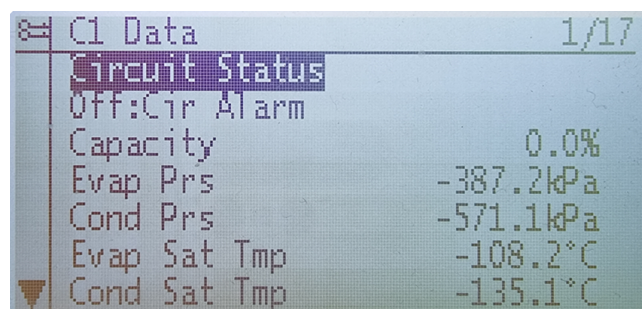
- A** OFF status
B PREOPEN status
C RUN status
D PUMP DOWN status
e And:
 • Thermo ON
 • Evap and cond pressure >40 kPa
 • Circuit enabled (BMS/HMI)
 • Cycle time = 0s
 • No alarms impending start
 • Unit state = Auto
 • Evap state = Run
 • Number of starts in last 60 minutes < 15
f Any:
 • Rapid stop alarm
 • Circuit disabled (HMI/BMS)
 • Evap state = NOT run
g And:
 • Preopen finalized
 • EXV state = pressure
h Any:
 • Rapid stop alarm
 • Evap state = NOT run
i Any:
 • Thermo OFF comand
 • Pump down alarm active
 • Circuit disabled (BMS/HMI)
j Any:
 • Evap pressure < pump down pressure
 • Cond pressure < pump down limit
 • Circuit rapid alarm
 • Pump down > 120s

The unit has 4 main circuit statuses:

- OFF
- PREOPEN
- RUN
- PUMP DOWN

Status of the circuit can be seen within the Service Tool at the following menu:

View/set Circuit -> C1/2 Data



The Circuit Status can be summarized with the following table:

Priority	Status	Trigger condition
0	Off	Circuit is OFF and not operating.
1	Off: Stage Up Delay	Circuit is OFF due to the stage up delay timer. Timer can be found on Timer's menu. Stage up timer only applicable when 2 circuits exist.
2	Off: Cycle Timer	Circuit is OFF due to the unit's cycle delay timer. Timer can be found on Timer's menu.
3	Off: BAS Disable	Circuit is OFF due to network control being active, but unit not enabled at the BMS configuration.
4	Off: Cir Mode Disable	Circuit is OFF due to being disabled on settings.
5	Off: Oil Heating	Circuit is OFF but crankcase heater is ON.
6	Off: Cir Alarm	Circuit is OFF due to circuit and/or unit alarm stopping operation.
7	Off: Max Comp Starts	Circuit is OFF due to maximum number of compressor starts happened (15 per hour).
8	Test Mode	Test Mode Active.
9	Preopen	Circuit is in Preopen state.
10	Run	Circuit is in Run state.
11	Run: Min EWT HP	Circuit is running with low Delta T at the evaporator.
12	Run: Low Pressure	Circuit running on low pressure; if persists C105/C205 can happen.
13	Run: High Pressure	Circuit running on high pressure; if persists error C106/C206 can happen.
14	Run: High Motor Amps	The unit is running while it detects high current; if persists it will trigger the C108/C208 error.
15	Run: Defrost	Circuit is running defrost.
16	Pump down	Circuit is currently performing a pump down.

2.3 To switch between user interface and service monitoring tool

Standard, the user interface is installed on the unit. To install the service monitoring tool, see procedure described below.

The passwords to be used for user interface (HMI) and service monitoring tool are:

- User: 2526
- Technician: 2201

To install the service monitoring tool

- 1 Stop the unit operation via the user interface.
- 2 Change the settings on the user interface as follows:
 - Enter Technician password.
 - Navigate to menu HMI Type [14.05]
Set to OFF.

[14.05]	HMI Type	OFF = Siemens
		ON = EvCO

- After changing, navigate to menu Apply Changes [23.01].
Set to ON and wait until it returns to OFF.
- 3** Wait until automatic reboot is finished (ErrC is shown on the user interface display).
- 4** Turn OFF the main switch.
- 5** Remove the main switch box cover, see ["4.23 Plate work"](#) [▶ 263].
- 6** Disconnect the user interface LAN cable from the main PCB.
- 7** Connect the LAN cable of the service monitoring tool to the T-HMI port of the main PCB.
- 8** Turn ON the power of the unit with the main switch.

**INFORMATION**

If the service monitoring tool fails to upload data, replace the LAN cable.

To re-install the user interface

- 1** Change the settings on the service monitoring tool as follows:
 - Enter technician password.
 - In the Main Menu, select Commission Unit > Configuration > HMI Selection.
Set to EvCO.
 - In the Main Menu, select Application Save.
Set to ON.
- 2** Turn OFF the main switch.
- 3** Disconnect the LAN cable of the service monitoring tool from the main PCB and remove the service monitoring tool from the unit.
- 4** Connect the user interface LAN cable to the T-HMI port of the main PCB.
- 5** Install the main switch box cover (including the user interface), see ["4.23 Plate work"](#) [▶ 263].
- 6** Turn ON the power of the unit with the main switch.

2.4 To use Scope Light as an alternative for the service monitoring tool

Scope is the monitoring tool for EWAT/EWYT-CZ that can do the following:

- Monitoring Software.
- Read-and-write.
- Configuration and visualization of data trends, logs...
- Upload/download parameter sets.
- Upload software.

Possible outputs with Scope Light are:

- Parameter file creation.
- Parameters and values of current status on PDF.
- Event Log in excel displaying the actions performed by pcb.
- Alarm Log with Alarm history in Excel file.

Note:

- Scope is a 32-bit application requiring the following minimum system requirements on the PC: PC with Microsoft® Windows® 7 (x86 and x64) or higher.
- Official Trendconfig files, installer files... are available in my.daikin.eu portal.

- Scope Light supported languages: English.



INFORMATION

This guide only indicates the menus of the Scope Light v11.48, if meanwhile a newer version is available the screenshots may look different.

Required cable for scope light connection:

- Available as Spare Part Number: 5020073.
- Connectable via USB –LAN cable without any settings requirements.
- Only use the specified cable, other cables are not supported.

Scope USB LAN cable

To connect the Scope to the computer a USB-LAN cable is required.

- Available as a spare part: 5020073 (SERVICE CABLE USB-RJ45 150MM SIEMENS POLOC2.40/STD)



INFORMATION

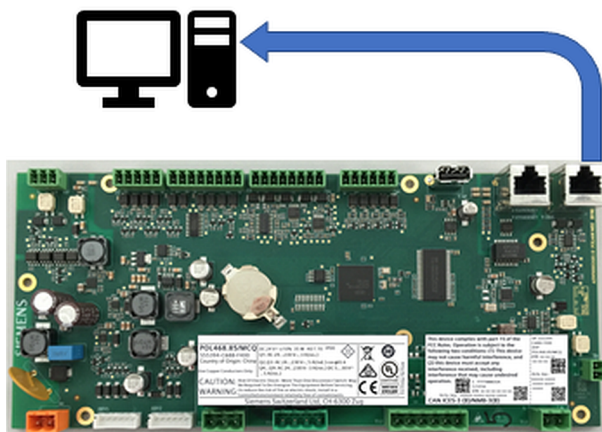
Other cables or wiring combinations are NOT supported.

Connectable via USB –LAN cable without any settings requirements.

Note: If you connect a not-compatible cable, the computer might make a sound as if it recognizes a USB cable but scope might not show it as an option since it cannot read the communication with POL 468.

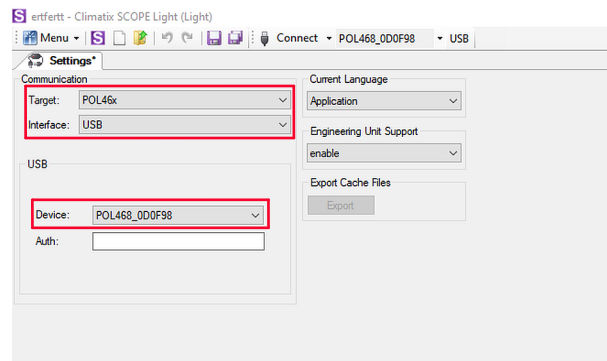
To connect the Scope cable

- 1 Connect the USB side of the cable to a PC USB port.
- 2 Connect the LAN side of the cable to the T-HMI port of the POL 468.

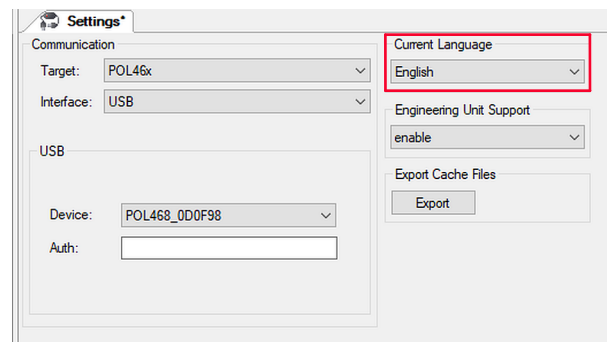


To set up Scope Light

- 3 With the Scope cable connected, run the Scope Light Software on your PC.
- 4 Create a new project in Scope with the following project settings:
 - Target = POL46x
 - Interface = USB
 - Device = select the main PCB device from the dropdown list

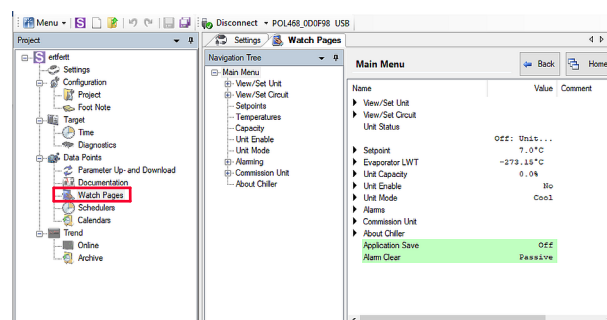


- 5 Select "Save" and click "Connect".
- 6 Enter the password:
 - User: 2526
 - Technician: 2201
- 7 Wait while the computer is loading data from the main PCB. Depending on password access level different data will be loaded.
- 8 Once the data is loaded, stay on the Settings window and set the "Current Language" to "English".



- 9 Click "Save" and again wait for the upload process.
- 10 Click on "Watch Pages" in the navigation tree of the Scope.

Result: Scope can now be used as an Alternative to the service monitoring tool.



- Green fields are Read & Write -> double click to Write
- White fields are Read only
- Navigate with the mouse and use "Back" and "Home" buttons on the top right

2.5 To update the software of the PCB using the service monitoring tool

To save the parameters

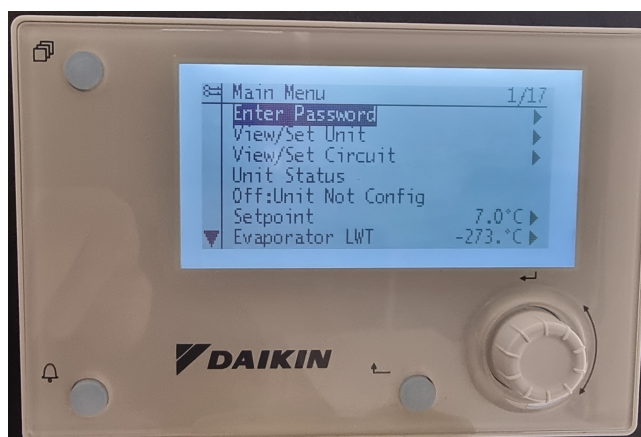
First all parameters of the OLD software need to be saved to be able to copy them to the new software when installed.

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see "4.23 Plate work" [▶ 263].

- 1 Connect the service monitoring tool to the unit.
- 2 Turn ON the power of the unit via the main switch.
- 3 Enter technician password.



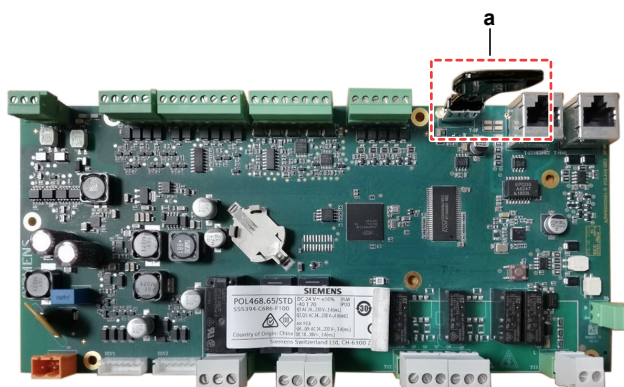
- 4 Insert an empty USB-drive in the USB-port.



INFORMATION

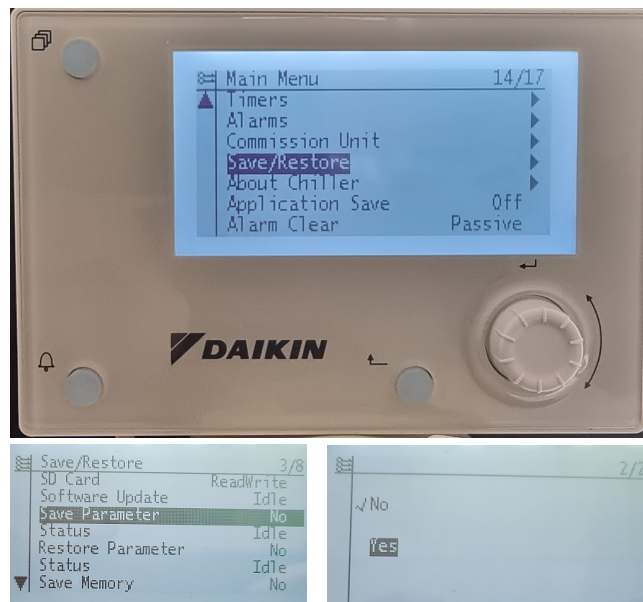
USB specifications:

- Type: USB 2.0
- Maximum: 32 GB
- System: FAT32
- Current: 100 mA

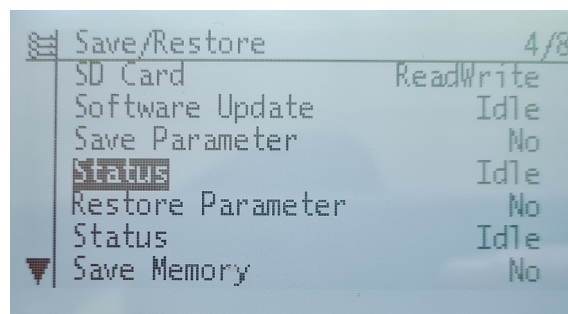


a USB-drive

- 5 Go to the Main Menu > Save/Restore > Save Parameter > Yes.



- 6 Wait for the Status to be Fail > Pass > Idle (process finished correctly).



Result: The file PARAM.ucf is saved on the USB drive.

- 7 Turn OFF the main switch and remove the USB drive from the PCB.

To update the software

Prerequisite: Make sure that the parameters of the OLD software have been saved (see previous procedure).

- 1 Load the files shown in the picture onto an empty USB-drive.

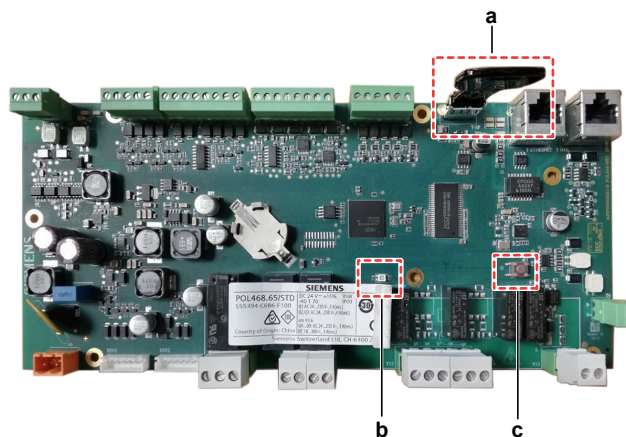
USB DISK (D:)				
	Name	Date modified	Type	Size
	HM4Web	2011/08/08 16:11	UCF File	177 KB
	HM4comp	2011/08/08 16:11	UCF File	46 KB
	MBRTcomp	2011/08/08 16:11	UCF File	154 KB
	OBHcomp	2011/08/08 16:11	UCF File	25 KB
	ScopeConfig	2011/08/08 16:11	UCF File	1 KB



INFORMATION

Latest software version is available on Daikin Business Portal.

- 2 Turn ON the main switch.
3 While power is ON (LED = ON), insert the USB-drive in the USB-port.



- a USB-drive
- b LED
- c Button

- FOR SOFTWARE VERSION V1.12.A OR NEWER

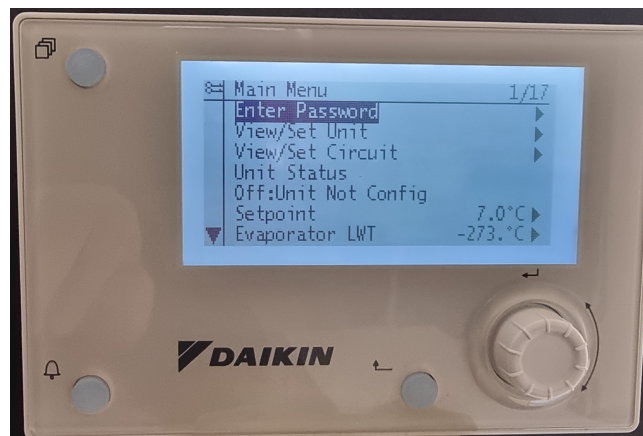
- 1 Go to the Main Menu > Save/Restore > Software Update > Start.
- 2 While software is updating, check the status of the LED:
Result: First the LED blinks green. Then it blinks green / red, and at the end it lights up continuously orange.
- 3 Immediately turn OFF the main switch, remove the USB drive and turn ON the main switch.
- 4 When done, on the user interface, check the menu > About chiller.
Result: Software version MUST be the latest version.

- FOR OLDER SOFTWARE VERSION AND SPARE PCB's

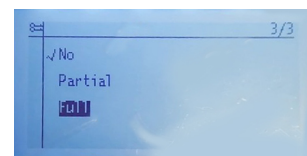
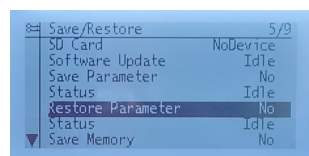
- 1 Turn OFF the main switch.
- 2 Press the button, and keep pressed.
- 3 With the button still pressed, turn ON the main switch and power the unit.
Result: The LED blinks green.
- 4 Keep the button pressed.
Result: The LED blinks green / red.
- 5 Immediately release the button.
Result: The LED lights up continuously orange.
- 6 Immediately turn OFF the main switch, remove the USB drive and turn ON the main switch.
- 7 On the user interface, check the menu > About chiller.
Result: Software version MUST be the latest version.

To upload the parameters

- 1 Connect the service monitoring tool to the unit.
- 2 Enter technician password.

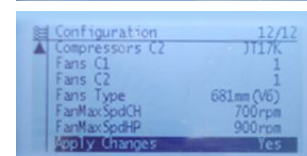
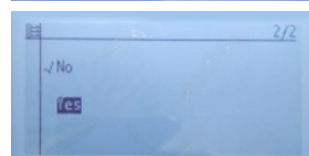
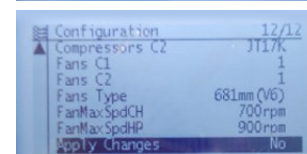
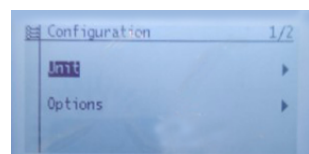
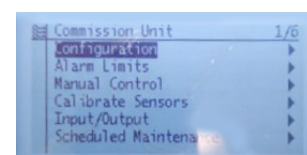
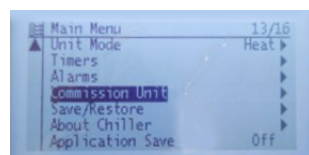


- 3 While power is ON (LED = ON), insert the USB-drive containing the PARAM.ucf in the USB-port.
- 4 Go to the Main Menu > Save/Restore > Restore Parameter > Full.



- 5 Go to Application Save (bottom of the menu) > Yes.
- 6 Remove the USB-drive from the USB-port.
- 7 Go to Commission Unit > Configuration > Unit > Apply Changes > Yes.

Result: The parameters are updated.



2.6 To update the software of the PCB using the user interface

To save the parameters

First all parameters of the OLD software need to be saved to be able to copy them to the new software when installed.

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see "4.23 Plate work" [▶ 263].

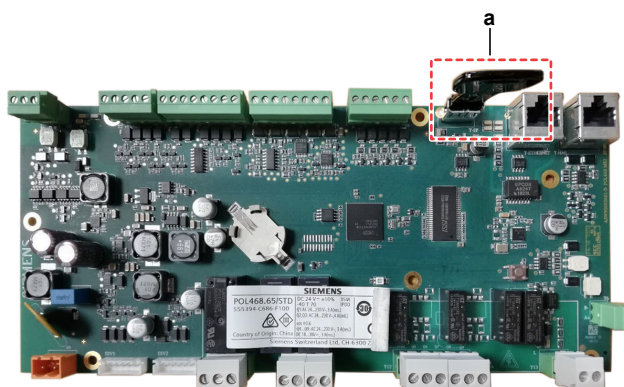
- 1 Connect the user interface (HMI) to the unit.
- 2 Turn ON the power of the unit via the main switch.
- 3 Enter technician password.
- 4 Insert an empty USB-drive in the USB-port.



INFORMATION

USB specifications:

- Type: USB 2.0
- Maximum: 32 GB
- System: FAT32
- Current: 100 mA



a USB-drive

- 5 Go to the page [14.06] Parameter Save > On.
- 6 Wait for 30 seconds.
Result: The file PARAM.ucf is saved on the USB drive.
- 7 Turn OFF the main switch and remove the USB drive from the PCB.

To update the software

Prerequisite: Make sure that the parameters of the OLD software have been saved (see previous procedure).

- 1 Load the files shown in the picture onto an empty USB-drive.

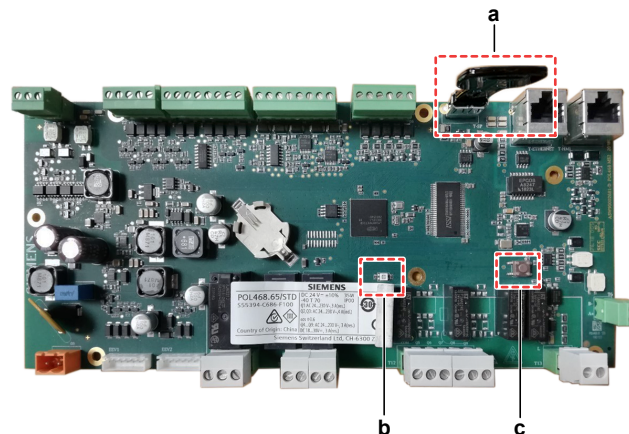
Name	Date modified	Type	Size
HM4Web	23/11/2020 16:11	UCF File	177 KB
HM4comp	23/11/2020 16:11	UCF File	46 KB
MBRCcomp	23/11/2020 16:11	UCF File	154 KB
OBHcomp	23/11/2020 16:11	UCF File	25 KB
ScopeConfig	23/11/2020 16:11	UCF File	1 KB



INFORMATION

Latest software version is available on Daikin Business Portal.

- 2 Turn ON the main switch.
- 3 While power is ON (LED = ON), insert the USB-drive in the USB-port of the main PCB.



- a USB-drive
- b LED
- c Button

■ FOR UNITS WITH LOADED SOFTWARE (NO SPARES)

- 1 Use field setting [23.02] to update the software.
- 2 While software is updating, check the status of the LED:
Result: First the LED blinks green. Then it blinks green / red, and at the end it lights up continuously orange.
- 3 Immediately turn OFF the main switch, remove the USB drive and turn ON the main switch.
- 4 When done, on the user interface, check the menu > About.
Result: Software version MUST be the latest version.

■ FOR SPARE PCB's

- 1 Turn OFF the main switch.
- 2 Press the button, and keep pressed.
- 3 With the button still pressed, turn ON the main switch and power the unit.
Result: The LED blinks green.
- 4 Keep the button pressed.
Result: The LED blinks green / red.
- 5 Immediately release the button.
Result: The LED lights up continuously orange.
- 6 Immediately turn OFF the main switch, remove the USB drive and turn ON the main switch.
- 7 On the user interface, check the menu > About
Result: Software version MUST be the latest version.

To upload the parameters

- 1 Connect the user interface (HMI) to the unit.
- 2 Enter technician password.
- 3 While power is ON (LED = ON), insert the USB-drive containing the PARAM.ucf in the USB-port.
- 4 Go to the page [14.07] Parameter Restore > Full.

- 5** Go to page [23.00] Application Save > On.
- 6** Remove the USB-drive from the USB-port.
- 7** Go to page [23.01] Apply Changes > On.

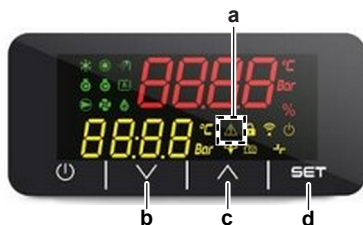
Result: The parameters are updated.

3 Troubleshooting

3.1 To retrieve error codes and check error history

3.1.1 Via the unit user interface

To retrieve the error codes



- a icon
- b Down
- c Up
- d SET

In case of an error, the icon on the user interface display is blinking.

To display the error code perform as follows:

- 1 Press Up until page "-7- ALMS" is displayed.



- 2 Press SET to enter this menu.
- 3 Press Up/Down to select "07.00" Alarm List.
- 4 Press SET to enter the "07.00" Alarm List menu.
- 5 Press Up/Down to navigate through the different error codes (If any).

Result: The error codes are shown on the user interface display.



- a Error code



INFORMATION

If any of the following error codes is shown, check the corresponding sub code:

- C116: for compressor on Circuit 1
- C216: for compressor on Circuit 2
- C117: for Fan (1 or 2) on Circuit 1
- C217: for Fan (1 or 2) on Circuit 2
- U014: for water pump
- U016: for domestic hot water

To retrieve the sub code

- 1 Press Up until page "XX" is displayed (depending on the main error code, see below).
- 2 Press SET to enter this menu.
- 3 Press Up/Down to select "XX.YY" (depending on the main error code, see below).

Main error code	XX	YY
C116	21	00 for compressor on Circuit 1
C216	21	01 for compressor on Circuit 2
C117	21	02 for Fan 1 on Circuit 1
C117	21	03 for Fan 2 on Circuit 1
C217	21	04 for Fan 1 on Circuit 2
C217	21	05 for Fan 2 on Circuit 2
U014	21	06 through 13
U016	19	05

Note: The subcode will be only visible while the error code is active.

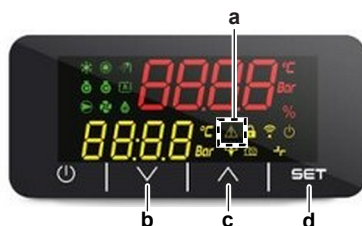
- 4 Press SET to enter the selected menu.

Result: For C116, C117, C216, and C217: The sub code is shown on the user interface display.

Result: For U014: A 4 number digit code (indicating a corresponding sub error) is shown on the user interface display. See error code U014 for more detailed information about these sub errors.

Result: For U016: A (decimal) number code (indicating corresponding active sub error(s)) is shown on the user interface display. See error code U016 for more detailed information about these sub errors.

To retrieve the master/slave errors



- a icon
- b Down
- c Up
- d SET

In case of a master/slave error, the icon on the user interface display is blinking.

To display the master/slave error perform as follows:

- 1 Press Up until page "16" is displayed.



- 2 Press SET to enter this menu.

- 3 Press Up/Down to select "16.16" M/S Alarm Code.
- 4 Press SET to enter the "16.16" M/S Alarm Code menu.

Result: A (decimal) number code (indicating corresponding active master/slave error(s)) is shown on the user interface display. See ["3.3.8 Master/slave errors"](#) [▶ 110] for more detailed information about these master/slave errors.



a Decimal number code (indicating active master/slave error(s))

3.1.2 Via service monitoring tool

To retrieve the error codes and master/slave errors

In case of an error, the LED 🔔 on the service monitoring tool is lit.

To display the string of the error code or master/slave error perform as follows:

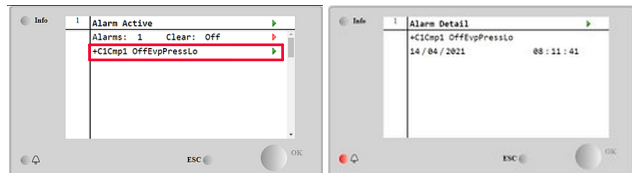
- 1 In the Main Menu, select Alarms > Alarm Active.

Result: The string(s) of the active error code(s) or master/slave error(s) are shown on the display.



- 2 Select the desired error code string or master/slave error string (arrow) to display the Alarm Detail screen.

Result: Date and time of the selected error are shown.



INFORMATION

If any of the following error code strings is shown, check the corresponding sub code:

- C1Cmp1 OffVfdFault: for compressor on Circuit 1
- C2Cmp1 OffVfdFault: for compressor on Circuit 2
- C1 FanAlm: for Fan (1 or 2) on Circuit 1
- C2 FanAlm: for Fan (1 or 2) on Circuit 2
- EvapPump1Fault: for water pump

To retrieve the sub code

- 1 Depending on the error code string that was found, enter Technician password and via the Main Menu of the service monitoring tool navigate to the following menu:

Error code string	Navigate to	Sub code / value shown at
C1Cmp1 OffVfdFault	View/Set Circuit > Circuit #1 > Inverter Cmp	AlarmCode1 for compressor on Circuit 1 ^(a)
C2Cmp1 OffVfdFault	View/Set Circuit > Circuit #2 > Inverter Cmp	AlarmCode1 for compressor on Circuit 2 ^(a)
C1 FanAlm	View/Set Circuit > Circuit #1 > Inverter Fan	AlarmCode1 for Fan 1 on Circuit 1 ^(a)
	View/Set Circuit > Circuit #1 > Inverter Fan	AlarmCode2 for Fan 2 on Circuit 1 ^(a)
C2 FanAlm	View/Set Circuit > Circuit #2 > Inverter Fan	AlarmCode1 for Fan 1 on Circuit 2 ^(a)
	View/Set Circuit > Circuit #2 > Inverter Fan	AlarmCode2 for Fan 2 on Circuit 2 ^(a)
EvapPump1Fault	View / Set Unit > Pumps	Fault Code 0_15 ^(b) OR Fault Code 16_31 ^(b)

^(a) The sub code is shown at this location on the service monitoring tool.

^(b) A binary value (indicating a corresponding sub error) is shown at this location on the service monitoring tool. See error code U014 for more detailed information about these sub errors.

To check the error history

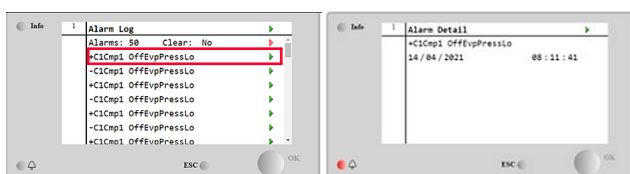
- 2 In the Main Menu, select Alarms > Alarm Log.

Result: The string(s) of the error code(s) or master/slave error(s) are shown on the display.



- 3 Select the desired error code string or master/slave error string (arrow) to display the Alarm Detail screen.

Result: Date and time of the selected error are shown.



3.1.3 Via Daikin on Site cloud



INFORMATION

Screen shots shown in this procedure are taken from a specific version of the DoS user interface. Your current DoS user interface might look different.

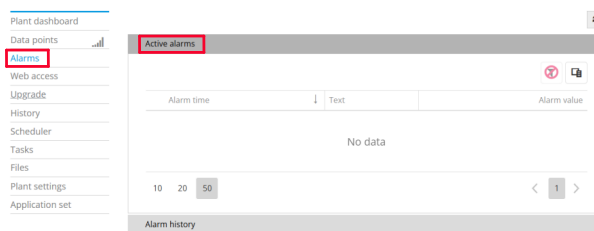


INFORMATION

Ensure the unit is connected to the Daikin on Site server with stable communication.

Using the Alarms page

- TO RETRIEVE THE ERROR CODES

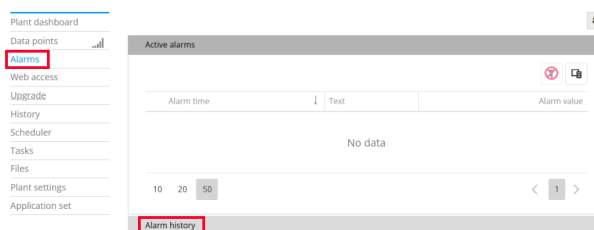


- 1 On the DoS user interface, select Alarms > Active alarms.

Result: The string(s) of the active error code(s) are shown on the screen.

Note: If connection with the unit is lost, "Device connection lost" is shown on the screen.

- TO CHECK THE ERROR HISTORY

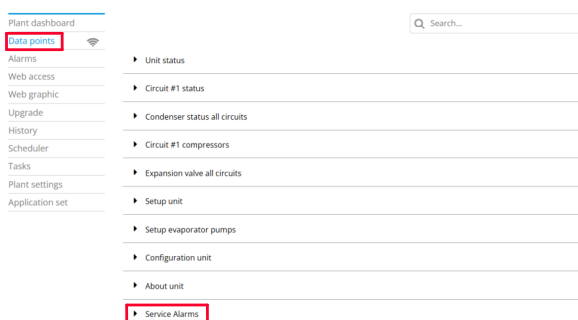


- 1 On the DoS user interface, select Alarms > Alarm history.

Result: The (string(s)) of the error code(s) are shown on the screen.

Using the Data points page

- TO RETRIEVE THE ERROR CODES



- 1 On the DoS user interface, select Data points > Service Alarms.

Result: The following screen is shown.

Unit Alarms Word1	0			
Cir1 Alarms Word1	0			
Cir1 Alarms Word2	0			
Cir2 Alarms Word1	0			
Cir2 Alarms Word2	0			

- 2 Unit Alarms Word indicates a Unit alarm, Cir# Alarms Word indicates a Circuit alarm.
- 3 For the respective Unit Alarms Word and Cir# Alarms Word a decimal value is shown on the screen. This value corresponds with an alarm code as indicated in the table below.

Note: If value 0 is shown, NO error is present.

- Unit Alarms Word:

Unit alarm	Decimal value		Bit (16 bits number)
	Unit Alarms Word1	Unit Alarms Word2 ^(a)	
U001	1	-	0000000000000001
U002	2	-	0000000000000010
U003	4	-	0000000000000100
U004	8	-	0000000000001000
U005	16	-	0000000000010000
U006	32	-	0000000000100000
U007	64	-	0000000001000000
U008	128	-	0000000010000000
U009	256	-	0000000100000000
U010	512	-	0000001000000000
U011	1024	-	0000010000000000
U012	2048	-	0000100000000000
U013	4096	-	0001000000000000
U014	8192	-	0010000000000000
U015	16384	-	0100000000000000
U016	32768	-	1000000000000000
U017	-	1	0000000000000001
U018	-	2	0000000000000010
U019	-	4	0000000000000100
U020	-	8	0000000000001000
U021	-	16	0000000000010000
U022	-	32	0000000000100000
U023	-	64	0000000001000000
U024	-	128	0000000010000000
U025	-	256	0000000100000000
U026	-	512	0000001000000000
U027	-	1024	0000010000000000
U028	-	2048	0000100000000000
U029	-	4096	0001000000000000
U030	-	8192	0010000000000000
U031	-	16384	0100000000000000
U032	-	32768	1000000000000000

^(a) NOT always present.

- Cir# Alarms Word:

Circuit alarm ^(a)	Decimal value		Bit (16 bits number)
	Cir# Alarms Word1	Cir# Alarms Word2	
C101	1	-	0000000000000001
C102	2	-	0000000000000010
C103	4	-	0000000000000100
C104	8	-	0000000000001000
C105	16	-	0000000000010000
C106	32	-	0000000000100000
C107	64	-	0000000001000000
C108	128	-	0000000010000000
C109	256	-	0000000100000000
C110	512	-	0000001000000000
C111	1024	-	0000010000000000
C112	2048	-	0000100000000000
C113	4096	-	0001000000000000
C114	8192	-	0010000000000000
C115	16384	-	0100000000000000
C116	32768	-	1000000000000000
C117	-	1	0000000000000001
C118	-	2	0000000000000010
C119	-	4	0000000000000100
C120	-	8	0000000000001000
C121	-	16	0000000000010000
C122	-	32	0000000000100000
C123	-	64	0000000001000000
C124	-	128	0000000010000000
C125	-	256	0000000100000000
C126	-	512	0000001000000000
C127	-	1024	0000010000000000
C128	-	2048	0000100000000000
C129	-	4096	0001000000000000
C130	-	8192	0010000000000000
C131	-	16384	0100000000000000
C132	-	32768	1000000000000000

^(a) Circuit 1 alarms shown. Circuit 2 alarms start with C2*.

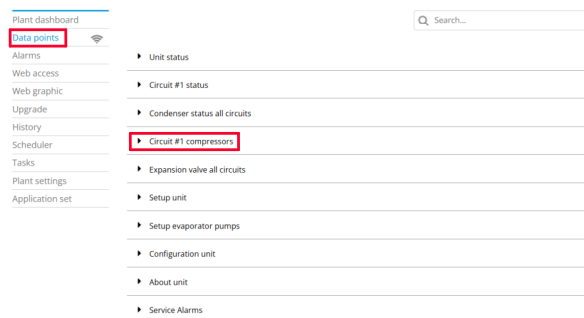
If value is NOT listed in the table, multiple alarms are triggered together. Convert the decimal value to binary and count the bits to identify the alarms.

For example: Unit Alarms Word1 shows decimal value 9728. Converted to binary value = 0010011000000000, which means alarms U010, U011 and U014 are triggered.

▪ TO RETRIEVE THE SUB CODE

If error code C116 (for compressor on Circuit 1) or C216 (for compressor on Circuit 2) is present, check the corresponding sub code as described below.

Note: Sub codes for other error codes (e.g. C117, C217, ...) are NOT available through Daikin on Site.



1 On the DoS user interface, select Data points > Circuit # compressors.

Result: The following screen is shown.

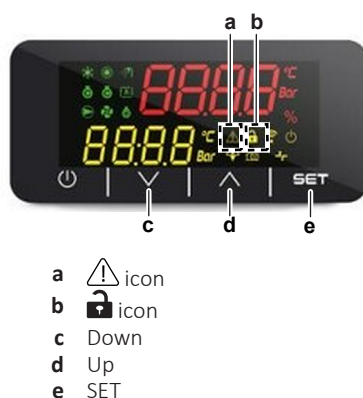


2 Check the compressor sub code to view current and historical compressor inverter alarms. In this example, sub code C116-63 is shown.

3.2 To reset error codes and clear the error history

3.2.1 Via the unit user interface

To reset the error codes and master/slave errors



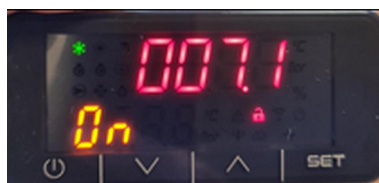
INFORMATION

lock icon MUST be lit (at least User level password is needed for this) to be able to perform this action.

- 1 Press Up until page "-7- ALMS" is displayed.



- 2 Press SET to enter this menu.
- 3 Press Up/Down to select "007.1" Alarm Clear.
- 4 Press SET to enter the "007.1" Alarm Clear menu.
- 5 Press Up/Down to select On.



- 6 Press SET to confirm.

Result: The error codes and/or master/slave errors have been reset.

3.2.2 Via service monitoring tool

To reset the error codes and master/slave errors

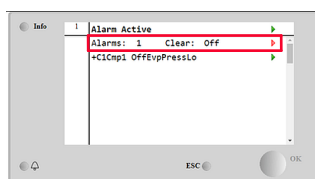
- 1 In the Main Menu, select Alarms > Alarm Active.

Result: The string(s) of the active error code(s) or master/slave error(s) are shown on the display.



- 2 Select Clear (arrow) and set to On.

Result: The error code(s) or master/slave error(s) have been reset.



To clear the error history

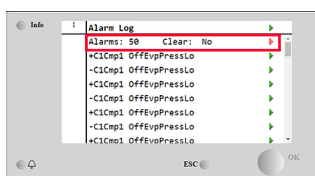
- 3 In the Main Menu, select Alarms > Alarm Log.

Result: The string(s) of the error code(s) or master/slave error(s) are shown on the display.



- 4 Select Clear (arrow) and set to Yes.

Result: The error history has been deleted (cleared).



3.3 Error based troubleshooting

3.3.1 Overview of error codes

Unit alarms

Error type	Error code	Description	Error string
Unit Rapid Stop Alarm	U003	Water Flow Alarm	UnitOffEvapWaterFlow
	U004	Evaporator Freezing Alarm	UnitOffEvapWaterTmpLo
	U005 ^(a)	External Alarm	UnitOffExternalAlarm
	U006	Evaporator Leaving Water Temperature Sensor Fault	UnitOffEvplvgWTempSen
	U011	Optional Controller Communication Alarm	OptionCtrlrCommFail
	U012	ACS Gateway Communication Alarm	UnitOffACSCommFail
	U016 ^(b)	Domestic Hot Water Alarms	UnitOffDHWAlarm
	U018	Water Overheat Alarm	UnitOffOverHeatAlarm
	U019	Bad pCOe I/O Module Communication	UnitOffPcoeCommFail
Unit Pumpdown Stop Alarm	U002	Time Not Valid	UnitOffTimeNotValid
	U007	Evaporator Entering Water Temperature Sensor Fault	UnitOffEvplntWTempSen
	U008	Outside Ambient Temperature Sensor Fault	UnitOffAmbTempSen
	U013	Outside Ambient Temperature Below Limit	StartInhbtdAmbTempLo
	U015	Pump Communication Error	PumpInvMbCommFail
	U017	Collective Housing Water Tank Sensor Fault	UnitOffTankWatTempSen
Unit Alert	U001	External Event	UnitExternalEvent
	U009	Demand Limit Signal Out Of Range	BadDemandLimitInput
	U010	Setpoint Reset Signal Out Of Range	BadSetPtOverrideInput
	U014 ^(c)	Pump Error	EvapPump1Fault
	U020	Domestic Hot Water Anti-Legionella Cycle Alarm	DHW Anti Legionella Cycle Fail

^(a) Error can be a Unit Pumpdown Stop Alarm depending on the settings.

^(b) The error code U016 includes many sub errors. See error code U016 for more information about these sub errors.

^(c) The error code U014 includes many sub errors. See error code U014 for more information about these sub errors.

- Unit Rapid Stop Alarm: These errors cause an immediate stop of the unit.
- Unit Pumpdown Stop Alarm: These errors cause stop of the unit following normal pumpdown procedure.
- Unit Alert: These errors ONLY create a visual information and an item in the alarm log. Unit continues operating.
- Error codes can be retrieved via the outdoor unit user interface.
- Error strings can be retrieved via the service monitoring tool.

Circuit 1 alarms

Error type	Error code	Sub code	Description	Error string
Circuit Rapid Stop Alarm	C101	-	Low Pressure Ratio	C1Cmp1 OffPrRatioLo
	C102	-	No Pressure Change at start	C1 OffNoPressChgStart
	C103	-	Fan's Inverter Communication Alarm	C1Fan OffVfdCommFail
	C104	-	Compressor's Inverter Communication Alarm	C1Cmp1 OffVfdCommFail
	C105	-	Low Evaporator Pressure Alarm	C1Cmp1 OffEvpPressLo
	C106	-	High Condensing Pressure Alarm	C1Cmp1 OffCndPressHi
	C107	-	High Discharge Temperature Alarm	C1Cmp1 OffDischTmpHi
	C108	-	High Compressor Current Protection	C1Cmp1 OffMtrAmpsHi
	C109	-	No Pressure At Start Alarm	C1 OffStartFailEvpPrLo
	C110	-	Evaporating Pressure Sensor Fault	C1Cmp1 EvapPressSen
	C111	-	Condensing Pressure Sensor Fault	C1Cmp1 CondPressSen
	C112	-	High Motor Temperature Alarm	C1Cmp1 OffMotorTempHi
	C115	-	Pump Down Failed	C1 Failed Pumpdown
	C116	33	Instantaneous Overcurrent (OCP)	C1Cmp1 OffVfdFault
		35	Electrical Thermal 1	
		36	Electrical Thermal 2	
		37	Step Out (Overload Stop)	
		38	Lightning Strike Detected	
		40	Start Failure (Stall Prevention)	
		43	Power Open Phase Circuit / Clamp Diode Short Circuit Error	
		44	Fin Thermal Abnormality	
		45	Fin Temperature Sensor Error	
		46	Instantaneous Overcurrent (During Boot)	
		47	Current Sensor / Overcurrent Protection Circuit Error	
		49	Power Unbalance	
		54	Current Offset Error	
		56	IGBT Error	
		57	JP Setting Error	
		58	Unit Type Setting Error	
		59	Data Flash Error	
		61	Compressor Lock	
		63	Pressure Protection	
		114	Power Open Phase Detected	

Error type	Error code	Sub code	Description	Error string
Circuit Rapid Stop Alarm	C116	115	Output Open Phase	C1Cmp1 OffVfdFault
		116	Voltage Sensor Failure	
		117	Over-Voltage During Operation	
		118	Under-Voltage During Operation	
		145	Power Frequency Error	
	C117	65	Hardware Overcurrent Protection (Instantaneous Overcurrent)	C1 FanAlm
		68	Fin Temperature Overheat Error	
		69	Fin Thermistor Failure Error	
		72	Fan Motor Current Overload / Overcurrent / Abnormality	
		75	IPM Error – Circuit Error Detected During Waveform Output	
		86	Current Detecting Circuit Offset Value	
		88	Gate Driving Circuit Failure	
		90	Model Setting Error	
		91	EEPROM Failure Error	
	C119	-	Low Discharge SuperHeat Alarm	C1Cmp1 OffLowDiscSH
	C120	-	Mechanical High Pressure Alarm	C1Cmp1 OffMechPressHi
	C121	-	Economizer Pressure Sensor Not Detected	C1Cmp1 EconPressSen
Circuit Pumpdown Stop Alarm	C113	-	Suction Temperature Sensor Alarm	C1Cmp1 OffSuctTempSen
	C114	-	Discharge Temperature Sensor Alarm	C1Cmp1 OffDischTmpSen
	C122	-	Economizer Temperature Sensor Not Detected	C1Cmp1 EconTempSen

- Circuit Rapid Stop Alarm: These errors cause an immediate stop of the circuit.
- Circuit Pumpdown Stop Alarm: These errors cause a stop of the unit performed normal pumpdown procedure.
- Error codes and sub codes can be retrieved via the outdoor unit user interface.
- Error strings can be retrieved via the service monitoring tool.

Circuit 2 alarms

Error type	Error code	Sub code	Description	Error string
Circuit Rapid Stop Alarm	C201	-	Low Pressure Ratio	C2Cmp1 OffPrRatioLo
	C202	-	No Pressure Change at start	C2 OffNoPressChgStart
	C203	-	Fan's Inverter Communication Alarm	C2Fan OffVfdCommFail
	C204	-	Compressor's Inverter Communication Alarm	C2Cmp1 OffVfdCommFail
	C205	-	Low Evaporator Pressure Alarm	C2Cmp1 OffEvpPressLo
	C206	-	High Condensing Pressure Alarm	C2Cmp1 OffCndPressHi
	C207	-	High Discharge Temperature Alarm	C2Cmp1 OffDischTmpHi
	C208	-	High Compressor Current Protection	C2Cmp1 OffMtrAmpsHi
	C209	-	No Pressure At Start Alarm	C2 OffStartFailEvpPrLo
	C210	-	Evaporating Pressure Sensor Fault	C2Cmp1 EvapPressSen
	C211	-	Condensing Pressure Sensor Fault	C2Cmp1 CondPressSen
	C212	-	High Motor Temperature Alarm	C2Cmp1 OffMotorTempHi
	C215	-	Pump Down Failed	C2 Failed Pumpdown
	C216	33	Instantaneous Overcurrent (OCP)	C2Cmp1 OffVfdFault
		35	Electrical Thermal 1	
		36	Electrical Thermal 2	
		37	Step Out (Overload Stop)	
		38	Lightning Strike Detected	
		40	Start Failure (Stall Prevention)	
		43	Power Open Phase Circuit / Clamp Diode Short Circuit Error	
		44	Fin Thermal Abnormality	
		45	Fin Temperature Sensor Error	
		46	Instantaneous Overcurrent (During Boot)	
		47	Current Sensor / Overcurrent Protection Circuit Error	
		49	Power Unbalance	
		54	Current Offset Error	
		56	IGBT Error	
		57	JP Setting Error	
		58	Unit Type Setting Error	
		59	Data Flash Error	
		61	Compressor Lock	
		63	Pressure Protection	
		114	Power Open Phase Detected	

Error type	Error code	Sub code	Description	Error string
Circuit Rapid Stop Alarm	C216	115	Output Open Phase	C2Cmp1 OffVfdFault
		116	Voltage Sensor Failure	
		117	Over-Voltage During Operation	
		118	Under-Voltage During Operation	
		145	Power Frequency Error	
	C217	65	Hardware Overcurrent Protection (Instantaneous Overcurrent)	C2 FanAlm
		68	Fin Temperature Overheat Error	
		69	Fin Thermistor Failure Error	
		72	Fan Motor Current Overload / Overcurrent / Abnormality	
		75	IPM Error – Circuit Error Detected During Waveform Output	
		86	Current Detecting Circuit Offset Value	
		88	Gate Driving Circuit Failure	
		90	Model Setting Error	
		91	EEPROM Failure Error	
	C219	-	Low Discharge SuperHeat Alarm	C2Cmp1 OffLowDiscSH
	C220	-	Mechanical High Pressure Alarm	C2Cmp1 OffMechPressHi
	C221	-	Economizer Pressure Sensor Not Detected	C2Cmp1 EconPressSen
Circuit Pumpdown Stop Alarm	C213	-	Suction Temperature Sensor Alarm	C2Cmp1 OffSuctTempSen
	C214	-	Discharge Temperature Sensor Alarm	C2Cmp1 OffDischTmpSen
	C222	-	Economizer Temperature Sensor Not Detected	C2Cmp1 EconTempSen

- Circuit Rapid Stop Alarm: These errors cause an immediate stop of the circuit.
- Circuit Pumpdown Stop Alarm: These errors cause a stop of the unit performed normal pumpdown procedure.
- Error codes and sub codes can be retrieved via the outdoor unit user interface.
- Error strings can be retrieved via the service monitoring tool.

Other errors

Error type	Error code	Sub code	Description	Error string
Other	ErrC	-	Communication error	-

Master/slave errors

Error type	Error code	Sub code	Description	Error string
Master/slave	0~511 ^(a)	-	Master Missing	Master Missing
		-	Slave 3 Missing	Slave 3 Missing
		-	Slave 2 Missing	Slave 2 Missing
		-	Slave 1 Missing	Slave 1 Missing
		-	Slave 3 Communication Error	Slave 3 CommAlm
		-	Slave 2 Communication Error	Slave 2 CommAlm
		-	Slave 1 Communication Error	Slave 1 CommAlm
		-	Master Communication Error	Master CommAlm
		-	Common Leaving Water Temperature Alarm	Common LWTSen

^(a) A (decimal) number code (indicating corresponding active master/slave error(s)) is shown on the user interface display. See "3.3.8 Master/slave errors" [▶ 110] for more detailed information about these master/slave errors.

- Master/slave error (codes) can be retrieved via the outdoor unit user interface.
- Master/slave error strings can be retrieved via the service monitoring tool.

3.3.2 Unit Rapid Stop Alarms

U003 – Water flow alarm

Trigger	Effect	Reset
Detection of water flow loss to the chiller. During start-up (compressor OFF), unit will perform a check on the unit flow as long as the Evaporator recirculation timer. During this time the flow switch needs to be active. If this "Flow proof" fails it will trigger the error. During operation (compressor ON), if flow switch is NOT active during "Flow proof" it will trigger the error.	Unit will stop operating.	Reset via user interface. Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check recirculation time setting [08.00] and increase timer if needed. See "9.8 Field settings" [▶ 442].

Possible cause: Recirculation timer set too short or installed water pump too slow.

- 2 Perform a check of the flow switch. See ["4.15 Flow switch"](#) [▶ 219].

Possible cause: Faulty flow switch.

- 3 Check the water flow. See ["6.3 Water circuit"](#) [▶ 361].

Possible cause: Water flow is too low.

- 4 Check if the water circuit is clogged. See ["6.3 Water circuit"](#) [▶ 361].

Possible cause: Clogged water circuit.

- 5 Clean the water filter. See ["6.4 Manufacturer components"](#) [▶ 374].

Possible cause: Clogged water filter.

- 6 Perform a check of the water pump. See ["4.31 Water pump"](#) [▶ 321].

Possible cause: Faulty water pump.

- 7 ONLY for EWYE-CZP-A units: Perform a check of the pump inverter. See documentation of the pump inverter.

Possible cause: Faulty pump inverter.

- 8 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U004 – Evaporator freezing alarm

Trigger	Effect	Reset
Water temperature (entering or leaving) has dropped below a safety limit (setting [09.06] or set on service monitoring tool).	Unit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.



INFORMATION

Units with PEGASO version v1.18.A or newer have the Pump On setting [08.16]. This setting activates the pump when the set temperature is reached. Set the Pump ON setting higher than the Evap Freeze setting in order to start the pump before the U004 is triggered.

- 1 Check the freeze limit setpoint setting [09.06]. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: The freeze limit has not been set correctly (as a function of glycol percentage).

- 2 Check the water flow. See ["6.3 Water circuit"](#) [▶ 361].

Possible cause: Water flow is too low.

- 3 Check the inlet water temperature. Increase inlet water temperature as needed.
Possible cause: Inlet water temperature is too low.
- 4 Perform a check of the flow switch. See ["4.15 Flow switch"](#) [▶ 219].
Possible cause: Faulty flow switch.
- 5 Perform a check of the water pump. See ["4.31 Water pump"](#) [▶ 321].
Possible cause: Faulty water pump.
- 6 Perform a check of the inlet water thermistor. See ["4.29 Thermistors"](#) [▶ 301].
Possible cause: Faulty inlet water thermistor.
- 7 Perform a check of the outlet water thermistor. See ["4.29 Thermistors"](#) [▶ 301].
Possible cause: Faulty outlet water thermistor.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U005 – External alarm



INFORMATION

This error (U005) is listed as a Unit rapid stop alarm, but depending on the setting [15.05], this can ALSO trigger error U001, thus can ALSO be a Unit alert type error.

Trigger	Effect	Reset
Faulty external device (pump, alarm inputs, ...) detected or external alarm working as intended.	Unit will stop operating. If field setting [15.05] = 3, ALSO pumpdown operation will be performed.	Reset via user interface. Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check the cause of the external alarm input. If the external alarm input was activated properly, solve the cause.
Possible cause: External alarm working properly.
- 2 Check that the external alarm setting [15.05] is correctly set. See ["9.8 Field settings"](#) [▶ 442].
Possible cause: Incorrect setting.
- 3 Check the wiring connected to the external alarm input terminal on the main PCB. See ["9.2 Wiring diagram"](#) [▶ 408].
Possible cause: Faulty or disconnected wiring on external alarm input terminal on main PCB.
- 4 Check the correct operation of the external device. See ["6.4 Manufacturer components"](#) [▶ 374].
Possible cause: Faulty external device.

- 5 Check the wiring between the external device and the unit. See ["9.2 Wiring diagram"](#) [▶ 408].

Possible cause: Faulty wiring between the external device and the unit.

- 6 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U006 – Evaporator leaving water temperature sensor fault

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the outlet water thermistor. See ["4.29 Thermistors"](#) [▶ 301].

Possible cause: Faulty outlet water thermistor.

- 2 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U011 – Optional controller (EKRSCIOC) communication alarm

Trigger	Effect	Reset
Communication problems with the optional PCB detected.	Unit will NOT stop operating.	Auto reset 5 seconds after trigger was cleared.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.



INFORMATION

EKRSCIOC can be identified as POL985.00/MCQ on the sticker on the side.

- 1 Check that the setting [15.02] is set to ON (extension module enabled). See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Incorrect setting.

- 2 Check that the wiring is connected to the correct terminal (T1) of the main PCB. See ["9.2 Wiring diagram"](#) [▶ 408].

Possible cause: Wiring connected to wrong terminal on main PCB.

- 3 Perform a check of the option PCB. See ["4.21 Option PCB"](#) [▶ 253].

Possible cause: Faulty option PCB.

- 4 Perform a check of the main PCB. See "4.18 Main PCB" [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U012 – ACS gateway communication alarm

Trigger	Effect	Reset
The ACS gateway that bridges the Daikin protocol of the compressor and/or fan with the main PCB using Modbus protocol has encountered an error	Unit will stop operating.	Automatic reset.
		Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check the communication wiring (insertion and continuity) on connector TN1 on the ACS digital I/O PCB and connector T6 on the main PCB. See "9.2 Wiring diagram" [▶ 408].

Possible cause: Faulty or damaged communication wiring between main PCB and ACS digital I/O PCB.

- 2 Perform a check of the ACS digital I/O PCB. See "4.4 ACS digital I/O PCB" [▶ 139].

Possible cause: Faulty ACS digital I/O PCB.

- 3 Perform a check of the main PCB. See "4.18 Main PCB" [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U016 – Domestic hot water alarms

When this error code occurs, check the corresponding sub code (ONLY possible via the user interface), see "3.1 To retrieve error codes and check error history" [▶ 35].

A (decimal) number code is shown on the user interface display. This decimal number code corresponds to a 5 digit binary code. Specific active sub error as shown in the table below.

User interface (HMI)			Sub error				
Page	Decimal	Binary	Temperature sensor fault	3-way valve switch fail	Lost end position reference	Lost start position reference	Double position error
19.05	0	00000	-	-	-	-	-
	1	00001	-	-	-	-	Active
	2	00010	-	-	-	Active	-
	3	00011	-	-	-	Active	Active
	4	00100	-	-	Active	-	-
	5	00101	-	-	Active	-	Active
	6	00110	-	-	Active	Active	-
	7	00111	-	-	Active	Active	Active
	8	01000	-	Active	-	-	-
	9	01001	-	Active	-	-	Active
	10	01010	-	Active	-	Active	-
	11	01011	-	Active	-	Active	Active
	12	01100	-	Active	Active	-	-
	13	01101	-	Active	Active	-	Active
	14	01110	-	Active	Active	Active	-
	15	01111	-	Active	Active	Active	Active
	16	10000	Active	-	-	-	-
	17	10001	Active	-	-	-	Active
	18	10010	Active	-	-	Active	-
	19	10011	Active	-	-	Active	Active
	20	10100	Active	-	Active	-	-
	21	10101	Active	-	Active	-	Active
	22	10110	Active	-	Active	Active	-
	23	10111	Active	-	Active	Active	Active
	24	11000	Active	Active	-	-	-
	25	11001	Active	Active	-	-	Active
	26	11010	Active	Active	-	Active	
	27	11011	Active	Active	-	Active	Active
	28	11100	Active	Active	Active	-	-
	29	11101	Active	Active	Active	-	Active
	30	11110	Active	Active	Active	Active	-
	31	11111	Active	Active	Active	Active	Active

Double position error

Trigger	Effect	Reset
The 3-way valve feedback inputs for open and closed at the PCB are both active.	Unit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if setting [15.09] is correctly set. Correct as needed. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Setting [15.09] is enabled while NO domestic hot water is present in the system.

**INFORMATION**

When domestic hot water is active the service monitoring tool will display 70°C. Basically, it shows the 70°C on the service monitoring tool in order to keep the unit running at 100%; it is intended. When domestic hot water loop reaches the setpoint of setting [19.00] it will thermo OFF.

**INFORMATION**

The Digital Input of the domestic hot water CAN be activated permanently by the setting [19.10].

- If [19.10] is enabled: Digital Input = ALWAYS true, domestic hot water activated permanently. In this case, ALSO BMS CAN be used as an alternative for the Digital Input.
- If [19.10] is disabled: Physical switch (to activate domestic hot water) has priority. Make sure the switch functions correctly and the wiring to the PCB is correct and NOT damaged.

- 2 Perform a check of both 3-way valve feedback contacts (open and closed). See ["6.4 Manufacturer components"](#) [▶ 374].

Possible cause: Faulty 3-way valve feedback contact(s).

- 3 Check the wiring (insertion and continuity) from the 3-way valve feedback contacts (open and closed) to the option PCB. See ["9.2 Wiring diagram"](#) [▶ 408].

Possible cause: Faulty or damaged wiring between the 3-way valve feedback contacts (open and closed) and the option PCB.

- 4 Perform a check of the 3-way valve. See ["6.4 Manufacturer components"](#) [▶ 374].

Possible cause: Faulty 3-way valve.

- 5 Perform a check of the option PCB. See ["4.21 Option PCB"](#) [▶ 253].

Possible cause: Faulty option PCB.

- 6 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

Lost start position reference

Trigger	Effect	Reset
3-way valve feedback abnormality detected when unit is connected to the main water circuit.	Unit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if setting [15.09] is correctly set. Correct as needed. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Setting [15.09] is enabled while NO domestic hot water is present in the system.

**INFORMATION**

When domestic hot water is active the service monitoring tool will display 70°C. Basically, it shows the 70°C on the service monitoring tool in order to keep the unit running at 100%; it is intended. When domestic hot water loop reaches the setpoint of setting [19.00] it will thermo OFF.

**INFORMATION**

The Digital Input of the domestic hot water CAN be activated permanently by the setting [19.10].

- If [19.10] is enabled: Digital Input = ALWAYS true, domestic hot water activated permanently. In this case, ALSO BMS CAN be used as an alternative for the Digital Input.
- If [19.10] is disabled: Physical switch (to activate domestic hot water) has priority. Make sure the switch functions correctly and the wiring to the PCB is correct and NOT damaged.

- 2 Check if setting [19.06] is correctly set. Correct as needed. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Incorrect setting [19.06].

- 3 Check if setting [19.07] is correctly set. Correct as needed. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Incorrect setting [19.07].

- 4 Perform a check of both 3-way valve feedback contacts (open and closed). See ["6.4 Manufacturer components"](#) [▶ 374].

Possible cause: Faulty 3-way valve feedback contact(s).

- 5 Check the wiring (insertion and continuity) from the 3-way valve feedback contacts (open and closed) to the option PCB. See ["9.2 Wiring diagram"](#) [▶ 408].

Possible cause: Faulty or damaged wiring between the 3-way valve feedback contacts (open and closed) and the option PCB.

- 6 Perform a check of the 3-way valve. See ["6.4 Manufacturer components"](#) [▶ 374].

Possible cause: Faulty 3-way valve.

- 7 Check the wiring (insertion and continuity) from the 3-way valve to the option PCB. See ["9.2 Wiring diagram"](#) [▶ 408].

Possible cause: Faulty or damaged wiring between the 3-way valve and the option PCB.

- 8 Perform a check of the option PCB. See ["4.21 Option PCB"](#) [▶ 253].

Possible cause: Faulty option PCB.

- 9 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

Lost end position reference

Trigger	Effect	Reset
3-way valve feedback abnormality detected when unit is connected to the domestic hot water circuit.	Unit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check if setting [15.09] is correctly set. Correct as needed. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Setting [15.09] is enabled while NO domestic hot water is present in the system.



INFORMATION

When domestic hot water is active the service monitoring tool will display 70°C. Basically, it shows the 70°C on the service monitoring tool in order to keep the unit running at 100%; it is intended. When domestic hot water loop reaches the setpoint of setting [19.00] it will thermo OFF.



INFORMATION

The Digital Input of the domestic hot water CAN be activated permanently by the setting [19.10].

- If [19.10] is enabled: Digital Input = ALWAYS true, domestic hot water activated permanently. In this case, ALSO BMS CAN be used as an alternative for the Digital Input.
- If [19.10] is disabled: Physical switch (to activate domestic hot water) has priority. Make sure the switch functions correctly and the wiring to the PCB is correct and NOT damaged.

- 2 Check if setting [19.06] is correctly set. Correct as needed. See ["9.8 Field settings"](#) [▶ 442].
Possible cause: Incorrect setting [19.06].
- 3 Check if setting [19.07] is correctly set. Correct as needed. See ["9.8 Field settings"](#) [▶ 442].
Possible cause: Incorrect setting [19.07].
- 4 Perform a check of both 3-way valve feedback contacts (open and closed). See ["6.4 Manufacturer components"](#) [▶ 374].
Possible cause: Faulty 3-way valve feedback contact(s).
- 5 Check the wiring (insertion and continuity) from the 3-way valve feedback contacts (open and closed) to the option PCB. See ["9.2 Wiring diagram"](#) [▶ 408].
Possible cause: Faulty or damaged wiring between the 3-way valve feedback contacts (open and closed) and the option PCB.
- 6 Perform a check of the 3-way valve. See ["6.4 Manufacturer components"](#) [▶ 374].
Possible cause: Faulty 3-way valve.
- 7 Check the wiring (insertion and continuity) from the 3-way valve to the option PCB. See ["9.2 Wiring diagram"](#) [▶ 408].
Possible cause: Faulty or damaged wiring between the 3-way valve and the option PCB.
- 8 Perform a check of the option PCB. See ["4.21 Option PCB"](#) [▶ 253].
Possible cause: Faulty option PCB.
- 9 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3-way valve switch fail

Trigger	Effect	Reset
3-way valve abnormality detected.	Unit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if setting [15.09] is correctly set. Correct as needed. See ["9.8 Field settings"](#) [▶ 442].
Possible cause: Setting [15.09] is enabled while NO domestic hot water is present in the system.

**INFORMATION**

When domestic hot water is active the service monitoring tool will display 70°C. Basically, it shows the 70°C on the service monitoring tool in order to keep the unit running at 100%; it is intended. When domestic hot water loop reaches the setpoint of setting [19.00] it will thermo OFF.

**INFORMATION**

The Digital Input of the domestic hot water CAN be activated permanently by the setting [19.10].

- If [19.10] is enabled: Digital Input = ALWAYS true, domestic hot water activated permanently. In this case, ALSO BMS CAN be used as an alternative for the Digital Input.
- If [19.10] is disabled: Physical switch (to activate domestic hot water) has priority. Make sure the switch functions correctly and the wiring to the PCB is correct and NOT damaged.

- 2 Perform a check of the 3-way valve. See ["6.4 Manufacturer components"](#) [▶ 374].

Possible cause: Faulty 3-way valve.

- 3 Check the wiring (insertion and continuity) from the 3-way valve to the option PCB. See ["9.2 Wiring diagram"](#) [▶ 408].

Possible cause: Faulty or damaged wiring between the 3-way valve and the option PCB.

- 4 Perform a check of the option PCB. See ["4.21 Option PCB"](#) [▶ 253].

Possible cause: Faulty option PCB.

- 5 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

Temperature sensor fault

Trigger	Effect	Reset
Temperature sensor abnormality detected.	Unit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if setting [15.09] is correctly set. Correct as needed. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Setting [15.09] is enabled while NO domestic hot water is present in the system.

**INFORMATION**

When domestic hot water is active the service monitoring tool will display 70°C. Basically, it shows the 70°C on the service monitoring tool in order to keep the unit running at 100%; it is intended. When domestic hot water loop reaches the setpoint of setting [19.00] it will thermo OFF.

**INFORMATION**

The Digital Input of the domestic hot water CAN be activated permanently by the setting [19.10].

- If [19.10] is enabled: Digital Input = ALWAYS true, domestic hot water activated permanently. In this case, ALSO BMS CAN be used as an alternative for the Digital Input.
- If [19.10] is disabled: Physical switch (to activate domestic hot water) has priority. Make sure the switch functions correctly and the wiring to the PCB is correct and NOT damaged.

- 2 Perform a check of the domestic hot water thermistor. See ["4.29 Thermistors"](#) [▶ 301].

Possible cause: Faulty domestic hot water thermistor.

- 3 Perform a check of the option PCB. See ["4.21 Option PCB"](#) [▶ 253].

Possible cause: Faulty option PCB.

- 4 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U018 – Water overheat alarm

Trigger	Effect	Reset
Entering water temperature too high.	Unit will stop operating.	Reset via user interface.
		Reset on network.
		Automatic reset 10 seconds after trigger was cleared.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the inlet water thermistor. See ["4.29 Thermistors"](#) [▶ 301].
Possible cause: Faulty inlet water thermistor.
- 2 Check the domestic hot water piping installation.
Possible cause: System is causing high inlet water temperature.
- 3 Check the water flow. See ["6.3 Water circuit"](#) [▶ 361].
Possible cause: Water flow is too low.
- 4 Check if the water circuit is clogged. See ["6.3 Water circuit"](#) [▶ 361].

Possible cause: Clogged water circuit.

- 5 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U019 – Bad pCOe I/O module communication

Trigger	Effect	Reset
Communication between the economizer extension I/O module and main PCB has been interrupted.	Unit will stop operating.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check the communication wiring (insertion and continuity) between the terminal block J3 on the economizer extension I/O module and the terminal block T6 on the main PCB. See ["9.2 Wiring diagram"](#) [▶ 408].

Possible cause: Faulty or damaged wiring between economizer extension I/O module and main PCB.

- 2 Perform a check of the economizer extension I/O module. See ["4.10 Economizer extension I/O module"](#) [▶ 179].

Possible cause: Faulty economizer extension I/O module.

- 3 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.3 Unit Pumpdown Stop Alarms

U002 – Time not valid

Trigger	Effect	Reset
The time is NOT set (default date and time 01/01/2003 00:00:00).	Unit will stop operating following normal pumpdown procedure.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check if settings [10] (date) and [11] (time) are correctly set. Correct as needed. See ["9.8 Field settings"](#) [▶ 442].
Possible cause: Incorrect setting [10] (date) and/or [11] (time).
- 2 Check the battery on the main PCB and replace as needed with field supplied battery BR2032.
Possible cause: Faulty battery on main PCB.
- 3 Check if correct software is installed on the main PCB and update as needed. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Incorrect software installed on main PCB.
- 4 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U007 – Evaporator entering water temperature sensor fault

Trigger	Effect	Reset
Inlet water thermistor input is out of range.	Unit will stop operating following normal pumpdown procedure.	Reset via user interface.
		Reset on network.
		Automatic reset 10 seconds after trigger was cleared.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the inlet water thermistor. See ["4.29 Thermistors"](#) [▶ 301].
Possible cause: Faulty inlet water thermistor.
- 2 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U008 – Outside ambient temperature sensor fault

Trigger	Effect	Reset
Outdoor air thermistor input is out of range.	Unit will stop operating following normal pumpdown procedure.	Reset via user interface.
		Reset on network.
		Automatic reset 10 seconds after trigger was cleared.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the outdoor air thermistor. See ["4.29 Thermistors"](#) [▶ 301].
Possible cause: Faulty ambient air thermistor.
- 2 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U013 – Outside ambient temperature below limit

Trigger	Effect	Reset
Outdoor air temperature is too low.	Unit will stop operating following normal pumpdown procedure.	Automatic reset with a hysteresis when outdoor air temperature $\geq -17.5^{\circ}\text{C}$.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the outdoor air thermistor. See ["4.29 Thermistors"](#) [▶ 301].
Possible cause: Faulty ambient air thermistor.
- 2 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U015 – Pump communication error

Trigger	Effect	Reset
Modbus communication failure with pump inverter module.	Unit will stop operating.	Reset via user interface.
		Reset on network.
		Auto reset

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the pump inverter. See documentation of the pump inverter.
Possible cause: Faulty pump inverter.

- 2 Check that the parameters of the pump inverter are correctly set. See ["4.24 Pump inverter"](#) [▶ 274].

Possible cause: Incorrect parameter setting on pump inverter.

- 3 Check that the unit type settings [14.xx] are set correctly. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Software update failed or incorrect unit type settings.

- 4 Perform a check of the water pump. See ["4.31 Water pump"](#) [▶ 321].

Possible cause: Faulty water pump.

- 5 Check wiring (insertion and continuity) between the main PCB and the pump inverter. See ["9.2 Wiring diagram"](#) [▶ 408].

Possible cause: Faulty or damaged wiring between main PCB and pump inverter.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U017 – Collective housing water tank sensor fault

Trigger	Effect	Reset
Common leaving water thermistor input is out of range.	Unit will stop operating following normal pumpdown procedure.	Reset via user interface.
		Reset on network.
		Automatic reset 10 seconds after trigger was cleared.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the common leaving water thermistor. See ["4.29 Thermistors"](#) [▶ 301].

Possible cause: Faulty common leaving water thermistor or connector fault.

- 2 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.4 Unit Alerts

U001 – External event

**INFORMATION**

This error (U001) is listed as a Unit alert type error, but depending on the setting [15.05], this can ALSO trigger error U005, thus can ALSO be 1 of the following error types:

- Unit rapid stop alarm
- Unit pumpdown stop alarm

Trigger	Effect	Reset
Faulty external device (pump, alarm inputs ...) detected or external alarm working as intended.	Unit will NOT stop operating.	Auto reset.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check the cause of the external alarm input. If the external alarm input was activated properly, solve the cause.
Possible cause: External alarm working properly.
- 2 Check that the external alarm setting [15.05] is correctly set. See ["9.8 Field settings"](#) [▶ 442].
Possible cause: Incorrect setting.
- 3 Check the wiring connected to the external alarm input terminal on the main PCB. See ["9.2 Wiring diagram"](#) [▶ 408].
Possible cause: Faulty or disconnected wiring on external alarm input terminal on main PCB.
- 4 Check the correct operation of the external device. See ["6.4 Manufacturer components"](#) [▶ 374].
Possible cause: Faulty external device.
- 5 Check the wiring between the external device and the unit. See ["9.2 Wiring diagram"](#) [▶ 408].
Possible cause: Faulty wiring between the external device and the unit.
- 6 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U009 – Demand limit signal out of range

Trigger	Effect	Reset
Demand Limit option has been enabled and input to the controller is out of range.	Unit will NOT stop operating.	Reset via user interface.
		Reset on network.
		Auto reset 5 seconds after trigger was cleared.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if setting [18.00] is correctly set. Correct as needed. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Incorrect setting [18.00].

- 2 Check the demand limit input signal on the option PCB. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause: Incorrect demand limit input signal.

- 3 Perform a check of the option PCB. See ["4.21 Option PCB"](#) [▶ 253].

Possible cause: Faulty option PCB.

- 4 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U010 – Setpoint reset signal out of range

Trigger	Effect	Reset
Setpoint Reset option has been enabled and input to the controller is out of range.	Unit will NOT stop operating.	Reset via user interface.
		Reset on network.
		Auto reset 5 seconds after trigger was cleared.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if settings [20.00] and [20.01] are correctly set. Correct as needed. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Incorrect setting [20.00] or [20.01].

- 2 Check the setpoint reset input signal on the option PCB. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause: Incorrect demand setpoint reset signal.

- 3 Perform a check of the option PCB. See ["4.21 Option PCB"](#) [▶ 253].

Possible cause: Faulty option PCB.

- 4 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U014 – Pump error

When this error code occurs, check the corresponding sub code, see ["3.1 To retrieve error codes and check error history"](#) [▶ 35].

See below an overview of the possible sub errors according to the 4 number digit shown on the user interface display, the binary value shown on the service monitoring tool or the code shown on the pump inverter (if applicable):

Pump inverter		User interface (HMI)		Service Monitoring Tool		Error description
Code	Bit value	Page	4 Number digit code	Binary value		
				Fault code 0~15	Fault code 16~31	
AL28	0	21-06	0001	1	0	The brake resistor is not connected or not working.
AL14	2		0100	4	0	Earth Fault: check for earth leakage
AL17	4	21-07	0001	16	0	Catch up error: There is no communication to the frequency converter.
AL13	5		0010	32	0	Over Current error
AL11	7		1000	128	0	Motor thermistor overtemperature. The thermistor might be disconnected.
AL10	8	21-08	0001	256	0	Motor overload temperature: According to the electronic thermal protection (ETR), the motor is too hot.
AL9	9		0010	512	0	Inverter overload: Frequency High
AL8	10		0100	1024	0	DC under volt: motor Frequency Low
AL7	11		1000	2048	0	DC over volt
AL6	12	21-09	0001	4096	0	Short Circuit
AL4	14		0100	16384	0	Mains phase loss: A phase is missing on the supply side, or the mains voltage imbalance is too high
AL2	16	21-10	0001	0	1	Live zero error: The Live Zero function is used for monitoring the signal on an analog input. If the signal disappears or falls below 50% of expected value, a Live Zero warning is reported.
AL38	17		0010	0	2	Internal fault: Troubleshoot with a power cycle, check pump, Check that the Pump is properly installed, Check for loose or missing wiring.
AL30	19		1000	0	8	U phase loss
AL31	20	21-11	0001	0	16	V phase loss
AL32	21		0010	0	32	W phase loss

Pump inverter		User interface (HMI)		Service Monitoring Tool		Error description
Code	Bit value	Page	4 Number digit code	Binary value		
				Fault code 0~15	Fault code 16~31	
AL25	26	21-12	0100	0	1024	Brake resistor short-circuit: If a short circuit occurs, the brake function is disabled and the warning appears.
AL27	27		1000	0	2048	Brake IGBT short-circuit
AL80	29	21-13	0010	0	8192	Drive initialised to default value Parameter settings are initialised to default settings after a manual reset. To clear the alarm, reset the unit.
AL63	31		1000	0	32768	Parameter database busy LCP and RS-485 connection are trying to update parameters simultaneously

Trigger	Effect	Reset
Pump is started but the flow switch is NOT able to close within the recirculate time (possible to modify the times on the service monitoring tool).	Unit will NOT stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check the subcode status and apply corrective actions according to subcode.
- 2 Check if the water circuit is clogged. See ["6.3 Water circuit"](#) [▶ 361].
Possible cause: Clogged water circuit.
- 3 Clean the water filter. See ["6.4 Manufacturer components"](#) [▶ 374].
Possible cause: Clogged water filter.
- 4 Perform a check of the water pump. See ["4.31 Water pump"](#) [▶ 321].
Possible cause: Faulty water pump.
- 5 ONLY for EWYE-CZP-A units: Perform a check of the pump inverter. See documentation of the pump inverter.
Possible cause: Faulty pump inverter.
- 6 Perform a check of the flow switch. See ["4.15 Flow switch"](#) [▶ 219].
Possible cause: Faulty flow switch.
- 7 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

U020 – Domestic hot water anti-legionella cycle alarm

Trigger	Effect	Reset
Programmed anti-legionella cycle could NOT start.	Unit will NOT stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

**INFORMATION**

Anti-legionella operation CANNOT start if the unit is disabled or performing Defrost operation.

- 1 Check that the Anti-legionella cycle settings are correctly set. See domestic hot water option handbook and ["9.8 Field settings"](#) [▶ 442].

Possible cause: Incorrect setting(s).

- 2 Check that the Anti-legionella set cycle setting [19.16] is correctly set. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Incorrect setting.

- 3 Check that the Anti-legionella alarm digital input is correctly wired. L connected to terminal Di5 and N connected to terminal R4-5 of terminal block T4 on the option PCB. Digital input requires 230 V AC.

Possible cause: Incorrect wiring.

- 4 Check the correct operation of the Anti-legionella alarm digital input contacts. See ["6.4 Manufacturer components"](#) [▶ 374].

Possible cause: Faulty operation of the Anti-legionella alarm digital input contacts.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.5 Circuit Rapid Stop Alarms**INFORMATION**

Error codes C1xx are applicable for the main circuit. Error codes C2xx are applicable for the secondary circuit.

C101 & C201 – Low pressure ratio

Trigger	Effect	Reset
The ratio between inlet and outlet pressure of the compressor is below a limit that guarantees proper lubrication to compressor.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

**INFORMATION**

Pressure ratio calculation uses absolute pressure values, so values MUST be +1 bar.
 Pressure ratio = Absolute high pressure / Absolute low pressure. For example:

- Condenser (high) pressure = 19.69 bar
- Evaporator (low) pressure = 5.04 bar
- Pressure ratio = (19.69+1) / (5.04+1) = 3.4255

**INFORMATION**

Pressure sensor operation is directly related to the pressure ratio calculation. Ensure pressure sensor readings are correct and that the offset is properly set. If one of the pressure sensors is having an error it gets a NULL/INFINITE ratio. This means the pressure ratio CANNOT give an alarm if any of the sensors is broken.

- 1 Perform a software update. See ["2 General operation"](#) [▶ 16].
Possible cause: Outdated software version installed.
- 2 Perform a check of the refrigerant low pressure sensor. See ["4.27 Refrigerant low pressure sensor"](#) [▶ 287]
Possible cause: Faulty refrigerant low pressure sensor.
- 3 Perform a check of the refrigerant high pressure sensor. See ["4.26 Refrigerant high pressure sensor"](#) [▶ 279].
Possible cause: Faulty refrigerant high pressure sensor.
- 4 Check for leaks in the refrigerant circuit. Look for oil traces on the unit(s). Check the brazing points on the refrigerant piping. Perform a pressure test, see ["6.2 Refrigerant circuit"](#) [▶ 350].
Possible cause: Leak in the refrigerant circuit.
- 5 Check if the refrigerant circuit is correctly charged. See ["6.2 Refrigerant circuit"](#) [▶ 350].
Possible cause: Refrigerant shortage.
- 6 Perform a check of the 4-way valve. See ["4.3 4-way valve"](#) [▶ 131].
Possible cause: Faulty 4-way valve.
- 7 Perform a check of the expansion valve. See ["4.13 Expansion valve"](#) [▶ 203].
Possible cause: Faulty expansion valve.
- 8 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

- 9 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].

Possible cause: Faulty inverter PCB.

- 10 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

- 11 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C102 & C202 – No pressure change at start

Trigger	Effect	Reset
Compressor is NOT able to start or to create a certain minimum variation of the evaporating or condensing pressures after start. It will trigger if pressure difference is too low a certain time after compressor start-up.	Circuit will stop operating.	Reset via user interface.
		Reset on network.
		Auto reset 3 times, then manual reset.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the refrigerant low pressure sensor. See ["4.27 Refrigerant low pressure sensor"](#) [▶ 287]

Possible cause: Faulty refrigerant low pressure sensor.

- 2 Perform a check of the refrigerant high pressure sensor. See ["4.26 Refrigerant high pressure sensor"](#) [▶ 279].

Possible cause: Faulty refrigerant high pressure sensor.

- 3 Perform a check of the expansion valve. See ["4.13 Expansion valve"](#) [▶ 203].

Possible cause: Faulty expansion valve.

- 4 Check if the refrigerant circuit is correctly charged. See ["6.2 Refrigerant circuit"](#) [▶ 350].

Possible cause: Refrigerant shortage.

- 5 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C103 & C203 – Fan's inverter communication alarm

Trigger	Effect	Reset
Bad communication between the main PCB and fan inverter PCB	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

FOR C103:

- 1 Check wiring (insertion and continuity) on X6A (terminal 1) on the main circuit inverter PCB and terminal Q3 of terminal block T11 on the main PCB. See ["9.2 Wiring diagram" \[▶ 408\]](#).

Possible cause: Faulty or damaged wiring between inverter PCB and main PCB.

FOR C203:

- 2 Check wiring (insertion and continuity) on X6A (terminal 1) on the secondary circuit inverter PCB and terminal Q4 of terminal block T11 on the main PCB. See ["9.2 Wiring diagram" \[▶ 408\]](#).

Possible cause: Faulty or damaged wiring between inverter PCB and main PCB.

FOR C103 AND C203:

- 3 Perform a check of the fan inverter PCB(s). See ["4.14 Fan inverter PCB" \[▶ 212\]](#).

Possible cause: Faulty fan inverter PCB.



INFORMATION

In case of 2 fans (fan inverter PCB's) on 1 refrigerant circuit, swap the fan inverter PCB's to check which one is faulty.

- 4 Perform a check of the main PCB. See ["4.18 Main PCB" \[▶ 236\]](#).

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C104 & C204 – Compressor's inverter communication alarm

Trigger	Effect	Reset
Bad communication between the main PCB and inverter PCB	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- FOR C104:
 - 1 Check wiring (insertion and continuity) on X6A (terminal 1) on the main circuit inverter PCB and terminal Q3 of terminal block T11 on the main PCB. See ["9.2 Wiring diagram"](#) [▶ 408].
Possible cause: Faulty or damaged wiring between inverter PCB and main PCB.
- FOR C204:
 - 1 Check wiring (insertion and continuity) on X6A (terminal 1) on the secondary circuit inverter PCB and terminal Q4 of terminal block T11 on the main PCB. See ["9.2 Wiring diagram"](#) [▶ 408].
Possible cause: Faulty or damaged wiring between inverter PCB and main PCB.
- FOR C104 AND C204:
 - 2 Perform a check of the ACS digital I/O PCB. See ["4.4 ACS digital I/O PCB"](#) [▶ 139].
Possible cause: Faulty ACS digital I/O PCB.
 - 3 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].
Possible cause: Faulty inverter PCB.
 - 4 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C105 & C205 – Low evaporator pressure alarm

Trigger	Effect	Reset
Evaporating pressure drops below the Low Pressure Unload.	Circuit will stop operating.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a software update. See ["2 General operation"](#) [▶ 16].

- Possible cause:** Outdated software version installed.
- 2 Check the inlet water temperature. Increase inlet water temperature as needed.
Possible cause: Inlet water temperature is too low.
 - 3 Check the water flow. See "[6.3 Water circuit](#)" [▶ 361].
Possible cause: Water flow is too low.
 - 4 Clean the water filter. See "[6.4 Manufacturer components](#)" [▶ 374].
Possible cause: Clogged water filter.
 - 5 Perform a check of the water pump. See "[4.31 Water pump](#)" [▶ 321].
Possible cause: Faulty water pump.
 - 6 Perform a check of the refrigerant low pressure sensor. See "[4.27 Refrigerant low pressure sensor](#)" [▶ 287]
Possible cause: Faulty refrigerant low pressure sensor.
 - 7 Check if a transitory condition (e.g. staging up of an other fan) may cause the error. Wait until normal condition is recovered, or perform reset on the unit.
 - 8 Check for leaks in the refrigerant circuit. Look for oil traces on the unit(s). Check the brazing points on the refrigerant piping. Perform a pressure test, see "[6.2 Refrigerant circuit](#)" [▶ 350].
Possible cause: Leak in the refrigerant circuit.
 - 9 Check if the refrigerant circuit is correctly charged. See "[6.2 Refrigerant circuit](#)" [▶ 350].
Possible cause: Refrigerant shortage.
 - 10 ONLY for Cool and Heat/Cool with glycol mode application: Check the low pressure unload limit setting. Check the evaporator approach and the corresponding water temperature to evaluate the low pressure unload limit.
Possible cause: Low pressure unload limit NOT set correctly.
 - 11 Clean the outdoor heat exchanger. See "[7 Maintenance](#)" [▶ 376].
Possible cause: Dirty outdoor heat exchanger.
 - 12 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "[6.2 Refrigerant circuit](#)" [▶ 350].
Possible cause: Non-condensables and/or humidity in the refrigerant circuit.
 - 13 Check the glycol percentage. Take a sample from the drain port and use a refractometer to check the glycol level. Add glycol as needed.
Possible cause: Glycol level too low.
 - 14 Perform a check of the expansion valve. See "[4.13 Expansion valve](#)" [▶ 203].
Possible cause: Faulty expansion valve.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C106 & C206 – High condensing pressure alarm

Trigger	Effect	Reset
Condensing saturated temperature rises above the maximum condensing saturated temperature.	Circuit will stop operating.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the refrigerant high pressure sensor. See "[4.26 Refrigerant high pressure sensor](#)" [▶ 279].
Possible cause: Faulty refrigerant high pressure sensor.
- 2 Perform a check of the outdoor unit fan motor. See "[4.22 Outdoor unit fan motor](#)" [▶ 258].
Possible cause: Faulty outdoor unit fan motor.
- 3 Clean the outdoor heat exchanger. See "[7 Maintenance](#)" [▶ 376].
Possible cause: Dirty outdoor heat exchanger.
- 4 Check ambient temperature. Check if outdoor unit location temperature differs drastically.
- 5 Check if there is discharge air by-pass on installation location.
Possible cause: External noise. Check further on how to eliminate external factors.
- 6 Check if the refrigerant circuit is correctly charged. See "[6.2 Refrigerant circuit](#)" [▶ 350].
Possible cause: Refrigerant overcharge.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C107 & C207 – High discharge temperature alarm

Trigger	Effect	Reset
Discharge temperature too high. Error CANNOT trigger if discharge thermistor fault is active.	Circuit will stop operating.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

**DANGER: RISK OF BURNING/SCALDING**

The compressor crankcase and discharge pipes may be very hot. Be careful when getting in contact with the compressor and discharge pipes.

- 1 Check ambient conditions of the unit. See operation limits in the Databook.
Possible cause: Operation at too high temperature might lead to high temperature errors.
- 2 Perform a check of the discharge pipe thermistor. See ["4.29 Thermistors"](#) [▶ 301].
Possible cause: Faulty discharge pipe thermistor or connector fault.
- 3 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.
- 4 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C108 & C208 – High compressor current protection

Trigger	Effect	Reset
The unit detects current over maximum limit on the compressor inverter.	Circuit will stop operating.	Reset via user interface. Auto reset (NOT possible if overcurrent reaches 110%).

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check the compressor operation conditions. See operation limits in the Databook.
Possible cause: Compressor operating outside its operation limits.
- 2 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].
Possible cause:
 - Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
 - Power drop,
 - Short circuit.
- 3 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.
- 4 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].
Possible cause: Faulty inverter PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C109 & C209 – No pressure at start alarm

Trigger	Effect	Reset
The unit CANNOT reach the minimum pressure (low pressure unload) after start for a certain amount of time.	Circuit will stop operating.	Reset via user interface.
		Reset on network.
		Auto reset 3 times, then manual reset.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the refrigerant low pressure sensor. See ["4.27 Refrigerant low pressure sensor"](#) [▶ 287]
Possible cause: Faulty refrigerant low pressure sensor.
- 2 Perform a check of the expansion valve. See ["4.13 Expansion valve"](#) [▶ 203].
Possible cause: Faulty expansion valve.
- 3 Perform a check of the refrigerant high pressure sensor. See ["4.26 Refrigerant high pressure sensor"](#) [▶ 279].
Possible cause: Faulty refrigerant high pressure sensor.
- 4 Check if the refrigerant circuit is correctly charged. See ["6.2 Refrigerant circuit"](#) [▶ 350].
Possible cause: Refrigerant shortage.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C110 & C210 – Evaporating pressure sensor fault

Trigger	Effect	Reset
Low pressure sensor is NOT operating correctly.	Circuit will stop operating.	Reset via user interface.
		Reset on network.
		Auto reset 10 seconds after trigger was cleared.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the refrigerant low pressure sensor. See ["4.27 Refrigerant low pressure sensor"](#) [▶ 287]
Possible cause: Faulty refrigerant low pressure sensor.

- 2 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

FOR ERROR CODE C110:

- 3 Perform a check of the 24 V DC auxiliary power supply. See ["4.2 24 V DC auxiliary power supply"](#) [▶ 128].

Possible cause: Faulty auxiliary power supply.

FOR ERROR CODE C210:

- 4 Perform a check of the 5 V DC auxiliary power supply. See ["4.1 5 V DC auxiliary power supply"](#) [▶ 126].

Possible cause: Faulty auxiliary power supply.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C111 & C211 – Condensing pressure sensor fault

Trigger	Effect	Reset
High pressure sensor is NOT operating correctly.	Circuit will stop operating.	Reset via user interface.
		Reset on network.
		Auto reset 10 seconds after trigger was cleared.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the refrigerant high pressure sensor. See ["4.26 Refrigerant high pressure sensor"](#) [▶ 279].

Possible cause: Faulty refrigerant high pressure sensor.

- 2 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

FOR ERROR CODE C111:

- 3 Perform a check of the 24 V DC auxiliary power supply. See ["4.2 24 V DC auxiliary power supply"](#) [▶ 128].

Possible cause: Faulty auxiliary power supply.

FOR ERROR CODE C211:

- 4 Perform a check of the 5 V DC auxiliary power supply. See ["4.1 5 V DC auxiliary power supply"](#) [▶ 126].

Possible cause: Faulty auxiliary power supply.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C112 & C212 – High motor temperature alarm

Trigger	Effect	Reset
Compressor thermal protector is detected open for 2 seconds.	Circuit will stop operating.	Reset via user interface. Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the compressor thermal protection. See ["4.7.1 Checking procedures"](#) [▶ 159].
Possible cause: Faulty compressor thermal protection.
- 2 Check cycle timer and clear using the service monitoring tool.
Possible cause: Cycle timer stuck.
- 3 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C115 & C215 – Pump down failed

Trigger	Effect	Reset
NOT all refrigerant was removed from the evaporator.	Circuit will stop operating.	Auto reset when circuit state is off.
Pumpdown lasted more than 120 seconds.		

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the expansion valve. See ["4.13 Expansion valve"](#) [▶ 203].
Possible cause: Faulty expansion valve.
- 2 Perform a check of the refrigerant low pressure sensor. See ["4.27 Refrigerant low pressure sensor"](#) [▶ 287]
Possible cause: Faulty refrigerant low pressure sensor.
- 3 Perform a check of the refrigerant high pressure sensor. See ["4.26 Refrigerant high pressure sensor"](#) [▶ 279].
Possible cause: Faulty refrigerant high pressure sensor.
- 4 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-33 & C216-33 – Instantaneous overcurrent (OCP)

Trigger	Effect	Reset
Output overcurrent protection activated due to instantaneous overcurrent detected.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 2 Perform a check of the expansion valve. See ["4.13 Expansion valve"](#) [▶ 203].

Possible cause: Faulty expansion valve.

- 3 Check if the refrigerant circuit is clogged. See ["6.2 Refrigerant circuit"](#) [▶ 350].

Possible cause: Clogged refrigerant circuit.

- 4 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

- 5 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].

Possible cause: Faulty inverter PCB.

- 6 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-35 & C216-35 – Electrical thermal 1

Trigger	Effect	Reset
Output overcurrent protection activated due to instantaneous overcurrent detected.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if the unit has been struck by lightning.
Possible cause: Lightning struck the unit.
- 2 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].
Possible cause:
 - Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
 - Power drop,
 - Short circuit.
- 3 Perform a check of the expansion valve. See ["4.13 Expansion valve"](#) [▶ 203].
Possible cause: Faulty expansion valve.
- 4 Check if the refrigerant circuit is clogged. See ["6.2 Refrigerant circuit"](#) [▶ 350].
Possible cause: Clogged refrigerant circuit.
- 5 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.
- 6 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].
Possible cause: Faulty inverter PCB.
- 7 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-36 & C216-36 – Electrical thermal 2

Trigger	Effect	Reset
Output overcurrent protection activated due to instantaneous overcurrent detected.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if the unit has been struck by lightning.
Possible cause: Lightning struck the unit.
- 2 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 3 Perform a check of the expansion valve. See ["4.13 Expansion valve"](#) [▶ 203].

Possible cause: Faulty expansion valve.

- 4 Check if the refrigerant circuit is clogged. See ["6.2 Refrigerant circuit"](#) [▶ 350].

Possible cause: Clogged refrigerant circuit.

- 5 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

- 6 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].

Possible cause: Faulty inverter PCB.

- 7 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-37 & C216-37 – Step out (overload stop)

Trigger	Effect	Reset
Output overcurrent protection activated due to instantaneous overcurrent detected.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if the unit has been struck by lightning.

Possible cause: Lightning struck the unit.

- 2 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 3 Perform a check of the expansion valve. See ["4.13 Expansion valve"](#) [▶ 203].

Possible cause: Faulty expansion valve.

- 4 Check if the refrigerant circuit is clogged. See ["6.2 Refrigerant circuit"](#) [▶ 350].

Possible cause: Clogged refrigerant circuit.

- 5 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

- 6 Perform a check of the inverter PCB. See "4.17 Inverter PCB" [▶ 229].

Possible cause: Faulty inverter PCB.

- 7 Perform a check of the main PCB. See "4.18 Main PCB" [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-38 & C216-38 – Lightning strike detected

Trigger	Effect	Reset
Output overcurrent protection activated due to instantaneous overcurrent detected.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check if the unit has been struck by lightning.

Possible cause: Lightning struck the unit.

- 2 Check if the power supply is compliant with the regulations. See "6.1 Electrical circuit" [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 3 Perform a check of the expansion valve. See "4.13 Expansion valve" [▶ 203].

Possible cause: Faulty expansion valve.

- 4 Check if the refrigerant circuit is clogged. See "6.2 Refrigerant circuit" [▶ 350].

Possible cause: Clogged refrigerant circuit.

- 5 Perform a check of the compressor. See "4.6 Compressor" [▶ 147].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

- 6 Perform a check of the inverter PCB. See "4.17 Inverter PCB" [▶ 229].

Possible cause: Faulty inverter PCB.

- 7 Perform a check of the main PCB. See "4.18 Main PCB" [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-40 & C216-40 – Start failure (stall prevention)

Trigger	Effect	Reset
Overcurrent or NO rotation detected at startup. Compressor CANNOT start after 3 tries.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if the power supply is compliant with the regulations. See "[6.1 Electrical circuit](#)" [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 2 Check if the refrigerant circuit is clogged. See "[6.2 Refrigerant circuit](#)" [▶ 350].

Possible cause: Clogged refrigerant circuit.

- 3 Perform a check of the compressor. See "[4.6 Compressor](#)" [▶ 147].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

- 4 Perform a check of the inverter PCB. See "[4.17 Inverter PCB](#)" [▶ 229].

Possible cause: Faulty inverter PCB.

- 5 Perform a check of the main PCB. See "[4.18 Main PCB](#)" [▶ 236].

Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-43 & C216-43 – Power open phase circuit / clamp diode short circuit error

Trigger	Effect	Reset
There has been an error at the PCB due to bad inputs/outputs, bad power supply or data error. Open phase or unbalanced power supply detection by inverter PCB.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check the power supply to the unit. See ["6.1 Electrical circuit"](#) [▶ 347].
Possible cause:
 - Faulty or disturbance of the power supply (imbalance),
 - Phase missing,
 - Power drop,
 - Short circuit.
- 2 Perform a check of the 24 V DC auxiliary power supply. See ["4.2 24 V DC auxiliary power supply"](#) [▶ 128].
Possible cause: Faulty auxiliary power supply.
- 3 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].
Possible cause: Faulty inverter PCB.
- 4 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.
- 5 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-44 & C216-44 – Fin thermal abnormality

Trigger	Effect	Reset
Too high temperature detected by Inverter PCB.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

**INFORMATION**

The fans are ALSO used to cool inverter PCB's at the back side of the switch box. If fins temperature rises too much, the fan speed will be boosted as countermeasure.

- 1 Check if noise operation level or maximum fan speed setting is active and correct as needed. See ["9.8 Field settings"](#) [▶ 442].
Possible cause: Low fan speed.
- 2 Check ambient temperature. Check if outdoor unit location temperature differs drastically.
- 3 Check if there is discharge air by-pass on installation location.

Possible cause: External noise. Check further on how to eliminate external factors.

- 4 Clean the outdoor heat exchanger. See "[7 Maintenance](#)" [▶ 376].

Possible cause: Dirty outdoor heat exchanger.

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 5 Wait until the rectifier voltage is below 10 V DC.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 6 Check that the thermal interface grease is applied properly on the (PCB or refrigerant piping) contact surface of the heat sink. Adjust if needed.

Possible cause: Thermal interface grease NOT applied properly on the heat sink.

- 7 Check if heat sink plate is correctly fixed with screws.

Possible cause: Heat sink plate not correctly installed.

- 8 Perform a check of the inverter PCB. See "[4.17 Inverter PCB](#)" [▶ 229].

Possible cause: Faulty inverter PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-45 & C216-45 – Fin temperature sensor error

Trigger	Effect	Reset
PCB fin thermistor detected out of range, open or short-circuit.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Wait until the rectifier voltage is below 10 V DC.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Check that the thermal interface grease is applied properly on the (PCB or refrigerant piping) contact surface of the heat sink. Adjust if needed.

Possible cause: Thermal interface grease NOT applied properly on the heat sink.

- 3 Check if heat sink plate is correctly fixed with screws.
Possible cause: Heat sink plate not correctly installed.
- 4 Check ambient temperature. Check if outdoor unit location temperature differs drastically.
- 5 Check if there is discharge air by-pass on installation location.
Possible cause: External noise. Check further on how to eliminate external factors.
- 6 Perform a check of the expansion valve. See "4.13 Expansion valve" [▶ 203].
Possible cause: Faulty expansion valve.
- 7 Clean the outdoor heat exchanger. See "7 Maintenance" [▶ 376].
Possible cause: Dirty outdoor heat exchanger.
- 8 Perform a check of the inverter PCB. See "4.17 Inverter PCB" [▶ 229].
Possible cause: Faulty inverter PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-46 & C216-46 – Instantaneous overcurrent (during boot)

Trigger	Effect	Reset
Output overcurrent protection activated due to instantaneous overcurrent detected.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check if the power supply is compliant with the regulations. See "6.1 Electrical circuit" [▶ 347].
Possible cause:
 - Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
 - Power drop,
 - Short circuit.
- 2 Perform a check of the expansion valve. See "4.13 Expansion valve" [▶ 203].
Possible cause: Faulty expansion valve.
- 3 Check if the refrigerant circuit is clogged. See "6.2 Refrigerant circuit" [▶ 350].
Possible cause: Clogged refrigerant circuit.
- 4 Perform a check of the compressor. See "4.6 Compressor" [▶ 147].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.
- 5 Perform a check of the inverter PCB. See "4.17 Inverter PCB" [▶ 229].
Possible cause: Faulty inverter PCB.

- 6 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-47 & C216-47 – Current sensor / overcurrent protection circuit error

Trigger	Effect	Reset
There has been an error at the PCB due to bad inputs/outputs, bad power supply or data error.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the 24 V DC auxiliary power supply. See ["4.2 24 V DC auxiliary power supply"](#) [▶ 128].
Possible cause: Faulty auxiliary power supply.
- 2 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].
Possible cause: Faulty inverter PCB.
- 3 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.
- 4 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-49 & C216-49 – Power unbalance

Trigger	Effect	Reset
Power unbalance detected on the compressor.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 2 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].

Possible cause: Faulty inverter PCB.


INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-54 & C216-54 – Current offset error

Trigger	Effect	Reset
There has been an error at the PCB due to bad inputs/outputs, bad power supply or data error.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the 24 V DC auxiliary power supply. See ["4.2 24 V DC auxiliary power supply"](#) [▶ 128].

Possible cause: Faulty auxiliary power supply.

- 2 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].

Possible cause: Faulty inverter PCB.

- 3 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

- 4 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.


INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-56 & C216-56 – IGBT error

Trigger	Effect	Reset
There has been an error at the PCB due to bad inputs/outputs, bad power supply or data error.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the 24 V DC auxiliary power supply. See ["4.2 24 V DC auxiliary power supply"](#) [▶ 128].
Possible cause: Faulty auxiliary power supply.
- 2 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].
Possible cause: Faulty inverter PCB.
- 3 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.
- 4 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-57 & C216-57 – JP setting error

Trigger	Effect	Reset
There has been an error at the PCB due to bad inputs/outputs, bad power supply or data error.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the 24 V DC auxiliary power supply. See ["4.2 24 V DC auxiliary power supply"](#) [▶ 128].
Possible cause: Faulty auxiliary power supply.
- 2 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].
Possible cause: Faulty inverter PCB.
- 3 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.
- 4 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-58 & C216-58 – Unit type setting error

Trigger	Effect	Reset
Main PCB does NOT recognize the Inverter PCB.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check that the unit type settings [14.xx] are set correctly. See ["9.8 Field settings"](#) [▶ 442].
Possible cause: Software update failed or incorrect unit type settings.
- 2 Check if the correct spare part is installed for the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].
Possible cause: Incorrect spare part inverter PCB.
- 3 Check if correct software is installed on the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Incorrect or outdated software installed on main PCB.
- 4 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].
Possible cause: Faulty main PCB.
- 5 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].
Possible cause: Faulty inverter PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-59 & C216-59 – Data flash error

Trigger	Effect	Reset
There has been an error at the PCB due to bad inputs/outputs, bad power supply or data error.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the 24 V DC auxiliary power supply. See ["4.2 24 V DC auxiliary power supply"](#) [▶ 128].
Possible cause: Faulty auxiliary power supply.
- 2 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].
Possible cause: Faulty inverter PCB.
- 3 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

- 4 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-61 & C216-61 – Compressor lock

Trigger	Effect	Reset
Compressor gets locked due to malfunctioning.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check if the refrigerant circuit is correctly charged. See ["6.2 Refrigerant circuit"](#) [▶ 350].

Possible cause: Refrigerant overcharge.

- 2 Check if the refrigerant circuit is clogged. See ["6.2 Refrigerant circuit"](#) [▶ 350].

Possible cause: Clogged refrigerant circuit.

- 3 Clean the outdoor heat exchanger. See ["7 Maintenance"](#) [▶ 376].

Possible cause: Dirty outdoor heat exchanger.

- 4 Perform a check of the expansion valve. See ["4.13 Expansion valve"](#) [▶ 203].

Possible cause: Faulty expansion valve.

- 5 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

- 6 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].

Possible cause: Faulty inverter PCB.

- 7 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-63 & C216-63 – Pressure protection

Trigger	Effect	Reset
Too high pressure detected (confirmed continuously for 10 minutes) OR high pressure switch failure/ activation.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the high pressure switch. See "[4.16 High pressure switch](#)" [▶ 224].
Possible cause: Faulty high pressure switch.
- 2 Perform a check of the refrigerant high pressure sensor. See "[4.26 Refrigerant high pressure sensor](#)" [▶ 279].
Possible cause: Faulty refrigerant high pressure sensor.
- 3 Check if the refrigerant circuit is correctly charged. See "[6.2 Refrigerant circuit](#)" [▶ 350].
Possible cause: Refrigerant overcharge.
- 4 Check if the refrigerant circuit is clogged. See "[6.2 Refrigerant circuit](#)" [▶ 350].
Possible cause: Clogged refrigerant circuit.
- 5 Clean the outdoor heat exchanger. See "[7 Maintenance](#)" [▶ 376].
Possible cause: Dirty outdoor heat exchanger.
- 6 Perform a check of the expansion valve. See "[4.13 Expansion valve](#)" [▶ 203].
Possible cause: Faulty expansion valve.
- 7 Perform a check of the compressor. See "[4.6 Compressor](#)" [▶ 147].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.
- 8 Perform a check of the inverter PCB. See "[4.17 Inverter PCB](#)" [▶ 229].
Possible cause: Faulty inverter PCB.
- 9 Perform a check of the main PCB. See "[4.18 Main PCB](#)" [▶ 236].
Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-114 & C216-114 – Power open phase detected

Trigger	Effect	Reset
Inverter PCB detects a reverse phase, open phase, unbalanced phase or a current leak.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 2 Check if any of the phases is missing on the mains power supply terminal, see "To check the power supply of the unit" in ["6.1 Electrical circuit"](#) [▶ 347]. Correct if needed.

Possible cause: Missing phase(s) on mains power supply terminal.

- 3 Check the fuses on the power supply wiring. Replace any broken fuse(s).

Possible cause: Broken fuse(s) on power supply wiring.

- 4 Using a megger device, check the expansion valve coil, 4-way valve coil, fan motor, pressure sensors, crankcase heater, compressor, ... if any earth leakage is found. Replace the component(s) that generate earth leakage.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-115 & C216-115 – Output open phase

Trigger	Effect	Reset
Overcurrent or NO rotation detected at startup.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 2 Check if the refrigerant circuit is clogged. See "6.2 Refrigerant circuit" [▶ 350].

Possible cause: Clogged refrigerant circuit.

- 3 Perform a check of the compressor. See "4.6 Compressor" [▶ 147].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

- 4 Perform a check of the inverter PCB. See "4.17 Inverter PCB" [▶ 229].

Possible cause: Faulty inverter PCB.

- 5 Perform a check of the main PCB. See "4.18 Main PCB" [▶ 236].

Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-116 & C216-116 – Voltage sensor failure

Trigger	Effect	Reset
Abnormal range within the power supply detected by inverter PCB.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if the power supply is compliant with the regulations. See "6.1 Electrical circuit" [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 2 Perform a check of the inverter PCB. See "4.17 Inverter PCB" [▶ 229].

Possible cause: Faulty inverter PCB.

- 3 Perform a check of the noise filter PCB. See "4.20 Noise filter PCB" [▶ 248].

Possible cause: Faulty noise filter PCB.

- 4 Perform a check of the main PCB. See "4.18 Main PCB" [▶ 236].

Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-117 & C216-117 – Over-voltage during operation

Trigger	Effect	Reset
Abnormal range within the power supply detected by inverter PCB.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 2 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].

Possible cause: Faulty inverter PCB.

- 3 Perform a check of the noise filter PCB. See ["4.20 Noise filter PCB"](#) [▶ 248].

Possible cause: Faulty noise filter PCB.

- 4 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-118 & C216-118 – Under-voltage during operation

Trigger	Effect	Reset
Abnormal range within the power supply detected by inverter PCB.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 2 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].

Possible cause: Faulty inverter PCB.

- 3 Perform a check of the noise filter PCB. See ["4.20 Noise filter PCB"](#) [▶ 248].

Possible cause: Faulty noise filter PCB.

- 4 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C116-145 & C216-145 – Power frequency error

Trigger	Effect	Reset
Inverter PCB detects a reverse phase, open phase, unbalanced phase or a current leak.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 2 Check if any of the phases is missing on the mains power supply terminal, see "To check the power supply of the unit" in ["6.1 Electrical circuit"](#) [▶ 347]. Correct if needed.

Possible cause: Missing phase(s) on mains power supply terminal.

- 3 Check the fuses on the power supply wiring. Replace any broken fuse(s).

Possible cause: Broken fuse(s) on power supply wiring.

- 4 Using a megger device, check the expansion valve coil, 4-way valve coil, fan motor, pressure sensors, crankcase heater, compressor, ... if any earth leakage is found. Replace the component(s) that generate earth leakage.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C117-65 & C217-65 – Hardware overcurrent protection (instantaneous overcurrent)

Trigger	Effect	Reset
Overcurrent or inverter current abnormality detected by fan inverter PCB.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if the power supply is compliant with the regulations. See ["6.1 Electrical circuit"](#) [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 2 Perform a check of the fan inverter PCB. See ["4.14 Fan inverter PCB"](#) [▶ 212].

Possible cause: Faulty fan inverter PCB.

- 3 Perform a check of the inverter PCB. See ["4.17 Inverter PCB"](#) [▶ 229].

Possible cause: Faulty inverter PCB.

- 4 Perform a check of the noise filter PCB. See ["4.20 Noise filter PCB"](#) [▶ 248].

Possible cause: Faulty noise filter PCB.

- 5 Perform a check of the outdoor unit fan motor. See ["4.22 Outdoor unit fan motor"](#) [▶ 258].

Possible cause: Faulty outdoor unit fan motor.

- 6 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C117-68 & C217-68 – Fin temperature overheat error

Trigger	Effect	Reset
Too high temperature detected by fan inverter PCB.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check if noise operation level or maximum fan speed setting is active and correct as needed. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Low fan speed.

- 2 Check ambient temperature. Check if outdoor unit location temperature differs drastically.

- 3 Check if there is discharge air by-pass on installation location.

Possible cause: External noise. Check further on how to eliminate external factors.

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 4 Wait until the rectifier voltage is below 10 V DC.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 5 Check that the thermal interface grease is applied properly on the (PCB or refrigerant piping) contact surface of the heat sink. Adjust if needed.

Possible cause: Thermal interface grease NOT applied properly on the heat sink.

- 6 Check if heat sink plate is correctly fixed with screws.

Possible cause: Heat sink plate not correctly installed.

- 7 Perform a check of the fan inverter PCB. See "[4.14 Fan inverter PCB](#)" [▶ 212].

Possible cause: Faulty fan inverter PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C117-69 & C217-69 – Fin thermistor failure error

Trigger	Effect	Reset
PCB fin thermistor detected open or short-circuit.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Wait until the rectifier voltage is below 10 V DC.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Check that the thermal interface grease is applied properly on the (PCB or refrigerant piping) contact surface of the heat sink. Adjust if needed.

Possible cause: Thermal interface grease NOT applied properly on the heat sink.

- 3 Check if heat sink plate is correctly fixed with screws.

Possible cause: Heat sink plate not correctly installed.

- 4 Check ambient temperature. Check if outdoor unit location temperature differs drastically.

- 5 Check if there is discharge air by-pass on installation location.

Possible cause: External noise. Check further on how to eliminate external factors.

- 6 Clean the outdoor heat exchanger. See "[7 Maintenance](#)" [▶ 376].

Possible cause: Dirty outdoor heat exchanger.

- 7 Perform a check of the fan inverter PCB. See "[4.14 Fan inverter PCB](#)" [▶ 212].

Possible cause: Faulty fan inverter PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C117-72 & C217-72 – Fan motor current overload / overcurrent / abnormality

Trigger	Effect	Reset
Overcurrent or inverter current abnormality detected by fan inverter PCB.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check if the power supply is compliant with the regulations. See "[6.1 Electrical circuit](#)" [▶ 347].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 3\%$),
- Power drop,
- Short circuit.

- 2 Perform a check of the fan inverter PCB. See "[4.14 Fan inverter PCB](#)" [▶ 212].

Possible cause: Faulty fan inverter PCB.

- 3 Perform a check of the inverter PCB. See "[4.17 Inverter PCB](#)" [▶ 229].

Possible cause: Faulty inverter PCB.

- 4 Perform a check of the noise filter PCB. See "[4.20 Noise filter PCB](#)" [▶ 248].

Possible cause: Faulty noise filter PCB.

- 5 Perform a check of the outdoor unit fan motor. See "[4.22 Outdoor unit fan motor](#)" [▶ 258].

Possible cause: Faulty outdoor unit fan motor.

- 6 Perform a check of the main PCB. See "[4.18 Main PCB](#)" [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C117-75 & C217-75 – IPM error - circuit error detected during waveform output

Trigger	Effect	Reset
Abnormal signal received from outdoor unit fan motor.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the outdoor unit fan motor. See ["4.22 Outdoor unit fan motor"](#) [▶ 258].

Possible cause: Faulty outdoor unit fan motor.

- 2 Perform a check of the fan inverter PCB. See ["4.14 Fan inverter PCB"](#) [▶ 212].

Possible cause: Faulty fan inverter PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C117-86 & C217-86 – Current detecting circuit offset value

Trigger	Effect	Reset
Abnormal signal received from outdoor unit fan motor.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the outdoor unit fan motor. See ["4.22 Outdoor unit fan motor"](#) [▶ 258].

Possible cause: Faulty outdoor unit fan motor.

- 2 Perform a check of the fan inverter PCB. See ["4.14 Fan inverter PCB"](#) [▶ 212].

Possible cause: Faulty fan inverter PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C117-88 & C217-88 – Gate driving circuit failure

Trigger	Effect	Reset
Abnormal signal received from outdoor unit fan motor.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the outdoor unit fan motor. See ["4.22 Outdoor unit fan motor"](#) [▶ 258].

Possible cause: Faulty outdoor unit fan motor.

- 2 Perform a check of the fan inverter PCB. See ["4.14 Fan inverter PCB"](#) [▶ 212].

Possible cause: Faulty fan inverter PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C117-90 & C217-90 – Model setting error

Trigger	Effect	Reset
Main PCB does NOT recognize the fan inverter PCB.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check that the unit type settings [14.xx] are set correctly. See ["9.8 Field settings"](#) [▶ 442].

Possible cause: Software update failed or incorrect unit type settings.

- 2 Check if the correct spare part is installed for the fan inverter PCB. See ["4.14 Fan inverter PCB"](#) [▶ 212].

Possible cause: Incorrect spare part fan inverter PCB.

- 3 Check if correct software and settings are installed on the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Incorrect software or settings installed on main PCB.

- 4 Perform a check of the ACS digital I/O PCB. See ["4.4 ACS digital I/O PCB"](#) [▶ 139].

Possible cause: Faulty ACS digital I/O PCB.

- 5 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

- 6 Perform a check of the fan inverter PCB. See ["4.14 Fan inverter PCB"](#) [▶ 212].

Possible cause: Faulty fan inverter PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C117-91 & C217-91 – EEPROM failure error

Trigger	Effect	Reset
Abnormal signal received from outdoor unit fan motor.	Circuit will stop operating.	Reset via user interface.
		Reset on network.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the outdoor unit fan motor. See ["4.22 Outdoor unit fan motor"](#) [▶ 258].

Possible cause: Faulty outdoor unit fan motor.

- 2 Perform a check of the fan inverter PCB. See ["4.14 Fan inverter PCB"](#) [▶ 212].

Possible cause: Faulty fan inverter PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C119 & C219 – Low discharge superheat alarm

Trigger	Effect	Reset
The unit has worked for too long with low discharge super heat.	Circuit will stop operating.	Reset via user interface (when it happens for the 3rd time).
		Reset on network (when it happens for the 3rd time)..
		Auto reset (first 2 times when discharge superheat is above 5°C).

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a software update. See ["2 General operation"](#) [▶ 16].
Possible cause: Outdated software version installed.
- 2 Check the main water supply and pressure of the installation. See ["6.3 Water circuit"](#) [▶ 361].
Possible cause: Main water supply or pressure outside expected range.
- 3 Check the water flow. See ["6.3 Water circuit"](#) [▶ 361].
Possible cause: Water flow is too low.
- 4 Check the required space around the outdoor unit heat exchanger. See ["6.5 External factors"](#) [▶ 375].

Possible cause: Insufficient air flow or air by-pass due to required space specifications not met.

- 5 Perform a check of the expansion valve. See ["4.13 Expansion valve"](#) [▶ 203].

Possible cause: Faulty expansion valve.

- 6 Perform a check of the discharge pipe and suction thermistors. See ["4.29 Thermistors"](#) [▶ 301].

Possible cause: Faulty thermistor is causing bad readings and as a consequence bad operation of the expansion valve.

- 7 Perform a check of the refrigerant high pressure sensor. See ["4.26 Refrigerant high pressure sensor"](#) [▶ 279].

Possible cause: Faulty refrigerant high pressure sensor.

- 8 Perform a check of the refrigerant low pressure sensor. See ["4.27 Refrigerant low pressure sensor"](#) [▶ 287].

Possible cause: Faulty refrigerant low pressure sensor.

- 9 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

- 10 Check that the check valve is working properly and is NOT blocking the pass.

Possible cause: Faulty check valve.

- 11 Check if correct software is installed on the main PCB and update as needed. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Incorrect software installed on main PCB.

- 12 Perform a check of the outdoor unit fan motor. See ["4.22 Outdoor unit fan motor"](#) [▶ 258].

Possible cause: Faulty outdoor unit fan motor.

- 13 Check if the refrigerant circuit is correctly charged. See ["6.2 Refrigerant circuit"](#) [▶ 350].

Possible cause: Refrigerant overcharge.

- 14 Perform a check of the compressor. See ["4.6 Compressor"](#) [▶ 147].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C120 & C220 – Mechanical high pressure alarm

Trigger	Effect	Reset
Condenser pressure rises above the mechanical high pressure limit.	Circuit will stop operating.	Auto reset (first 2 times when Condensing Saturated Temperature is below 65°C).
		Reset via user interface (when it happens for the 3rd time).
		Reset on network (when it happens for the 3rd time).

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- Check ambient conditions of the unit. See operation limits in the Databook.
 - If ambient temperature is higher than the maximum allowed temperature, perform a reset of the unit.
 - If ambient temperature is near the maximum allowed temperature, calibrate the outdoor air thermistor. See ["4.29 Thermistors"](#) [▶ 301].
 - If ambient temperature is lower than the maximum allowed temperature, continue as described below.

Possible cause: Operation at too high temperature might lead to pressure errors.
- Perform a check of the outdoor unit fan motor. See ["4.22 Outdoor unit fan motor"](#) [▶ 258].

Possible cause: Faulty outdoor unit fan motor.
- Clean the outdoor heat exchanger. See ["7 Maintenance"](#) [▶ 376].

Possible cause: Dirty outdoor heat exchanger.
- Check ambient temperature. Check if outdoor unit location temperature differs drastically.
- Check if there is discharge air by-pass on installation location.

Possible cause: External noise. Check further on how to eliminate external factors.
- Perform a check of the refrigerant high pressure sensor. See ["4.26 Refrigerant high pressure sensor"](#) [▶ 279].

Possible cause: Faulty refrigerant high pressure sensor.
- Perform a check of the high pressure switch. See ["4.16 High pressure switch"](#) [▶ 224].

Possible cause: Faulty high pressure switch.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C121 & C221 – Economizer pressure sensor not detected

Trigger	Effect	Reset
Economizer pressure sensor is NOT operating correctly.	Circuit will stop operating.	Reset via user interface.
		Reset on network.
		Auto reset 10 seconds after trigger was cleared.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the economizer pressure sensor. See ["4.11 Economizer refrigerant pressure sensor"](#) [▶ 184].

Possible cause: Faulty economizer pressure sensor.

- 2 Perform a check of the economizer extension I/O module. See ["4.10 Economizer extension I/O module"](#) [▶ 179].

Possible cause: Faulty economizer extension I/O module.

- 3 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.6 Circuit Pumpdown Stop Alarms

**INFORMATION**

Error codes C1xx are applicable for the main circuit. Error codes C2xx are applicable for the secondary circuit.

C113 & C213 – Suction temperature sensor alarm

Trigger	Effect	Reset
Suction pipe thermistor is NOT operating correctly and outside range.	Circuit will stop operating following normal pumpdown procedure.	Reset via user interface.
		Reset on network.
		Auto reset 10 seconds after trigger was cleared.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the suction pipe thermistor. See ["4.29 Thermistors"](#) [▶ 301].

Possible cause: Faulty suction pipe thermistor or connector fault.

- 2 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C114 & C214 – Discharge temperature sensor alarm

Trigger	Effect	Reset
Discharge pipe thermistor is NOT operating correctly.	Circuit will stop operating following normal pumpdown procedure.	Reset via user interface.
		Reset on network.
		Auto reset 10 seconds after trigger was cleared.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the discharge pipe thermistor. See ["4.29 Thermistors"](#) [▶ 301].

Possible cause: Faulty discharge pipe thermistor or connector fault.

- 2 Perform a check of the main PCB. See ["4.18 Main PCB"](#) [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

C122 & C222 – Economizer temperature sensor not detected

Trigger	Effect	Reset
Economizer thermistor is NOT operating correctly and outside range.	Circuit will stop operating.	Reset via user interface.
		Reset on network.
		Auto reset 10 seconds after trigger was cleared.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Perform a check of the economizer thermistor. See ["4.29 Thermistors"](#) [▶ 301].

Possible cause: Faulty economizer thermistor.

- 2 Perform a check of the economizer pressure sensor. See ["4.11 Economizer refrigerant pressure sensor"](#) [▶ 184].

Possible cause: Faulty economizer pressure sensor.

- 3 Perform a check of the economizer extension I/O module. See ["4.10 Economizer extension I/O module"](#) [▶ 179].

Possible cause: Faulty economizer extension I/O module.

- 4 Perform a check of the main PCB. See "4.18 Main PCB" [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.7 Other errors

ErrC – Communication error

Trigger	Effect	Reset
Incompatible main PCB detected.	Unit will NOT start.	Auto reset when compatible main PCB is detected.
Communication error with HMI.		

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Disconnect the user interface and connect the service monitoring tool to the unit.
 - If the main menu list is shown on the service monitoring tool, re-install the user interface and make sure settings are correct. See "2.3 To switch between user interface and service monitoring tool" [▶ 24].

Possible cause: Incorrect setting on user interface or service monitoring tool.
 - If the main menu list is NOT shown on the service monitoring tool, continue with the next step.
- 2 Check via the user interface that the following parameters are set correctly:

Parameter	Value
Addr: Address	247
Lin: Timeout no communication	60
Butt: timeout	5
StoP: Modbus stop bits	1 bit
PAr: Parity	EVEn
Baud: Baud rate	57.6 (57600 bps)

- Keep the SET button pressed (7~8 seconds) until Addr is shown on the screen of the user interface.
- Scroll to select the appropriate parameter and press the SET button (parameter value starts flashing = editable).
- Set the desired value and press the SET button to confirm.
- Restart the user interface by turning the power OFF and then ON again via the main switch, or by disconnecting/connecting the user interface cable or main PCB side cable.

Possible cause: Incorrect parameter setting.

- 3 Check the communication wiring between the user interface and the unit PCB. See "4.30 User interface" [▶ 316].

Possible cause: Faulty wiring between the user interface and the unit PCB.

- 4 Check if the correct spare part is installed for the main PCB. See "4.18 Main PCB" [▶ 236].

Possible cause: Incorrect spare part main PCB.

- 5 Check if correct software is installed on the main PCB and update as needed. See "4.18 Main PCB" [▶ 236].

Possible cause: Incorrect software installed on main PCB.

- 6 Perform a check of the main PCB. See "4.18 Main PCB" [▶ 236].

Possible cause: Faulty main PCB.



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.8 Master/slave errors

In case master/slave error(s) are retrieved via the user interface page [16.16], see "3.1 To retrieve error codes and check error history" [▶ 35]:

A (decimal) number code is shown on the user interface display. This decimal number code corresponds to a 9 digit binary code. Each digit can be "0" or "1" and each digit (if displayed as "1") corresponds to a specific active master/slave error as shown in the table below.

User interface (HMI)		Master/slave error								
Decimal	Binary Bits value (NOT displayed)	Master Missing	Slave 3 Missing	Slave 2 Missing	Slave 1 Missing	Slave 3 Communication Error	Slave 2 Communication Error	Slave 1 Communication Error	Master Communication Error	Common LWT Alarm
0	00000000	-	-	-	-	-	-	-	-	-
1	00000001	-	-	-	-	-	-	-	-	Active
2	00000010	-	-	-	-	-	-	-	Active	-
3	00000011	-	-	-	-	-	-	-	Active	Active
4	00000100	-	-	-	-	-	-	Active	-	-
5	00000101	-	-	-	-	-	-	Active	-	Active
6	00000110	-	-	-	-	-	-	Active	Active	-
7	00000111	-	-	-	-	-	-	Active	Active	Active
8	00001000	-	-	-	-	-	Active	-	-	-
9	00001001	-	-	-	-	-	Active	-	-	Active
10	00001010	-	-	-	-	-	Active	-	Active	-
11	00001011	-	-	-	-	-	Active	-	Active	Active
12	00001100	-	-	-	-	-	Active	Active	-	-
13	00001101	-	-	-	-	-	Active	Active	-	Active

User interface (HMI)		Master/slave error								
Decimal	Binary Bits value (NOT displayed)	Master Missing	Slave 3 Missing	Slave 2 Missing	Slave 1 Missing	Slave 3 Communication Error	Slave 2 Communication Error	Slave 1 Communication Error	Master Communication Error	Common LWT Alarm
14	000001110	-	-	-	-	-	Active	Active	Active	-
15	000001111	-	-	-	-	-	Active	Active	Active	Active
16	000010000	-	-	-	-	Active	-	-	-	-
17	000010001	-	-	-	-	Active	-	-	-	Active
18	000010010	-	-	-	-	Active	-	-	Active	-
19	000010011	-	-	-	-	Active	-	-	Active	Active
20	000010100	-	-	-	-	Active	-	Active	-	-
21	000010101	-	-	-	-	Active	-	Active	-	Active
22	000010110	-	-	-	-	Active	-	Active	Active	-
23	000010111	-	-	-	-	Active	-	Active	Active	Active
24	000011000	-	-	-	-	Active	Active	-	-	-
25	000011001	-	-	-	-	Active	Active	-	-	Active
26	000011010	-	-	-	-	Active	Active	-	Active	-
27	000011011	-	-	-	-	Active	Active	-	Active	Active
28	000011100	-	-	-	-	Active	Active	Active	-	-
29	000011101	-	-	-	-	Active	Active	Active	-	Active
30	000011110	-	-	-	-	Active	Active	Active	Active	-
31	000011111	-	-	-	-	Active	Active	Active	Active	Active
32	000100000	-	-	-	Active	-	-	-	-	-
33	000100001	-	-	-	Active	-	-	-	-	Active
34	000100010	-	-	-	Active	-	-	-	Active	-
35	000100011	-	-	-	Active	-	-	-	Active	Active
36	000100100	-	-	-	Active	-	-	Active	-	-
37	000100101	-	-	-	Active	-	-	Active	-	Active
38	000100110	-	-	-	Active	-	-	Active	Active	-
39	000100111	-	-	-	Active	-	-	Active	Active	Active
40	000101000	-	-	-	Active	-	Active	-	-	-
41	000101001	-	-	-	Active	-	Active	-	-	Active
42	000101010	-	-	-	Active	-	Active	-	Active	-
43	000101011	-	-	-	Active	-	Active	-	Active	Active
44	000101100	-	-	-	Active	-	Active	Active	-	-
45	000101101	-	-	-	Active	-	Active	Active	-	Active
46	000101110	-	-	-	Active	-	Active	Active	Active	-
47	000101111	-	-	-	Active	-	Active	Active	Active	Active
48	000110000	-	-	-	Active	Active	-	-	-	-
49	000110001	-	-	-	Active	Active	-	-	-	Active
50	000110010	-	-	-	Active	Active	-	-	Active	-
51	000110011	-	-	-	Active	Active	-	-	Active	Active
52	000110100	-	-	-	Active	Active	-	Active	-	-
53	000110101	-	-	-	Active	Active	-	Active	-	Active
54	000110110	-	-	-	Active	Active	-	Active	Active	-
55	000110111	-	-	-	Active	Active	-	Active	Active	Active
56	000111000	-	-	-	Active	Active	Active	-	-	-
57	000111001	-	-	-	Active	Active	Active	-	-	Active
58	000111010	-	-	-	Active	Active	Active	-	Active	-
59	000111011	-	-	-	Active	Active	Active	-	Active	Active
60	000111100	-	-	-	Active	Active	Active	Active	-	-
61	000111101	-	-	-	Active	Active	Active	Active	-	Active
62	000111110	-	-	-	Active	Active	Active	Active	Active	-
63	000111111	-	-	-	Active	Active	Active	Active	Active	Active

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User interface (HMI)		Master/slave error								
Decimal	Binary Bits value (NOT displayed)	Master Missing	Slave 3 Missing	Slave 2 Missing	Slave 1 Missing	Slave 3 Communication Error	Slave 2 Communication Error	Slave 1 Communication Error	Master Communication Error	Common LWT Alarm
64	001000000	-	-	Active	-	-	-	-	-	-
65	001000001	-	-	Active	-	-	-	-	-	Active
66	001000010	-	-	Active	-	-	-	-	Active	-
67	001000011	-	-	Active	-	-	-	-	Active	Active
68	001000100	-	-	Active	-	-	-	Active	-	-
69	001000101	-	-	Active	-	-	-	Active	-	Active
70	001000110	-	-	Active	-	-	-	Active	Active	-
71	001000111	-	-	Active	-	-	-	Active	Active	Active
72	001001000	-	-	Active	-	-	Active	-	-	-
73	001001001	-	-	Active	-	-	Active	-	-	Active
74	001001010	-	-	Active	-	-	Active	-	Active	-
75	001001011	-	-	Active	-	-	Active	-	Active	Active
76	001001100	-	-	Active	-	-	Active	Active	-	-
77	001001101	-	-	Active	-	-	Active	Active	-	Active
78	001001110	-	-	Active	-	-	Active	Active	Active	-
79	001001111	-	-	Active	-	-	Active	Active	Active	Active
80	001010000	-	-	Active	-	Active	-	-	-	-
81	001010001	-	-	Active	-	Active	-	-	-	Active
82	001010010	-	-	Active	-	Active	-	-	Active	-
83	001010011	-	-	Active	-	Active	-	-	Active	Active
84	001010100	-	-	Active	-	Active	-	Active	-	-
85	001010101	-	-	Active	-	Active	-	Active	-	Active
86	001010110	-	-	Active	-	Active	-	Active	Active	-
87	001010111	-	-	Active	-	Active	-	Active	Active	Active
88	001011000	-	-	Active	-	Active	Active	-	-	-
89	001011001	-	-	Active	-	Active	Active	-	-	Active
90	001011010	-	-	Active	-	Active	Active	-	Active	-
91	001011011	-	-	Active	-	Active	Active	-	Active	Active
92	001011100	-	-	Active	-	Active	Active	Active	-	-
93	001011101	-	-	Active	-	Active	Active	Active	-	Active
94	001011110	-	-	Active	-	Active	Active	Active	Active	-
95	001011111	-	-	Active	-	Active	Active	Active	Active	Active
96	001100000	-	-	Active	Active	-	-	-	-	-
97	001100001	-	-	Active	Active	-	-	-	-	Active
98	001100010	-	-	Active	Active	-	-	-	Active	-
99	001100011	-	-	Active	Active	-	-	-	Active	Active
100	001100100	-	-	Active	Active	-	-	Active	-	-
101	001100101	-	-	Active	Active	-	-	Active	-	Active
102	001100110	-	-	Active	Active	-	-	Active	Active	-
103	001100111	-	-	Active	Active	-	-	Active	Active	Active
104	001101000	-	-	Active	Active	-	Active	-	-	-
105	001101001	-	-	Active	Active	-	Active	-	-	Active
106	001101010	-	-	Active	Active	-	Active	-	Active	-
107	001101011	-	-	Active	Active	-	Active	-	Active	Active
108	001101100	-	-	Active	Active	-	Active	Active	-	-
109	001101101	-	-	Active	Active	-	Active	Active	-	Active
110	001101110	-	-	Active	Active	-	Active	Active	Active	-
111	001101111	-	-	Active	Active	-	Active	Active	Active	Active
112	001110000	-	-	Active	Active	Active	-	-	-	-
113	001110001	-	-	Active	Active	Active	-	-	-	Active

User interface (HMI)		Master/slave error								
Decimal	Binary Bits value (NOT displayed)	Master Missing	Slave 3 Missing	Slave 2 Missing	Slave 1 Missing	Slave 3 Communication Error	Slave 2 Communication Error	Slave 1 Communication Error	Master Communication Error	Common LWT Alarm
114	001110010	-	-	Active	Active	Active	-	-	Active	-
115	001110011	-	-	Active	Active	Active	-	-	Active	Active
116	001110100	-	-	Active	Active	Active	-	Active	-	-
117	001110101	-	-	Active	Active	Active	-	Active	-	Active
118	001110110	-	-	Active	Active	Active	-	Active	Active	-
119	001110111	-	-	Active	Active	Active	-	Active	Active	Active
120	001111000	-	-	Active	Active	Active	Active	-	-	-
121	001111001	-	-	Active	Active	Active	Active	-	-	Active
122	001111010	-	-	Active	Active	Active	Active	-	Active	-
123	001111011	-	-	Active	Active	Active	Active	-	Active	Active
124	001111100	-	-	Active	Active	Active	Active	Active	-	-
125	001111101	-	-	Active	Active	Active	Active	Active	-	Active
126	001111110	-	-	Active	Active	Active	Active	Active	Active	-
127	001111111	-	-	Active	Active	Active	Active	Active	Active	Active
128	010000000	-	Active	-	-	-	-	-	-	-
129	010000001	-	Active	-	-	-	-	-	-	Active
130	010000010	-	Active	-	-	-	-	-	Active	-
131	010000011	-	Active	-	-	-	-	-	Active	Active
132	010000100	-	Active	-	-	-	-	Active	-	-
133	010000101	-	Active	-	-	-	-	Active	-	Active
134	010000110	-	Active	-	-	-	-	Active	Active	-
135	010000111	-	Active	-	-	-	-	Active	Active	Active
136	010001000	-	Active	-	-	-	Active	-	-	-
137	010001001	-	Active	-	-	-	Active	-	-	Active
138	010001010	-	Active	-	-	-	Active	-	Active	-
139	010001011	-	Active	-	-	-	Active	-	Active	Active
140	010001100	-	Active	-	-	-	Active	Active	-	-
141	010001101	-	Active	-	-	-	Active	Active	-	Active
142	010001110	-	Active	-	-	-	Active	Active	Active	-
143	010001111	-	Active	-	-	-	Active	Active	Active	Active
144	010010000	-	Active	-	-	Active	-	-	-	-
145	010010001	-	Active	-	-	Active	-	-	-	Active
146	010010010	-	Active	-	-	Active	-	-	Active	-
147	010010011	-	Active	-	-	Active	-	-	Active	Active
148	010010100	-	Active	-	-	Active	-	Active	-	-
149	010010101	-	Active	-	-	Active	-	Active	-	Active
150	010010110	-	Active	-	-	Active	-	Active	Active	-
151	010010111	-	Active	-	-	Active	-	Active	Active	Active
152	010011000	-	Active	-	-	Active	Active	-	-	-
153	010011001	-	Active	-	-	Active	Active	-	-	Active
154	010011010	-	Active	-	-	Active	Active	-	Active	-
155	010011011	-	Active	-	-	Active	Active	-	Active	Active
156	010011100	-	Active	-	-	Active	Active	Active	-	-
157	010011101	-	Active	-	-	Active	Active	Active	-	Active
158	010011110	-	Active	-	-	Active	Active	Active	Active	-
159	010011111	-	Active	-	-	Active	Active	Active	Active	Active
160	010100000	-	Active	-	Active	-	-	-	-	-
161	010100001	-	Active	-	Active	-	-	-	-	Active
162	010100010	-	Active	-	Active	-	-	-	Active	-
163	010100011	-	Active	-	Active	-	-	-	Active	Active

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User interface (HMI)		Master/slave error								
Decimal	Binary Bits value (NOT displayed)	Master Missing	Slave 3 Missing	Slave 2 Missing	Slave 1 Missing	Slave 3 Communication Error	Slave 2 Communication Error	Slave 1 Communication Error	Master Communication Error	Common LWT Alarm
164	010100100	-	Active	-	Active	-	-	Active	-	-
165	010100101	-	Active	-	Active	-	-	Active	-	Active
166	010100110	-	Active	-	Active	-	-	Active	Active	-
167	010100111	-	Active	-	Active	-	-	Active	Active	Active
168	010101000	-	Active	-	Active	-	Active	-	-	-
169	010101001	-	Active	-	Active	-	Active	-	-	Active
170	010101010	-	Active	-	Active	-	Active	-	Active	-
171	010101011	-	Active	-	Active	-	Active	-	Active	Active
172	010101100	-	Active	-	Active	-	Active	Active	-	-
173	010101101	-	Active	-	Active	-	Active	Active	-	Active
174	010101110	-	Active	-	Active	-	Active	Active	Active	-
175	010101111	-	Active	-	Active	-	Active	Active	Active	Active
176	010110000	-	Active	-	Active	Active	-	-	-	-
177	010110001	-	Active	-	Active	Active	-	-	-	Active
178	010110010	-	Active	-	Active	Active	-	-	Active	-
179	010110011	-	Active	-	Active	Active	-	-	Active	Active
180	010110100	-	Active	-	Active	Active	-	Active	-	-
181	010110101	-	Active	-	Active	Active	-	Active	-	Active
182	010110110	-	Active	-	Active	Active	-	Active	Active	-
183	010110111	-	Active	-	Active	Active	-	Active	Active	Active
184	010111000	-	Active	-	Active	Active	Active	-	-	-
185	010111001	-	Active	-	Active	Active	Active	-	-	Active
186	010111010	-	Active	-	Active	Active	Active	-	Active	-
187	010111011	-	Active	-	Active	Active	Active	-	Active	Active
188	010111100	-	Active	-	Active	Active	Active	Active	-	-
189	010111101	-	Active	-	Active	Active	Active	Active	-	Active
190	010111110	-	Active	-	Active	Active	Active	Active	Active	-
191	010111111	-	Active	-	Active	Active	Active	Active	Active	Active
192	011000000	-	Active	Active	-	-	-	-	-	-
193	011000001	-	Active	Active	-	-	-	-	-	Active
194	011000010	-	Active	Active	-	-	-	-	Active	-
195	011000011	-	Active	Active	-	-	-	-	Active	Active
196	011000100	-	Active	Active	-	-	-	Active	-	-
197	011000101	-	Active	Active	-	-	-	Active	-	Active
198	011000110	-	Active	Active	-	-	-	Active	Active	-
199	011000111	-	Active	Active	-	-	-	Active	Active	Active
200	011001000	-	Active	Active	-	-	Active	-	-	-
201	011001001	-	Active	Active	-	-	Active	-	-	Active
202	011001010	-	Active	Active	-	-	Active	-	Active	-
203	011001011	-	Active	Active	-	-	Active	-	Active	Active
204	011001100	-	Active	Active	-	-	Active	Active	-	-
205	011001101	-	Active	Active	-	-	Active	Active	-	Active
206	011001110	-	Active	Active	-	-	Active	Active	Active	-
207	011001111	-	Active	Active	-	-	Active	Active	Active	Active
208	011010000	-	Active	Active	-	Active	-	-	-	-
209	011010001	-	Active	Active	-	Active	-	-	-	Active
210	011010010	-	Active	Active	-	Active	-	-	Active	-
211	011010011	-	Active	Active	-	Active	-	-	Active	Active
212	011010100	-	Active	Active	-	Active	-	Active	-	-
213	011010101	-	Active	Active	-	Active	-	Active	-	Active

User interface (HMI)		Master/slave error								
Decimal	Binary Bits value (NOT displayed)	Master Missing	Slave 3 Missing	Slave 2 Missing	Slave 1 Missing	Slave 3 Communication Error	Slave 2 Communication Error	Slave 1 Communication Error	Master Communication Error	Common LWT Alarm
214	011010110	-	Active	Active	-	Active	-	Active	Active	-
215	011010111	-	Active	Active	-	Active	-	Active	Active	Active
216	011011000	-	Active	Active	-	Active	Active	-	-	-
217	011011001	-	Active	Active	-	Active	Active	-	-	Active
218	011011010	-	Active	Active	-	Active	Active	-	Active	-
219	011011011	-	Active	Active	-	Active	Active	-	Active	Active
220	011011100	-	Active	Active	-	Active	Active	Active	-	-
221	011011101	-	Active	Active	-	Active	Active	Active	-	Active
222	011011110	-	Active	Active	-	Active	Active	Active	Active	-
223	011011111	-	Active	Active	-	Active	Active	Active	Active	Active
224	011100000	-	Active	Active	Active	-	-	-	-	-
225	011100001	-	Active	Active	Active	-	-	-	-	Active
226	011100010	-	Active	Active	Active	-	-	-	Active	-
227	011100011	-	Active	Active	Active	-	-	-	Active	Active
228	011100100	-	Active	Active	Active	-	-	Active	-	-
229	011100101	-	Active	Active	Active	-	-	Active	-	Active
230	011100110	-	Active	Active	Active	-	-	Active	Active	-
231	011100111	-	Active	Active	Active	-	-	Active	Active	Active
232	011101000	-	Active	Active	Active	-	Active	-	-	-
233	011101001	-	Active	Active	Active	-	Active	-	-	Active
234	011101010	-	Active	Active	Active	-	Active	-	Active	-
235	011101011	-	Active	Active	Active	-	Active	-	Active	Active
236	011101100	-	Active	Active	Active	-	Active	Active	-	-
237	011101101	-	Active	Active	Active	-	Active	Active	-	Active
238	011101110	-	Active	Active	Active	-	Active	Active	Active	-
239	011101111	-	Active	Active	Active	-	Active	Active	Active	Active
240	011110000	-	Active	Active	Active	Active	-	-	-	-
241	011110001	-	Active	Active	Active	Active	-	-	-	Active
242	011110010	-	Active	Active	Active	Active	-	-	Active	-
243	011110011	-	Active	Active	Active	Active	-	-	Active	Active
244	011110100	-	Active	Active	Active	Active	-	Active	-	-
245	011110101	-	Active	Active	Active	Active	-	Active	-	Active
246	011110110	-	Active	Active	Active	Active	-	Active	Active	-
247	011110111	-	Active	Active	Active	Active	-	Active	Active	Active
248	011111000	-	Active	Active	Active	Active	Active	-	-	-
249	011111001	-	Active	Active	Active	Active	Active	-	-	Active
250	011111010	-	Active	Active	Active	Active	Active	-	Active	-
251	011111011	-	Active	Active	Active	Active	Active	-	Active	Active
252	011111100	-	Active	Active	Active	Active	Active	Active	-	-
253	011111101	-	Active	Active	Active	Active	Active	Active	-	Active
254	011111110	-	Active	Active	Active	Active	Active	Active	Active	-
255	011111111	-	Active	Active	Active	Active	Active	Active	Active	Active
256	100000000	Active	-	-	-	-	-	-	-	-
257	100000001	Active	-	-	-	-	-	-	-	Active
258	100000010	Active	-	-	-	-	-	-	Active	-
259	100000011	Active	-	-	-	-	-	-	Active	Active
260	100000100	Active	-	-	-	-	-	Active	-	-
261	100000101	Active	-	-	-	-	-	Active	-	Active
262	100000110	Active	-	-	-	-	-	Active	Active	-
263	100000111	Active	-	-	-	-	-	Active	Active	Active

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User interface (HMI)		Master/slave error								
Decimal	Binary Bits value (NOT displayed)	Master Missing	Slave 3 Missing	Slave 2 Missing	Slave 1 Missing	Slave 3 Communication Error	Slave 2 Communication Error	Slave 1 Communication Error	Master Communication Error	Common LWT Alarm
264	100001000	Active	-	-	-	-	Active	-	-	-
265	100001001	Active	-	-	-	-	Active	-	-	Active
266	100001010	Active	-	-	-	-	Active	-	Active	-
267	100001011	Active	-	-	-	-	Active	-	Active	Active
268	100001100	Active	-	-	-	-	Active	Active	-	-
269	100001101	Active	-	-	-	-	Active	Active	-	Active
270	100001110	Active	-	-	-	-	Active	Active	Active	-
271	100001111	Active	-	-	-	-	Active	Active	Active	Active
272	100010000	Active	-	-	-	Active	-	-	-	-
273	100010001	Active	-	-	-	Active	-	-	-	Active
274	100010010	Active	-	-	-	Active	-	-	Active	-
275	100010011	Active	-	-	-	Active	-	-	Active	Active
276	100010100	Active	-	-	-	Active	-	Active	-	-
277	100010101	Active	-	-	-	Active	-	Active	-	Active
278	100010110	Active	-	-	-	Active	-	Active	Active	-
279	100010111	Active	-	-	-	Active	-	Active	Active	Active
280	100011000	Active	-	-	-	Active	Active	-	-	-
281	100011001	Active	-	-	-	Active	Active	-	-	Active
282	100011010	Active	-	-	-	Active	Active	-	Active	-
283	100011011	Active	-	-	-	Active	Active	-	Active	Active
284	100011100	Active	-	-	-	Active	Active	Active	-	-
285	100011101	Active	-	-	-	Active	Active	Active	-	Active
286	100011110	Active	-	-	-	Active	Active	Active	Active	-
287	100011111	Active	-	-	-	Active	Active	Active	Active	Active
288	100100000	Active	-	-	Active	-	-	-	-	-
289	100100001	Active	-	-	Active	-	-	-	-	Active
290	100100010	Active	-	-	Active	-	-	-	Active	-
291	100100011	Active	-	-	Active	-	-	-	Active	Active
292	100100100	Active	-	-	Active	-	-	Active	-	-
293	100100101	Active	-	-	Active	-	-	Active	-	Active
294	100100110	Active	-	-	Active	-	-	Active	Active	-
295	100100111	Active	-	-	Active	-	-	Active	Active	Active
296	100101000	Active	-	-	Active	-	Active	-	-	-
297	100101001	Active	-	-	Active	-	Active	-	-	Active
298	100101010	Active	-	-	Active	-	Active	-	Active	-
299	100101011	Active	-	-	Active	-	Active	-	Active	Active
300	100101100	Active	-	-	Active	-	Active	Active	-	-
301	100101101	Active	-	-	Active	-	Active	Active	-	Active
302	100101110	Active	-	-	Active	-	Active	Active	Active	-
303	100101111	Active	-	-	Active	-	Active	Active	Active	Active
304	100110000	Active	-	-	Active	Active	-	-	-	-
305	100110001	Active	-	-	Active	Active	-	-	-	Active
306	100110010	Active	-	-	Active	Active	-	-	Active	-
307	100110011	Active	-	-	Active	Active	-	-	Active	Active
308	100110100	Active	-	-	Active	Active	-	Active	-	-
309	100110101	Active	-	-	Active	Active	-	Active	-	Active
310	100110110	Active	-	-	Active	Active	-	Active	Active	-
311	100110111	Active	-	-	Active	Active	-	Active	Active	Active
312	100111000	Active	-	-	Active	Active	Active	-	-	-
313	100111001	Active	-	-	Active	Active	Active	-	-	Active

User interface (HMI)		Master/slave error								
Decimal	Binary Bits value (NOT displayed)	Master Missing	Slave 3 Missing	Slave 2 Missing	Slave 1 Missing	Slave 3 Communication Error	Slave 2 Communication Error	Slave 1 Communication Error	Master Communication Error	Common LWT Alarm
314	100111010	Active	-	-	Active	Active	Active	-	Active	-
315	100111011	Active	-	-	Active	Active	Active	-	Active	Active
316	100111100	Active	-	-	Active	Active	Active	Active	-	-
317	100111101	Active	-	-	Active	Active	Active	Active	-	Active
318	100111110	Active	-	-	Active	Active	Active	Active	Active	-
319	100111111	Active	-	-	Active	Active	Active	Active	Active	Active
320	101000000	Active	-	Active	-	-	-	-	-	-
321	101000001	Active	-	Active	-	-	-	-	-	Active
322	101000010	Active	-	Active	-	-	-	-	Active	-
323	101000011	Active	-	Active	-	-	-	-	Active	Active
324	101000100	Active	-	Active	-	-	-	Active	-	-
325	101000101	Active	-	Active	-	-	-	Active	-	Active
326	101000110	Active	-	Active	-	-	-	Active	Active	-
327	101000111	Active	-	Active	-	-	-	Active	Active	Active
328	101001000	Active	-	Active	-	-	Active	-	-	-
329	101001001	Active	-	Active	-	-	Active	-	-	Active
330	101001010	Active	-	Active	-	-	Active	-	Active	-
331	101001011	Active	-	Active	-	-	Active	-	Active	Active
332	101001100	Active	-	Active	-	-	Active	Active	-	-
333	101001101	Active	-	Active	-	-	Active	Active	-	Active
334	101001110	Active	-	Active	-	-	Active	Active	Active	-
335	101001111	Active	-	Active	-	-	Active	Active	Active	Active
336	101010000	Active	-	Active	-	Active	-	-	-	-
337	101010001	Active	-	Active	-	Active	-	-	-	Active
338	101010010	Active	-	Active	-	Active	-	-	Active	-
339	101010011	Active	-	Active	-	Active	-	-	Active	Active
340	101010100	Active	-	Active	-	Active	-	Active	-	-
341	101010101	Active	-	Active	-	Active	-	Active	-	Active
342	101010110	Active	-	Active	-	Active	-	Active	Active	-
343	101010111	Active	-	Active	-	Active	-	Active	Active	Active
344	101011000	Active	-	Active	-	Active	Active	-	-	-
345	101011001	Active	-	Active	-	Active	Active	-	-	Active
346	101011010	Active	-	Active	-	Active	Active	-	Active	-
347	101011011	Active	-	Active	-	Active	Active	-	Active	Active
348	101011100	Active	-	Active	-	Active	Active	Active	-	-
349	101011101	Active	-	Active	-	Active	Active	Active	-	Active
350	101011110	Active	-	Active	-	Active	Active	Active	Active	-
351	101011111	Active	-	Active	-	Active	Active	Active	Active	Active
352	101100000	Active	-	Active	Active	-	-	-	-	-
353	101100001	Active	-	Active	Active	-	-	-	-	Active
354	101100010	Active	-	Active	Active	-	-	-	Active	-
355	101100011	Active	-	Active	Active	-	-	-	Active	Active
356	101100100	Active	-	Active	Active	-	-	Active	-	-
357	101100101	Active	-	Active	Active	-	-	Active	-	Active
358	101100110	Active	-	Active	Active	-	-	Active	Active	-
359	101100111	Active	-	Active	Active	-	-	Active	Active	Active
360	101101000	Active	-	Active	Active	-	Active	-	-	-
361	101101001	Active	-	Active	Active	-	Active	-	-	Active
362	101101010	Active	-	Active	Active	-	Active	-	Active	-
363	101101011	Active	-	Active	Active	-	Active	-	Active	Active

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User interface (HMI)		Master/slave error								
Decimal	Binary Bits value (NOT displayed)	Master Missing	Slave 3 Missing	Slave 2 Missing	Slave 1 Missing	Slave 3 Communication Error	Slave 2 Communication Error	Slave 1 Communication Error	Master Communication Error	Common LWT Alarm
364	101101100	Active	-	Active	Active	-	Active	Active	-	-
365	101101101	Active	-	Active	Active	-	Active	Active	-	Active
366	101101110	Active	-	Active	Active	-	Active	Active	Active	-
367	101101111	Active	-	Active	Active	-	Active	Active	Active	Active
368	101110000	Active	-	Active	Active	Active	-	-	-	-
369	101110001	Active	-	Active	Active	Active	-	-	-	Active
370	101110010	Active	-	Active	Active	Active	-	-	Active	-
371	101110011	Active	-	Active	Active	Active	-	-	Active	Active
372	101110100	Active	-	Active	Active	Active	-	Active	-	-
373	101110101	Active	-	Active	Active	Active	-	Active	-	Active
374	101110110	Active	-	Active	Active	Active	-	Active	Active	-
375	101110111	Active	-	Active	Active	Active	-	Active	Active	Active
376	101111000	Active	-	Active	Active	Active	Active	-	-	-
377	101111001	Active	-	Active	Active	Active	Active	-	-	Active
378	101111010	Active	-	Active	Active	Active	Active	-	Active	-
379	101111011	Active	-	Active	Active	Active	Active	-	Active	Active
380	101111100	Active	-	Active	Active	Active	Active	Active	-	-
381	101111101	Active	-	Active	Active	Active	Active	Active	-	Active
382	101111110	Active	-	Active	Active	Active	Active	Active	Active	-
383	101111111	Active	-	Active	Active	Active	Active	Active	Active	Active
384	110000000	Active	Active	-	-	-	-	-	-	-
385	110000001	Active	Active	-	-	-	-	-	-	Active
386	110000010	Active	Active	-	-	-	-	-	Active	-
387	110000011	Active	Active	-	-	-	-	-	Active	Active
388	110000100	Active	Active	-	-	-	-	Active	-	-
389	110000101	Active	Active	-	-	-	-	Active	-	Active
390	110000110	Active	Active	-	-	-	-	Active	Active	-
391	110000111	Active	Active	-	-	-	-	Active	Active	Active
392	110001000	Active	Active	-	-	-	Active	-	-	-
393	110001001	Active	Active	-	-	-	Active	-	-	Active
394	110001010	Active	Active	-	-	-	Active	-	Active	-
395	110001011	Active	Active	-	-	-	Active	-	Active	Active
396	110001100	Active	Active	-	-	-	Active	Active	-	-
397	110001101	Active	Active	-	-	-	Active	Active	-	Active
398	110001110	Active	Active	-	-	-	Active	Active	Active	-
399	110001111	Active	Active	-	-	-	Active	Active	Active	Active
400	110010000	Active	Active	-	-	Active	-	-	-	-
401	110010001	Active	Active	-	-	Active	-	-	-	Active
402	110010010	Active	Active	-	-	Active	-	-	Active	-
403	110010011	Active	Active	-	-	Active	-	-	Active	Active
404	110010100	Active	Active	-	-	Active	-	Active	-	-
405	110010101	Active	Active	-	-	Active	-	Active	-	Active
406	110010110	Active	Active	-	-	Active	-	Active	Active	-
407	110010111	Active	Active	-	-	Active	-	Active	Active	Active
408	110011000	Active	Active	-	-	Active	Active	-	-	-
409	110011001	Active	Active	-	-	Active	Active	-	-	Active
410	110011010	Active	Active	-	-	Active	Active	-	Active	-
411	110011011	Active	Active	-	-	Active	Active	-	Active	Active
412	110011100	Active	Active	-	-	Active	Active	Active	-	-
413	110011101	Active	Active	-	-	Active	Active	Active	-	Active

User interface (HMI)		Master/slave error								
Decimal	Binary Bits value (NOT displayed)	Master Missing	Slave 3 Missing	Slave 2 Missing	Slave 1 Missing	Slave 3 Communication Error	Slave 2 Communication Error	Slave 1 Communication Error	Master Communication Error	Common LWT Alarm
414	110011110	Active	Active	-	-	Active	Active	Active	Active	-
415	110011111	Active	Active	-	-	Active	Active	Active	Active	Active
416	110100000	Active	Active	-	Active	-	-	-	-	-
417	110100001	Active	Active	-	Active	-	-	-	-	Active
418	110100010	Active	Active	-	Active	-	-	-	Active	-
419	110100011	Active	Active	-	Active	-	-	-	Active	Active
420	110100100	Active	Active	-	Active	-	-	Active	-	-
421	110100101	Active	Active	-	Active	-	-	Active	-	Active
422	110100110	Active	Active	-	Active	-	-	Active	Active	-
423	110100111	Active	Active	-	Active	-	-	Active	Active	Active
424	110101000	Active	Active	-	Active	-	Active	-	-	-
425	110101001	Active	Active	-	Active	-	Active	-	-	Active
426	110101010	Active	Active	-	Active	-	Active	-	Active	-
427	110101011	Active	Active	-	Active	-	Active	-	Active	Active
428	110101100	Active	Active	-	Active	-	Active	Active	-	-
429	110101101	Active	Active	-	Active	-	Active	Active	-	Active
430	110101110	Active	Active	-	Active	-	Active	Active	Active	-
431	110101111	Active	Active	-	Active	-	Active	Active	Active	Active
432	110110000	Active	Active	-	Active	Active	-	-	-	-
433	110110001	Active	Active	-	Active	Active	-	-	-	Active
434	110110010	Active	Active	-	Active	Active	-	-	Active	-
435	110110011	Active	Active	-	Active	Active	-	-	Active	Active
436	110110100	Active	Active	-	Active	Active	-	Active	-	-
437	110110101	Active	Active	-	Active	Active	-	Active	-	Active
438	110110110	Active	Active	-	Active	Active	-	Active	Active	-
439	110110111	Active	Active	-	Active	Active	-	Active	Active	Active
440	110111000	Active	Active	-	Active	Active	Active	-	-	-
441	110111001	Active	Active	-	Active	Active	Active	-	-	Active
442	110111010	Active	Active	-	Active	Active	Active	-	Active	-
443	110111011	Active	Active	-	Active	Active	Active	-	Active	Active
444	110111100	Active	Active	-	Active	Active	Active	Active	-	-
445	110111101	Active	Active	-	Active	Active	Active	Active	-	Active
446	110111110	Active	Active	-	Active	Active	Active	Active	Active	-
447	110111111	Active	Active	-	Active	Active	Active	Active	Active	Active
448	111000000	Active	Active	Active	-	-	-	-	-	-
449	111000001	Active	Active	Active	-	-	-	-	-	Active
450	111000010	Active	Active	Active	-	-	-	-	Active	-
451	111000011	Active	Active	Active	-	-	-	-	Active	Active
452	111000100	Active	Active	Active	-	-	-	Active	-	-
453	111000101	Active	Active	Active	-	-	-	Active	-	Active
454	111000110	Active	Active	Active	-	-	-	Active	Active	-
455	111000111	Active	Active	Active	-	-	-	Active	Active	Active
456	111001000	Active	Active	Active	-	-	Active	-	-	-
457	111001001	Active	Active	Active	-	-	Active	-	-	Active
458	111001010	Active	Active	Active	-	-	Active	-	Active	-
459	111001011	Active	Active	Active	-	-	Active	-	Active	Active
460	111001100	Active	Active	Active	-	-	Active	Active	-	-
461	111001101	Active	Active	Active	-	-	Active	Active	-	Active
462	111001110	Active	Active	Active	-	-	Active	Active	Active	-
463	111001111	Active	Active	Active	-	-	Active	Active	Active	Active

3 | Troubleshooting

User interface (HMI)		Master/slave error								
Decimal	Binary Bits value (NOT displayed)	Master Missing	Slave 3 Missing	Slave 2 Missing	Slave 1 Missing	Slave 3 Communication Error	Slave 2 Communication Error	Slave 1 Communication Error	Master Communication Error	Common LWT Alarm
464	111010000	Active	Active	Active	-	Active	-	-	-	-
465	111010001	Active	Active	Active	-	Active	-	-	-	Active
466	111010010	Active	Active	Active	-	Active	-	-	Active	-
467	111010011	Active	Active	Active	-	Active	-	-	Active	Active
468	111010100	Active	Active	Active	-	Active	-	Active	-	-
469	111010101	Active	Active	Active	-	Active	-	Active	-	Active
470	111010110	Active	Active	Active	-	Active	-	Active	Active	-
471	111010111	Active	Active	Active	-	Active	-	Active	Active	Active
472	111011000	Active	Active	Active	-	Active	Active	-	-	-
473	111011001	Active	Active	Active	-	Active	Active	-	-	Active
474	111011010	Active	Active	Active	-	Active	Active	-	Active	-
475	111011011	Active	Active	Active	-	Active	Active	-	Active	Active
476	111011100	Active	Active	Active	-	Active	Active	Active	-	-
477	111011101	Active	Active	Active	-	Active	Active	Active	-	Active
478	111011110	Active	Active	Active	-	Active	Active	Active	Active	-
479	111011111	Active	Active	Active	-	Active	Active	Active	Active	Active
480	111100000	Active	Active	Active	Active	-	-	-	-	-
481	111100001	Active	Active	Active	Active	-	-	-	-	Active
482	111100010	Active	Active	Active	Active	-	-	-	Active	-
483	111100011	Active	Active	Active	Active	-	-	-	Active	Active
484	111100100	Active	Active	Active	Active	-	-	Active	-	-
485	111100101	Active	Active	Active	Active	-	-	Active	-	Active
486	111100110	Active	Active	Active	Active	-	-	Active	Active	-
487	111100111	Active	Active	Active	Active	-	-	Active	Active	Active
488	111101000	Active	Active	Active	Active	-	Active	-	-	-
489	111101001	Active	Active	Active	Active	-	Active	-	-	Active
490	111101010	Active	Active	Active	Active	-	Active	-	Active	-
491	111101011	Active	Active	Active	Active	-	Active	-	Active	Active
492	111101100	Active	Active	Active	Active	-	Active	Active	-	-
493	111101101	Active	Active	Active	Active	-	Active	Active	-	Active
494	111101110	Active	Active	Active	Active	-	Active	Active	Active	-
495	111101111	Active	Active	Active	Active	-	Active	Active	Active	Active
496	111110000	Active	Active	Active	Active	Active	-	-	-	-
497	111110001	Active	Active	Active	Active	Active	-	-	-	Active
498	111110010	Active	Active	Active	Active	Active	-	-	Active	-
499	111110011	Active	Active	Active	Active	Active	-	-	Active	Active
500	111110100	Active	Active	Active	Active	Active	-	Active	-	-
501	111110101	Active	Active	Active	Active	Active	-	Active	-	Active
502	111110110	Active	Active	Active	Active	Active	-	Active	Active	-
503	111110111	Active	Active	Active	Active	Active	-	Active	Active	Active
504	111111000	Active	Active	Active	Active	Active	Active	-	-	-
505	111111001	Active	Active	Active	Active	Active	Active	-	-	Active
506	111111010	Active	Active	Active	Active	Active	Active	-	Active	-
507	111111011	Active	Active	Active	Active	Active	Active	-	Active	Active
508	111111100	Active	Active	Active	Active	Active	Active	Active	-	-
509	111111101	Active	Active	Active	Active	Active	Active	Active	-	Active
510	111111110	Active	Active	Active	Active	Active	Active	Active	Active	-
511	111111111	Active	Active	Active	Active	Active	Active	Active	Active	Active

It is ALSO possible that more than one digit is displayed as "1". This means there are multiple active master/slave errors. See examples below:

- If "3" is displayed, this corresponds to binary code "000000011". Master/slave errors "Master communication error" + "Common LWT alarm" are both active.
- If "21" is displayed, this corresponds to binary code "000010101". Master/slave errors "Slave 3 communication error" + "Slave 1 communication error" + "Common LWT alarm" are ALL active.

Master missing

Trigger	Effect	Reset
Slave unit fails to communicate with Master unit.	Slave unit continues working in local mode. Error is displayed on Slave unit.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check that the cable between the Master unit and Slave unit:
 - Is NOT damaged,
 - Is NOT broken (continuity),
 - Is correctly connected (terminal and polarity).

Possible cause: Faulty thermistor(s).



INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

Slave 3 missing

Trigger	Effect	Reset
Master unit fails due to wrong configuration.	Complete system (Master/Slaves) CANNOT start. Error is displayed on Master unit.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code



INFORMATION

It is recommended to perform the checks in the listed order.

- 1 Check the address assigned to each unit of the complete system. Make sure each unit has a unique address.

Possible cause: Same address is set for more than one unit or NO address set for 1 or more unit(s).
- 2 Check that the parameter setting M/S Num of Unit is correctly set for each unit of the complete system. The number of the unit set in the parameter MUST be the same as the number that is assigned to the unit.

Possible cause: Parameter setting M/S Num of Unit set incorrectly.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

Slave 2 missing

Trigger	Effect	Reset
Master unit fails due to wrong configuration.	Complete system (Master/Slaves) CANNOT start. Error is displayed on Master unit.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check the address assigned to each unit of the complete system. Make sure each unit has a unique address.
Possible cause: Same address is set for more than one unit or NO address set for 1 or more unit(s).
- 2 Check that the parameter setting M/S Num of Unit is correctly set for each unit of the complete system. The number of the unit set in the parameter MUST be the same as the number that is assigned to the unit.
Possible cause: Parameter setting M/S Num of Unit set incorrectly.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

Slave 1 missing

Trigger	Effect	Reset
Master unit fails due to wrong configuration.	Complete system (Master/Slaves) CANNOT start. Error is displayed on Master unit.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check the address assigned to each unit of the complete system. Make sure each unit has a unique address.
Possible cause: Same address is set for more than one unit or NO address set for 1 or more unit(s).
- 2 Check that the parameter setting M/S Num of Unit is correctly set for each unit of the complete system. The number of the unit set in the parameter MUST be the same as the number that is assigned to the unit.
Possible cause: Parameter setting M/S Num of Unit set incorrectly.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

Slave 3 communication error

Trigger	Effect	Reset
Master unit fails to communicate with Slave 3 unit.	Slave unit continues working in local mode. Error is displayed on Master unit.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

1 Check that the cable between the Master unit and Slave unit:

- Is NOT damaged,
- Is NOT broken (continuity),
- Is correctly connected (terminal and polarity).

Possible cause: Faulty thermistor(s).

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

Slave 2 communication error

Trigger	Effect	Reset
Master unit fails to communicate with Slave 2 unit.	Slave unit continues working in local mode. Error is displayed on Master unit.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

1 Check that the cable between the Master unit and Slave unit:

- Is NOT damaged,
- Is NOT broken (continuity),
- Is correctly connected (terminal and polarity).

Possible cause: Faulty thermistor(s).

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

Slave 1 communication error

Trigger	Effect	Reset
Master unit fails to communicate with Slave 1 unit.	Slave unit continues working in local mode. Error is displayed on Master unit.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

1 Check that the cable between the Master unit and Slave unit:

- Is NOT damaged,
- Is NOT broken (continuity),
- Is correctly connected (terminal and polarity).

Possible cause: Faulty thermistor(s).

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

Master communication error

Trigger	Effect	Reset
Master unit fails to communicate with Slave units.	Slave unit continues working in local mode. Error is displayed on Slave unit.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code**INFORMATION**

It is recommended to perform the checks in the listed order.

1 Check that the cable between the Master unit and Slave unit:

- Is NOT damaged,
- Is NOT broken (continuity),
- Is correctly connected (terminal and polarity).

Possible cause: Faulty thermistor(s).

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

Common leaving water sensor alarm

Trigger	Effect	Reset
Abnormality detected on the common leaving water thermistor.	ALL units of the system continue working in local mode.	Reset via user interface.
		Reset on network.
		Auto reset.

To solve the error code

**INFORMATION**

It is recommended to perform the checks in the listed order.

- 1 Check that the common leaving water thermistor is connected to the Master unit.

Possible cause: Common leaving water thermistor connected to the wrong unit.

- 2 Perform a check of the common leaving water thermistor. See ["4.29 Thermistors"](#) [▶ 301].

Possible cause: Faulty common leaving water thermistor or connector fault.

**INFORMATION**

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

4 Components



CAUTION

When replacing a component ALWAYS make sure the correct spare part for your unit is installed.

4.1 5 V DC auxiliary power supply



INFORMATION

ONLY for 2-circuit units.

4.1.1 Checking procedures

To perform an electrical check of the 5V DC auxiliary power supply

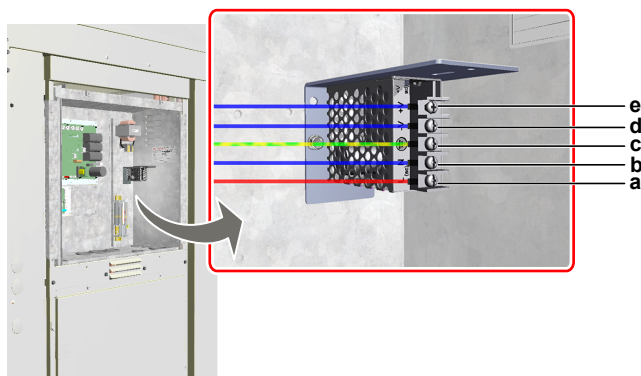
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see "[4.23 Plate work](#)" [▶ 263].

- 1 Turn ON the power of the unit with the main switch.
- 2 Measure the output voltage between terminals -V and +V of the auxiliary power supply.

Result: The measured voltage MUST be 5 V DC.



- a Terminal L
- b Terminal N
- c Terminal GND
- d Terminal -V
- e Terminal +V

Is the measured output voltage correct?	Action
Yes	Auxiliary power supply is OK. Return to troubleshooting of the specific error code and continue with the next procedure.
No	Continue with the next step.

- 3 Measure the input voltage between terminals L and N of the auxiliary power supply.

Result: The measured voltage MUST be 230 V AC.

Is the measured input voltage correct?	Action
Yes	Replace the auxiliary power supply, see "4.1.2 Repair procedures" [▶ 127].
No	Continue with the next step.

4 Check the power supply to the unit, see ["6.1.1 Checking procedures"](#) [▶ 347].

Is the power supply to the unit correct?	Action
Yes	Correct the wiring from the main switch to the auxiliary power supply, see "9.2 Wiring diagram" [▶ 408].
No	Adjust the power supply to the unit, see "6.1.2 Repair procedures" [▶ 350].

4.1.2 Repair procedures

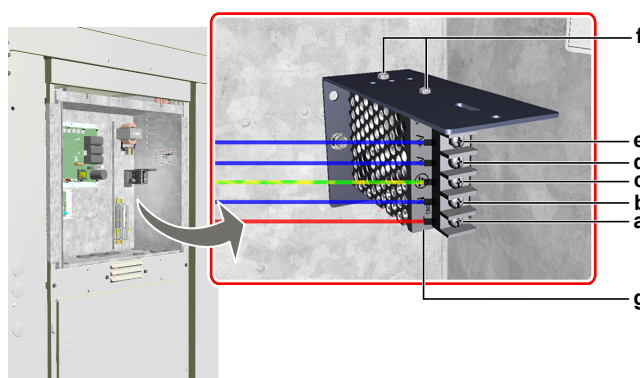
To remove the 5V DC auxiliary power supply

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Remove the plastic cover from the wiring terminals.
- 2 Loosen the screws and disconnect all the wires from the terminals.

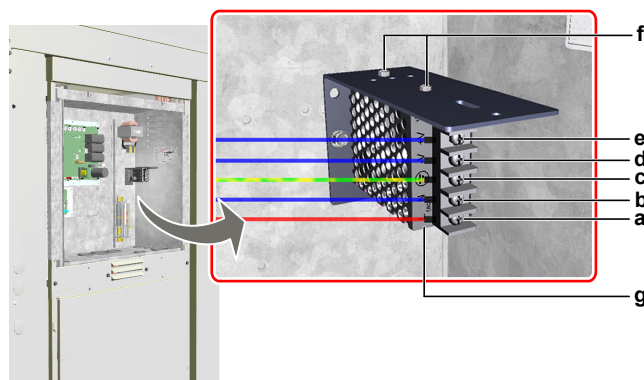


- a Terminal L
- b Terminal N
- c Terminal GND
- d Terminal -V
- e Terminal +V
- f Screw
- g Auxiliary power supply

- 3 Remove the 2 screws that fix the auxiliary power supply to the bracket.
- 4 Remove the auxiliary power supply from the bracket.
- 5 To install the auxiliary power supply, see ["4.1.2 Repair procedures"](#) [▶ 127].

To install the 5 V DC auxiliary power supply

- 1 Install the auxiliary power supply in the correct location on the bracket.
- 2 Install and tighten the 2 screws to fix the auxiliary power supply to the bracket.



- a Terminal L
- b Terminal N
- c Terminal GND
- d Terminal -V
- e Terminal +V
- f Screw
- g Auxiliary power supply

3 Connect all the wires to the terminals and tighten the screws to fix the wires.

4 Install the plastic cover on the wiring terminals.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.2 24 V DC auxiliary power supply

4.2.1 Checking procedures

To perform an electrical check of the 24 V DC auxiliary power supply

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see "[4.23 Plate work](#)" [▶ 263].

1 Turn ON the power of the unit with the main switch.

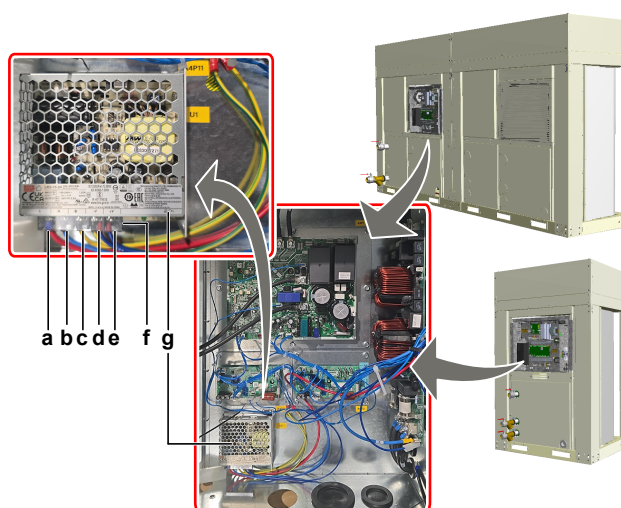


INFORMATION

The component is located in the rear section of the switch box.

2 Measure the output voltage between terminals -V and +V of the auxiliary power supply.

Result: The measured voltage MUST be 24 V DC.



- a Terminal L
- b Terminal N
- c Terminal GND
- d Terminal -V
- e Terminal +V
- f Plastic cover
- g Auxiliary power supply

Is the measured output voltage correct?	Action
Yes	Auxiliary power supply is OK. Return to troubleshooting of the specific error code and continue with the next procedure.
No	Continue with the next step.

- 3** Measure the input voltage between terminals L and N of the auxiliary power supply.

Result: The measured voltage MUST be 230 V AC.

Is the measured input voltage correct?	Action
Yes	Replace the auxiliary power supply, see "4.2.2 Repair procedures" [▶ 129].
No	Continue with the next step.

- 4** Check the power supply to the unit, see ["6.1.1 Checking procedures"](#) [▶ 347].

Is the power supply to the unit correct?	Action
Yes	Correct the wiring from the main switch to the auxiliary power supply, see "9.2 Wiring diagram" [▶ 408].
No	Adjust the power supply to the unit, see "6.1.2 Repair procedures" [▶ 350].

4.2.2 Repair procedures

To remove the 24 V DC auxiliary power supply

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

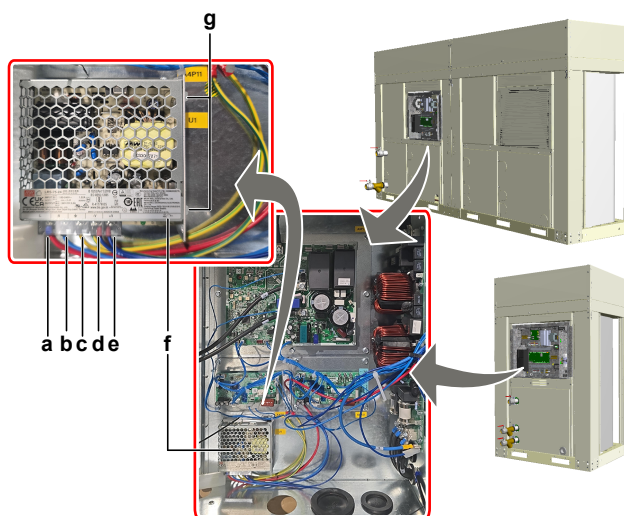
Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Loosen the screws and disconnect all the wires from the terminals.



INFORMATION

The component is located in the rear section of the switch box.

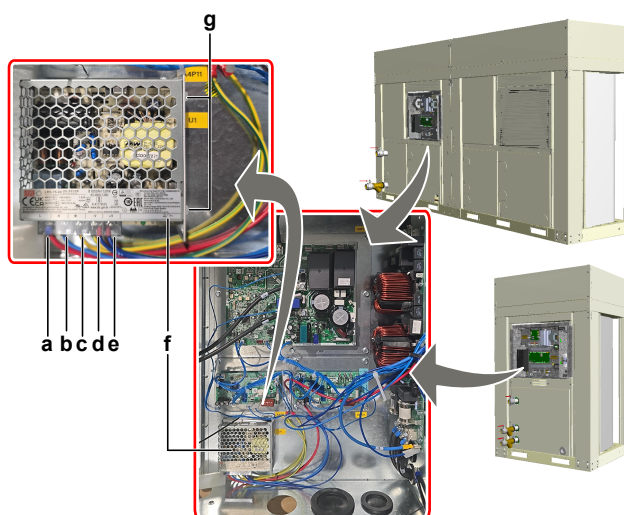


- a Terminal L
- b Terminal N
- c Terminal GND
- d Terminal -V
- e Terminal +V
- f Auxiliary power supply
- g Fixing screw

- 2 Remove the screws that fix the auxiliary power supply to the switch box.
- 3 Remove the auxiliary power supply from the switch box.
- 4 To install the auxiliary power supply, see "[4.2.2 Repair procedures](#)" [▶ 129].

To install the 24 V DC auxiliary power supply

- 1 Install the auxiliary power supply in the correct location on the switch box.
- 2 Install and tighten the screws to fix the auxiliary power supply.



- a Terminal L
- b Terminal N
- c Terminal GND
- d Terminal -V
- e Terminal +V
- f Auxiliary power supply
- g Fixing screw

- 3 Connect all the wires to the terminals and tighten the screws to fix the wires.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.3 4-way valve

4.3.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To perform a mechanical check of the 4-way valve

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 If applicable, remove the insulation from the 4-way valve.



DANGER: RISK OF BURNING/SCALDING

The coil gets hot while energised. Wait for it to cool down.

- 2 Verify that the coil screw is firmly fixing the coil to the valve body.
- 3 Check if any damage or burst is present.

Is the 4-way valve coil firmly fixed and not visually damaged?	Action
Yes	Perform an electrical check of the 4-way valve, see "4.3.1 Checking procedures" [▶ 131].
No	Fix or replace the 4-way valve coil, see "4.3.2 Repair procedures" [▶ 135].

To perform an electrical check of the 4-way valve

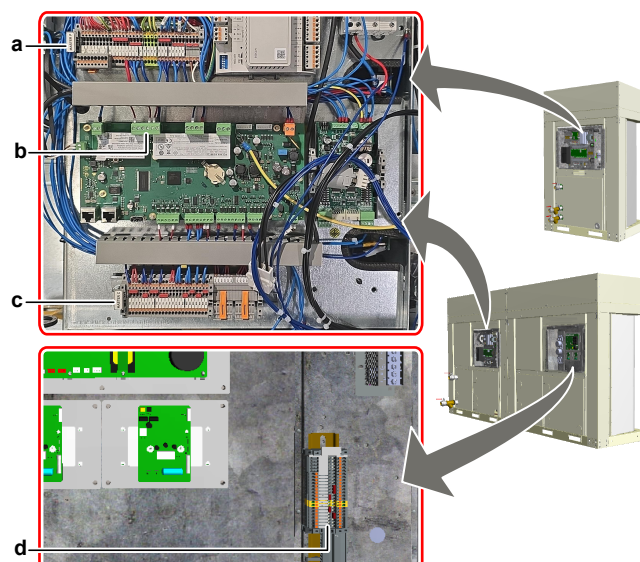
- 1 First perform a mechanical check of the 4-way valve, see ["4.3.1 Checking procedures"](#) [▶ 131].



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Disconnect the wires of the 4-way valve:
 - For 4-way valve Y4W1; disconnect the wire Y4W1 and L of terminal block MP.
 - For 4-way valve Y4W2, disconnect the wires from terminals 604 and Y4W1of the slave terminal block.



- a Terminal block MP
- b Terminal block T12
- c Terminal block MC
- d Slave terminal block

- 3 Measure the resistance of the 4-way valve coil between the disconnected wires.

Result: The measured resistance MUST be $2.085 \text{ k}\Omega \pm 10\%$.

Is the measured value correct?	Action
Yes	Continue with the next step.
No	Replace the 4-way valve coil, see "4.3.2 Repair procedures" [▶ 135].

- 4 Connect the 4-way valve wires to the appropriate terminals.
- 5 Turn ON the power using the main switch.
- 6 Activate the 4-way valve via the service monitoring tool:
- Enter technician password.
 - In the Main Menu, select Unit Enable.
 - Set to Disable.
 - In the Main Menu, select Unit Mode > Test to put the unit in test mode.
 - In the Main Menu, select Commission Unit > Manual Control > Circuit # > 4-Way Valve.
 - Set to On.
- 7 Measure the voltage between the following terminals:

Result: The measured voltage MUST be 230 V AC.

4-way valve	Terminals
4-way valve Y4W1	Y4W1 and L of terminal block MP
4-way valve Y4W2	Y4W2 and 604 of the slave terminal block

- 8 De-activate the 4-way valve via the service monitoring tool:
- In the Main Menu, select Commission Unit > Manual Control > Circuit # > 4-Way Valve.
 - Set to Off.

9 Again measure the voltage between the terminals.

Result: The measured voltage MUST be 0 V AC.

Are the measured voltages correct?	Action
Yes	Perform a position check of the 4-way valve, see "4.3.1 Checking procedures" [▶ 131].
No	Continue with the next step.

10 Disconnect the wires from the main PCB:

- For 4-way valve Y4W1; disconnect the wires from terminals Q6 and COM of terminal block T12 on the main PCB.
- For 4-way valve Y4W2, disconnect the wires from the terminals Q7 and COM of terminal block T12 on the main PCB.

11 Activate the 4-way valve via the service monitoring tool:

- In the Main Menu, select Commission Unit > Manual Control > Circuit # > 4-Way Valve.
- Set to On.

12 Measure the resistance between the following terminals:

Result: The measurement MUST be short circuit (4-way valve active, switch contact on main PCB = closed).

4-way valve	Terminals
4-way valve Y4W1	COM and Q6 of terminal block T12 on main PCB
4-way valve Y4W2	COM and Q7 of terminal block T12 on main PCB

13 De-activate the 4-way valve via the service monitoring tool:

- In the Main Menu, select Commission Unit > Manual Control > Circuit # > 4-Way Valve.
- Set to Off.

14 Again measure the resistance between the terminals.

Result: The measurement MUST be open circuit (4-way valve NOT active, switch contact on main PCB = open).

Are the measured resistances correct?	Action
Yes	Check and correct the wiring between the main power supply terminal and the 4-way valve connection points, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check the main PCB, see "4.18 Main PCB" [▶ 236].

To perform a position check of the 4-way valve

- 1** First perform an electrical check of the 4-way valve, see ["4.3.1 Checking procedures"](#) [▶ 131].

When outdoor temperature is mild and unit can switch between heating and cooling



INFORMATION

This procedure is ONLY possible when the outdoor temperature is within the temperature range for both **Heating** and **Cooling** operation mode. See the installation, operation and maintenance manual for the temperature range of the operation modes.

- 1 Activate **Heating** operation via the service monitoring tool.



INFORMATION

It is recommended to connect the service monitoring tool to the unit and verify the operation mode of the 4-way valve.

- 2 Check with a contact thermometer (or by touching) if the flow through the 4-way valve corresponds with the flow shown in the flow diagram. (See ["9.3 Piping diagram"](#) [▶ 409]).



INFORMATION

The flow through the 4-way valve is correct if the water temperature after the heat exchanger rises/drops when operating in **Heating/Cooling** mode.

Is the flow correct?	Action
Yes	Skip the next step of this procedure.
No	Perform the next step of this procedure.

- 3 Connect a manifold to one of the service ports of the refrigerant circuit and check the pressure (suction, discharge). Compare with normal operation conditions of the unit.

Refrigerant pressure correct?	Action
Yes	Replace the body of the 4-way valve, see "4.3.2 Repair procedures" [▶ 135].
No	Leaks may be found in the refrigerant circuit. Perform a pressure test of the refrigerant circuit, see "6.2.1 Checking procedures" [▶ 350].

- 4 De-activate **Heating** and activate **Cooling** operation via the service monitoring tool.
- 5 Check with a contact thermometer (or by touching) if the flow through the 4-way valve corresponds with the flow shown in the flow diagram. (See ["9.3 Piping diagram"](#) [▶ 409]).



INFORMATION

The flow through the 4-way valve is correct if the water temperature after the heat exchanger rises/drops when operating in **Heating/Cooling** mode.

Is the flow correct?	Action
Yes	4-way valve is OK. Return to the troubleshooting of the specific error and continue with the next procedure.

Is the flow correct?	Action
No	Replace the body of the 4-way valve, see "4.3.2 Repair procedures" [▶ 135].

When outdoor temperature does not allow the unit to run in cooling or heating mode



INFORMATION

Follow this procedure when the outdoor temperature is outside the temperature range for one of the operation modes (**Heating** or **Cooling**). The unit CANNOT operate in the mode for which the outdoor temperature is outside its temperature range. See the installation, operation and maintenance manual for the temperature range of the operation modes.

- 1 With the unit operating, connect the service monitoring tool to the unit and check whether the unit is operating in **Heating** or **Cooling** mode.
- 2 Check with a contact thermometer (or by touching) if the flow through the 4-way valve corresponds with the flow shown in the flow diagram of the specific operation mode. (See ["9.3 Piping diagram"](#) [▶ 409]).



INFORMATION

The flow through the 4-way valve is correct if the water temperature after the heat exchanger rises/drops when operating in **Heating/Cooling** mode.

Is the flow correct?	Action
Yes	4-way valve is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Perform the next step of this procedure.

- 3 Connect a manifold to one of the service ports of the refrigerant circuit and check the pressure (suction, discharge). Compare with normal operation conditions of the unit.

Refrigerant pressure correct?	Action
Yes	Replace the body of the 4-way valve, see "4.3.2 Repair procedures" [▶ 135].
No	Leaks may be found in the refrigerant circuit. Perform a pressure test of the refrigerant circuit, see "6.2.1 Checking procedures" [▶ 350].

4.3.2 Repair procedures

To remove the 4-way valve coil

Prerequisite: Stop the unit operation via the user interface.

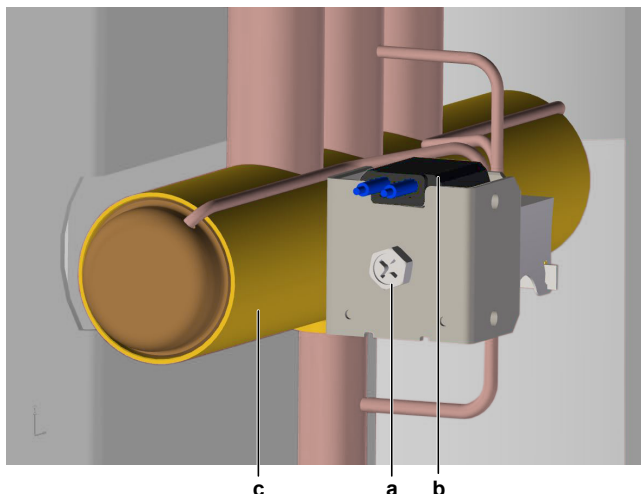
Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

Prerequisite: If needed, remove any parts to create more space for the removal of the 4-way valve coil.

Prerequisite: If applicable, remove the insulation from the 4-way valve.

- 1 Remove the screw and remove the 4-way valve coil from the 4-way valve body.

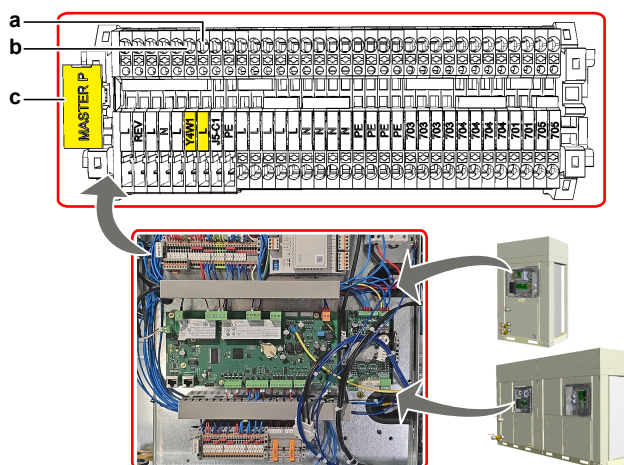


- a Screw
- b 4-way valve coil
- c 4-way valve body

- 2 Cut all tie straps that fix the 4-way valve coil harness.

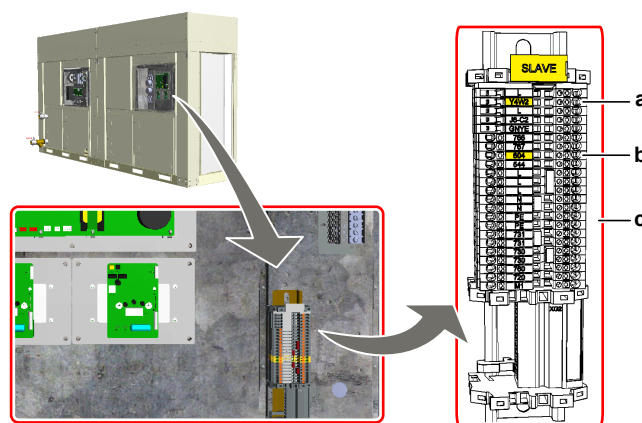
- 3 Disconnect the wires of the 4-way valve:

- For 4-way valve Y4W1; disconnect the wire Y4W1 and L of terminal block MP.



- a Terminal L
- b Terminal Y4W1
- c Terminal block MP

- For 4-way valve Y4W2, disconnect the wires from terminals 604 and Y4W2 of the slave terminal block.



- a Terminal Y4W2
- b Terminal 604
- c Slave terminal block

- 4 To install the 4-way valve coil, see ["4.3.2 Repair procedures"](#) [▶ 135].

To remove the 4-way valve body

- 1 Recuperate the refrigerant from the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].
- 2 Remove the 4-way valve coil from the 4-way valve body, see ["4.3.2 Repair procedures"](#) [▶ 135].
- 3 Remove and keep the putty (if installed) and the insulation (if installed) for re-use.
- 4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 5 Wrap a wet rag around the components near the 4-way valve pipes. Heat the brazing points of the 4-way valve pipes using an oxygen acetylene torch and remove the 4-way valve pipes from the refrigerant pipes using pliers.
- 6 Stop the nitrogen supply when the piping has cooled down.
- 7 Remove the 4-way valve.



INFORMATION

It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

- 8 Install plugs or caps on the open pipe ends of the refrigerant piping to avoid dirt or impurities from entering the piping.
- 9 To install the 4-way valve body, see ["4.3.2 Repair procedures"](#) [▶ 135].

To install the 4-way valve body

- 1 Remove the plugs or caps from the refrigerant piping and make sure they are clean.
- 2 Remove the 4-way valve coil from the spare part 4-way valve body.
- 3 Install the 4-way valve body in the correct location and correctly oriented. Insert the pipe ends in the pipe expansions.
- 4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 5 Wrap a wet rag around the 4-way valve body and any other components near the 4-way valve and braze the 4-way valve pipes to the refrigerant pipes.



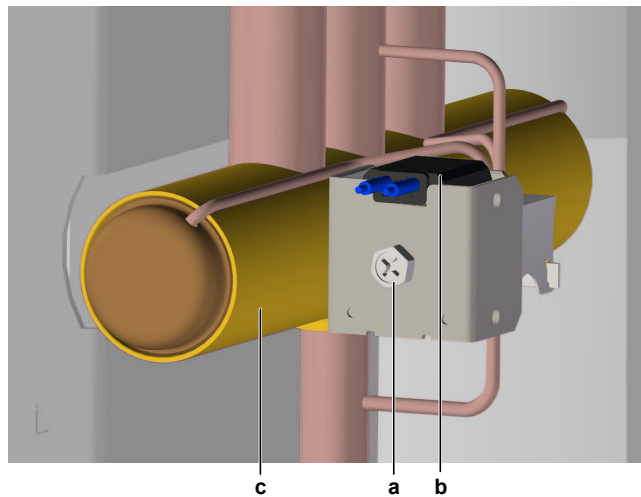
CAUTION

Overheating the valve will damage or destroy it.

- 6 After brazing is done, stop the nitrogen supply after the component has cooled-down.
- 7 Install the putty (if available) and the insulation (if available) in their original location.
- 8 Install the 4-way valve coil on the 4-way valve body, see ["4.3.2 Repair procedures"](#) [▶ 135].
- 9 Perform a pressure test, see ["6.2.1 Checking procedures"](#) [▶ 350].
- 10 Add refrigerant to the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

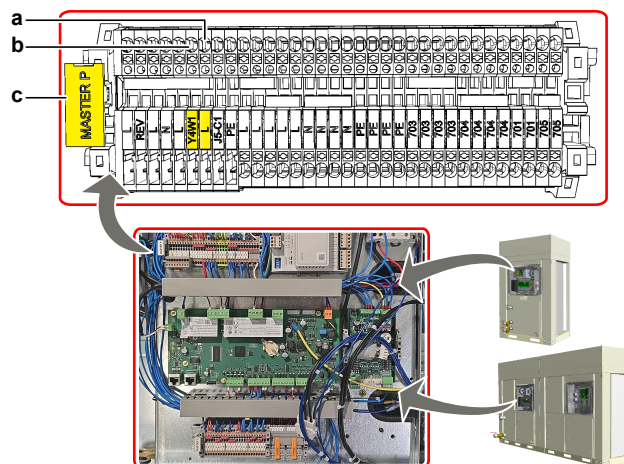
To install the 4-way valve coil

- 1 Install the 4-way valve coil on the 4-way valve body.



- a Screw
- b 4-way valve coil
- c 4-way valve body

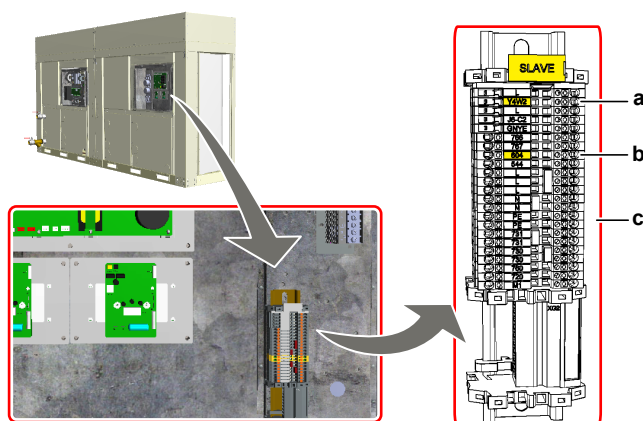
- 2 Install and tighten the screw to fix the 4-way valve coil.
- 3 Connect the wires of the 4-way valve:
 - For 4-way valve Y4W1; connect the wires to terminals Y4W1 and L of terminal block MP.



- a Terminal L
- b Terminal Y4W1

c Terminal block MP

- For 4-way valve Y4W2, connect the wires to terminals 604 and Y4W2 of the slave terminal block.



- a Terminal Y4W2
- b Terminal 604
- c Slave terminal block

4 Fix the 4-way valve coil harness using new tie straps.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.4 ACS digital I/O PCB

4.4.1 Checking procedures

**INFORMATION**

It is recommended to perform the checks in the listed order.

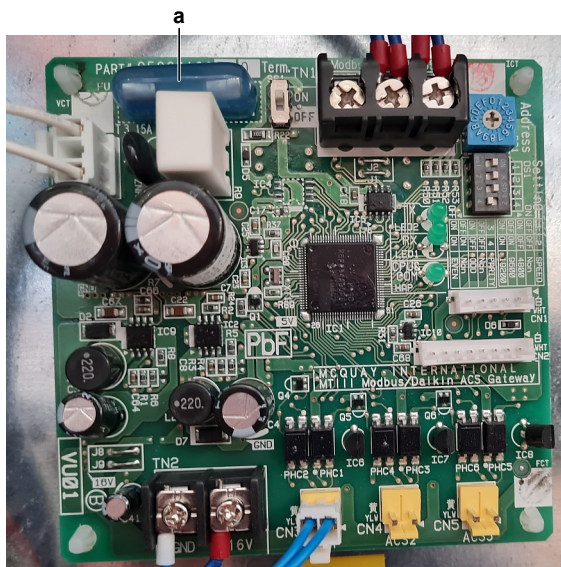
To check the fuse of the ACS digital I/O PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Measure the continuity of the fuse. If no continuity is measured, the fuse has blown.



a Fuse

To perform a power check of the ACS digital I/O PCB

Prerequisite: First check the fuse of the ACS digital I/O PCB, see ["4.4.1 Checking procedures"](#) [▶ 139].

- 1 Turn ON the power of the unit with the main switch.
- 2 Measure the voltage between pins of connector CN6 of the ACS digital I/O PCB.

Result: The measured voltage MUST be 24 V DC.

Is the measured voltage on the ACS digital I/O PCB correct?	Action
Yes	Return to "4.4.1 Checking procedures" [▶ 139] of the ACS digital I/O PCB and continue with the next procedure.
No	Continue with the next step.

- 3 Measure the output voltage between terminals -V and +V of the 24 V DC auxiliary power supply.

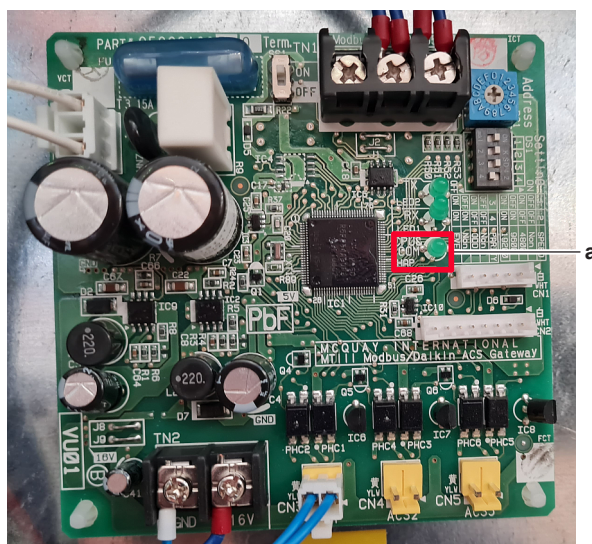
Result: The measured voltage MUST be 24 V DC.

Is the measurement correct?	Action
Yes	Correct the wiring between the ACS digital I/O PCB and the 24 V DC auxiliary power supply, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the 24 V DC auxiliary power supply, see "4.2.1 Checking procedures" [▶ 128].

To check the HAP LED of the ACS digital I/O PCB

Prerequisite: First perform a power check of the ACS digital I/O PCB, see ["4.4.1 Checking procedures"](#) [▶ 139].

- 1 Locate the HAP LED on the ACS digital I/O PCB.



a HAP LED

Does the HAP LED blink in regular intervals (1 second ON/1 second OFF)?	Action
Yes	Return to "4.4.1 Checking procedures" [▶ 139] of the ACS digital I/O PCB and continue with the next procedure.
No	Replace the ACS digital I/O PCB, see "4.4.2 Repair procedures" [▶ 142].

To check if the correct spare part is installed

- 1 First perform all earlier checks of the ACS digital I/O PCB, see ["4.4.1 Checking procedures"](#) [▶ 139].
- 2 If a spare part PCB is installed in your unit, check that it is the correct one by performing the procedure described below.
- 3 Make sure the DIP switches of the PCB are set correctly, see ["4.4.2 Repair procedures"](#) [▶ 142].
- 4 Visit your local spare parts webbank.
- 5 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the ACS digital I/O PCB installed?	Action
Yes	Return to "4.4.1 Checking procedures" [▶ 139] of the ACS digital I/O PCB and continue with the next procedure.
No	Replace the ACS digital I/O PCB, see "4.4.2 Repair procedures" [▶ 142].

To check the wiring of the ACS digital I/O PCB

Prerequisite: First perform all earlier checks of the ACS digital I/O PCB, see ["4.4.1 Checking procedures"](#) [▶ 139].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Check that all wires are properly connected and that all connectors are fully plugged-in.
- 2 Check that no connectors or wires are damaged.
- 3 Check that the wiring corresponds with the wiring diagram, see ["9.2 Wiring diagram" \[▶ 408\]](#).

**INFORMATION**

Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.4.1 Checking procedures" [▶ 139] of the ACS digital I/O PCB and continue with the next procedure.

Problem solved?

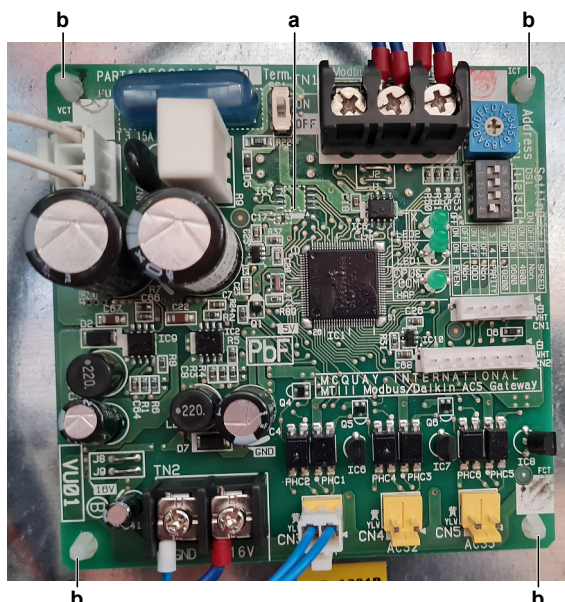
After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.4.2 Repair procedures

To remove the ACS digital I/O PCB**Prerequisite:** Stop the unit operation via the user interface.**Prerequisite:** Turn OFF the main switch.**Prerequisite:** Remove the required plate work, see ["4.23 Plate work" \[▶ 263\]](#).

- 1 Disconnect all connectors from the ACS digital I/O PCB.
- 2 Loosen the screws and disconnect the wires from the ACS digital I/O PCB.
- 3 Carefully pull the ACS digital I/O PCB and unlatch the PCB supports one by one using a small pair of pliers.

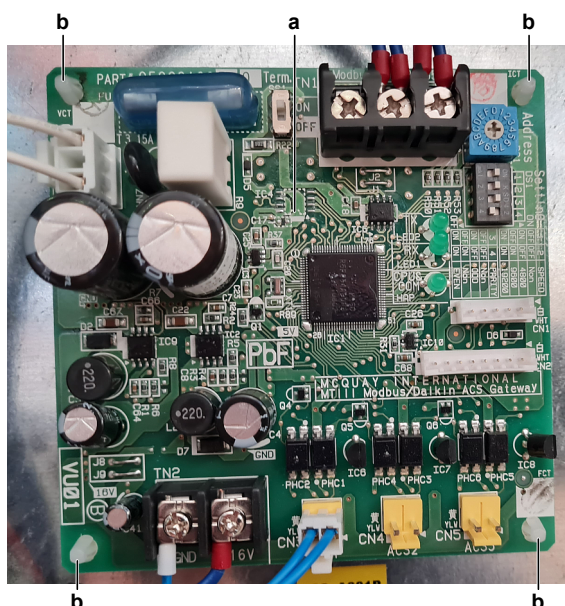


a ACS digital I/O PCB
b PCB support

- 4 Remove the ACS digital I/O PCB from the switch box.
- 5 To install the ACS digital I/O PCB, see ["4.4.2 Repair procedures"](#) [▶ 142].

To install the ACS digital I/O PCB

- 1 Install the ACS digital I/O PCB in the correct location in the switch box.
- 2 Attach the ACS digital I/O PCB to the PCB supports.



a ACS digital I/O PCB
b PCB support

- 3 Connect all connectors to the ACS digital I/O PCB.
- 4 Connect the wires to the ACS digital I/O PCB and tighten the screws to fix the wires.

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to "4.4.1 Checking procedures" [▶ 139] of the ACS digital I/O PCB and continue with the next procedure.

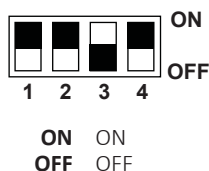
To set the DIP switches of the spare part ACS digital I/O PCB

If a spare part PCB is installed in your unit, the DIP switches need to be set. By default (factory settings) all switches are in off position.



a Shows the position of a switch
ON ON
OFF OFF

- 1 Shut the power off.
- 2 Position the DIP switches as shown below.



ON ON
OFF OFF

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.4.1 Checking procedures" [▶ 139] of the ACS digital I/O PCB and continue with the next procedure.

4.5 Check valve

4.5.1 Checking procedures

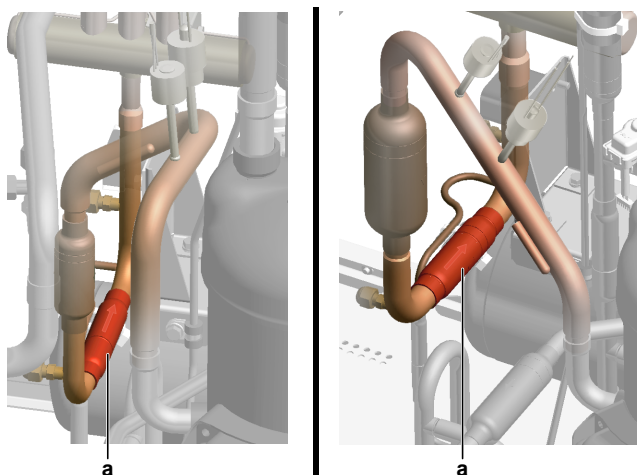
To perform an operation check of the check valve

The check valve prevents back flow from the condensers when unit is stopped.

Prerequisite: Turn OFF the unit with the main switch.

- 1 Visually check:
 - For oil drops around the check valve. Locate and fix as necessary.
 - Pipes for signs of damage. Replace pipes as needed.
- 2 Turn ON the power of the unit with the main switch.
- 3 Start the unit operation via the user interface.
- 4 Check in which mode the unit is operating, turn on cooling mode.
- 5 Check the inlet and outlet of the valve with a contact thermometer or use a valve stethoscope to see if refrigerant flows through the check valve.

Result: Refrigerant MUST flow through the check valve.



a Check valve

Refrigerant flow through check valve correct?	Action
Yes	Perform an auditive check of the check valve, see "4.5.1 Checking procedures" [▶ 144].
No	Replace the check valve, see "4.5.2 Repair procedures" [▶ 146].

To perform an auditive check of the check valve

- 1 Turn ON the power of the unit with the main switch.
- 2 Set the thermo OFF setting to the maximum value and start the unit operation until it reaches minimum speed.
- 3 Observe the check valve.

Does the check valve chatter?	Action
No	Component is OK. Return to the troubleshooting of the specific error and continue with the next step.
Yes	Continue with the next step to modify the anti-chatter settings.

To modify the anti-chattering settings:

- 1 On the service tool, go to: Main Menu -> Commission unit -> Configuration -> Anti Chatt speeds.
- 2 Increase the value by 120 rpm and listen to the check valve again.
- 3 Repeat this last step until the chattering stops. Do not set up higher than 1200 rpm setting.

The table below shows the default values from factory for the minimum compressor speed depending on temperature and compressor type.

Setting	Compressor	Activation Range	Default value [rpm]
[14.16] Min Spd 1	JT17K	Evap. Temp. > 7,9°C	720
[14.17] Min Spd 2	JT17K	-2,5°C < Evap. Temp < 7,9°C	720
[14.18] Min Spd 3	JT17K	Evap. Temp < -2,5°C	960

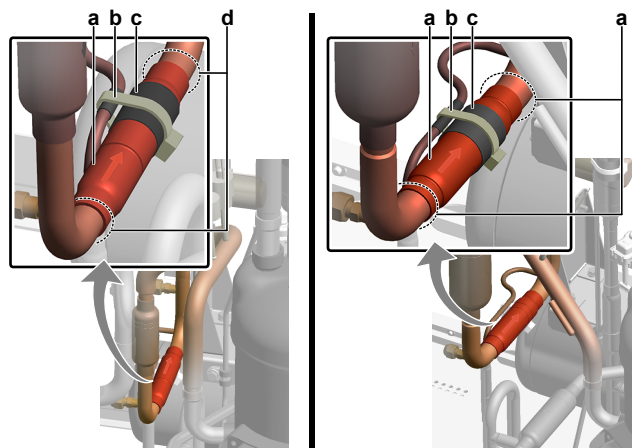
Does the chattering noise persists?	Action
Yes	Replace the check valve, see "4.5.2 Repair procedures" [▶ 146].
No	Component is OK. Return to the troubleshooting of the specific error and continue with the next step.

4.5.2 Repair procedures

To remove the check valve

Prerequisite: Turn OFF the unit with the main switch.

- 1 Recuperate the refrigerant from the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].
- 2 Remove the tie strap and insulation from around the check valve.
- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 4 Wrap a wet rag around the components near the check valve. Heat the brazing points of the check valve using an oxygen acetylene torch and remove the check valve from the refrigerant pipes using pliers.



- a Check valve
- b Tie strap
- c Insulation
- d Brazing point

- 5 Stop the nitrogen supply when the piping has cooled down.
- 6 Remove the check valve.
- 7 Install plugs or caps on the open pipe ends of the refrigerant piping to avoid dirt or impurities from entering the piping.
- 8 To install the check valve, see ["4.5.2 Repair procedures"](#) [▶ 146].

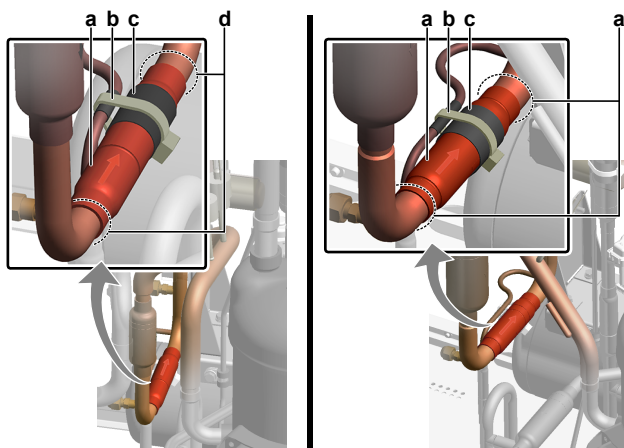
To install the check valve

- 1 Remove the plugs or caps from the refrigerant piping and make sure they are clean.
- 2 Install the check valve in the correct location and correctly oriented (as noted during removal).
- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

- 4 Wrap a wet rag around the check valve body and any other components near the check valve and braise the refrigerant pipes to the check valve body.

**CAUTION**

Overheating any component will damage or destroy it.



- a Check valve
- b Tie strap
- c Insulation
- d Brazing point

- 5 After brazing is done, stop the nitrogen supply after the component has cooled-down.
- 6 Install the insulation and tie strap around the check valve.
- 7 Add refrigerant to the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.6 Compressor

4.6.1 Checking procedures

**INFORMATION**

It is recommended to perform the checks in the listed order.

To perform an auditive check of the compressor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Remove the compressor insulation, see ["4.6.2 Repair procedures"](#) [▶ 153].
- 2 Turn ON the power using the main switch.
- 3 Start the unit operation via the user interface.

**CAUTION**

NEVER operate the compressor with the compressor wire terminals cover removed.

- 4 Wait for - or create condition to operate the compressor.
- 5 Or activate the compressor via the service monitoring tool:
 - Enter technician password.
 - In the Main Menu, select Unit Enable.
 - Set to Disable.
 - In the Main Menu, select Unit Mode > Test to put the unit in test mode.
 - In the Main Menu, select Commission Unit > Manual Control > Circuit # > Compressor #.
 - Set Control Mode to Manual Stp.
 - Set Manual Capacity to 20%.
- 6 Listen to the compressor when it tries to operate. Judge if a mechanical lock is present.

**INFORMATION**

If you have a multimeter with data logging functionality, record the current in 1 of the U-V-W wires at compressor start-up. ALWAYS measure at the PCB side. If mechanical lock is present, logged current will drastically increase to a peak value and the unit will trigger an error.

**INFORMATION**

If a mechanical lock is present, also check and eliminate the root cause. Mechanical lock is most likely caused by lack of lubrication (which might be related to overheat or wet operation), failing crankcase heater (if available), impurities in the refrigerant,

A mechanical lock is present on the compressor?	Action
Yes	Replace the compressor, see "4.6.2 Repair procedures" [▶ 153].
No	Perform an mechanical check of the compressor, see "4.6.1 Checking procedures" [▶ 147].

To perform a mechanical check of the compressor

Prerequisite: First perform an auditive check of the compressor, see ["4.6.1 Checking procedures"](#) [▶ 147].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Before proceeding:

**DANGER: RISK OF ELECTROCUTION**

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Visually check:
 - For oil drops around the compressor. Locate and fix as needed.
 - Pipes for signs of damage. Replace pipes as needed.

- 3 Check that the compressor bolts are correctly fixed. Fix as needed.
- 4 Check that the compressor wire terminals cover is correctly installed and fixed. Correct as needed.
- 5 Check the compressor dampers for any damage.



a Damper



INFORMATION

The compressor dampers may look different.

Compressor dampers are in a good condition?	Action
Yes	Perform an electrical check of the compressor, see "4.6.1 Checking procedures" [▶ 147].
No	Replace the compressor and/or damaged dampers, see "4.6.2 Repair procedures" [▶ 153].

To perform an electrical check of the compressor

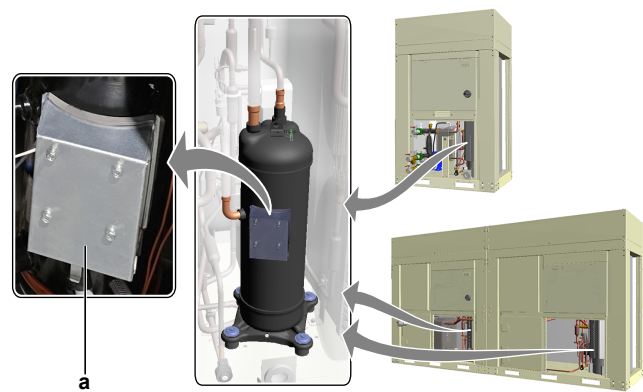
- 1 First perform a mechanical check of the compressor, see ["4.6.1 Checking procedures"](#) [▶ 147].



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Remove the cover of the compressor wire terminals.



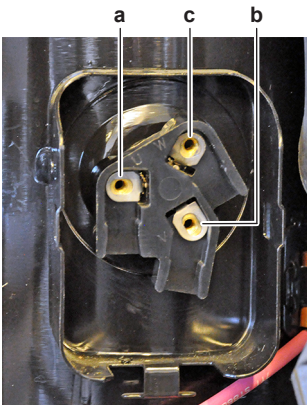
a Compressor wire terminals cover

- 3 Loosen and remove the 3 bolts that fix the compressor wiring.
- 4 Remove the wiring from the compressor wire terminals U, V and W.
- 5 Carefully straighten the terminal lugs.
- 6 Remove the black wire guide.



INFORMATION

Note the position of the wiring on the compressor wire terminals to allow correct connection during installation.



a U
b V
c W



CAUTION

Before measuring the compressor motor windings resistance, measure the resistance of the multimeter probes by holding the probes against each other. If the measured resistance is NOT 0 Ω, this value MUST be subtracted from the measured winding resistance.

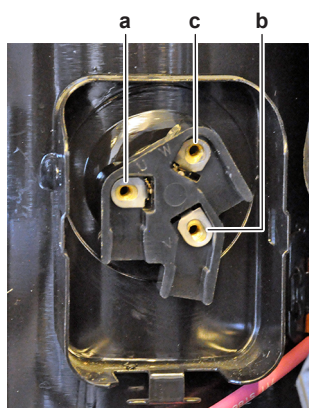
- 7 Measure the resistance between the compressor motor windings U-V, V-W and U-W.

Result: All measurements MUST be approximately the same.

Unit	Compressor	Winding resistance value (at temperature of 20°C)
EWYE019~035CZ(N/P)-A1	M1C	0.17 Ω±14%
EWYE050~070CZ(N/P)-A2	M1C + M2C	0.17 Ω±14%

Compressor motor winding measurements are correct?	Action
Yes	Continue with the next step.
No	Replace the compressor, see "4.6.2 Repair procedures" [▶ 153].

- 8 Measure the continuity of the U, V and W wires between the compressor and the PCB. If no continuity, correct as needed, see ["9.2 Wiring diagram"](#) [▶ 408].
- 9 Install the black wire guide over the terminal lugs.
- 10 Bend the terminal lugs against the black wire guide.
- 11 Align the wiring with the compressor wire terminals U, V and W.
- 12 Insert and fix the 3 bolts that fix the compressor wiring.



a U
b V
c W

- 13 Install the compressor wire terminals cover.
- 14 Install the compressor insulation.
- 15 Turn ON the power of the unit with the main switch.
- 16 Start the unit operation via the user interface.

**CAUTION**

NEVER operate the compressor with the compressor wire terminals cover removed.

- 17 Wait for – or create condition to operate the compressor.
- 18 Or activate the compressor via the service monitoring tool:
 - Enter technician password.
 - In the Main Menu, select Unit Enable.
 - Set to Disable.
 - In the Main Menu, select Unit Mode > Test to put the unit in test mode.
 - In the Main Menu, select Commission Unit > Manual Control > Circuit # > Compressor #.
 - Set Control Mode to Manual Stp.
 - Set Manual Capacity to 20%.
- 19 Once the compressor operates, measure the U-V-W inverter voltages. ALWAYS measure at the PCB side.

Result: All measurements MUST be the same.

Inverter voltage measurements are correct?	Action
Yes	Continue with the next step.
No	Perform a check of the appropriate PCB, see "4 Components" [▶ 126].

20 While compressor is operating, measure the current in each phase U, V and W. ALWAYS measure at the PCB side.

Result: All measurements MUST be the same.

Compressor motor winding current measurements are correct?	Action
Yes	Perform an insulation check of the compressor, see "4.6.1 Checking procedures" [▶ 147].
No	Preventively replace the compressor, see "4.6.2 Repair procedures" [▶ 153].

To perform an insulation check of the compressor

Prerequisite: First perform an electrical check of the compressor, see "4.6.1 Checking procedures" [▶ 147].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

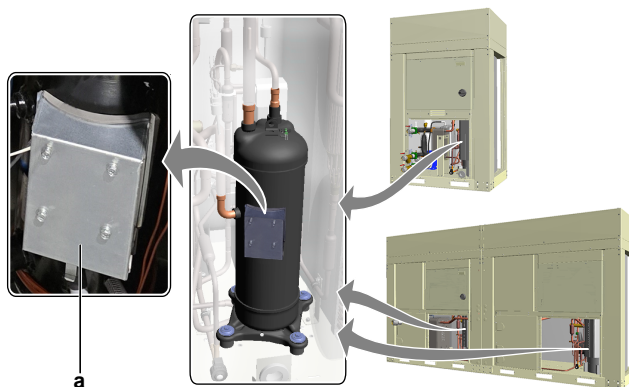
1 Before proceeding:



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

2 Remove the cover of the compressor wire terminals.



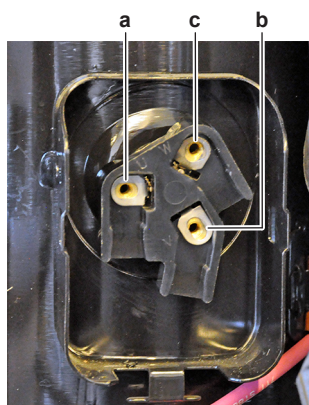
a Compressor wire terminals cover

- 3** Loosen and remove the 3 bolts that fix the compressor wiring.
- 4** Remove the wiring from the compressor wire terminals U, V and W.
- 5** Carefully straighten the terminal lugs.
- 6** Remove the black wire guide.



INFORMATION

Note the position of the wiring on the compressor wire terminals to allow correct connection during installation.



a U
b V
c W

- 7 Set the Megger voltage to 500 V DC or 1000 V DC.
- 8 Measure the insulation resistance between the following terminals. The measured insulation resistance MUST be >3 MΩ.
 - U–ground,
 - V–ground,
 - W–ground.
- 9 If compressor is OK, completely assemble the compressor.

**CAUTION**

NEVER operate the compressor with the compressor wire terminals cover removed.

Compressor insulation measurements are correct?	Action
Yes	Compressor is OK. Return to troubleshooting of the specific error and continue with the next procedure.
No	Replace the compressor, see "4.6.2 Repair procedures" [▶ 153].

4.6.2 Repair procedures

To remove the compressor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

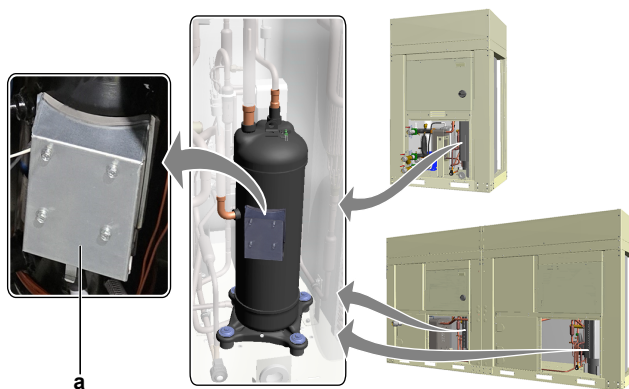
Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

- 1 If needed, remove any parts to create more space for the removal of the compressor.

**DANGER: RISK OF ELECTROCUTION**

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Remove the cover of the compressor wire terminals.



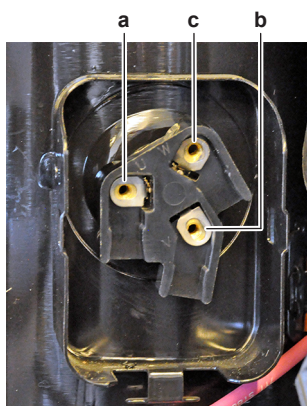
a Compressor wire terminals cover

- 3** Loosen and remove the 3 bolts that fix the compressor wiring.
- 4** Remove the wiring from the compressor wire terminals U, V and W.
- 5** Carefully straighten the terminal lugs.
- 6** Remove the black wire guide.



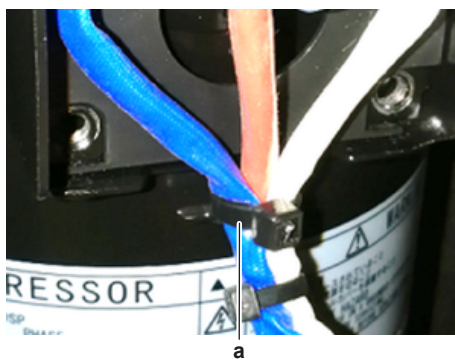
INFORMATION

Note the position of the wiring on the compressor wire terminals to allow correct connection during installation.



- a** U
- b** V
- c** W

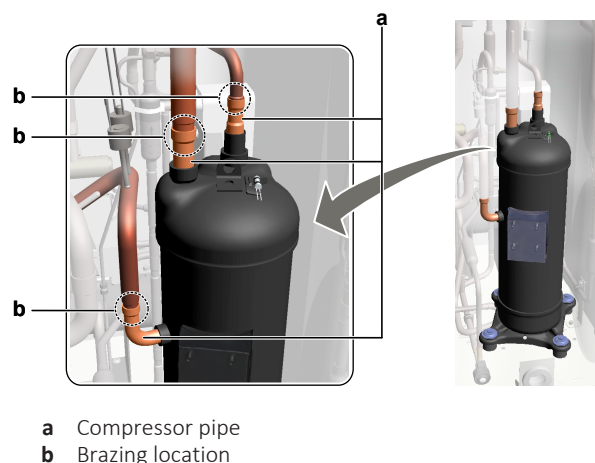
- 7** Cut the tie strap and remove the compressor wiring from the compressor body.



a Tie strap

- 8** If applicable, remove the screw and disconnect the ground wire from the compressor.
- 9** Remove the crankcase heater, see "[4.9.2 Repair procedures](#)" [[▶ 176](#)].

- 10** Remove the compressor thermal protector, see ["4.7.2 Repair procedures"](#) [▶ 161].
- 11** Remove the following thermistors from their holder:
 - Suction thermistor
 - Discharge pipe thermistor
 - Compressor body thermistor (if applicable)
- 12** Supply nitrogen to the refrigerant circuit. The nitrogen pressure **MUST NOT** exceed 0.02 MPa.
- 13** Wrap a wet rag around the components near the compressor pipes. Heat the brazing points of the compressor pipes using an oxygen acetylene torch and remove the refrigerant pipes from the compressor pipes using pliers.



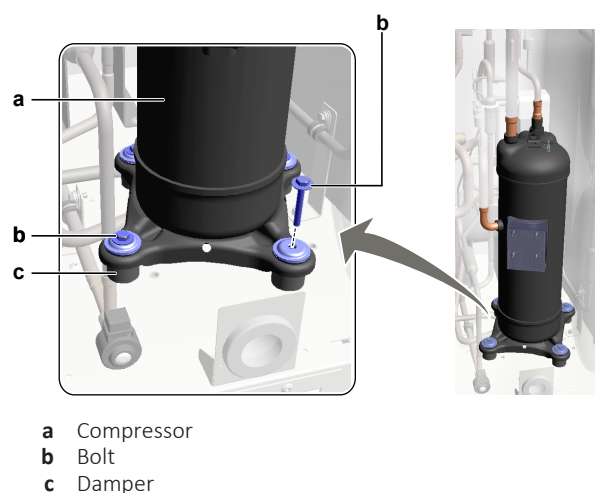
- 14** Stop the nitrogen supply when the piping has cooled down.



INFORMATION

It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

- 15** Remove the nuts and bolts and remove the compressor from the unit.



- 16** Remove the 4 dampers from the compressor.



INFORMATION

The compressor dampers may look different.

- 17** Remove the bushings and keep them for re-use.

- 18 Install plugs or caps on the open pipe ends of the refrigerant piping to avoid dirt or impurities from entering the piping.



INFORMATION

If the pipes that were removed together with the compressor are NOT included in the spare part compressor and are NOT damaged, heat the brazing points and remove the pipes from the compressor to reuse them on the spare part compressor. It is ALSO possible to order and install new pipes on the spare part compressor.

- 19 To install the compressor, see "4.6.2 Repair procedures" [▶ 153].

To install the compressor



INFORMATION

If the pipes that were removed together with the compressor are NOT included in the spare part compressor, install and braze the reused or new pipes to the spare part compressor before installing the compressor.

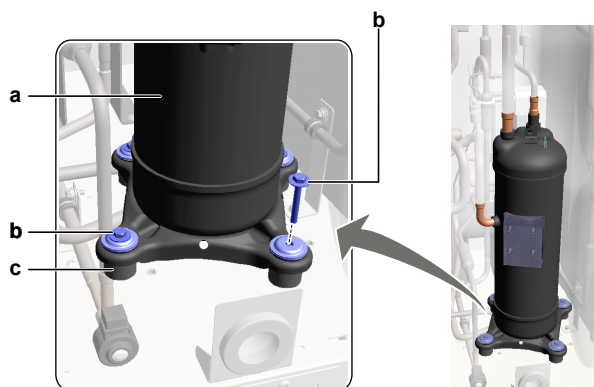
- 1 Check the state of the dampers. Replace if worn.
- 2 Install the 4 dampers in the correct location on the unit.
- 3 Remove the plugs or caps from the refrigerant piping and make sure they are clean.
- 4 Remove the caps from the compressor pipes (of the new compressor).



CAUTION

The oil in the compressor is hygroscopic. Therefore remove the caps from the compressor pipes as late as possible.

- 5 Install the compressor on the correct location on the dampers. Properly insert the refrigerant pipes in the pipe expansions of the compressor pipes.
- 6 Install and tighten the bolts and nuts to fix the compressor to the dampers.



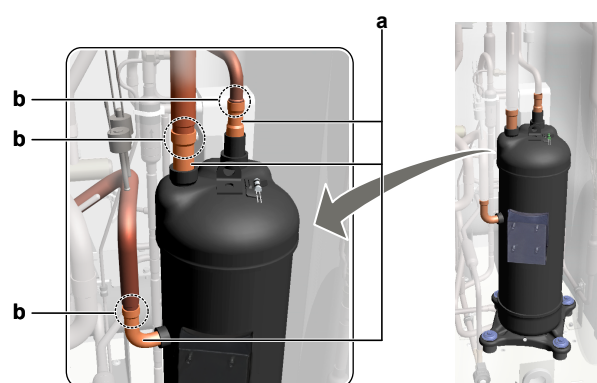
- a Compressor
- b Bolt
- c Damper



INFORMATION

The compressor dampers may look different.

- 7 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 8 Wrap a wet rag around the compressor pipes and any other components near the compressor and braze the compressor pipes to the refrigerant pipes.



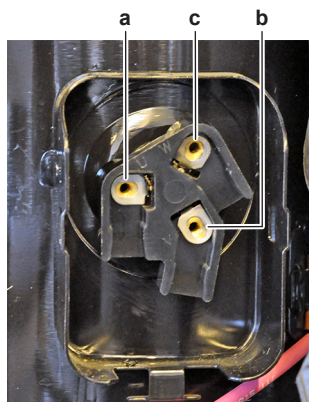
a Compressor pipe
b Brazing location



CAUTION

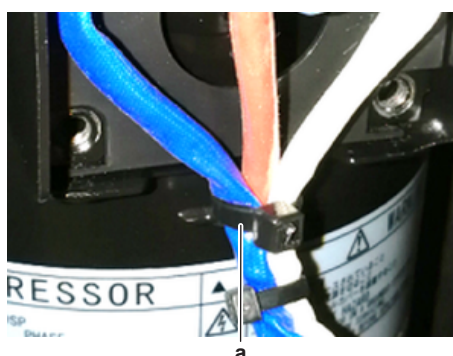
Overheating the compressor pipes (and the oil inside the compressor pipes) will damage or destroy the compressor.

- 9 After brazing is done, stop the nitrogen supply after the component has cooled-down.
- 10 Install the compressor thermal protector, see ["To install the compressor thermal protector"](#) [▶ 163].
- 11 Install the black wire guide over the terminal lugs.
- 12 Bend the terminal lugs against the black wire guide.
- 13 Align the wiring with the compressor wire terminals U, V and W.
- 14 Insert and fix the 3 bolts that fix the compressor wiring.



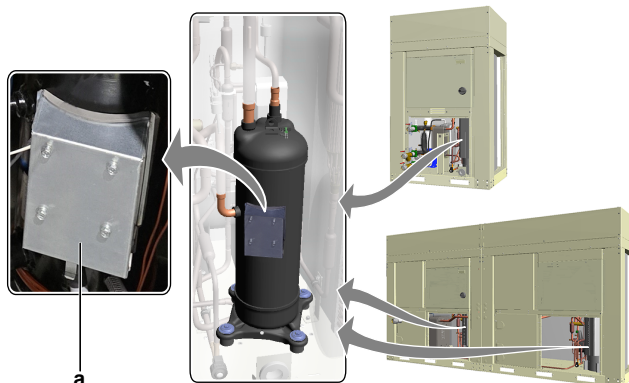
a U
b V
c W

- 15 Fix the compressor wiring to the protrusion on the compressor body using a new tie strap.



a Tie strap

16 Install the cover of the compressor wire terminals.



a Compressor wire terminals cover

17 If applicable, connect the ground wire to the compressor. Install and tighten the screw to fix the ground wire.

18 Install the crankcase heater, see ["To install the crankcase heater"](#) [▶ 178]

19 Install the following thermistors in their holder:

- Suction thermistor
- Discharge pipe thermistor
- Compressor body thermistor (if applicable)

20 Install the compressor insulation, see ["4.6.2 Repair procedures"](#) [▶ 153].

21 Perform a pressure test, see ["6.2.1 Checking procedures"](#) [▶ 350].

22 Add refrigerant to the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

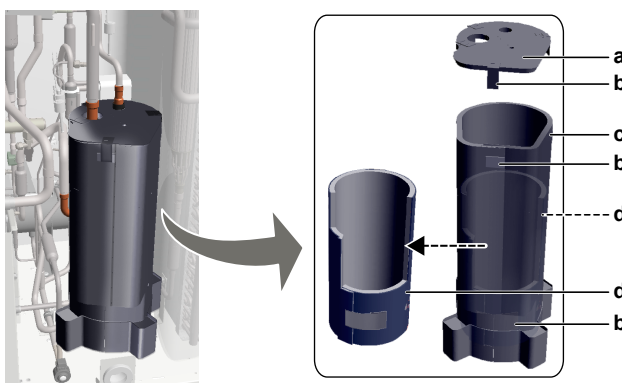
To remove the compressor insulation

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

1 Detach all the strips.



a Top insulation

b Strip

- c Outer body jacket
- d Secondary (inner) body jacket

- 2 Open the body jacket.
- 3 Remove the top insulation from the compressor.



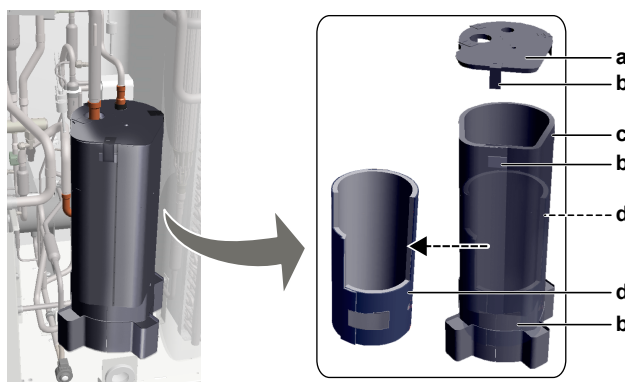
INFORMATION

Some units have multiple parts of top insulation. Remove ALL top insulation.

- 4 Open the secondary (inner) body jacket from the compressor.
- 5 Remove the body jackets from the compressor.
- 6 To install the compressor insulation, see ["4.6.2 Repair procedures"](#) [▶ 153].

To install the compressor insulation

- 1 Install the secondary (inner) body jacket on the compressor.
- 2 Route the compressor and the compressor thermal protector wiring out of the body jacket.
- 3 Install the top insulation on the compressor.



- a Top insulation
- b Strip
- c Outer body jacket
- d Secondary (inner) body jacket

- 4 Install the (outer) body jacket around the compressor.
- 5 Properly fit the top insulation in the body jacket.
- 6 Attach the strips.



INFORMATION

Make sure that the insulation nicely fits around the compressor.

4.7 Compressor thermal protector

4.7.1 Checking procedures

To perform a mechanical check of the compressor thermal protector

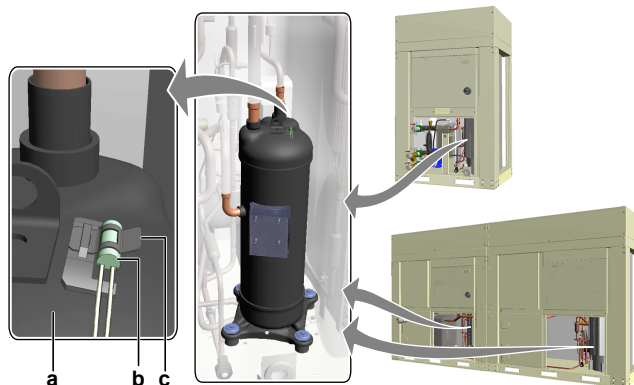
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

Prerequisite: Remove the compressor insulation.

- 1 Remove the compressor thermal protection from the compressor.

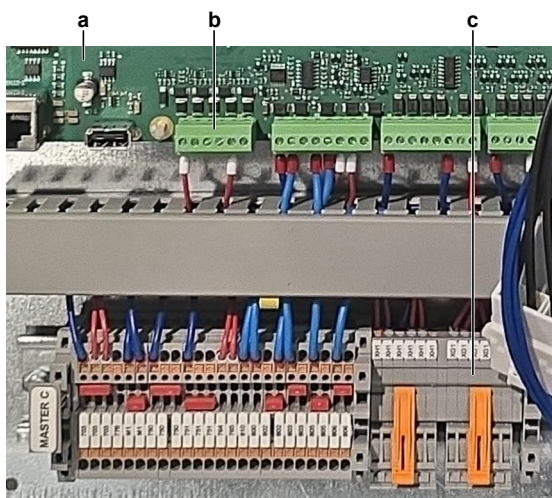


- a Compressor
- b Compressor thermal protector
- c Bracket

- 2 If in doubt, measure the temperature of the compressor thermal protection.

Result: The temperature MUST be below 145°C.

- 3 Using a hot air gun, carefully heat the compressor thermal protection to slightly above 155°C (compressor thermal protection trips at 145~155°C).
- 4 Disconnect the wires of the compressor thermal protector:
 - For compressor thermal protector S1; disconnect the wire from terminal D5 of terminal block T5 on the main PCB and the wire from terminal 703 of terminal block XG1.

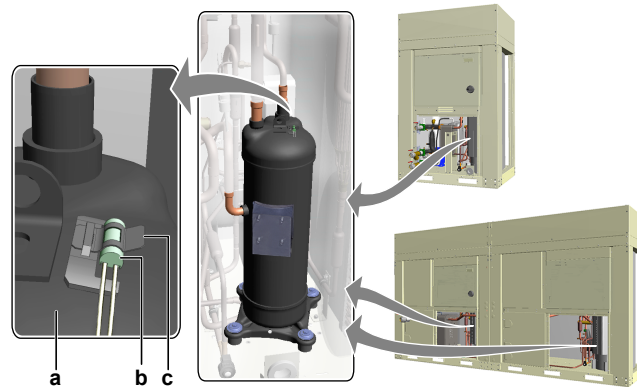


- a Main PCB
- b Terminal block T5
- c Terminal block XG1

- For compressor thermal protector S2, disconnect the wires from terminals 3 and 4 of terminal block XH2.

Prerequisite: Remove the compressor insulation.

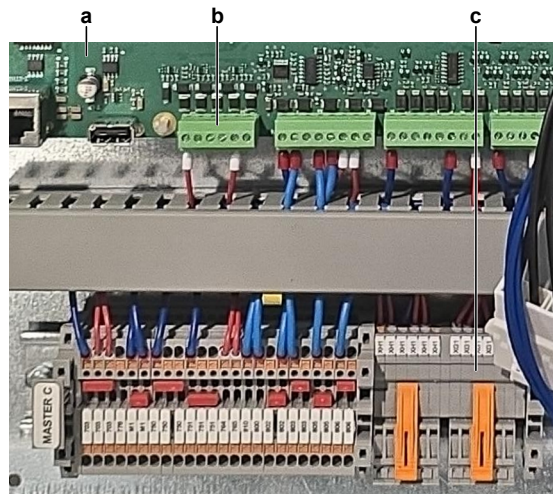
- 1 Remove the compressor thermal protector from the bracket on the compressor.



- a Compressor
- b Compressor thermal protector
- c Bracket

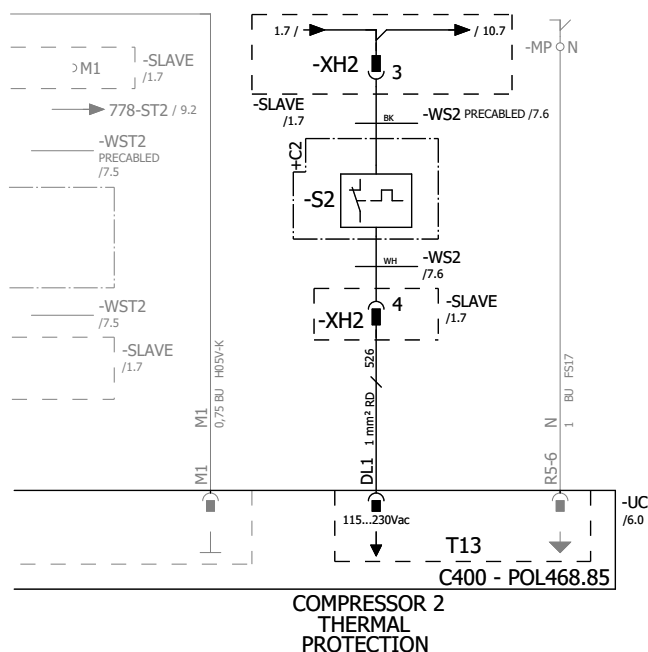
- 2 Disconnect the wires of the compressor thermal protector:

- For compressor thermal protector S1; disconnect the wire from terminal D5 of terminal block T5 on the main PCB and the wire from terminal 703 of terminal block XG1.



- a Main PCB
- b Terminal block T5
- c Terminal block XG1

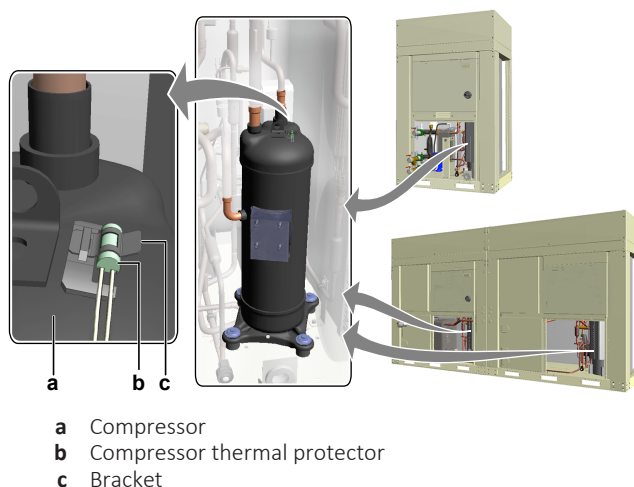
- For compressor thermal protector S2, disconnect the wires from terminals 3 and 4 of terminal block XH2.



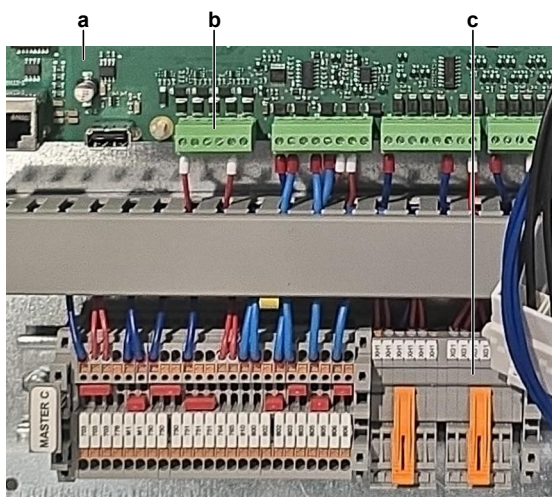
- 3 Cut all tie straps that fix the compressor thermal protector wiring harness.
- 4 To install the compressor thermal protector, see ["4.6.2 Repair procedures"](#) [▶ 153].

To install the compressor thermal protector

- 1 Install the compressor thermal protector on the compressor thermal protector bracket.

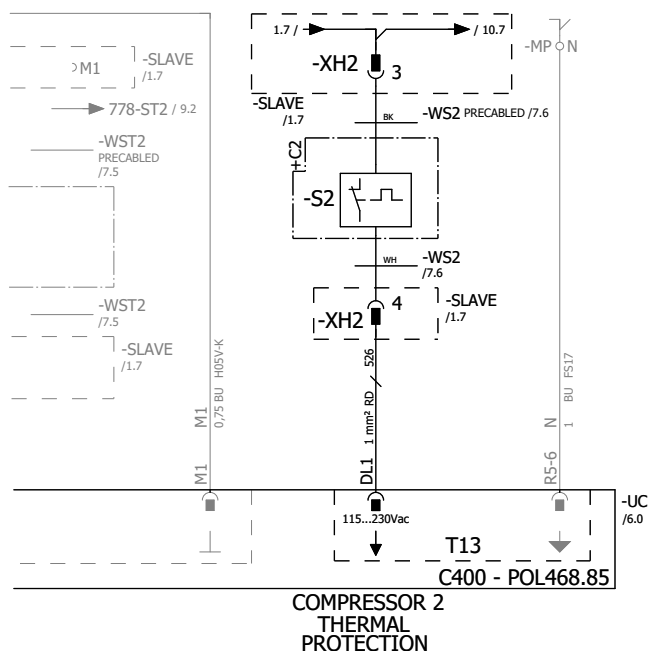


- 2 Connect the wires of the compressor thermal protector:
 - For compressor thermal protector S1; connect a wire to terminal D5 of terminal block T5 on the main PCB and the other wire to terminal 703 of terminal block XG1.



- a Main PCB
- b Terminal block T5
- c Terminal block XG1

- For compressor thermal protector S2, connect the wires to terminals 3 and 4 of terminal block XH2.



- 3 Install new tie straps to fix the compressor thermal protector wiring harness.
- 4 Install the compressor insulation, see ["4.6.2 Repair procedures"](#) [▶ 153].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.8 Condenser heat exchanger

4.8.1 Checking procedures

To perform a mechanical check of the condenser heat exchanger

Prerequisite: Stop the unit operation via the user interface.

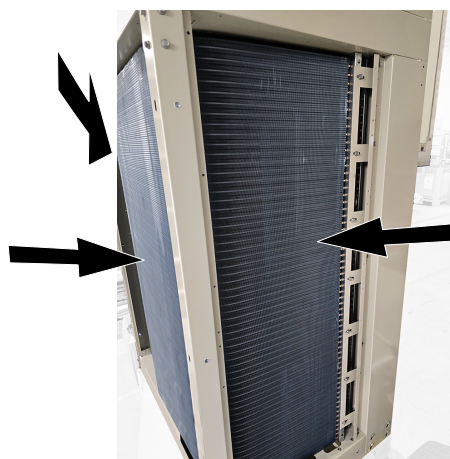
Prerequisite: Turn OFF the main switch.

- 1 Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].
- 2 Visually check:
 - For any signs of damage or corrosion. Replace the condenser as needed, see ["4.8.2 Repair procedures"](#) [▶ 165].
 - For bended air fins. Straighten as needed.
- 3 Check the condenser for leaks. Use soap test method.



CAUTION

Do NOT use soap containing Chlorine or Sulfide as this may result in corrosion of the copper piping.



Any leaks found?	Action
Yes	Replace the condenser, see "4.8.2 Repair procedures" [▶ 165].
No	Condenser is OK. Return to the troubleshooting of the specific error and continue with the next step.

4.8.2 Repair procedures

To remove the condenser heat exchanger

Prerequisite: Stop the unit operation via the user interface.

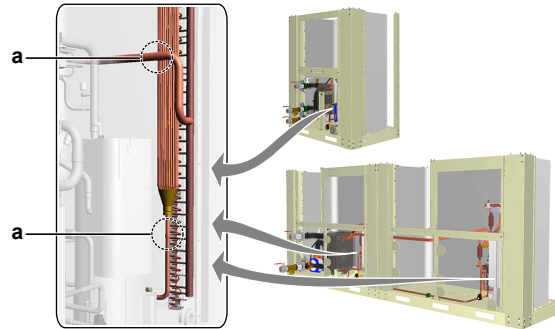
Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Recuperate the refrigerant from the refrigerant circuit (both refrigerant circuits for 2-circuit units), see ["6.2.2 Repair procedures"](#) [▶ 355].
- 2 Remove the fan block corresponding to the heat exchanger that has to be removed to be able to remove the heat exchanger itself, see ["4.23 Plate work"](#) [▶ 263].

To remove the condenser heat exchanger

- 1 Remove the insulation from the appropriate piping.
- 2 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 3 Wrap a wet rag around the components near the condenser heat exchanger pipes. Heat the brazing points (a) of the condenser heat exchanger pipes using an oxygen acetylene torch and remove the condenser heat exchanger pipes from the refrigerant pipes using pliers.



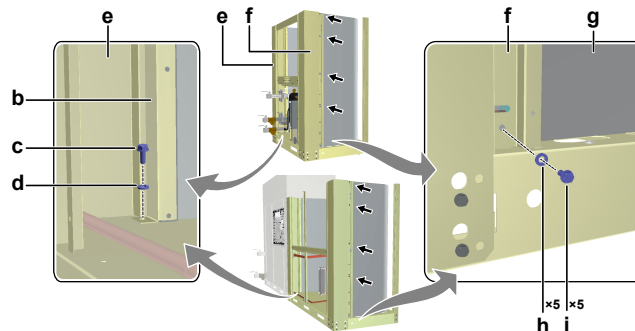
- 4 Stop the nitrogen supply when the piping has cooled down.



INFORMATION

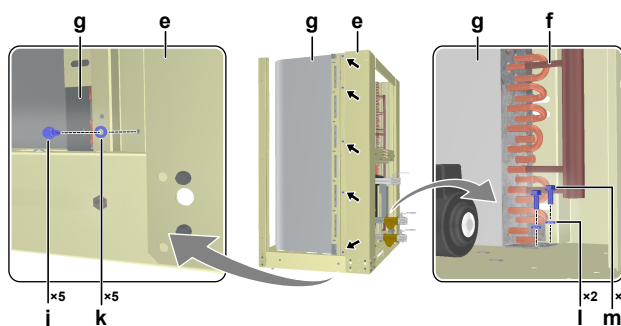
It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

- 5 Install plugs or caps on the open pipe ends to avoid dirt or impurities from entering the piping.
- 6 Remove the screw (c) and washer (d) that fix the condenser heat exchanger (g) on the non-brazing side to the unit's floor plate.
- 7 Remove the screws (i) and washers (h) that fix the condenser heat exchanger (g) on the brazing side to the vertical stay (f).



For single circuit units only:

- 1 Remove the screws (j) and washers (k) that fix the condenser heat exchanger (g) on the non-brazing side to the vertical stay (e).
- 2 Remove the screws (m) and washers (l) that fix the condenser heat exchanger (g) on the brazing side to the unit's floor plate.



- 3 Slide the condenser heat exchanger (g) backwards and remove it from the unit.



INFORMATION

In case the condenser heat exchanger will be reused, before removal, put a blanket over the heat exchanger to protect the air fins.

For double circuit units only:

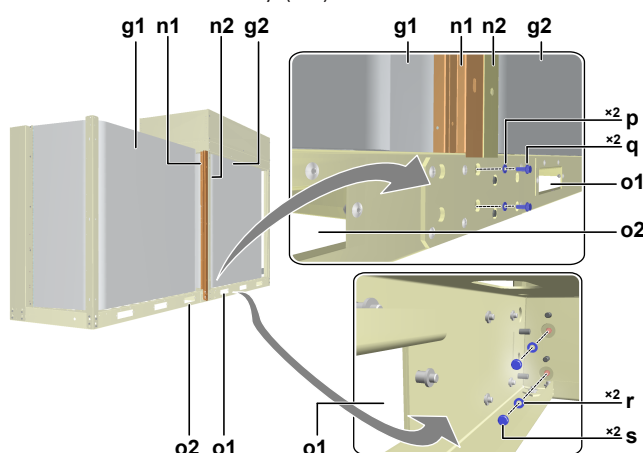


INFORMATION

For double circuit units the vertical back stay (on the side corresponding with the heat exchanger that will be removed) must be removed first.

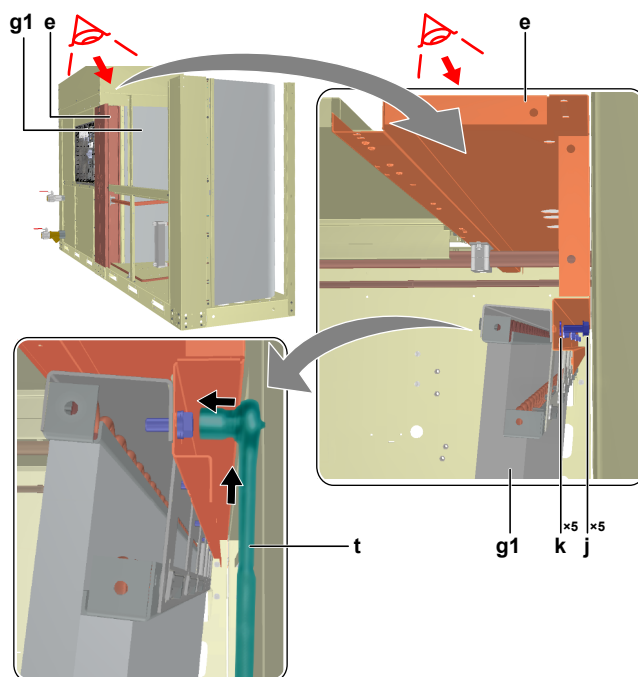
For example; removing the vertical stay (n1) to remove heat exchanger (g1):

- 1 Remove the screws (q) and washers (p) that fix the vertical stay (n1) to the unit's floor plate.
- 2 Through the service hole (o1), remove the screws (s) and washers (r) that fix the vertical stay (n1) to the unit's floor plate.
- 3 Remove the vertical stay (n1).

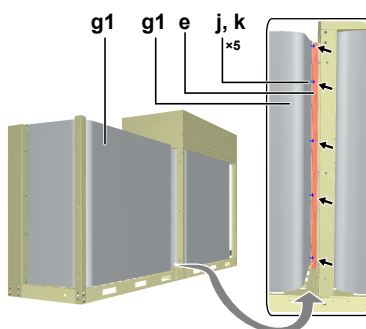


The screws (j) and washers (k) that fix the condenser heat exchanger (g1) on the non-brazing side to the vertical stay (e) are difficult to reach. In the view from above (shown in the figure here below) the situation is clarified.

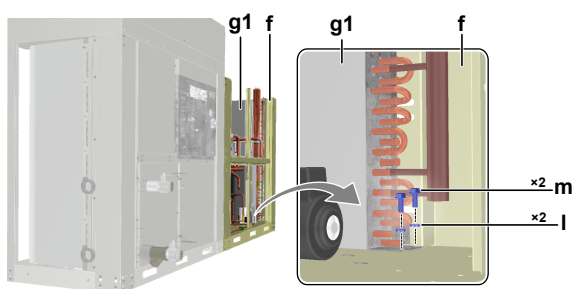
The socket wrench will have to be applied "blindly" to the screws (j). It is possible to feel by hand where the screws are located behind the corner of the vertical stay (e).



- 4 From the backside of the unit, remove the screws (j) and washers (k) that fix the condenser heat exchanger (g1) on the non-brazing side to the vertical stay (e).



- 5 Remove the screws (m) and washers (l) that fix the condenser heat exchanger (g1) on the brazing side to the unit's floor plate.



- 6 Slide the condenser heat exchanger (g1) backwards and remove it from the unit.
- 7 To install the condenser heat exchanger, see ["4.8.2 Repair procedures"](#) [▶ 165].

To install the condenser heat exchanger

- 1 Remove the plugs or caps from the refrigerant piping and make sure they are clean.

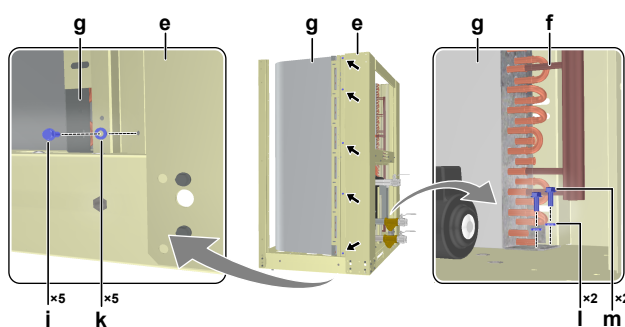
**INFORMATION**

Before installation, put a blanket over the condenser heat exchanger to protect the air fins from damage during installation.

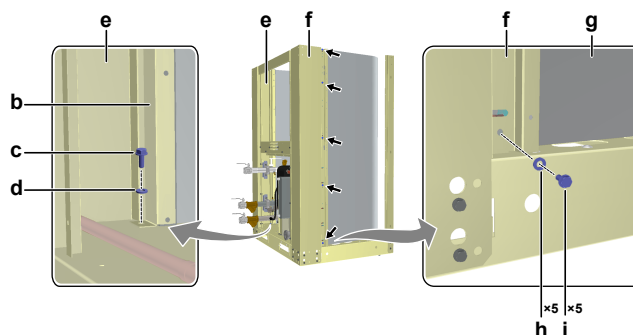
For single circuit units only:**NOTICE**

Do not fully tighten the screws yet. Tighten them after the condenser heat exchanger is brazed to the unit.

- 1 Slide the condenser heat exchanger in place on the unit's floor plate.
- 2 Install the screws (m) and washers (l) that fix the condenser heat exchanger (g) on the brazing side to the unit's floor plate.
- 3 Install the screws (j) and washers (k) that fix the condenser heat exchanger (g) on the non-brazing side to the vertical stay (e).

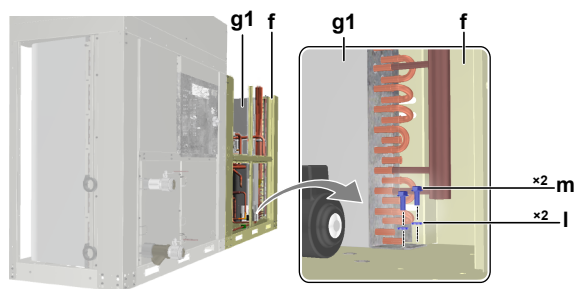


- 4 Install the screws (i) and washers (h) that fix the condenser heat exchanger (g) on the brazing side to the vertical stay (f).
- 5 Install the screw (c) and washer (d) that fix the condenser heat exchanger (g) on the non-brazing side to the unit's floor plate.

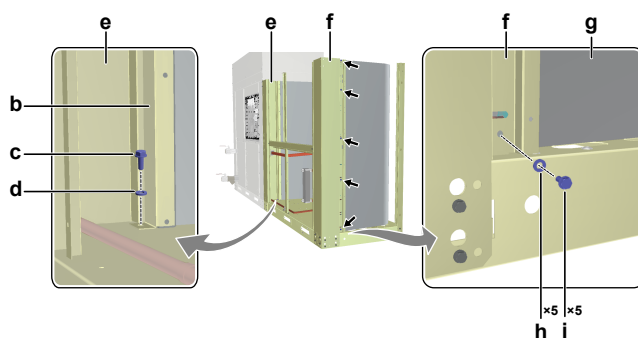
**For double circuit units only:****NOTICE**

Do not fully tighten the screws yet. Tighten them after the condenser heat exchanger is brazed to the unit.

- 1 Slide the condenser heat exchanger in place on the unit's floor plate.
- 2 Install the screws (m) and washers (l) that fix the condenser heat exchanger (g1) on the brazing side to the unit's floor plate.



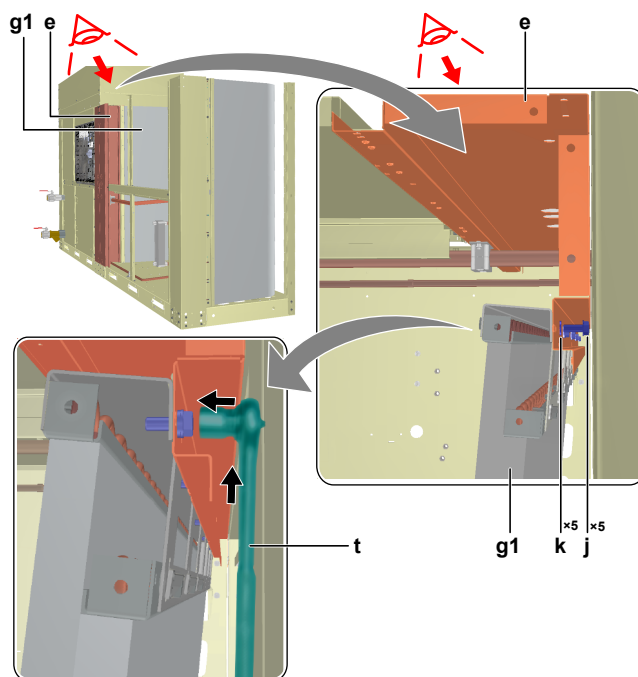
- 3 Install the screws (i) and washers (h) that fix the condenser heat exchanger (g1) on the brazing side to the vertical stay (f).
- 4 Install the screw (c) and washer (d) that fix the condenser heat exchanger (g1) on the non-brazing side to the unit's floor plate.



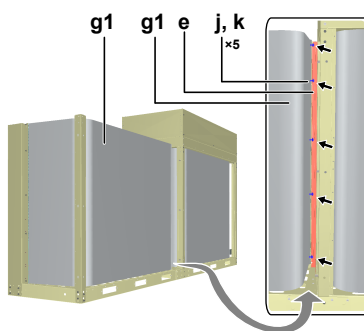
The location for the screws (j) and washers (k) to fix the condenser heat exchanger (g1) on the non-brazing side to the vertical stay (e) is difficult to reach. In the view from above (shown in the figure here below) the situation is clarified.

The screws and washers will have to be applied "blindly" to their location. It is possible to feel by hand where the screws must be located behind the corner of the vertical stay (e).

Also the socket wrench will have to be applied "blindly" to the screws (j).



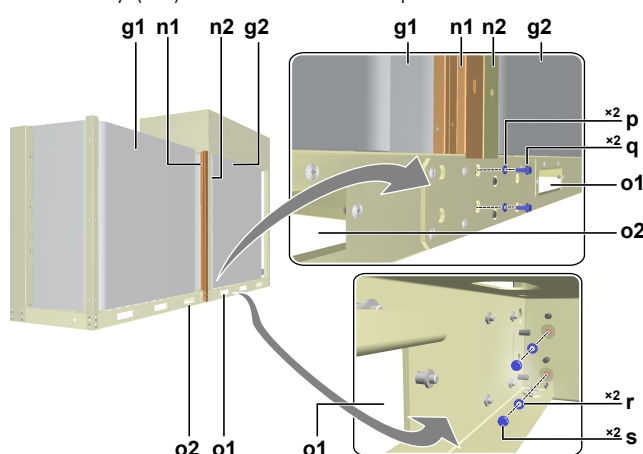
- 5 From the backside of the unit, install the screws (j) and washers (k) to fix the condenser heat exchanger (g1) on the non-brazing side to the vertical stay (e).

**INFORMATION**

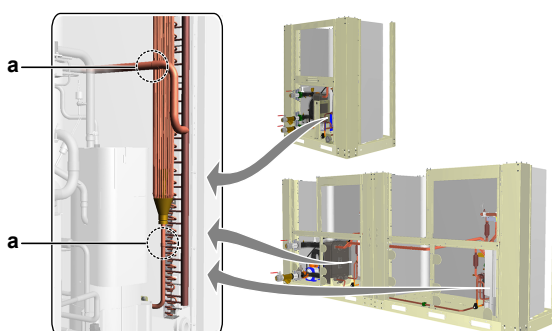
For double circuit units the vertical back stay (on the side corresponding with the removed heat exchanger) was removed when the condenser heat exchanger was removed.

For example; installing the vertical stay (n1):

- 6 Place the vertical stay (n1) in the correct position.
- 7 Install the screws (q) and washers (p) to fix the vertical stay (n1) to the unit's floor plate.
- 8 Through the service hole (o1), install the screws (s) and washers (r) to fix the vertical stay (n1) to the unit's floor plate.

**For all units:**

- 1 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 2 Wrap a wet rag around the components near the condenser heat exchanger brazing points (a).



- 3 After brazing is done, stop the nitrogen supply after the component has cooled down.
- 4 Tighten all the screws that fix the condenser heat exchanger to the unit.

- 5 Reinstall the fan block on the unit, see ["4.23 Plate work"](#) [▶ 263].
- 6 Install the insulation on the appropriate piping.
- 7 Perform a pressure test, see ["6.2.1 Checking procedures"](#) [▶ 350].
- 8 Add refrigerant to the refrigerant circuit (both refrigerant circuits for double circuit units), see ["6.2.2 Repair procedures"](#) [▶ 355].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.9 Crankcase heater

4.9.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To perform an electrical check of the crankcase heater

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

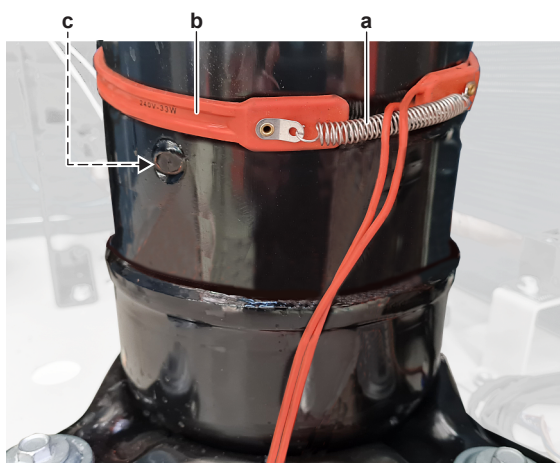
- 1 Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

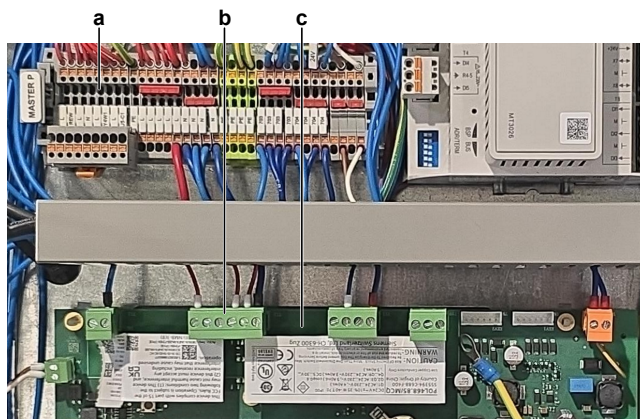
- 2 Remove the compressor insulation, see ["4.6.2 Repair procedures"](#) [▶ 153].
- 3 Detach the spring that fixes the crankcase heater on the compressor.



- a Spring
- b Crankcase heater
- c Welded plug

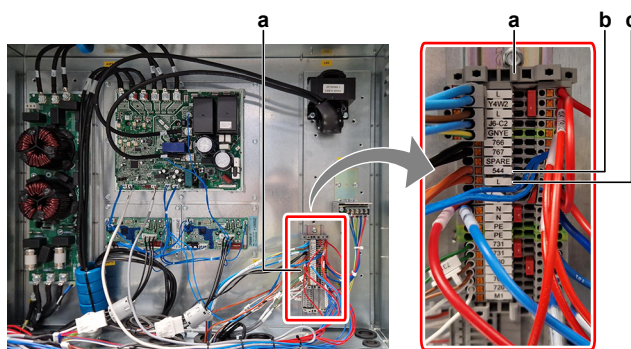
- 4 Remove the crankcase heater from the compressor and wait for 5 minutes (until the heater element reaches ambient temperature).
- 5 Disconnect the wires of the crankcase heater:

- For crankcase heater E11HC; disconnect the wire from terminal Q8 of terminal block T12 on the main PCB and the wire from terminal L of terminal block MP.



- a Terminal block MP
- b Terminal block T12
- c Main PCB

- For crankcase heater E21HC, disconnect the wires from the terminals 544 and L of terminal block SC.



- a Terminal block SC
- b Terminal 544
- c Terminal L

- Measure the resistance between the disconnected crankcase heater wires.

Result: The resistance MUST be $1.77 \text{ k}\Omega \pm 10\%$.

Is the measured resistance correct?	Action
Yes	Continue with the next step.
No	Replace the crankcase heater, see "4.9.2 Repair procedures" [▶ 176].

- Connect the crankcase heater wires to the appropriate terminals and install the crankcase heater on the compressor.
- Turn ON the power using the main switch.
- Start the unit operation via the user interface.
- Activate the crankcase heater via the service monitoring tool:
 - Enter technician password.
 - In the Main Menu, select Unit Enable.
 - Set to Disable.
 - In the Main Menu, select Unit Mode > Test to put the unit in test mode.
 - In the Main Menu, select Commission Unit > Manual Control > Circuit # > Crankcase heater.
 - Set to On.

**INFORMATION**

Verify that the read-out of the outdoor air thermistor and discharge thermistor is correct.

- Measure the outdoor temperature. Use a contact thermometer to measure the other thermistor temperatures.
- Compare with the read-out via the service monitoring tool or field settings.

11 Measure the voltage between the following terminals:

Result: The measured voltage MUST be 230 V AC.

Crankcase heater	Terminals
E11HC	Q8 of terminal block T12 on main PCB and L of terminal block MP.
E21HC	L and 544 of terminal block SC.

**INFORMATION**

The compressor body temperature MUST raise at least 5°C before the crankcase heater is deactivated.

Is the measured voltage correct?	Action
Yes	Perform an insulation check of the crankcase heater, see " 4.9.1 Checking procedures " [▶ 172].
No	Continue with the next step.

12 Disconnect the wires from the main PCB:

- For crankcase heater E11HC; disconnect the wires from terminals Q8 and COM of terminal block T12 on the main PCB.
- For crankcase heater E21HC, disconnect the wires from the terminals Q9 and COM of terminal block T12 on the main PCB.

13 Activate the crankcase heater via the service monitoring tool:

- Enter technician password.
- In the Main Menu, select Unit Enable.
- Set to Disable.
- In the Main Menu, select Unit Mode > Test to put the unit in test mode.
- In the Main Menu, select Commission Unit > Manual Control > Circuit # > Crankcase heater.
- Set to On.

**INFORMATION**

Verify that the read-out of the outdoor air thermistor and discharge thermistor is correct.

- Measure the outdoor temperature. Use a contact thermometer to measure the other thermistor temperatures.
- Compare with the read-out via the service monitoring tool or field settings.

14 Measure the resistance between the following terminals:

Result: The measurement MUST be short circuit (crankcase heater energised, switch contact on main PCB = closed).

Crankcase heater	Terminals
E11HC	COM and Q8 of terminal block T12 on main PCB
E21HC	COM and Q9 of terminal block T12 on main PCB
Is the measured resistance correct?	Action
Yes	Check and correct the wiring between the main power supply terminal and the crankcase heater connection points, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the main PCB, see "4.18 Main PCB" [▶ 236].

To perform an insulation check of the crankcase heater

Prerequisite: First perform an electrical check of the crankcase heater, see ["4.9.1 Checking procedures"](#) [▶ 172].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Before proceeding:

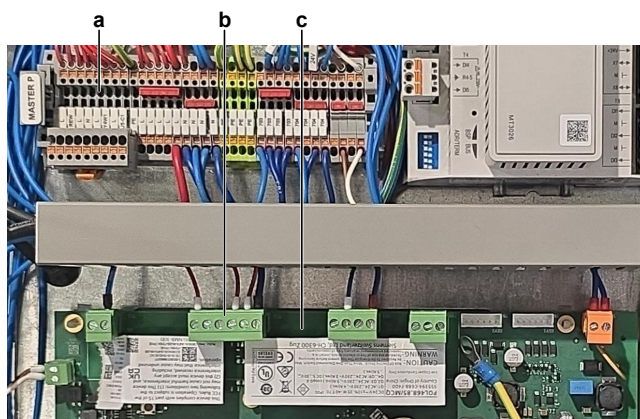


DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

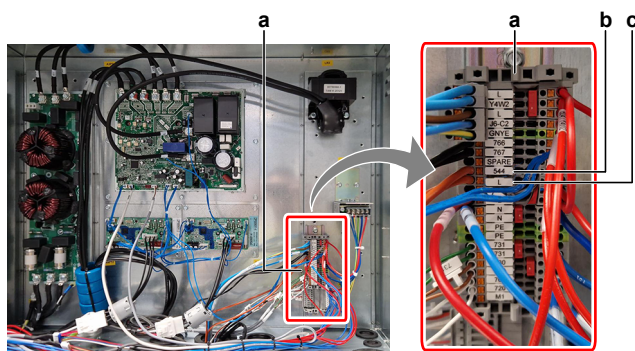
- 2 Disconnect the wires of the crankcase heater:

- For crankcase heater E11HC; disconnect the wire from terminal Q8 of terminal block T12 on the main PCB and the wire from terminal L of terminal block MP.



- a Terminal block MP
- b Terminal block T12
- c Main PCB

- For crankcase heater E21HC, disconnect the wires from the terminals 544 and L of terminal block SC.



- a Terminal block SC
- b Terminal 544
- c Terminal L

- 3 Set the Megger voltage to at least 500 V DC.
- 4 Connect one of the Megger leads to one of the disconnected crankcase heater wires and the other lead to the ground / conductive part of the unit casing.
- 5 Measure the insulation resistance of the crankcase heater.

Result: The measured insulation resistance MUST be >100 MΩ.

Is the measured insulation resistance correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the crankcase heater, see "4.9.2 Repair procedures" [▶ 176].

4.9.2 Repair procedures

To remove the crankcase heater

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

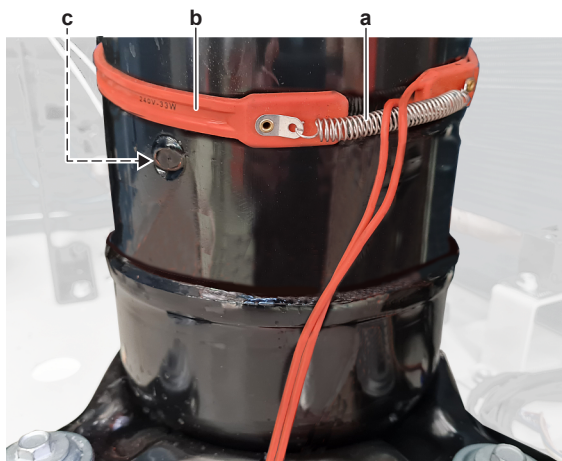
- 1 Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Remove the compressor insulation, see ["4.6.2 Repair procedures"](#) [▶ 153].
- 3 Detach the spring that fixes the crankcase heater on the compressor.

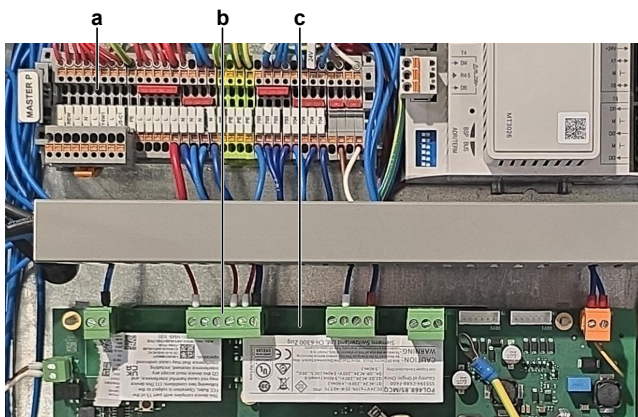


- a Spring
- b Crankcase heater
- c Welded plug

4 Cut all tie straps that fix the crankcase heater harness.

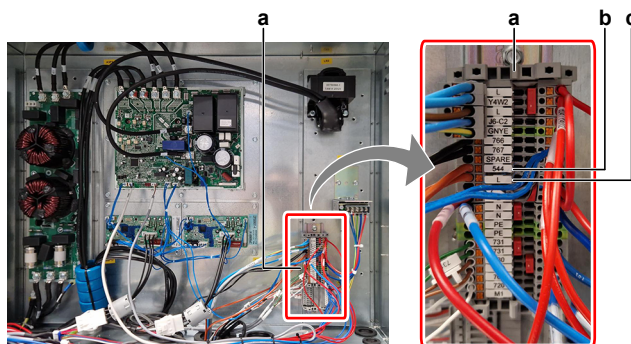
5 Disconnect the wires of the crankcase heater:

- For crankcase heater E11HC; disconnect the wire from terminal Q8 of terminal block T12 on the main PCB and the wire from terminal L of terminal block MP.



- a Terminal block MP
- b Terminal block T12
- c Main PCB

- For crankcase heater E21HC, disconnect the wires from the terminals 544 and L of terminal block SC.



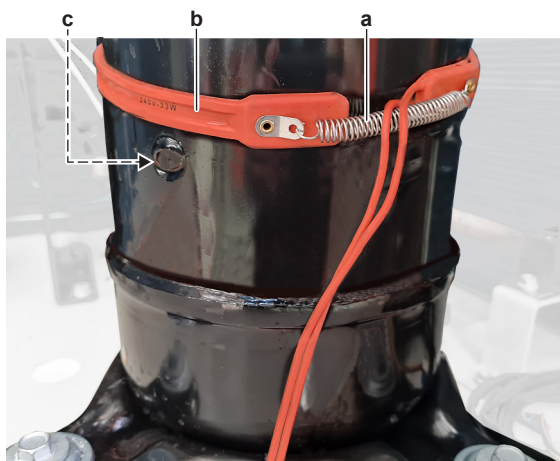
- a Terminal block SC
- b Terminal 544
- c Terminal L

6 Remove the crankcase heater from the unit.

7 To install the crankcase heater, see "[4.9.2 Repair procedures](#)" [[▶ 176](#)].

To install the crankcase heater

- 1 Install the crankcase heater on the compressor, above the welded plug.
- 2 Attach the spring to fix the crankcase heater.

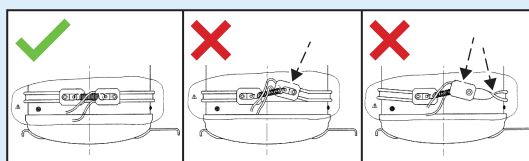


- a Spring
- b Crankcase heater
- c Welded plug

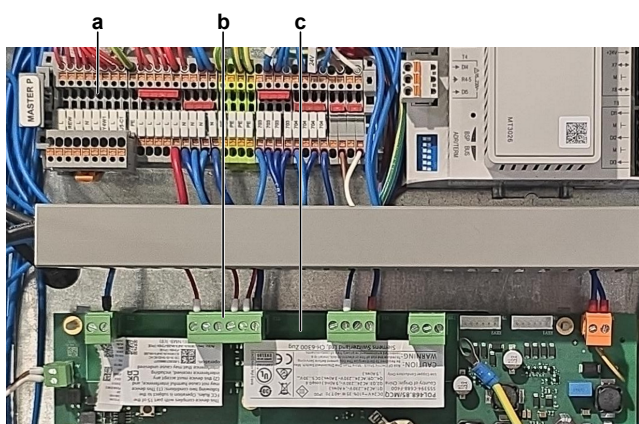


NOTICE

Hook the spring between the two lead wires. Do NOT incline or twist the crankcase heater rubber mould.

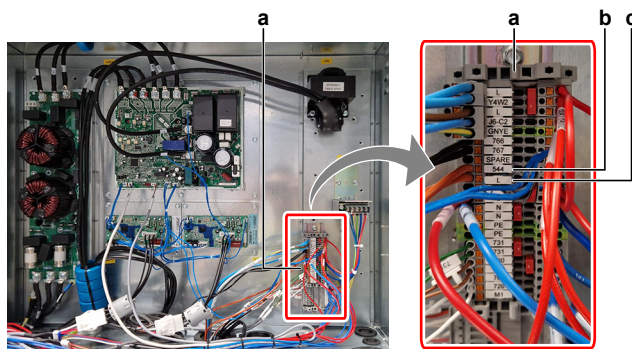


- 3 Route the crankcase heater harness towards the switch box.
- 4 Connect the wires of the crankcase heater:
 - For crankcase heater E11HC; connect the one to the terminal Q8 of terminal block T12 on the main PCB and the other wire to terminal L of terminal block MP.



- a Terminal block MP
- b Terminal block T12
- c Main PCB

- For crankcase heater E21HC, connect the wires to the terminals 544 and L of terminal block SC.



- a Terminal block SC
- b Terminal 544
- c Terminal L

5 Fix the crankcase heater harness using new tie straps.



INFORMATION

Replace all cable ties that were cut during removal.

6 Install the compressor insulation, see ["To install the compressor insulation"](#) [▶ 159].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.10 Economizer extension I/O module

4.10.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

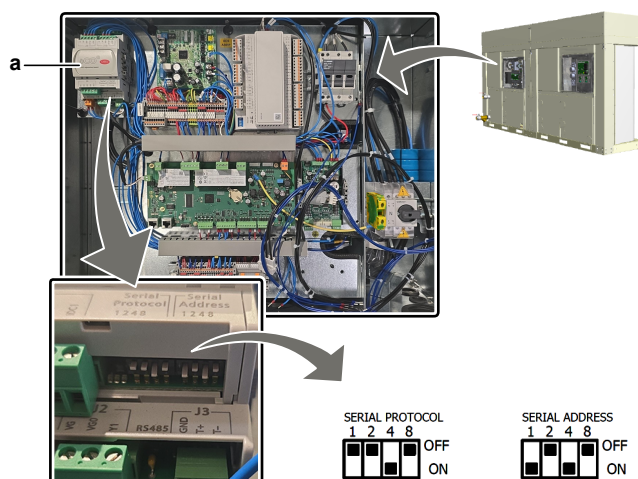
To check the DIP switches of the economizer extension I/O module



INFORMATION

The economizer extension I/O module is only present in double circuit units.

1 Check the correct position of the DIP switches. Correct as needed.



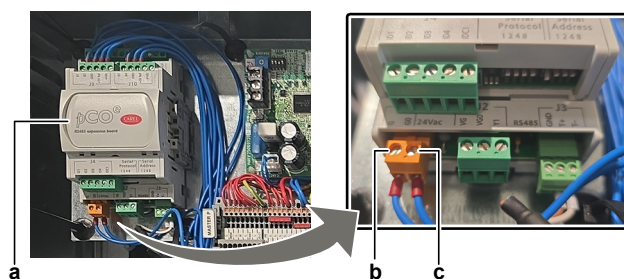
a Economizer extension I/O module

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the "4.10.1 Checking procedures" [▶ 179] of the economizer extension I/O module and continue with the next procedure.

To perform a power check of the economizer extension I/O module

- 1 Turn ON the power of the unit with the main switch.
- 2 Measure the voltage between pins G and G0 of connector J1 of economizer extension I/O module.

Result: The measured voltage MUST be 24 V DC.



a Economizer extension I/O module
b G terminal
c G0 terminal

Is the measured voltage on the economizer extension I/O module correct?	Action
Yes	Return to the "4.10.1 Checking procedures" [▶ 179] of the economizer extension I/O module and continue with the next procedure.
No	Continue with the next step.

- 3 Measure the output voltage between terminals -V and +V of the 24 V DC auxiliary power supply.

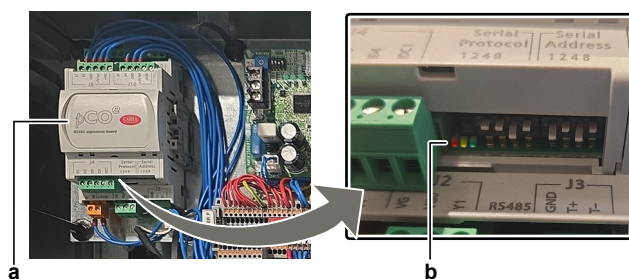
Result: The measured voltage MUST be 24 V DC.

Is the measurement correct?	Action
Yes	Correct the wiring between the economizer extension I/O module and the 24 V DC auxiliary power supply, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the 24 V DC auxiliary power supply, see "4.2.1 Checking procedures" [▶ 128].

To check the LEDs of the economizer extension I/O module

Prerequisite: First check the power supply to the economizer extension I/O module, see "4.10.1 Checking procedures" [▶ 179].

- 1 Locate the LEDs on the economizer extension I/O module.



- a Economizer extension I/O module
b LED's (from left to right: red – yellow – green)

- 2 Compare the behaviour of the LEDs to the table below.

Red LED	Yellow LED	Green LED	Meaning	Action
-	-	ON	Active communication	-
-	ON	-	Probe error	Check economizer thermistor and pressure transducers.
ON	-	-	I/O mismatch error	Check communication wiring to main PCB. Check position of dispswitches.
Flashing	-	-	Missing communication	Check communication wiring to main PCB. Check position of dispswitches.
-	-	-	Waiting for startup (can take up to 30 s)	-

Do the LEDs function correctly?	Action
Yes	Return to the "4.10.1 Checking procedures" [▶ 179] and continue with the next procedure.
No	Perform necessary action as described in the table above.

- 3** After necessary action has been performed, again check the behaviour of the LEDs.

Do the LEDs function correctly?	Action
Yes	Return to the "4.10.1 Checking procedures" [▶ 179] of the economizer extension I/O module and continue with the next procedure.
No	Replace the economizer extension I/O module, see "4.10.2 Repair procedures" [▶ 183].

To check the wiring of the economizer extension I/O module

Prerequisite: First perform all earlier checks of the economizer extension I/O module, see ["4.10.1 Checking procedures"](#) [▶ 179].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Check that all wires are properly connected and that all connectors are fully plugged-in.
- 2 Check that no connectors or wires are damaged.
- 3 Check that the wiring corresponds with the wiring diagram, see ["9.2 Wiring diagram"](#) [▶ 408].

Is the wiring OK?	Action
Yes	Return to the "4.10.1 Checking procedures" [▶ 179] of the economizer extension I/O module and continue with the next procedure.
No	Correct or replace the wiring according to the "9.2 Wiring diagram" [▶ 408].

To check the in- and output signals of the economizer extension I/O module

Prerequisite: First perform all earlier checks of the economizer extension I/O module, see ["4.10.1 Checking procedures"](#) [▶ 179].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Check that the connections below correspond with the wiring diagram:
 - J1: Power supply, see ["To perform a power check of the economizer extension I/O module"](#) [▶ 180].
 - J2: Water pump speed.
 - J3: RS-485 communication.
 - J5: Economizer solenoid valve YECV1, see ["4.12.1 Checking procedures"](#) [▶ 196].
 - J6: Economizer solenoid valve YECV2, see ["4.12.1 Checking procedures"](#) [▶ 196].

- J9:, Economizer refrigerant pressure sensors ECP1 and ECP2, see ["4.11.1 Checking procedures"](#) [▶ 184].
- J10: Economizer thermistors ECT1 and ECT2, see ["4.29.1 Refrigerant side thermistors"](#) [▶ 301].



Are all in- and output signals OK?	Action
Yes	Replace the economizer extension I/O module, see "4.10.2 Repair procedures" [▶ 183].
No	Correct the in- and output signals according to the "9.2 Wiring diagram" [▶ 408].

4.10.2 Repair procedures

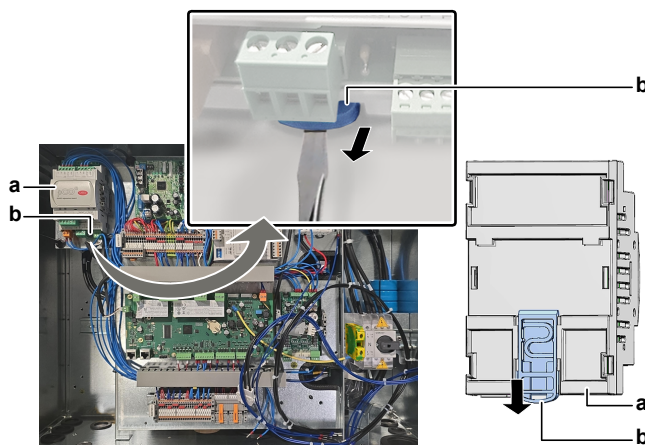
To remove the economizer extension I/O module

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Disconnect all the in- and output wiring.
- 2 Use a screwdriver to push down the flap at the backside of the module to release it from the mounting rail.



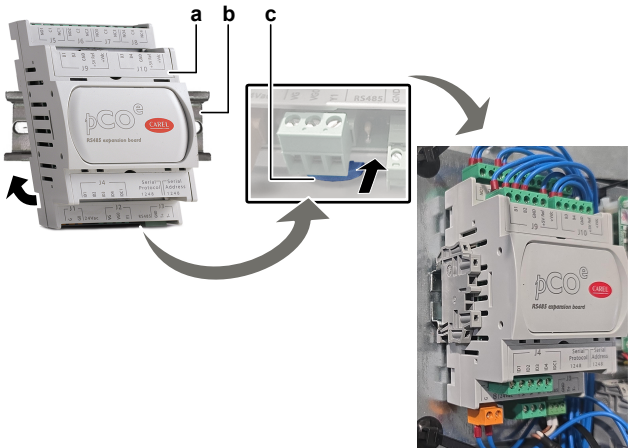
a Economizer extension I/O module
b Flap

3 Remove the module from the mounting rail.

To install the economizer extension I/O module, see "4.10.2 Repair procedures" [▶ 183].

To install the economizer extension I/O module

- 1 Check and set the DIP switches of the economizer extension I/O module. See "4.10.1 Checking procedures" [▶ 179], "To check the DIP switches of the economizer extension I/O module".
- 2 Install the module at the correct location on the mounting rail.
- 3 Carefully push the flap at the backside of the module upwards to fix the module to the mounting rail.
- 4 Connect all the in- and output wiring. See "To check the in- and output signals of the economizer extension I/O module" [▶ 182].



- a Economizer extension I/O module
- b Mounting rail
- c Flap

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To set the DIP switches of the economizer extension I/O module

See "4.10.1 Checking procedures" [▶ 179], "To check the DIP switches of the economizer extension I/O module".

4.11 Economizer refrigerant pressure sensor

4.11.1 Checking procedures

**INFORMATION**
It is recommended to perform the checks in the listed order.

To perform an electrical check of the economizer pressure sensor

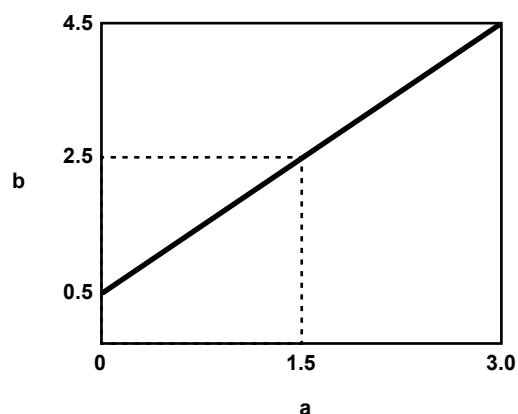
Prerequisite: Check that the pressure sensor is correctly calibrated. Perform the calibration procedure as needed, see "4.11.2 Repair procedures" [▶ 190].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Connect a pressure gauge to the low pressure service port.
- 2 Turn ON the power of the unit with the main switch.
- 3 Start the unit operation and let it operate for a while in stable conditions.
- 4 Read the pressure on the pressure gauge.
- 5 Using the graphic below, determine the expected sensor output voltage based on the pressure obtained in the previous step.



a Detected pressure (MPa)
b Output voltage (V)

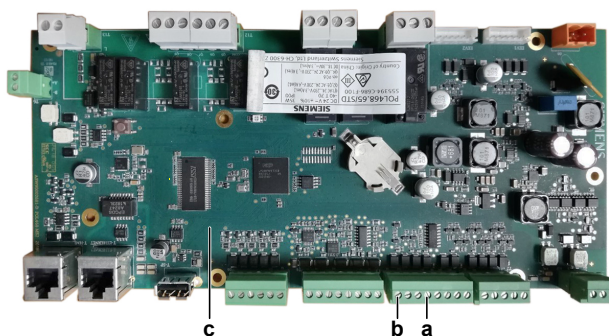
V (DC)	Detected pressure MPa
0.5	0
0.6	0.075
0.7	0.15
0.8	0.225
0.9	0.3
1.0	0.375
1.1	0.45
1.2	0.525
1.3	0.6
1.4	0.675
1.5	0.75
1.6	0.825
1.7	0.9
1.8	0.975
1.9	1.05
2.0	1.125
2.1	1.2
2.2	1.275
2.3	1.35
2.4	1.425

V (DC)	Detected pressure MPa
2.5	1.5
2.6	1.575
2.7	1.65
2.8	1.725
2.9	1.8
3.0	1.875
3.1	1.95
3.2	2.025
3.3	2.1
3.4	2.175
3.5	2.25
3.6	2.325
3.7	2.4
3.8	2.475
3.9	2.55
4.0	2.625
4.1	2.7
4.2	2.775
4.3	2.85
4.4	2.925
4.5	3

Economizer pressure sensor ECP1

For single circuit units only:

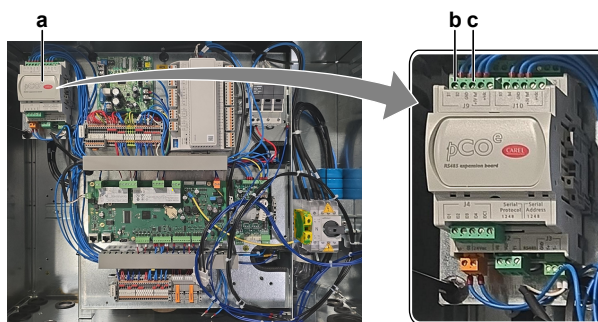
- 6 Measure the output voltage between terminals X2 and M of terminal block T3 on the main PCB.



- a Terminal X2 on terminal block T3
- b Terminal M on terminal block T3
- c Main PCB

For double circuit units only:

- 7 Measure the output voltage between terminals B1 and GND of terminal block J9 on the Economizer extension I/O module.



- a Economizer extension I/O module
- b B1 on terminal block J9
- c GND on terminal block J9

For all units:

- 8 Check that the measured voltage is in line with the expected voltage through the read refrigerant pressure.



INFORMATION

In most cases, the service monitoring tool allows to monitor the low pressure.

If the measured output voltage value matches the voltage determined through the measured pressure, but the pressure is NOT correct on the service monitoring tool, replace the main PCB.

The measured voltage is inside the expected range?	Action
Yes	Refrigerant pressure sensor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

For single circuit units only:

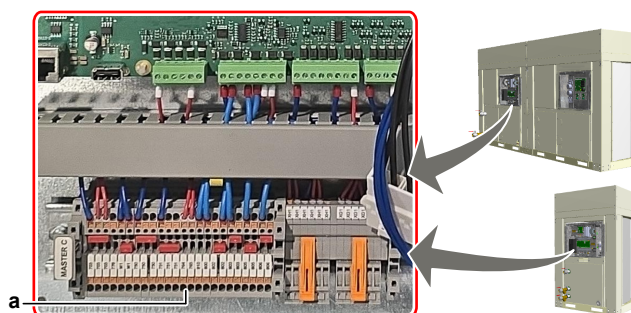
- 9 Measure the voltage (power supply) between terminals 750 and 751 of terminal block MC.

Result: The measured voltage MUST be +5 V DC.

For double circuit units only:

- 10 Measure the voltage (power supply) between terminals 802 and 803 of terminal block MC.

Result: The measured voltage MUST be +5 V DC.



- a Terminal block MC

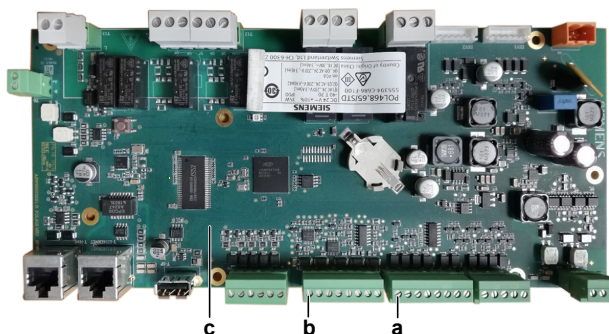
Is the measured voltage +5 V DC?	Then
Yes	Replace the pressure sensor see "4.11.2 Repair procedures" [▶ 190].

Is the measured voltage +5 V DC?	Then
No	Continue with the next step.

For single circuit units only:

- 11** Measure the output voltage between terminal M of terminal block T3 and terminal VDCout of terminal block T4 on the main PCB.

Result: The measured voltage MUST be +5 V DC.



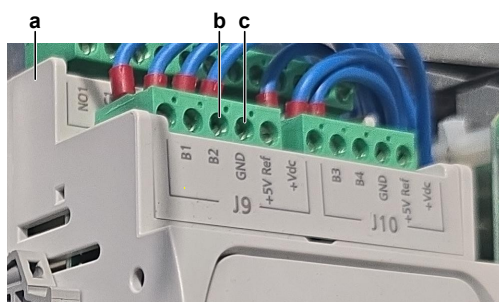
- a Terminal M on terminal block T3
- b Terminal VDCout on terminal block T4
- c Main PCB

Is the measured output voltage +5 V DC?	Then
Yes	Correct the wiring between the terminal block MC and the terminal blocks on the main PCB, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the main PCB, see "4.18.1 Checking procedures" [▶ 236].

For double circuit units only:

- 12** Measure the output voltage between terminal GND and terminal +5V Ref of terminal block J9 on the Economizer extension I/O module.

Result: The measured voltage MUST be +5 V DC.



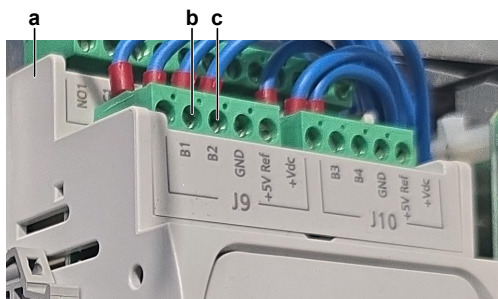
- a Economizer extension I/O module
- b GND on terminal block J9
- c +5V Ref on terminal block J9

Is the measured output voltage +5 V DC?	Then
Yes	Correct the wiring between the terminal block MC and the terminal blocks on the Economizer extension I/O module, see "9.2 Wiring diagram" [▶ 408].

Is the measured output voltage +5 V DC?	Then
No	Perform a check of the main Economizer extension I/O module, see "4.10.1 Checking procedures" [▶ 179].

Economizer pressure sensor ECP2

- 1 Measure the output voltage between terminals B2 and GND of terminal block J9 on the Economizer extension I/O module.



- a Economizer extension I/O module
- b B2 on terminal block J9
- c GND on terminal block J9

- 2 Check that the measured voltage is in line with the expected voltage through the read refrigerant pressure.



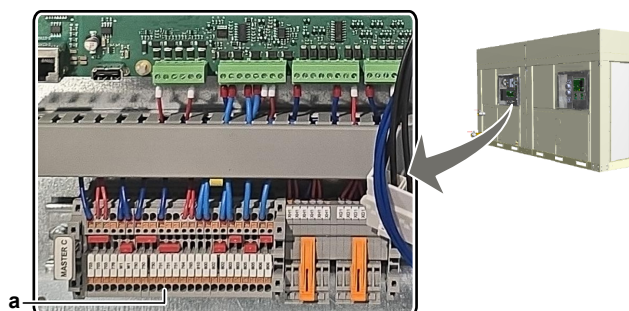
INFORMATION

In most cases, the service monitoring tool allows to monitor the low pressure.
If the measured output voltage value matches the voltage determined through the measured pressure, but the pressure is NOT correct on the service monitoring tool, replace the main PCB.

The measured voltage is inside the expected range?	Action
Yes	Refrigerant pressure sensor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

- 3 Measure the voltage (power supply) between terminals 802 and 803 of terminal block MC.

Result: The measured voltage MUST be +5 V DC.

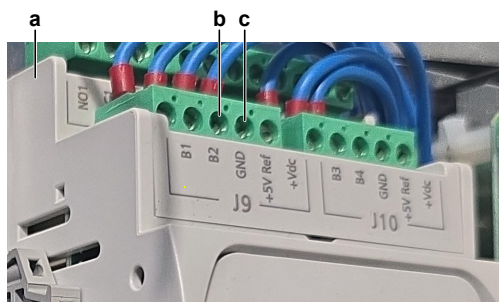


- a Terminal block MC

Is the measured voltage +5 V DC?	Then
Yes	Replace the pressure sensor see "4.11.2 Repair procedures" [▶ 190].
No	Continue with the next step.

- 4** Measure the output voltage between terminal GND and terminal +5V Ref of terminal block J9 on the Economizer extension I/O module.

Result: The measured voltage MUST be +5 V DC.



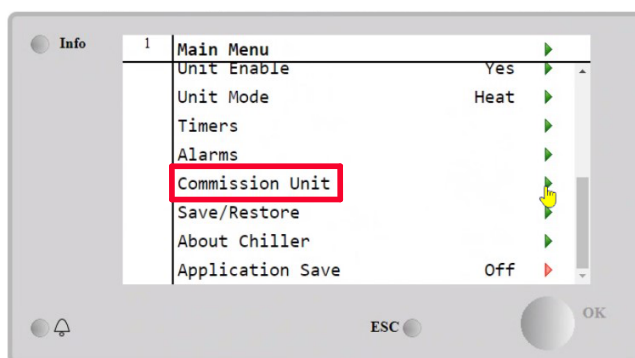
- a Economizer extension I/O module
- b GND on terminal block J9
- c +5V Ref on terminal block J9

Is the measured output voltage +5 V DC?	Then
Yes	Correct the wiring between the terminal block MC and the terminal blocks on the Economizer extension I/O module, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the main Economizer extension I/O module, see "4.10.1 Checking procedures" [▶ 179].

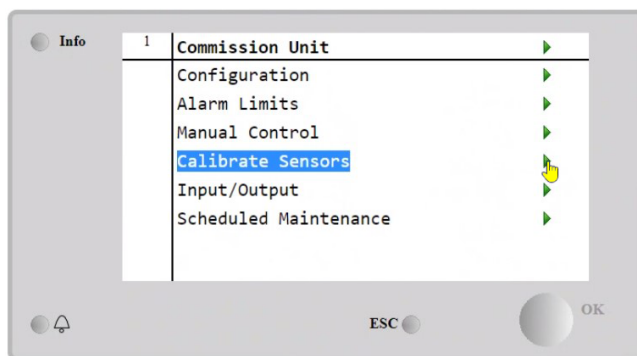
4.11.2 Repair procedures

To calibrate the economizer refrigerant pressure sensor

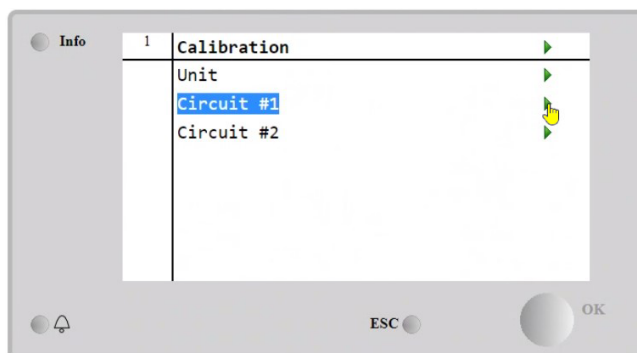
On the service monitoring tool:



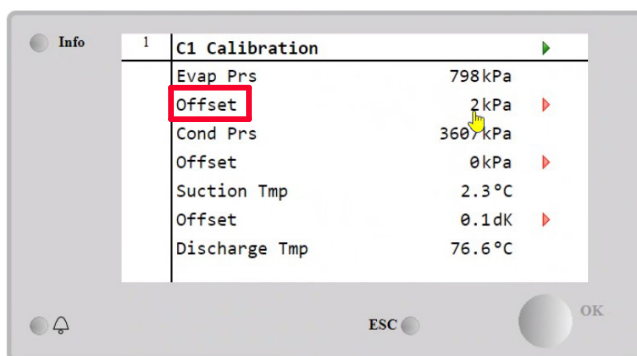
- 1** Select Commission Unit.



2 Select Calibrate Sensors.



3 Select Circuit #.



4 Select Offset.

5 Modify the Offset to obtain the same pressure as measured by the reference gauge.

If the required correction is out of the possible range (from -100 kPa to 100 kPa) replace the pressure sensor, see ["4.11.2 Repair procedures"](#) [▶ 190].

Is the problem solved?	Action
Yes	No further actions required.
No	Perform an electrical check of the refrigerant pressure sensor, see "4.27.1 Checking procedures" [▶ 287].

To remove the economizer refrigerant pressure sensor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

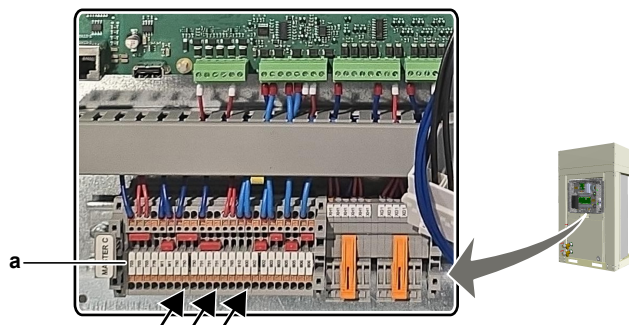
Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

- 1 Cut all tie straps that fix the refrigerant pressure sensor harness.

Economizer pressure sensor ECP1

For single circuit units only:

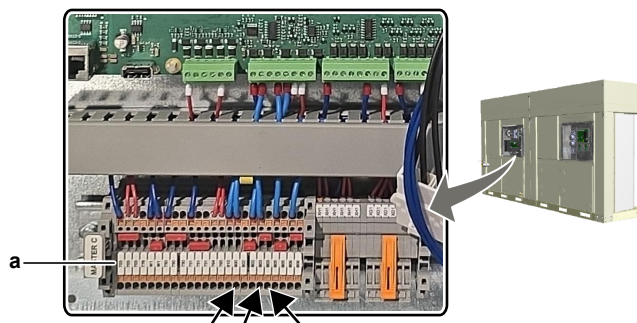
- 2 Disconnect the wires of the pressure sensor:
 - Disconnect the wires from the terminals 800, 750 and 751 of terminal block MC.



a Terminal block MC

For double circuit units only:

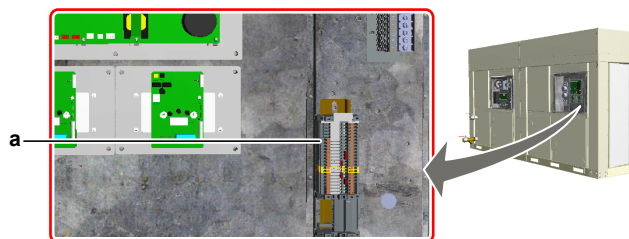
- 3 Disconnect the wires of the pressure sensor:
 - Disconnect the wires from the terminals 800, 802 and 803 of terminal block MC.



a Terminal block MC

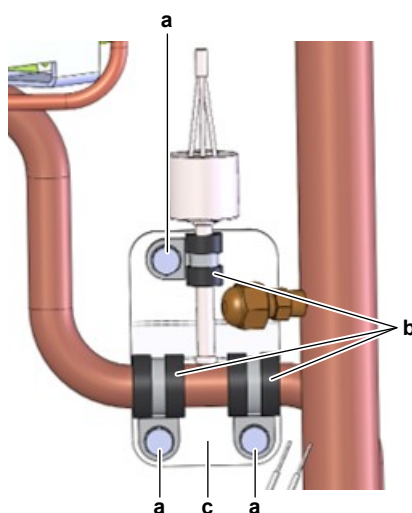
Economizer pressure sensor ECP2

- 1 Disconnect the wires of the pressure sensor:
 - Disconnect the wires from the terminals 802, 803 and 810 of terminal block SC.



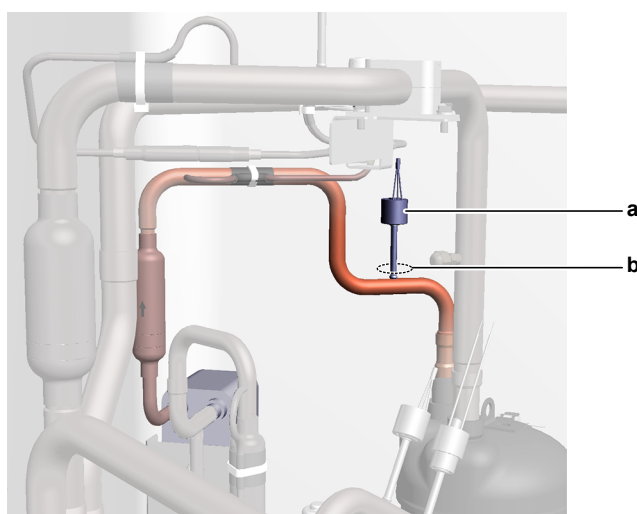
a Terminal block SC

- 2 Remove the 3 bolts and remove the 3 clips and bracket from the refrigerant piping.



- a Bolt
- b Clip
- c Bracket

- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure **MUST NOT** exceed 0.02 MPa.
- 4 Wrap a wet rag around the components near the refrigerant pressure sensor. Heat the brazing point of the refrigerant pressure sensor pipe using an oxygen acetylene torch and remove the refrigerant pressure sensor pipe from the refrigerant pipe using pliers.



- a Refrigerant pressure sensor
- b Refrigerant pressure sensor pipe

- 5 Stop the nitrogen supply when the piping has cooled down.
- 6 Remove the refrigerant pressure sensor.



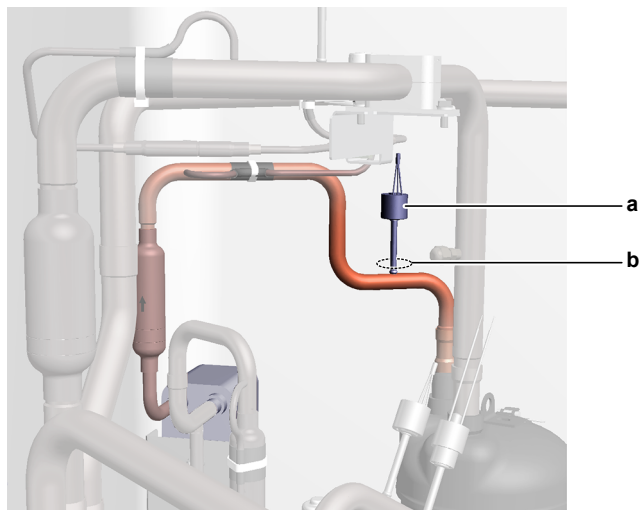
INFORMATION

It is **ALSO** possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

- 7 Install a plug or cap on the refrigerant piping to avoid dirt or impurities from entering the piping.
- 8 To install the refrigerant pressure sensor, see ["4.11.2 Repair procedures"](#) [▶ 190].

To install the economizer refrigerant pressure sensor

- 1 Remove the plug or cap from the refrigerant piping and make sure it is clean.
- 2 Install the refrigerant pressure sensor in the correct location.
- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure **MUST NOT** exceed 0.02 MPa.
- 4 Wrap a wet rag around the refrigerant pressure sensor and any other components near the pressure sensor and braise the refrigerant pressure sensor pipe to the refrigerant pipe.



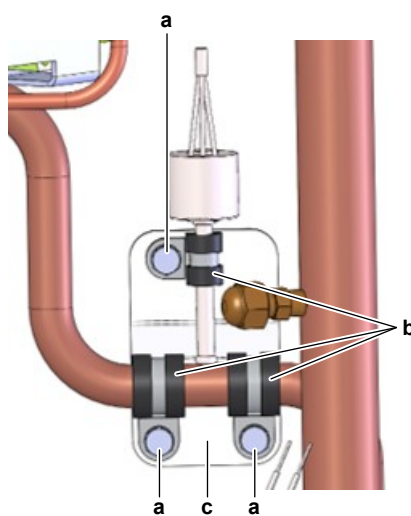
a Refrigerant pressure sensor
b Refrigerant pressure sensor pipe



CAUTION

Overheating the pressure sensor will damage or destroy it.

- 5 After brazing is done, stop the nitrogen supply after the component has cooled-down.
- 6 Install the bracket and the 3 clips in the correct location on the refrigerant piping.

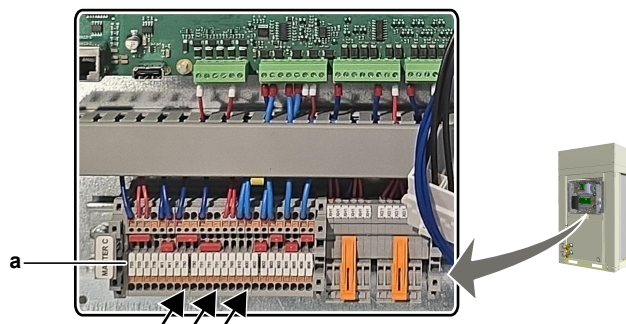


a Bolt
b Clip
c Bracket

- 7 Install and tighten the 3 bolts to fix the clips and bracket.

Economizer pressure sensor ECP1**For single circuit units only:**

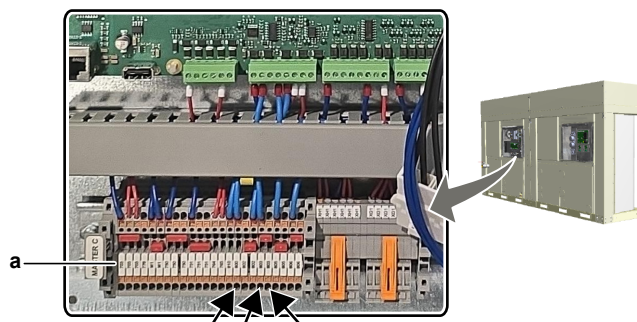
- 8 Connect the wires of the pressure sensor:
- Connect the wires to the terminals 800, 750 and 751 of terminal block MC.



a Terminal block MC

For double circuit units only:

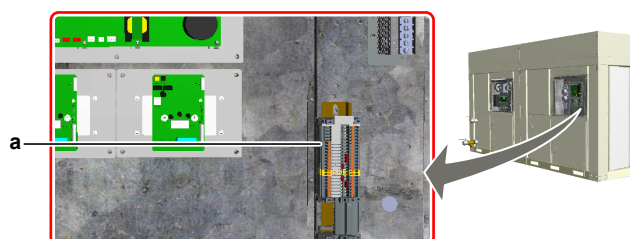
- 9 Connect the wires of the pressure sensor:
- Connect the wires to the terminals 800, 802 and 803 of terminal block MC.



a Terminal block MC

Economizer pressure sensor ECP2

- 1 Connect the wires of the pressure sensor:
- Connect the wires to the terminals 802, 803 and 810 of terminal block SC.



a Terminal block SC

- 2 Fix the refrigerant pressure sensor harness using new tie straps.
- 3 Perform a pressure test, see ["6.2.1 Checking procedures"](#) [▶ 350].
- 4 Add refrigerant to the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.12 Economizer solenoid valve

4.12.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To perform a mechanical check of the economizer solenoid valve

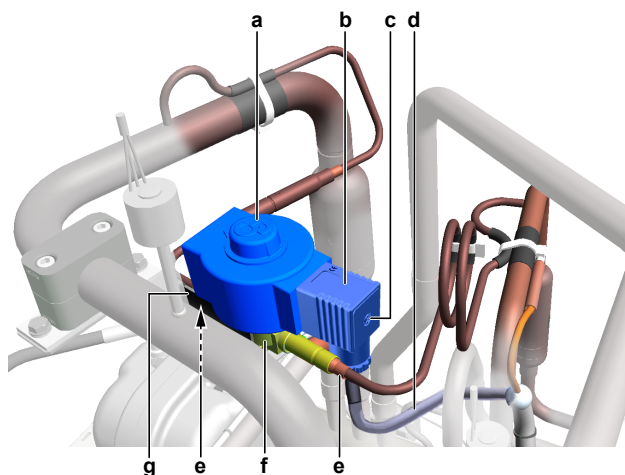
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

1 Visually check:

- For oil drops around the solenoid valve. Locate and fix as needed.
- Pipes for signs of damage. Replace pipes as needed.
- Coil and coil wires for any damage or burst.
- That the coil is correctly installed (clicked) on the valve body. Fix as needed.
- That the cable is installed in downwards direction, fix as needed.
- That the screw holding the connector is correctly installed, fix as needed.



- a Solenoid valve coil
- b Connector
- c Screw
- d Cable
- e Brazing points
- f Solenoid valve body
- g Mounting bracket

Is the solenoid valve coil firmly fixed and not visually damaged?	Action
Yes	Perform an electrical check of the solenoid valve, see "4.12.1 Checking procedures" [▶ 196].

Is the solenoid valve coil firmly fixed and not visually damaged?	Action
No	Fix or replace the solenoid valve coil, see "4.12.2 Repair procedures" [▶ 200].

To perform an electrical check of the economizer solenoid valve

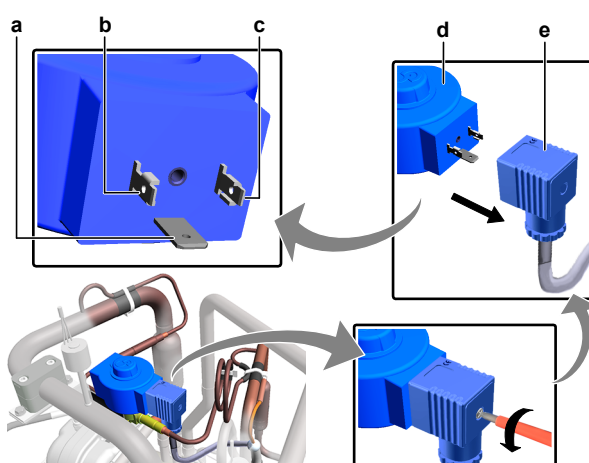
Prerequisite: First perform a mechanical check of the solenoid valve, see ["4.12.1 Checking procedures"](#) [▶ 196].

- 1 Loosen the screw and unplug the solenoid valve connector.



INFORMATION

Make sure that the solenoid valve wiring harness between the connector on the solenoid valve and the connections inside the switch box is properly connected and NOT damaged (check continuity), see ["9.2 Wiring diagram"](#) [▶ 408].



- a Earth pole
- b X1 pole
- c X2 pole
- d Solenoid valve coil
- e Connector

- 2 Measure the resistance of the solenoid valve coil.

Result: The measured resistance MUST be:

- X1 to earth → Open line
- X2 to earth → Open line
- X1 to X2 → $390\ \Omega \pm 5\%$

Are the measured values correct?	Action
Yes	Continue with the next step.
No	Replace the solenoid valve coil, see "4.12.2 Repair procedures" [▶ 200].

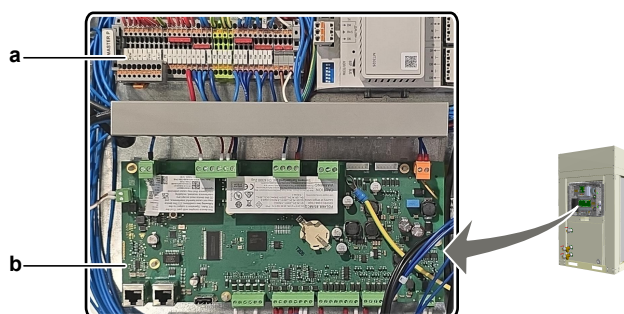
- 3 Re-connect the solenoid valve connector.
- 4 Start the unit operation via the user interface.

For single circuit units only:

- 5 Measure the voltage (power supply) on the solenoid valve connection between terminal Q9 of terminal block T12 on the main PCB, and terminal L of terminal block MP.

Result: The measured voltage MUST be:

- 0 V AC when the solenoid valve is NOT activated
- 230 V AC when the solenoid valve is activated



a Terminal block MP
b Main PCB

- 6 Wait for the activation or deactivation of the solenoid valve and again measure the voltage (power supply) on the solenoid valve connection on the main PCB and terminal block MP.

Are the measured voltages correct?	Action
Yes	Perform an operation check of the solenoid valve, see "4.12.1 Checking procedures" [▶ 196].
No	Perform a check of the main PCB, see "4.18 Main PCB" [▶ 236].

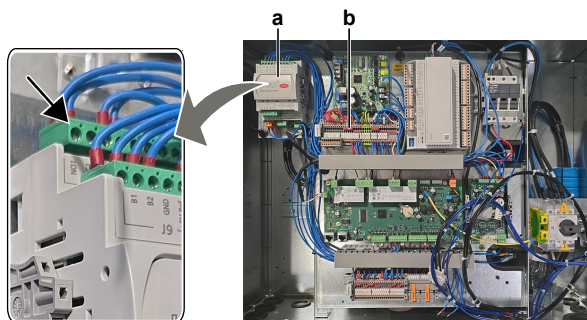
For double circuit units only:

For economizer solenoid valve XYECV1:

- 7 Measure the voltage (power supply) on the solenoid valve connection between terminal NO1 of terminal block J5 on the economizer extension I/O module, and terminal L of terminal block MP.

Result: The measured voltage MUST be:

- 0 V AC when the solenoid valve is NOT activated
- 230 V AC when the solenoid valve is activated



a Economizer extension I/O module
b Terminal block MP

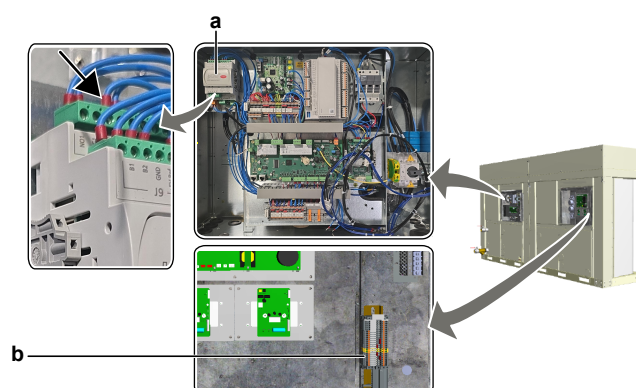
- 8 Wait for the activation or deactivation of the solenoid valve and again measure the voltage (power supply) on the solenoid valve connection on the economizer extension I/O module and terminal block MP.

For economizer solenoid valve XYECV2:

- 9 Measure the voltage (power supply) on the solenoid valve connection between terminal NO2 of terminal block J6 on the economizer extension I/O module, and terminal L of terminal block SC.

Result: The measured voltage MUST be:

- 0 V AC when the solenoid valve is NOT activated
- 230 V AC when the solenoid valve is activated



- a** Economizer extension I/O module
b Terminal block SC

10 Wait for the activation or deactivation of the solenoid valve and again measure the voltage (power supply) on the solenoid valve connection on the economizer extension I/O module and terminal block SC.

Are the measured voltages correct?	Action
Yes	Perform an operation check of the solenoid valve, see "4.12.1 Checking procedures" [▶ 196].
No	Perform a check of the main PCB, see "4.18 Main PCB" [▶ 236].

To perform an operation check of the economizer solenoid valve

Prerequisite: First perform an electrical check of the solenoid valve, see ["4.12.1 Checking procedures"](#) [▶ 196].

- 1 Check the position of the specific solenoid valve. The solenoid valve MUST be:
 - In closed position (NOT energized) when NOT activated
 - In open position (energized) when activated
- 2 If the solenoid valve is closed, check the valve inlet and outlet for any leaks. Replace the valve body if any leaks are found, see ["4.12.2 Repair procedures"](#) [▶ 200].
- 3 If the solenoid valve is open, check with a contact thermometer (or by touching) if refrigerant flows through the solenoid valve.
- 4 Wait for the activation or deactivation of the specific solenoid valve and again perform the above checks.

Is the solenoid valve operating correctly?	Action
Yes	Component is OK. Return to the troubleshooting of the specific error and continue with the next step.
No	Replace the solenoid valve body, see "4.12.2 Repair procedures" [▶ 200].

4.12.2 Repair procedures

To remove the economizer solenoid valve coil

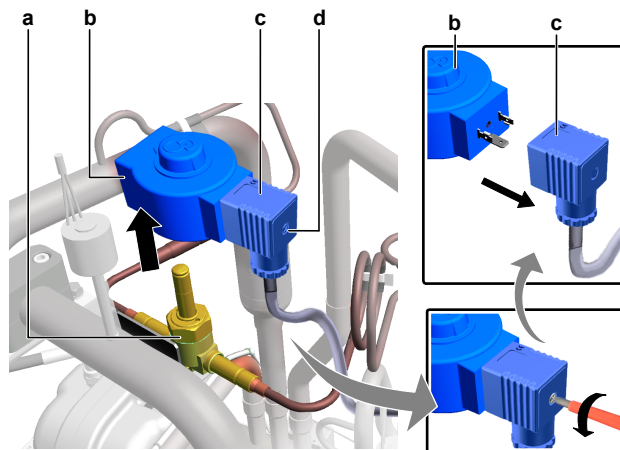
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

- 1 Remove the solenoid valve coil from the solenoid valve body by pulling it upwards. It will release with a "click".
- 2 Loosen the screw and unplug the solenoid valve connector.



- a Solenoid valve body
- b Solenoid valve coil
- c Connector
- d Screw

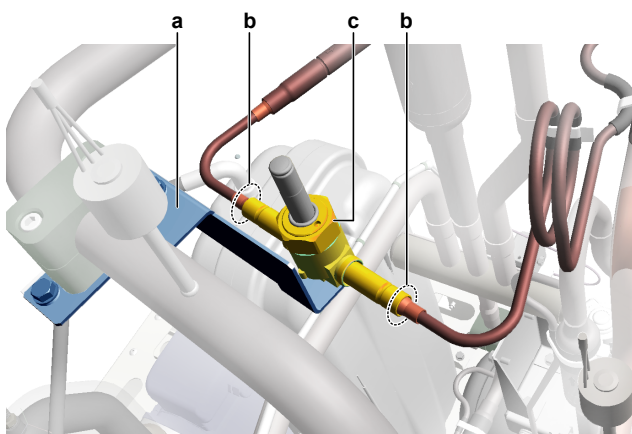
- 3 To install the solenoid valve coil, see ["4.12.2 Repair procedures"](#) [▶ 200].

To remove the economizer solenoid valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

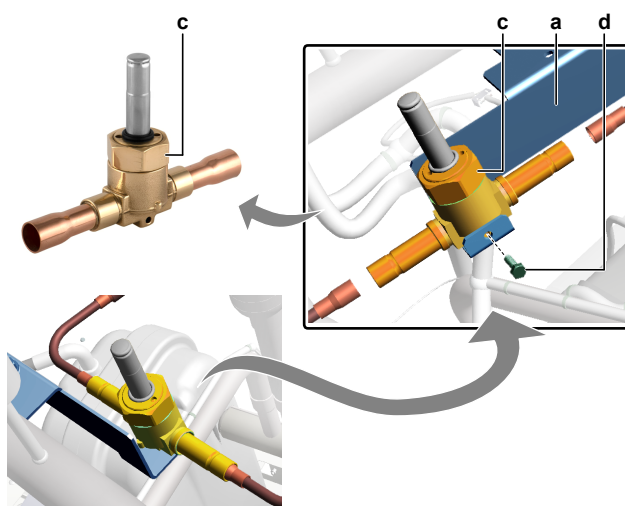
Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

- 1 Remove the solenoid valve coil, see ["4.12.2 Repair procedures"](#) [▶ 200].
- 2 Using a valve magnet, open the solenoid valve.
- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 4 Wrap a wet rag around the components near the solenoid valve assembly pipes. Heat the brazing points of the solenoid valve assembly pipes using an oxygen acetylene torch and remove the solenoid valve assembly pipes from the refrigerant pipes using pliers.



- a Mounting bracket
- b Brazing point
- c Solenoid valve body

- 5 Stop the nitrogen supply when the piping has cooled down.
- 6 Remove the screw that fixes the solenoid valve body to the bracket.
- 7 Remove the solenoid valve body.



- a Mounting bracket
- c Solenoid valve body
- d Screw



INFORMATION

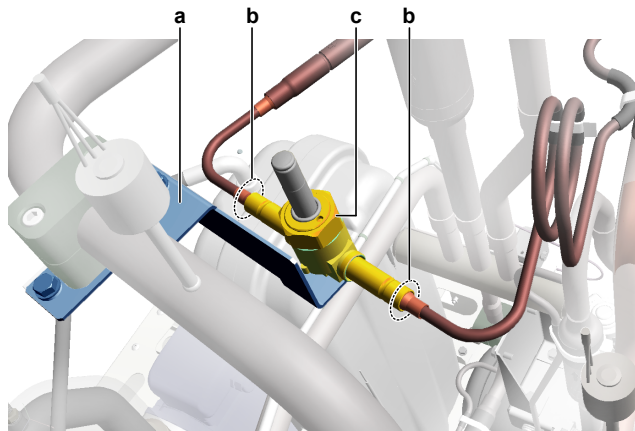
It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

- 8 Install plugs or caps on the open pipe ends of the refrigerant piping to avoid dirt or impurities from entering the piping.
- 9 To install the solenoid valve body, see "[4.12.2 Repair procedures](#)" [▶ 200].

To install the economizer solenoid valve body

- 1 Remove the plugs or caps from the refrigerant piping and make sure they are clean.
- 2 Remove the solenoid valve coil from the spare part solenoid valve body.
- 3 Install the solenoid valve body in the correct location and correctly oriented. Insert the pipe ends in the pipe expansions.
- 4 Open the solenoid valve using a valve magnet.

- 5 Supply nitrogen to the refrigerant circuit. The nitrogen pressure **MUST NOT** exceed 0.02 MPa.
- 6 Wrap a wet rag around the solenoid valve body and any other components near the solenoid valve and braze the solenoid valve body pipes to the refrigerant pipes.



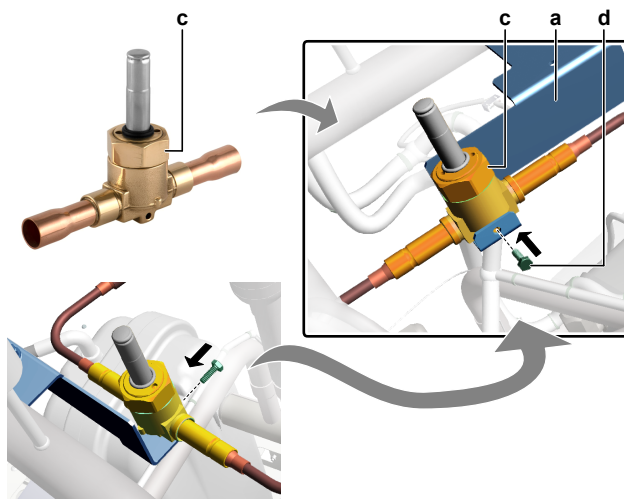
- a Mounting bracket
- b Brazing point
- c Solenoid valve body



CAUTION

Overheating the valve will damage or destroy it.

- 7 After brazing is done, stop the nitrogen supply after the component has cooled-down.
- 8 Install and tighten the screw to fix the solenoid valve body to the mounting bracket.

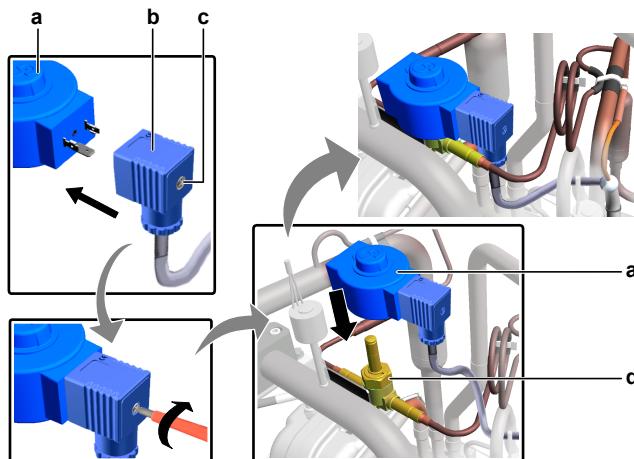


- a Mounting bracket
- c Solenoid valve body
- d Screw

- 9 Install the insulation in the original location (if applicable).
- 10 Install the solenoid valve coil, see "[4.12.2 Repair procedures](#)" [[▶ 200](#)].
- 11 Perform a pressure test, see "[6.2.1 Checking procedures](#)" [[▶ 350](#)].
- 12 Add refrigerant to the refrigerant circuit, see "[6.2.2 Repair procedures](#)" [[▶ 355](#)].

To install the economizer solenoid valve coil

- 1 Plug-in the connector in the solenoid valve coil. Ensure it is correctly connected.
- 2 Install and tighten the screw to fix the connector to the solenoid valve coil.
- 3 Correctly install the solenoid valve coil on the solenoid valve body. The coils MUST click on the body.



- a** Solenoid valve coil
b Connector
c Screw
d Solenoid valve body

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the "4.12.1 Checking procedures" [▶ 196] of the economizer solenoid valve and continue with the next procedure.

4.13 Expansion valve

4.13.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.



INFORMATION

Depending on the type, the outdoor units have 1 or 2 refrigerant circuits. Units with one refrigerant circuit have one main expansion valve (EEXV1) and one economizer expansion valve (ECEXV1) units with two refrigerant circuits have two main expansion valves (EEXV1 and EEXV2) and two economizer expansion valves (ECEXV1 and ECEXV2) As they are equal for both refrigerant circuits, the check and repair procedures describe only one main and one economizer expansion valve.

To perform a mechanical check of the expansion valve

Prerequisite: Power OFF the unit and wait until the pump down procedure is finished. Then turn ON the unit and listen to the expansion valve assembly. If the

expansion valve does NOT make a latching sound, continue with the electrical check of the expansion valve, see ["4.13.1 Checking procedures"](#) [▶ 203].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Remove the expansion valve insulation (if applicable) and visually check:
 - For oil drops around the expansion valve. Locate and fix as necessary.
 - Pipes for signs of damage. Replace pipes as needed.
 - Coil wires for signs of damage. Replace expansion valve coil as needed. See ["4.13.2 Repair procedures"](#) [▶ 207].
- 2 Remove the expansion valve coil from the expansion valve body, see ["4.13.2 Repair procedures"](#) [▶ 207].
- 3 Slide the expansion valve magnet over the expansion valve body and gently rotate the magnet clockwise/counterclockwise to manually close/open the expansion valve. Listen to check if the valve is closing/opening and manually close the valve when check is done.



INFORMATION

After the check, remove the magnet from the expansion valve body and install the expansion valve coil on the expansion valve body. Make sure that the expansion valve coil is correctly installed on the expansion valve body.



INFORMATION

It is highly recommended to perform a power reset after checking the valve using a magnet.

Does the expansion valve open?	Action
Yes	Perform an electrical check of the expansion valve, see "4.13.1 Checking procedures" [▶ 203].
No	Replace the expansion valve body, see "4.13.2 Repair procedures" [▶ 207].

To perform an electrical check of the expansion valve

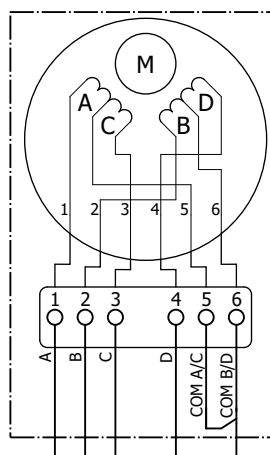
- 1 First perform a mechanical check of the expansion valve, see ["4.13.1 Checking procedures"](#) [▶ 203].
- 2 Disconnect the electrical connector of the expansion valve coil from the appropriate PCB and measure the resistance of all windings (between the pins of each phase (wire) and the common wire) using a multi meter. All measurements MUST be approximately the same.

Number of refrigerant circuits	Symbol	Location (PCB)	Connector	Winding resistance
1	EEXV1	Main	T8	100±10 Ω
	ECEXV1	Main	T9	300±30 Ω

Number of refrigerant circuits	Symbol	Location (PCB)	Connector	Winding resistance
2	EEXV1	Main	T8	100±10 Ω
	EEXV2	Main	T9	100±10 Ω
	ECEXV1	Stepper valve driver	Stepper 1	300±30 Ω
	ECEXV2	Stepper valve driver	Stepper 2	300±30 Ω

**INFORMATION**

For EEXV2: Make sure that the wiring between the expansion valve connector and the connector on the PCB is properly connected and NOT damaged (check continuity), see "9.2 Wiring diagram" [▶ 408].

3 Measure as follows:

EE Valve	Between pins	Winding resistance
EEXV1 and EEXV2 1: Grey 2: Brown 3: Yellow 4: Green 6: White	1 - 2	100±10 Ω
	1 - 3	100±10 Ω
	1 - 4	100±10 Ω
	1 - 6	50±5 Ω
	2 - 3	100±10 Ω
	2 - 4	100±10 Ω
	2 - 6	50±5 Ω
	3 - 4	100±10 Ω
	3 - 6	50±5 Ω
	4 - 6	50±5 Ω

EE Valve	Between pins	Winding resistance
ECEXV1 and ECEXV2	1 - 2	300±30 Ω
1: White	1 - 3	300±30 Ω
2: Yellow	1 - 4	300±30 Ω
3: Orange	1 - 6	150±15 Ω
4: Blue	2 - 3	300±30 Ω
6: Red	2 - 4	300±30 Ω
	2 - 6	150±15 Ω
	3 - 4	300±30 Ω
	3 - 6	150±15 Ω
	4 - 6	150±15 Ω

- 4 Check the insulation resistance of the coil by measuring the resistance between the pins of each phase (1, 2, 3, 4) and GND on the unit.

Result: None of the measurements should be short-circuit.



WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

Is the measured resistance correct?	Action
Yes	Perform an operation check of the expansion valve, see "4.13.1 Checking procedures" [▶ 203].
No	Replace the expansion valve coil, "4.13.2 Repair procedures" [▶ 207].

To perform an operation check of the expansion valve

Prerequisite: First perform an electrical check of the expansion valve, see ["4.13.1 Checking procedures"](#) [▶ 203].

- 1 Turn ON the power of the unit with the main switch.
- 2 Start the unit operation via the user interface.
- 3 When the expansion valve is closed according to the service monitoring tool, check the inlet and outlet of the valve with a contact thermometer or use an expansion valve stethoscope to see if refrigerant flows through the expansion valve. Check that the valve is NOT bleeding.

Result: There MUST be NO flow through the expansion valve.

- 4 When the expansion valve is open according to the service monitoring tool, check the inlet and outlet of the valve with a contact thermometer or use an expansion valve stethoscope to see if refrigerant flows through the expansion valve.

Result: Refrigerant MUST flow through the expansion valve.

- 5 Wait for the PCB to command the expansion valve to open (when closed) or to close (when open) (pulse output to expansion valve visible on service monitoring tool).

**INFORMATION**

If the PCB does NOT command the expansion valve to open or close (when it is supposed to), perform a check of the appropriate thermistors and pressure sensors (as their measurements control the operation of the expansion valve(s)).

6 While in opening or closing sequence each expansion valve winding ($\Phi 1, 2, 3, 4$) is supplied with 12 V DC from the PCB. You will need a good multimeter, where its range is set to about 20 V DC, and during opening or closing sequence you may be able to measure the supply voltage for a short time. If you set the multimeter range to Auto, then most likely you may NOT read a value between switching ranges. The best way to check is to feel the movement of the valve by touching, rather than trying to measure the driving voltage.

7 When the expansion valve was commanded to close, check the inlet and outlet of the valve with a contact thermometer or use an expansion valve stethoscope to see if refrigerant flows through the expansion valve. Check that the valve is NOT bleeding.

Result: There MUST be NO flow through the expansion valve.

8 When the expansion valve was commanded to open, check the inlet and outlet of the valve with a contact thermometer or use an expansion valve stethoscope to see if refrigerant flows through the expansion valve.

Result: Refrigerant MUST flow through the expansion valve.

Is the flow through the expansion valve correct?	Action
Yes	Component is OK. Return to the troubleshooting of the specific error and continue with the next step.
No	Replace the expansion valve, see "4.13.2 Repair procedures" [▶ 207].

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.13.2 Repair procedures

To remove the expansion valve coil

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

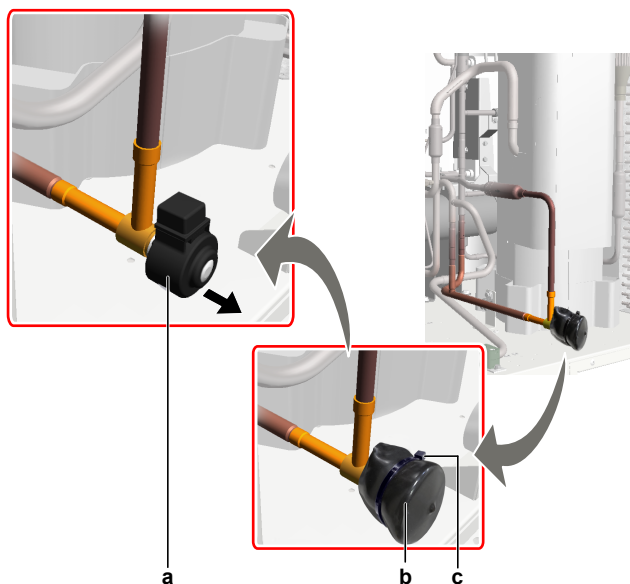
Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

1 If needed, remove any parts or insulation to create more space for the removal.

To remove the main expansion valve coil:

2 Cut the tie strap and remove the insulation cap.

- 3 Pull the expansion valve coil to remove it from the expansion valve body.



- a Expansion valve coil
- b Insulation cap
- c Tie strap

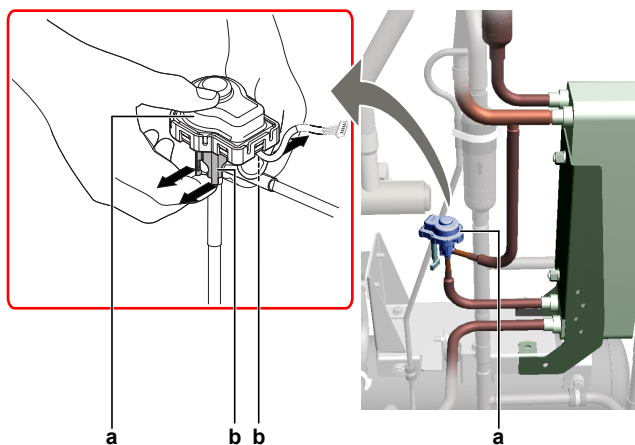


INFORMATION

It may be needed to turn the expansion valve coil 1/8 turn counter clockwise to unlock it. Make sure to note the correct orientation (position) of the expansion valve coil before removal.

To remove the economizer expansion valve coil:

- 4 Pull the retaining clips sideways and remove the coil from the expansion valve body by pulling it upward.



- a Expansion valve coil
- b Retaining clips

To further remove either of the expansion valve coils:

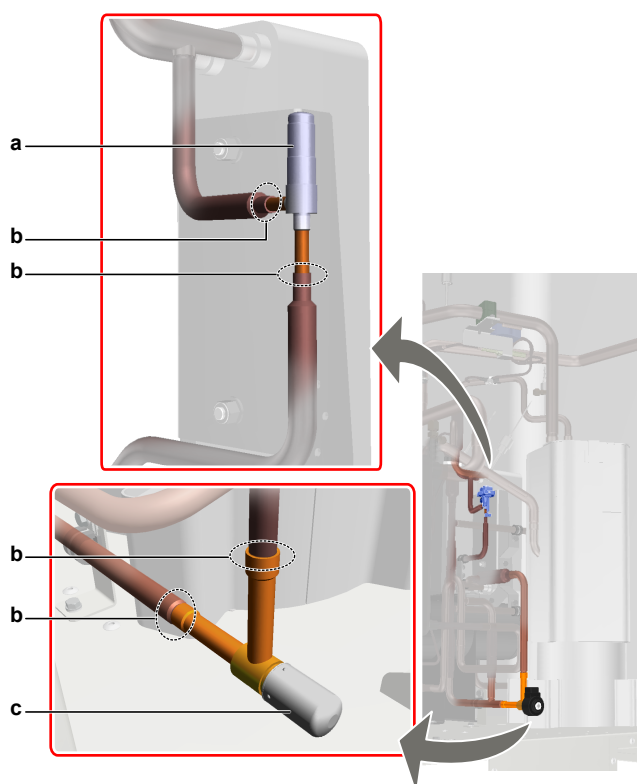
- 5 Cut all tie straps that fix the expansion valve coil harness.
- 6 Disconnect the expansion valve coil connector from the appropriate PCB. See ["To perform an electrical check of the expansion valve"](#) [▶ 204] for an overview of the expansion valve connectors and their locations.
- 7 To install the expansion valve coil, see ["4.13.2 Repair procedures"](#) [▶ 207].

To remove the expansion valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "6.2.2 Repair procedures" [▶ 355].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

- 1 Remove the expansion valve coil, see "4.13.2 Repair procedures" [▶ 207].
- 2 Using a valve magnet, open the expansion valve.
- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 4 Wrap a wet rag around the components near the expansion valve pipes. Heat the brazing points of the expansion valve pipes using an oxygen acetylene torch and remove the expansion valve pipes from the refrigerant pipes using pliers.



- a Economizer expansion valve body
- b Brazing point on expansion valve pipe
- c Main expansion valve body

- 5 Stop the nitrogen supply when the piping has cooled down.
- 6 Remove the expansion valve body.



INFORMATION

It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

- 7 Install plugs or caps on the open pipe ends of the refrigerant piping to avoid dirt or impurities from entering the piping.
- 8 To install the expansion valve body, see "4.13.2 Repair procedures" [▶ 207].

To install the expansion valve body

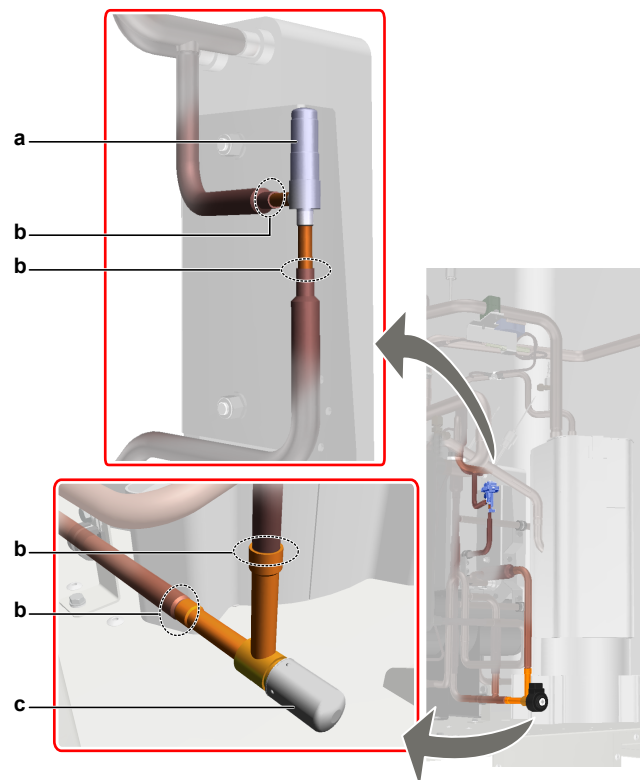
- 1 Remove the plugs or caps from the refrigerant piping and make sure they are clean.
- 2 Remove the expansion valve coil from the spare part expansion valve body.
- 3 Install the expansion valve body in the correct location and correctly oriented. Insert the pipe ends in the pipe expansions.
- 4 Open the expansion valve using a valve magnet.
- 5 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 6 Wrap a wet rag around the expansion valve body and any other components near the expansion valve and braze the expansion valve pipes to the refrigerant pipes.



CAUTION

Overheating the valve will damage or destroy it.

- 7 After brazing is done, stop the nitrogen supply after the component has cooled-down.



- a Economizer expansion valve body
- b Brazing point on expansion valve pipe
- c Main expansion valve body

- 8 To install the expansion valve coil, see ["4.13.2 Repair procedures"](#) [▶ 207].
- 9 Perform a pressure test, see ["6.2.1 Checking procedures"](#) [▶ 350].
- 10 Add refrigerant to the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

To install the expansion valve coil

- 1 Install the expansion valve coil on the expansion valve body.

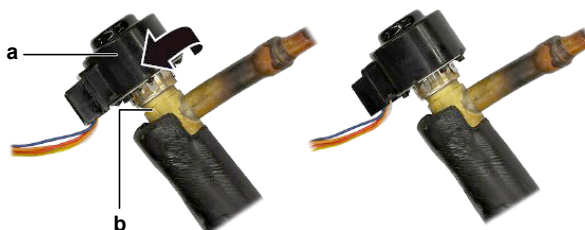
To install the main expansion valve coil:

**INFORMATION**

Turn the expansion valve coil 1/8 turn clockwise to lock it on the expansion valve body.

**INFORMATION**

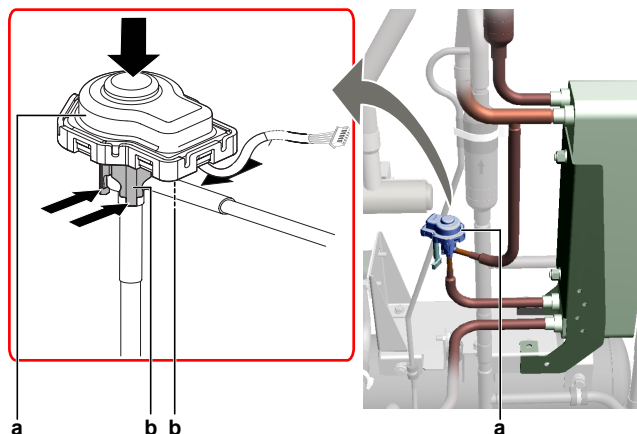
The correct alignment of the expansion valve coil is ensured by dimples.



- a Expansion valve coil
b Pipe

To install the economizer expansion valve coil:

- 2 Push the expansion valve coil downwards on the expansion valve body until the retaining clips click back in place.



- a Expansion valve coil
b Retaining clips

To further install either of the expansion valve coils:**WARNING**

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

- 3 Fix the expansion valve coil harness using new tie straps.
- 4 Install the insulation cap on the expansion valve coil (if applicable).

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.13.1 Checking procedures" [▶ 203] of the expansion valve and continue with the next procedure.

4.14 Fan inverter PCB

4.14.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To perform a power check of the fan inverter PCB

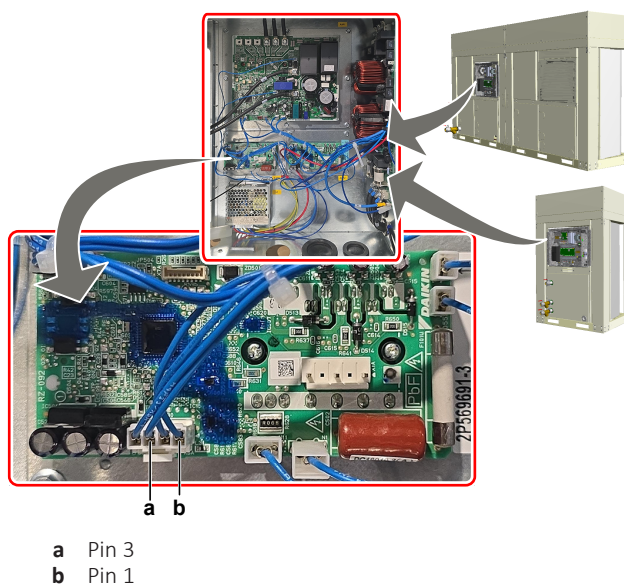
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Turn ON the power of the unit with the main switch.
- 2 Measure the voltage between pins 1 and 3 of connector X5A.

Result: The measured voltage MUST be 18 V DC.



Is the measured voltage on the PCB correct?	Action
Yes	Return to "4.14.1 Checking procedures" [▶ 212] procedures of the PCB and continue with the next procedure.
No	Continue with the next step.

- 3 Measure the output voltage on connector X601A on the inverter PCB.

Result: The measured voltage MUST be 18 V DC.

Is the measured output voltage on the inverter PCB correct?	Action
Yes	Correct the wiring between the fan inverter PCB and the inverter PCB, see "6.1.2 Repair procedures" [▶ 350].

Is the measured output voltage on the inverter PCB correct?	Action
No	Perform a check of the inverter PCB, see "4.17.1 Checking procedures" [▶ 229].

To check the HAP LED of the fan inverter PCB

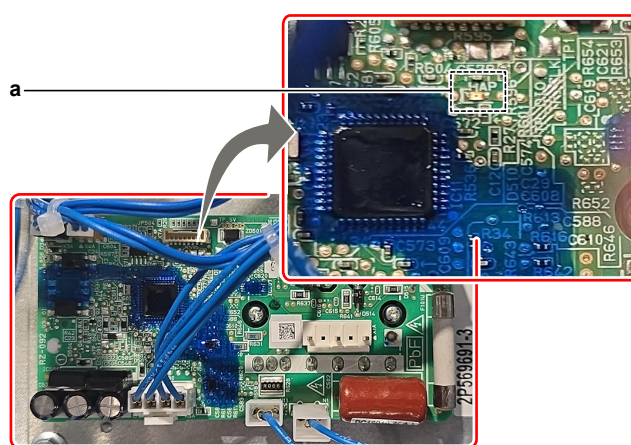
- 1 First perform a power check of the fan inverter PCB, see ["4.14.1 Checking procedures"](#) [▶ 212].



INFORMATION

Make sure that the PCB is NOT in stand-by mode. The HAP LED will NOT blink when in stand-by mode.

- 2 Locate the HAP LED on the fan inverter PCB.



a HAP LED

Does the HAP LED blink in regular intervals (approximately 1 Hz)?	Action
Yes	Return to "4.14.1 Checking procedures" [▶ 212] of the fan inverter PCB and continue with the next procedure.
No	Replace the fan inverter PCB, see "4.14.2 Repair procedures" [▶ 217].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the fan inverter PCB, see ["4.14.1 Checking procedures"](#) [▶ 212].

- 1 Visit your local spare parts webbank.
- 2 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the fan inverter PCB installed?	Action
Yes	Return to "4.14.1 Checking procedures" [▶ 212] of the fan inverter PCB and continue with the next procedure.

Is the correct spare part for the fan inverter PCB installed?	Action
No	Replace the fan inverter PCB, see "4.14.2 Repair procedures" [▶ 217].

To check the wiring of the fan inverter PCB

Prerequisite: First perform all earlier checks of the fan inverter PCB, see ["4.14.1 Checking procedures"](#) [▶ 212].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Check that all wires are properly connected and that all connectors are fully plugged-in.
- 2 Check that no connectors or wires are damaged.
- 3 Check that the wiring corresponds with the wiring diagram, see ["9.2 Wiring diagram"](#) [▶ 408].



INFORMATION

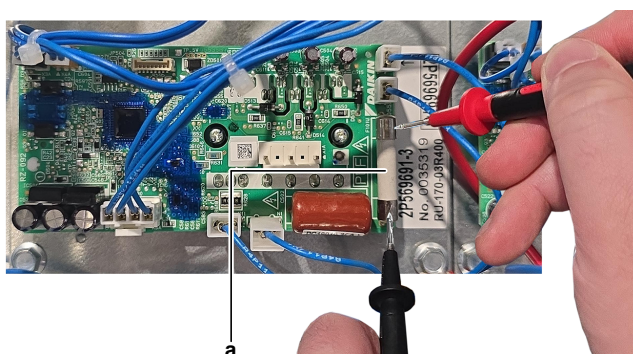
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.14.1 Checking procedures" [▶ 212] of the fan inverter PCB and continue with the next procedure.

To check the fuse of the fan inverter PCB

Prerequisite: First perform all earlier checks of the fan inverter PCB, see ["4.14.1 Checking procedures"](#) [▶ 212].

- 1 Measure the continuity of the fuse. If no continuity is measured, the fuse has blown.



a Fuse

Blown fuse on the fan inverter PCB?	Action
Yes	Replace the fan inverter PCB, see "4.14.2 Repair procedures" [▶ 217].

Blown fuse on the fan inverter PCB?	Action
No	Return to "4.14.1 Checking procedures" [▶ 212] of the fan inverter PCB and continue with the next procedure.

To check the rectifier voltage of the fan inverter PCB

Prerequisite: First perform all earlier checks of the fan inverter PCB, see ["4.14.1 Checking procedures"](#) [▶ 212].

- 1 Turn ON the power of the unit with the main switch.

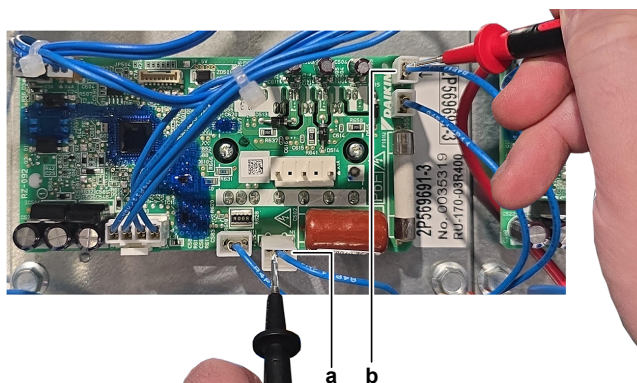


DANGER: RISK OF ELECTROCUTION

Do NOT touch any live parts or PCB's.

- 2 Measure the DC voltage on P1 and N1 on the fan inverter PCB.

Result: The measured voltage MUST be approximately 560 V DC.

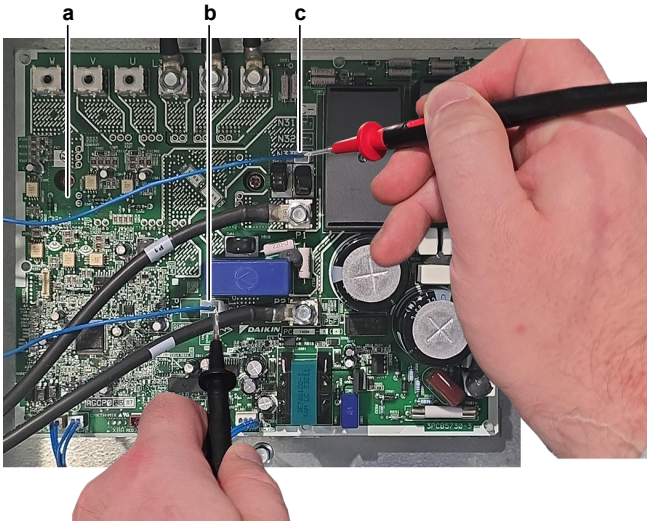


- a Wire terminal N1
b Wire terminal P1

Is the measured voltage correct?	Action
Yes	Perform a power transistor check of the fan inverter PCB, see "4.14.1 Checking procedures" [▶ 212].
No	Continue with the next step.

- 3 Measure the DC output voltage between terminals P12 and N33 on the inverter PCB.

Result: The measured voltage MUST be approximately 560 V DC.



a Inverter PCB
b Wire terminal P12
c Wire terminal N33

Is the measured output voltage on the inverter PCB correct?	Action
Yes	Correct the wiring between the fan inverter PCB and the inverter PCB, see "6.1.2 Repair procedures" [▶ 350].
No	Perform a check of the inverter PCB, see "4.17.1 Checking procedures" [▶ 229].

To perform a power transistor check of the fan inverter PCB

Prerequisite: First perform all earlier checks of the fan inverter PCB, see "4.14.1 Checking procedures" [▶ 212].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

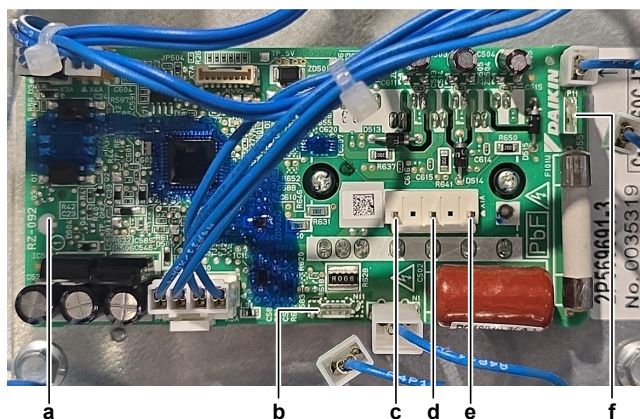
- 1 Set the multimeter to diode measurement.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Disconnect the connector X1A and Faston connectors P11 and N11 from the fan inverter PCB.
- 3 Check the fan inverter PCB in reference with the tables below.



- a** Fan inverter PCB
- b** Connector N11
- c** Connector X1A, pin U
- d** Connector X1A, pin V
- e** Connector X1A, pin W
- f** Connector P11

VDC	Com	Ref	VDC	Com	Ref
P11	X1A, pin U	O.L	N11	X1A, pin V	0,423
P11	X1A, pin V	O.L	N11	X1A, pin W	0,423
P11	X1A, pin W	O.L	X1A, pin U	N11	O.L
X1A, pin U	P11	0,423	X1A, pin V	N11	O.L
X1A, pin V	P11	0,423	X1A, pin W	N11	O.L
X1A, pin W	P11	0,423	P11	N11	O.L
N11	X1A, pin U	0,423	N11	P11	0,774

Are the test results OK?	Action
Yes	Power transistors are OK. Return to "4.14.1 Checking procedures" [▶ 212].
No	Replace the fan inverter PCB, see "4.14.2 Repair procedures" [▶ 217].

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.14.2 Repair procedures

To remove the fan inverter PCB

Prerequisite: Stop the unit operation via the user interface.

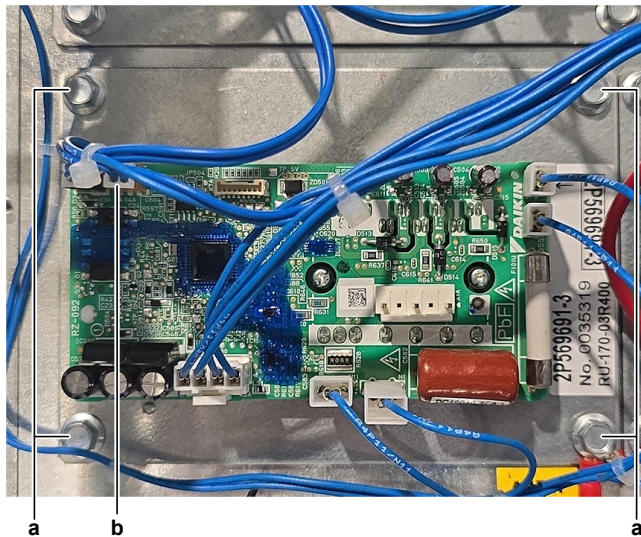
Prerequisite: Turn OFF the main switch.

- 1 Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].
- 2 Disconnect all connectors from the fan inverter PCB.

**INFORMATION**

In case of inverter PCB TYPE27 (with two fan inverter PCB's installed) there is a bridge connector X4A installed on the fan inverter PCB A5PXX. This bridge connector X4A is not supplied with the spare part PCB. Transfer the bridge connector X4A.

- 3 Loosen and remove the screws that fix the fan inverter PCB assembly (with heat sink plate) to the switch box.

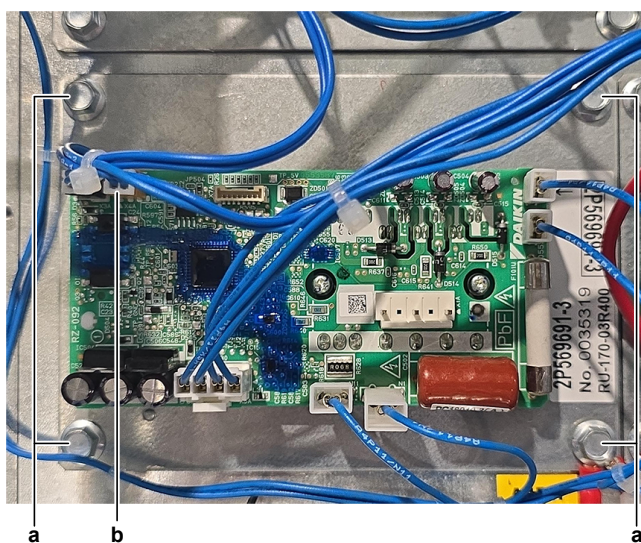


- a Screw (fan inverter assembly)
b Connector X4A

- 4 Remove the fan inverter PCB assembly (with heat sink plate).
- 5 To install the new fan inverter PCB, see ["4.14.2 Repair procedures"](#) [► 217].

To install the fan inverter PCB

- 1 Install the fan inverter PCB assembly (with heat sink plate) on its correct location.
- 2 Install and tighten the screws to fix the fan inverter PCB assembly (with heat sink plate) to the switch box.



- a Screw (fan inverter assembly)
b Connector X4A

- 3 Connect all connectors to the fan inverter PCB.

**INFORMATION**

In case of inverter PCB TYPE27 (with two fan inverter PCB's installed) a bridge connector X4A has to be installed on the A5P fan inverter PCB.

Reinstall connector X4A which you recuperated from the removed fan inverter PCB.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.14.1 Checking procedures " [▶ 212] of the fan inverter PCB and continue with the next procedure.

4.15 Flow switch

4.15.1 Checking procedures

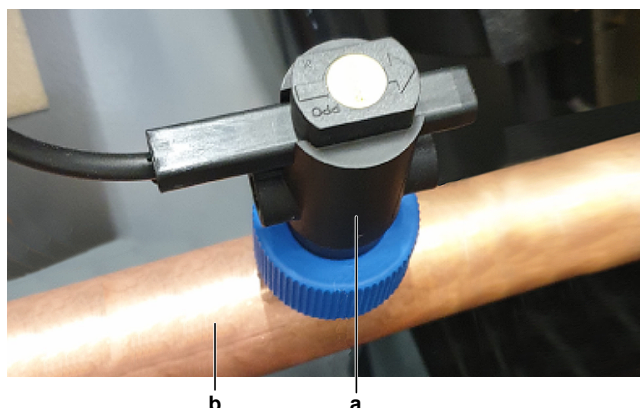
To perform a mechanical check of the flow switch

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see "[4.23 Plate work](#)" [▶ 263].

- 1 Close the water shut off valves.
- 2 Unscrew the flow switch and remove it from the piping.



- a Flow switch
b Piping

- 3 Check that the paddles inside the flow switch are moving.

Do the paddles move?	Then
Yes	Skip the next step.
No	Continue with the next step.

- 4 Remove any accumulated grease or particles from around the paddles with a mop.

Do the paddles move?	Then
Yes	Continue with the next step.
No	Replace the flow switch, see " 4.15.2 Repair procedures " [▶ 222].

- 5 Clean the piping (b).

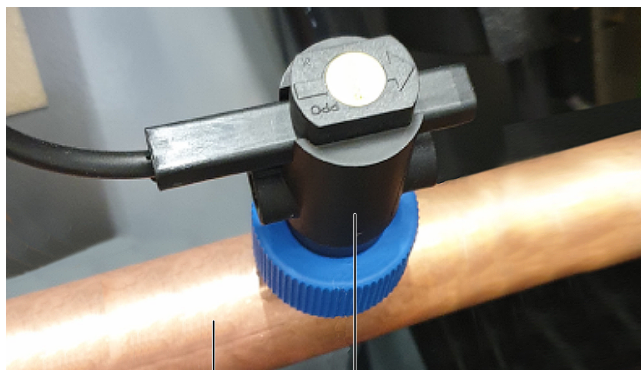
- 6 Install (screw) the flow switch on correct location on the piping and in the correct orientation (arrow pointing in the direction of the water flow). Ensure that the O-ring is correctly installed and NOT damaged.



NOTICE

Use sealant grease that can stand the operation range of at least -20°C to 60°C.

- 7 Tighten the plastic union nut to a torque of 7,5 Nm ($\pm 5\%$).



- a Flow switch
- b Piping

- 8 Open the water shut off valves.
- 9 Return to troubleshooting of the specific error and continue with the next procedure.

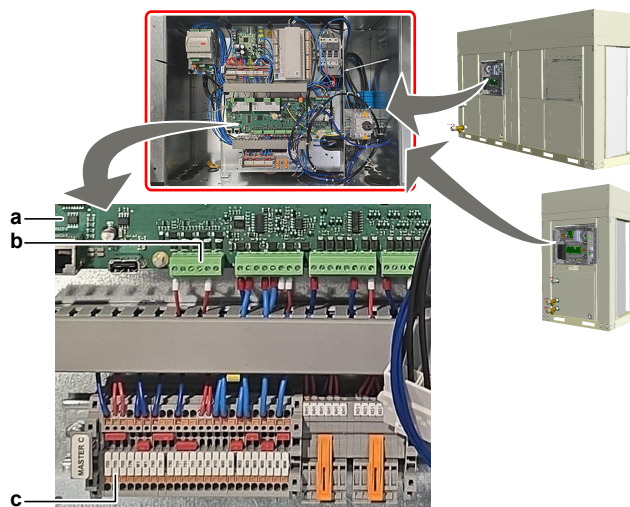
To perform an electrical check of the flow switch

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see "[4.23 Plate work](#)" [[▶ 263](#)].

- 1 Check that the flow switch is correctly installed. The arrow MUST point in the direction of the water flow. Correct as needed.
- 2 Disconnect the flow switch wires from terminal D2 of terminal block T5 on the main PCB and from terminal 703 on terminal block MC.



- a Main PCB
- b Terminal block T5
- c Terminal block MC

- 3 Turn ON the power of the unit with the main switch.
- 4 Measure the voltage (flow switch power) between the terminal Di2 of terminal block T5 on the main PCB and terminal 703 of terminal block MC.

Result: The measured voltage MUST be approximately 24 V DC.

Is measured voltage correct?	Then
Yes	Skip the next step.
No	Continue with the next step.

- 5 Measure the output voltage between terminals -V and +V of the 24 V DC auxiliary power supply.

Result: The measured voltage MUST be 24 V DC.

Is the measurement correct?	Action
Yes	Correct the wiring between the appropriate terminals and the 24 V DC auxiliary power supply, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the 24 V DC auxiliary power supply, see "4.2.1 Checking procedures" [▶ 128].

- 6 Make sure that the unit is NOT operating, and there is NO water flow.
- 7 Measure the resistance between the (disconnected) flow switch wires.

Result: The flow switch MUST be open (OL).

- 8 Activate the water pump using the service monitoring tool as follows:
 - Use technician password.
 - In the Main Menu, select Unit Mode > Mode.
 - Set to Test.
 - In the Main Menu, select Commission Unit > Manual Control > Unit > Pump #.
 - Set to ON.
- 9 Select high speed and check (using a water flow meter) that the water flow is according to the table below:

Model	Flow switch trigger set point (L/min)
EWYE019CZ(N/P)-A1	22
EWYE022CZ(N/P)-A1	22
EWYE025CZ(N/P)-A1	22
EWYE030CZ(N/P)-A1	22
EWYE035CZ(N/P)-A1	22
EWYE050CZ(N/P)-A2	57
EWYE060CZ(N/P)-A2	57
EWYE070CZ(N/P)-A2	57



INFORMATION

It is ALSO possible to check the flow switch operation using the service monitoring tool.
In the Main Menu, select Commission Unit > Input/Output. The status is Passive (flow switch open) when NO water flow and Active (flow switch closed) when appropriate water flow.

- 10** Again measure the resistance between the (disconnected) flow switch wires.
Result: The flow switch MUST be closed (0 Ω).



INFORMATION

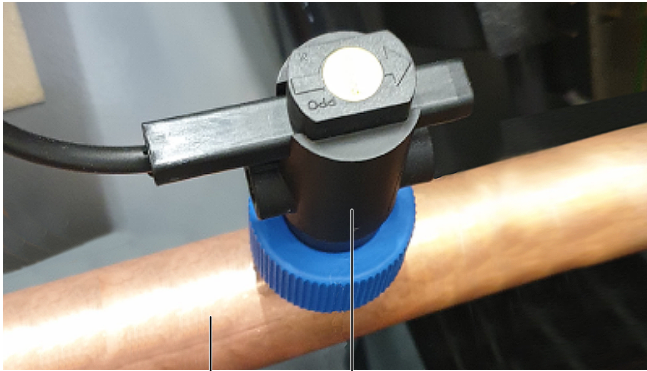
When water flow is below flow switch trigger set point, switch MUST be open (OL).
When water flow is above flow switch trigger set point, switch MUST be closed (0 Ω).

Are flow switch measurements correct?	Action
Yes	Flow switch is OK. Return to troubleshooting of the specific error and continue with the next procedure.
No	Replace the flow switch, see "4.15.2 Repair procedures" [▶ 222].

4.15.2 Repair procedures

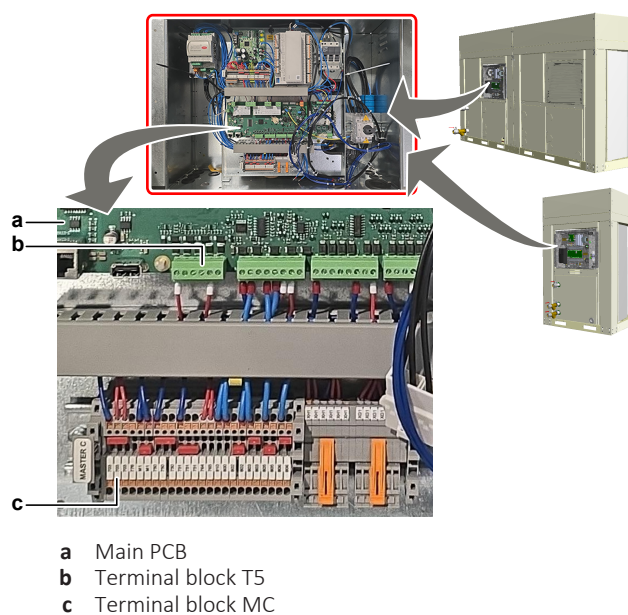
To remove the flow switch

- Prerequisite:** Stop the unit operation via the user interface.
Prerequisite: Turn OFF the main switch.
Prerequisite: Remove the required plate work, see "4.23 Plate work" [▶ 263].
- 1 Drain the water circuit, see "6.3.2 Repair procedures" [▶ 367].
 - 2 Unscrew the flow switch and remove it from the piping.



a Flow switch
b Piping

- 3 Disconnect the flow switch wires from terminal D2 of terminal block T5 on the main PCB and from terminal 703 on terminal block MC.



- 4 Cut all tie straps that fix the wiring harness.
- 5 Guide the flow switch harness out of the switch box and remove the flow switch.
- 6 To install the flow switch, see "[4.15.2 Repair procedures](#)" [▶ 222].

To install the flow switch

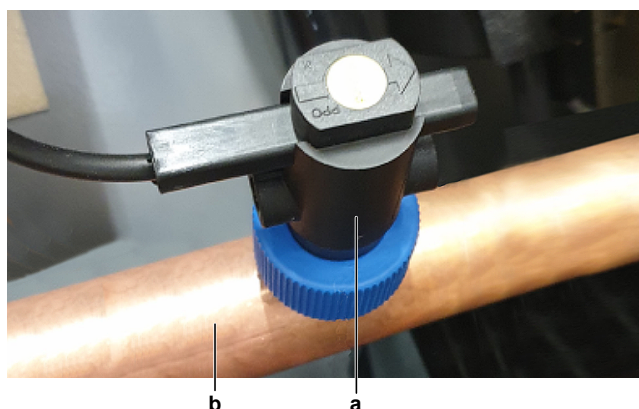
- 1 Clean the piping (b).
- 2 Install (screw) the flow switch on correct location on the piping and in the correct orientation (arrow pointing in the direction of the water flow). Ensure that the O-ring is correctly installed and NOT damaged.



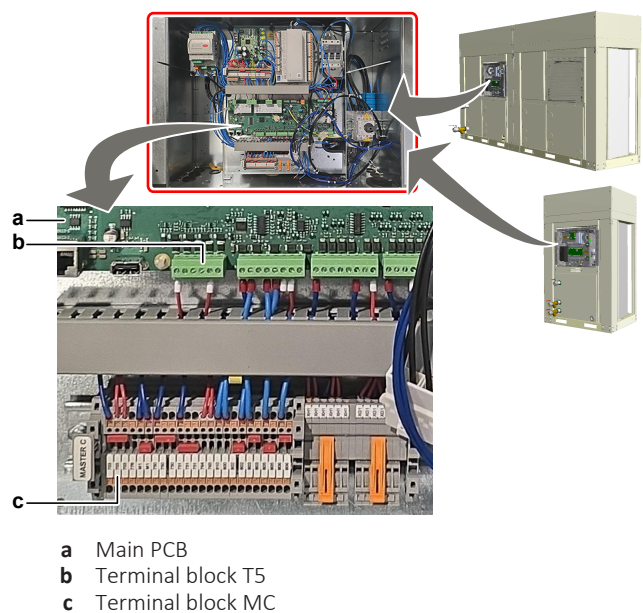
NOTICE

Use sealant grease that can stand the operation range of at least -20°C to 60°C.

- 3 Tighten the plastic union nut to a torque of 7,5 Nm (±5%).



- 4 Route the flow switch harness into the switch box.
- 5 Connect the flow switch wires to the terminal D2 of terminal block T5 on the main PCB and to terminal 703 of terminal block MC.



6 Install new tie straps to fix the flow switch wiring harness.

INFORMATION

Replace all cable ties that were cut during removal.

7 Open the stop valves and add water to the water circuit if needed, see "6.3.2 Repair procedures" [▶ 367].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.16 High pressure switch

4.16.1 Checking procedures

To deactivate the high pressure switch

- Prerequisite:** Stop the unit operation via the user interface.
- Prerequisite:** Turn OFF the main switch.
- Prerequisite:** Remove the required plate work, see "4.23 Plate work" [▶ 263].

1 Push the red button on top of the high pressure switch.



2 Start the unit operation and check if the error still occurs.

To perform an electrical check of the high pressure switch

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

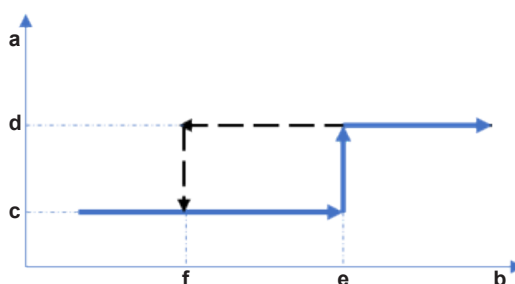
Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Recuperate the refrigerant from the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].
- 2 Fill the refrigerant circuit with nitrogen until pressurised just below operating pressure of the high pressure switch.



INFORMATION

Make sure that the manual reset button on the high pressure switch is pressed.



- a High pressure switch protection control
- b Pressure
- c High pressure switch closed
- d High pressure switch open
- e High pressure switch operating pressure
- f High pressure switch reset pressure

Number of refrigerant circuits	High pressure switch	Operating pressure (MPa)	Reset pressure (MPa)
1	F131	3.61~3.75	2.6~2.8
2	F131		
	F132		

- 3 Disconnect the high pressure switch connector from the PCB.



INFORMATION

Measure the continuity of all wiring between the high pressure switch and the appropriate PCB. If NO continuity is measured, repair as needed, see ["9.2 Wiring diagram"](#) [▶ 408].

- 4 Measure the resistance between the pins 1-2 of the high pressure switch connector.
Result: The switch MUST be closed.
- 5 Fill the refrigerant circuit with nitrogen until pressurised just above operating pressure of the high pressure switch.
- 6 Measure the resistance between the pins 1-2 of the high pressure switch connector.

Result: The switch MUST be open.



INFORMATION

If the high pressure switch was triggered open, it will stay open until the refrigerant pressure drops below the reset pressure of the high pressure switch.

- 7** Lower the pressure of the nitrogen in the refrigerant circuit just above reset pressure of the high pressure switch.
- 8** Measure the resistance between the pins 1-2 of the high pressure switch connector.

Result: The switch MUST be open.

- 9** Lower the pressure of the nitrogen in the refrigerant circuit just below reset pressure of the high pressure switch.
- 10** Press the manual reset button on the high pressure switch.
- 11** Measure the resistance between the pins 1-2 of the high pressure switch connector.

Result: The switch MUST be closed.

High pressure switch connector measurements are correct?	Then
Yes	High pressure switch is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the high pressure switch, see "4.16.2 Repair procedures" [▶ 226].

4.16.2 Repair procedures

To remove the high pressure switch

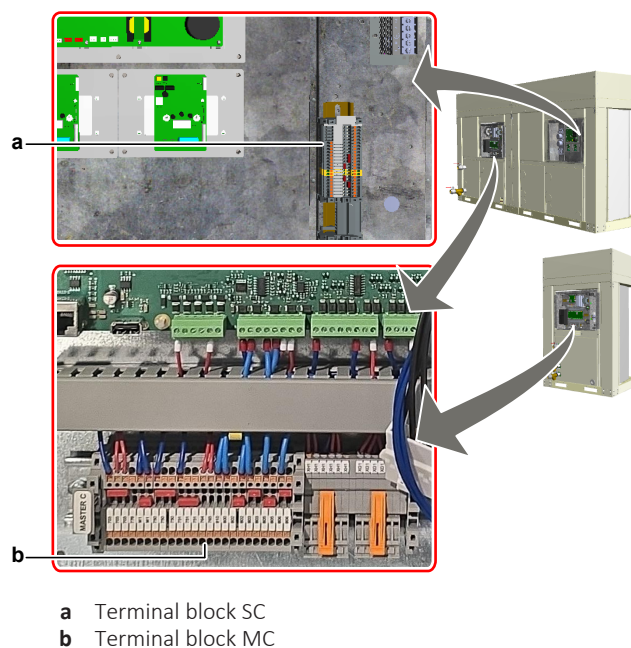
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

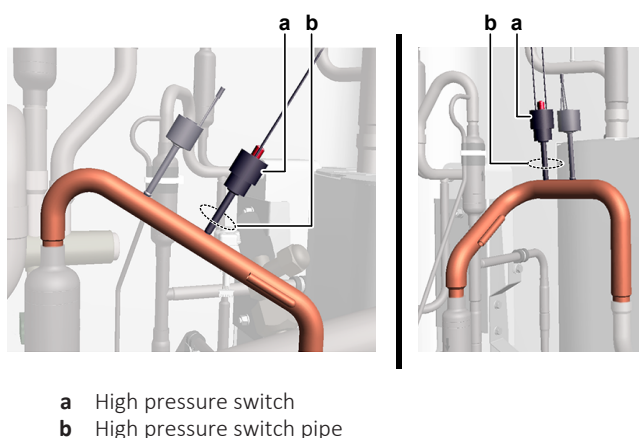
Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

- 1** If needed, remove any parts or putty (if installed) to create more space for the removal of the high pressure switch.
- 2** Disconnect the wires of the high pressure switch:
 - For high pressure switch F131; disconnect the wires from terminals 764 and 765 of terminal block MC.
 - For high pressure switch F132; disconnect the wires from terminals 766 and 767 of terminal block SC.



- 3 Cut all tie straps that fix the high pressure switch harness.
- 4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 5 Wrap a wet rag around the components near the high pressure switch. Heat the brazing point of the high pressure switch pipe using an oxygen acetylene torch and remove the high pressure switch pipe from the refrigerant pipe using pliers.



- 6 Stop the nitrogen supply when the piping has cooled down.
- 7 Remove the high pressure switch.



INFORMATION

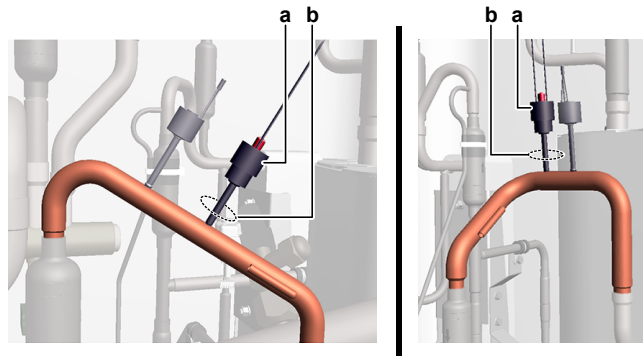
It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

- 8 Install a plug or cap on the refrigerant piping to avoid dirt or impurities from entering the piping.
- 9 To install the high pressure switch, see "[4.16.2 Repair procedures](#)" [▶ 226].

To install the high pressure switch

- 1 Remove the plug or cap from the refrigerant piping and make sure it is clean.
- 2 Install the high pressure switch in the correct location.

- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure **MUST NOT** exceed 0.02 MPa.
- 4 Wrap a wet rag around the high pressure switch and any other components near the high pressure switch and braze the high pressure switch pipe to the refrigerant pipe.



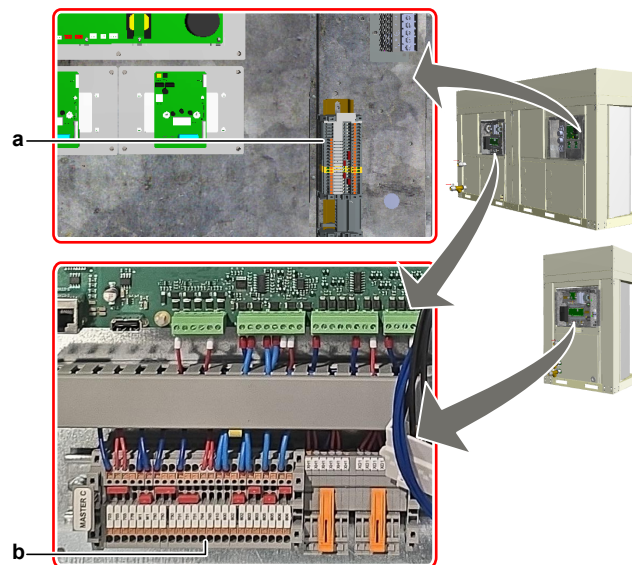
a High pressure switch
b High pressure switch pipe



CAUTION

Overheating the pressure switch will damage or destroy it.

- 5 After brazing is done, stop the nitrogen supply after the component has cooled-down.
- 6 Route the high pressure switch harness towards the appropriate connector.
- 7 Connect the wires of the high pressure switch:
 - For high pressure switch F131; Connect the wires to the terminals 764 and 765 of terminal block MC.
 - For high pressure switch F132; connect the wires to the terminals 766 and 767 of terminal block connector SC.



a Terminal block SC
b Terminal block MC

- 8 Install new tie straps to fix the high pressure switch harness.
- 9 Install all removed parts or putty (as needed) that were removed for space creation purposes.
- 10 Perform a pressure test, see "[6.2.1 Checking procedures](#)" [[▶ 350](#)].

- 11** Add refrigerant to the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.17 Inverter PCB

4.17.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To perform a power check of the inverter PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Turn ON the power of the unit with the main switch.



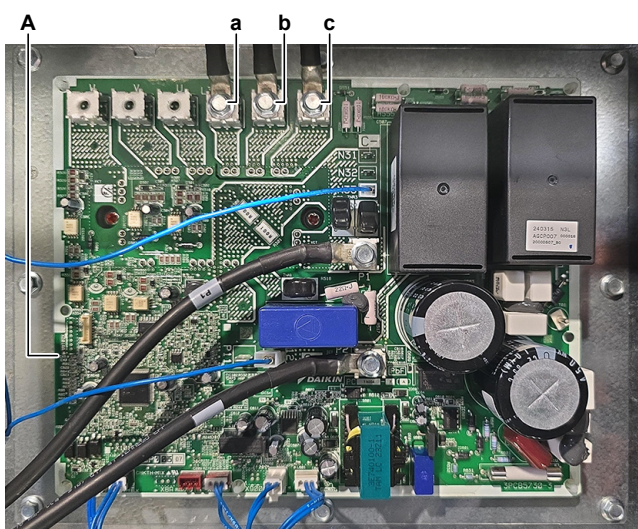
DANGER: RISK OF ELECTROCUTION

Do NOT touch any live parts or PCB's.

- 2 Measure the voltage between the following wires on the inverter PCB.

Result: All measurements MUST be 380~415 V AC.

- L1B –L2B
- L1B –L3B
- L2B –L3B



- A TYPE JP098D PCB
- a Wire L3B
- b Wire L2B
- c Wire L1B

Does the inverter PCB receive power?	Action
Yes	Return to "4.17.1 Checking procedures" [▶ 229] of the inverter PCB and continue with the next procedure.
No	Continue with the next step.

- 3 Perform an electrical check of the noise filter PCB, see ["4.20.1 Checking procedures"](#) [▶ 248].

Electrical check of noise filter PCB correct?	Action
Yes	Correct the wiring between the inverter PCB and the noise filter PCB, see "6.1.2 Repair procedures" [▶ 350].
No	Perform a check of the noise filter PCB, see "4.20.1 Checking procedures" [▶ 248].

To check the HAP LED of the inverter PCB

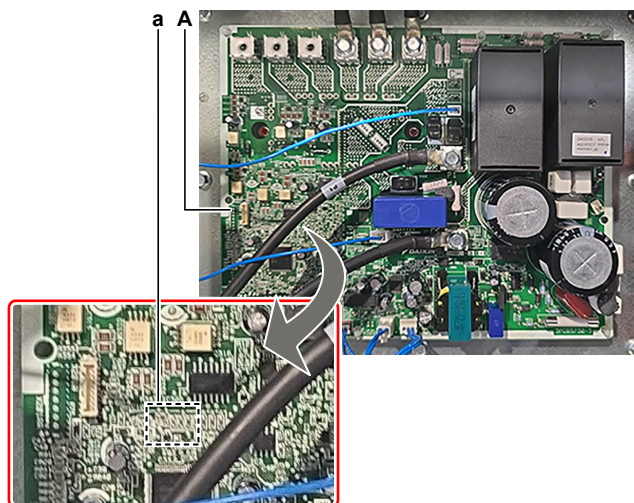
- 1 First perform a power check of the inverter PCB, see ["4.17.1 Checking procedures"](#) [▶ 229].



INFORMATION

Make sure that the PCB is NOT in stand-by mode. The HAP LED will NOT blink when in stand-by mode.

- 2 Locate the HAP LED on the inverter PCB.



A TYPE JP098D PCB
a HAP LED

Does the HAP LED blink in regular intervals (approximately 1 Hz)?	Action
Yes	Return to "4.17.1 Checking procedures" [▶ 229] of the inverter PCB and continue with the next procedure.
No	Replace the inverter PCB, see "4.17.2 Repair procedures" [▶ 235].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the inverter PCB, see ["4.17.1 Checking procedures"](#) [▶ 229].

- 1 Visit your local spare parts webbank.
- 2 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the inverter PCB installed?	Action
Yes	Return to "4.17.1 Checking procedures" [▶ 229] of the inverter PCB and continue with the next procedure.
No	Replace the inverter PCB, see "4.17.2 Repair procedures" [▶ 235].

To check the wiring of the inverter PCB

Prerequisite: First perform all earlier checks of the inverter PCB, see ["4.17.1 Checking procedures"](#) [▶ 229].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Wait until the rectifier voltage is below 10 V DC.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Check that all wires are properly connected and that all connectors are fully plugged-in.
- 3 Check that no connectors or wires are damaged.
- 4 Check that the wiring corresponds with the wiring diagram, see ["9.2 Wiring diagram"](#) [▶ 408].



INFORMATION

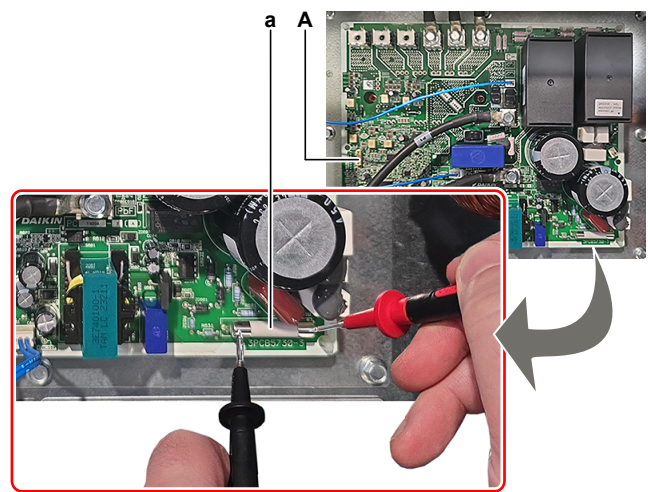
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.17.1 Checking procedures" [▶ 229] of the inverter PCB and continue with the next procedure.

To check the fuses of the inverter PCB

Prerequisite: First perform all earlier checks of the inverter PCB, see ["4.17.1 Checking procedures"](#) [▶ 229].

- 1 Measure the continuity of the fuse. If no continuity is measured, the fuse has blown.



A TYPE JP098D PCB
a Fuse

Any blown fuses on the inverter PCB?	Action
Yes	Replace the inverter PCB, see "4.17.2 Repair procedures" [▶ 235].
No	Return to "4.17.1 Checking procedures" [▶ 229] of the inverter PCB and continue with the next procedure.

To check the rectifier voltage of the inverter PCB

Inverter PCB Type JP098D

Prerequisite: First perform all earlier checks of the inverter PCB, see "4.17.1 Checking procedures" [▶ 229].

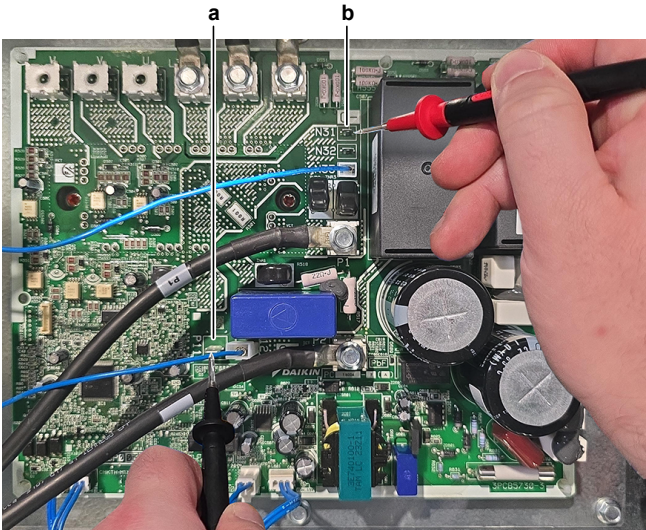
- 1 Turn ON the power of the unit with the main switch.



DANGER: RISK OF ELECTROCUTION
Do NOT touch any live parts or PCB's.

- 2 Measure the rectifier voltage between the terminals P11 and N31 on the inverter PCB.

Result: The measured voltage MUST be approximately 560 V DC.



a Terminal P11

b Terminal N31

Is the measured voltage correct?	Action
Yes	Diode module is OK. Perform a check of the power module of the inverter PCB, see "4.17.1 Checking procedures" [▶ 229].
No	Continue with the next step.

3 Perform a check of both reactors, see ["4.25.1 Checking procedures"](#) [▶ 277].

Are both reactors OK?	Action
Yes	Replace the inverter PCB, see "4.17.2 Repair procedures" [▶ 235].
No	Replace the faulty reactor, see "4.25.2 Repair procedures" [▶ 278].

To perform a diode module check

Inverter PCB Type JP098D

1 First check the rectifier voltage of the inverter PCB, see ["4.17.1 Checking procedures"](#) [▶ 229].



INFORMATION

If the rectifier voltage is OK, the diode module is OK. If rectifier voltage is NOT OK, proceed as described in the rectifier voltage check procedure.

Below procedure describes how to check the diode module itself.

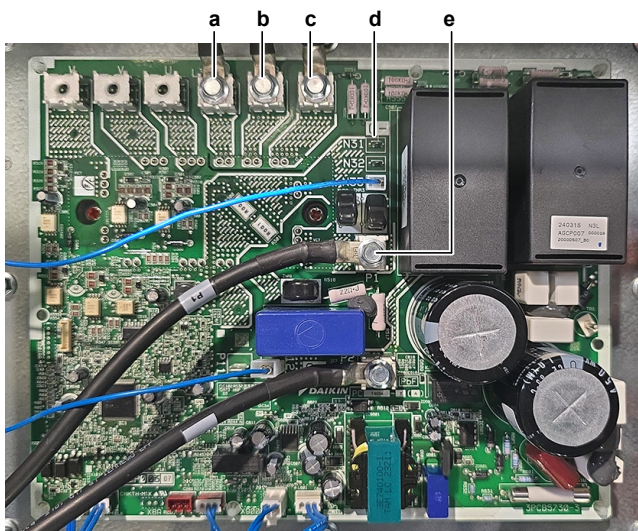
- 2** Stop the unit operation via the central controller.
- 3** Turn OFF the main switch.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 4** Disconnect the wires from the terminals L1B, L2B, L3B and P1 on the inverter PCB.
- 5** Check the diode module in reference with the table below.



- a Wire terminal L3B
- b Wire terminal L2B
- c Wire terminal L1B
- d Wire terminal N31
- e Terminal P1

VDC	Com	Ref	VDC	Com	Ref
P1	L1B	O.L	N31	L1B	0,429
P1	L2B	O.L	N31	L2B	0,429
P1	L3B	O.L	N31	L3B	0,429
L1B	P1	0,429	L1B	N31	O.L
L2B	P1	0,429	L2B	N31	O.L
L3B	P1	0,429	L3B	N31	O.L

- 6 If the diode module is NOT ok, replace the inverter PCB, see "[4.17.2 Repair procedures](#)" [▶ 235].

To perform a power module check

Inverter PCB Type JP098D

Prerequisite: Stop the unit operation via the user interface.

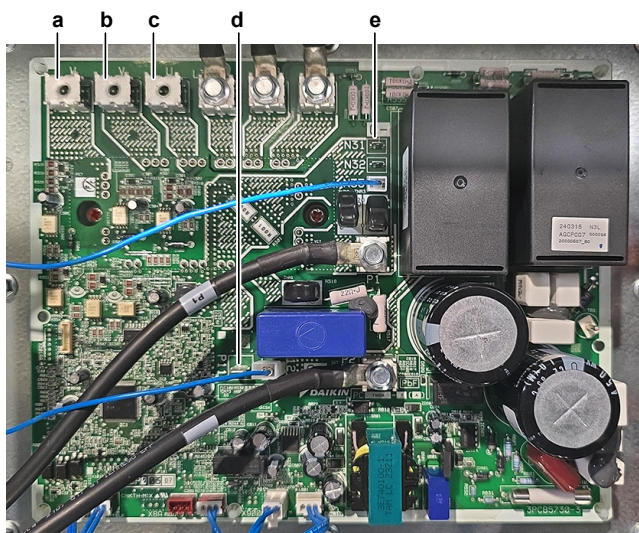
- 1 Turn OFF the main switch.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Disconnect the compressor wires from the inverter PCB.
- 3 Check the power module in reference with the table below.



- a Wire terminal W
- b Wire terminal V
- c Wire terminal U
- d Terminal P11
- e Terminal N31

VDC	Com	Ref	VDC	Com	Ref
P11	U	O.L	N31	U	0,401
P11	V	O.L	N31	V	0,401

VDC	Com	Ref	VDC	Com	Ref
P11	W	O.L	N31	W	0,401
U	P11	0,401	U	N31	O.L
V	P11	0,401	V	N31	O.L
W	P11	0,401	W	N31	O.L

Are the test results OK?	Action
Yes	Return to "4.17.1 Checking procedures" [▶ 229] of the inverter PCB and continue with the next procedure.
No	Replace the inverter PCB, see "4.17.2 Repair procedures" [▶ 235].

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.17.2 Repair procedures

To remove the inverter PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

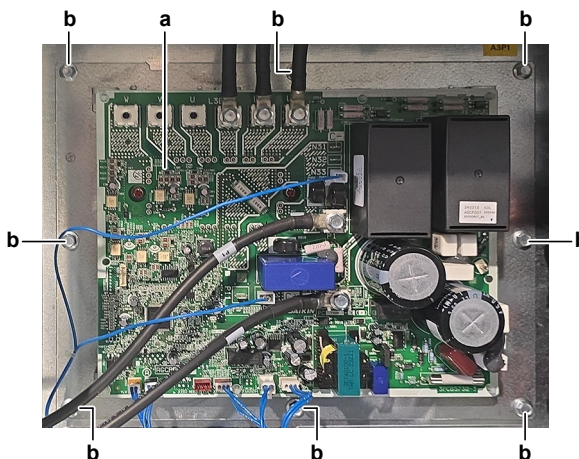
- 1 Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Loosen the screws and disconnect the wires from the inverter PCB.
- 3 Disconnect all connectors from the inverter PCB.
- 4 Loosen and remove the screws that fix the inverter PCB assembly (with heat sink plate) to the switch box.

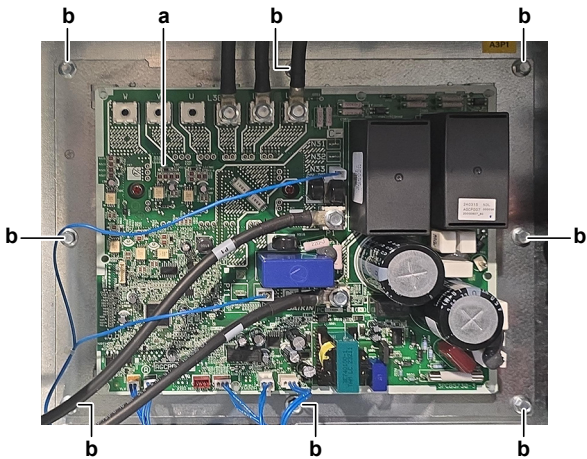


- a TYPE JP098D inverter PCB assembly (with heat sink plate)
- b Screw

- 5 Remove the inverter PCB assembly (with heat sink pate).
- 6 To install the new inverter PCB, see ["4.17.2 Repair procedures"](#) [▶ 235].

To install the inverter PCB

- 1 Install the inverter PCB assembly (with heat sink plate) on its correct location.



- a TYPE JP098D inverter PCB assembly (with heat sink plate)
- b Screw

- 2 Install and tighten the screws to fix the inverter PCB assembly (with heat sink plate) to the switch box.
- 3 Connect all connectors to the inverter PCB.
- 4 Connect all wires to the inverter PCB and tighten the screws to fix the wires.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.17.1 Checking procedures" [▶ 229] of the inverter PCB and continue with the next procedure.

4.18 Main PCB

4.18.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To check if the latest software version is installed on the main PCB

- 1 On the user interface, navigate to page [24.00] and check which software version is currently installed on the main PCB.
- 2 Go to Daikin Business Portal and check the latest software version available.

Is the latest software version installed?	Action
Yes	Return to "4.18.1 Checking procedures" [▶ 236] of the main PCB and continue with the next procedure.

Is the latest software version installed?	Action
No	Update the software of the main PCB, see "2 General operation" [▶ 16].

To perform a power check of the main PCB

Prerequisite: First check if the latest software version is installed, see "4.18.1 Checking procedures" [▶ 236].

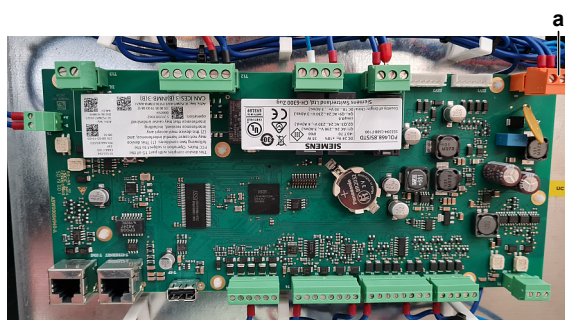
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see "4.23 Plate work" [▶ 263].

- 1 Turn ON the power of the unit with the main switch.
- 2 Measure the voltage between the wires on terminal block T7 of the main PCB.

Result: The measurement MUST be 24 V DC.



a Terminal block T7

Is the measurement correct?	Action
Yes	Return to "4.18.1 Checking procedures" [▶ 236] of the main PCB and continue with the next procedure.
No	Continue with the next step.

- 3 Measure the output voltage between terminals -V and +V of the 24 V DC auxiliary power supply.

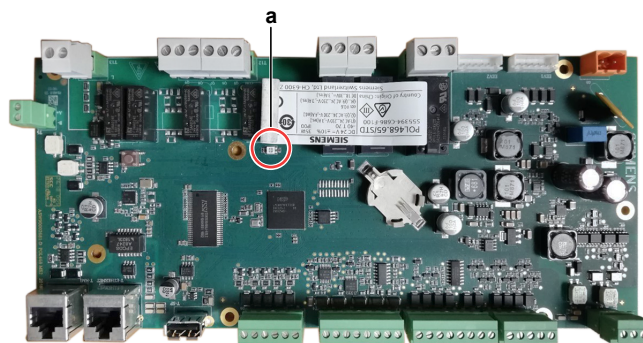
Result: The measured voltage MUST be 24 V DC.

Is the measurement correct?	Action
Yes	Correct the wiring between the main PCB and the 24 V DC auxiliary power supply, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the 24 V DC auxiliary power supply, see "4.2.1 Checking procedures" [▶ 128].

To check the LED of the main PCB

Prerequisite: First check the power supply to the main PCB, see "4.18.1 Checking procedures" [▶ 236].

- 1 Locate the LED on the main PCB.



a LED

**INFORMATION**

Make sure the correct software is available on the PCB. If NOT, update using the updater tool.

2 Compare the behaviour of the led to the table below.

Color	Flash response	Function	Action
Red/green	Changes at 1 Hz	Software update mode: Download application or new firmware	Complete the update procedure (see "2 General operation" [▶ 16]) and wait until update is done
Green	Continuous	Application loaded and is running	All OK
Orange	Continuous	Application loaded but is not running	^(a)
Orange	Flashing: 50 ms on / 1000 ms off	Application not loaded	^(b)
Red	Flashing at 2 Hz	Firmware error	Update software (see "2 General operation" [▶ 16]), if persists replace PCB
Red	Continuous	Hardware fault	Replace PCB (see "4.18.2 Repair procedures" [▶ 240]).

^(a) Orange LED will appear when using the SCOPE virtual controller or other Service monitoring tools (command on the toolbar: Start application needed) and also to check during update procedure with USB drive (manual restart required).

^(b) Check the Service monitoring tool procedures.

Does the LED function correctly?	Action
Yes	Return to "4.18.1 Checking procedures" [▶ 236] of the main PCB and continue with the next procedure.
No	Perform necessary action as described in the table above.

- 3 After necessary action has been performed, again check the behaviour of the LED.

Does the LED function correctly?	Action
Yes	Return to "4.18.1 Checking procedures" [▶ 236] of the main PCB and continue with the next procedure.
No	Replace the main PCB, "4.18.2 Repair procedures" [▶ 240].

To check if the correct spare part is installed

- 1 First perform all earlier checks of the main PCB, see "4.18.1 Checking procedures" [▶ 236].
- 2 Visit your local spare parts webbank.
- 3 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the main PCB installed?	Action
Yes	Return to "4.18.1 Checking procedures" [▶ 236] of the main PCB and continue with the next procedure.
No	Replace the main PCB, "4.18.2 Repair procedures" [▶ 240].

To check the wiring of the main PCB

Prerequisite: First perform all earlier checks of the main PCB, see "4.18.1 Checking procedures" [▶ 236].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Check that all wires are properly connected and that all connectors are fully plugged-in.
- 2 Check that no connectors or wires are damaged.
- 3 Check that the wiring corresponds with the wiring diagram, see "9.2 Wiring diagram" [▶ 408].



INFORMATION

Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.18.1 Checking procedures" [▶ 236] of the main PCB and continue with the next procedure.

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.18.2 Repair procedures

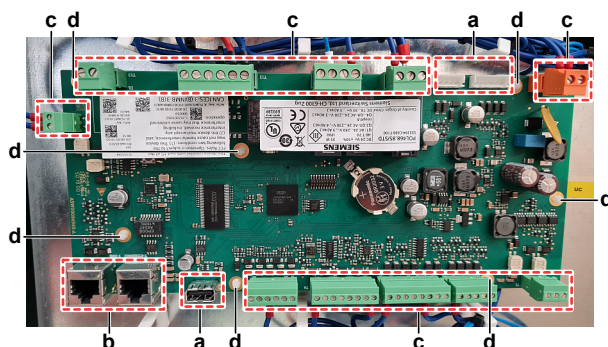
To remove the main PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Disconnect all connectors and LAN cables from the main PCB.

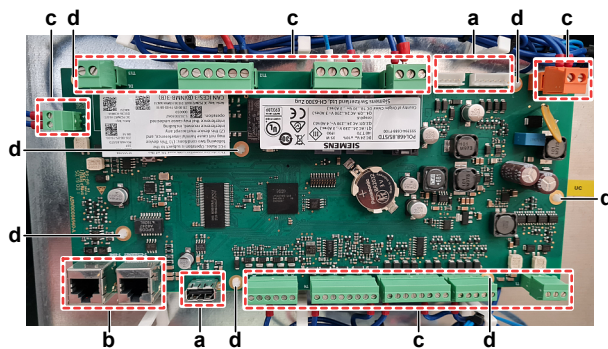


- a Connector
- b LAN terminal
- c Terminal block
- d PCB support

- 2 Disconnect all terminal blocks from the main PCB.
- 3 Carefully pull the PCB at the side and unlatch the PCB supports one by one using a small pair of pliers.
- 4 Remove the main PCB.
- 5 To install the new outdoor unit main PCB, see ["4.18.2 Repair procedures"](#) [▶ 240].

To install the main PCB

- 1 Install the main PCB on its correct location in the switch box.
- 2 Correctly install the main PCB on the PCB supports.



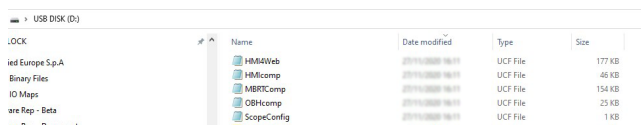
- a Connector
- b LAN terminal
- c Terminal block
- d PCB support

- 3 Connect all terminal blocks to the main PCB.

- 4 Connect all connectors and LAN cables to the main PCB.

Update software

- 1 Load the files shown in the picture onto an empty USB-drive.



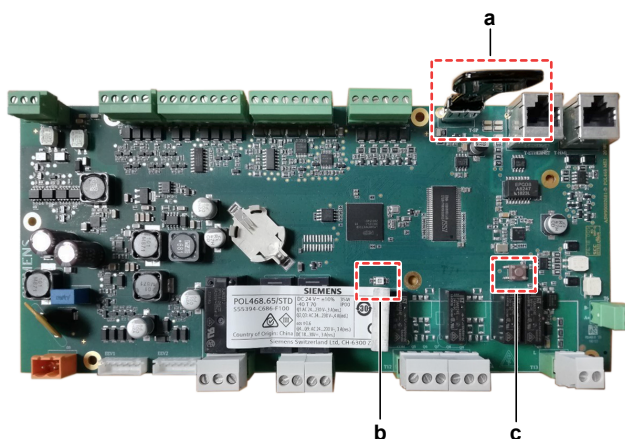
Name	Date modified	Type	Size
HM4Web	2017/11/28 16:17	UCF File	177 KB
HM4Comp	2017/11/28 16:17	UCF File	46 KB
MBRTComp	2017/11/28 16:17	UCF File	154 KB
OBHcomp	2017/11/28 16:17	UCF File	25 KB
ScopeConfig	2017/11/28 16:17	UCF File	1 KB



INFORMATION

Latest software version is available on Daikin Business Portal.

- 2 While power is ON (LED = ON), insert the USB-drive in the USB-port.



- a USB-drive
- b LED
- c Button

■ FOR SOFTWARE VERSION V1.12.A OR NEWER

- 1 Update the software
 - Via the user interface: Use field setting [23.02].
 - Via the service monitoring tool: Go to the Main Menu > Save/Restore > Software Update > Start.
- 2 While software is updating, check the status of the LED:

Result: First the LED blinks green. Then it blinks green / red, and at the end it lights up continuously orange.
- 3 Immediately turn OFF and ON the main switch.
- 4 When done, on the user interface, check the menu > About.

Result: Software version MUST be the latest version.

■ FOR SPARE PCB's

- 1 Press the button, and keep pressed.
- 2 With the button still pressed, turn ON the main switch and power the unit.

Result: The LED blinks green.
- 3 Keep the button pressed.

Result: The LED blinks green / red.
- 4 Immediately release the button.

Result: The LED lights up continuously orange.
- 5 Immediately turn OFF and ON the main switch.

- 6 On the user interface, check the menu > About

Result: Software version MUST be the latest version.

Set parameters

- When installing a new main PCB, the configuration of the unit has to be defined (technician password required):
 - Via the user interface: Navigate to page [14] Service Configuration.
 - Via the service monitoring tool: In the Main Menu, select Commission Unit > Configuration.
- Find below an overview of the required settings:

Page	Name	Description
[14.00]	Unit Type	0 = None
		1 = None
		2 = EWYE
[14.01]	Size	0 = 19 kW
		1 = 22 kW
		2 = 25 kW
		3 = 30 kW
		4 = 35 kW
		5 = 50 kW
		6 = 60 kW
		7 = 70 kW
[14.02]	Pump Type	0 = N Naked (No)
		1 = P: Low Lift (LL)
[14.03]	Option	0 = No option (No)
		1 = High ambient temperature kit (HA) Option code 192
[14.06]	Parameter Save	Off = Don't save parameters in USB
		On = Save parameters in USB
[14.07]	Parameter Restore	0 = No restoration of parameters from USB (No)
		1 = Partial restoration of parameters from USB (Partial)
		2 = Full restoration of parameters from USB (Full)

- Correctly set the following data for your specific unit:

Unit	[14.00]	[14.01]	[14.02]	[14.03]	Unit	[14.00]	[14.01]	[14.02]	[14.03]
EWYE019CZP-A1	2	0	1	0	EWYE019CZN-A1	2	0	0	0
EWYE022CZP-A1	2	1	1	0	EWYE022CZN-A1	2	1	0	0
EWYE025CZP-A1	2	2	1	0	EWYE025CZN-A1	2	2	0	0
EWYE030CZP-A1	2	3	1	0	EWYE030CZN-A1	2	3	0	0
EWYE035CZP-A1	2	4	1	0	EWYE035CZN-A1	2	4	0	0

Unit	[14.00]	[14.01]	[14.02]	[14.03]	Unit	[14.00]	[14.01]	[14.02]	[14.03]
EWYE050CZP-A2	2	5	1	0	EWYE050CZN-A2	2	5	0	0
EWYE060CZP-A2	2	6	1	0	EWYE060CZN-A2	2	6	0	0
EWYE070CZP-A2	2	7	1	0	EWYE070CZN-A2	2	7	0	0
EWYE019CZP-AA1	2	0	1	1	EWYE019CZN-AA1	2	0	0	1
EWYE022CZP-AA1	2	1	1	1	EWYE022CZN-AA1	2	1	0	1
EWYE025CZP-AA1	2	2	1	1	EWYE025CZN-AA1	2	2	0	1
EWYE030CZP-AA1	2	3	1	1	EWYE030CZN-AA1	2	3	0	1
EWYE035CZP-AA1	2	4	1	1	EWYE035CZN-AA1	2	4	0	1
EWYE050CZP-AA2	2	5	1	1	EWYE050CZN-AA2	2	5	0	1
EWYE060CZP-AA2	2	6	1	1	EWYE060CZN-AA2	2	6	0	1
EWYE070CZP-AA2	2	7	1	1	EWYE070CZN-AA2	2	7	0	1

4 When settings are done, use [23.01] Apply Changes.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.18.1 Checking procedures " [▶ 236] of the main PCB and continue with the next procedure.

4.19 Main switch

4.19.1 Checking procedures

To perform a mechanical check of the main switch

- 1 Turn ON the power of the unit with the main switch.
- 2 Check if unit gets powered by observing the HMI.

Prerequisite: Turn OFF the main switch.

- 3 Check if unit goes off by observing the HMI.

Does the unit switch ON and OFF?	Action
Yes	Main switch is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Perform the next step.

- 4 Remove the main switch box cover and the secondary switch box cover, see "[4.23 Plate work](#)" [▶ 263].



CAUTION

The user interface is wired to the main PCB with a LAN to 4-pin cable. This cable CANNOT be removed from the outside.

Remove the main switch box cover carefully so the cable does NOT break.

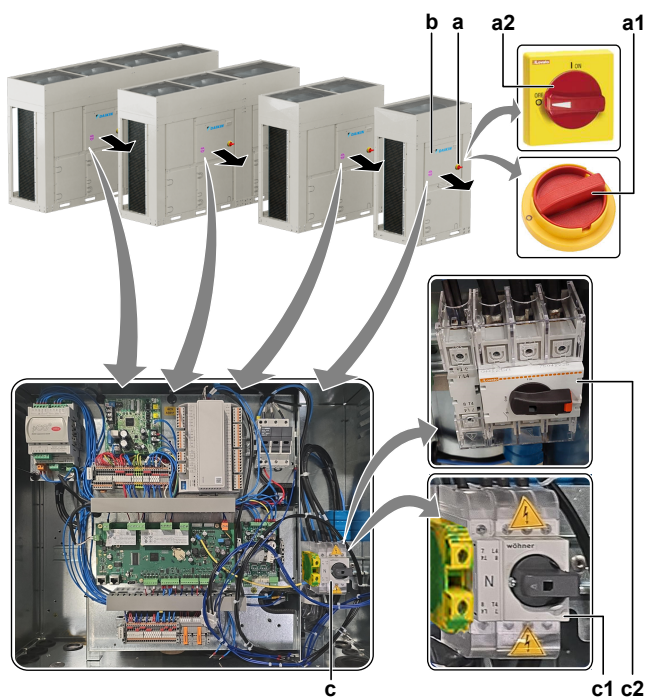


CAUTION

When removing the main switch box cover, always be careful not to break the main switch shaft.

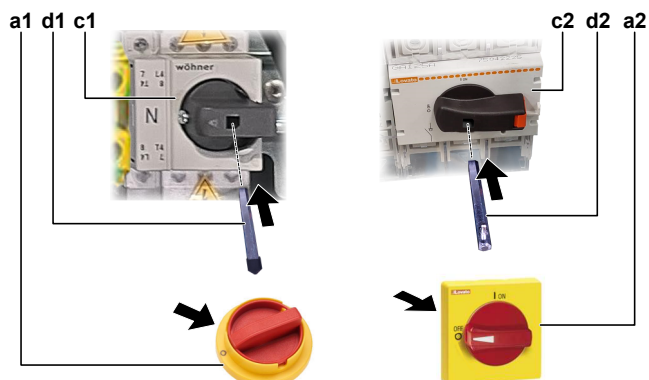
**INFORMATION**

Due to production modifications, main switches are branded either as "Wohner" or "Lovato". Refer to the RNSQI bulletin number 23-47 to order the correct replacement. RNSQI is available in the portal and the SPP bank.



- a** Main switch rotary handle
- a1** Main switch rotary handle "Wohner"
- a2** Main switch rotary handle "Lovato"
- b** Main switch box cover
- c** Main switch
- c1** Main switch "Wohner"
- c2** Main switch "Lovato"

- 5** Check if the mechanical connection between the main switch (c), the connection shaft (d) and the main switch rotary handle (a) is damaged.
- 6** Define which of the parts are damaged:
 - The main switch (c).
 - The main switch rotary handle (a) or shaft (d), which are part of a kit.



- a1** Main switch rotary handle "Wohner"
- a2** Main switch rotary handle "Lovato"
- c1** Main switch "Wohner"
- c2** Main switch "Lovato"
- d1** Main switch connection shaft "Wohner"
- d2** Main switch connection shaft "Lovato"

Is the mechanical connection damaged?	Action
Yes	Replace the defective part(s), see "4.19.2 Repair procedures" [▶ 246].
No	Perform an electrical check of the main switch, see "4.19.1 Checking procedures" [▶ 243].

To perform an electrical check of the main switch

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Turn off the unit's external power supply.
- 2 Remove the main switch box cover and the secondary switch box cover, see ["4.23 Plate work"](#) [▶ 263].



CAUTION

The user interface is wired to the main PCB with a LAN to 4-pin cable. This cable CANNOT be removed from the outside.

Remove the main switch box cover carefully so the cable does NOT break.



CAUTION

When removing the main switch box cover, always be careful not to break the main switch shaft.



INFORMATION

Due to production modifications, main switches are branded either as "Wohner" or "Lovato". Refer to the RNSQI bulletin number 23-47 to order the correct replacement. RNSQI is available in the portal and the SPP bank.

- 3 With the unit's external power supply still turned OFF, turn ON the main switch (c).

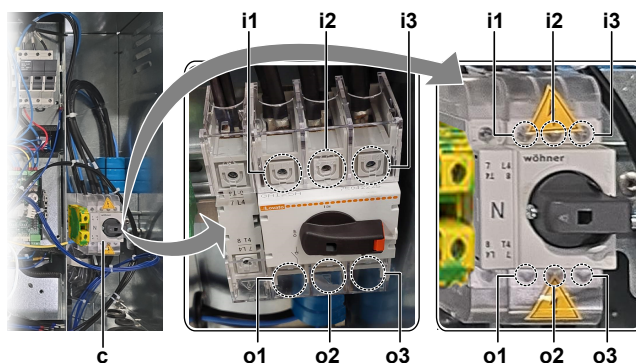
- 4 Measure the resistance between all the in and out terminals.

Result: The measurement must be closed circuit.

- 5 With the unit's external power supply still turned OFF, turn OFF the main switch (c).

- 6 Measure the resistance between all the in and out terminals.

Result: The measurement must be open circuit.



- c** Main switch ("Lovato" or "Wohner")
- i1** IN terminal (L1)
- i2** IN terminal (L2)
- i3** IN terminal (L3)
- o1** OUT terminal (L1)
- o2** OUT terminal (L2)
- o3** OUT terminal (L3)

Are the measurements correct?	Action
Yes	Main switch is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the main switch, see "4.19.2 Repair procedures" [▶ 246].

**WARNING**

When installing the main switch box cover, always turn off the main switch first and carefully put the cover back in place.

4.19.2 Repair procedures

To remove the main switch

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Turn off the unit's external power supply and install a safety lock.
- 2 Remove the main switch box cover and the secondary switch box cover, see ["4.23 Plate work"](#) [▶ 263].

**CAUTION**

The user interface is wired to the main PCB with a LAN to 4-pin cable. This cable CANNOT be removed from the outside.

Remove the main switch box cover carefully so the cable does NOT break.

**CAUTION**

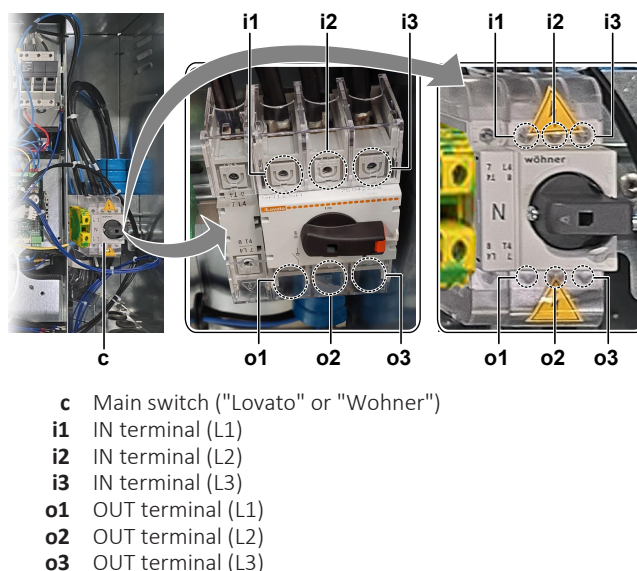
When removing the main switch box cover, always be careful not to break the main switch shaft.

**INFORMATION**

Due to production modifications, main switches are branded either as "Wohner" or "Lovato". Refer to the RNSQI bulletin number 23-47 to order the correct replacement. RNSQI is available in the portal and the SPP bank.

- 3 Using a multimeter, measure the voltage at the input terminals.

Result: The voltage MUST be 0.



- 4 Disconnect the cabling of the main switch from the IN and OUT terminals.
- 5 Remove the main switch.
- 6 To install the main switch, see ["4.19.2 Repair procedures"](#) [▶ 246].

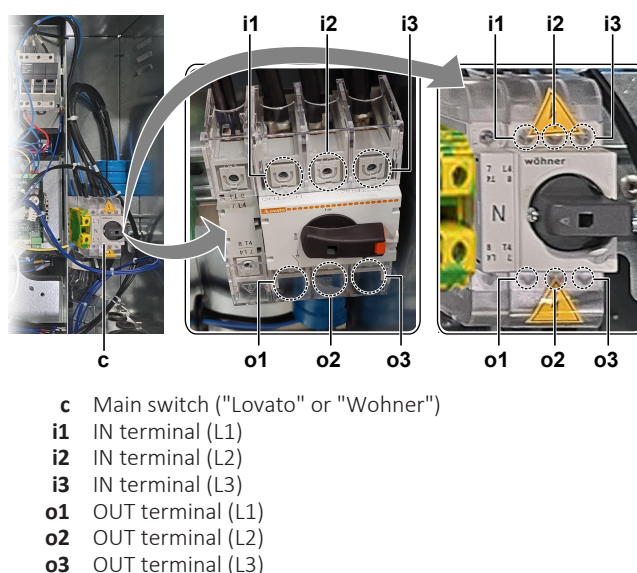
To install the main switch



INFORMATION

Due to production modifications, main switches are branded either as "Wohner" or "Lovato". Refer to the RNSQI bulletin number 23-47 to order the correct replacement. RNSQI is available in the portal and the SPP bank.

- 1 Install the main switch.
- 2 Connect the cabling of the main switch on the IN and OUT terminals. Ensure that the cables are tight and properly inserted.
- 3 Install the small plastic cover on the main switch IN and OUT terminals.



- 4 Install the main switch box cover and the secondary switch box cover, see ["4.23 Plate work"](#) [▶ 263].
- 5 Remove the safety lock and turn ON the unit's external power supply.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.20 Noise filter PCB

4.20.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To perform a power check of the noise filter PCB

Prerequisite: Stop the unit operation via the user interface.

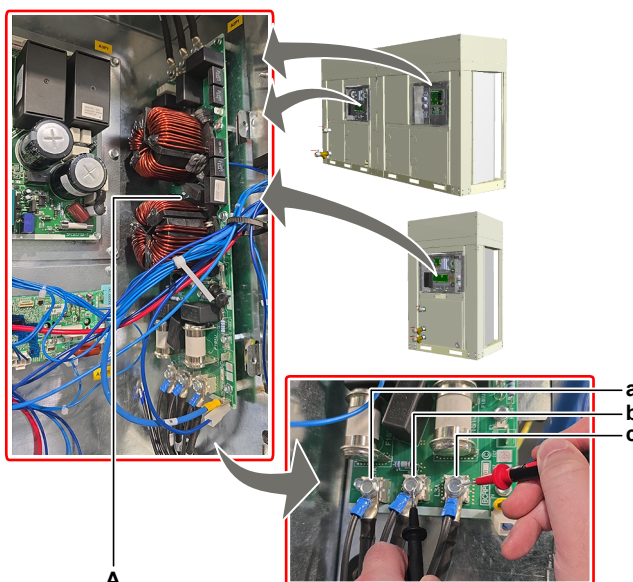
Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Turn ON the power of the unit with the main switch.
- 2 Measure the voltage between the following wires of the noise filter PCB on the location shown below.

Result: All measurements MUST be 380~415 V AC.

- L1A–L2A
- L1A–L3A
- L2A–L3A



- A** Noise filter PCB
a L1A
b L2A
c L3A

Is the measured voltage on the PCB correct?	Action
Yes	Return to "4.20.1 Checking procedures" [▶ 248] procedures of the PCB and continue with the next procedure.
No	Continue with the next step.

3 Check the power supply to the unit, see "6.1.1 Checking procedures" [▶ 347].

Does the unit receive power?	Action
Yes	Correct the wiring from the main power supply terminal to the noise filter PCB, see "4.20.2 Repair procedures" [▶ 251].
No	Adjust the power supply to the unit, see "6.1.2 Repair procedures" [▶ 350].

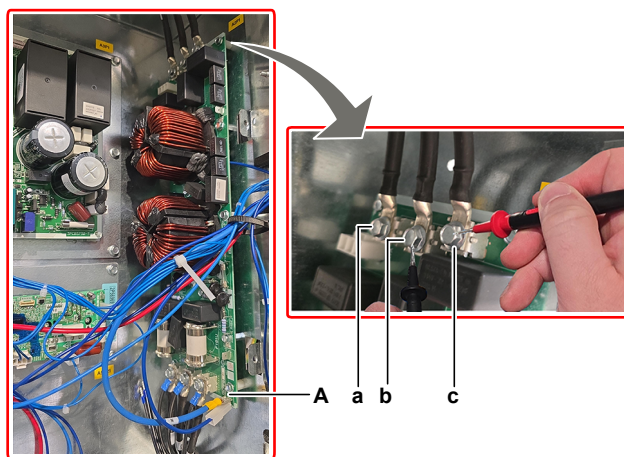
To perform an electrical check of the noise filter PCB

Prerequisite: First check the power supply to the noise filter PCB, see "4.20.1 Checking procedures" [▶ 248].

1 Measure the voltage between the following output wires of the noise filter PCB on the location shown below.

Result: All measurements MUST be 380~415 V AC.

- L1B–L2B
- L1B–L3B
- L2B–L3B



- A** Noise filter PCB
- a** L1B
- b** L2B
- c** L3B

Is the output voltage on the noise filter PCB correct?	Action
Yes	Return to "4.20.1 Checking procedures" [▶ 248] of the noise filter PCB and continue with the next procedure.
No	Replace the noise filter PCB, see "4.20.2 Repair procedures" [▶ 251].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the noise filter PCB, see ["4.20.1 Checking procedures"](#) [▶ 248].

- 1 Visit your local spare parts webbank.
- 2 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the noise filter PCB installed?	Action
Yes	Return to "4.20.1 Checking procedures" [▶ 248] of the noise filter PCB and continue with the next procedure.
No	Replace the noise filter PCB, see "4.20.2 Repair procedures" [▶ 251].

To check the wiring of the noise filter PCB

Prerequisite: First perform all earlier checks of the noise filter PCB, see ["4.20.1 Checking procedures"](#) [▶ 248].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Check that all wires are properly connected and that all connectors are fully plugged-in.
- 2 Check that no connectors or wires are damaged.
- 3 Check that the wiring corresponds with the wiring diagram, see ["9.2 Wiring diagram"](#) [▶ 408].

**INFORMATION**

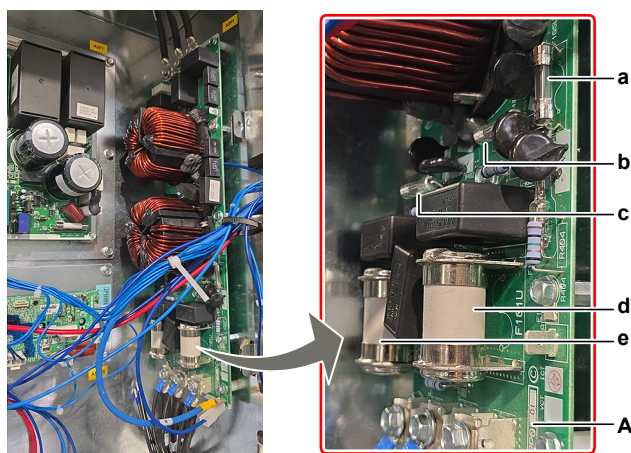
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.20.1 Checking procedures" [▶ 248] of the noise filter PCB and continue with the next procedure.

To check the fuses of the noise filter PCB

Prerequisite: First perform all earlier checks of the noise filter PCB, see ["4.20.1 Checking procedures"](#) [▶ 248].

- 1 Measure the continuity of the fuse. If no continuity is measured, the fuse has blown.



- A** Noise filter PCB
a Fuse F105
b Fuse F103
c Fuse F104
d Fuse F101
e Fuse F102

Blown fuse on the noise filter PCB?	Action
Yes	Replace the noise filter PCB, see "4.20.2 Repair procedures" [▶ 251].
No	Return to "4.20.1 Checking procedures" [▶ 248] of the noise filter PCB and continue with the next procedure.

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.20.2 Repair procedures

To correct the wiring from the main power supply terminal to the noise filter PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Access the switch box, see ["4.23 Plate work"](#) [▶ 263].
- 2 Make sure that all wires are firmly and correctly connected, see ["9.2 Wiring diagram"](#) [▶ 408].
- 3 Check the continuity of all wires.
- 4 Replace any damaged or broken wires.

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to "4.20.1 Checking procedures" [▶ 248] of the noise filter PCB and continue with the next procedure.

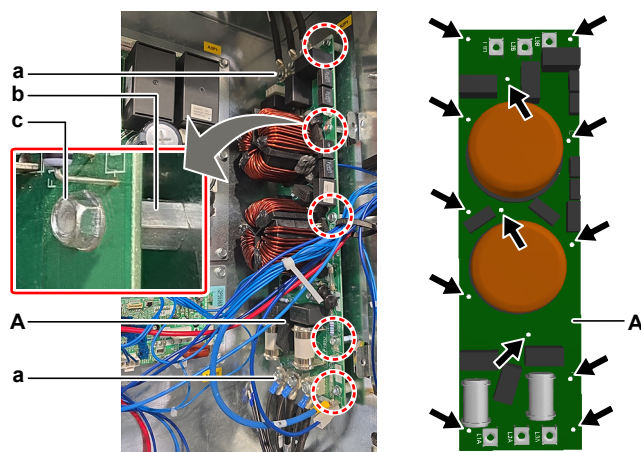
To remove the noise filter PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Loosen the screws and disconnect all the wires from the noise filter PCB.

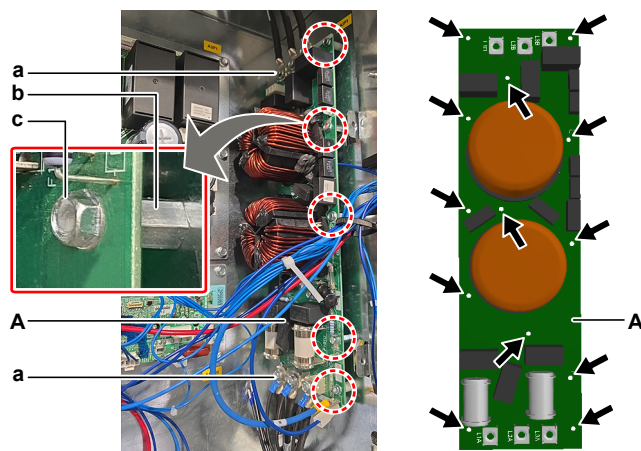


- A Noise filter PCB
- a Wire terminal
- b PCB support
- c Screw

- 2 Remove the screws from the PCB supports and remove the PCB.
- 3 To install the new noise filter PCB, see ["4.20.2 Repair procedures"](#) [▶ 251].

To install the noise filter PCB

- 1 Install the noise filter PCB on its correct location.
- 2 Install the screws through the holes in the PCB into the PCB supports.
- 3 Tighten the screws to fix the noise filter PCB.



- A Noise filter PCB
- a Wire terminal
- b PCB support
- c Screw

- 4 Connect all the wires to the wire terminals on the noise filter PCB and tighten the screws to fix the wires.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.20.1 Checking procedures" [▶ 248] of the noise filter PCB and continue with the next procedure.

4.21 Option PCB

The type of option PCB is the EKRSCIOC I/O extension board. See ["5.5 EKRSCIOC - I/O extension board"](#) [▶ 341].

4.21.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To perform a power check of the option PCB

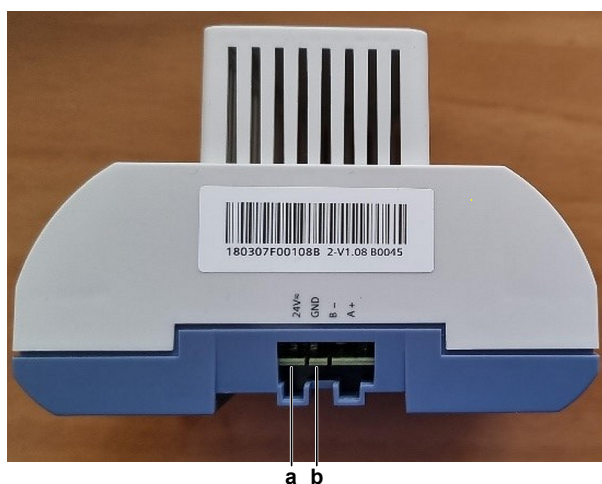
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Turn ON the power of the unit with the main switch.
- 2 Measure the voltage between the wires on terminals 24 V-GND of the option PCB.

Result: The measurement MUST be 24 V DC.



- a** Terminal 24 V
b Terminal GND

Is the measurement correct?	Action
Yes	Return to "4.21.1 Checking procedures" [▶ 253] of the option PCB and continue with the next procedure.
No	Continue with the next step.

- 3 Measure the output voltage between terminals -V and +V of the 24 V DC auxiliary power supply.

Result: The measured voltage MUST be 24 V DC.

Is the measurement correct?	Action
Yes	Correct the wiring between the option PCB and the 24 V DC auxiliary power supply, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the 24 V DC auxiliary power supply, see "4.2.1 Checking procedures" [▶ 128].

To check the LEDs of the option PCB

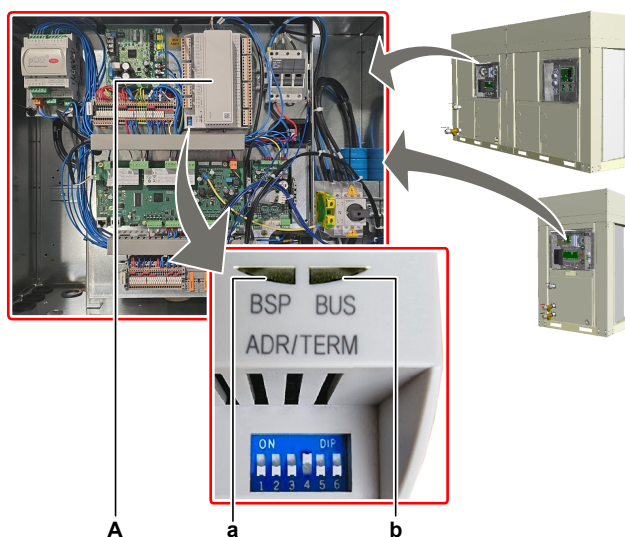
- 1 First check the power supply to the option PCB, see ["4.21.1 Checking procedures"](#) [▶ 253].



INFORMATION

To allow the main PCB to properly communicate with the option PCB, the option PCB MUST be enabled (field setting [15.02] = ON).

- 2 Locate the LEDs on the option PCB.



- A Option PCB
a BPS LED
b BUS LED

- 3 Compare the behaviour of the leds to the table below.

LED	Color	Flash response	Function	Action
BPS LED	Red	Flashing at 2 Hz	Error or address error	Correctly set DIP switches (see "4.21.2 Repair procedures" [▶ 256])
	Green	Continuous	Running	All OK

LED	Color	Flash response	Function	Action
BUS LED	Red	Continuous	Communication error	Check wiring, wiring MUST be connected to T1 of main PCB and NOT to T6 (see "4.21.1 Checking procedures" [▶ 253]) Correctly set DIP switches (see "4.21.2 Repair procedures" [▶ 256]) Set [15.02] to ON
	Green	Continuous	Communication running	All OK
	Green + Red (yellow)	Continuous	Communication running but parameter NOT configured successfully	Check wiring (see "4.21.1 Checking procedures" [▶ 253]) and correctly set DIP switches (see "4.21.2 Repair procedures" [▶ 256])

Do the LEDs function correctly?	Action
Yes	Return to "4.21.1 Checking procedures" [▶ 253] of the option PCB and continue with the next procedure.
No	Perform necessary action as described in the table above.

- 4** After necessary action has been performed, again check the behaviour of the LEDs.

Do the LEDs function correctly?	Action
Yes	Return to "4.21.1 Checking procedures" [▶ 253] of the option PCB and continue with the next procedure.
No	Replace the option PCB, "4.21.2 Repair procedures" [▶ 256].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the option PCB, see ["4.21.1 Checking procedures"](#) [▶ 253].

- 1 If a spare part option PCB is installed in your unit, check that it is the correct one by performing the procedure described below.
- 2 Check the sticker on the side: it must indicate POL985.00/MCQ.
- 3 Make sure the DIP switches of the option PCB are set correctly, see ["4.21.2 Repair procedures"](#) [▶ 256].
- 4 Visit your local spare parts webbank.
- 5 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the option PCB installed?	Action
Yes	Return to "4.21.1 Checking procedures" [▶ 253] of the option PCB and continue with the next procedure.
No	Replace the option PCB, "4.21.2 Repair procedures" [▶ 256].

To check the wiring of the option PCB

Prerequisite: First perform all earlier checks of the option PCB, see ["4.21.1 Checking procedures"](#) [▶ 253].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Check that all wires are properly connected and that all connectors are fully plugged-in.
- 2 Check that no connectors or wires are damaged.
- 3 Check that the wiring corresponds with the wiring diagram, see ["9.2 Wiring diagram"](#) [▶ 408].



INFORMATION

Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.21.1 Checking procedures" [▶ 253] of the option PCB and continue with the next procedure.

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

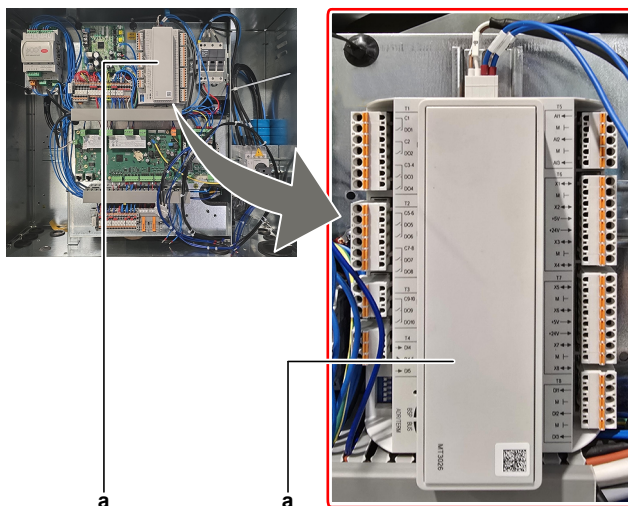
4.21.2 Repair procedures

To remove the option PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].
- 2 Disconnect all connectors from the option PCB.

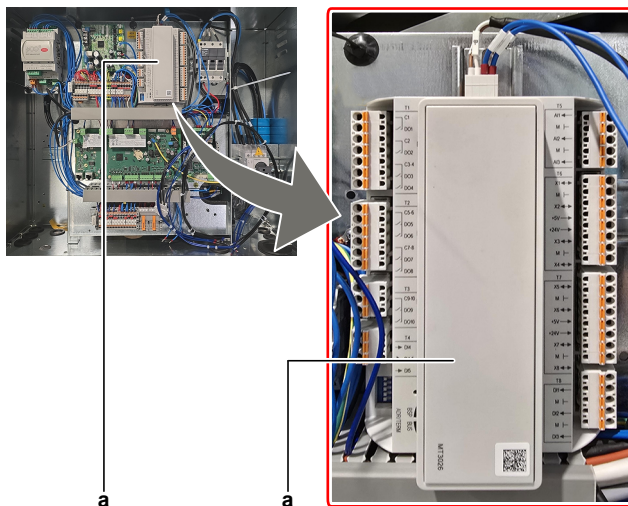


a Option PCB

- 3 Remove the cover of the option PCB.
- 4 Loosen the screws and disconnect all wires from the terminal blocks.
- 5 Remove the option PCB from the switch box.
- 6 To install the new option PCB, see ["4.21.2 Repair procedures"](#) [▶ 256].

To install the option PCB

- 1 Install the option PCB on its correct location in the switch box.
- 2 Connect all wiring to the correct wiring terminals. Tighten the screws to fix the wiring.
- 3 Install the cover of the option PCB.



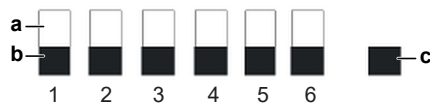
a Option PCB

- 4 Connect all connectors to the option PCB.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.21.1 Checking procedures" [▶ 253] of the option PCB and continue with the next procedure.

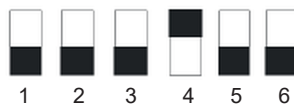
To set the DIP switches and field settings of the spare part option PCB

If a spare part option PCB is installed in your unit, the DIP switches and field setting [15.02] need to be set. By default (factory settings) all switches are in off position.



- a** ON position
- b** OFF position
- c** Shows the position of a switch
- 1~5** Address switch 1~5
- 6** Peripheral bus termination

- 1** Shut the power off.
- 2** Set the DIP switch 4 to ON.



- 3** Turn ON the power of the unit.
- 4** Set the field setting [15.02] as shown in the table below, see ["9.8 Field settings"](#) [▶ 442].

Option PCB	Setting [15.02]
Passive	OFF
Active	ON

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.21.1 Checking procedures" [▶ 253] of the option PCB and continue with the next procedure.

4.22 Outdoor unit fan motor

4.22.1 Checking procedures



INFORMATION

Depending on the type, the outdoor units have 1, 2, 3 or 4 fans. As they are all equal, the check and repair procedures describe only one.

EWYE019~025CZ(N/P)-A1 have 1 fan,
 EWYE030~035CZ(N/P)-A1 have 2 fans,
 EWYE050~060CZ(N/P)-A2 have 3 fans,
 EWYE070CZ(N/P)-A2 have 4 fans.



INFORMATION

It is recommended to perform the checks in the listed order.

To perform a mechanical check of the propeller fan blade assembly

Prerequisite: First perform a power transistor check of the fan inverter PCB, see ["4.14 Fan inverter PCB"](#) [▶ 212]. If power transistor is OK, proceed as follows:

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 If propeller fan blade touches the bell mouth, check if the fan motor is correctly mounted on its base, see ["4.22.2 Repair procedures"](#) [▶ 261].
- 2 Check the state of the propeller fan blade assembly for damage, deformations and cracks.

Is the propeller fan blade assembly damaged?	Action
Yes	Replace the propeller fan blade assembly, see "4.22.2 Repair procedures" [▶ 261]
No	Perform a mechanical check of the DC fan motor assembly, see "4.22.1 Checking procedures" [▶ 258].

To perform a mechanical check of the DC fan motor assembly

Prerequisite: First perform a mechanical check of the propeller fan blade assembly, see ["4.22.1 Checking procedures"](#) [▶ 258].

- 1 Visually check:
 - For any burnt-out part or wire. If found, replace the fan motor, see ["4.22.2 Repair procedures"](#) [▶ 261].
 - That fan motor fixation bolts are correctly installed and fixed. Correct as needed.
- 2 Manually rotate the fan motor shaft. Check that it rotates smoothly.
- 3 Check the friction of the DC fan motor shaft bearing.

Is the DC fan motor shaft friction normal?	Action
Yes	Perform an electrical check of the DC fan motor assembly, see "4.22.1 Checking procedures" [▶ 258].
No	Replace the DC fan motor assembly, see "4.22.2 Repair procedures" [▶ 261].

To perform an electrical check of the DC fan motor assembly

- 1 First perform a mechanical check of the DC fan motor assembly, see ["4.22.1 Checking procedures"](#) [▶ 258].



INFORMATION

Check the fan motor power supply (voltage) circuit on the PCB.

- 2 Turn ON the power of the unit with the main switch.
- 3 Activate the desired outdoor unit fan via the service monitoring tool:

- Enter technician password.
- In the Main Menu, select Unit Enable.
- Set to Disable.
- In the Main Menu, select Unit Mode > Test to put the unit in test mode.
- In the Main Menu, select Commission Unit > Manual Control > Circuit # > Fan Out #.
- Set to On.

4 Check the functioning of the outdoor unit fan.

Outdoor unit fan ...	Action
Rotates continuously (without interruption)	DC fan motor assembly is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
Does not rotate or rotates for a short time	Continue with the next step.

5 Stop the unit operation via the user interface.

6 Turn OFF the main switch.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

7 Check that the DC fan motor connector X1A is properly connected to the PCB.

8 Unplug the DC fan motor connector and measure the resistance between the pins 1–3, 3–5, and 1–5 of the DC fan motor connector.

Result: All measurements MUST be $3.94 \Omega \pm 5\%$ at 20°C .



INFORMATION

Winding resistance values above are given for reference. You should NOT be reading a value in k Ω or a short-circuit. Make sure that the propeller fan blade does NOT rotate, as this could affect resistance measurements.

9 Set the Megger voltage to 500 V DC or 1000 V DC.

10 Measure the insulation resistance for the motor terminals. Measurements between each phase and fan motor body (e.g. axle) MUST be $>1000 \text{ M}\Omega$.

Are the measured resistance values correct?	Action
Yes	Perform a check of the fan inverter PCB, see "4.14.1 Checking procedures" [▶ 212].
No	Replace the DC fan motor, see "4.22.2 Repair procedures" [▶ 261].

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

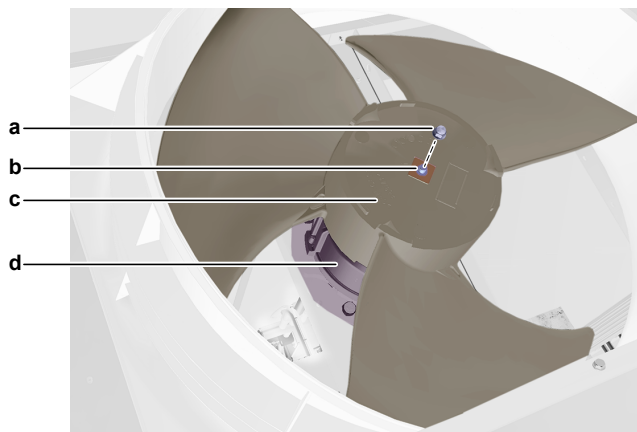
4.22.2 Repair procedures

To remove the propeller fan blade assembly

Prerequisite: Stop the unit operation via the user interface.

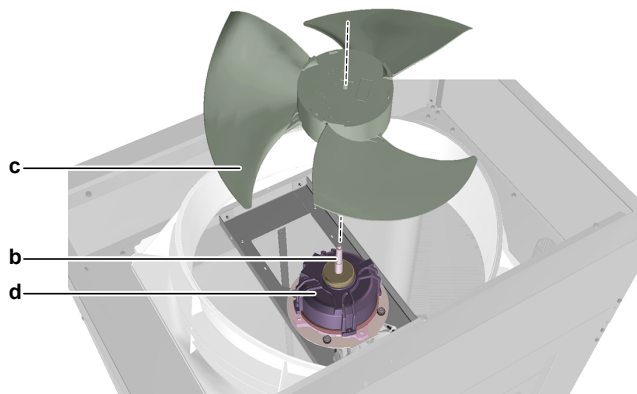
Prerequisite: Turn OFF the main switch.

- 1 Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].
- 2 Loosen and remove the nut using a wrench.



- a Nut
- b Motor axle
- c Propeller fan blade assembly
- d Fan motor assembly

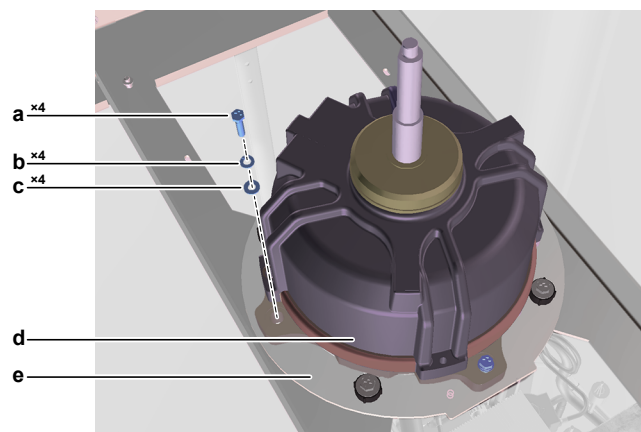
- 3 Remove the propeller fan blade from the fan motor axle.



- 4 To install the propeller fan blade assembly, see ["4.22.2 Repair procedures"](#) [▶ 261].

To remove the DC fan motor assembly

- 1 Remove the propeller fan blade assembly from the DC fan motor assembly, see ["4.22.2 Repair procedures"](#) [▶ 261].
- 2 Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].
- 3 Disconnect the DC fan motor connector from the fan inverter PCB.
- 4 Remove the ferrite bead.
- 5 Cut the tie strap.

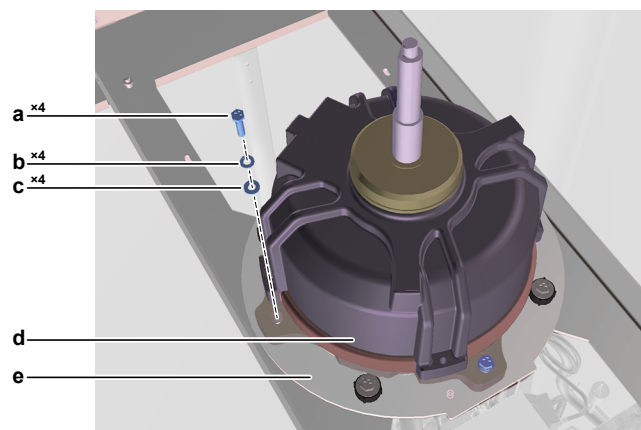


- a Screw
- b Lock washer
- c Washer
- d DC fan motor assembly
- e Bracket

- 6 Remove the 4 screws and washers that fix the DC fan motor assembly.
- 7 Remove the DC fan motor assembly from the unit.
- 8 To install the DC fan motor assembly, see ["4.22.2 Repair procedures"](#) [▶ 261].

To install the DC fan motor assembly

- 1 Install the DC fan motor assembly in the correct location.
- 2 Install and tighten the washers and screws to fix the DC fan motor assembly to the unit.



- a Screw
- b Lock washer
- c Washer
- d DC fan motor assembly
- e Bracket

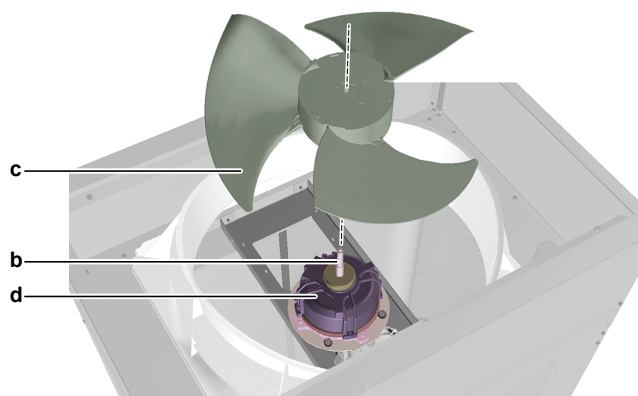
- 3 Connect the DC fan motor connector to the connector on the fan inverter PCB.
- 4 Install the ferrite bead.
- 5 Install new tie straps to fix the fan motor harness.
- 6 Install the propeller fan blade assembly, see ["4.22.2 Repair procedures"](#) [▶ 261].

To install the propeller fan blade assembly

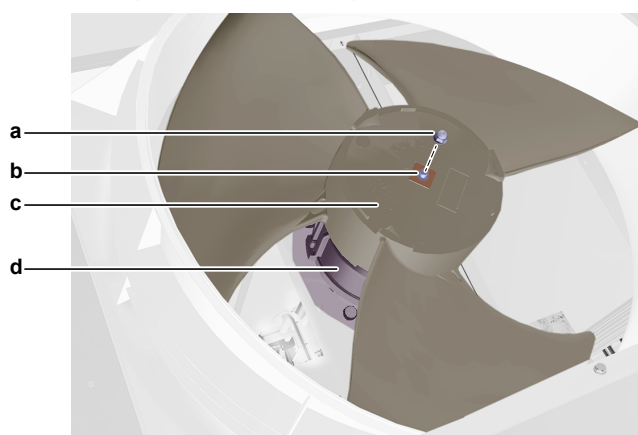
- 1 Install the propeller fan blade assembly on the DC fan motor assembly motor axle.

**CAUTION**

Do NOT install a damaged propeller fan blade assembly.



- 2** Install and tighten the nut using a wrench.



- a** Nut
- b** Motor axle
- c** Propeller fan blade assembly
- d** Fan motor assembly

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.22.1 Checking procedures " [▶ 258] of the outdoor unit fan motor and continue with the next procedure.

4.23 Plate work

4.23.1 To remove the plate work

To remove the main switch box cover

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1** Remove (pull out) the main switch from the unit.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Loosen and remove the 10 screws that fix the switch box cover.



- a Main switch
- b Screw
- c Main circuit switch box cover
- d Screw (top cover)
- e Top cover

- 3 Carefully remove the switch box cover and disconnect the wiring from the user interface.



CAUTION

The user interface is wired to the main PCB with a LAN to 4-pin cable. This cable CANNOT be removed from the outside.

Remove the main switch box cover carefully so the cable does NOT break.



CAUTION

When removing the main switch box cover, always be careful not to break the main switch shaft.

- 4 Remove the switch box cover from the unit.
- 5 Remove the 2 screws that fix the switch box top cover and remove the cover.



WARNING

When installing the main switch box cover, always turn off the main switch first and carefully put the cover back in place.

To remove the secondary switch box cover

Prerequisite: Stop the unit operation via the user interface.

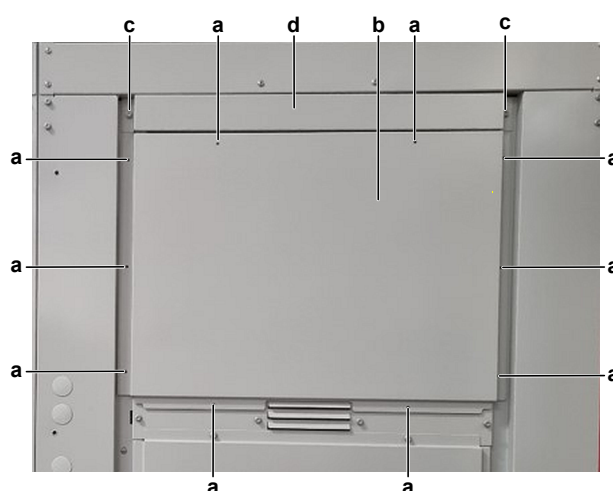
- 1 Turn OFF the main switch.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Loosen and remove the 10 screws that fix the switch box cover.



- a Screw
- b Secondary circuit switch box cover
- c Screw (top cover)
- d Top cover

- 3 Remove the switch box cover.
- 4 Remove the 2 screws that fix the switch box top cover and remove the cover.

To remove the lower cover

Prerequisite: Stop the unit operation via the user interface.

- 1 Turn OFF the main switch.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Loosen and remove the 8 screws that fix the lower cover.



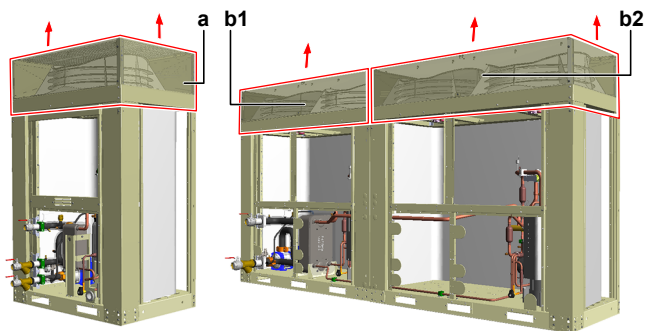
- a Screw
- b Main circuit lower cover
- c Secondary circuit lower cover

- 3 Remove the lower cover.

4.23.2 To remove the fan block

One circuit units have one fan block (a), two circuit units have two fan blocks (b1 and b2).

Fan blocks come as a single piece with fans installed.



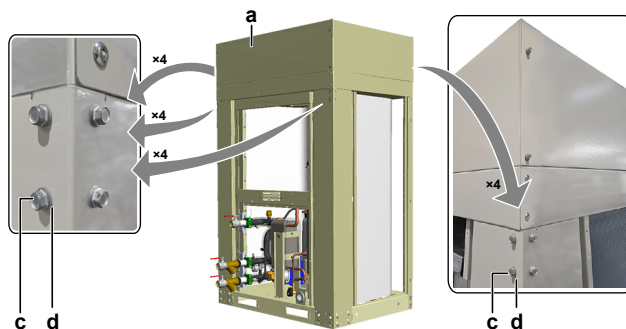
WARNING

The fan block is heavy. Use a crane to lift it from the unit.

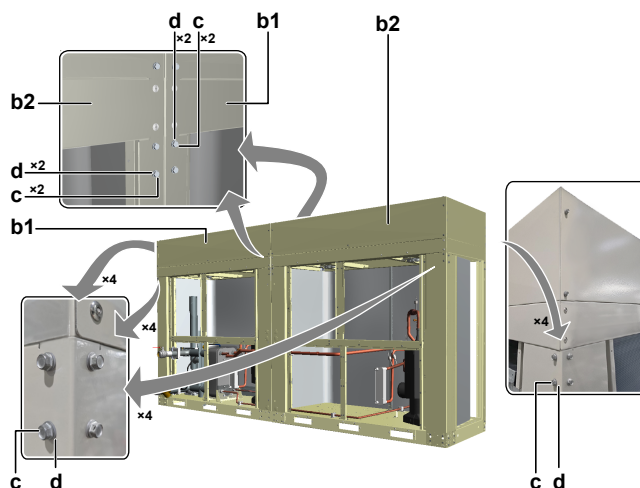
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

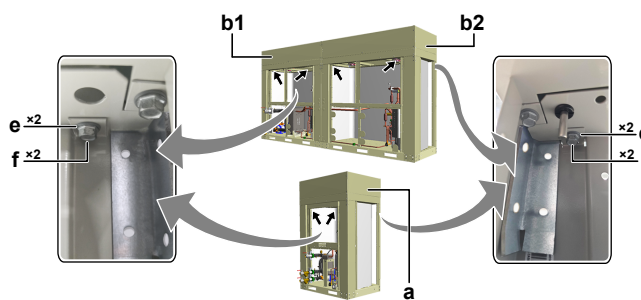
- 1 Disconnect the wiring harness from the fan motor.
 - 2 Remove the screws (c) and washers (d) that fix the fan block frame (t) to the vertical stays.
- One circuit units have 4 screws (c) and washers (d) on each corner stay.



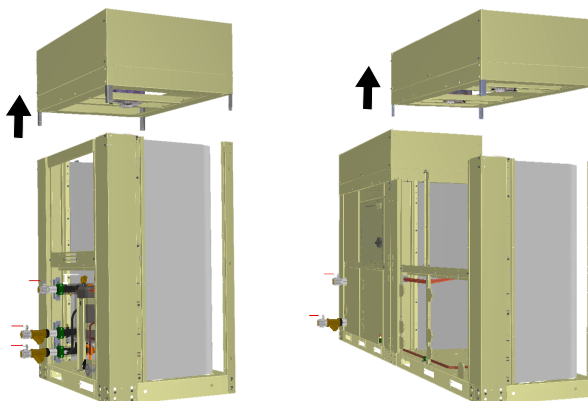
- Two circuit units have 4 screws (c) and washers (d) on each corner stay, and 2 screws (c) and washers (d) on each middle stay.



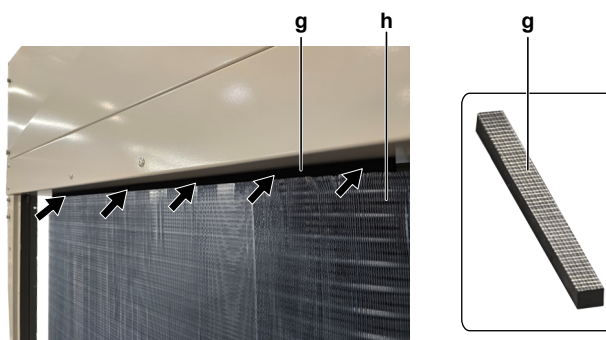
- 3 Remove the screws (f) and washers (e) that fix the fan block to the vertical stays. There are 2 screws and washers in every corner and on the middle stays, front and backside of the unit.
- 4 If necessary, remove the switchbox for easier access to the screws in the front of the unit, see "4.23 Plate work" [▶ 263].



- 5 Using a crane, lift and remove the fan block from the unit.



- 6 Leave the insulation material (g) between the fan block and the condenser coil (h) in place and reuse it.



- 7 To install the fan block, follow the above steps in reverse order.

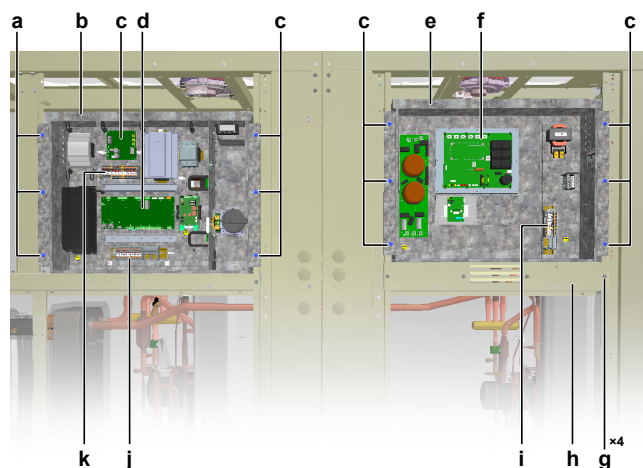
4.23.3 To remove the switch box

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Remove the 4 screws and remove the heat sink panel from the unit.



- a Screw (switch box)
- b Main switch box
- c ACS digital I/O PCB
- d Main PCB
- e Secondary switch box
- f Secondary circuit inverter PCB
- g Screw (heat sink panel)
- h Heat sink panel (secondary circuit switch box)
- i Terminal block SC
- j Terminal block MC
- k Terminal block MP

2 Disconnect the power supply wiring:

- From the main switch (for main circuit switch box removal).
- From the noise filter PCB (for secondary switch box removal).

3 Disconnect the wiring of the following components:

Main circuit switch box removal		Secondary circuit switch box removal	
Component	Wiring position	Component	Wiring position
High pressure sensor	▪ Terminal X3 of terminal block T3 on main PCB ▪ Terminal block MC: 750-751	High pressure sensor	▪ Terminal block SC: 730-731-760
Low pressure sensor	▪ Terminal X1 of terminal block T3 on main PCB ▪ Terminal block MC: 750-751	Low pressure sensor	▪ Terminal block SC: 730-731-720
Compressor thermal protector	▪ Terminal D5 of terminal block T5 on main PCB ▪ Terminal block MC: 703	Compressor thermal protector	▪ Terminal block SC: 606-N
Crankcase heater	▪ Terminal Q8 of terminal block T12 on main PCB ▪ Terminal block XU: L	Crankcase heater	▪ Terminal block SC: 544-L
4-way valve (if applicable)	▪ Terminal Q6 of terminal block T12 on main PCB ▪ Terminal block MC: L	4-way valve (if applicable)	▪ Terminal block SC: 604-L
Suction pipe thermistor	▪ Terminal B5 of terminal block T3 on main PCB ▪ Terminal block MC: M1	Suction pipe thermistor	▪ Terminal M of terminal block T4 on main PCB ▪ Terminal B6 of terminal block T3 on main PCB

Main circuit switch box removal		Secondary circuit switch box removal	
Component	Wiring position	Component	Wiring position
Discharge pipe thermistor	- Terminal X5 of terminal block T4 on main PCB - Terminal block MC: M1	Discharge pipe thermistor	- Terminal X6 of terminal block T4 on main PCB - Terminal M of terminal block T4 on main PCB
High pressure switch	Terminal block MC: 764-765		
High pressure switch	Terminal block SC: 766-767		
Outdoor air thermistor	- Terminal B3 of terminal block T2 on main PCB - Terminal block MC: 774		
Expansion valve	Connector T8 on main PCB		
Expansion valve	Connector T9 on main PCB		
Economiser expansion valve	Connector STEPPER 1 on stepper valve driver		
Economiser expansion valve	Connector STEPPER 2 on stepper valve driver		
Inlet water thermistor	- Terminal B1 of terminal block T2 on main PCB - Terminal block MC: 774		
Outlet water thermistor	- Terminal B2 of terminal block T2 on main PCB - Terminal block MC: 774		
Flow switch	- Terminal D2 of terminal block T5 on main PCB - Terminal block MC: 703		
Water pump	Pump inverter OR Contactor KM90		

- 4 Disconnect the wiring of all field accessories and options.
- 5 For units with 2 refrigerant circuits: Disconnect the wiring of the secondary circuit inverter PCB:
 - From terminal Q4 of terminal block T11 on the main PCB and from the ACS digital I/O PCB (for main circuit switch box removal).
 - From the inverter PCB itself (for secondary switch box removal).
- 6 For units with 2 refrigerant circuits: Disconnect all extension wiring between the main circuit switch box and secondary circuit switch box:
 - From the main PCB and terminal blocks MC and MP (for main circuit switch box removal).
 - From terminal block SC (for secondary switch box removal).
- 7 For main circuit switch box ONLY: Access the back plate of the switch box, see "4.23 Plate work" [▶ 263].
- 8 Disconnect the compressor wiring from the inverter PCB.

- 9 Disconnect the fan motor connectors.
- 10 Cut all tie straps that fix the wiring to the switch box and route the wiring out of the switch box as needed.



INFORMATION

Make sure ALL wiring is disconnected from the switch box before removing as this may damage the wiring.

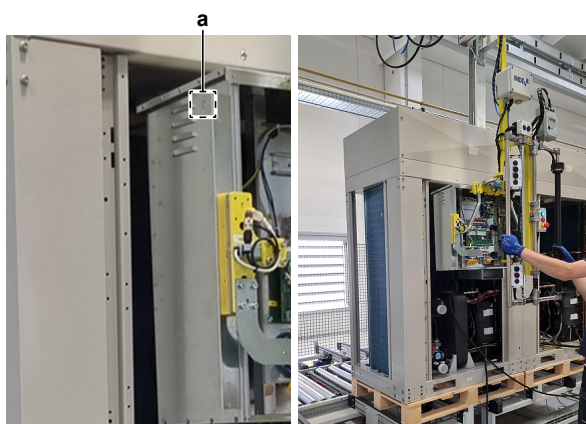
- 11 Remove the 6 screws that fix the switch box.
- 12 Using a hoist, lift the switch box to unhook it from the unit.



CAUTION

The switch box is very heavy. Handle with care and look for support when handling.

- 13 Carefully move the switch box out of the unit.



a Hook

- 14 To install the switch box, see "4.23 Plate work" [▶ 263].

4.23.4 To install the switch box

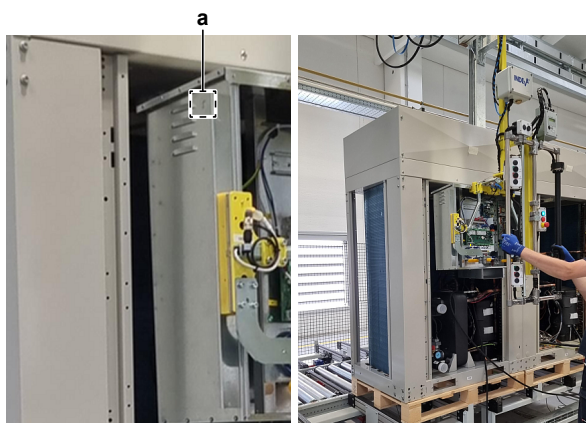
- 1 Using a hoist, lift the switch box to the correct position in front of the unit.



CAUTION

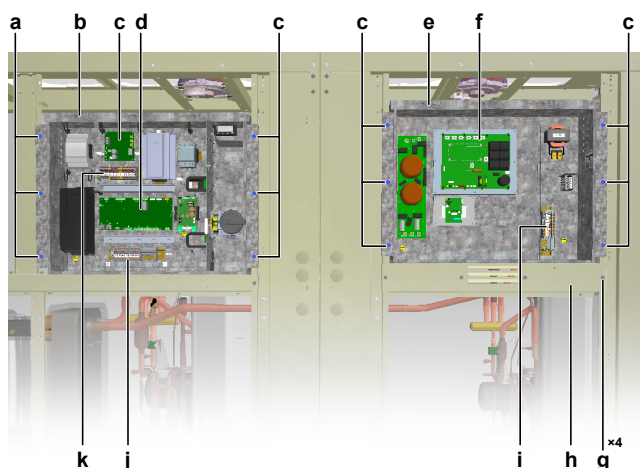
The switch box is very heavy. Handle with care and look for support when handling.

- 2 Carefully move the switch box inside the unit. Lower the switch box and make sure the hooks are inserted in the holes on the unit.



a Hook

- 3 Install and tighten the 6 screws to fix the switch box to the unit.



- a Screw (switch box)
- b Main switch box
- c ACS digital I/O PCB
- d Main PCB
- e Secondary switch box
- f Secondary circuit inverter PCB
- g Screw (heat sink panel)
- h Heat sink panel (secondary circuit switch box)
- i Terminal block SC
- j Terminal block MC
- k Terminal block MP

- 4 For main circuit switch box ONLY: Access the back plate of the switch box, see "4.23 Plate work" [▶ 263].
- 5 Route the compressor wiring inside the switch box and connect the compressor wiring to the inverter PCB.
- 6 Route the fan motor wiring inside the switch box and connect the fan motor connectors.
- 7 For main circuit switch box ONLY: Re-install the front plate of the switch box, see "4.23 Plate work" [▶ 263].
- 8 Correctly route and connect the wiring of the following components:

Main circuit switch box removal		Secondary circuit switch box removal	
Component	Wiring position	Component	Wiring position
High pressure sensor	- Terminal X3 of terminal block T3 on main PCB - Terminal block MC: 750-751	High pressure sensor	Terminal block SC: 730-731-760
Low pressure sensor	- Terminal X1 of terminal block T3 on main PCB - Terminal block MC: 750-751	Low pressure sensor	Terminal block SC: 730-731-720
Compressor thermal protector	- Terminal D5 of terminal block T5 on main PCB - Terminal block MC: 703	Compressor thermal protector	Terminal block SC: 606-N
Crankcase heater	- Terminal Q8 of terminal block T12 on main PCB - Terminal block XU: L	Crankcase heater	Terminal block SC: 544-L
4-way valve (if applicable)	- Terminal Q6 of terminal block T12 on main PCB - Terminal block MC: L	4-way valve (if applicable)	Terminal block SC: 604-L

Main circuit switch box removal		Secondary circuit switch box removal	
Component	Wiring position	Component	Wiring position
Suction pipe thermistor	- Terminal B5 of terminal block T3 on main PCB - Terminal block MC: M1	Suction pipe thermistor	- Terminal M of terminal block T4 on main PCB - Terminal B6 of terminal block T3 on main PCB
Discharge pipe thermistor	- Terminal X5 of terminal block T4 on main PCB - Terminal block MC: M1	Discharge pipe thermistor	- Terminal X6 of terminal block T4 on main PCB - Terminal M of terminal block T4 on main PCB
High pressure switch	Terminal block MC: 764-765		
High pressure switch	Terminal block SC: 766-767		
Outdoor air thermistor	- Terminal B3 of terminal block T2 on main PCB - Terminal block MC: 774		
Expansion valve	Connector T8 on main PCB		
Expansion valve	Connector T9 on main PCB		
Economiser expansion valve	Connector STEPPER 1 on stepper valve driver		
Economiser expansion valve	Connector STEPPER 2 on stepper valve driver		
Inlet water thermistor	- Terminal B1 of terminal block T2 on main PCB - Terminal block MC: 774		
Outlet water thermistor	- Terminal B2 of terminal block T2 on main PCB - Terminal block MC: 774		
Flow switch	- Terminal D2 of terminal block T5 on main PCB - Terminal block MC: 703		
Water pump	Pump inverter OR Contactor KM90		

- 9** Correctly route and connect the wiring of all field accessories and options.
- 10** For units with 2 refrigerant circuits: Correctly route and connect the wiring of the secondary circuit inverter PCB:
 - To terminal Q4 of terminal block T11 on the main PCB and to the ACS digital I/O PCB (for main circuit switch box installation).
 - To the inverter PCB itself (for secondary switch box installation).
- 11** For units with 2 refrigerant circuits: Correctly route and connect all extension wiring between the main circuit switch box and secondary circuit switch box:
 - To the main PCB and terminal blocks XU and XD (for main circuit switch box installation).
 - To terminal block X2 (for secondary switch box installation).

- 12** Connect the power supply wiring:
 - To the main switch (for main circuit switch box installation).
 - To the noise filter PCB (for secondary switch box installation).
- 13** Install the heat sink panel. Install and tighten the 4 screws to fix the heat sink panel to the unit.

4.23.5 To access the back plate of the switch box



INFORMATION

This procedure is **ONLY** applicable for the main circuit switch box.

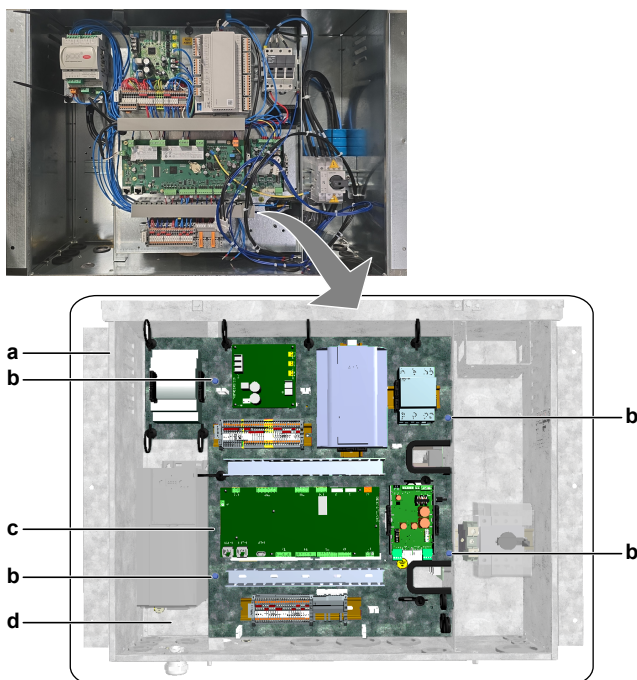
- 1** Remove the switch box cover, see "4.23 Plate work" [▶ 263].



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2** Remove the 4 screws (b) from the front plate (c) of the switch box (a).



- a** Main switch box
- b** Screw
- c** Front plate
- d** Back plate

- 3** Carefully pull and open the front plate to create access to the back plate (d) of the switch box (a).



CAUTION

Take care NOT to damage the wiring or cables when repositioning the front plate.

4.24 Pump inverter



INFORMATION

The pump inverter is NOT compatible with the high ambient temperature kit (OP.192).

4.24.1 Checking procedures

To check the fuse of the pump inverter power supply

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see "4.23 Plate work" [▶ 263].

- 1 At the pump inverter power supply, put the fuses (circuit breaker) in the UP (closed) position.
- 2 Loosen the screws and disconnect the wires from the fuses (circuit breaker).
- 3 Measure the continuity of the fuses. If no continuity is measured, the fuse(s) has blown. Replace as needed.



Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.24.2 Repair procedures

To perform the configuration of the pump inverter

On the units EWYE(P)-A, a pump inverter is installed which is factory programmed with the following parameters:

**INFORMATION**

Parameters NOT indicated in this table MUST be left at default value.

Parameter	Definition	Pre-configured value
1-01	Motor Control Principle	[0] U/f
1-03	Torque characteristic	[2] Auto Energy Optmization
1-20	Motor Power	(a)
1-22	Motor Voltage	400 V
1-23	Motor Frequency	50 Hz
1-24	Motor Current	(a)
1-25	Motor Nominal Speed	2900 rpm
3-00	Reference Range	[0] Min-Max
3-02	Minimum Reference	30
3-03	Maximum Reference	50
3-15	Reference Resoruce 1	[11] Local Bus Reference
3-16	Reference Resoruce 2	[0] No Function
3-17	Reference Resoruce 3	[0] No Function
3-41	Ramp 1 Ramp Up Time	15 s
3-42	Ramp 1 Ramp Down Time	15 s
4-10	Motor Speed Direction	[2] Both
4-12	Motor Speed Low Limit [Hz]	30 Hz
4-14	Motro Speed High Limit [Hz]	50 Hz
5-10	Terminal 18 DI	[0] No function
5-11	Terminal 19 DI	[0] No function
5-12	Terminal 27 DI	[8] Start
5-13	Terminal 29 DI	[0] No operation
5-15	Terminal 33	[0] No operation
8-01	Control Site	[0] Digital and Control Word
8-30	Protocol	[2] Modbus RTU
8-31	Address	[4] Pump
8-32	Baud rate	[3] 19200 Baud
8-33	Parity / Stop Bits	[3] No Parity, 2 Stop Bit
8-42.00	PCD write configuration	[14] [1685] Control Word
8-42.01	PCD write configuration	[15] [1686] REF

Parameter	Definition	Pre-configured value
8-43.00	PCD read configuration	[7] [1603] Status Word
8-43.01	PCD read configuration	[8] [1605] Main Actual Value [%]
8-43.02	PCD read configuration	[13] [1613] Frequency
8-43.03	PCD read configuration	[14] [1614] Motor Current
8-43.04	PCD read configuration	[34] [1690] Alarm Word
8-43.05	PCD read configuration	[34] [1690] Alarm Word
8-43.06	PCD read configuration	[18] [1634] Heatsink Temperatures
8-43.07	PCD read configuration	[10] [1610] Power [kW]
8-43.08	PCD read configuration	[3] [1502] kWh Counter
8-43.09	PCD read configuration	[3] [1502] kWh Counter
8-43.10	PCD read configuration	[17] [1630] DC Link Voltage
8-43.11	PCD read configuration	[19] [1635] Inverter Thermal
8-43.12	PCD read configuration	[35] [1692] Warning Word
8-43.13	PCD read configuration	[35] [1692] Warning Word
8-43.14	PCD read configuration	[16] [1618] Motor Thermal

^(a) See below these values depending on the unit model.

Unit	1-20	1-24
EWYE019CZP-A1 EWYE022CZP-A1 EWYE025CZP-A1	1.1 [kW]	2.4 [A]
EWYE030CZP-A1 EWYE035CZP-A1	1.1 [kW]	2.4 [A]
EWYE050CZP-A2 EWYE060CZP-A2 EWYE070CZP-A2	2.2 [kW]	4.56 [A]

When you want to check / update these parameters on a properly functioning pump inverter OR when you need to set the parameters on a new pump inverter, the Danfoss keypad (PN 5902740) is needed (order as spare part).

To set the parameters

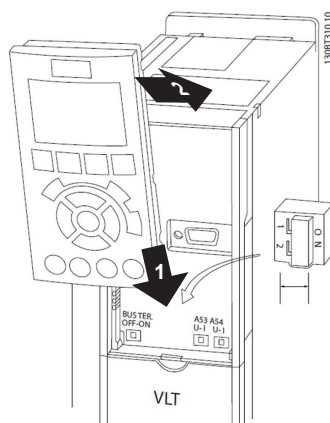


CAUTION

Make sure to set the parameters as shown above. When a new pump inverter is installed, all parameters MUST be checked and set correctly!

Prerequisite: Order the Danfoss keypad (PN 5902740).

- 1 Insert the keypad on the front of the pump inverter, and slide it in the appropriate guides. Slightly press the upper part of the keypad to fix it on the pump inverter.



- 2 Set all parameters as shown above. Use the following instructions to navigate to the different parameters:
 - Press the Menu button on the keypad to open the Main Menu. "0" is shown on the display.
 - Use the up/down buttons to navigate to the desired menu.
 - Press the OK button to enter the menu.
 - Use the up/down buttons to navigate to the desired sub-menu.
 - Press the OK button to enter the sub-menu.
- 3 When done, remove the keypad from the pump inverter.



INFORMATION

There is a possibility to copy/paste parameters from the pump inverter to the Danfoss keypad for storage. ALSO, when parameters are copied (stored) to the keypad, it is possible to copy/paste them to the pump inverter on the unit. For more information, see the documentation of the pump inverter.

Do NOT use the copy/paste function when the pump inverter is faulty or broken!

4.25 Reactor

4.25.1 Checking procedures

To perform an electrical check of the reactor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

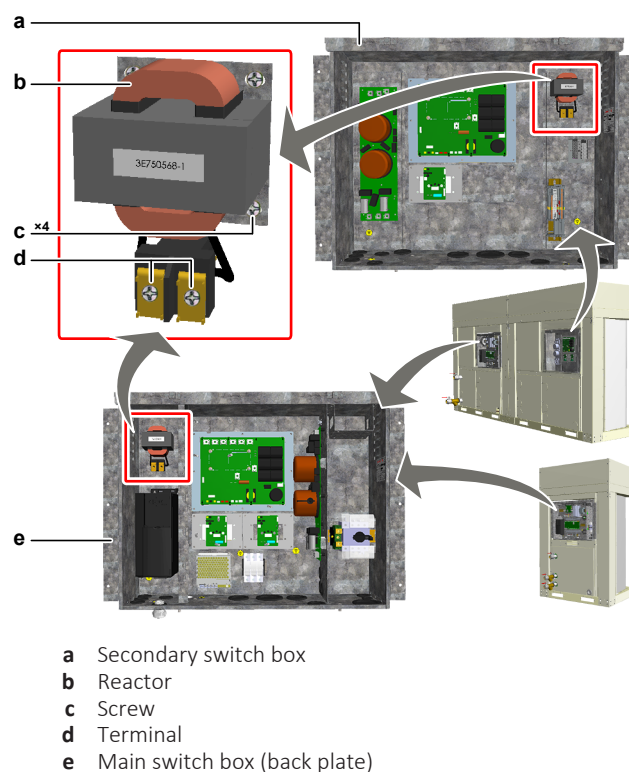
- 1 Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Visually check the reactor for any damage or burnt-out components. If any damage is found, replace the reactor, see ["4.25.2 Repair procedures"](#) [▶ 278].



- 3 Check the connections of the reactor on the inverter PCB and check continuity of the wires, see ["9.2 Wiring diagram"](#) [408].
- 4 Remove the wiring from the reactor terminals.
- 5 Using a megger device of 500 V DC, check the insulation resistance. Make sure there is no earth leakage.

Result: Insulation resistance MUST be >100 MΩ.

Is the measured insulation resistance correct?	Action
Yes	Continue with the next step.
No	Replace the reactor, see "4.25.2 Repair procedures" [278].

- 6 Measure the resistance of the reactor.

Result: The measured resistance MUST be 3.04~4.56 mΩ.

Is the resistance measurement correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next step.
No	Replace the reactor, see "4.25.2 Repair procedures" [278].

4.25.2 Repair procedures

To remove the reactor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Remove the required plate work, see ["4.23 Plate work"](#) [263].

**DANGER: RISK OF ELECTROCUTION**

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2 Loosen the screws and disconnect the wires from the terminals.
- 3 Remove the 4 screws that fix the reactor to the switch box.
- 4 Remove the reactor.
- 5 To install the reactor, see "[4.25.2 Repair procedures](#)" [▶ 278].

To install the reactor

- 1 Install the reactor on the correct location on the switch box.
- 2 Install the 4 screws that fix the reactor to the switch box.
- 3 Connect the wires to the reactor terminals. Install and tighten the screws to fix the wires.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.26 Refrigerant high pressure sensor

4.26.1 Checking procedures

To perform an electrical check of the refrigerant pressure sensor

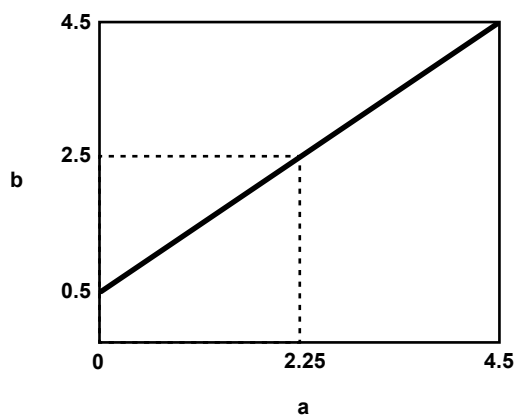
Prerequisite: Check that the pressure sensor is correctly calibrated. Perform the calibration procedure as needed, see "[4.26.2 Repair procedures](#)" [▶ 283].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see "[4.23 Plate work](#)" [▶ 263].

- 1 Connect a pressure gauge to the high pressure service port.
- 2 Turn ON the power of the unit with the main switch.
- 3 Start the unit operation and let it operate for a while in stable conditions.
- 4 Read the pressure from the pressure gauge.
- 5 Using the graphic below, determine the expected sensor output voltage based on the pressure obtained in the previous step.



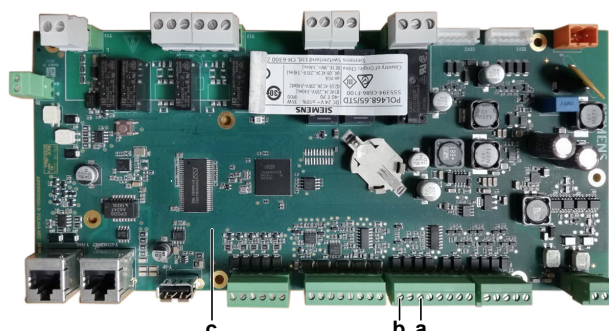
a Detected pressure (MPa)
b Output voltage (V)

V (DC)	Detected pressure MPa
0.5	0
0.6	0.11
0.7	0.23
0.8	0.34
0.9	0.45
1.0	0.56
1.1	0.68
1.2	0.79
1.3	0.90
1.4	1.01
1.5	1.13
1.6	1.24
1.7	1.35
1.8	1.46
1.9	1.58
2.0	1.69
2.1	1.80
2.2	1.91
2.3	2.03
2.4	2.14
2.5	2.25
2.6	2.36
2.7	2.48
2.8	2.59
2.9	2.70
3.0	2.81
3.1	2.93

V (DC)	Detected pressure MPa
3.2	3.04
3.3	3.15
3.4	3.26
3.5	3.38
3.6	3.49
3.7	3.60
3.8	3.71
3.9	3.83
4.0	3.94
4.1	4.05
4.2	4.16
4.3	4.28
4.4	4.39
4.5	4.50

High pressure sensor CNP1

- 6 Measure the output voltage between terminals X3 and M of terminal block T3 on the main PCB.



- a Terminal X3 on terminal block T3
- b Terminal M on terminal block T3
- c Main PCB

- 7 Check that the measured voltage is in line with the expected voltage through the read refrigerant pressure.



INFORMATION

In most cases, the user interface (7-segment display) allows to monitor the high pressure.

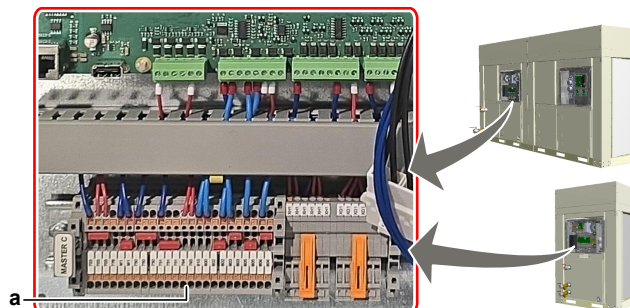
If the measured output voltage value matches the voltage determined through the measured pressure, but the pressure is NOT correct on the user interface (7-segment display), replace the main PCB.

The measured voltage is inside the expected range?	Action
Yes	Refrigerant pressure sensor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.

The measured voltage is inside the expected range?	Action
No	Continue with the next step.

- 8** Measure the voltage (power supply) between terminals 750 and 751 of terminal block MC.

Result: The measured voltage MUST be +5 V DC.

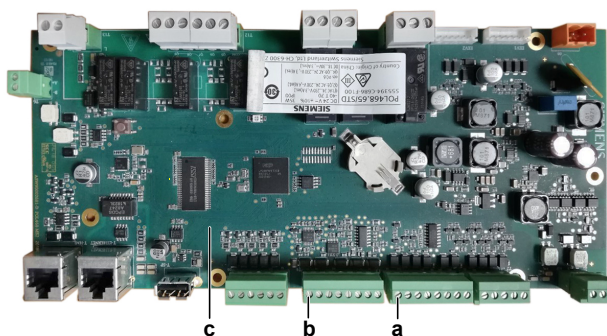


a Terminal block MC

Is the measured voltage +5 V DC?	Then
Yes	Replace the pressure sensor see "4.27.2 Repair procedures" [▶ 291].
No	Continue with the next step.

- 9** Measure the output voltage between terminal M of terminal block T3 and terminal VDCout of terminal block T4 on the main PCB.

Result: The measured voltage MUST be +5 V DC.

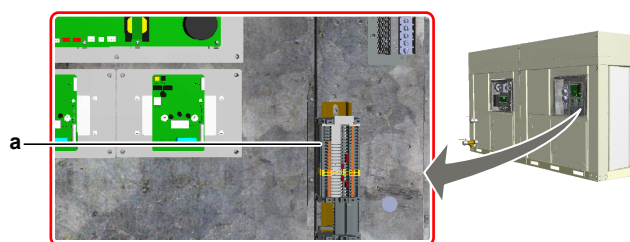


a Terminal M on terminal block T3
b Terminal VDCout on terminal block T4
c Main PCB

Is the measured output voltage +5 V DC?	Then
Yes	Correct the wiring between the terminal block XD and the terminal blocks on the main PCB, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the main PCB, see "4.18.1 Checking procedures" [▶ 236].

High pressure sensor CNP2

- 1** Measure the output voltage between terminals 760 and 731 of terminal block SC. Make sure that the wire connected to terminal X4 of terminal block T3 on the main PCB is NOT damaged or broken (continuity).



a Terminal block SC

- 2 Check that the measured voltage is in line with the expected voltage through the read refrigerant pressure.



INFORMATION

In most cases, the user interface (7-segment display) allows to monitor the high pressure.

If the measured output voltage value matches the voltage determined through the measured pressure, but the pressure is NOT correct on the user interface (7-segment display), replace the main PCB.

The measured voltage is inside the expected range?	Action
Yes	Refrigerant pressure sensor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

- 3 Measure the voltage (power supply) between terminals 730 and 731 of terminal block SC.

Result: The measured voltage MUST be +5 V DC.

Is the measured voltage +5 V DC?	Then
Yes	Replace the pressure sensor see "4.27.2 Repair procedures" [▶ 291].
No	Continue with the next step.

- 4 Measure the output voltage between terminals -V and +V of the 5 V DC auxiliary power supply.

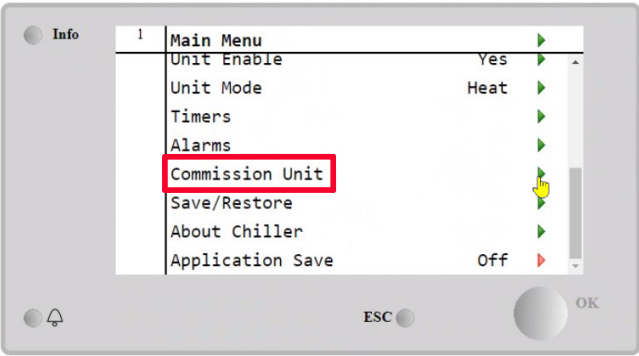
Result: The measured voltage MUST be 5 V DC.

Is the output voltage correct?	Action
Yes	Correct the wiring between the appropriate terminals and the 5 V DC auxiliary power supply, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the 5 V DC auxiliary power supply, see "4.1.1 Checking procedures" [▶ 126].

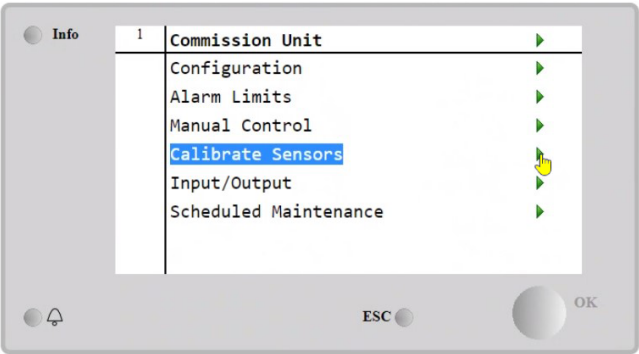
4.26.2 Repair procedures

To calibrate the refrigerant pressure sensor

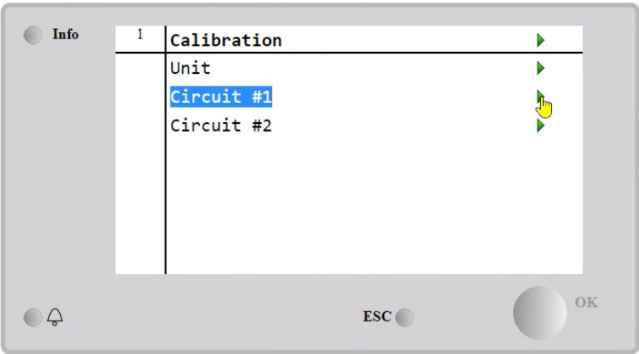
On the service monitoring tool:



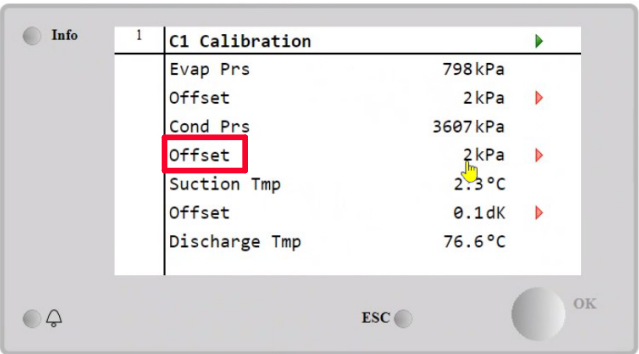
1 Select Commission Unit.



2 Select Calibrate Sensors.



3 Select Circuit #.



4 Select Offset.

5 Modify the Offset to obtain the same pressure as measured by the reference gauge.

If the required correction is out of the possible range (from -100 kPa to 100 kPa) replace the pressure sensor, see "4.26.2 Repair procedures" [▶ 283].

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Perform an electrical check of the refrigerant pressure sensor, see "4.26.1 Checking procedures" [▶ 279].

To remove the refrigerant pressure sensor

Prerequisite: Stop the unit operation via the user interface.

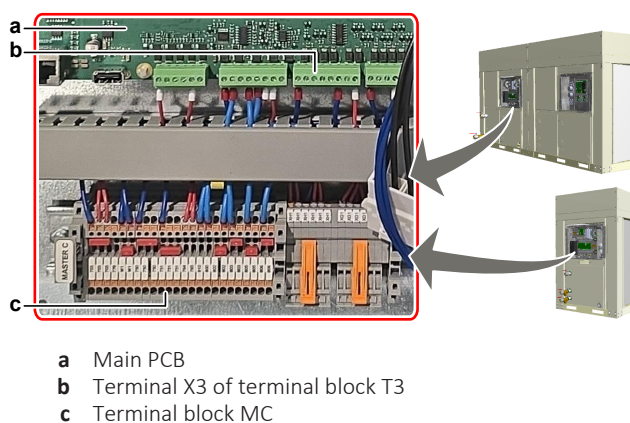
Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

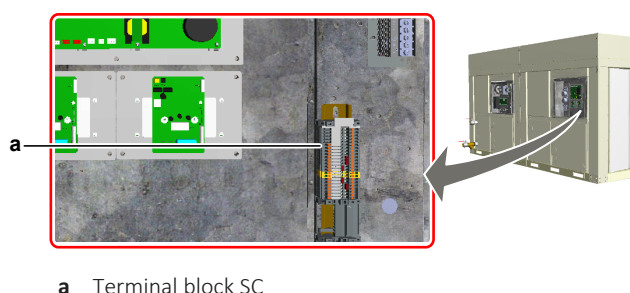
Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

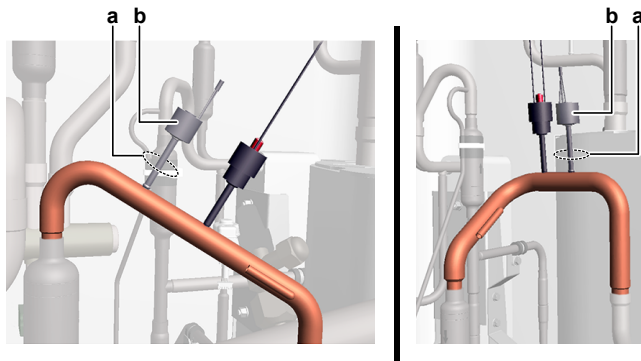
- 1 Cut all tie straps that fix the refrigerant pressure sensor harness.
- 2 Disconnect the wires of the pressure sensor:
 - For pressure sensor CNP1; disconnect the wire from terminal X3 of terminal block T3 on the main PCB and the wires from terminals 750 and 751 of terminal block MC.



- For pressure sensor CNP2; disconnect the wires from terminals 760, 730 and 731 of terminal block SC.



- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 4 Wrap a wet rag around the components near the refrigerant pressure sensor. Heat the brazing point of the refrigerant pressure sensor pipe using an oxygen acetylene torch and remove the refrigerant pressure sensor pipe from the refrigerant pipe using pliers.



a Refrigerant pressure sensor pipe
b Refrigerant pressure sensor

- 5 Stop the nitrogen supply when the piping has cooled down.
- 6 Remove the refrigerant pressure sensor.



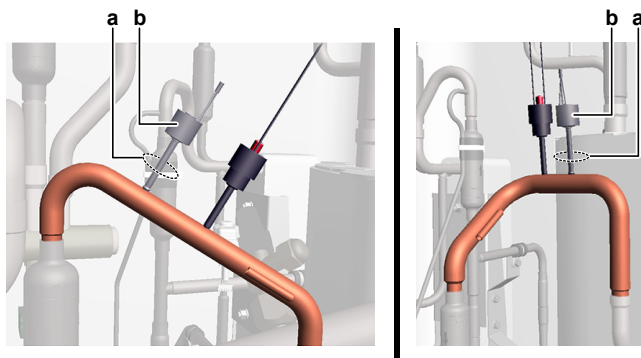
INFORMATION

It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

- 7 Install a plug or cap on the refrigerant piping to avoid dirt or impurities from entering the piping.
- 8 To install the refrigerant pressure sensor, see ["4.26.2 Repair procedures"](#) [▶ 283].

To install the refrigerant pressure sensor

- 1 Remove the plug or cap from the refrigerant piping and make sure it is clean.
- 2 Install the refrigerant pressure sensor in the correct location.
- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 4 Wrap a wet rag around the refrigerant pressure sensor and any other components near the pressure sensor and braze the refrigerant pressure sensor pipe to the refrigerant pipe.



a Refrigerant pressure sensor pipe
b Refrigerant pressure sensor



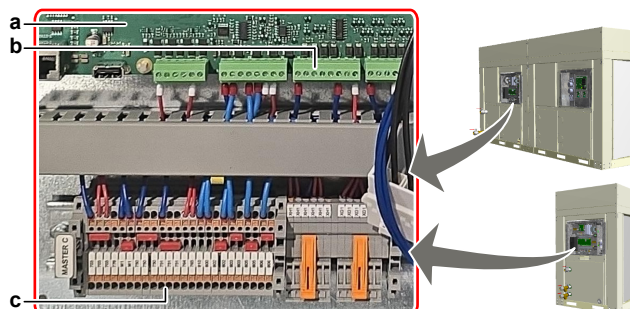
CAUTION

Overheating the pressure sensor will damage or destroy it.

- 5 After brazing is done, stop the nitrogen supply after the component has cooled-down.

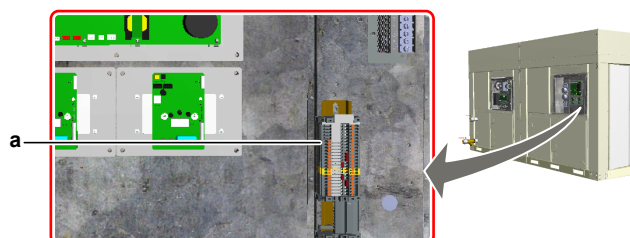
6 Connect the wires of the pressure sensor:

- For pressure sensor CNP1; connect the wire to terminal X3 of terminal block T3 on the main PCB and the wires to the terminals 750 and 751 of terminal block MC.



- a Main PCB
- b Terminal X3 of terminal block T3
- c Terminal block MC

- For pressure sensor CNP2; connect the wires to the terminals 760, 730 and 731 of terminal block SC.



- a Terminal block SC

- Fix the refrigerant pressure sensor harness using new tie straps.
- Perform a pressure test, see ["6.2.1 Checking procedures"](#) [▶ 350].
- Add refrigerant to the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.27 Refrigerant low pressure sensor

4.27.1 Checking procedures

To perform an electrical check of the refrigerant pressure sensor

Prerequisite: Check that the pressure sensor is correctly calibrated. Perform the calibration procedure as needed, see ["4.27.2 Repair procedures"](#) [▶ 291].

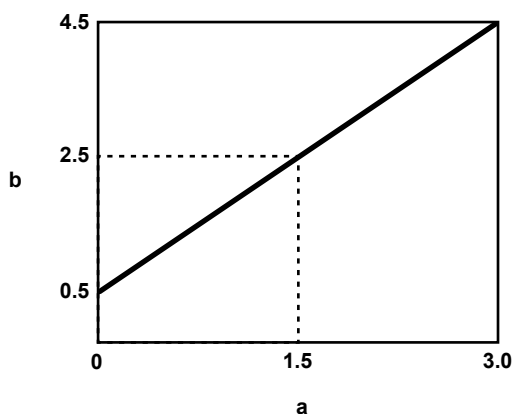
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- Connect a pressure gauge to the low pressure service port.
- Turn ON the power of the unit with the main switch.

- 3 Start the unit operation and let it operate for a while in stable conditions.
- 4 Read the pressure on the pressure gauge.
- 5 Using the graphic below, determine the expected sensor output voltage based on the pressure obtained in the previous step.



a Detected pressure (MPa)
b Output voltage (V)

V (DC)	Detected pressure MPa
0.5	0
0.6	0.075
0.7	0.15
0.8	0.225
0.9	0.3
1.0	0.375
1.1	0.45
1.2	0.525
1.3	0.6
1.4	0.675
1.5	0.75
1.6	0.825
1.7	0.9
1.8	0.975
1.9	1.05
2.0	1.125
2.1	1.2
2.2	1.275
2.3	1.35
2.4	1.425
2.5	1.5
2.6	1.575
2.7	1.65
2.8	1.725

V (DC)	Detected pressure MPa
2.9	1.8
3.0	1.875
3.1	1.95
3.2	2.025
3.3	2.1
3.4	2.175
3.5	2.25
3.6	2.325
3.7	2.4
3.8	2.475
3.9	2.55
4.0	2.625
4.1	2.7
4.2	2.775
4.3	2.85
4.4	2.925
4.5	3

Low pressure sensor EVP1

- 6 Measure the output voltage between terminals X1 and M of terminal block T3 on the main PCB.
- 7 Check that the measured voltage is in line with the expected voltage through the read refrigerant pressure.



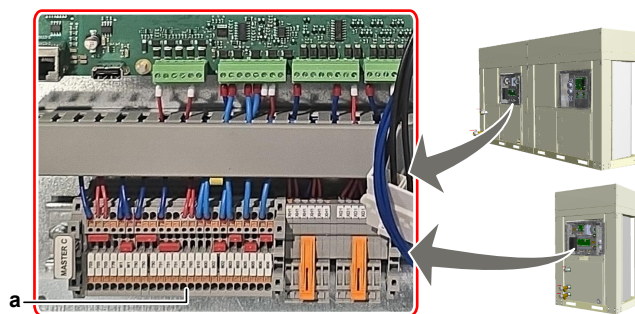
INFORMATION

In most cases, the service monitoring tool allows to monitor the low pressure.
If the measured output voltage value matches the voltage determined through the measured pressure, but the pressure is NOT correct on the service monitoring tool, replace the main PCB.

The measured voltage is inside the expected range?	Action
Yes	Refrigerant pressure sensor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

- 8 Measure the voltage (power supply) between terminals 750 and 751 of terminal block MC .

Result: The measured voltage MUST be +5 V DC.

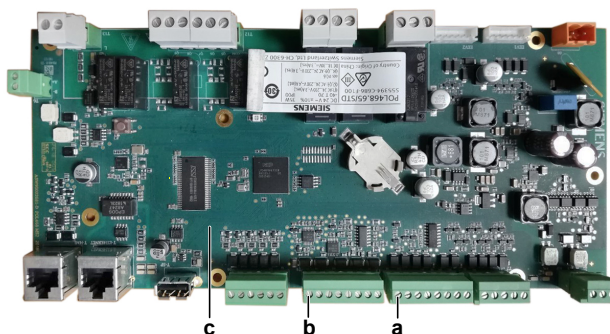


a Terminal block MC

Is the measured voltage +5 V DC?	Then
Yes	Replace the pressure sensor see "4.26.2 Repair procedures" [▶ 283].
No	Continue with the next step.

- 9 Measure the output voltage between terminal M of terminal block T3 and terminal VDCout of terminal block T4 on the main PCB.

Result: The measured voltage MUST be +5 V DC.

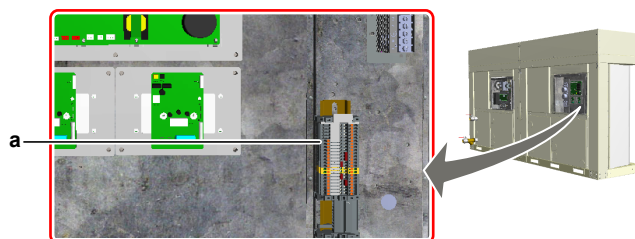


a Terminal M on terminal block T3
 b Terminal VDCout on terminal block T4
 c Main PCB

Is the measured output voltage +5 V DC?	Then
Yes	Correct the wiring between the terminal block XD and the terminal blocks on the main PCB, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the main PCB, see "4.18.1 Checking procedures" [▶ 236].

Low pressure sensor EVP2

- 1 Measure the output voltage between terminals 720 and 731 of terminal block SC . Make sure that the wire connected to terminal X2 of terminal block T3 on the main PCB is NOT damaged or broken (continuity).



a Terminal block SC

- 2 Check that the measured voltage is in line with the expected voltage through the read refrigerant pressure.



INFORMATION

In most cases, the service monitoring tool allows to monitor the low pressure.

If the measured output voltage value matches the voltage determined through the measured pressure, but the pressure is NOT correct on the service monitoring tool, replace the main PCB.

The measured voltage is inside the expected range?	Action
Yes	Refrigerant pressure sensor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

- 3 Measure the voltage (power supply) between terminals 730 and 731 of terminal block SC.

Result: The measured voltage MUST be +5 V DC.

Is the measured voltage +5 V DC?	Then
Yes	Replace the pressure sensor see "4.26.2 Repair procedures" [▶ 283].
No	Continue with the next step.

- 4 Measure the output voltage between terminals -V and +V of the 5 V DC auxiliary power supply.

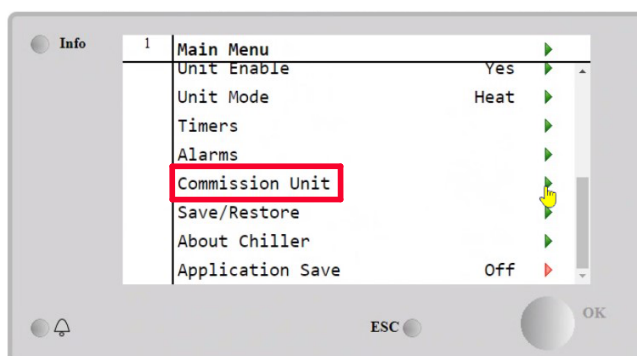
Result: The measured voltage MUST be 5 V DC.

Is the output voltage correct?	Action
Yes	Correct the wiring between the appropriate terminals and the 5 V DC auxiliary power supply, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the 5 V DC auxiliary power supply, see "4.1.1 Checking procedures" [▶ 126].

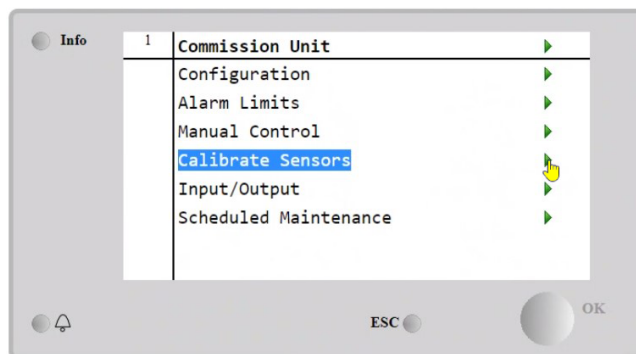
4.27.2 Repair procedures

To calibrate the refrigerant pressure sensor

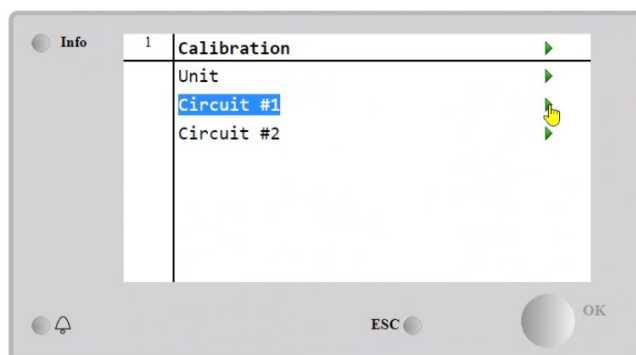
On the service monitoring tool:



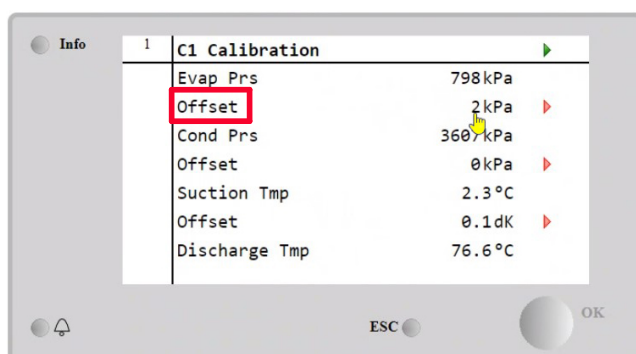
1 Select Commission Unit.



2 Select Calibrate Sensors.



3 Select Circuit #.



4 Select Offset.

5 Modify the Offset to obtain the same pressure as measured by the reference gauge.

If the required correction is out of the possible range (from -100 kPa to 100 kPa) replace the pressure sensor, see ["4.27.2 Repair procedures"](#) [▶ 291].

Is the problem solved?	Action
Yes	No further actions required.
No	Perform an electrical check of the refrigerant pressure sensor, see "4.27.1 Checking procedures" [▶ 287].

To remove the refrigerant pressure sensor

Prerequisite: Stop the unit operation via the user interface.

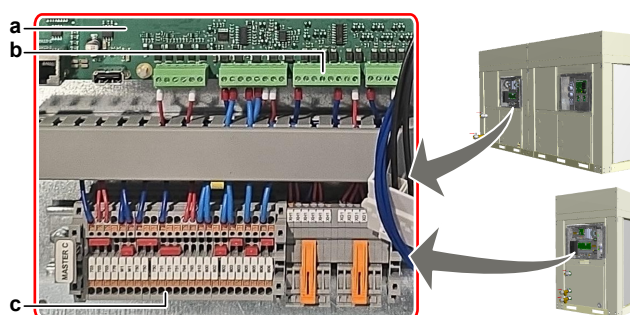
Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "6.2.2 Repair procedures" [▶ 355].

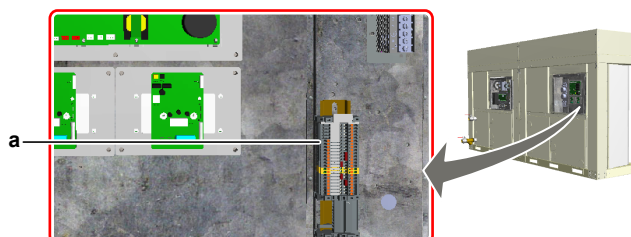
Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

- 1 Cut all tie straps that fix the refrigerant pressure sensor harness.
- 2 Disconnect the wires of the pressure sensor:
 - For pressure sensor EVP1; disconnect the wire from terminal X1 of terminal block T3 on the main PCB and the wires from the terminals 750 and 751 of terminal block MC.



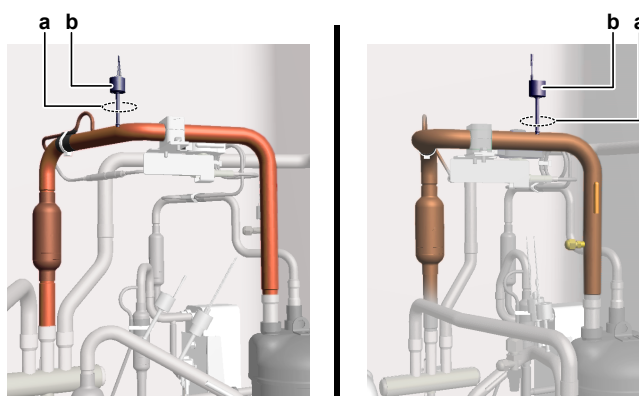
- a Main PCB
- b Terminal X1 of terminal block T3
- c Terminal block MC

- For pressure sensor EVP2; disconnect the wires from terminals 720, 730 and 731 of terminal block SC.



- a Terminal block SC

- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 4 Wrap a wet rag around the components near the refrigerant pressure sensor. Heat the brazing point of the refrigerant pressure sensor pipe using an oxygen acetylene torch and remove the refrigerant pressure sensor pipe from the refrigerant pipe using pliers.



- a Refrigerant pressure sensor pipe
- b Refrigerant pressure sensor

- 5 Stop the nitrogen supply when the piping has cooled down.
- 6 Remove the refrigerant pressure sensor.



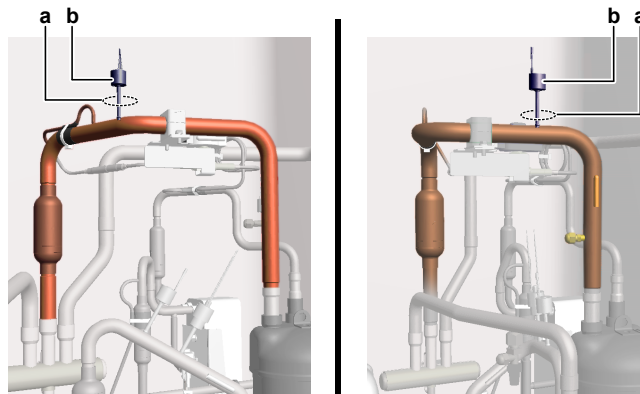
INFORMATION

It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

- 7 Install a plug or cap on the refrigerant piping to avoid dirt or impurities from entering the piping.
- 8 To install the refrigerant pressure sensor, see ["4.27.2 Repair procedures"](#) [▶ 291].

To install the refrigerant pressure sensor

- 1 Remove the plug or cap from the refrigerant piping and make sure it is clean.
- 2 Install the refrigerant pressure sensor in the correct location.
- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
- 4 Wrap a wet rag around the refrigerant pressure sensor and any other components near the pressure sensor and braze the refrigerant pressure sensor pipe to the refrigerant pipe.



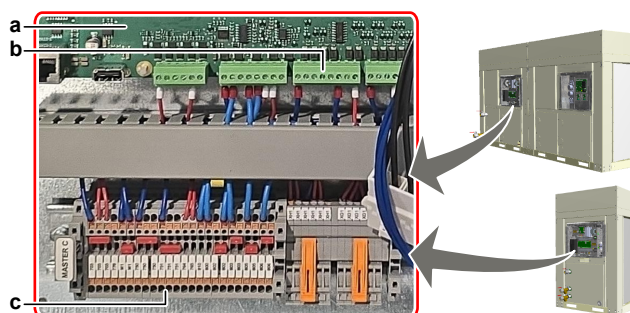
- a Refrigerant pressure sensor pipe
b Refrigerant pressure sensor



CAUTION

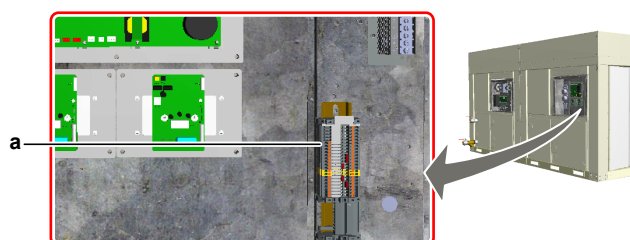
Overheating the pressure sensor will damage or destroy it.

- 5 After brazing is done, stop the nitrogen supply after the component has cooled-down.
- 6 Connect the wires of the pressure sensor:
 - For pressure sensor EVP1; connect the wire to terminal X1 of terminal block T3 on the main PCB and the wires to the terminals 750 and 751 of terminal block MC.



- a Main PCB
- b Terminal X1 of terminal block T3
- c Terminal block MC

- For pressure sensor EVP2; connect the wires to the terminals 720, 730 and 731 of terminal block SC.



- a Terminal block SC

- 7 Fix the refrigerant pressure sensor harness using new tie straps.
- 8 Perform a pressure test, see ["6.2.1 Checking procedures"](#) [▶ 350].
- 9 Add refrigerant to the refrigerant circuit, see ["6.2.2 Repair procedures"](#) [▶ 355].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.28 Stepper valve driver

4.28.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To perform a power check of the stepper valve driver

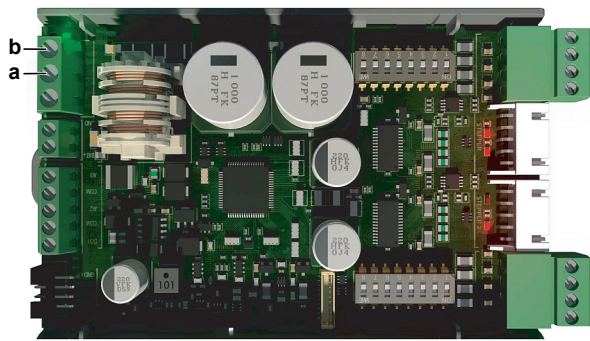
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Turn ON the power of the unit with the main switch.
- 2 Measure the voltage between the wires connected to the terminals + and – of the stepper valve driver.

Result: The measurement MUST be 24 V DC.



a + terminal
b - terminal

Is the measurement correct?	Action
Yes	Return to "4.28.1 Checking procedures" [▶ 295] of the stepper valve driver and continue with the next procedure.
No	Continue with the next step.

3 Measure the output voltage between terminals -V and +V of the 24 V DC auxiliary power supply.

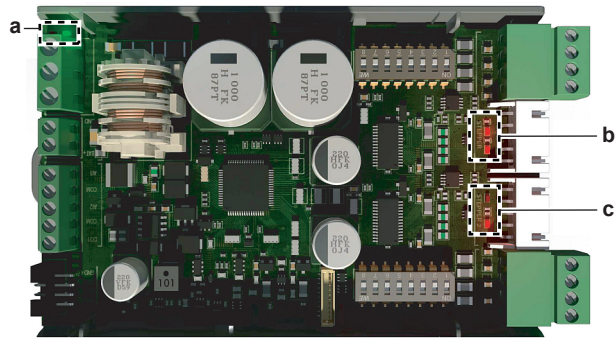
Result: The measured voltage MUST be 24 V DC.

Is the measurement correct?	Action
Yes	Correct the wiring between the stepper valve driver and the 24 V DC auxiliary power supply, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the 24 V DC auxiliary power supply, see "4.2.1 Checking procedures" [▶ 128].

To check the LEDs of the stepper valve driver

Prerequisite: First check the power supply to the stepper valve driver, see "4.28.1 Checking procedures" [▶ 295].

1 Locate the LEDs on the stepper valve driver.



a Error / Alarm LEDs
b Stepper 1 LEDs (for expansion valve EXV1)
c Stepper 2 LEDs (for expansion valve EXV2)

2 Compare the behaviour of the LEDs to the table below.

LEDs	LED behaviour	Function	Action
Stepper LEDs (EXV1 and EXV2)	Green = Flashing at 8 Hz Red = OFF	Expansion valve opening	-
	Green = Continuously ON Red = OFF	Expansion valve open	-
	Green = OFF Red = Flashing at 8 Hz	Expansion valve closing	-
	Green = OFF Red = Continuously ON	Expansion valve closed	-
	Green and Red flashing intermittently at 8 Hz	Expansion valve open circuit	Check expansion valve and wiring (see "4.13.1 Checking procedures" [▶ 203])
	Green and Red flashing together at 1 Hz	Power by Koolkey NO expansion valve operation	-
Error / Alarm LED	Green = Continuously ON Red = OFF	NO alarm/warning	ALL OK
	Green = Continuously ON Red = Flashing at 4 Hz	Alarm expansion valve EXV1	Check expansion valve EXV1 (see "4.13.1 Checking procedures" [▶ 203])
	Green = Continuously ON Red = Flashing at 8 Hz	Alarm expansion valve EXV2	Check expansion valve EXV2 (see "4.13.1 Checking procedures" [▶ 203])
	Green and Red flashing intermittently at 8 Hz	Alarm expansion valve EXV1 and EXV2	Check expansion valve EXV1 and EXV2 (see "4.13.1 Checking procedures" [▶ 203])
	Green = Continuously ON Red = Flashing at 1 Hz	Warning expansion valve EXV1	Check expansion valve EXV1 (see "4.13.1 Checking procedures" [▶ 203])
	Green = Continuously ON Red = Flashing at 2 Hz	Warning expansion valve EXV2	Check expansion valve EXV2 (see "4.13.1 Checking procedures" [▶ 203])
	Green and Red flashing intermittently at 2 Hz	Warning expansion valve EXV1 and EXV2	Check expansion valve EXV1 and EXV2 (see "4.13.1 Checking procedures" [▶ 203])

Do the LEDs function correctly?	Action
Yes	Return to "4.28.1 Checking procedures" [▶ 295] of the stepper valve driver and continue with the next procedure.
No	Perform necessary action as described in the table above.

- 3** After necessary action has been performed, again check the behaviour of the LEDs.

Do the LEDs function correctly?	Action
Yes	Return to "4.28.1 Checking procedures" [▶ 295] of the stepper valve driver and continue with the next procedure.
No	Replace the stepper valve driver, "4.28.2 Repair procedures" [▶ 299].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the stepper valve driver, see ["4.28.1 Checking procedures"](#) [▶ 295].

- 1 If a spare part stepper valve driver is installed in your unit, check that it is the correct one by performing the procedure described below.
- 2 Make sure the DIP switches of the stepper valve driver are set correctly, see ["4.28.2 Repair procedures"](#) [▶ 299].
- 3 Visit your local spare parts webbank.
- 4 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the stepper valve driver installed?	Action
Yes	Return to "4.28.1 Checking procedures" [▶ 295] of the stepper valve driver and continue with the next procedure.
No	Replace the stepper valve driver, "4.28.2 Repair procedures" [▶ 299].

To check the wiring of the stepper valve driver

Prerequisite: First perform all earlier checks of the stepper valve driver, see ["4.28.1 Checking procedures"](#) [▶ 295].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Check that all wires are properly connected and that all connectors are fully plugged-in.
- 2 Check that no connectors or wires are damaged.
- 3 Check that the wiring corresponds with the wiring diagram, see ["9.2 Wiring diagram"](#) [▶ 408].



INFORMATION

Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.28.1 Checking procedures" [▶ 295] of the stepper valve driver and continue with the next procedure.

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.28.2 Repair procedures

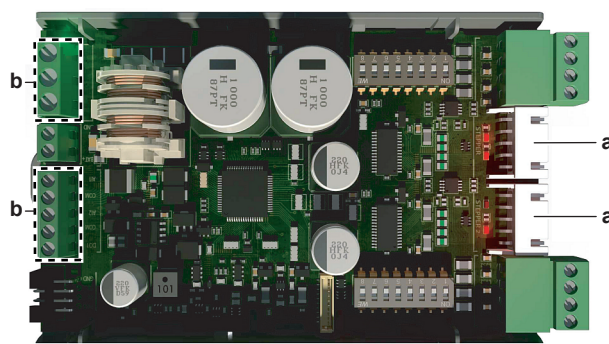
To remove the stepper valve driver

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Disconnect the expansion valve connectors from the stepper valve driver.



- a** Expansion valve connector
b Terminal block

- 2 Loosen the screws and disconnect the wires from the indicated terminal blocks.
- 3 Remove the stepper valve driver from the switch box.
- 4 To install the new stepper valve driver, see ["4.28.2 Repair procedures"](#) [▶ 299].

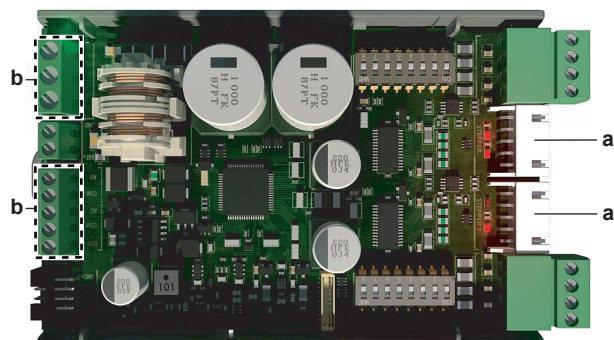
To install the stepper valve driver

- 1 Install the stepper valve driver on its correct location in the switch box.
- 2 Connect all wiring to the terminal blocks of the stepper valve driver.

**INFORMATION**

Use the wiring diagram for correct installation of the wiring, see ["9.2 Wiring diagram"](#) [▶ 408].

- 3 Tighten the screws to fix the wiring to the terminal blocks.



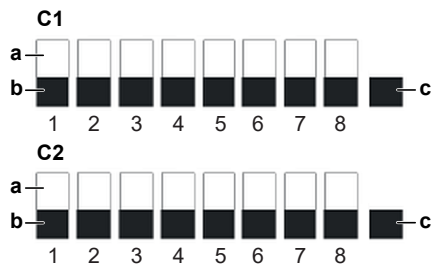
- a Expansion valve connector
- b Terminal block

- 4 Connect the expansion valve connectors to the stepper valve driver.
- 5 Correctly set the DIP switches, see "4.28.2 Repair procedures" [▶ 299].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.28.1 Checking procedures" [▶ 295] of the stepper valve driver and continue with the next procedure.

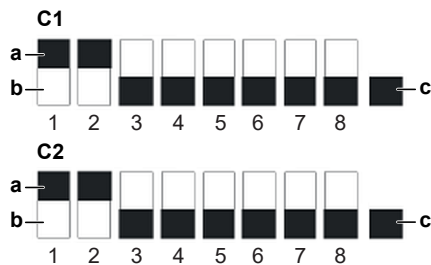
To set the DIP switches of the stepper valve driver

If a spare part stepper valve driver is installed in your unit, the DIP switches need to be set. By default (factory settings) all switches are in OFF position.



- C1 DIP switch C1
- C2 DIP switch C2
- a ON position
- b OFF position
- c Shows the position of a switch

- 1 Turn OFF the power of the unit with the main switch.
- 2 Position the DIP switches as shown below:



- C1 DIP switch C1
- C2 DIP switch C2
- a ON position
- b OFF position
- c Shows the position of a switch

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.28.1 Checking procedures" [▶ 295] of the stepper valve driver and continue with the next procedure.

4.29 Thermistors

4.29.1 Refrigerant side thermistors

Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To perform a mechanical check of the specific thermistor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Locate the thermistor and remove the insulation if needed. Check that the thermistor is correctly installed and that there is thermal contact between the thermistor and the piping or ambient (for air thermistor).

Is the thermistor correctly installed (thermal contact between the thermistor and the piping)?	Action
Yes	Perform an electrical check of the specific thermistor, see "Checking procedures" [▶ 301].
No	Correctly install the thermistor, see "Repair procedures" [▶ 304].

To perform an electrical check of the specific thermistor

- 1 First perform a mechanical check of the thermistor, see ["Checking procedures"](#) [▶ 301].
- 2 Locate the thermistor.



INFORMATION

Remove the thermistor from its holder if not reachable with a contact thermometer.

- 3 Measure the temperature using a contact thermometer.

Name	Symbol	Location (PCB)	Terminal block (terminals)	Inter-mediate terminal block (terminals)	Reference (table)
Air thermistor	OAT	Main & terminal block	T2: B3 MC: M1		A
Discharge pipe thermistor (circuit 1)	DT1	Main & terminal block	T4: X5 MC: M1	XG1/2 XG1/3	B
Discharge pipe thermistor (circuit 2)	DT2	Main & terminal block	T4: X6-M	XH2/5 XH2/2	B
Suction thermistor (circuit 1)	ST1	Main & terminal block	T3: B5-M1	XG1/3 XG1/1	A
Suction thermistor (circuit 2)	ST2	Main & terminal block	T3: B6 T4: M	XH2/1 XH2/2	A
Economizer thermistor (circuit 1)	ECT1	For single circuit units			
		Main & terminal block	T4: X6 T3: M1	XG1/4 XG1/3	A
		For double circuit units			
		pCO ₂ IO module	J10: B3 T3: M1	XG1/4 XG1/3	A
Economizer thermistor (circuit 2)	ECT2	pCO ₂ IO module	J10: B4-GND	XH2/6 XH2/7	A

- 4** Determine the thermistor resistance that matches the measured temperature.

Thermistor – Table A

T °C	kΩ	T °C	kΩ	T °C	kΩ	T °C	kΩ
–40	345.275	5	25.490	50	3.662	95	0.811
–35	247.840	10	19.956	55	3.040	100	0.701
–30	180.031	15	15.741	60	2.536	105	0.608
–25	132.251	20	12.504	65	2.126	110	0.529
–20	98.187	25	10.000	70	1.791	115	0.462
–15	73.631	30	8.050	75	1.516	120	0.405
–10	55.745	35	6.521	80	1.288	125	0.356
–5	42.586	40	5.314	85	1.100		
0	32.813	45	4.355	90	0.943		

Thermistor – Table B

T °C	kΩ	T °C	kΩ	T °C	kΩ	T °C	kΩ
-50	8330.59	40	51.279	130	2.322	220	0.289
-45	5761.99	45	41.534	135	2.025	225	0.263
-40	4037.78	50	33.828	140	1.771	230	0.239
-35	2864.68	55	27.698	145	1.553	235	0.218
-30	2056.31	60	22.795	150	1.366	240	0.199
-25	1492.49	65	18.853	155	1.204	245	0.182
-20	1094.71	70	15.666	160	1.065	250	0.167
-15	811.006	75	13.077	165	0.944	255	0.153
-10	606.555	80	10.964	170	0.838	260	0.141
-5	457.761	85	9.232	175	0.747	265	0.130
0	348.454	90	7.805	180	0.666	270	0.119
5	267.432	95	6.624	185	0.596	275	0.110
10	206.862	100	5.644	190	0.534	280	0.102
15	161.211	105	4.826	195	0.480	285	0.094
20	126.536	110	4.142	200	0.432	290	0.087
25	100.000	115	3.566	205	0.390	295	0.081
30	79.548	120	3.081	210	0.352	300	0.075
35	63.677	125	2.670	215	0.319		

5 Disconnect the wires from the terminals of the appropriate terminal block.



INFORMATION

When disconnecting the wires, an error is triggered due to missing connection on the thermistor.

6 Measure the resistance between the disconnected wires.

7 Check that the measured resistance value matches the resistance determined through the measured temperature (earlier step in the procedure).

- E.g. ST1 thermistor:
- Measured temperature with contact thermometer: 23.1°C,
- Resistance value determined through temperature (using the thermistor table A):
Resistance at 23°C: 100.9 kΩ,
Resistance at 24°C: 100.4 kΩ,
- Disconnect the wires from terminals B5 and M1 of terminal block T3 and measure resistance between the wires:
Measured resistance: 100.8 kΩ,
- Measured resistance value is inside the range. ST1 thermistor passes the check.



INFORMATION

All thermistors have a resistance tolerance of 3%.

**INFORMATION**

In most cases, the user interface allows to monitor the thermistors.
If the measured resistance value matches the resistance determined through the measured temperature, but the temperature for the corresponding thermistor is NOT correct on the user interface display, replace the applicable PCB.

Does the measured resistance of the thermistor match with the temperature determined resistance?	Action
Yes	Thermistor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

- 8** Disconnect the thermistor wires from the terminals of the intermediate terminal block and measure the resistance of the thermistor (between the thermistor wires).

Does the measured resistance of the thermistor match with the temperature determined resistance?	Action
Yes	Correct the wiring between the terminal block on the PCB and the intermediate terminal block, see "9.2 Wiring diagram" [▶ 408].
No	Replace the specific thermistor, see "Repair procedures" [▶ 304].

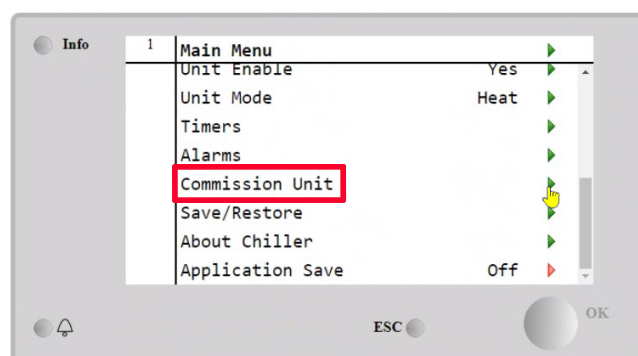
Repair procedures**To calibrate the thermistor****Air thermistor**

- 1** Place the sample thermistor and the outdoor air thermistor in ambient temperature.

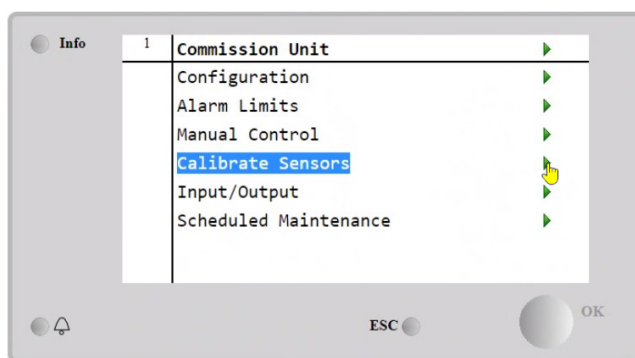
**INFORMATION**

Make sure to have stable ambient air conditions and wait until the thermistor read-out on the unit and sample temperatures are stable.

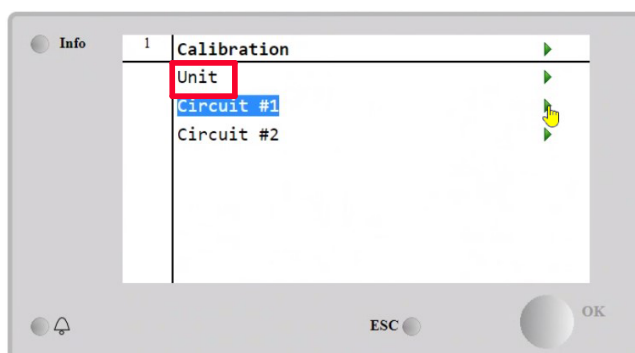
- 2** Enter technician password.
3 On the service monitoring tool, select Commission Unit.



- 4** Select Calibrate Sensors.



5 Select Unit.



- 6 Check the air thermistor read-out and compare with the temperature value detected by the sample thermistor.
- 7 Select Offset of the air thermistor.
- 8 Set the temperature difference (between air thermistor read-out and sample temperature) in the offset parameter.
- 9 Save the modifications before proceeding with startup of the unit.

Other thermistors

- 1 Place the sample thermistor and the unit thermistor in a container with ice.

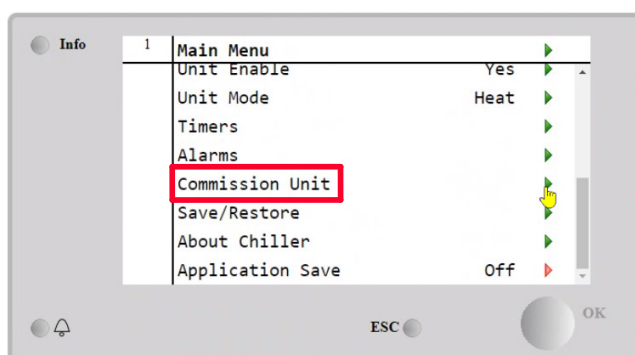


INFORMATION

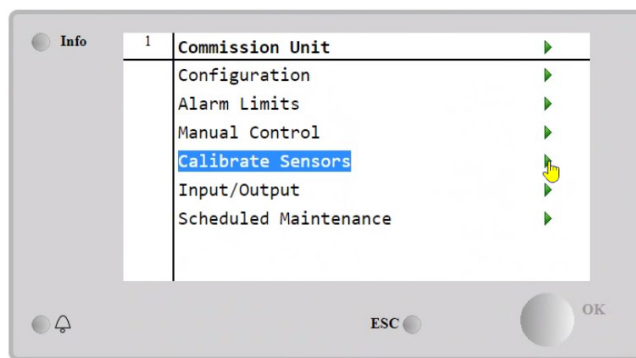
Make sure to have a proper water/ice mix and wait until the water/ice temperature is stable.

Place both thermistors in the middle of the container in order to NOT affect the readings.

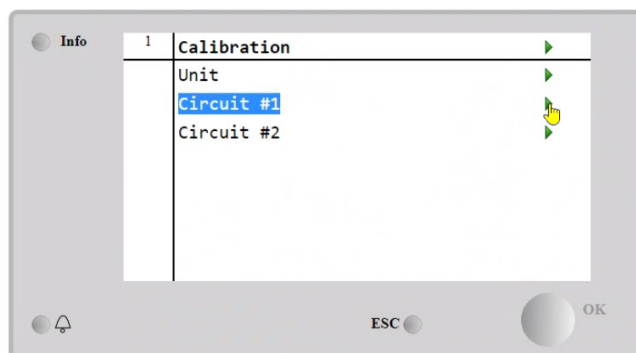
- 2 Enter technician password.
- 3 On the service monitoring tool, select Commission Unit.



- 4 Select Calibrate Sensors.



- 5 Select Circuit # of the specific thermistor.



- 6 Check the specific thermistor read-out and compare with the temperature value detected by the sample thermistor.
- 7 Select Offset of the specific thermistor.
- 8 Set the temperature difference (between thermistor read-out and sample temperature) in the offset parameter.



CAUTION

Suction thermistor is the most crucial one because it controls the correct functioning of the expansion valve and consequent safe compressor running.

- 9 Save the modifications before proceeding with startup of the unit.

Is the problem solved?	Action
Yes	No further actions required.
No	Perform an electrical check of the thermistor, see "Checking procedures" [▶ 301].

To remove the thermistor

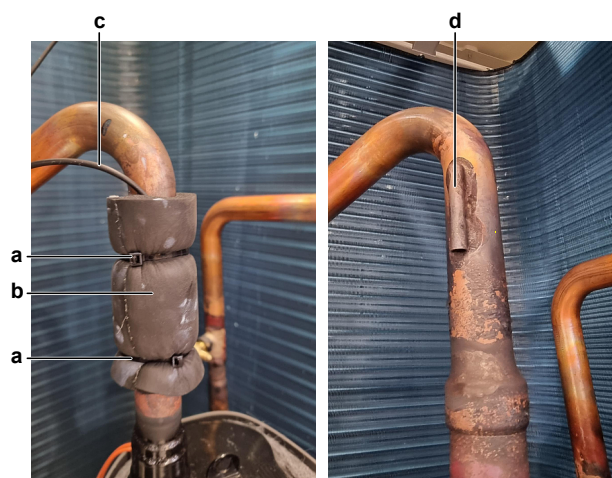
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Locate the thermistor that needs to be removed.
- 2 Remove the thermistor from the thermistor holder as follows:
 - For air (ambient) thermistor:
Unscrew and remove the thermistor from the casing.

- For refrigerant piping thermistors:
 - Cut the tie straps that fix the insulation and the thermistor wire.
 - Cut and remove the insulation.
 - Remove the thermistor from the thermistor holder.



- a** Tie strap
- b** Insulation
- c** Thermistor wire
- d** Thermistor holder

- 3** Cut all tie straps that fix the thermistor harness.
- 4** Disconnect the thermistor wires from the terminals of the appropriate terminal block(s) and remove the thermistor.

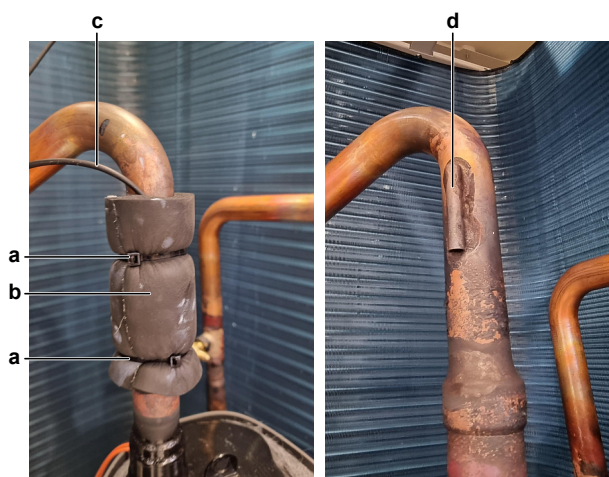
Name	Symbol	Terminal block (terminals)
Air thermistor	OAT	T2 on main PCB: B3 MC: M1
Discharge pipe thermistor (circuit 1)	DT1	XG1/2 XG1/3
Discharge pipe thermistor (circuit 2)	DT2	XH2/5 XH2/2
Suction thermistor (circuit 1)	ST1	XG1/3 XG1/1
Suction thermistor (circuit 2)	ST2	XH2/1 XH2/2
Economizer thermistor (circuit 1)	ECT1	XG1/4 XG1/3
Economizer thermistor (circuit 2)	ECT2	XH2/6 XH2/7

- 5** To install the thermistor, see "[Repair procedures](#)" [▶ 304].

To install the thermistor

- 1** Install the thermistor in the thermistor holder as follows:
 - For air (ambient) thermistor:
 - Install and tighten the thermistor in the correct location on the casing.

- For refrigerant piping thermistors:
Install the thermistor in the specific thermistor holder.



- a Tie strap
- b Insulation
- c Thermistor wire
- d Thermistor holder

- Route the thermistor harness towards the appropriate terminal block(s).
- Connect the thermistor wires to the appropriate terminals of the terminal block(s).

Name	Symbol	Terminal block (terminals)
Air thermistor	OAT	T2 on main PCB: B3 MC: M1
Discharge pipe thermistor (circuit 1)	DT1	XG1/2 XG1/3
Discharge pipe thermistor (circuit 2)	DT2	XH2/5 XH2/2
Suction thermistor (circuit 1)	ST1	XG1/3 XG1/1
Suction thermistor (circuit 2)	ST2	XH2/1 XH2/2
Economizer thermistor (circuit 1)	ECT1	XG1/4 XG1/3
Economizer thermistor (circuit 2)	ECT2	XH2/6 XH2/7

- Fix the thermistor harness using new tie straps
- Install the insulation around the thermistor.
- Fix the insulation and the thermistor wire using new tie straps.

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.29.2 Water side thermistors

Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To perform a mechanical check of the specific thermistor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Remove the required plate work, see "[4.23 Plate work](#)" [▶ 263].
- 2 Locate the thermistor. Check that the thermistor is correctly installed.

Is the thermistor correctly installed?	Action
Yes	Perform an electrical check of the specific thermistor, see " Checking procedures " [▶ 309].
No	Correctly install the thermistor, see " Repair procedures " [▶ 313].

To perform an electrical check of the specific thermistor

Domestic hot water thermistor (enhanced DHW)



INFORMATION

Domestic hot water thermistor (enhanced DHW) is used when option PCB EKRSCIOC is installed.

Prerequisite: Check that the thermistors are correctly calibrated. Perform the calibration procedure as needed, see "[Repair procedures](#)" [▶ 304].

- 1 First perform a mechanical check of the thermistor, see "[Checking procedures](#)" [▶ 309].
- 2 Locate the thermistor.



INFORMATION

Remove the thermistor from its holder if not reachable with a contact thermometer.

- 3 Measure the temperature using a contact thermometer.

Name	Symbol	Location (PCB)	Terminal block (terminals)	Inter-mediate terminal block (terminals)	Reference (table)
Domestic hot water thermistor (enhanced DHW)	DHWT	Option PCB (EKRSIOC)	Output: T6: X1-M Power: T6: +24V-M	-	A

- 4 Determine the thermistor output voltage that matches the measured temperature.

Thermistor – Table A

T °C	V DC	T °C	V DC	T °C	V DC	T °C	V DC
-50	0	-10	2.667	30	5.333	70	8.000
-45	0.333	-5	3.000	35	5.667	75	8.333
-40	0.667	0	3.333	40	6.000	80	8.667
-35	1.000	5	3.667	45	6.333	85	9.000
-30	1.333	10	4.000	50	6.667	90	9.333
-25	1.667	15	4.333	55	7.000	95	9.667
-20	2.000	20	4.667	60	7.333	100	10.000
-15	2.333	25	5.000	65	7.667		

- 5 Measure the thermistor output voltage between the wires on the terminals of the appropriate terminal block.
- 6 Check that the measured output voltage matches the voltage determined through the measured temperature (earlier step in the procedure). E.g. DHWT thermistor:
- Measured temperature with contact thermometer: 23.1°C,
 - Output voltage value determined through temperature (using the thermistor table A):
Output voltage at 20°C: 4.667 V DC,
Output voltage at 25°C: 5.000 V DC,
 - Measure output voltage between X1-M on terminal block T6:
Measured output voltage: 4.873,
 - Measured output voltage value is inside the range. DHWT thermistor passes the check.



INFORMATION

In most cases, the user interface allows to monitor the thermistors.

If the measured output voltage value matches the output voltage determined through the measured temperature, but the temperature for the corresponding thermistor is NOT correct on the user interface display, replace the applicable PCB.

Does the measured output voltage of the thermistor match with the temperature determined output voltage?	Then
Yes	Thermistor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

- 7** Measure the thermistor power supply voltage between the wires on the terminals of the appropriate terminal block.

Result: The measured voltage MUST be 24 V DC.

Is the measured power supply of the thermistor correct?	Then
Yes	Replace the specific thermistor, see "Repair procedures" [▶ 313].
No	Perform a check of the option PCB, see "4.21.1 Checking procedures" [▶ 253].

All other water side thermistors

Prerequisite: Check that the thermistors are correctly calibrated. Perform the calibration procedure as needed, see ["Repair procedures"](#) [▶ 304].

- 1 First perform a mechanical check of the thermistor, see ["Checking procedures"](#) [▶ 309].
- 2 Locate the thermistor.



INFORMATION

Remove the thermistor from its holder if not reachable with a contact thermometer.

- 3** Measure the temperature using a contact thermometer.

Name	Symbol	Location (PCB)	Terminal block (terminals)	Inter-mediate terminal block (terminals)	Reference (table)
Inlet water thermistor	EEWT	Main & terminal block	T2: B1-M	XH2/1 XH2/3	A
Outlet water thermistor	ELWT	Main & terminal block	T2: B2-M	XH2/1 XH2/2	A
Domestic hot water thermistor (standard DHW)	DHWT	Option PCB (EKRSCIOC)	T6: X1-M		A

Name	Symbol	Location (PCB)	Terminal block (terminals)	Inter-mediate terminal block (terminals)	Reference (table)
Common leaving water thermistor (system temperature) (a)	CLWT	Main & terminal block	T2: B4-M	MC: 774	A

(a) ONLY at Master/Slave systems and/or collective housing system.

- 4 Determine the thermistor resistance that matches the measured temperature.

Thermistor – Table A

T °C	kΩ	T °C	kΩ	T °C	kΩ	T °C	kΩ
-40	345.275	5	25.490	50	3.662	95	0.811
-35	247.840	10	19.956	55	3.040	100	0.701
-30	180.031	15	15.741	60	2.536	105	0.608
-25	132.251	20	12.504	65	2.126	110	0.529
-20	98.187	25	10.000	70	1.791	115	0.462
-15	73.631	30	8.050	75	1.516	120	0.405
-10	55.745	35	6.521	80	1.288	125	0.356
-5	42.586	40	5.314	85	1.100		
0	32.813	45	4.355	90	0.943		

- 5 Disconnect the wires from the terminals of the appropriate terminal block and measure the resistance between the disconnected wires.
- E.g. EEWT thermistor:
 - Measured temperature with contact thermometer: 23.1°C,
 - Resistance value determined through temperature (using the thermistor table A):
Resistance at 23°C: 100.9 kΩ,
Resistance at 24°C: 100.4 kΩ,
 - Disconnect the wires from terminals B1 and M of terminal block T2 and measure resistance between the wires:
Measured resistance: 100.8 kΩ,
 - Measured resistance value is inside the range. EEWT thermistor passes the check.



INFORMATION

All thermistors have a resistance tolerance of 3%.



INFORMATION

In most cases, the user interface allows to monitor the thermistors.

If the measured resistance value matches the resistance determined through the measured temperature, but the temperature for the corresponding thermistor is NOT correct on the user interface display, replace the applicable PCB.

**INFORMATION**

See the overview of the thermistors at the start of the procedure and the ["9.2 Wiring diagram" \[▶ 408\]](#) to determine if the specific thermistor is either:

- Directly connected to the PCB
- Connected to an intermediate terminal block which is connected to the PCB

▪ FOR THERMISTORS DIRECTLY CONNECTED TO THE PCB

Does the measured resistance of the thermistor match with the temperature determined resistance?	Then
Yes	Thermistor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the specific thermistor, see "Repair procedures" [▶ 313] .

▪ FOR THERMISTORS CONNECTED TO AN INTERMEDIATE TERMINAL BLOCK

Does the measured resistance of the thermistor match with the temperature determined resistance?	Action
Yes	Thermistor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

- 1 Disconnect the thermistor wires from the terminals of the intermediate terminal block and measure the resistance of the thermistor (between the thermistor wires).

Does the measured resistance of the thermistor match with the temperature determined resistance?	Action
Yes	Correct the wiring between the terminal block on the PCB and the intermediate terminal block, see "9.2 Wiring diagram" [▶ 408] .
No	Replace the specific thermistor, see "Repair procedures" [▶ 313] .

Repair procedures

To calibrate the thermistor

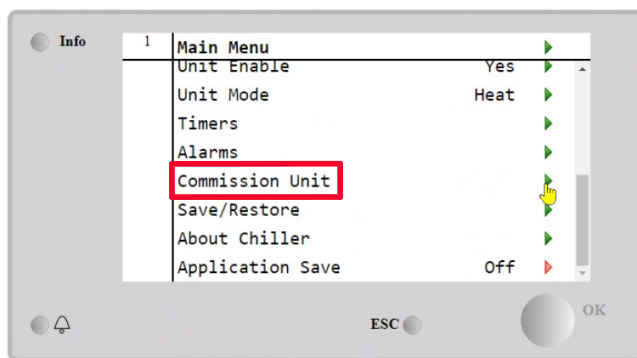
- 1 Place the sample thermistor and the unit thermistor in a container with ice.

**INFORMATION**

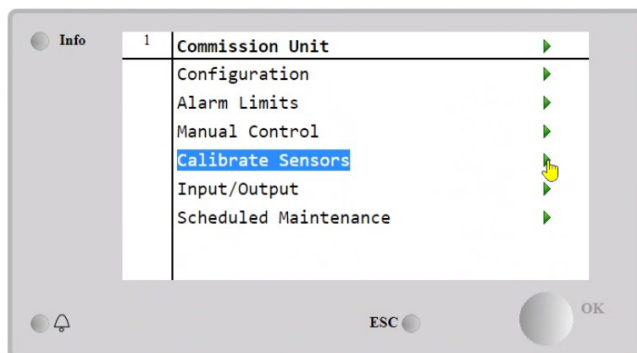
Make sure to have a proper water/ice mix and wait until the water/ice temperature is stable.

Place both thermistors in the middle of the container in order to NOT affect the readings.

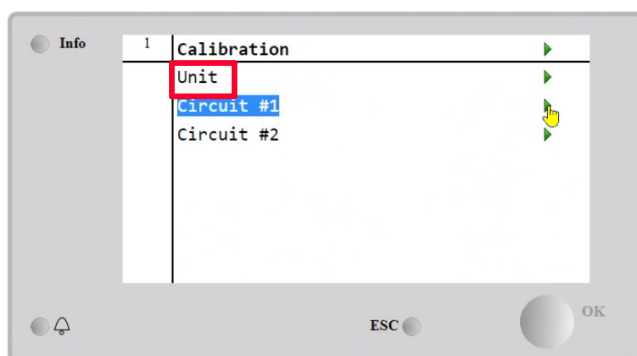
- 2 Enter technician password.
- 3 On the service monitoring tool, select Commission Unit.



4 Select Calibrate Sensors.



5 Select Unit.



- 6 Check the specific thermistor read-out and compare with the temperature value detected by the sample thermistor.
- 7 Select Offset of the specific thermistor.
- 8 Set the temperature difference (between thermistor read-out and sample temperature) in the offset parameter.
- 9 Save the modifications before proceeding with startup of the unit.

Is the problem solved?	Action
Yes	No further actions required.
No	Perform an electrical check of the thermistor, see "Checking procedures" [▶ 309].

To remove the thermistor

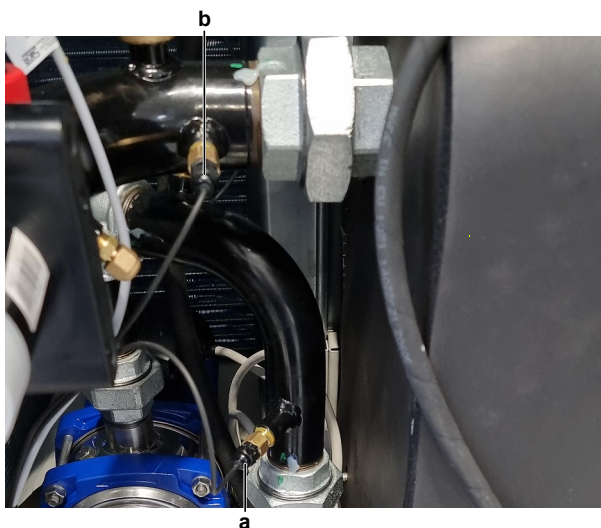
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Locate the thermistor that needs to be removed.

- 2 Remove the thermistor from the thermistor holder.



- a Inlet water thermistor EEWT
b Outlet water thermistor ELWT

- 3 Cut the tie straps that fix the thermistor harness.
4 Disconnect the thermistor wires from the terminals of the appropriate terminal block(s) and remove the thermistor.

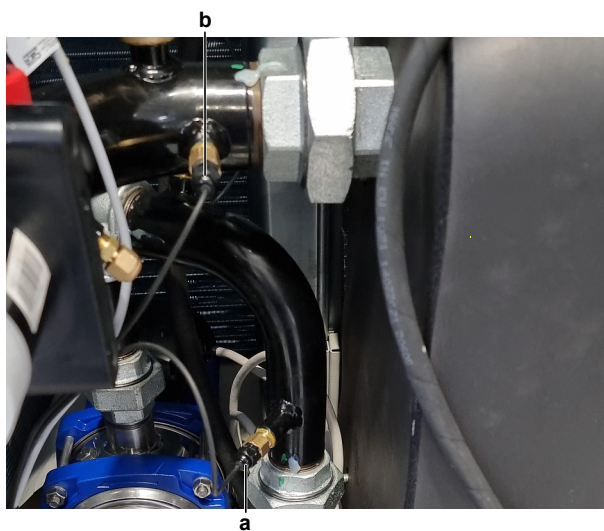
Name	Symbol	Terminal block (terminals)
Inlet water thermistor	EEWT	XH2/1 XH2/3
Outlet water thermistor	ELWT	XH2/1 XH2/2
Domestic hot water thermistor (enhanced DHW)	DHWT	T6 on option PCB EKRSCIOH: +24V-X1-M
Common leaving water thermistor (system temperature) ^(a)	CLWT	T2: B4 MC: 774

^(a) ONLY at Master/Slave systems and/or collective housing system.

- 5 To install the thermistor, see ["Repair procedures"](#) [► 313].

To install the thermistor

- 1 Correctly install the thermistor in the specific thermistor holder.



- a** Inlet water thermistor EEWT
b Outlet water thermistor ELWT

- 2** Route the thermistor harness towards the appropriate terminal block(s).
- 3** Connect the thermistor wires to the appropriate terminals of the terminal block(s).

Name	Symbol	Terminal block (terminals)
Inlet water thermistor	EEWT	XH2/1 XH2/3
Outlet water thermistor	ELWT	XH2/1 XH2/2
Domestic hot water thermistor (enhanced DHW)	DHWT	T6 on option PCB EKRSCIOH: +24V-X1-M
Common leaving water thermistor (system temperature) ^(a)	CLWT	T2: B4 MC: 774

^(a) ONLY at Master/Slave systems and/or collective housing system.

- 4** Fix the thermistor harness using new tie straps.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.30 User interface

4.30.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To check the power supply to the user interface

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Turn ON the power to the unit with main switch.
- 2 Measure the voltage between pins 1-4 on the LAN cable (that was disconnected from the user interface).

Result: The measured voltage MUST be 24 V DC.

Does the user interface receive power?	Action
Yes	Check if the user interface functions correctly, see "4.30.1 Checking procedures" [▶ 316].
No	Continue with the next step.

- 3 Check the communication wiring between the user interface and the unit PCB, see ["4.30.1 Checking procedures"](#) [▶ 316].

Is the communication wiring correct?	Action
Yes	Perform a check of the main PCB, see "4.18 Main PCB" [▶ 236].
No	Replace the user interface cable, see "4.30.2 Repair procedures" [▶ 319].

To check the correct functioning of the user interface

Prerequisite: First perform a power check of the user interface, see ["4.30.1 Checking procedures"](#) [▶ 316].

- 1 Check the display for the following items:
 - Pinhole, bright spot, black spot, white spot, black line, white line, foreign particle, bubble:
The colour of a small area is different from the remainder. The phenomenon does NOT change with voltage.
 - Contrast variation:
The colour of a small area is different from the remainder. The phenomenon changes with voltage.
 - Polariser defect:
Scratch, dirt, particle, bubble on polariser or between polariser and glass.
 - Dot defect:
The pixel appears bright or dark abnormally.
 - Functional defect:
No display, abnormal display, open or missing segment, short circuit, false viewing direction.
 - Glass defect:
Glass cracks, shaved corner of glass, surplus glass.
- 2 Check that information is shown correctly and can be navigated through on the display of the user interface.
- 3 Check that settings can be changed and saved, see ["4.30.2 Repair procedures"](#) [▶ 319].

Does the user interface function correctly?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

- 4** Perform a check of the communication wiring between the user interface and the unit PCB.

Is the communication wiring correct?	Action
Yes	Replace the user interface, see "4.30.2 Repair procedures" [▶ 319].
No	Replace the user interface cable, see "4.30.2 Repair procedures" [▶ 319].

To check the communication wiring between the user interface and the unit PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1** Remove (pull out) the main switch from the unit.



DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

- 2** Loosen and remove the 10 screws that fix the switch box cover.



- a** Main switch
- b** Screw
- c** Main circuit switch box cover

- 3** Carefully move the switch box cover to the front without disconnecting the wiring from the user interface.
- 4** Make sure the user interface cable is firmly and correctly connected to the user interface connector 1-2-3-4 and to the LAN connector T-HMI on the main PCB, see ["9.2 Wiring diagram"](#) [▶ 408].
- 5** Disconnect the user interface cable from the user interface and main PCB and check the continuity of all wires of the user interface cable.

Is the user interface cable correct?	Action
Yes	Return to checking procedures of the specific error code and continue with the next procedure.
No	Replace the user interface cable, see "4.30.2 Repair procedures" [▶ 319].

To check the settings

- 1 See the relevant documentation (installer reference guide, ...) to check the specific setting.
- 2 Check via the user interface that the following parameters are set correctly:

Parameter	Value
Addr: Address	247
Lin: Timeout no communication	60
Butt: timeout	5
StoP: Modbus stop bits	1 bit
PAr: Parity	EVEn
Baud: Baud rate	57.6 (57600 bps)

- 3 Keep the SET button pressed (7~8 seconds) until Addr is shown on the screen of the user interface.
- 4 Scroll to through the parameters.
- 5 To set the parameters, see ["4.30.2 Repair procedures"](#) [▶ 319].

Is the setting correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Adjust the specific setting see "4.30.2 Repair procedures" [▶ 319].

4.30.2 Repair procedures

To remove the user interface

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Remove the main switch box cover (including the user interface), see ["4.23 Plate work"](#) [▶ 263].
- 2 Push the sides and remove the user interface from the main switch box cover.
- 3 To install the user interface, see ["4.30.2 Repair procedures"](#) [▶ 319].

To install the user interface

- 1 Install the user interface display in the correct location on the main switch box cover.
- 2 Check via the user interface that the following parameters are set correctly:

Parameter	Value
Addr: Address	247

Parameter	Value
Lin: Timeout no communication	60
Butt: timeout	5
StoP: Modbus stop bits	1 bit
PAr: Parity	EVEn
Baud: Baud rate	57.6 (57600 bps)

- Keep the SET button pressed (7~8 seconds) until Addr is shown on the screen of the user interface.
- Scroll to select the appropriate parameter and press the SET button (parameter value starts flashing = editable).
- Set the desired value and press the SET button to confirm.
- Restart the user interface by turning the power OFF and then ON again via the main switch, or by disconnecting/connecting the user interface cable or main PCB side cable.

Possible cause: Incorrect parameter setting.

- 3 Install the main switch box cover on the unit, see ["4.23 Plate work"](#) [▶ 263].

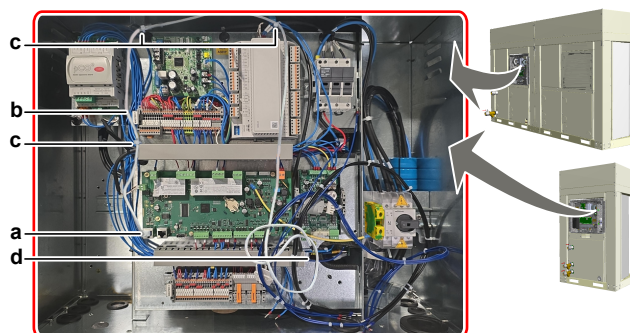
Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To remove the user interface cable

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Remove the main switch box cover (including the user interface), see ["4.23 Plate work"](#) [▶ 263].
- 2 Disconnect the user interface cable from the main PCB.

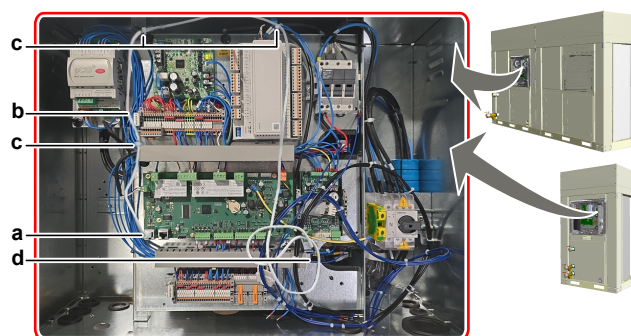


- a User interface cable connected on main PCB
- b User interface cable
- c Tie strap
- d Connector XDHI (towards user interface)

- 3 Cut the tie straps that fix the user interface cable and remove the cable.
- 4 To install the user interface cable, see ["4.30.2 Repair procedures"](#) [▶ 319].

To install the user interface cable

- 1 Connect the user interface cable to the main PCB.



- a User interface cable connected on main PCB
- b User interface cable
- c Tie strap
- d Connector XDHI (towards user interface)

- 2 Route the user interface cable as shown and fix it using new tie straps.
- 3 Install the main switch box cover, see ["4.23 Plate work"](#) [▶ 263].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To adjust the settings

- 1 See the relevant documentation (installer reference guide, ...) to adjust the specific setting.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.31 Water pump

4.31.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To perform an electrical check of the water pump

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Turn ON the power of the unit with the main switch.
- 2 Connect the service monitoring tool to the unit.
- 3 Activate the water pump using the service monitoring tool as follows:

- Use technician password.
- In the Main Menu, select Unit Mode > Mode.
- Set to Test.
- In the Main Menu, select Commission Unit > Manual Control > Unit > Pump #.
- Set to ON.

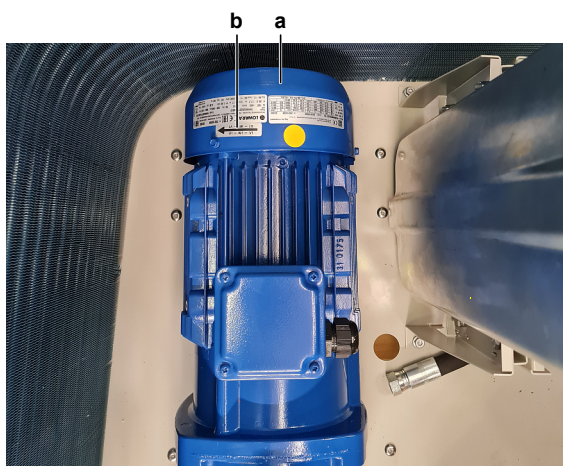


INFORMATION

It is ALSO possible to check the water pump operation using the service monitoring tool.

In the Main Menu, select Commission Unit > Input/Output > Unit. The status is Off (water pump NOT operating) when NO water flow and On (water pump operating) when appropriate water flow.

- 4 Check through the water pump motor cover or the coupling protection if the motor is rotating (water pump is working). Use a small mirror as needed.



- a Water pump motor cover
- b Rotating direction indication

- 5 Also check the rotating direction (correct rotating direction indicated on the pump cover). If rotating direction is NOT correct:
 - Stop the unit operation and turn off the main switch Q10.
 - Loosen the 4 bolts and remove the cover from the electrical connection box of the water pump.
 - Swap 2 of the 3 phases of the water pump power supply and reinstall the cover on the electrical connection box.
 - Turn ON the main switch Q10. Start the unit operation, operate the water pump via the service monitoring tool and check that rotating direction is correct.

Is the water pump working correctly?	Action
Yes	Water pump is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Perform the next step.

- 6 Loosen the 4 bolts and remove the cover from the electrical connection box of the water pump.
- 7 Measure the water pump power supply voltage between the phases U1-V1, U1-W1 and V1-W1.

Result: All measured voltages MUST be 400 V AC.

Is the measured power supply voltage correct?	Action
Yes	Perform a mechanical check of the water pump, see "4.31.1 Checking procedures" [▶ 321].
No	Perform as described below for the specific pump.

Units with high ambient temperature kit (OP.192)

- 1 Measure the output voltage between the terminals 2-4, 2-6 and 4-6 of the water pump contactor KM90.

Result: All measured voltages MUST be 400 V AC.

Is the measured output voltage correct?	Action
Yes	Replace the water pump wiring harness, see "4.31.2 Repair procedures" [▶ 325].
No	Perform a check of the water pump contactor, see "4.31.1 Checking procedures" [▶ 321].

Units with inverter water pump

- 1 Measure the output voltage between the terminals U-V, U-W and V-W of the pump inverter.

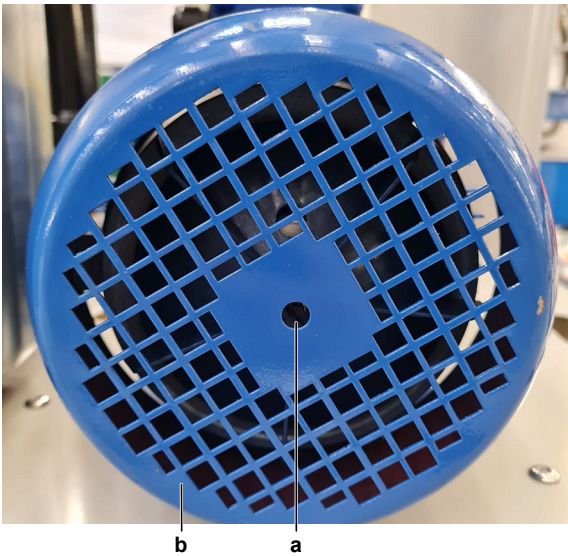
Result: All measured voltages MUST be 400 V AC.

Is the measured output voltage correct?	Action
Yes	Replace the water pump wiring harness, see "4.31.2 Repair procedures" [▶ 325].
No	Perform a check of the pump inverter, see documentation of the pump inverter for more information.

To perform a mechanical check of the water pump

Prerequisite: First perform an electrical check of the water pump, see ["4.31.1 Checking procedures"](#) [▶ 321].

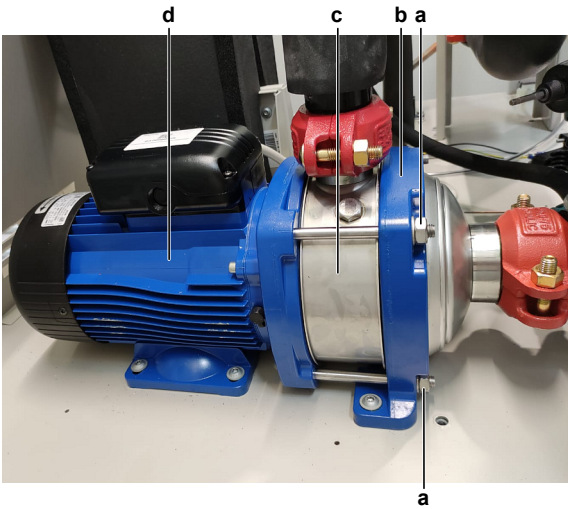
- 1 Remove the water pump, see ["4.31.2 Repair procedures"](#) [▶ 325].
- 2 Insert a flat screwdriver in the slot of the rotor shaft of the water pump (through the hole in the pump motor cover); press and turn it to rotate the water pump rotor shaft.



a Hole
b Water pump motor cover

Does the rotor of the water pump motor rotate smoothly?	Action
Yes	Replace the water pump, see "4.31.2 Repair procedures" [▶ 325].
No	Continue with the next step.

3 Remove the 4 nuts and remove the bracket from the water pump.



a Nut
b Bracket
c Water pump housing
d Water pump motor

- 4 Separate the water pump housing from the pump motor.
- 5 Check for impurities or any objects that may block the water pump.

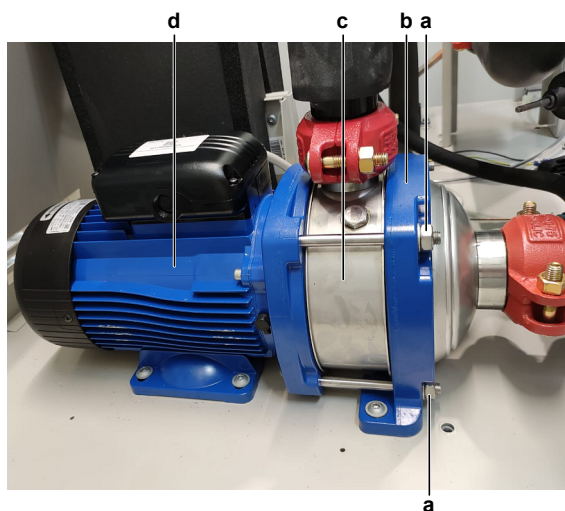
Any impurities or objects found?	Action
Yes	Remove the impurities or objects that may block the water pump, see "4.31.2 Repair procedures" [▶ 325].
No	Replace the water pump, see "4.31.2 Repair procedures" [▶ 325].

4.31.2 Repair procedures

To remove impurities from the water pump

Prerequisite: Remove the water pump, see ["4.31.2 Repair procedures"](#) [▶ 325].

- 1 Remove the 4 nuts and remove the bracket from the water pump.



- a Nut
- b Bracket
- c Water pump housing
- d Water pump motor

- 2 Separate the water pump housing from the pump motor.
- 3 Remove any impurities or objects that may block the water pump.
- 4 Install the water pump housing on the pump motor. Make sure the seal is installed correctly.
- 5 Correctly install the bracket on the water pump. Install and tighten the 4 nuts to fix the cover.
- 6 Install the water pump, see ["4.31.2 Repair procedures"](#) [▶ 325].

Is the problem solved?	Action
Yes	No further actions required.
No	Replace the water pump, see "4.31.2 Repair procedures" [▶ 325].

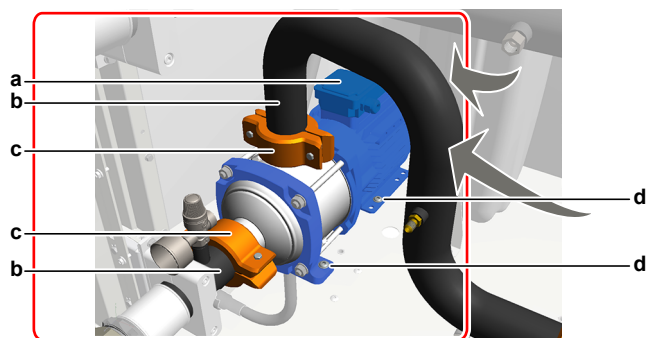
To remove the water pump

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

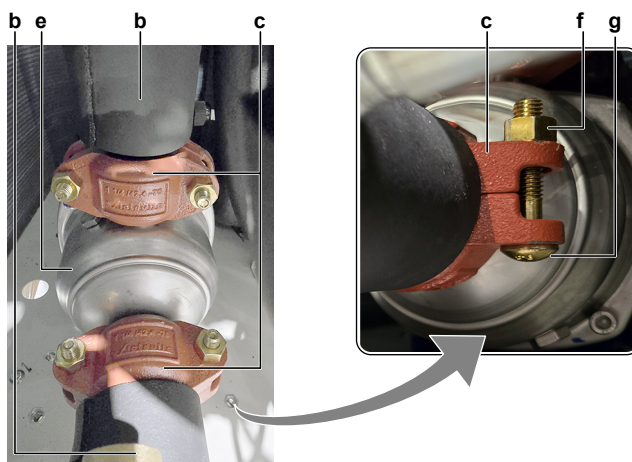
Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Drain water from the water circuit, see ["6.3.2 Repair procedures"](#) [▶ 367].
- 2 Loosen the 4 bolts and remove the cover from the electrical connection box of the water pump.



- a Electrical connection box cover
- b Water circuit pipe
- c Clamp
- d Bolt (pump fixation)

- 3 Note down the connection position of the wires. Remove the screws and disconnect the wires from the electrical connection box.
- 4 Route the water pump harness through the grommet out of the electrical connection box.
- 5 Unscrew the nuts and bolts to loosen the clamps.
- 6 Disconnect the water circuit pipes from the water pump.



- b Water circuit pipe
- c Clamp
- e Water pump
- f Nut
- g Bolt

- 7 Remove the 4 bolts that fix the water pump to the unit frame.



INFORMATION

As the pump fixation bolts are hard to access, use a Hex ball Screwdriver.

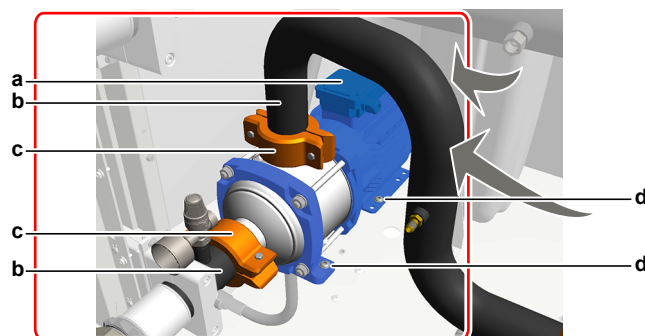
- 8 Remove the water pump from the unit.
- 9 To install the water pump, see "[4.31.2 Repair procedures](#)" [▶ 325].

To install the water pump

- 1 Install the water pump in the correct location.
- 2 Install and tighten the 4 bolts to fix the water pump to the unit frame.

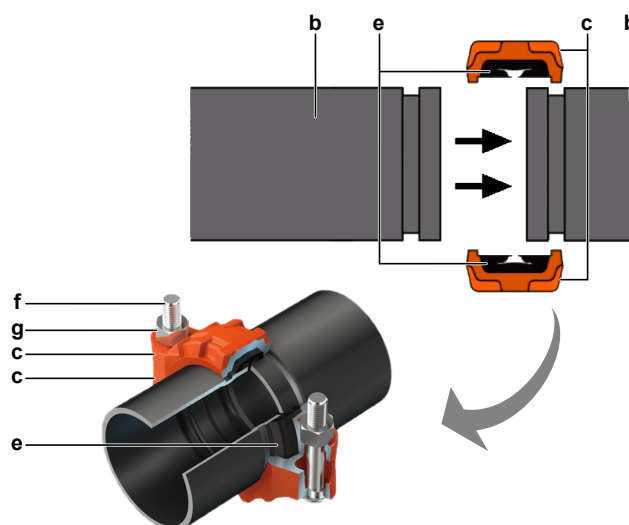
**INFORMATION**

As the pump fixation bolts are hard to access, use a Hex ball Screwdriver.



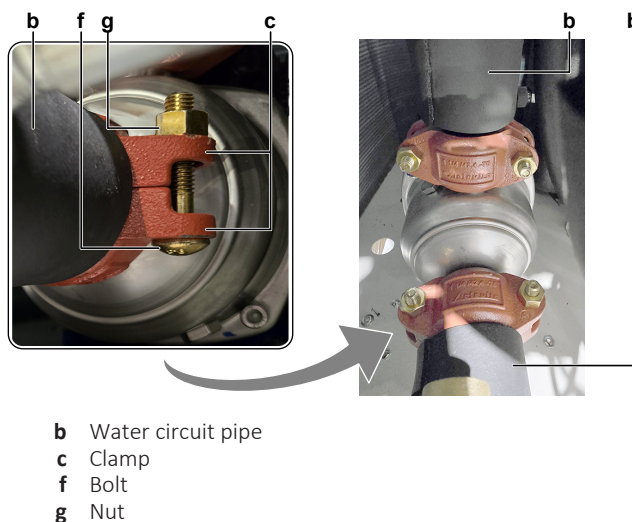
- a Electrical connection box cover
- b Water circuit pipe
- c Clamp
- d Bolt (pump fixation)

- 3 Check piping ends and looks for cracks, deformation, anomalies... replace pipe if necessary.
- 4 Apply slight lubrication and insert gasket in one of the pipe ends.
- 5 Align both pipes together
- 6 Install the clamp housings over the gasket.
- 7 Install bolts and nuts on both sides of the clamps.

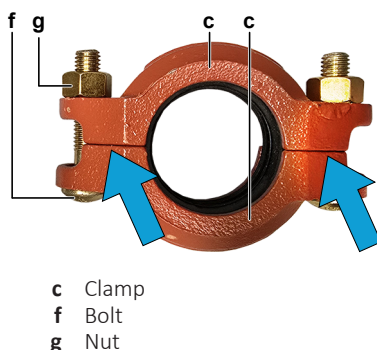


- b Water circuit pipe
- c Clamp
- e Gasket
- f Bolt
- g Nut

- 8 Tighten the nuts.



- 9 Make sure that there is metal to metal contact on both sides between the clamp housings.



- 10 Loosen the 4 bolts and remove the cover from the electrical connection box of the water pump.
- 11 Route the water pump harness through the grommet, inside the electrical connection box of the water pump.
- 12 Connect the wires to the correct locations in the electrical connection box.
- 13 Install the cover on the electrical connection box. Install and tighten the 4 bolts to fix the cover.
- 14 Open the stop valves and add water to the water circuit if needed, see ["6.3.2 Repair procedures"](#) [▶ 367].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To remove the water pump wiring harness

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Loosen the 4 screws and remove the cover from the electrical connection box of the water pump.



a Electrical connection box cover
b Screw

- 2** Note down the connection position of the wires. Remove the screws and disconnect the wires from the electrical connection box.
- 3** Route the water pump harness through the grommet out of the electrical connection box.
- 4** Disconnect the other end of the wiring harness from the:
 - water pump contactor KM90 and ground screw (for units with high ambient water pump).
 - pump inverter (for units with inverter water pump).
- 5** Cut all tie straps that fix the wiring harness, and remove the wiring harness from the unit.
- 6** To install the water pump wiring harness, see ["4.31.2 Repair procedures"](#) [▶ 325].

To install the water pump wiring harness

- 1** Correctly connect the wiring harness (see ["9.2 Wiring diagram"](#) [▶ 408]) to the:
 - water pump contactor KM90 and ground screw (for units with high ambient water pump).
 - pump inverter (for units with inverter water pump).
- 2** Loosen the 4 screws and remove the cover from the electrical connection box of the water pump.



a Electrical connection box cover
b Screw

- 3** Route the water pump harness through the grommet, inside the electrical connection box of the water pump.
- 4** Connect the wires to the correct locations in the electrical connection box.
- 5** Install the cover on the electrical connection box. Install and tighten the 4 bolts to fix the cover.
- 6** Fix the wiring harness using new tie straps.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To complete the configuration of the pump inverter on the unit (after all parameters have been set correctly) it is necessary to adjust the circuit breaker to an appropriate current value. See ["To set the current value on the pump circuit breaker"](#) [▶ 332].

4.32 Water pump contactor

4.32.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To perform a check of the water pump contactor



INFORMATION

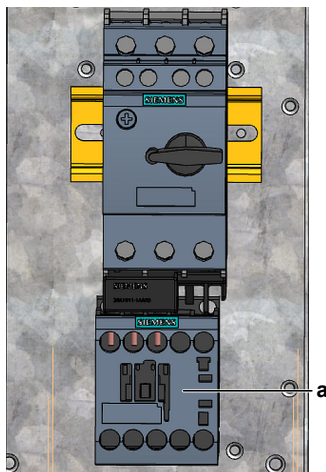
The water pump contactor is ONLY applicable for units with high ambient temperature kit (OP.192).

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Turn ON the power of the unit with the main switch.



a Water pump contactor KM90

- 2 Measure the power supply voltage between the following terminals of the water pump contactor:
 - KM90: 1-3, 1-5, 3-5

The measured voltages MUST be 400 V AC $\pm$ 10%.

Is the measured power supply voltage correct?	Action
Yes	Skip the next step.

Is the measured power supply voltage correct?	Action
No	Continue with the next step.

3 Check the power supply to the unit, see ["6.1.1 Checking procedures"](#) [▶ 347].

Does the unit receive power?	Action
Yes	Correct the wiring and/or components between the main power supply terminal and the water pump contactor KM90, see "9.2 Wiring diagram" [▶ 408].
No	Adjust the power supply to the unit, see "6.1.2 Repair procedures" [▶ 350].

4 Activate the water pump using the service monitoring tool as follows:

- Use technician password.
- In the Main Menu, select Unit Mode > Mode.
- Set to Test.
- In the Main Menu, select Commission Unit > Manual Control > Unit > Pump #.
- Set to ON.

5 Measure the voltage between the following terminals of the water pump contactor:

- KM90: 2-4, 2-6, 4-6

The measured voltages MUST be 400 V AC $\pm$ 10% (contacts closed).

Are the measured voltages of the water pump contactor correct (contacts closed)?	Action
Yes	Continue with the next step.
No	Skip the next steps and continue with the operating voltage check of the contactor.

6 Stop the water pump using the service monitoring tool.

7 Measure the voltage between the following terminals of the water pump contactor:

- KM90: 2-4, 2-6, 4-6

The measured voltages MUST be 0 V AC (contacts open).

Are the measured voltages of the water pump contactor correct (contacts open)?	Action
Yes	Contactor is OK. Return to troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

8 Measure the operating voltage between the terminals A1-A2 on the water pump contactor.

Result: The measured operating voltage MUST be:

- 230 V AC when the contactor contacts should be closed.
- 0 V AC when the contactor contacts should be open.

Is the measured operating voltage of the contactor correct?	Action
Yes	Replace the water pump contactor, see "4.31.2 Repair procedures" [▶ 325].
No	Continue with the next step.

9 Disconnect the wires from the terminals COM and Q1 (NO) of the terminal block T10 on the main PCB.

10 Measure the resistance between the terminals COM and Q1 (NO) of the terminal block T10 on the main PCB.

Result: The measured resistance MUST be:

- Short-circuit (switch contact on main PCB = closed) when the contactor contacts should be closed.
- OL (switch contact on main PCB = open) when the contactor contacts should be open.

Is the measured resistance correct?	Action
Yes	Check and correct the wiring between the main power supply terminal and the operating voltage terminals of the water pump contactor, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check the main PCB, see "4.18 Main PCB" [▶ 236].

4.32.2 Repair procedures

To set the current value on the pump circuit breaker



INFORMATION

ONLY for high ambient temperature kit (OP.192).

To complete the configuration of the pump inverter on the unit (after all parameters have been set correctly) it is necessary to adjust the circuit breaker to an appropriate current value. Below are the current values corresponding to the different units.

Unit	Circuit breaker current
EWYE019CZP-A1 EWYE022CZP-A1 EWYE025CZP-A1	S00 3RV20 11-1DA10 (2,2 ; 3,2) Set 2.4 A
EWYE030CZP-A1 EWYE035CZP-A1	S00 3RV20 11-1DA10 (2,2 ; 3,2) Set 2.4 A
EWYE050CZP-A2 EWYE060CZP-A2 EWYE070CZP-A2	S00 3RV20 11-1GA10 (4.5 ; 6.3) Set 4.6 A

Use the screw on the circuit breaker to set the correct current value (according to the unit).



a Screw

To remove the water pump contactor



INFORMATION

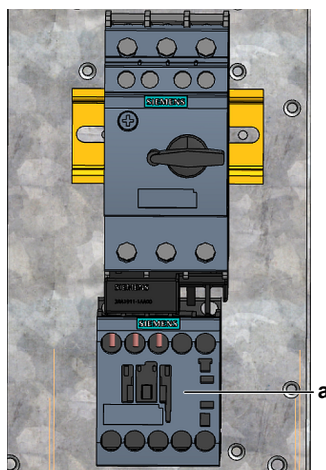
The water pump contactor is ONLY applicable for units with high ambient temperature kit (OP.192).

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn off the main switch and the circuit breaker of the water pump.

Prerequisite: Remove the required plate work, see "[4.23 Plate work](#)" [▶ 263].

- 1 Loosen the screws and disconnect the wiring from the water pump contactor terminals.

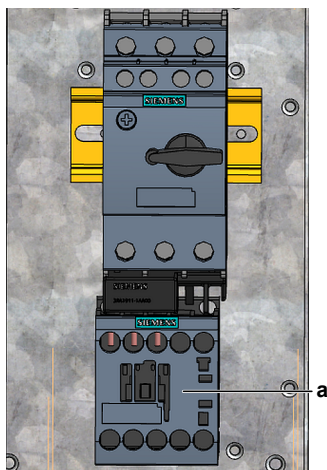


a Water pump contactor KM90

- 2 Remove the screws and remove the water pump contactor from the switch box.
- 3 To install the water pump contactor, see "[4.31.2 Repair procedures](#)" [▶ 325].

To install the water pump contactor

- 1 Install the water pump contactor in the switch box. Install and tighten the screws to fix the contactor.



a Water pump contactor KM90

- 2** Connect the wiring to the correct water pump contactor terminals. Tighten the screws to fix the wires.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.31.1 Checking procedures " [▶ 321] of the water pump and continue with the next procedure.

5 Accessories

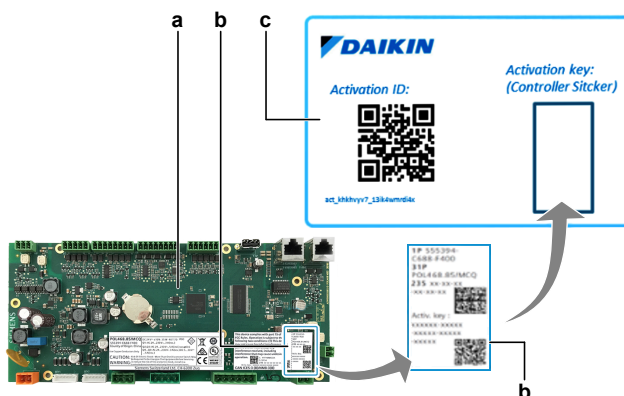
5.1 EKRSCBMS card

The accessory EKRSCBMS is a physical card (c) with same dimensions as any identity card.

It contains a printed QR code on the front with the license code under it.

To install the EKRSCBMS card

- 1 Once arrived, cut the small QR codes (b) from the Main PCB (a) and stick them on the intended location on the card.



Note:

- License cards can only be used once.
- If the main PCB gets replaced the previously used license card cannot be reused.

For licence activation with the EKRSCBMS card, see ["8.4 License activation"](#) [▶ 386].

5.2 Service tool

Available as Spare Part (PN: 5018926).

Arrives in a box:



- a POL895.53/MCQ
b Small screws for wall installation

To install the service tool

- 1 Open back (a) with a small screwdriver.
- 2 Cut out the punchhole (b).

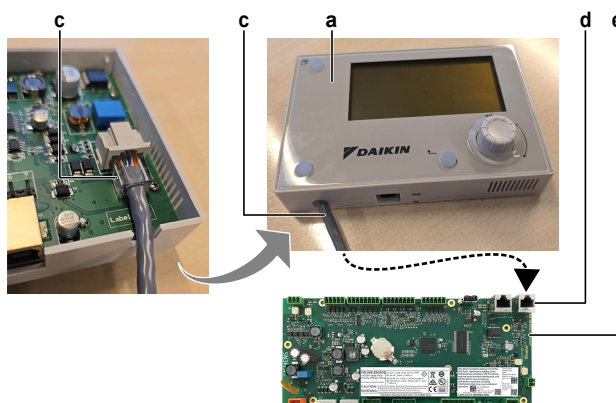


3 Insert a LAN cable (RJ45-RJ45).

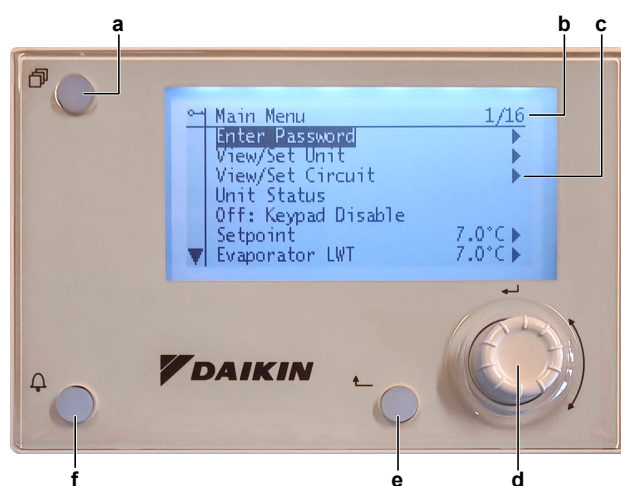
Note: LAN cable (c) is not included (must be field supplied).

4 Connect the other end of the LAN cable (c) to the T-HMI port (d) of the main PCB (e).

Result: The service tool is ready to use.



Overview of functionalities



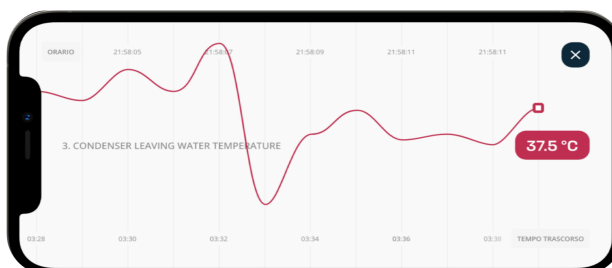
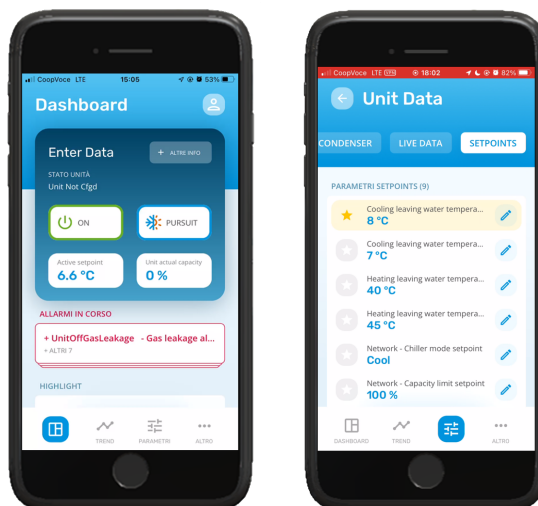
- a "Go to main menu" button
- b Page indication
- c Sub-menus
- d Control button (rotate to navigate; push to confirm)
- e "Go back" button
- f "Go to alarm" button (blinks if an active alarm is present)

To switch between user interface and service monitoring tool, see ["2 General operation" \[▶ 16\]](#).

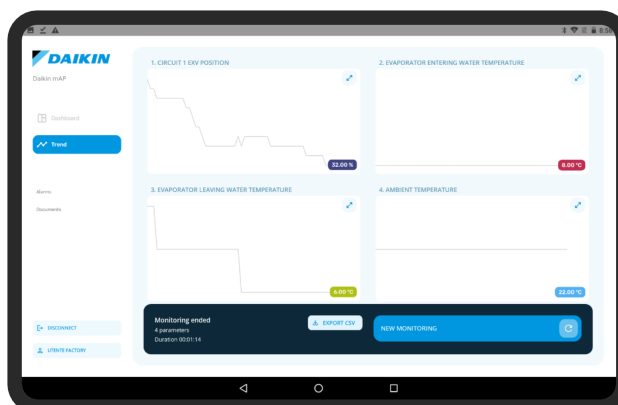
5.3 EKDMAP - Mobile App Access over WiFi

Features

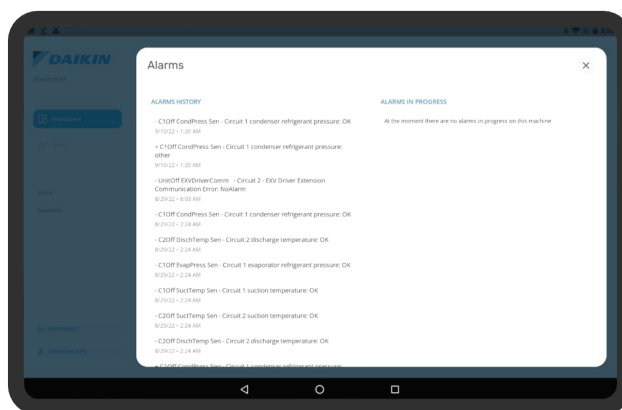
- iOS and Android version for Smartphones and Tablets.
- Multilanguage support.
- Unit Parameters visualization.
- Unit parameter and setpoint setting.



- Monitor and visualize data in trends + CSV export.

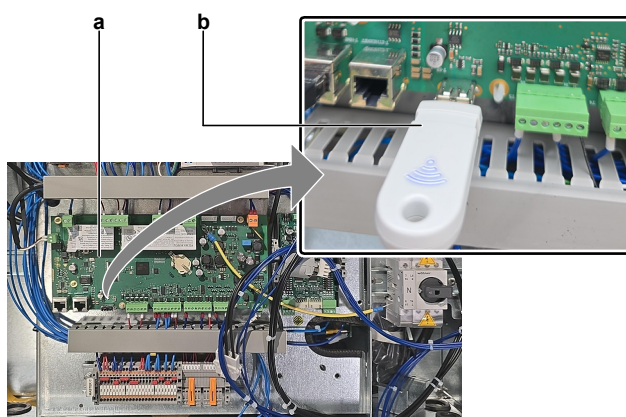


- Unit alarms visualization and reset.



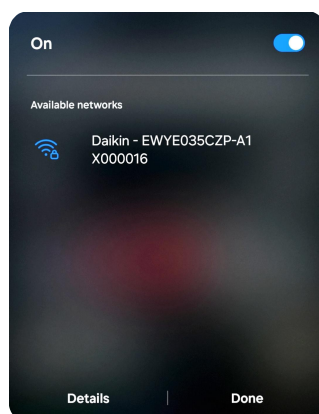
Requirements

EWYE-CZ units have standard a POL903 installed in the USB port.



- a** Main PCB
b POL903

This POL903 is the Wi-Fi module that allows to connect to the Wi-Fi network with phone or tablet, and to look for the unit in the available Wi-Fi network.



Access

When using the App, the access is based on the user's password and not on the unit password.



INFORMATION

The Wi-Fi password is Daikin@mAP.



The App recognizes different levels of user:

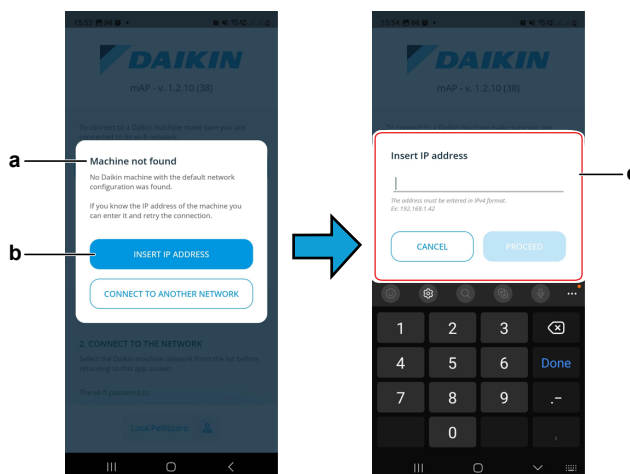
- User: free access without registration, read only and limited functionalities.
- Technician: registration is needed, access to limited datapoints.
- Daikin Technician: registration is needed, access to all datapoints (excluded factory settings).

Set up IP connection

If you get the message "Machine not found" (a) and if you know the IP address of the machine, you can enter it and retry the connection.

- 1 Push the "INSERT IP ADDRESS" button (b).

Result: The "Insert IP address" screen (c) opens.



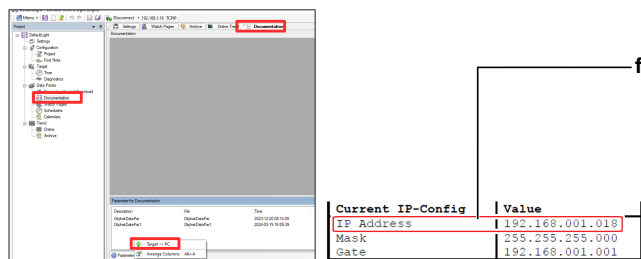
- 2 Enter the IP address.

There are 2 options to set up IP connection:

- Use the service tool and go to: Main Menu ► View/Set Unit ► IP Setup ► Settings. Set Static IP (e) by turning DHCP off (d).

Main Menu ▾ View/Set Unit ▾ IP Setup ▾ Settings		
Name	Value	Comment
Apply Changes	No	
DHCP	Off	d
IP	192.168.1.42	e
Mask	255.255.255.0	
Gateway	192.168.1.1	
PrimDNS	0.0.0.0	
SecndDNS	0.0.0.0	

- With DHCP On, find current IP config (f) on PDF output.



5.4 EKRSCTDH - Thermistor for DHW application

Requirements

Requires that the EKRSCIOC option is also installed. See "5.5 EKRSCIOC - I/O extension board" [▶ 341].

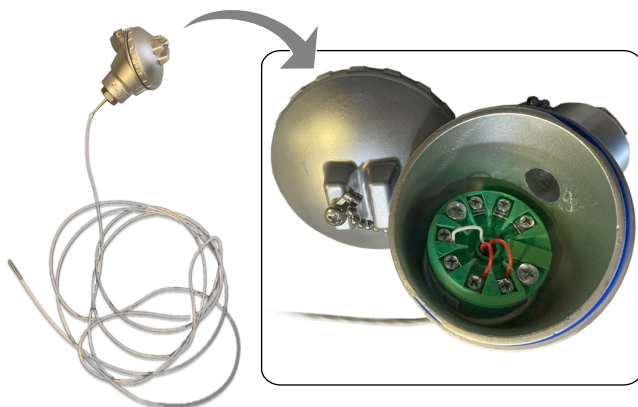


INFORMATION

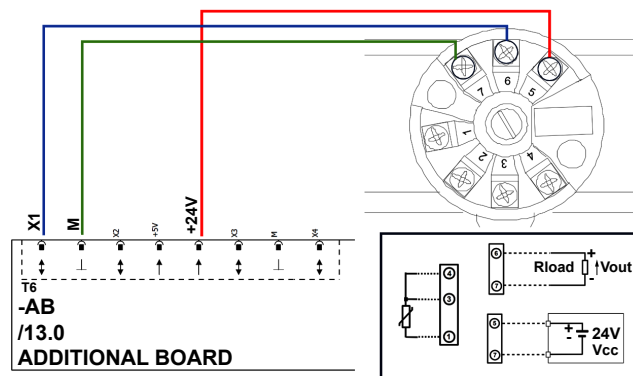
Check that the setting [14.28] is correct:

- [14.28] = 0 (NTC10K sensor)
- [14.28] = 1 (EKRSCTDH 0-10V sensor)

Features



Wiring



Installation

See "To install the thermistor" [▶ 315].

5.5 EKRSCIOC - I/O extension board

Features

	EKRSCIOC
Active when	[15.02] = ON
POL	POL985.00/MCQ
Wiring	T1 on Main PCB
Address	4 at the dipswitches of the EKRSCIOC
Functions	▪ Domestic Hot Water Enhanced ▪ Demand Limit ▪ Variable Primary Flow ▪ Low Noise input ▪ Setpoint Reset ▪ Double Setpoint ▪ Cooling / Heating digital output indication ▪ Defrost digital output indication ▪ Bivalent Operation
Compatibilities	▪ EKRSCTDH (24V sensor) for DHW enhanced ▪ EKRSCDP for VPF ▪ Not Compatible with Split models

To install the extension board

See "4.21 Option PCB" [▶ 253].

To check the IO module setting

On the HMI:

- EKRSCIOC active when [15.02] = 1 (On)

On the Web HMI:

Main Menu ▶ Commission Unit ▶ Configuration ▶ Options ▶ IO Ext module

- EKRSCIOC = Active

5.6 EKRSC TMS – M/S Thermistor

Features

- Arrives in a plastic bag.

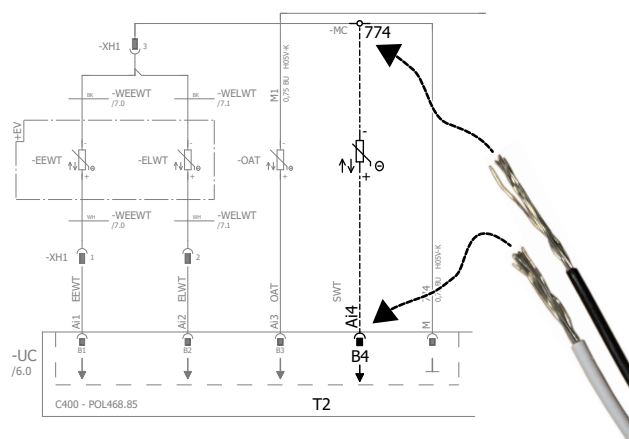


- 10m extension.
- NTC10K type thermistor.

Thermistor – Table A

T °C	kΩ	T °C	kΩ	T °C	kΩ	T °C	kΩ
-40	345.275	5	25.490	50	3.662	95	0.811
-35	247.840	10	19.956	55	3.040	100	0.701
-30	180.031	15	15.741	60	2.536	105	0.608
-25	132.251	20	12.504	65	2.126	110	0.529
-20	98.187	25	10.000	70	1.791	115	0.462
-15	73.631	30	8.050	75	1.516	120	0.405
-10	55.745	35	6.521	80	1.288	125	0.356
-5	42.586	40	5.314	85	1.100		
0	32.813	45	4.355	90	0.943		

Wiring for master/slave



The thermistor must be connected to the main PCB according to the wiring diagrams of the unit.

Wiring for domestic hot water tank

The thermistor must be connected to the T6 terminal of the EKRSCIOC I/O extension board.

**INFORMATION**

Check that the setting [14.28] is correct:

- [14.28] = 0 (NTC10K sensor)
- [14.28] = 1 (EKRSCDPH 0-10V sensor)

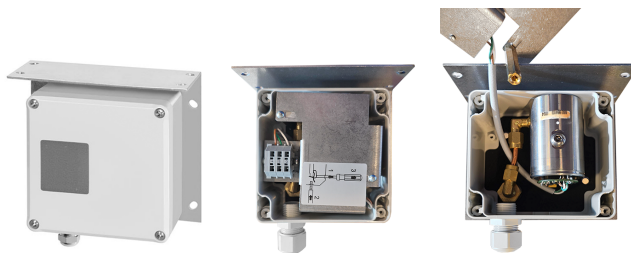
Installation

See ["To install the thermistor"](#) [▶ 315].

5.7 EKRSCDP - Differential pressure transducers

Features

- Arrives in a box.



- 0-10 V DC output signal.
- 0-5 bar measurement range.
- G ½" threaded connections.

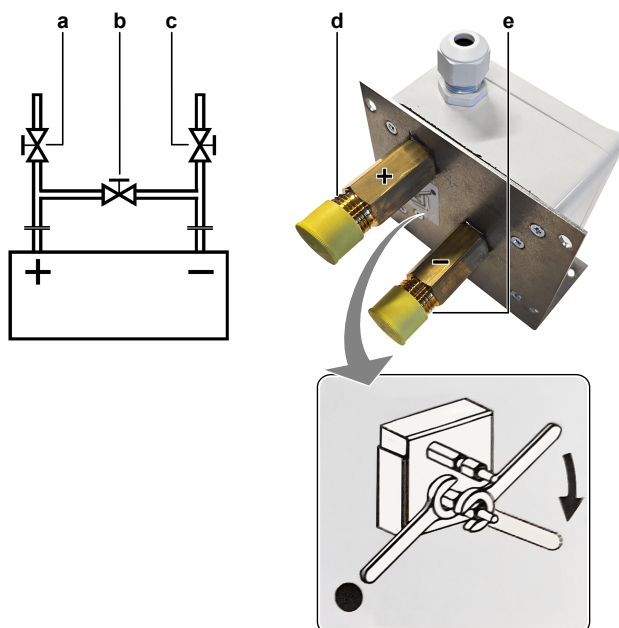
The differential pressure transducer is used in the VPF function and returns a 0-10 V DC output voltage depending on the measured water pressure delta.

Installation

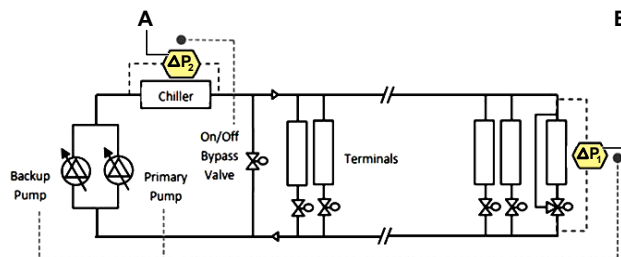
For correct installation, refer to the installation manual included in the box.

The "+" pipe (d) must be on the higher pressure side, the "-" pipe (e) on the lower pressure side.

To prevent high static pressure to destroy the sensor, a layout with isolating valves (a, b and c) can be used.



The EKRSCDP can be installed at the outlet/inlet of the chiller (A) or in the system (B). Or two EKRSCDP's can be installed.

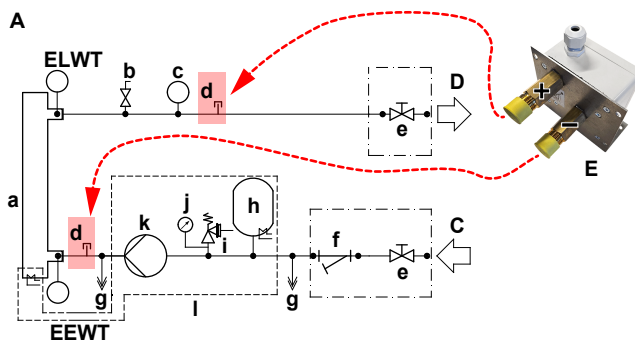
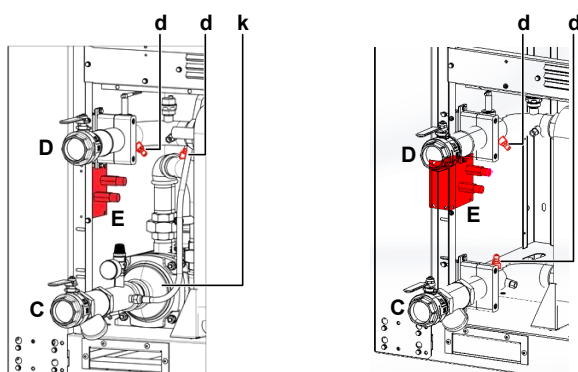


The EKRSCDP installed at the outlet/inlet of the chiller (A):



INFORMATION

The diagrams shown in this manual may be incorrect due to changes/updates to the unit. Correct diagrams are supplied with the unit and can also be found in the technical data book.

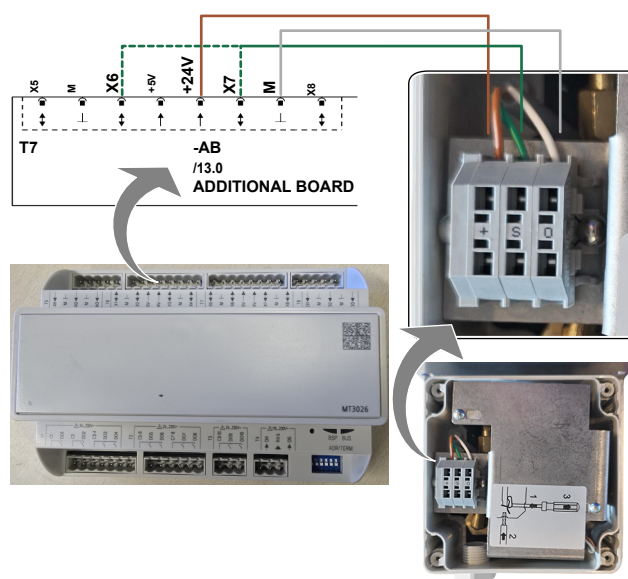


- | | |
|---|---------------------------|
| A Water circuit | d Plugged fitting |
| C Water IN | e Stop valve |
| D Water OUT | f Water filter |
| E EKRSCDP differential pressure transducer | g Drain |
| EEWT Inlet water thermistor | h Expansion vessel |
| ELWT Outlet water thermistor | i Safety valve |
| a Plate heat exchanger | j Pressure gauge |
| b Air purge valve | k Water pump |
| c Flow switch | l Pump kit |

The EKRSCDP installed in the system (B):

This is field installed.

Wiring



- 0 (white) = measuring neutral
- S (green) = measured signal output 0...10 V DC
 - Connect to X6 for "evaporator DP"
 - Connect to X7 for "system DP"
- + (brown) = power supply 24 V AC

Electrical checks

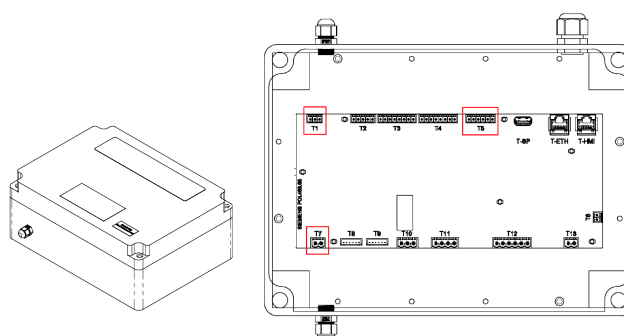
- Check that the power supply is 24 V AC.
- Measure the water pressure and the corresponding voltage:
 - 0 bar = 0 V
 - 5 bar = 10 V

All measurements in between must result in a linear curve.

5.8 EKSCSGW - Smart Grid box (only German market)

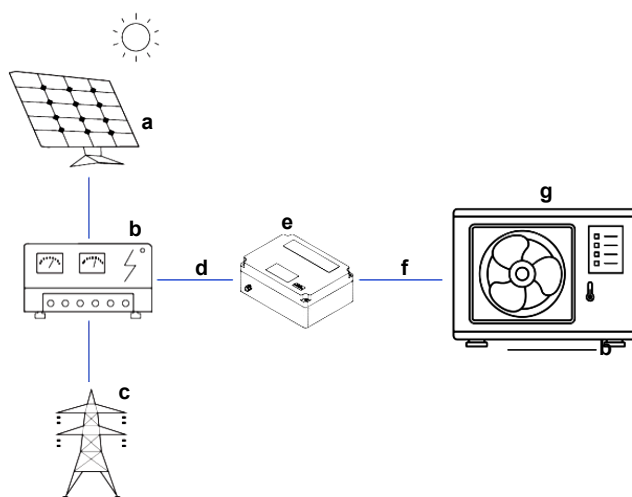
The Smart Grid Box is an accessory that allows the integration of the heat pump control for a Smart Grid application.

Before the installation, make sure that the heat pump system is compatible for use with the Smart Grid Application.



System layout

To integrate the Smart Grid Box into a Daikin Applied Heat Pumps, the system layout should be designed to be compatible with the new control functionalities.



- a** Solar panels
- b** Interface-compatible system components (Solar inverter / energy management system)
- c** Grid
- d** Digital input
- e** Smart Grid Box
- f** Modbus
- g** Heat Pump

For proper system set-up, see "Installation & Operating Manual D–EIOCP00301-23_01EN"

on the my.daikin.eu portal.

6 Third party components

6.1 Electrical circuit

6.1.1 Checking procedures

To check the power supply of the unit

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Check that the power supply cables and earth connection are firmly fixed to the main switch.
- 2 Measure the insulation resistance between each power supply terminal and the ground using a megger device of 500 V DC. All measurements MUST be >1MΩ. If insulation resistance is <1MΩ, earth leakage is present.
- 3 Turn ON the power of the unit with the main switch.
- 4 Measure the voltage between the phases L1-L2-L3 on the main switch.

Result: The voltage MUST be 400 V AC ± 10%.

- 5 Measure the voltage between each phase and N on the main switch.

Result: The voltage MUST be 230 V AC ± 10%.

- 6 Unbalance between the phases MUST NOT exceed 2%.

Is the measured voltage (power supply) correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Adjust the power supply, see "6.1.2 Repair procedures" [▶ 350].

To check if the power supply is compliant with the regulations

- 1 Check that the power source is in line with the requirements described in the databook.

Is the power supply compliant with the regulations?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Adjust the power supply, see "6.1.2 Repair procedures" [▶ 350].

To check the demand limit input signal

The demand limit function allows the unit to be limited to a specified maximum load. Capacity limit level is regulated using an external 0~10 V signal with a linear relationship. A signal of 0 V indicates the maximum capacity available whereas a signal of 10 V indicates the minimum capacity available.

The demand limit function CAN be enabled via field setting (menu) 18.00 in the user interface or via the Web interface.

Procedure

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Turn ON the power of the unit with the main switch.
- 2 Make sure the demand limit function is enabled (field setting menu 18.00 in the user interface or via Web interface).
- 3 Via the external controller, set the demand limit function to maximum capacity.
- 4 Measure the input voltage between terminals X2-M of terminal block T6 on the option PCB.

Result: The measured voltage MUST be 0 V.

- 5 Via the external controller, set the demand limit function to minimum capacity.
- 6 Again measure the input voltage between terminals X2-M of terminal block T6 on the option PCB.

Result: The measured voltage MUST be 10 V.

Are the measured voltages correct?	Action
Yes	Demand limit input signal is OK.
No	Continue with the next step.

- 7 Via the external controller, leave the demand limit function to minimum capacity.
- 8 Measure the output voltage between the respective terminals on the terminal block of the external controller.

Result: The measured voltage MUST be 10 V.

- 9 Via the external controller, set the demand limit function to maximum capacity.
- 10 Again measure the output voltage between the respective terminals on the terminal block of the external controller.

Result: The measured voltage MUST be 0 V.

Output voltages on the external controller are correct?	Action
Yes	Correct the transmission wiring between the external controller and the option PCB, see "9.2 Wiring diagram" [▶ 408].
No	Perform a check of the external controller, see "6.4.1 Checking procedures" [▶ 374].

To check the setpoint reset input signal

The setpoint reset function CAN override the chiller water temperature active setpoint when certain circumstances occur. The aim of this function is to reduce the unit energy consumption whilst maintaining the same comfort level.

To this purpose, 3 different control strategies are available (through field setting menu 20.00 in the user interface):

- Setpoint reset by outside air temperature
- Setpoint reset by an external signal (0~10 V)
- Setpoint reset by evaporator ΔT

When the external signal (0~10 V) strategy is selected, the active setpoint is calculated applying a correction based on an external 0~10 V signal. 0 V corresponds to 0°C correction, whereas 10 V corresponds to a correction of the maximum reset quantity (to be set via field setting 20.01 in the user interface).

Procedure

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see "4.23 Plate work" [▶ 263].

- 1 Turn ON the power of the unit with the main switch.
- 2 Make sure the setpoint reset function is correctly set (field setting menu 20.00 and 20.01 in the user interface).
- 3 Via the external controller, set the setpoint reset function to 0°C.
- 4 Measure the input voltage between terminals X5-M of terminal block T7 on the option PCB.

Result: The measured voltage MUST be 0 V.

- 5 Via the external controller, set the setpoint reset function to the maximum value.
- 6 Again measure the input voltage between terminals X5-M of terminal block T7 on the option PCB.

Result: The measured voltage MUST be 10 V.

Are the measured voltages correct?	Action
Yes	Setpoint reset input signal is OK.
No	Continue with the next step.

- 7 Via the external controller, leave the setpoint reset function to the maximum value.
- 8 Measure the output voltage between the respective terminals on the terminal block of the external controller.

Result: The measured voltage MUST be 10 V.

- 9 Via the external controller, set the setpoint reset function to 0°C.
- 10 Again measure the output voltage between the respective terminals on the terminal block of the external controller.

Result: The measured voltage MUST be 0 V.

Output voltages on the external controller are correct?	Action
Yes	Correct the transmission wiring between the external controller and the option PCB, see "9.2 Wiring diagram" [▶ 408].

Output voltages on the external controller are correct?	Action
No	Perform a check of the external controller, see "6.4.1 Checking procedures" [▶ 374].

6.1.2 Repair procedures

To adjust the power supply

- 1 Make sure that the power source is in line with the requirements described in the databook.
- 2 Adjust the power supply within 50 Hz $\pm$ 3%.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To correct the wiring between PCB's

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 Make sure that all wires are firmly and correctly connected, see ["9.2 Wiring diagram"](#) [▶ 408].
- 2 Check the continuity of all wires.
- 3 Replace any damaged or broken wires.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

6.2 Refrigerant circuit

6.2.1 Checking procedures



INFORMATION

It is recommended to perform the checks in the listed order.

To check if the refrigerant circuit is clogged

- 1 Check that all field piping is done according to the refrigeration practice and installation manual:
 - Correct piping diameters
 - Piping distance limits are followed
 - NO pipes are squeezed
 - NO short radius bends

- 2 Turn ON the power of the unit with the main switch.
- 3 Activate **Cooling** operation via the user interface or service monitoring tool.
- 4 Wait for the system to run at a more or less stable condition.
- 5 On the refrigerant liquid piping (between the refrigerant/water heat exchanger and the outdoor unit heat exchanger (coil)), using a contact thermometer, measure the temperature before and after every restricting device. If a big temperature difference is measured ($>2.5\sim 4\text{K}$), an internal pipe obstruction may be present at this location.

**INFORMATION**

Focus on positions with a potential risk for clogging such as:

- Filters
- Valves
- Brazing points
- ...

**INFORMATION**

A bigger temperature drop before and after the expansion valve can be normal, however excessive ice is indicating a malfunction of the expansion valve or internal obstruction of the valve (dirt or ice build up in case of humidity in the system).

Temperature drop found?	Action
Yes	Replace the clogged part, see "6.2.2 Repair procedures" [▶ 355].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

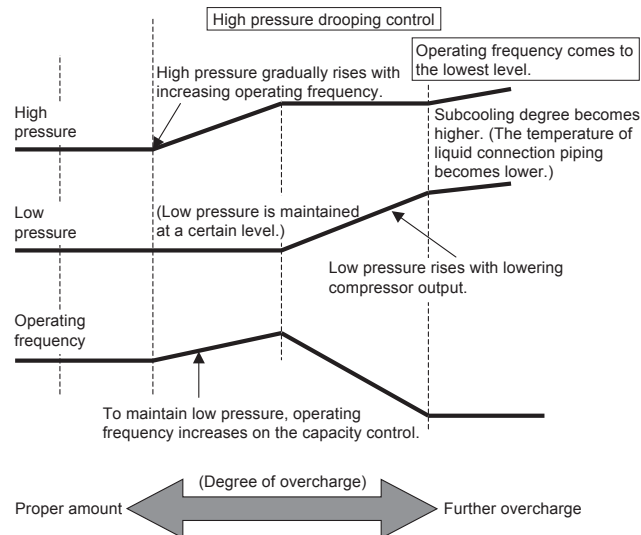
To check if the refrigerant circuit is correctly charged

Due to the relationship to pressure control and electronic expansion valve control, the amount of refrigerant needs to be examined according to operating conditions. Refer to the procedures shown below for correct examination.

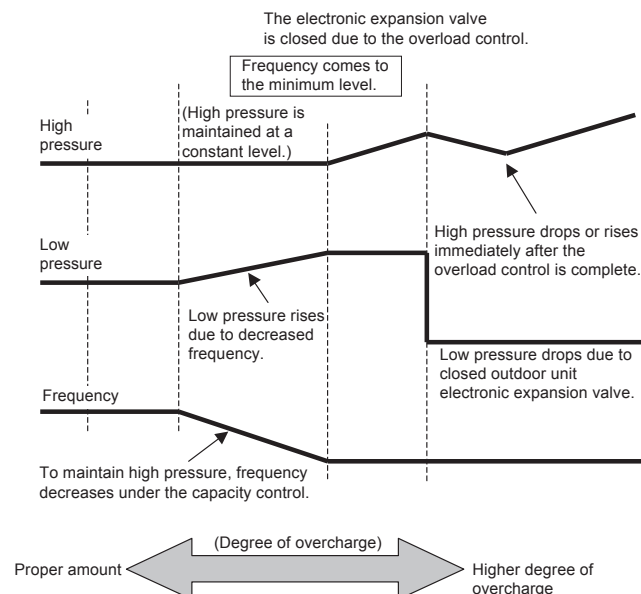
Refrigerant overcharge diagnosis

- 1 High pressure rises. Consequently, overload control is conducted to cause insufficient cooling capacity.
- 2 The superheated degree of suction gas lowers (or the wet operation is performed). Consequently, the compressor consumes more power and is noisy (before over-current relay trips).
- 3 The subcooling degree of refrigerant in liquid form rises (values $>4\sim 5\text{K}$ are NOT normal).

Cooling



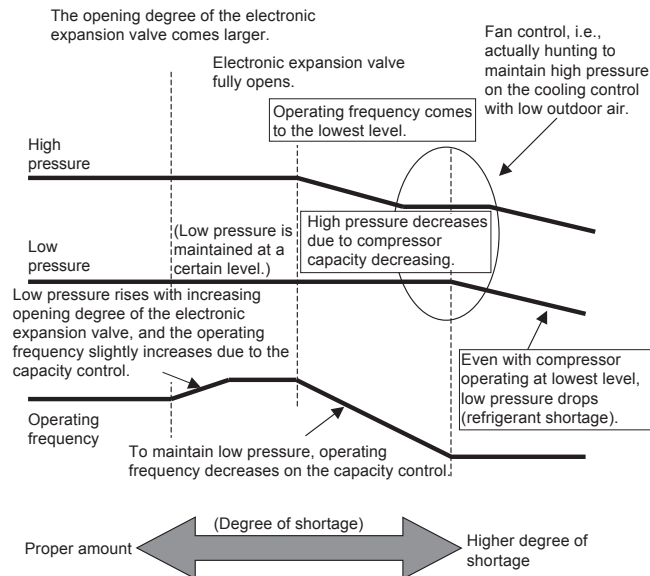
Heating



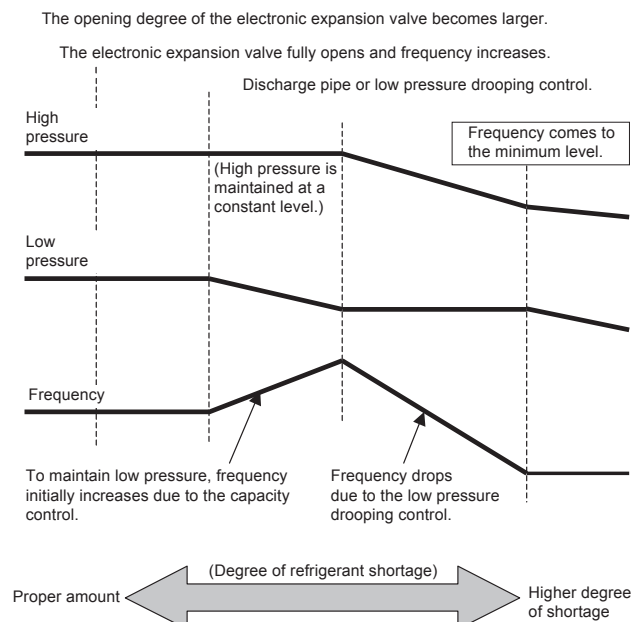
Refrigerant shortage diagnosis

- 1 The superheated degree of suction gas rises. Consequently, the compressor discharge gas temperature becomes higher than normal.
- 2 The superheated degree of suction gas rises. Consequently, the electronic expansion valve turns open more than normal or completely open for average output.
- 3 Low pressure drops to cause the unit not to reach cooling capacity (or heating capacity).

Cooling



Heating



Is the refrigerant circuit charged correctly?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Add or recuperate refrigerant until correctly charged, see "6.2.2 Repair procedures" [▶ 355].

To check for non-condensables in the refrigerant circuit

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Wait for the refrigerant to reach the outdoor temperature.
- 2 Connect a manometer to the service port.

- 3 Measure the pressure of the refrigerant. The measured pressure converted into saturated temperature **MUST** be in line with the expected pressure / saturated temperature at current ambient temperature.
- 4 If the measured pressure / saturated temperature is significantly higher (>5K), non-condensables gasses are most likely present in the refrigerant.

Any non-condensables found in the refrigerant circuit?	Action
Yes	To replace the refrigerant, see "6.2.2 Repair procedures" [▶ 355].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To perform a leak test

The leak test must satisfy the specifications of EN378-2.

- 1 Determine the leak test interval according to the F-gas law:

Leak test interval	Tonnes of CO ₂ equivalent	Refrigerant charge (kg)
12 months	$5 \leq t \text{ CO}_2\text{e} < 50$	7.4 – 74
6 months	$50 \leq t \text{ CO}_2\text{e} < 500$	74 – 740
3 months	$t \text{ CO}_2\text{e} \geq 500$	≥ 740

- Refrigerant charge and tonnes of CO₂ equivalent can be found on the refrigerant charge label on the unit.
- Tonnes of CO₂ equivalent can ALSO be calculated:
 $t\text{CO}_2\text{e} = (\text{Refrigerant charge} \times \text{Global Warming Potential}) / 1000$ with Global Warming Potential = 675.
- If tonnes of CO₂ equivalent is less than 5 tonnes, leak test is NOT required by the current law.



INFORMATION

Units with double refrigerant circuit have 2 separate circuits which are NOT mixed in the heat exchanger. Use the complete unit refrigerant charge to determine the leak test interval.

- 2 When a leak test is done, ALWAYS fill in the logbook of the unit. Keep the logbook close to the unit.
- 3 Optionally, an F-gas inspection sticker CAN be placed on the unit to indicate the next maintenance time.
- 4 Perform the two leaks tests below.

Vacuum leak test

- 1 Evacuate the system from the liquid and gas piping to a gauge pressure of –100.7 kPa (–1.007 bar) for more than 2 hours.
- 2 Once reached, turn off the vacuum pump and check that the pressure does not rise for at least 1 minute.
- 3 Should the pressure rise, the system may either contain moisture (see vacuum drying below) or have leaks.

Pressure leak test

- 1 Break the vacuum by pressurising with nitrogen gas to a minimum gauge pressure of 0.2 MPa (2 bar). Never set the gauge pressure higher than the maximum operation pressure of the unit.
- 2 Test for leaks by applying a bubble test solution to all piping connections.
- 3 Discharge all nitrogen gas.

**NOTICE**

ALWAYS use a recommended bubble test solution from your wholesaler.

NEVER use soap water:

- Soap water may cause cracking of components, such as flare nuts or stop valve caps.
- Soap water may contain salt, which absorbs moisture that will freeze when the piping gets cold.
- Soap water contains ammonia which may lead to corrosion of flared joints (between the brass flare nut and the copper flare).

Problem solved?

Any leaks found in the refrigerant circuit?	Action
Yes	Replace the leaking part of the refrigerant circuit, see " 6.2.2 Repair procedures " [▶ 355].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

6.2.2 Repair procedures

To replace the clogged/leaking part of the refrigerant circuit

- 1 See the correct procedure for the component that needs to be repaired. See also "[Repair information](#)" [▶ 359] for more details.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To recuperate the refrigerant

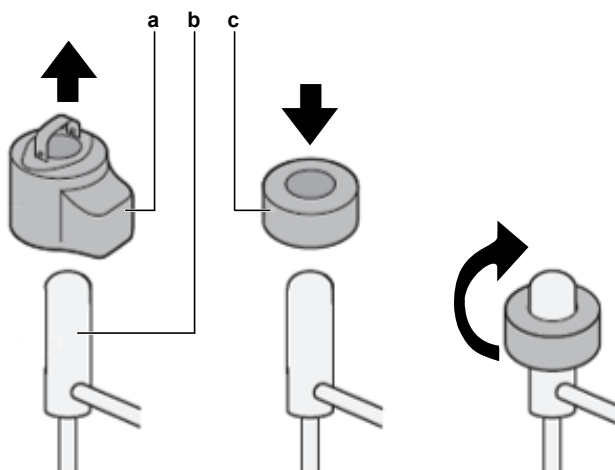
Necessary tools:

Service tool		Remark
	Refrigerant recovery unit	Compatible with the refrigerant to be recovered
	Scale	Read-out / 10 grams
	Manifold	Compatible with the refrigerant to be recovered
	Flexible hoses	Compatible with the refrigerant to be recovered
	Recovery cylinder	Compatible with the refrigerant to be recovered
	Vacuum pump	2-stage, equipped with solenoid valve

**INFORMATION**

Note the last operation mode of the unit (heating or cooling) as this will determine how the vacuum pump, manifold, recovery unit, and refrigerant bottle are to be connected.

- 1 Stop the unit operation via the user interface.
Result: The pump down operation starts.
- 2 Wait until the pump down operation is finished.
- 3 Turn OFF the main switch.
- 4 Manually open all expansion valves if the unit has no power or the PCB is faulty.



- a Expansion valve coil
- b Expansion valve body
- c Expansion valve magnet

- 5 Remove the expansion valve coil, see ["To remove the expansion valve coil" \[▶ 207\]](#).
- 6 Slide the expansion valve magnet on the expansion valve.
- 7 Turn the magnet clockwise to fully open the expansion valve.

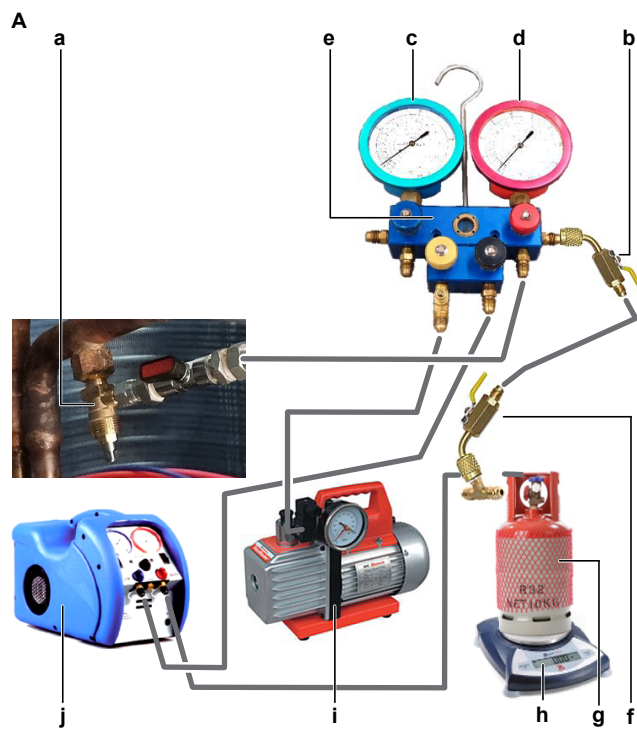
**INFORMATION**

All expansion valves for all units have a diameter of 21.75 mm. Make sure to use an appropriate magnet.

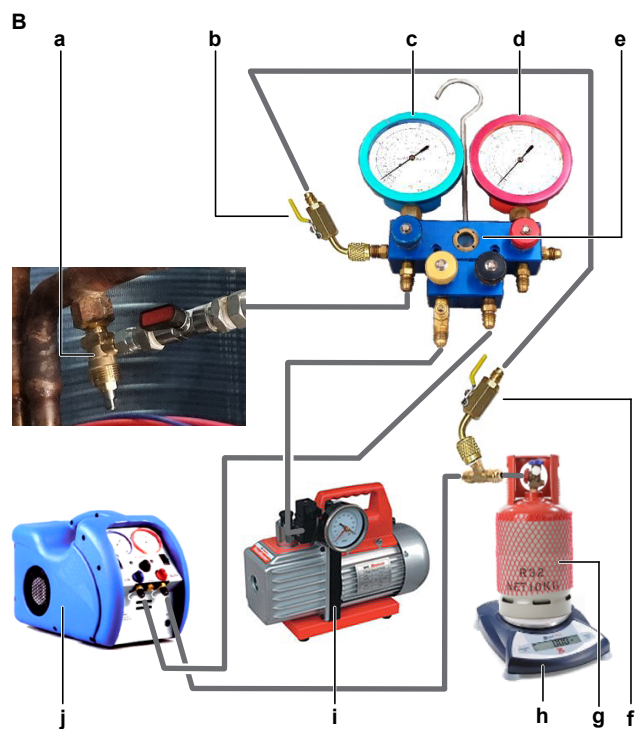
If you are not sure about the open position direction, keep the valve in its middle position.

This way the valve is at least half open, and refrigerant can pass.

- 8 Connect the vacuum pump, manifold, recovery unit, and refrigerant bottle to the service port of the refrigerant circuit as shown below.



- A** In heating mode (high pressure)
- a** Service port
 - b** Connection valve
 - c** Gauge (low pressure)
 - d** Gauge (high pressure)
 - e** Manifold
 - f** Connection valve
 - g** Refrigerant cylinder
 - h** Scale (10 gr read out)
 - i** Vacuum pump (2-stage with solenoid valve)
 - j** Refrigerant recovery unit



- B** In cooling mode (low pressure)
- a** Service port
 - b** Connection valve
 - c** Gauge (low pressure)
 - d** Gauge (high pressure)

- e** Manifold
- f** Connection valve
- g** Refrigerant cylinder
- h** Scale (10 gr read out)
- i** Vacuum pump (2-stage with solenoid valve)
- j** Refrigerant recovery unit

9 To add refrigerant, see "[6.2.2 Repair procedures](#)" [▶ 355].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To add refrigerant

- 1** See the installation, operation and maintenance manual for the correct procedure.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to troubleshooting of the specific error and continue with the next procedure.

Repair information

Refrigerant piping handling

- Make sure that the applied pressure is never higher than the unit design pressure indicated on the nameplate (PS).
- Work according to the F-gas regulation and/or local regulations.
- Make sure the correct amount of refrigerant is charged after repair according to the F-gas regulation label on the unit (factory + additional where required).
- Make sure to use the appropriate equipment and tools according to the refrigerant and unit type.
- R454C can be charged in gas phase.
- Make sure to use a digital scale (no charging cylinder).
- Execute correct vacuum drying procedure after repair:
 - When using an electronic vacuum gauge with an absolute pressure readout, a holding pressure of minimal 2000 Micron / 2 Torr / 266 Pa MUST be reached. This pressure should stay stable for 30 minutes when vacuum pump is NOT running. If vacuum pressure CANNOT be held, most likely there is still moisture in the system. Again run the vacuum pump for 1~2 hours until a holding pressure (absolute pressure readout) lower than 2000 Micron / 2 torr / 266 Pa is reached. If target pressure CANNOT be reached, again check for leaks.
 - Connect the unit according to the available service ports.
 - Use related field setting where necessary to open expansion valve / solenoid valve.

To perform refrigerant pump down operation

The unit is equipped with an automatic pump down operation which will collect all refrigerant from the field piping and indoor unit in the outdoor unit. To protect the environment, make sure to perform the following pump down operation when relocating the unit.



DANGER: RISK OF EXPLOSION

Pump down – Refrigerant leakage. If you want to pump down the system, and there is a leak in the refrigerant circuit:

- Do NOT use the unit's automatic pump down function, with which you can collect all refrigerant from the system into the outdoor unit. **Possible consequence:** Self-combustion and explosion of the compressor because of air going into the operating compressor.
- Use a separate recovery system so that the unit's compressor does NOT have to operate.



CAUTION

Some outdoor units are equipped with a low pressure switch to protect the compressor by switching it off. NEVER short-circuit the low pressure switch during pump down operation.

- 1 Remove the refrigerant connection cover, see "4.23 Plate work" [▶ 263].
- 2 Remove the cap from the stop valves.
- 3 Perform pump down operation, see installer reference guide for the correct procedure.
- 4 After 5~10 minutes (after only 1~2 minutes in case temperature <−10°C), close the liquid stop valve using a hexagonal wrench.
- 5 Check the manifold if vacuum is reached. Close the gas stop valve and stop forced cooling operation.

Refrigerant piping repair

- Make sure to cover open pipe ends during repair so no dust or moisture can enter.
- Make sure to re-apply insulation removed during repair.
- Pipe expansion / flare making:
 - Remove any burrs on the cut surface using the correct tool such as reamer or scraper (note that excessive deburring can thin the pipe walls and cause cracking of the pipe).
 - Make sure the flare has the correct size (use a flare gauge).
 - Make sure no particles remain in the piping.
 - Apply just a drop of refrigerant oil on the inner surface of the flare.
 - Make sure the flare connection is tightened with the correct torque (torque values refer to installation manual).
- Brazing:
 - Use the correct brazing tool.
 - Use a phosphor copper filler metal (silver composition of 0 to 2%). Do not use flux material.
 - Flush the piping before brazing with nitrogen to avoid oxidation of the inside of the copper tubes (nitrogen purity ≥99.99%).

6.3 Water circuit

6.3.1 Checking procedures

To check for an external pump

- 1 Inspect the installation outside the unit and check for the presence of an external pump. This may have an impact on the water flow inside the unit.

An external pump was found in the installation?	Action
Yes	Remove the external pump from the installation, see "6.3.2 Repair procedures" [▶ 367].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check the water pressure

- 1 Turn ON the power of the unit.
- 2 Read the water pressure on the pressure gauge located at the water pump.

Result: The pressure MUST be 1~2 bar.

Is the water pressure correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Add or remove water from the water circuit until the pressure is correct, see "6.3.2 Repair procedures" [▶ 367].

To check the water flow

- 1 Turn ON the power using the main switch.
- 2 Activate **Cooling** or **Heating** operation via the user interface.
- 3 Use a flow meter to check the water flow.

Result: The water flow MUST be at least:

Model	Minimum flow (L/min)
EWYE019~025CZP-A1	24
EWYE030~035CZP-A1	24
EWYE050~060CZP-A2	57
EWYE070CZP-A2	57

Is the water flow correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

- 4 Check the water pressure, see ["6.3.1 Checking procedures"](#) [▶ 361].

Is the water pressure correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Add or remove water from the water circuit until the pressure is correct, see "6.3.2 Repair procedures" [▶ 367].

To check the glycol concentration

If the unit operates below 4°C (water temperature), a proper water / glycol mixture is required. Check the glycol concentration as follows:

- 1 Take a water sample at the water drain valve.
- 2 Using a refractometer, define the glycol concentration.

Result: The glycol concentration MUST be:

Ambient temperature	Glycol concentration
–3°C	10%
–8°C	20%
–15°C	30%
–20°C	40%

- 3 Add glycol until the correct concentration in the water is reached.

This can be done in different ways:

- Use a filler kit and check the concentration using a refractometer.
- Calculate the amount of glycol to be added.

Glycol volume to be added = [(Target concentration–Measured concentration)/100] x Total water volume.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check the water quality

- 1 Take a water sample at the water drain valve.
- 2 Send the water sample to an accredited lab for testing.

Result: The water MUST comply with the following specifications:

Specifications	Water quality requirements
Ph (25°C)	7.5 – 9.0
Electrical conductivity (25°C)	<500 µS/cm
Chloride ion	<70 mg Cl/L (Heat pump) <300 mg Cl/L (Cooling ONLY)
Sulphate ion	<100 mg SO ₄ ² /L
Alkalinity	<200 mg CaCO ₃ /L
Total hardness	75 - 150 mg CaCO ₃ /L
Iron	<0.2 mg Fe/L

Specifications	Water quality requirements
Ammonium ion	<0.5 mg NH ⁴ +/L
Silica	
Chlorine molecular	<0.5 mg Cl ₂ /L
Is the water quality OK?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace with water of appropriate quality, see "6.3.2 Repair procedures" [▶ 367].

To check if the water circuit stop valves are open

- 1 The stop valves are located outside the unit. Check that all valves are in open position (in line with the piping).

All valves are open?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Open the specific valve(s) of the water circuit, see "6.3.2 Repair procedures" [▶ 367].

To check for an external heat source

- 1 Inspect the installation outside the unit and check for the presence of an external heat source. This may have an impact on the water temperature inside the unit.

An external heat source was found in the installation?	Action
Yes	Remove the external heat source from the installation, see "6.3.2 Repair procedures" [▶ 367].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check if the field installed air purge valves are installed on the correct locations

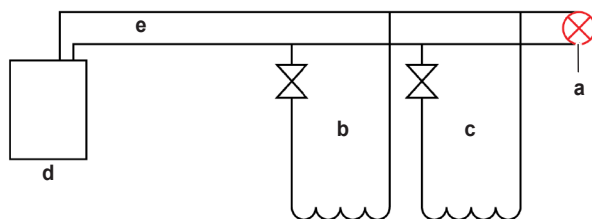
- 1 Check the installation outside the unit. All highest points of the installation MUST have air purge valves installed. The air purge valves MUST NOT be installed on other locations.

All air purge valves are installed on the correct locations?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.

All air purge valves are installed on the correct locations?	Action
No	Install the specific air purge valve(s) on the correct location(s) in the water circuit, see "6.3.2 Repair procedures" [▶ 367].

To check if a by-pass is installed in the water circuit

- 1 A by-pass MUST be installed in the water circuit outside the unit. This is needed to make sure that water can still flow through the circuit even when all loops (underfloor heating, radiators, ...) are shut-off (e.g. for anti-freeze function).



- a By-pass
- b Underfloor heating (cooling) circuit
- c Radiators circuit
- d Indoor or outdoor unit
- e Space heating (cooling) water circuit

Is a by-pass installed in the water circuit?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Install a by-pass in the water circuit, see "6.3.2 Repair procedures" [▶ 367].

To check for a leaking field installed domestic hot water tap

- 1 Inspect the installation outside the unit and check for a leaking domestic hot water tap.

Was a leaking domestic hot water tap found in the installation?	Action
Yes	Replace the leaking domestic hot water tap, see "6.3.2 Repair procedures" [▶ 367].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check for leaks in the water circuit

- 1 Inspect the installation outside and inside the unit and check for leaks.

A leak was found in the installation?	Action
Yes	Repair the leak in the installation, see "6.3.2 Repair procedures" [▶ 367].

A leak was found in the installation?	Action
No	Return to the troubleshooting of the specific error and continue with the next procedure.

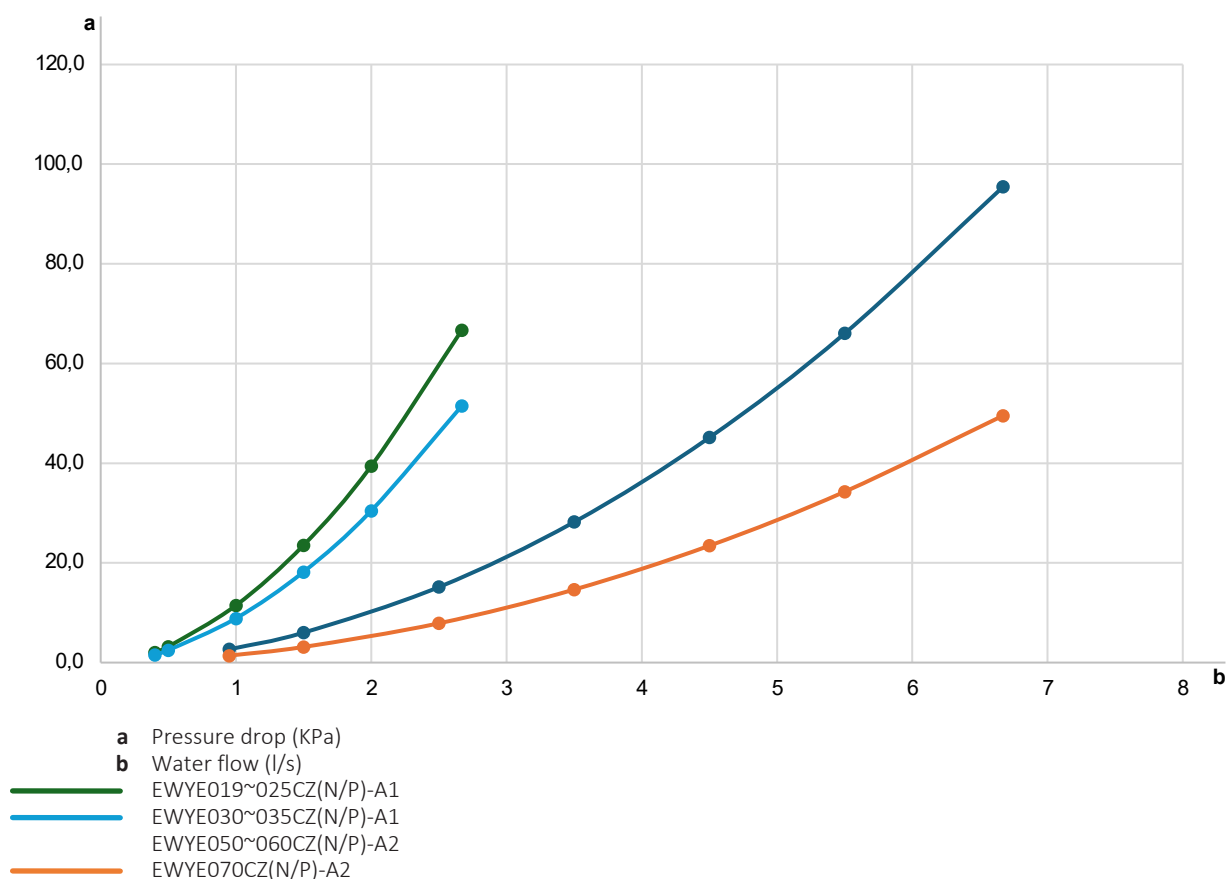
To check the pressure drop on the plate heat exchanger

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 On the inlet and outlet piping of the plate heat exchanger, install pressure gauges at the appropriate fittings.
- 2 Turn ON the power of the unit with the main switch.
- 3 Activate **Cooling** operation via the user interface or service monitoring tool.
- 4 Wait a few minutes until the system is operating properly.
- 5 Read the pressure on both pressure gauges and calculate the difference = pressure drop on the plate heat exchanger.
- 6 Check the water flow, see ["6.3.1 Checking procedures"](#) [▶ 361].
- 7 Using the graphic below, determine the expected pressure drop (for your specific unit) according to the measured water flow.



- 8 Compare the measured pressure drop with the pressure drop determined using the graphic above.

Is the pressure drop on the plate heat exchanger correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Check for the reason of incorrect pressure drop or contact your service manager.

To check if the water circuit is clogged

- 1 Check that all field piping is done according to the good practice and installation, operation and maintenance manual:
 - Correct piping diameters
 - Piping distance limits are followed
 - NO pipes are squeezed
 - NO short radius bends
- 2 Turn ON the power of the unit with the main switch.
- 3 Activate **Cooling** operation via the user interface or service monitoring tool.
- 4 Wait for the system to run at a more or less stable condition.
- 5 On the water circuit piping, using a contact thermometer, measure the temperature before and after every position with a potential risk for clogging. If a big temperature difference is measured, an internal pipe obstruction may be present at this location.



INFORMATION

Focus on positions with a potential risk for clogging such as:

- Filters
- Valves
- Brazing points
- ...

Temperature drop found?	Action
Yes	Replace the clogged part, see "6.3.2 Repair procedures" [▶ 367].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check the main water supply and pressure

- 1 Check that the main water supply and pressure of the installation is within the expected range (>1 bar).

Main water supply and pressure within expected range?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Adjust the main water supply of the installation, see "6.3.2 Repair procedures" [▶ 367].

6.3.2 Repair procedures

To set the pump speed

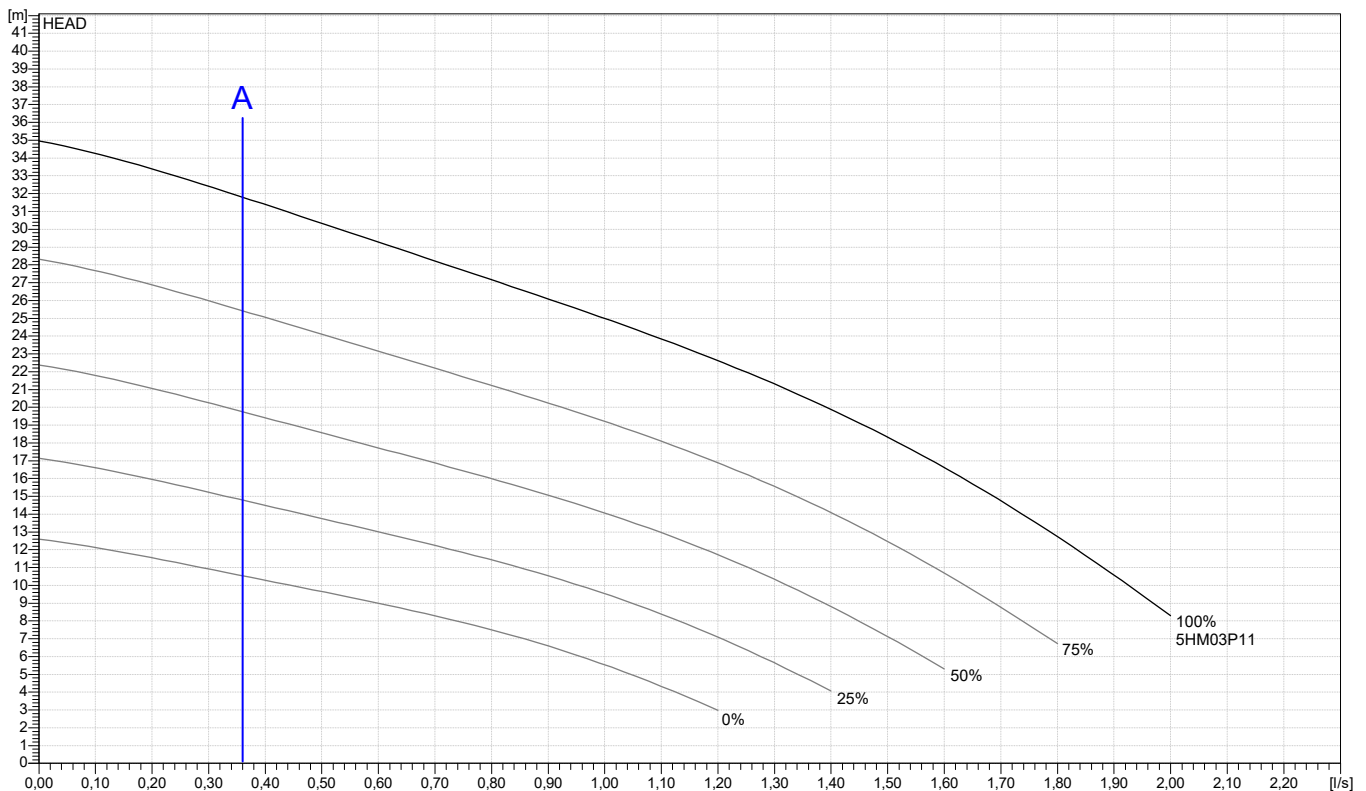
- 1 Check pump operation speed percentage on HMI and select the correct pump curve according to speed and unit.

**INFORMATION**

When the unit is turned ON, the pump will be running at 0% (= running at minimum speed).

- 2 Obtain the site de design specification head and flow.
- 3 Compare design specifications (design head and design flow) to current site pump speed and adjust if needed using the pump curves.
- 4 Check the Delta temperature between inlet and outlet of unit evaporator. If too low (below 3°C) consider to reduce pump speed and if too high (above 7°C) consider to increase pump speed.

For EWYE019CZP-A1, EWYE022CZP-A1 and EWYE025CZP-A1 units:

Pump 5HM03P11

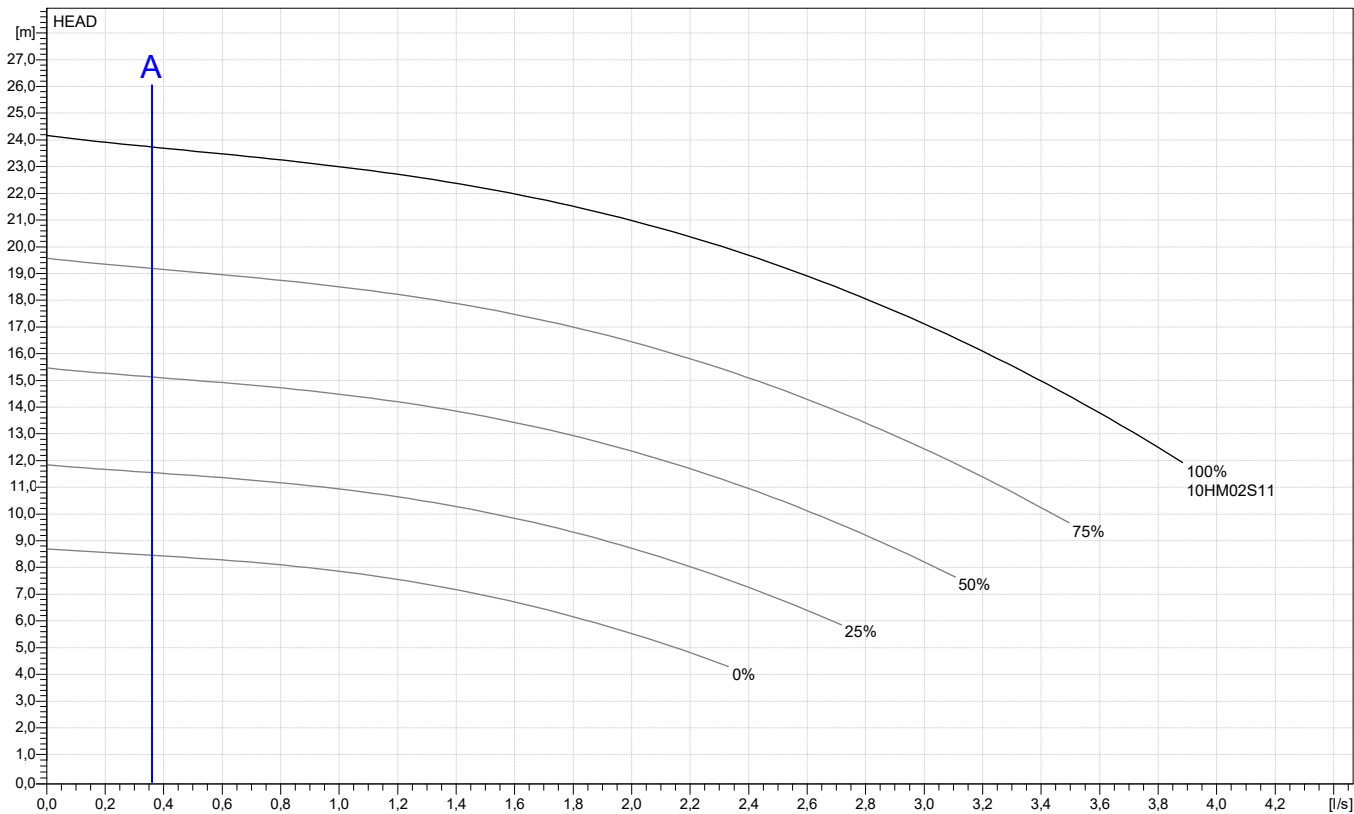
- A** Flow switch trigger set point for
EWYE019CZP-A1, EWYE022CZP-A1 and EWYE025CZP-A1 units: 0.36 L/s (22 L/min)

**INFORMATION**

For operation maximum- and minimum flow, refer to the databook.

For EWYE030CZP-A1 and EWYE035CZP-A1 units:

Pump 10HM02S11



A Flow switch trigger set point for EWYE030CZP-A1 and EWYE035CZP-A1 units: 0.36 L/s (22 L/min)

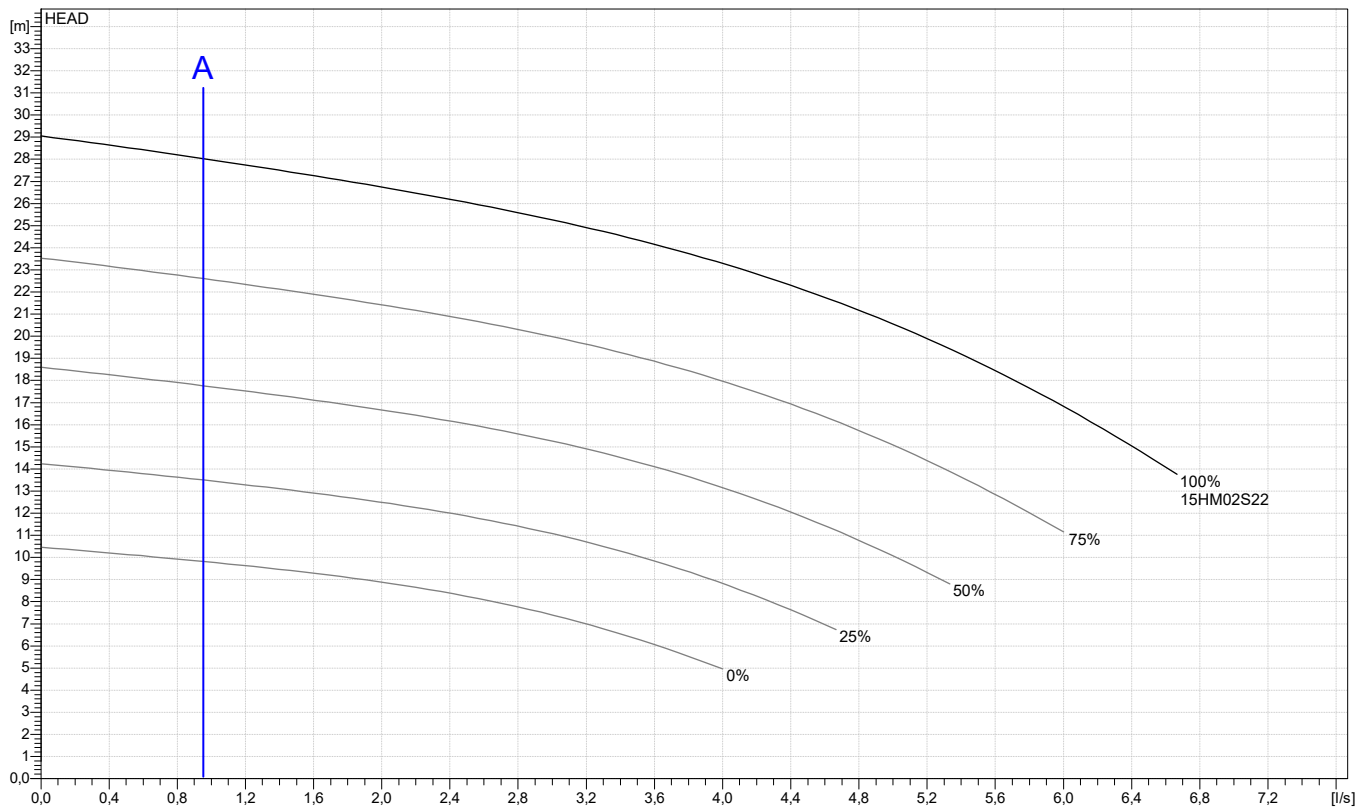


INFORMATION

For operation maximum- and minimum flow, refer to the databook.

For EWYE050CZP-A2, EWYE060CZP-A2 and EWYE070CZP-A2 units:

Pump 15HM02S22



A Flow switch trigger set point for EWYE050CZP-A2, EWYE060CZP-A2 and EWYE070CZP-A2 units: 0.95 L/s (57 L/min)

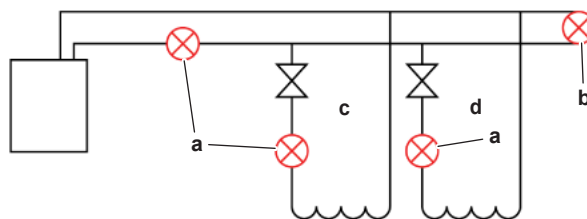


INFORMATION

For operation maximum- and minimum flow, refer to the databook.

To remove the external pump from the water circuit

- 1 If an external pump is found in the installation outside the unit, the pump **MUST** be programmed as such that it **ONLY** works when the water pump of the unit is off. See the specific dealer manual of the external pump for this procedure.



- a** External pump
- b** By-pass
- c** Underfloor heating circuit
- d** Radiators circuit

- 2 If impossible to program as such, the external pump needs to be removed from the installation.

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To remove/drain water from the water circuit



INFORMATION

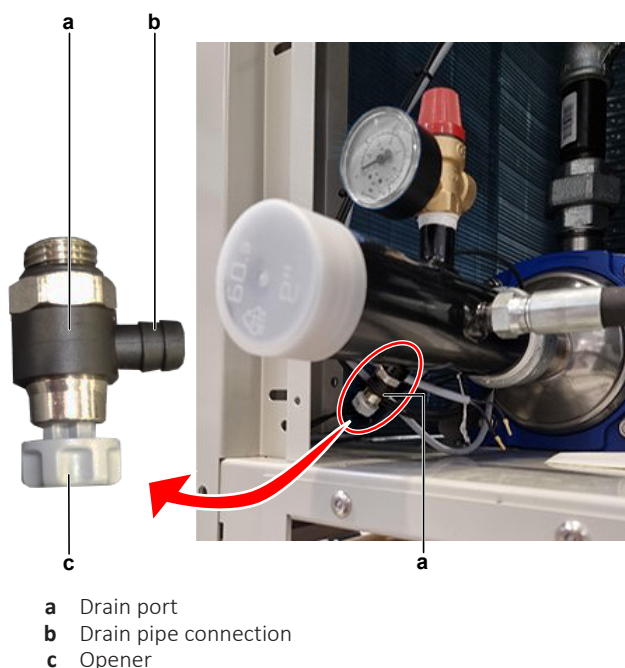
This procedure partially drains the water circuit, sufficient for component replacement.

Prerequisite: Stop the unit operation via the user interface.

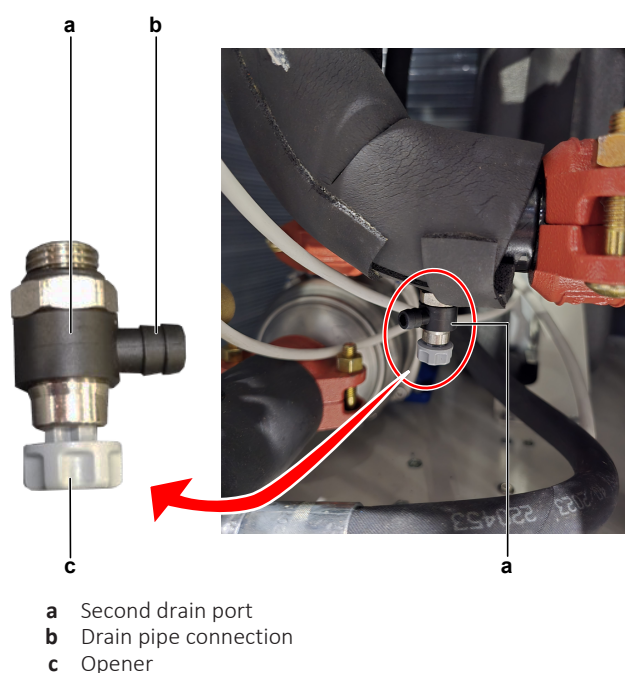
Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see "[4.23 Plate work](#)" [▶ 263].

- 1 Close the stop valves of the water circuit.
- 2 Connect a drain hose to the drain port.
- 3 Open the drain port. Collect the drained water in the drain pan, bottle, sink,... using the installed drain hose.



- 4 Locate the second drain port at the evaporator inlet and drain.



5 To add water to the water circuit, see ["6.3.2 Repair procedures"](#) [▶ 367].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To add water to the water circuit

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

Prerequisite: Remove the required plate work, see ["4.23 Plate work"](#) [▶ 263].

- 1 To fill the water circuit, use a field supply filling kit. Make sure you comply with the applicable legislation.
- 2 Purge the water circuit, see ["6.3.2 Repair procedures"](#) [▶ 367].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

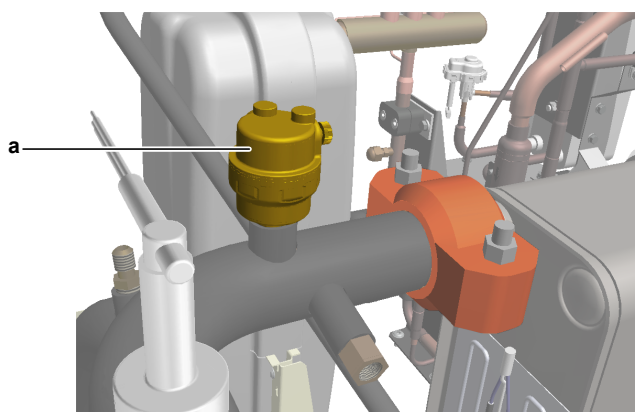
To open the stop valves of the water circuit

- 1 The stop valves are located outside the unit. Open the valves by placing them in line with the piping.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To open the air purge valves of the water circuit

- 1 An automatic air purge valve is installed in the unit.



a Automatic air purge valve

- 2 Place all field installed air purge valves in the open position.
- 3 Purge the water circuit, see "[6.3.2 Repair procedures](#)" [▶ 367].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To install the field installed air purge valves on the highest points of the water circuit

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Install field installed air purge valves on all highest points of the installation outside the unit.
- 2 Purge the water circuit, see "[6.3.2 Repair procedures](#)" [▶ 367].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To purge the water circuit

- 1 Check that all field installed air purge valves are installed in the correct locations, see "[6.3.1 Checking procedures](#)" [▶ 361].
- 2 See "[To open the air purge valves of the water circuit](#)" [▶ 372] for detailed information about the unit air purge valves.
- 3 Run the water pump ONLY (test mode via the service monitoring tool) as follows:
 - 10 minutes run, then 2 minutes stop. Do this 3 times.
 - 10 minutes stop.

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To remove the external heat source from the water circuit

- 1 Remove the external heat source from the installation outside the unit.

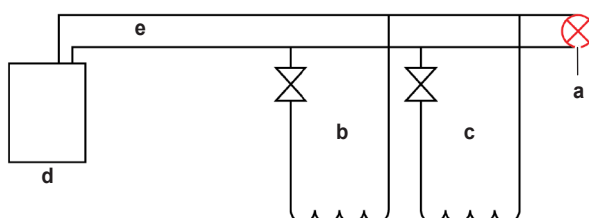
Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To install a by-pass in the water circuit

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the main switch.

- 1 Install a by-pass in the water circuit outside the installation as shown below.



- a By-pass
- b Underfloor heating (cooling) circuit
- c Radiators circuit
- d Indoor or outdoor unit
- e Space heating (cooling) water circuit

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To replace the leaking domestic hot water tap in the water circuit

- 1 Replace the leaking domestic hot water tap in the water circuit with a correct one.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To repair the leak in the water circuit

- 1 Repair the leak in the water circuit.

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To replace the clogged part of the water circuit

- 1 See the correct procedure for the component that needs to be repaired.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To adjust the main water supply of the installation

- 1 Adjust the main water supply of the installation to be within the expected range (>1 bar).

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

6.4 Manufacturer components

6.4.1 Checking procedures

To check the correct operation / setting of the manufacturer component

- 1 See the specific dealer manual to check for the correct installation, operation or setting of your component.

Does the component function correctly?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Adjust the specific component, see "6.4.2 Repair procedures" [▶ 374].

6.4.2 Repair procedures

To adjust the manufacturer component

- 1 See the specific dealer manual to adjust your component.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

6.5 External factors

6.5.1 Checking procedures

To check the outdoor temperature

- 1 The temperature ranges for the different operation modes of the unit can be found in the databook on Business Portal.



INFORMATION

If the outdoor temperature is outside the range of operation, the unit may NOT operate or may NOT deliver the required capacity.

Is the outdoor temperature within the operating range?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Wait for the outdoor temperature to return within the operating range.

To check the required space around the outdoor unit heat exchanger

- 1 Check if the space around the outdoor unit heat exchanger is sufficient. See the installation manual for the required space specifications. Adjust as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

7 Maintenance



NOTICE

General maintenance/inspection checklist. Next to the maintenance instructions in this chapter, a general maintenance/inspection checklist is also available on the Daikin Business Portal (authentication required).

The general maintenance/inspection checklist is complementary to the instructions in this chapter and can be used as a guideline and reporting template during maintenance.

7.1 Maintenance schedule

See next page.

Standard routine maintenance schedule

List of activities	Weekly	Monthly ^(a)	Yearly/Seasonal ^(b)
General			
Reading of operating data ^(c)	X		
Visual inspection of unit for any damage and/or loosening		X	
Verification of thermal insulation integrity		X	
Cleaning		X	
Paint where necessary			X
Analysis of water ^(d)			X
Check of flow switch operation		X	
Electrical installation			
Verification of control sequence			X
Verify contactor wear – Replace if necessary			X
Verify that all electrical terminals are tight – Tighten if necessary		X (Quarterly)	
Clean inside the electrical control board			X
Visual inspection of components for any signs of overheating		X	
Verify operation of compressor and electrical resistance		X	
Refrigerant circuit			
Check for any refrigerant leakage (leak test)		X	
Analyze compressor vibrations			X
Hydraulic circuit			
Check for any water leakage		X	
Check hydraulic connections		X	
Check the pressure at the pump inlet		X	
Clean the water filter			X
Check the glycol concentration			X
Check the water flow rate		X	
Check the safety valve			X
Coil section			
Check the cleaning of coils and water heat exchangers ^(e)			X
Verify that fans are well tightened			X
Verify the coil fins			X
Plate heat exchanger			
Check the cleaning of the plate heat exchanger			X

^(a) Monthly activities include all the weekly ones.

^(b) The annual (or early season) activities include all weekly and monthly activities.

^(c) Daily reading of the operating values of the unit allows maintaining high observational standards.

^(d) Check for any dissolved metals.

^(e) Clean condenser banks with clean water and water heat exchangers with appropriate chemicals. Particles and fibers could clog up the exchangers, especially for water exchangers pay attention if water rich in calcium carbonate is used. An increase in pressure drops or a decrease in thermal efficiency means that the heat exchangers are clogged. In environments with a high concentration of airborne particles, it might be necessary to clean the condenser bank more often.

Routine maintenance schedule for critical application and/or highly aggressive environment

List of activities	Weekly	Monthly ^(a)	Yearly/Seasonal ^(b)
General			
Reading of operating data ^(c)	X		
Visual inspection of unit for any damage and/or loosening		X	
Verification of thermal insulation integrity		X	
Cleaning		X	
Paint where necessary			X
Analysis of water ^(d)			X
Check of flow switch operation		X	
Electrical installation			
Verification of control sequence			X
Verify contactor wear – Replace if necessary			X
Verify that all electrical terminals are tight – Tighten if necessary			X
Clean inside the electrical control board		X	
Visual inspection of components for any signs of overheating		X	
Verify operation of compressor and electrical resistance		X	
Measure compressor motor insulation			X
Refrigerant circuit			
Check for any refrigerant leakage (leak test)		X	
Analyze compressor vibrations			X
Hydraulic circuit			
Check for any water leakage		X	
Check hydraulic connections		X	
Check the pressure at the pump inlet		X	
Clean the water filter			X
Check the glycol concentration			X
Check the water flow rate		X	
Check the safety valve			X
Coil section			
Checking the cleaning of the air heat exchanger ^(e)		X	
Check the cleaning of water heat exchangers ^(e)			X
Verify that fans are well tightened			X
Verify the coil fins		X	

List of activities	Weekly	Monthly ^(a)	Yearly/Seasonal ^(b)
Plate heat exchanger			
Check the cleaning of the plate heat exchanger			X

^(a) Monthly activities include all the weekly ones.

^(b) The annual (or early season) activities include all weekly and monthly activities.

^(c) Daily reading of the operating values of the unit allows maintaining high observational standards.

^(d) Check for any dissolved metals.

^(e) Clean condenser banks with clean water and water heat exchangers with appropriate chemicals. Particles and fibers could clog up the exchangers, especially for water exchangers pay attention if water rich in calcium carbonate is used. An increase in pressure drops or a decrease in thermal efficiency means that the heat exchangers are clogged. In environments with a high concentration of airborne particles, it might be necessary to clean the condenser bank more often.



CAUTION

Units placed or stored in a highly aggressive environment for long time without operation are still subject to these routine maintenance steps.

7.2 To clean the outdoor unit heat exchanger

- 1 Straighten the air fins.
- 2 Clear the outdoor unit heat exchanger from dust, leaves,... using a fin-comb or compressed air/N₂.



CAUTION

Avoid bending or damaging the air fins of the outdoor unit heat exchanger during the cleaning process.

Do NOT use a high-pressure washer.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

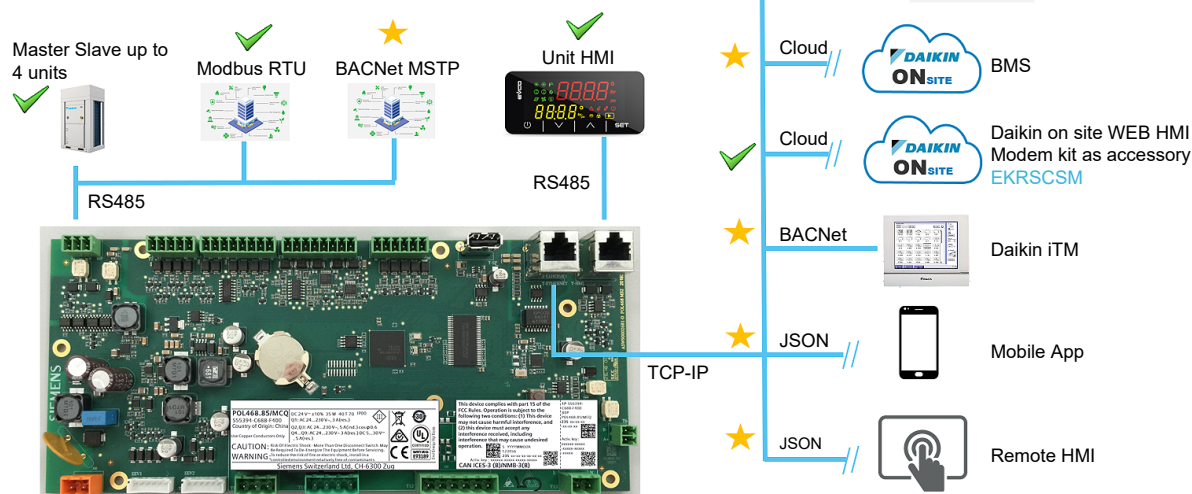
8 System integration

The Small Inverter Chiller offers multiple options for system integration:

- Modbus Rtu as standard
- Modbus TCP-IP with license
- Bacnet MSTP with license
- BACnet TCP-IP with license
- Daikin on Site Cloud monitoring with modem
- WebHMI with license

✓ Available with Standard Unit

★ Available with connectivity kit **EKRSCBMS** only



Because of the limited amount of ports on the unit, there are some compatibilities that need to be taken into account:

	M/S - Master (T1)	M/S - Slave (T1)	Modbus RTU (T1)	Modbus TCP-IP	Bacnet MSTP (T1)	Bacnet TCP-IP	IO Extension Pack	Modem
M/S - Master (T1)	-	✗	✗	✓	✗	✓	✓	✓
M/S - Slave (T1)	-	-	✗	✗	✗	✓	✗	✓
Modbus RTU (T1)	-	-	-	✓	✗	✓	✗	✓
Modbus TCP-IP	-	-	-	-	✓	✓	✓	✗
Bacnet MSTP (T1)	-	-	-	-	-	TBC	✗	✓
Bacnet TCP-IP	-	-	-	-	-	-	✓	✗
IO Extension Pack	-	-	-	-	-	-	-	✓
Modem	-	-	-	-	-	-	-	-

8.1 Protocol settings

Make sure the settings are correct for the installed protocol:

Protocol	Control Source	BAS protocol	Bacnet IP	BacNet Over RS485	License Manager
Modbus Rtu	Network	Modbus	No	No	Passive or Active
Modbus TCP-IP	Network	Modbus	No	No	Active
BacNet MSTP	Network	Bacnet	No	Yes	Active
BacNet TCP-IP	Network	Bacnet	Yes	No	Active

Control source

Modify the setting to network control source on following menu on the HMI:

Menu	Parameter	Range
04	00 (Control Source)	Off = Local On = Network

Or in Web HMI/Service Tool: Main Menu View/Set Unit → Network Control.

BAS protocol

Modify the setting to network control source on following menu on the HMI:

Page	Parameter	Range
22 (Protocol Communication)	12 (License Manager)	Off = Passive On = Active
	13 (BacNETOverRS)	Off = Passive On = Active
	14 (BacNET-IP)	Off = Passive On = Active
	15 (BasProtocol)	0 = None 1 = Modbus 2 = Bacnet

Or in Web HMI/Service Tool: Main Menu View/Set Unit → Protocols.

Modbus settings

For Modbus application set the Modbus protocol settings according to the field Modbus requirements.

Page	Parameter	Range	Description
22 (Protocol Communication)	00 (Mb Address)	1-255	Defines UC address in Modbus network.
	01 (Mb BAUD)	0-1000	Defines Modbus communication rate in Bps/100 and must be identical for all nodes of the bus.
	02 (Mb Parity)	0 = Even 1 = Odd 2 = None	Defines the parity used in Modbus communication and must be identical for all nodes of the bus.
	03 (Mb 2StopBit)	Off = 1 Stop-Bit On = 2 Stop-Bits	Defines whether 2 stop bits should be used.
	04 (Mb Timeout)	0-10	Defines the timeout in second for the response of the slave before a communication error is reported.
	16 (BusPolarization)	Off = Passive On = Active	Define the activation of internal polarization resistor of UC. It has to be set "Active" only on first unit of the network.

Or in Web HMI/Service Tool: Main Menu → View/Set Unit → Protocols.

Note: Modbus TCP-IP reserved port is 502.

**INFORMATION**

When bus polarization is active, the resistance between T1A and T1-B is 600 Ω. When it's passive it measures 12 kΩ.

Bacnet settings

For BACnet application set the BACnet protocol settings according to the field BACnet requirements

Page	Parameter	Range	Description	R/W	PsW
22 (Protocol Communication)	05 (BN address)	1-255	Defines UC address in BACnet network	W	1
	06 (BN BAUD)	0-1000 Bps/100	Defines BACnet communication rate in Bps/100 and must be identical for all nodes in the bus.	W	1
	07 BN (Device ID)	0-4.194.302 0-(X.XXX.---)	Defines the four most significant digits of Device ID, used in a BACnet network as the unique identifier of a specific device. The device ID for each device must be unique on the entire BACnet network.	W	1
	08 BN (Device ID)	0-4.194.302 0-(-.---.XXX)	Defines the three less significant digits of Device ID, used in a BACnet network as the unique identifier of a specific device. The device ID for each device must be unique on the entire BACnet network.	W	1
	09 (BN Port)	0-65535 0-(X-.-)	Defines the most significant digit of BACnet UDP port.	W	1
	10 (BN Port)	0-65535 0-(-X.XXX)	Defines four less significant digits of BACnet UDP port.	W	1
	11 (BN Timeout)	0-10	Defines the timeout in second for the response before a communication error is reported.	W	1

Or in Web HMI/Service Tool: Main Menu → View/Set Unit → Protocols.

8.2 Network enabling requirements

Modbus Rtu

Requirements	Type	Location
Network Control	Setting	HMI Setting 04.00 = On (Network)
		Web HMI = Main Menu → View/Set Unit → Network Control.
BAS protocol	Setting	HMI Setting 22.15 = 1 (Modbus)
		Web HMI = Main Menu → View/Set Unit → Protocols -> BAS protocol = Modbus
Network Enable at BMS	Holding Register	HR 9: Unit Enable Setpoint - Network = 1 (enable)

Modbus TCP-IP

Requirements	Type	Location
Network Control	Setting	HMI Setting 04.00 = On (Network)
		Web HMI = Main Menu → View/Set Unit → Network Control.

Requirements	Type	Location
BAS protocol	Setting	HMI Setting 22.15 = 1 (Modbus)
		Web HMI = Main Menu → View/Set Unit → Protocols -> BAS protocol = Modbus
License (Accessory EKRSCBMS)	Setting	HMI Setting 22.12 = On (Active)
		Web HMI = Main Menu → View / Set Unit -> Protocols -> License Manager = Active
Network Enable at BMS	Holding Register	HR 9: Unit Enable Setpoint - Network = 1 (enable)

BacNet MSTP

Requirements	Type	Location
Network Control	Setting	HMI Setting 04.00 = On (Network)
		Web HMI = Main Menu → View/Set Unit → Network Control.
BAS protocol	Setting	HMI Setting 22.15 = 2 (Bacnet)
		Web HMI = Main Menu → View/Set Unit → Protocols -> BAS protocol = Bacnet
Bacnet Over RS485	Setting	HMI Setting 22.13 = On (Bacnet Over RS485)
		Web HMI = Main Menu → View/Set Unit → Protocols -> BacNETOverRS
License (Accessory EKRSCBMS)	Setting	HMI Setting 22.12 = On (Active)
		Web HMI = Main Menu → View / Set Unit -> Protocols -> License Manager = Active
Network Enable at BMS	Datapoint	BV 2: Unit Enable Setpoint - Network = 1 (enable)

BacNet TCP-IP

Requirements	Type	Location
Network Control	Setting	HMI Setting 04.00 = On (Network)
		Web HMI = Main Menu → View/Set Unit → Network Control.
BAS protocol	Setting	HMI Setting 22.15 = 2 (Bacnet)
		Web HMI = Main Menu → View/Set Unit → Protocols -> BAS protocol = Bacnet
Bacnet IP	Setting	HMI Setting 22.14 = On (Bacnet IP)
		Web HMI = Main Menu → View/Set Unit → Protocols -> Bacnet IP = Yes
License (Accessory EKRSCBMS)	Setting	HMI Setting 22.12 = On (Active)
		Web HMI = Main Menu → View / Set Unit -> Protocols -> License Manager = Active
Network Enable at BMS	Datapoint	BV 2: Unit Enable Setpoint - Network = 1 (enable)

8.3 To prepare USB for software update or license upload

The following USB specifications **MUST** be met when using the (field supplied) USB for software update or license upload:

- Type: USB 2.0
- Maximum size: 32 GB
- System: FAT32
- Current: 100 mA

Format the USB before using it for software update or license upload.

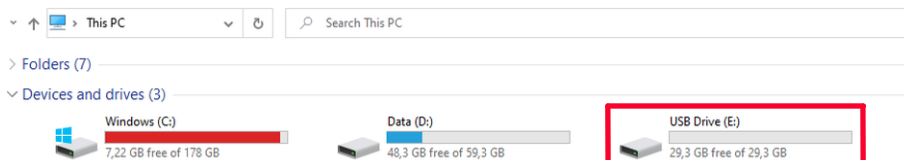
To check the USB specifications

- 1 Check USB type. In order to identify the USB type, most USB manufacturers follow a colour code for the plastic inside the port:

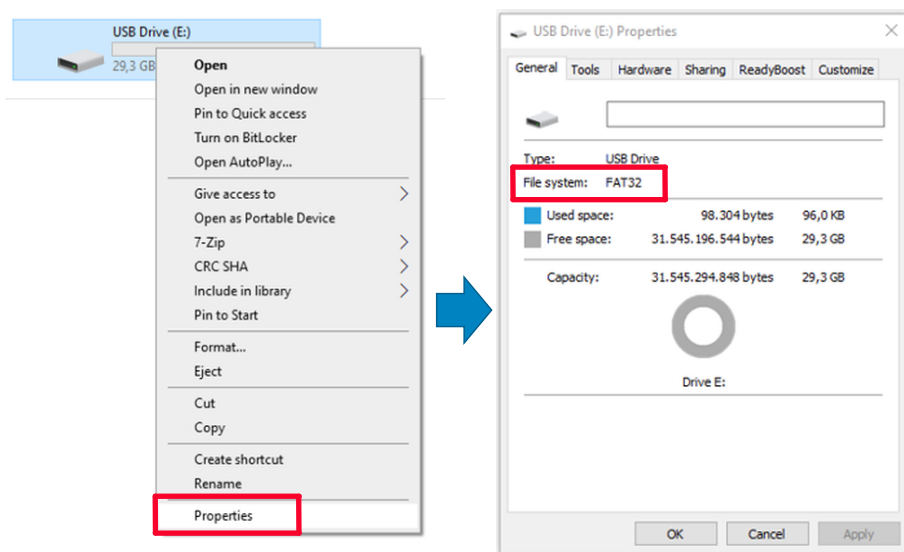
- White: USB 1.0
- Black: USB 2.0
- Blue: USB 3.0



- 2 Connect the USB to a computer.
- 3 Open the "File Explorer" and check the USB size.



- 4 In the "File Explorer", right click on the USB and select "Properties".

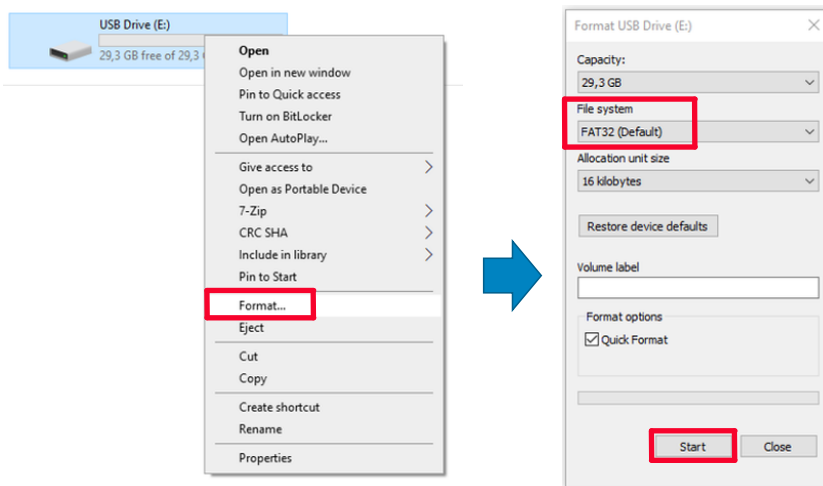


- 5 In the properties window, check the USB system.

To format the USB**CAUTION**

All files on the USB will be lost after formatting.

- 1 Connect the USB to a computer.
- 2 Open the "File Explorer", right click on the USB and select "Format".



- 3 At "File system", select "FAT32".
- 4 Click "Start".

Result: The USB will be formatted.

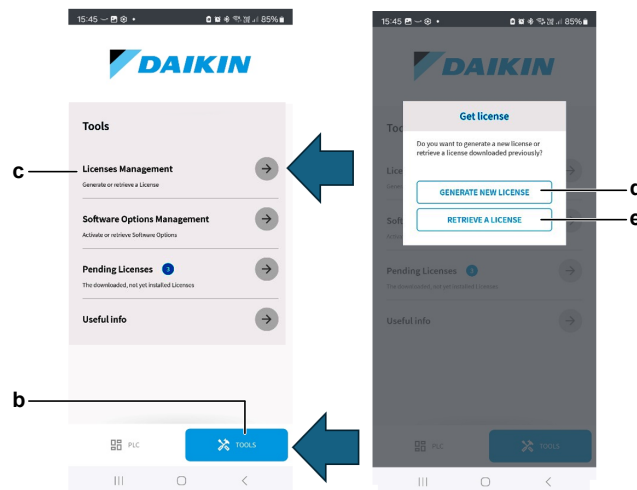
8.4 License activation

License Manager App

The license manager app (a) is both available for Android on the Google Play store and Apple Smartphones on the app store.

**INFORMATION**

Screenshots may differ due to updates on the app.



- 1 Open the app and select TOOLS (b) on bottom menu, then select Licenses Management (c).

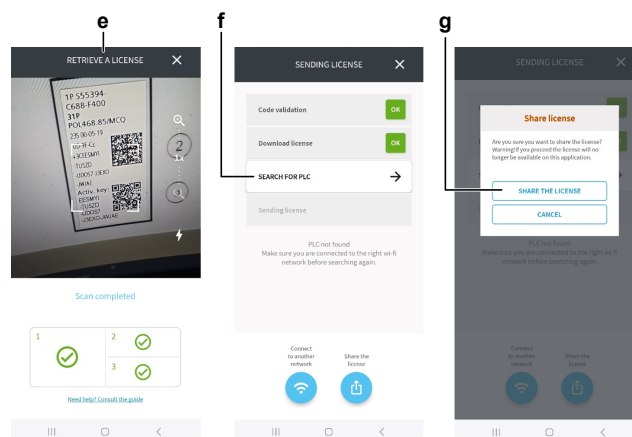
Result: Two options will pop up:

- GENERATE NEW LICENCE (d):
 - This button will register a license in the server.
 - Once a license is registered successfully the license gets saved in the Siemens server and it cannot be registered again.
 - Once the license is registered and you try it again with "Generate New license" it will fail and the app will indicate: "Wrong codes, the scanned codes are incorrect".
- RETRIEVE A LICENSE (e):
 - To be used only after "Generate New License" has been successful at least once and in case you missed to download the license file.
 - This action will search the server for already registered licenses and will download it if it exists.

Creating a license file

Prerequisite: You must have the EKRSCBMS card with the main pcb QR codes stuck on it. See "5 Accessories" [▶ 335].

- 1 Use GENERATE NEW LICENCE (d) (or RETRIEVE A LICENSE (e) if it already was created).
- 2 Scan the codes in the order indicated on the screen: left -> top right -> bottom right.



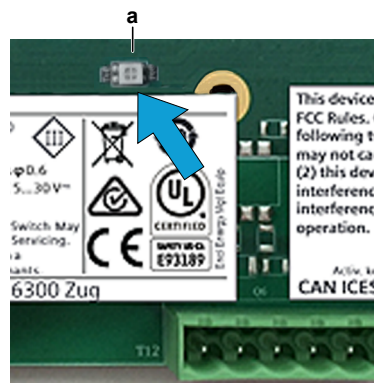
- 3 Wait for license to download and click next.

Result: The app will start SEARCH FOR PLC (f) (main pcb) on the wifi network and if that fails you will be able to SHARE THE LICENSE (g) to your pc using email, messaging or other apps available in your smartphone.

Uploading license using USB

Prerequisite: Format the USB stick.

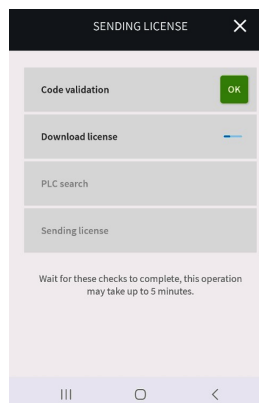
- 1 Fill the USB stick with license only.
- 2 Connect the USB Stick on USB port of the main pcb.
- 3 Switch OFF the power supply on the controller, the led (a) must be OFF.
- 4 Wait 10 seconds and switch ON the power supply on the controller, the led (a) must be ON.



- 5 Check if license is active.

Upload license using the modem

- 1 Connect the phone to the internet and wait for the license to download:



- 2 Once downloaded on the phone there will be asked to share license with PLC (Main PCB). Connect the phone wifi to the Chiller modem before continuing.
 - IF DCHP is ON just follow steps.
 - If DCHP is OFF click continue and type in the IP address.
- 3 Wait for the license manager app to transfer the license file.
- 4 Check if license is active.

Check if license is active

An active License is required for:

- Web HMI
- BACnet MSTP

- BACnet TCP/IP
- Modbus TCP/IP

Check that the License is active on the main PCB by verifying it on:

- HMI via setting [22.12]:
 - ON = License is active
 - OFF = License NOT found
- Service monitoring tool via View / Set Unit -> Protocols -> License Manager:
 - If Active, the License is active
 - If Passive, License is NOT active and BACnet CANNOT be used.

8.5 Modbus registers

For Modbus registers refer to "D-EIGOC00211-25" on the my.daikin.eu portal.

8.6 BACnet datapoints

For BACnet datapoints refer to "D-EIGOC00111-25" on the my.daikin.eu portal.

8.7 To check the modbus TCP registers with Modscan

Requisites

- Address of outdoor unit in the system.
- Personal Computer
- Modbus software for PC (Modscan in this example)

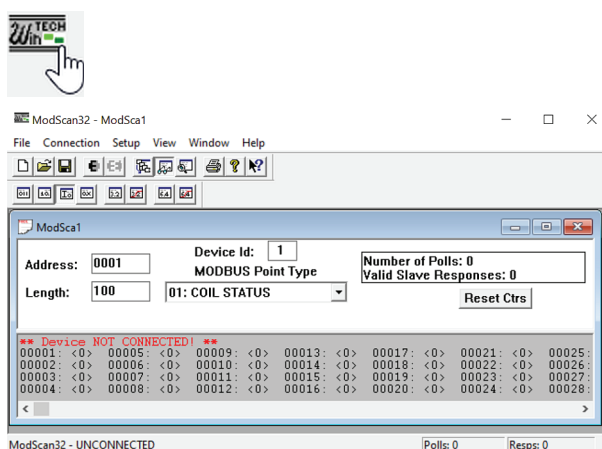
Procedure



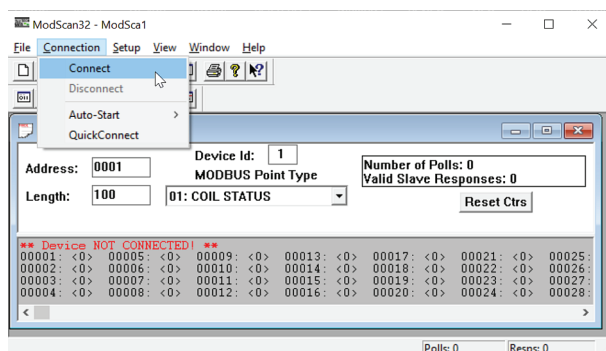
INFORMATION

Procedure is described for language set in English. Screen shots are shown in english.

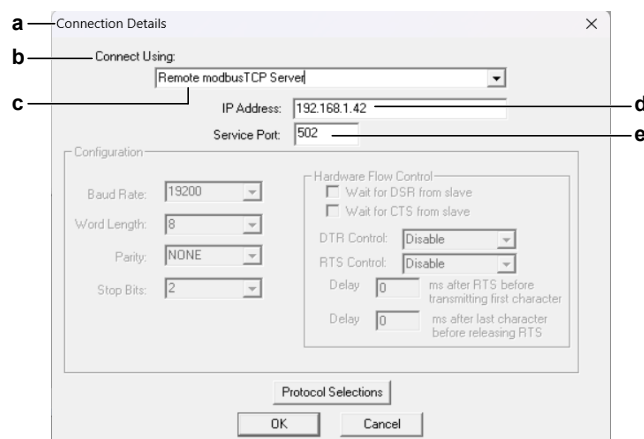
- 1 Launch the Modbus software (Modscan in this example) on your PC.



- 2 Click the "Connection" tab and click "Connect".



3 In the Connection Details (a) menu of Modscan:

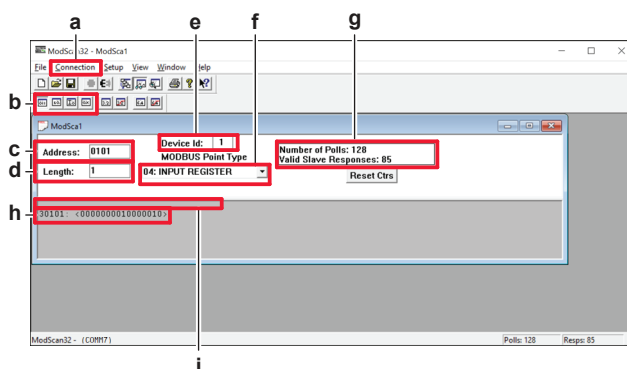


4 Select Connect Using (b) > Remote modbus TCP Server (c).

5 Set IP Address (d) to 192.168.1.42.

6 Set Service Port (e) to 502.

7 See the interface below:



- a "Connection" tab
- b Display icons
- c Address
- d Length
- e Device ID
- f Modbus Point Type
- g Polls and Responses
- h Response
- i Communication errors

a) "Connection" tab

With this tab, you can disconnect and connect again.

b) Display icons

With these icons, you can change the display of output for the register.



- i Binary
- ii Decimal
- iii Integer
- iv Hex

Different registers may need a different output type, easier to read. Refer to the design guide to check what you should read as an output for a register. Below are some examples for better understanding:

Register	Display
Alarm values	Binary
Temperatures, etc.	Decimal or integer

c) Address

This is the register you ask to the device. This address is in combination with Modbus Point Type selected at (f).

- Register structure: Please consult BMS Modbus manual.

d) Length

Modscan tool can retrieve multiple consecutive registers at once. The default value of length upon launch of software is 100. The more length is, the longer you need to wait for answers from the device. For troubleshooting and commissioning purposes we suggest to set length to 1 to keep it simple.

e) Device ID

This is the Modbus slave address the register (set by setting 22.00 on the HMI) is to be asked to.

f) Modbus Point Type

In the drop down menu, the available items are:

- 01: Coil status
- 02: Input status
- 03: Holding register
- 04: Input register

Select Holding Register

g) Polls and Responses

This indication is quite good to monitor communication. Upon launch, number of polls will start counting where you will have NO slave responses. As long as you ask for a correct address of correct Modbus point type to correct Device ID and all parameters are correctly set, you will receive response from PCB and Valid Slave Responses will also start to count.

h) Response

This is the response for the register you ask. In this example it is a Binary result.

i) Communication errors

This section is where you receive Errors in communication. Most common errors are:

Modbus Time Out:

- Your settings might be incorrect,
- Your ethernet might NOT be inserted or might NOT be working properly,
- Your RS-485 connection to the PCB might NOT be connected or might have wrong polarity,
- ...

Fix this before proceeding.

Invalid Slave Response:

This means the register you ask to the certain device does NOT have a meaning on that device. Under this response, Valid Responses at (g) will stop counting. Change the address, Modbus Point type and Device ID, consult the register lists and as long as you ask for correct register to correct device, this error will automatically resolve and you will have Valid Slave Responses at (g) counting again.

8.8 To check BACnet MSTP

Requisites

- Active License, see ["8.4 License activation"](#) [▶ 386],
- LAN to LAN cable (RJ45-RJ45),
- Personal Computer with LAN port,
- BMS BACnet manual,
- BACnet Explorer software (in this case Yabe),

Procedure

- 1** Set the BasProtocol setting [22.15] to BACnet.
 - 0 = None
 - 1 = Modbus
 - 2 = BACnet
- 2** Activate the BACnet communication. Set the BacNET-IP setting [22.14] to Passive.
 - Off = Passive
 - On = Active
- 3** Set the Sour setting [4.00] to Network.
 - Off = Local
 - On = Network
- 4** For this example we have a system with settings shown below. These settings will of course be different in your setup. Adjust accordingly. Confirm all of these settings on relevant units and PCB's before continuing.

Note: : On Service monitoring tool, go to: View / Set Unit -> Protocols.

Address:	22.00
Baud rate:	22.01 = [Bps/100]
Parity:	22.02 = [0 = Even]
	22.02 = [1 = Odd]
	22.02 = [2 = None]
Stop bit:	22.03= [Off = 1 Stop bit]
	22.03= [On = 2 Stop bits]

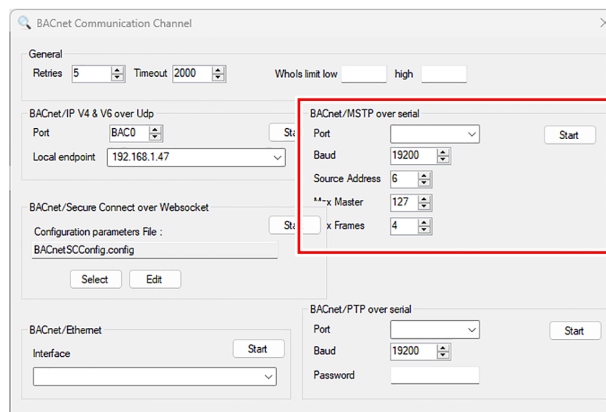
- 5 Get Yabe software and install it on your Personal Computer. Follow the manufacturer's instructions.



INFORMATION

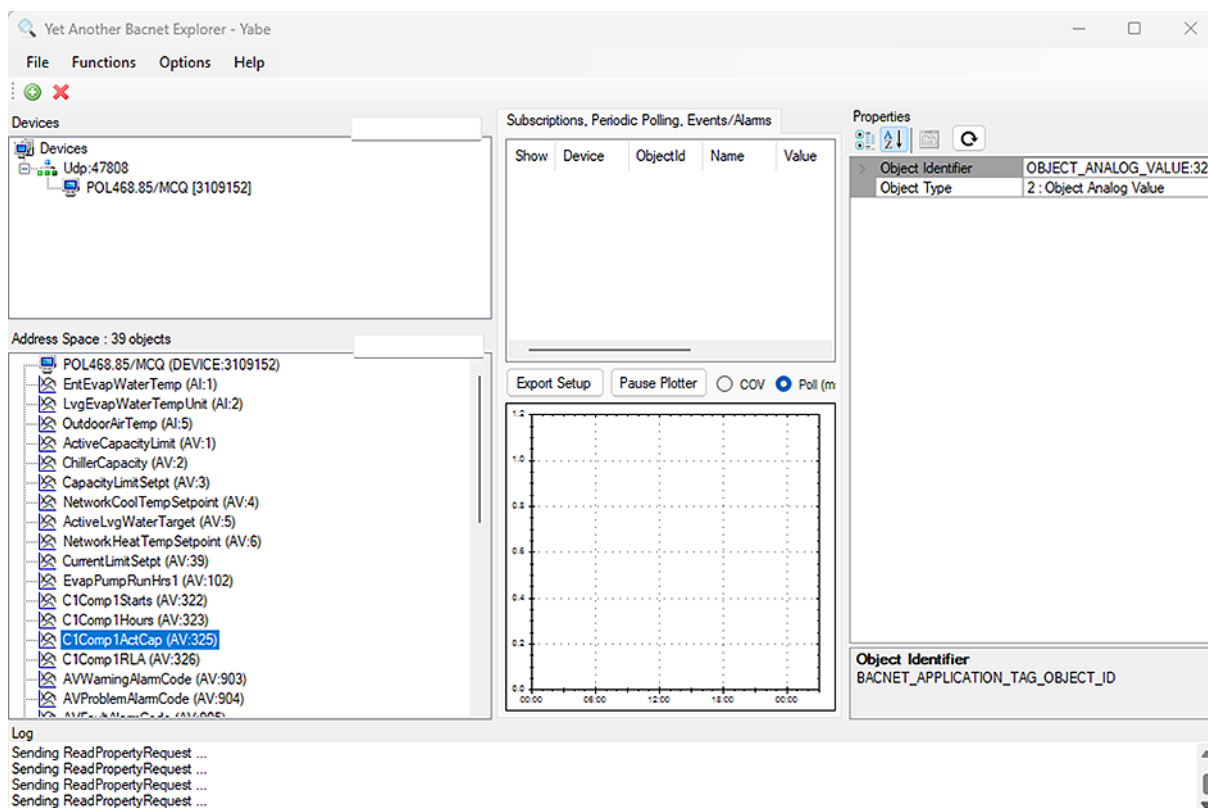
Yabe is given as just an example for testing. Similar other software CAN be used.

On Yabe, select the BACnet IP connection and set the PCB Modbus settings at the local endpoint.



- 6 Click Start.

Result: Communication is established and BACnet Explorer opens.



8.9 To check BACnet IP

Requisites

- Active License, see "8.4 License activation" [▶ 386],
- LAN to LAN cable (RJ45-RJ45),

- Personal Computer with LAN port,
- BACnet Explorer software (in this case Yabe),



INFORMATION

BMS connection MUST be made at the indoor units.

Procedure



INFORMATION

Procedure is described for language set in English. Screen shots are shown in english.

- 1 Connect the LAN cable to the T-ETHERNET port of the main PCB.
- 2 Connect the other end of the LAN cable to the LAN port of the Personal Computer.
- 3 Configure the main PCB. Set DHCP = OFF and manually write the IP settings:
 - Via service monitoring tool: go to View / Set Unit -> Controller IP setup.
- 4 Set IP address of the unit:
 - Via service monitoring tool: go to View / Set Unit -> Controller IP setup.
 - Via HMI: settings [22.07] and [22.08].
- 5 Apply the changes on the unit.
- 6 Get Yabe software and install it on your Personal Computer. Follow the manufacturer's instructions.



INFORMATION

Yabe is given as just an example for testing. Similar other software CAN be used.

- 7 Configure the Personal Computer. Set a static IP address on your computer: computer settings -> Network & Internet -> Ethernet -> IP assignment -> Edit.

Network & internet > Ethernet

Ethernet
Not connected

Authentication settings Edit

Metered connection
Some apps might work differently to reduce data usage when you're connected to this network
Off ☐

Set a data limit to help control data usage on this network

IP assignment: Automatic (DHCP) Edit

DNS server assignment: Automatic (DHCP) Edit

Primary DNS suffix: home Copy

Manufacturer: Killer

Description: Killer E2600 Gigabit Ethernet Controller

Driver version: 10.50.511.2021

Physical address (MAC): 1C-69-7A-9F-9A-A5

- 8 Select Manual.

Edit IP settings

Manual

IPv4

☐ Off

IPv6

☐ Off

Save Cancel

- 9 Set an IP address similar but NOT identical to the IP address at the PCB, but match the controllers Subnet mask. An example is shown below:

Edit IP settings

Manual

IPv4

☒ On

IP address

192.168.1.47

Subnet mask

255.255.255.0

Gateway

192.168.1.1

Preferred DNS

194.25.2.129

DNS over HTTPS

Off

Alternative DNS

Save Cancel

- 10 Click Save.
- 11 Double check if the communication between the PCB and the Personal Computer has been established with the command prompt and pinging the controllers IP address:
- Open the cmd.exe at windows (press windows button and R, then type cmd.exe and execute)
 - Type "ping *.*.*.*" and enter. In this case "ping 192.168.1.42"
- 12 If communication is successful, it will show something like this:

```
C:\Users\saras>ping 192.168.1.42

Pinging 192.168.1.42 with 32 bytes of data:
Reply from 192.168.1.42: bytes=32 time=2ms TTL=128
Reply from 192.168.1.42: bytes=32 time=2ms TTL=128
Reply from 192.168.1.42: bytes=32 time=2ms TTL=128
Reply from 192.168.1.42: bytes=32 time=1ms TTL=128

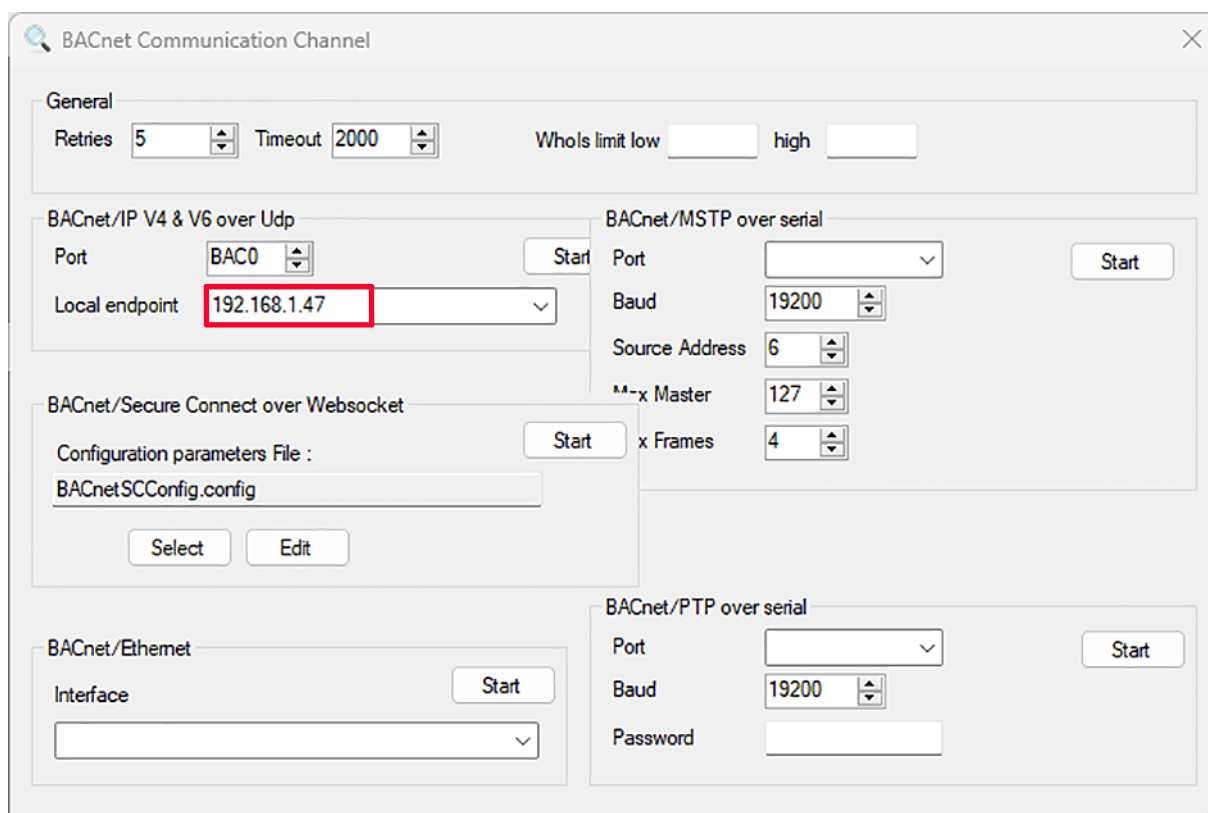
Ping statistics for 192.168.1.42:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms
```

13 If communication fails, it will show something like this:

```
C:\Users\saras>ping 192.168.1.22

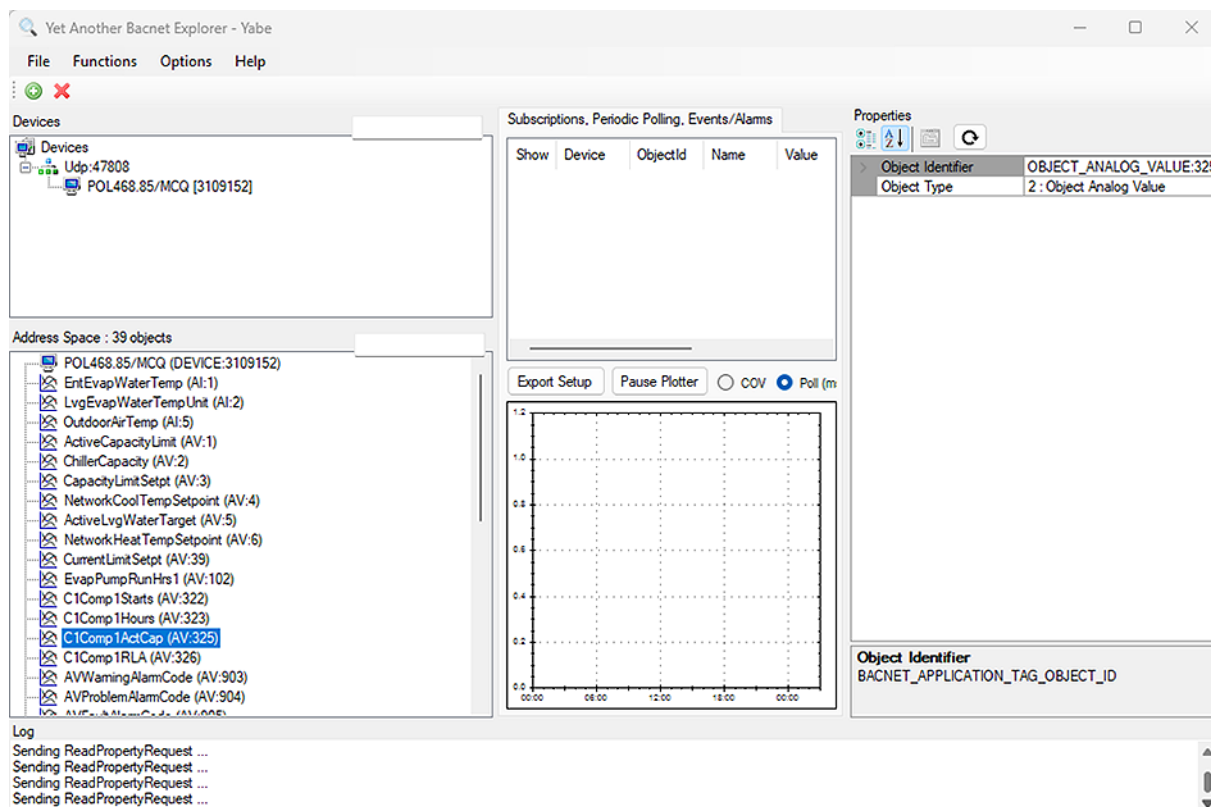
Pinging 192.168.1.22 with 32 bytes of data:
Reply from 192.168.1.47: Destination host unreachable.
Reply from 192.168.1.47: Destination host unreachable.
Reply from 192.168.1.47: Destination host unreachable.
Reply from 192.168.1.47: Destination host unreachable.

Ping statistics for 192.168.1.22:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```



14 Click Start.

Result: Communication is established and BACnet Explorer opens.



8.10 To check the Modbus RTU registers with Modscan

Requisites

- Address of outdoor unit in the system.
- Baud rate, parity and stop bit settings.
- Personal Computer
- Modbus software for PC (Modscan in this example)
- USB to Modbus converter hardware



INFORMATION

BMS connection MUST be made at the indoor units.

Procedure



INFORMATION

Procedure is described for language set in English. Screen shots are shown in english.



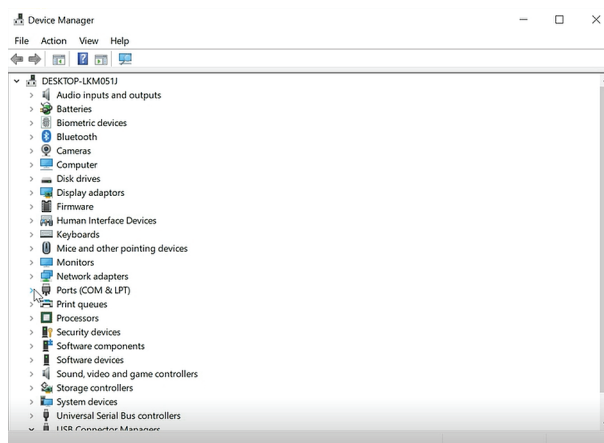
INFORMATION

Modscan is given as just an example for testing. Similar other software CAN be used.

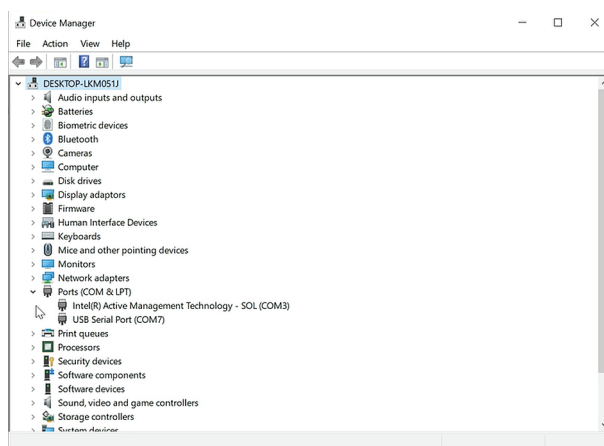
- 1 Buy Modscan software and install it to your PC. Follow the manufacturer's instructions.
- 2 You need a RS-485 to USB converter. Several different RS-485 to USB converters are available in the market. Some converters need USB driver for installation. Follow the manufacturer's instructions if necessary to install driver. Below are two examples of an RS-485 to USB converter:



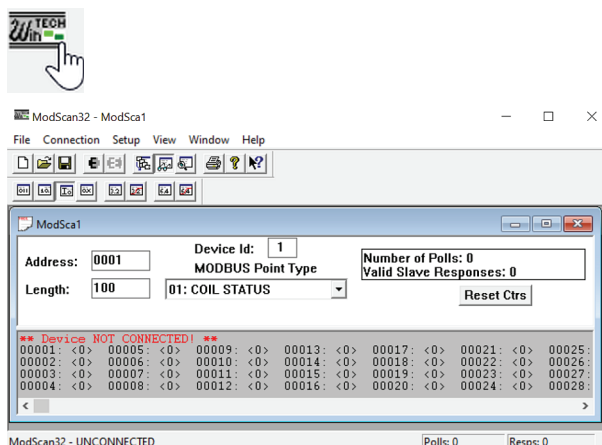
- 3 If there are more than 2 wires or wire connections on RS-485 side of your converter, consult manufacturer's instructions to figure out the connections or wires for (+) and (-).
- 4 Remove any other RS-485 cable from (A+) and (B-) on T1 terminal of main PCB. Connect (+) and (-) of your converter cable to (A+) and (B-) on T1 terminal of main PCB. Pay attention to polarity.
- 5 Connect USB side of the converter to your PC.
- 6 Go to "Device Manager".
 - For Windows 10: Press  + X and then select "Device Manager".
 - For any other Windows version, please search "How to access Device Manager on [your own Windows version here]" on your search engine to find instructions.
- 7 Click "Ports (COM & LPT)".



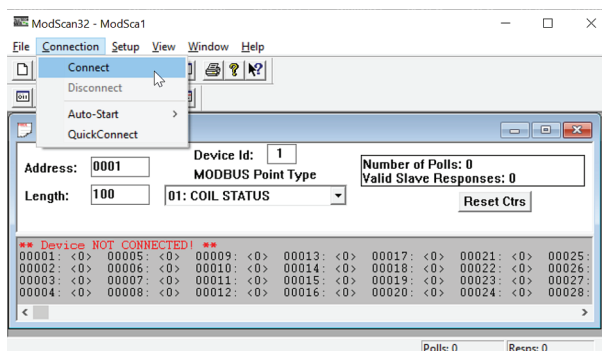
- 8 Locate your USB connection's COM port. Normally, it is listed as "USB Serial Port". In the example below, the COM port for this connection is COM7. If you are unsure which one, simply unplug your USB then it will disappear from the list. When you plug your USB again, it will pop up in the list.



- 9 Launch the Modbus software (Modscan in this example) on your PC.



10 Click the "Connection" tab and click "Connect".



11 For this example we have a system with settings shown below. These settings will of course be different in your setup. Adjust accordingly. Confirm all of these settings on relevant units and PCB's before continuing.

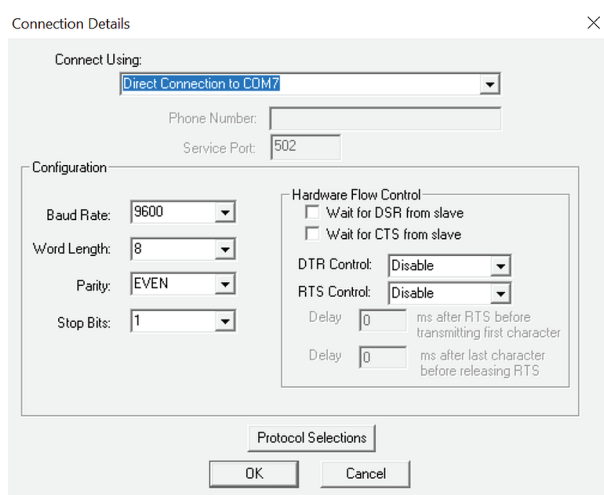
Note: : On Service monitoring tool, go to: View / Set Unit -> Protocols.

Address:	22.00
Baud rate:	22.01 = [Bps/100]
Parity:	22.02 = [0 = Even]
	22.02 = [1 = Odd]
	22.02 = [2 = None]
Stop bit:	22.03= [Off = 1 Stop bit]
	22.03= [On = 2 Stop bits]

12 Enable Modbus RTU:

- Set the BasProtocol setting [22.15] to Modbus:
 - 0 = None
 - 1 = Modbus
 - 2 = BACnet
- Set the Source setting [4.00] to Network:
 - Off = Local
 - On = Network

13 In the connection menu of Modscan:



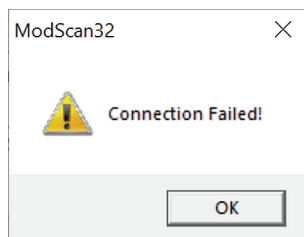
Baud Rate Baud Rate

Parity Parity

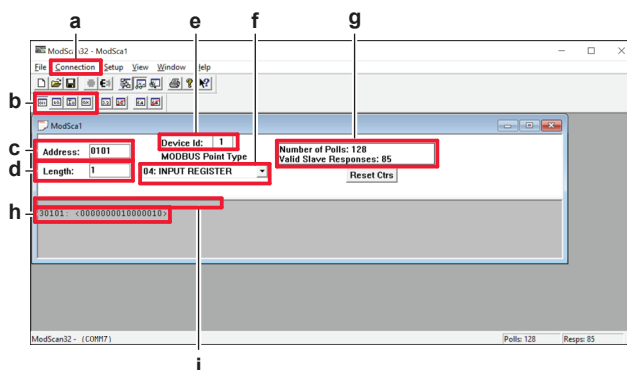
Stop Bits Stop Bits

- Click and select the COM port for your USB connection,
- Click and select the Baud Rate,
- Click and select Parity,
- Click and select Stop Bits,
- Click "OK".

- 14** If you receive below message then COM port is NOT properly selected or driver for your RS-485 to USB converter is NOT working properly. Fix this issue before you proceed.



- 15** See the interface below:



- a "Connection" tab
- b Display icons
- c Address
- d Length
- e Device ID
- f Modbus Point Type
- g Polls and Responses
- h Response
- i Communication errors

a) "Connection" tab

With this tab, you can disconnect and connect again.

b) Display icons

With these icons, you can change the display of output for the register.



- i** Binary
- ii** Decimal
- iii** Integer
- iv** Hex

Different registers may need a different output type, easier to read. Refer to the design guide to check what you should read as an output for a register. Below are some examples for better understanding:

Register	Display
Alarm values	Binary
Temperatures, etc.	Decimal or integer

c) Address

This is the register you ask to the device. This address is in combination with Modbus Point Type selected at (f).

- Register structure: Please consult BMS Modbus manual.

d) Length

Modscan tool can retrieve multiple consecutive registers at once. The default value of length upon launch of software is 100. The more length is, the longer you need to wait for answers from the device. For troubleshooting and commissioning purposes we suggest to set length to 1 to keep it simple.

e) Device ID

This is the Modbus slave address the register (set by setting 22.00 on the HMI) is to be asked to.

f) Modbus Point Type

In the drop down menu, the available items are:

- 01: Coil status
- 02: Input status
- 03: Holding register
- 04: Input register

Select Holding Register

g) Polls and Responses

This indication is quite good to monitor communication. Upon launch, number of polls will start counting where you will have NO slave responses. As long as you ask for a correct address of correct Modbus point type to correct Device ID and all parameters are correctly set, you will receive response from PCB and Valid Slave Responses will also start to count.

h) Response

This is the response for the register you ask. In this example it is a Binary result.

i) Communication errors

This section is where you receive Errors in communication. Most common errors are:

Modbus Time Out:

- Your settings might be incorrect,
- Your COM port might be incorrect,
- Your USB to RS-485 converter might NOT be inserted or might NOT be working properly,
- Your RS-485 connection to the PCB at A(+)/B(-) on the terminal might NOT be connected or might have wrong polarity,
- ...

Fix this before proceeding.

Invalid Slave Response:

This means the register you ask to the certain device does NOT have a meaning on that device. Under this response, Valid Responses at (g) will stop counting. Change the address, Modbus Point type and Device ID, consult the register lists and as long as you ask for correct register to correct device, this error will automatically resolve and you will have Valid Slave Responses at (g) counting again.

8.11 To connect a Web HMI

Requisites

- Active License, see "[8.4 License activation](#)" [▶ 386],
- LAN to LAN cable (RJ45-RJ45),
- Personal Computer with LAN port,
- Main PCB IP setup.



INFORMATION

BMS connection MUST be made at the indoor units.

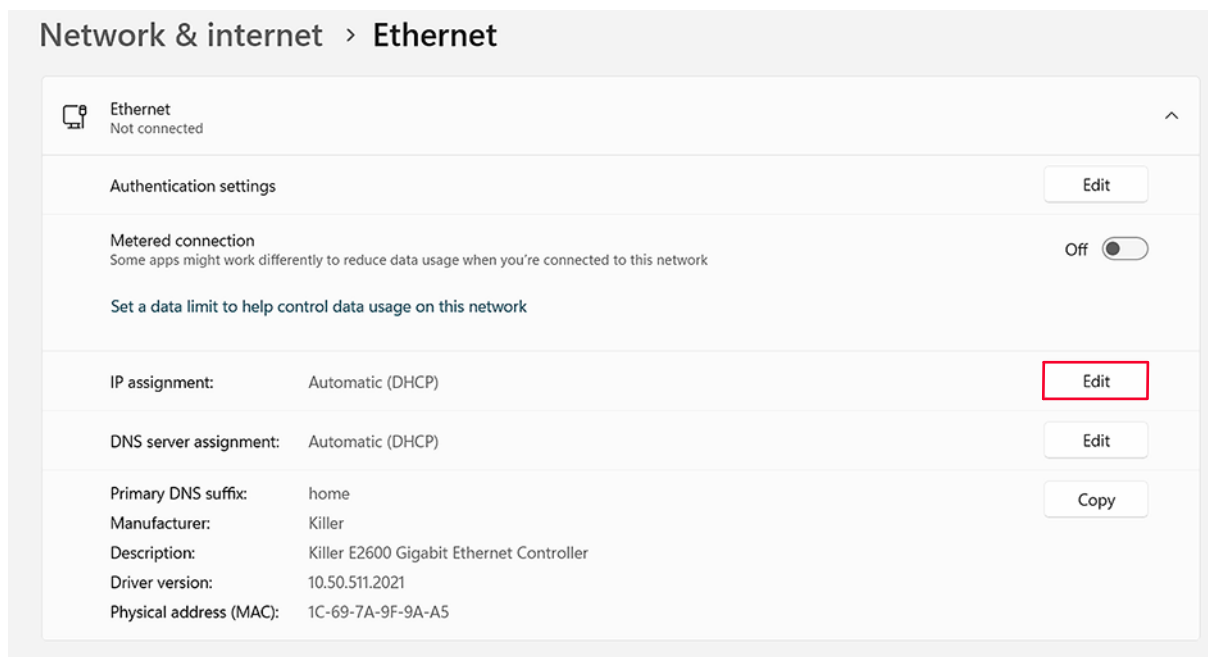
Procedure



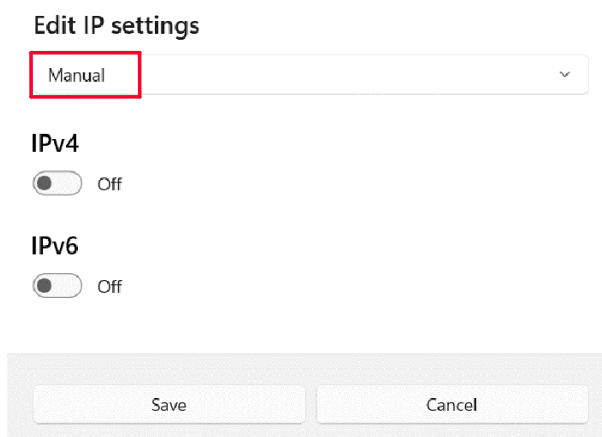
INFORMATION

Procedure is described for language set in English. Screen shots are shown in english.

- 1 Connect the LAN cable to the T-ETHERNET port of the main PCB.
- 2 Connect the other end of the LAN cable to the LAN port of the Personal Computer.
- 3 Configure the main PCB. Set DHCP = OFF and manually write the IP settings:
 - Via service monitoring tool: go to View / Set Unit -> Controller IP setup.
- 4 Configure the Personal Computer. Set a static IP address on your computer: computer settings -> Network & Internet -> Ethernet -> IP assignment -> Edit.



5 Select Manual.



6 Set an IP address similar but NOT identical to the IP address at the PCB, but match the controllers Subnet mask. An example is shown below:

Edit IP settings

Manual

IPv4

☒ On

IP address

192.168.1.47

Subnet mask

255.255.255.0

Gateway

192.168.1.1

Preferred DNS

194.25.2.129

DNS over HTTPS

Off

Alternative DNS

Save Cancel

- 7 Click Save.
- 8 Double check if the communication between the PCB and the Personal Computer has been established with the command prompt and pinging the controllers IP address:
 - Open the cmd.exe at windows (press windows button and R, then type cmd.exe and execute)
 - Type "ping *.*.*.*" and enter. In this case "ping 192.168.1.42"
- 9 If communication is successful, it will show something like this:

```
C:\Users\saras>ping 192.168.1.42

Pinging 192.168.1.42 with 32 bytes of data:
Reply from 192.168.1.42: bytes=32 time=2ms TTL=128
Reply from 192.168.1.42: bytes=32 time=2ms TTL=128
Reply from 192.168.1.42: bytes=32 time=2ms TTL=128
Reply from 192.168.1.42: bytes=32 time=1ms TTL=128

Ping statistics for 192.168.1.42:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms
```

- 10 If communication fails, it will show something like this:

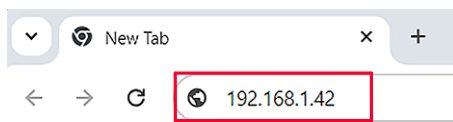
```
C:\Users\saras>ping 192.168.1.22

Pinging 192.168.1.22 with 32 bytes of data:
Reply from 192.168.1.47: Destination host unreachable.
Reply from 192.168.1.47: Destination host unreachable.
Reply from 192.168.1.47: Destination host unreachable.
Reply from 192.168.1.47: Destination host unreachable.

Ping statistics for 192.168.1.22:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
```

11 Once the communication is established, open the web browser.

12 At the URL, type in the IP address of the main PCB.



13 The sign in window opens.

14 Enter the correct Username and Password.

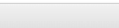
- Username = Daikin
- Password = Daikin@Web

 A screenshot of a 'Sign in' dialog box. At the top, it says 'Sign in' followed by the URL 'http://192.168.1.42' and a warning: 'Your connection to this site is not private'. Below this are two input fields labeled 'Username' and 'Password'. At the bottom right are two buttons: 'Sign in' (blue) and 'Cancel' (white with blue border).

15 Click Sign in.

16 Password is asked, enter the correct Service password.

Result: Web HMI opens with the same menus as the service monitoring tool.



Operating

Info

Metric

English

Log off

Main Menu ▶

Enter Password

▶ View/Set Unit

▶ View/Set Circuit

Unit Status

Off:Unit Not Config

▶ Setpoint

7.0°C

▶ Evaporator LWT

-273.15°C

▶ Unit Capacity

0.0%

▶ Unit Enable

No

▶ Unit Mode

Cool

▶ Timers

▶ Alarms

▶ Commission Unit

▶ Save/Restore

▶ About Chiller

Application Save

Off

Alarm Clear

Passive

Daikin Applied Europe

Mission

News

About

9 Technical data

9.1 Detailed information setting mode

9.1.1 Detailed information setting mode: Outdoor unit

See the installation, operation and maintenance manual on business portal for more information.

9.1.2 Detailed information setting mode: Remote controller

See the installation, operation and maintenance manual on business portal for more information.

9.2 Wiring diagram

See the internal wiring diagram supplied with the unit. The wiring diagram is ALSO available on the Daikin Business Portal (authentication required).

9.3 Piping diagram

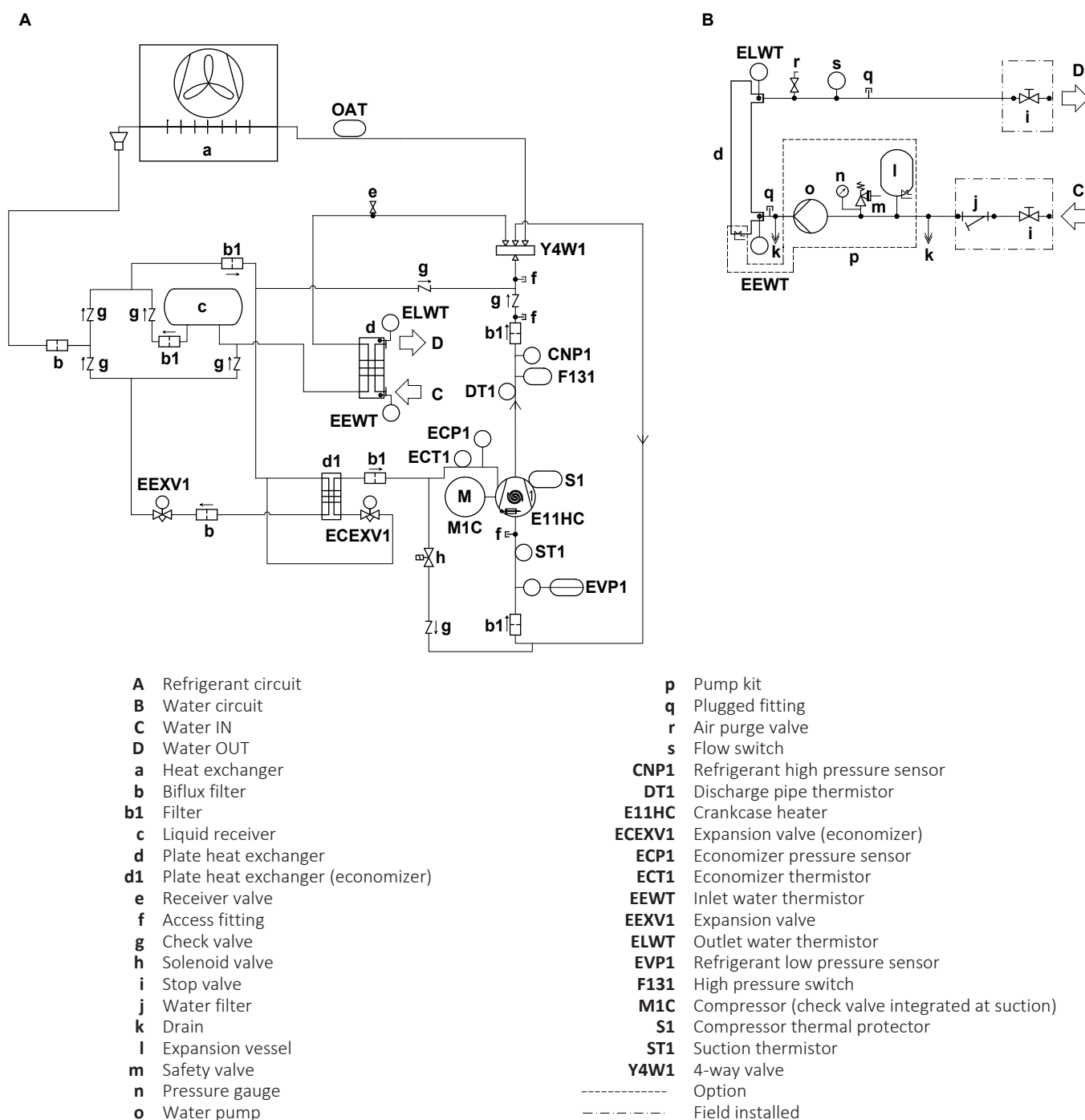
9.3.1 Piping diagram: Outdoor unit

EWYE019~035CZ(N/P)-A1



INFORMATION

The diagrams shown in this manual may be incorrect due to changes/updates to the unit. Correct diagrams are supplied with the unit and can also be found in the technical data book.

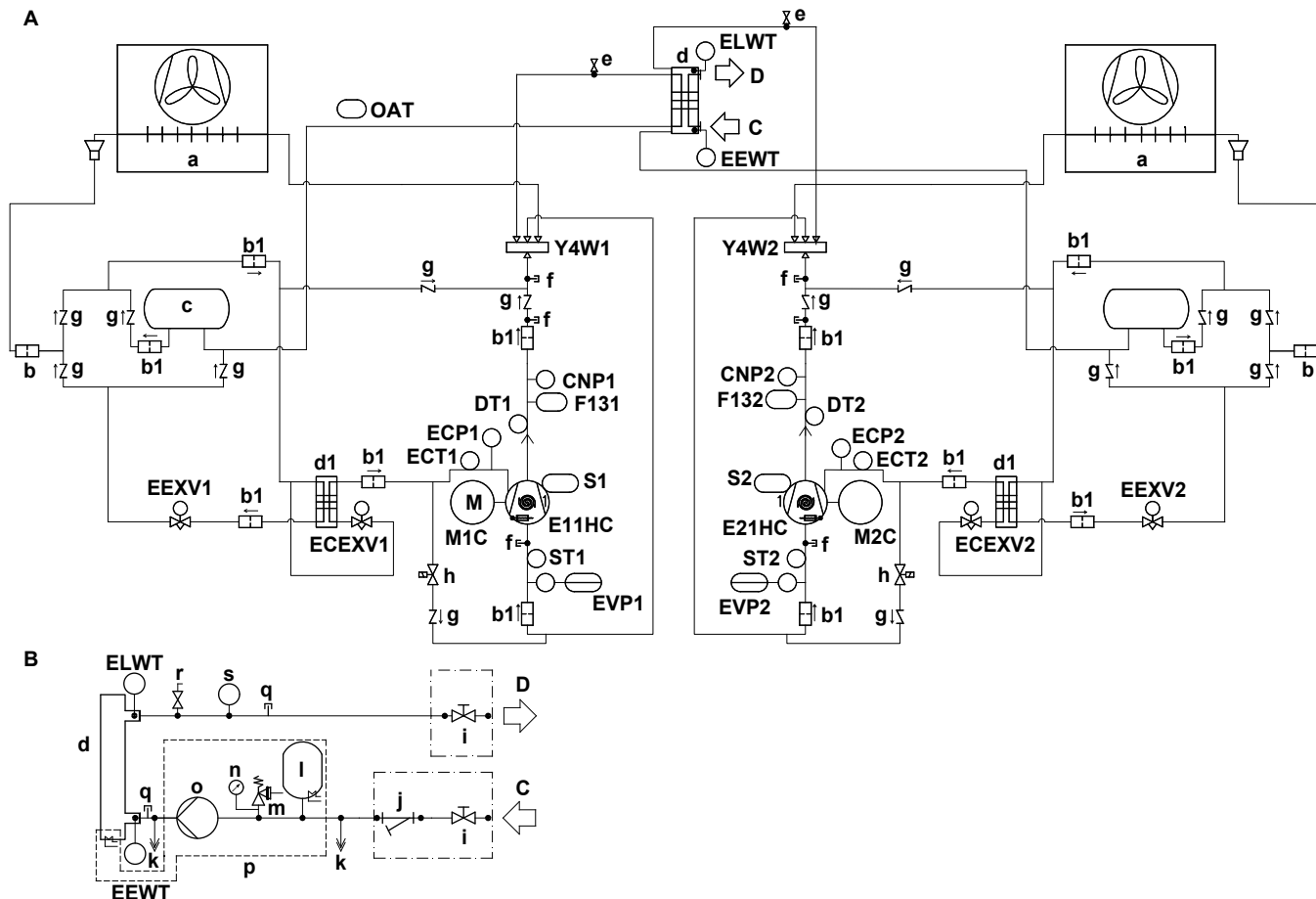


EWYE050~070CZ(N/P)-A2



INFORMATION

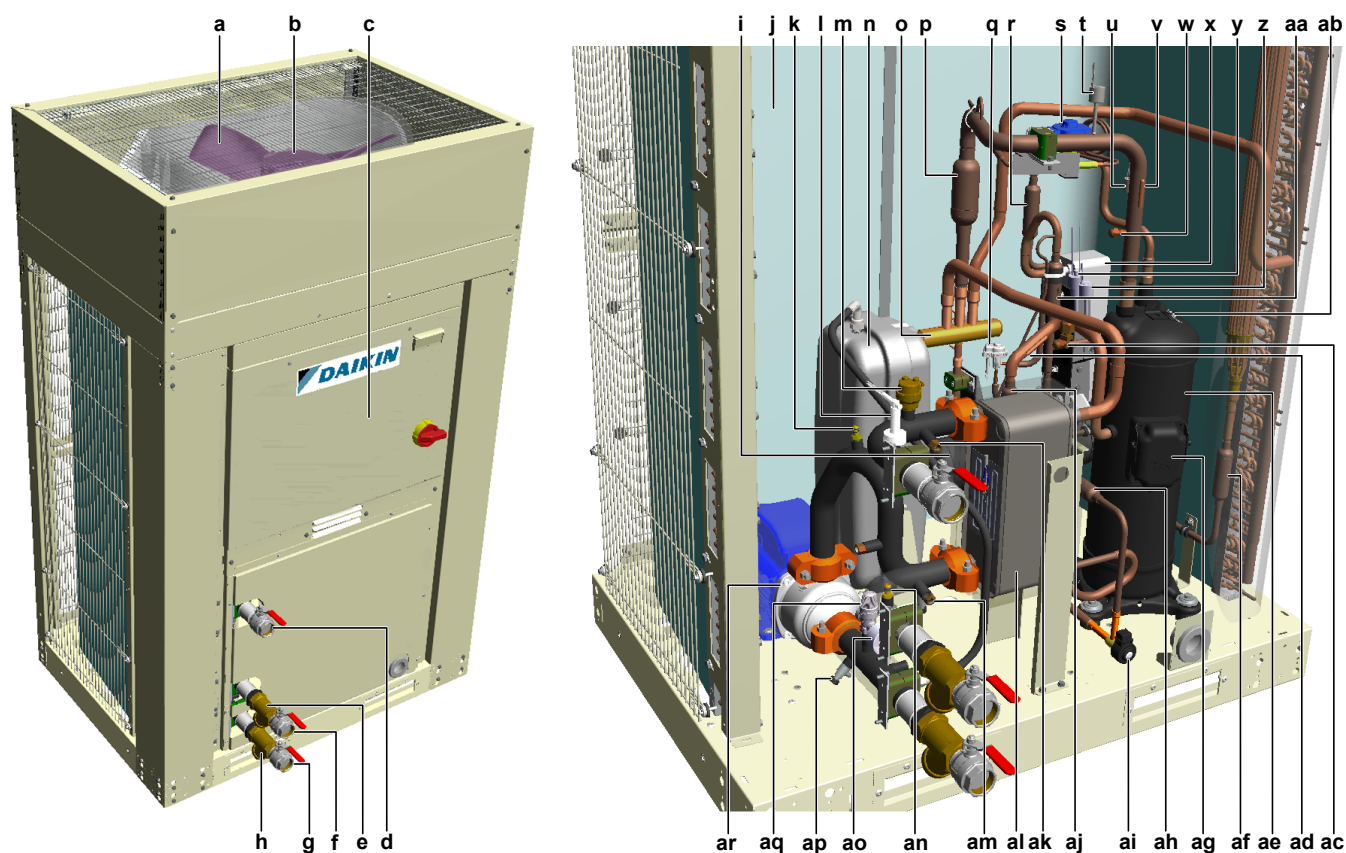
The diagrams shown in this manual may be incorrect due to changes/updates to the unit. Correct diagrams are supplied with the unit and can also be found in the technical data book.



- | | |
|--|---|
| A Refrigerant circuit | DT1 Discharge pipe thermistor |
| B Water circuit | DT2 Discharge pipe thermistor |
| C Water IN | E11HC Crankcase heater |
| D Water OUT | E21HC Crankcase heater |
| a Heat exchanger | ECEXV1 Expansion valve (economizer) |
| b Biflux filter | ECEXV2 Expansion valve (economizer) |
| b1 Filter | ECP1 Economizer pressure sensor |
| c Liquid receiver | ECP2 Economizer pressure sensor |
| d Plate heat exchanger | ECT1 Economizer thermistor |
| d1 Plate heat exchanger (economizer) | ECT2 Economizer thermistor |
| e Receiver valve | EEWT Inlet water thermistor |
| f Access fitting | EEXV1 Expansion valve |
| g Check valve | EEXV2 Expansion valve |
| h Solenoid valve | ELWT Outlet water thermistor |
| i Stop valve | EVP1 Refrigerant low pressure sensor |
| j Water filter | EVP2 Refrigerant low pressure sensor |
| k Drain | F131 High pressure switch |
| l Expansion vessel | F132 High pressure switch |
| m Safety valve | M1C Compressor (check valve integrated at suction) |
| n Pressure gauge | M2C Compressor (check valve integrated at suction) |
| o Water pump | S1 Compressor thermal protector |
| p Pump kit | S2 Compressor thermal protector |
| q Plugged fitting | ST1 Suction thermistor |
| r Air purge valve | ST2 Suction thermistor |
| s Flow switch | Y4W1 4-way valve |
| CNP1 Refrigerant high pressure sensor | Y4W2 4-way valve |
| CNP2 Refrigerant high pressure sensor | ----- Option |
| | ----- Field installed |

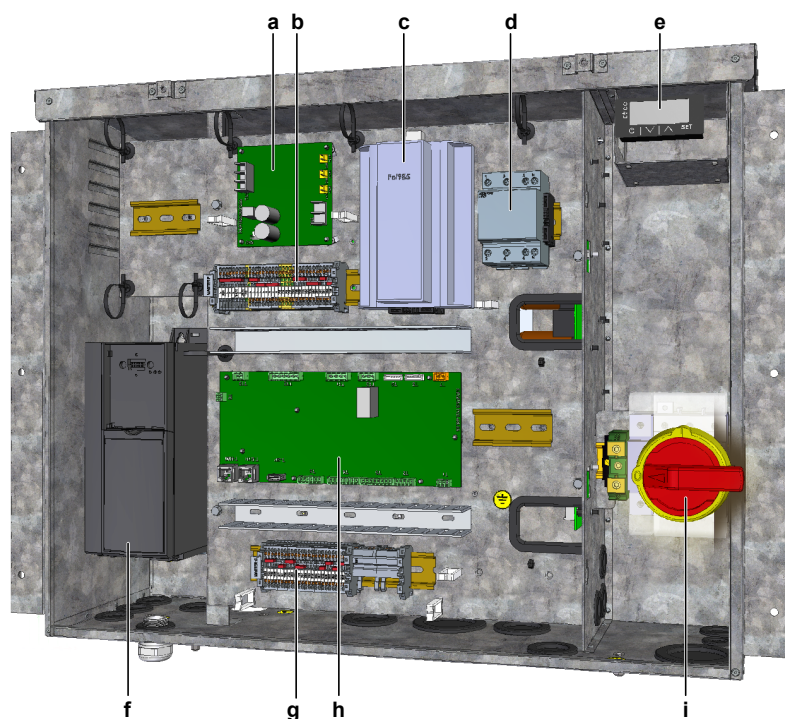
9.4 Component overview

9.4.1 Component overview: EWYE019~025CZ-A1

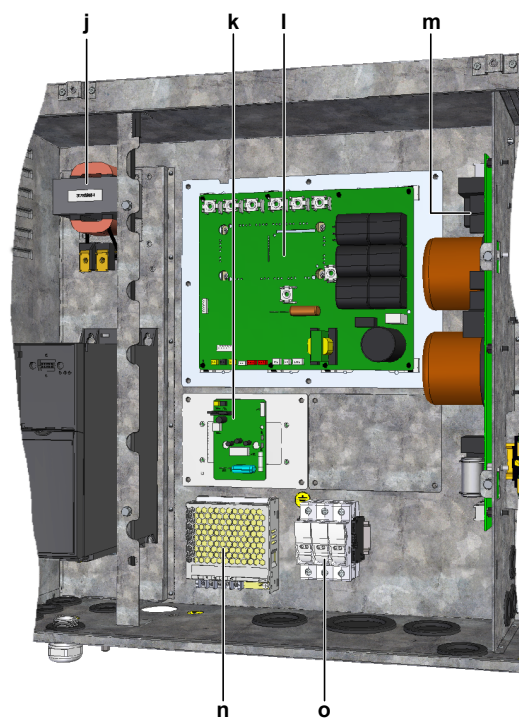


- a** Fan
- b** Fan motor M11F
- c** Switch box
- d** Water outlet
- e** Water filter (EWYE019~025CZN-A1) units
- f** Water inlet (EWYE019~025CZN-A1) units
- g** Water inlet (EWYE019~025CZP-A1) units
- h** Water filter (EWYE019~025CZP-A1) units
- i** Liquid receiver
- j** Heat exchanger
- k** Plugged fitting
- l** Flow switch
- m** Air purge valve
- n** Expansion vessel
- o** 4-way valve
- p** Filter
- q** Economizer expansion valve EXV1
- r** Biflux filter
- s** Solenoid valve YECV1
- t** Refrigerant low pressure sensor EVP1
- u** Economizer pressure sensor ECP1
- v** Suction thermistor ST1

- w** Access fitting
- x** Heat exchanger (economizer)
- y** High pressure switch F131
- z** Refrigerant high pressure sensor CNP1
- aa** Check valve
- ab** Compressor thermal protector S1
- ac** Receiver valve
- ad** Discharge pipe thermistor DT1
- ae** Compressor M1C
- af** Filter
- ag** Electrical connection box
- ah** Filter
- ai** Expansion valve EEXV1
- aj** Filter
- ak** Outlet water thermistor ELWT
- al** Plate type heat exchanger
- am** Inlet water thermistor EEWT
- an** Plugged fitting
- ao** Pressure gauge
- ap** Drain
- aq** Safety valve
- ar** Water pump

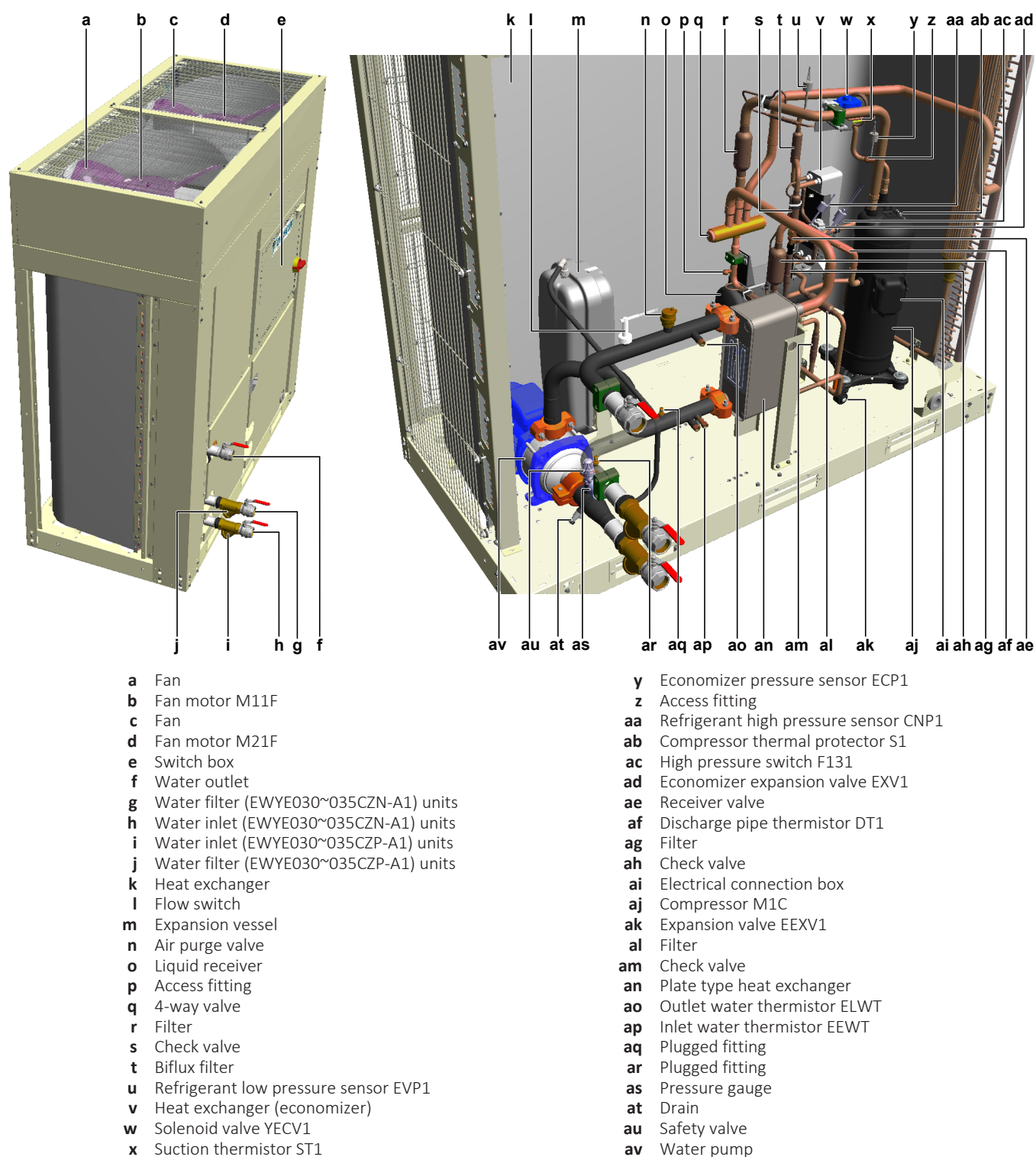


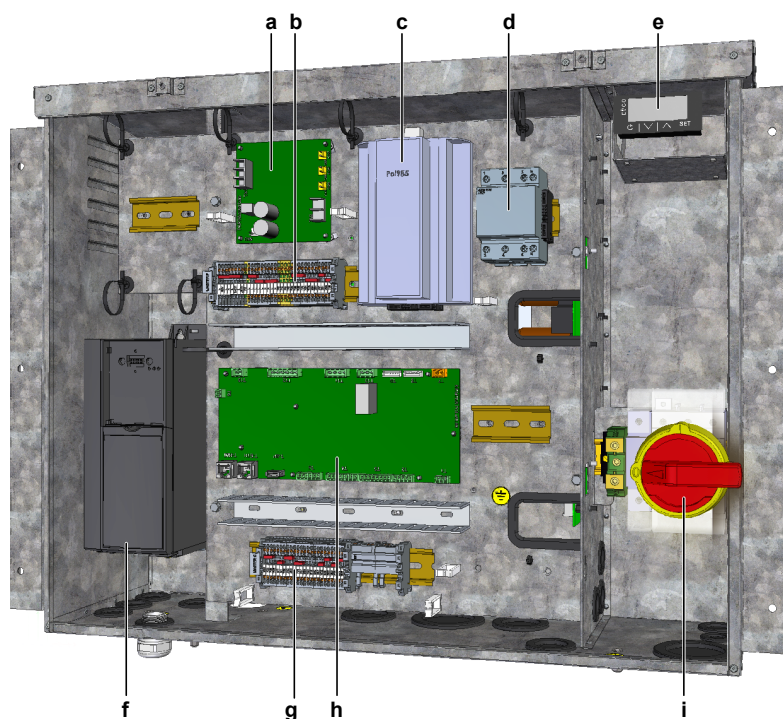
- a ACS digital I/O PCB A301P
- b Terminal block MP
- c Additional board (option PCB)
- d Water pump contactor KM90
- e Interface display
- f Pump inverter PVFD1
- g Terminal block MC
- h Main PCB UC



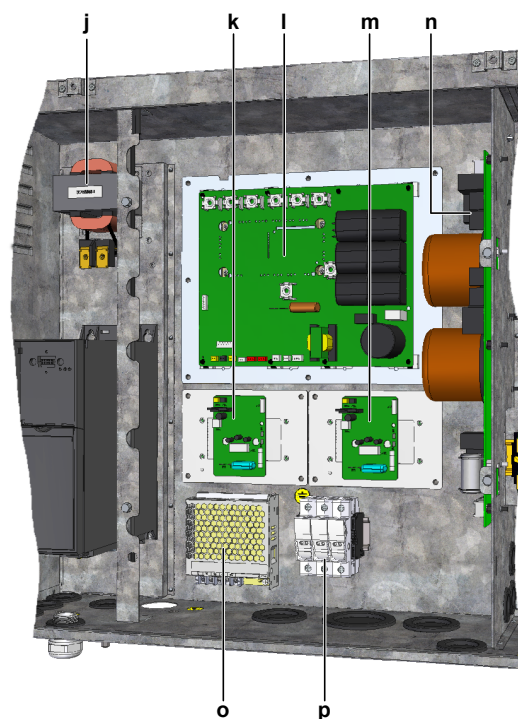
- i Main switch Q10
- j Reactor LR1
- k Fan inverter PCB A4P11
- l Inverter PCB A3P1
- m Noise filter PCB A2P1
- n 24 V DC auxiliary power supply U1
- o Circuit breaker

9.4.2 Component overview: EWYE030~035CZ-A1



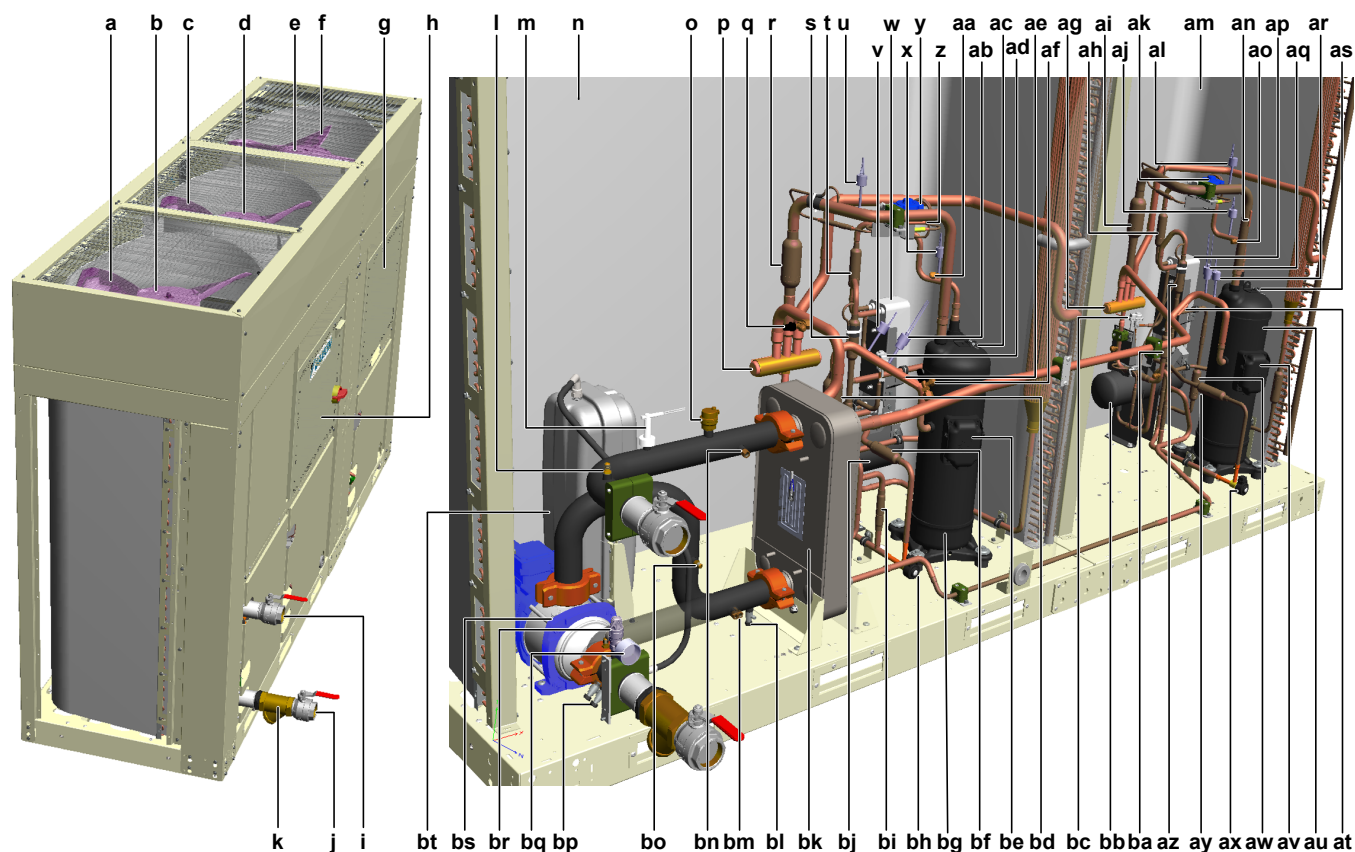


- a ACS digital I/O PCB A301P
- b Terminal block MP
- c Additional board (option PCB)
- d Water pump contactor KM90
- e Interface display
- f Pump inverter PVFD1
- g Terminal block MC
- h Main PCB UC

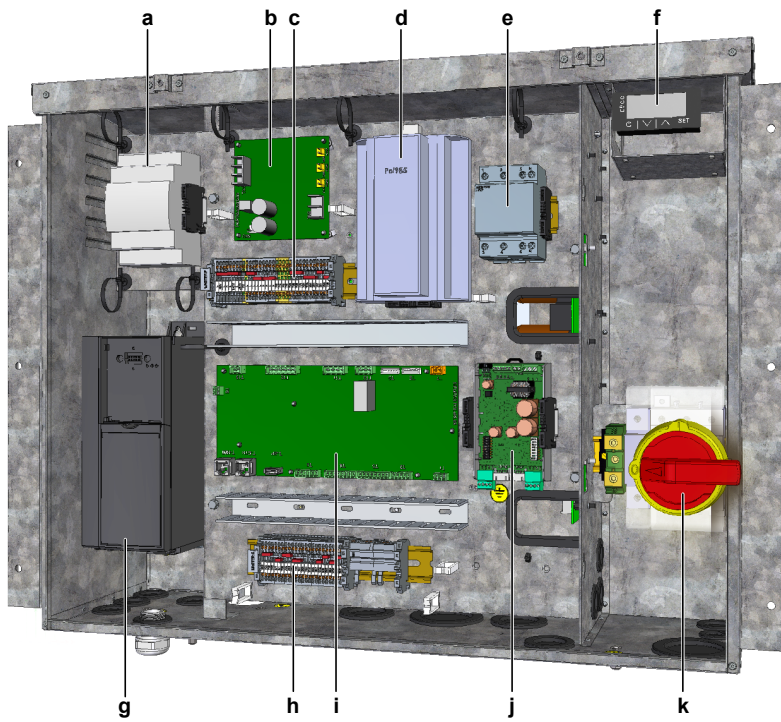


- i Main switch Q10
- j Reactor LR1
- k Fan inverter PCB A4P11
- l Inverter PCB A3P1
- m Fan inverter PCB A5P21
- n Noise filter PCB A2P1
- o 24 V DC auxiliary power supply U1
- p Circuit breaker

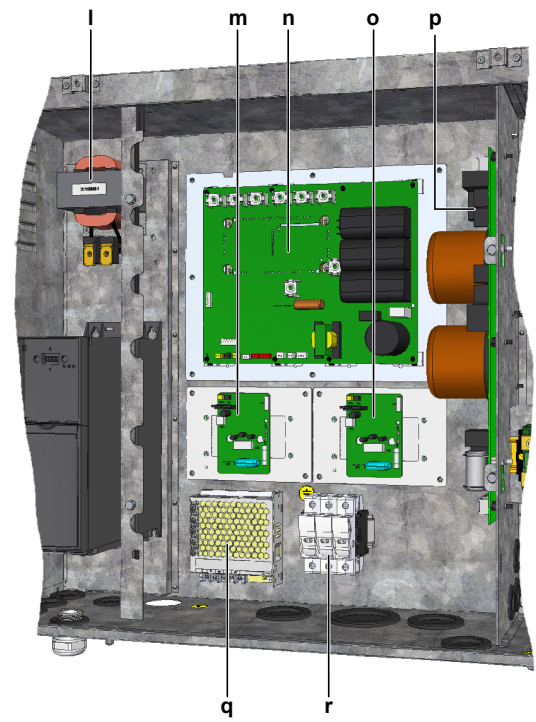
9.4.3 Component overview: EWYE050~060CZ-A2



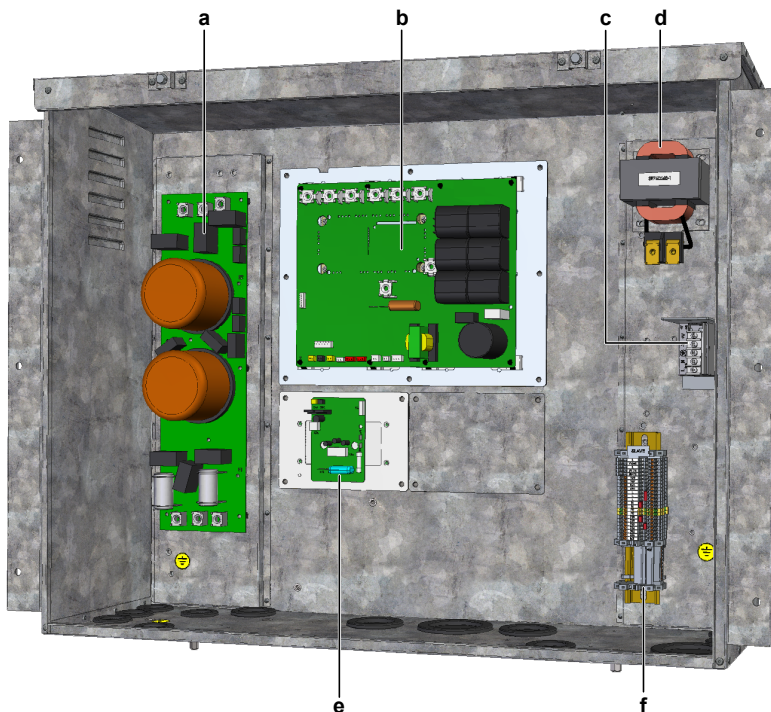
- | | |
|--|---|
| a Fan | ak Solenoid valve YECV2 |
| b Fan motor M11F | al Refrigerant low pressure sensor EVP2 |
| c Fan | am Heat exchanger |
| d Fan motor M21F | an Suction thermistor ST2 |
| e Fan | ao Access fitting |
| f Fan motor M12F | ap Heat exchanger (economizer) |
| g Switch box (secondary) | aq High pressure switch F132 |
| h Switch box (main) | ar Refrigerant high pressure sensor CNP2 |
| i Water outlet | as Compressor thermal protector S2 |
| j Water filter | at Discharge pipe thermistor DT2 |
| k Water inlet | au Compressor M2C |
| l Plugged fitting | av Electrical connection box |
| m Flow switch | aw Filter |
| n Heat exchanger | ax Expansion valve EEXV2 |
| o Air purge valve | ay Filter |
| p 4-way valve | az Check valve |
| q Receiver valve | ba Filter |
| r Filter | bb Liquid receiver |
| s Check valve | bc Economizer expansion valve EXV2 |
| t Filter | bd Filter |
| u Refrigerant low pressure sensor EVP1 | be Electrical connection box |
| v Refrigerant high pressure sensor CNP1 | bf Filter |
| w Heat exchanger (economizer) | bg Compressor M1C |
| x Economizer pressure sensor ECP1 | bh Expansion valve EEXV1 |
| y Solenoid valve YECV1 | bi Check valve |
| z Suction thermistor ST1 | bj Liquid receiver |
| aa Access fitting | bk Plate type heat exchanger |
| ab High pressure switch F131 | bl Drain |
| ac Compressor thermal protector S1 | bm Inlet water thermistor EEWT |
| ad Economizer expansion valve EXV1 | bn Outlet water thermistor ELWT |
| ae Discharge pipe thermistor DT1 | bo Plugged fitting |
| af Receiver valve | bp Drain |
| ag 4-way valve | bq Pressure gauge |
| ah Filter | br Safety valve |
| ai Filter | bs Water pump |
| aj Economizer pressure sensor ECP2 | bt Expansion vessel |



- a Economizer extension module CC1-2
- b ACS digital I/O PCB A301P
- c Terminal block MP
- d Additional board (option PCB)
- e Water pump contactor KM90
- f Interface display
- g Pump inverter PVFD1
- h Terminal block MC
- i Main PCB UC



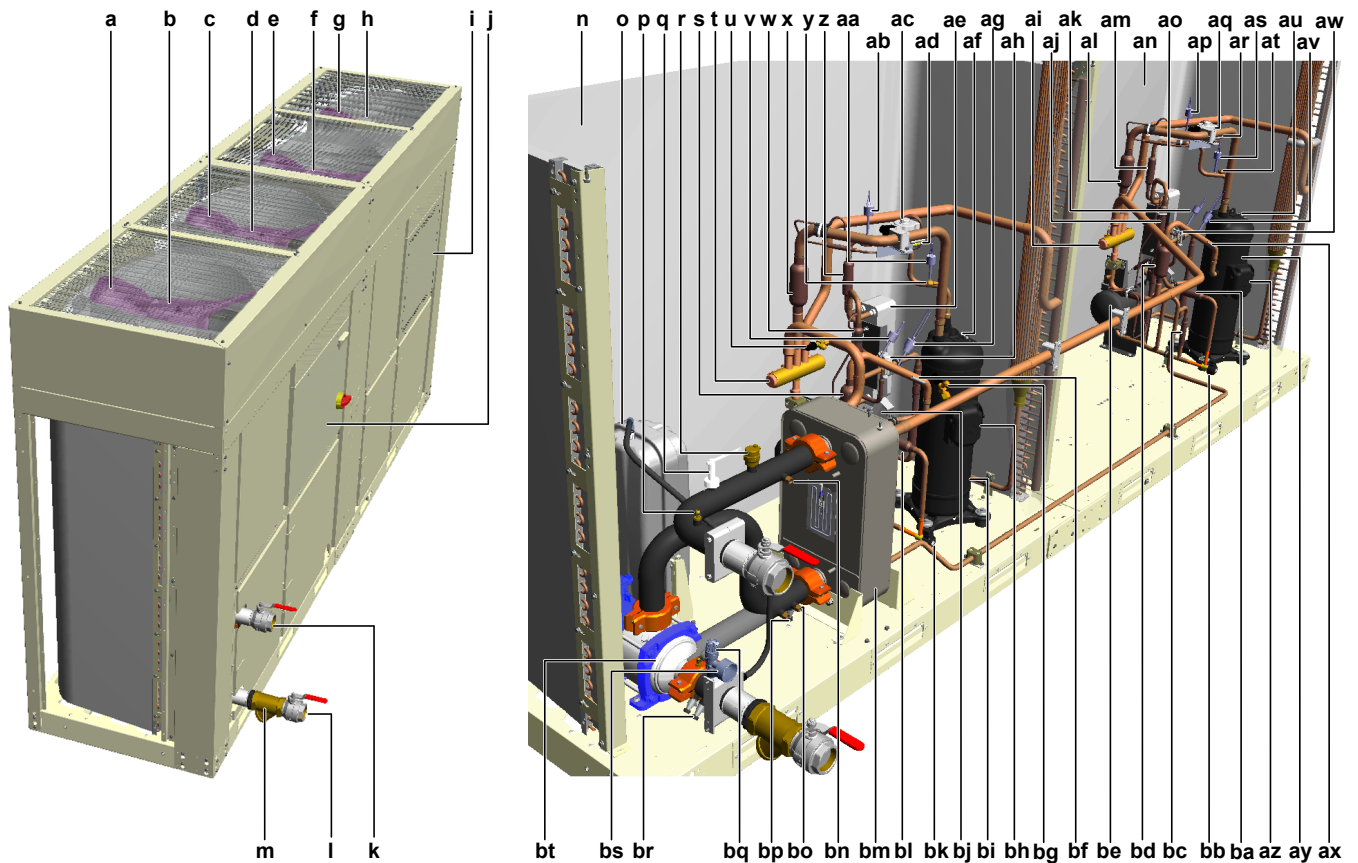
- j Stepper valve driver EKF-2A
- k Main switch Q10
- l Reactor LR1
- m Fan inverter PCB A4P11
- n Inverter PCB A3P1
- o Fan inverter PCB A5P21
- p Noise filter PCB A2P1
- q 24 V DC auxiliary power supply U1
- r Circuit breaker



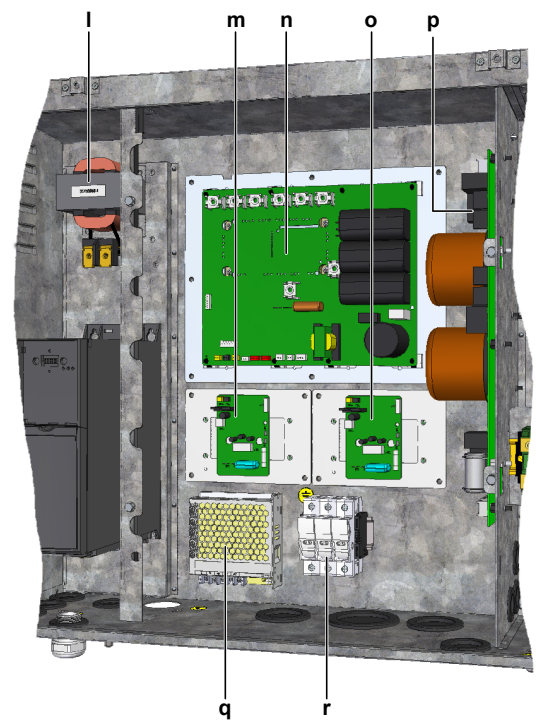
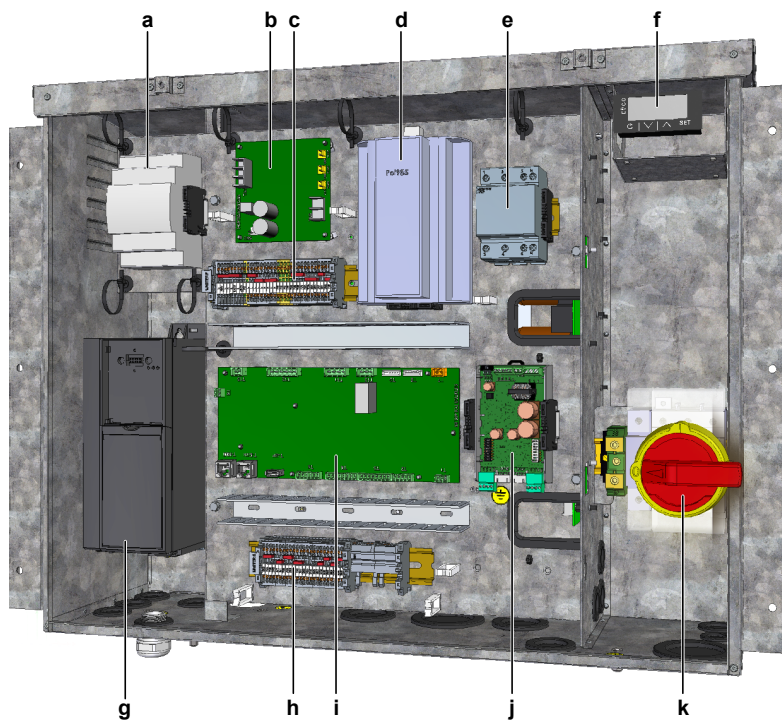
- a Noise filter PCB A2P2
- b Inverter PCB A3P2
- c 5 V DC auxiliary power supply

- d Reactor LR2
- e Fan inverter PCB A4P12
- f Terminal block (slave)

9.4.4 Component overview: EWYE070CZ-A2



a Fan	ak Refrigerant high pressure sensor CNP2
b Fan motor M11F	al Filter
c Fan	am Filter
d Fan motor M21F	an Heat exchanger
e Fan	ao Heat exchanger (economizer)
f Fan motor M12F	ap Refrigerant low pressure sensor EVP2
g Fan	aq Solenoid valve YECV2
h Fan motor M22F	ar Suction thermistor ST2
i Switch box (secondary)	as Economizer pressure sensor ECP2
j Switch box (main)	at Access fitting
k Water outlet	au Compressor thermal protector S2
l Water filter	av High pressure switch F132
m Water inlet	aw Economizer expansion valve EXV2
n Heat exchanger	ax Discharge pipe thermistor DT2
o Expansion vessel	ay Compressor M2C
p Plugged fitting	az Electrical connection box
q Flow switch	ba Filter
r Air purge valve	bb Expansion valve EEXV2
s Filter	bc Check valve
t 4-way valve	bd Filter
u Receiver valve	be Liquid receiver
v Refrigerant high pressure sensor CNP1	bf Discharge pipe thermistor DT1
w Check valve	bg Receiver valve
x Filter	bh Electrical connection box
y Access fitting	bi Compressor M1C
z Filter	bj Liquid receiver
aa Economizer pressure sensor ECP1	bk Expansion valve EEXV1
ab Refrigerant low pressure sensor EVP1	bl Filter
ac Solenoid valve YECV1	bm Plate type heat exchanger
ad Suction thermistor ST1	bn Outlet water thermistor ELWT
ae Heat exchanger (economizer)	bo Inlet water thermistor EEWT
af Compressor thermal protector S1	bp Drain
ag High pressure switch F131	bq Safety valve
ah Economizer expansion valve EXV1	br Drain
ai 4-way valve	bs Pressure gauge
aj Check valve	bt Water pump

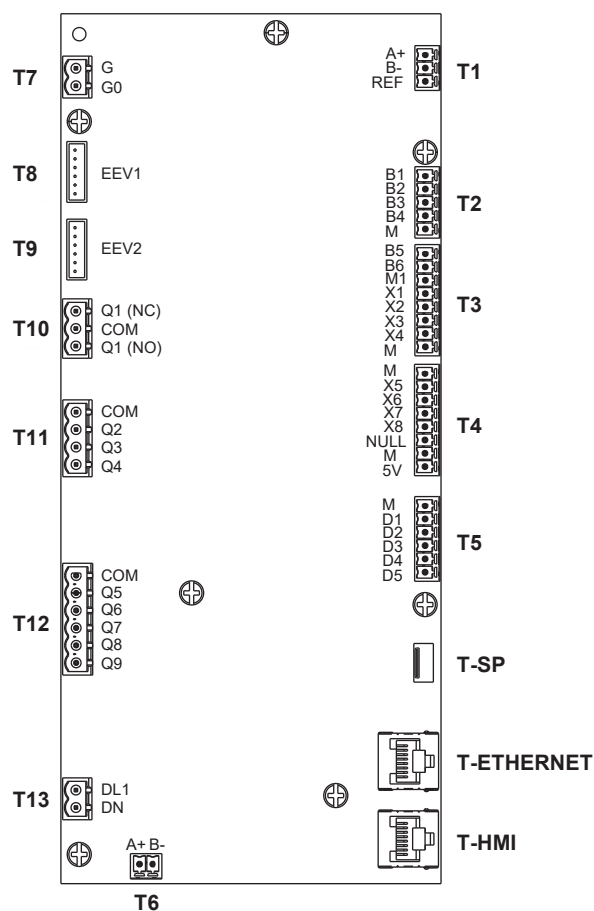


- a Noise filter PCB A2P2
- b Inverter PCB A3P2
- c 5 V DC auxiliary power supply
- d Reactor LR2

- e Fan inverter PCB A4P12
- f Fan inverter PCB A5P22
- g Terminal block (slave)

9.4.5 PCB Overview

Main PCB

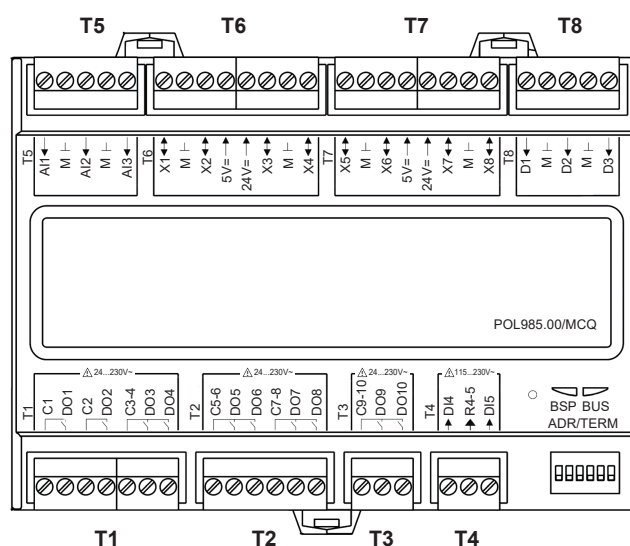


Terminal block	Terminal	Description	
T1	A+	RS-485	Modbus RTU / Master and Slave / EKRSCIO
	B-	RS-485	
	REF	RS-485	
T2	B1	Ai1	Evaporator inlet water temperature
	B2	Ai2	Evaporator outlet water temperature
	B3	Ai3	Outside ambient temperature
	B4	Ai4	System temperature
	M		
T3	B5	Ai5	Suction temperature circuit 1
	B6	Ai6	Suction temperature circuit 2
	M1		
	X1	Ai1	Refrigerant low pressure sensor circuit 1
	X2	Ai2	Refrigerant low pressure sensor circuit 2
	X3	Ai3	Refrigerant high pressure sensor circuit 1
	X4	Ai4	Refrigerant high pressure sensor circuit 2
	M		

Terminal block	Terminal	Description	
T4	M		
	X5	X5	Discharge temperature circuit 1
	X6	X6	Discharge temperature circuit 2
	X7		
	X8	X8	Pump speed (0~10 V)
	NULL	NULL	
	M		
	5V	VDCout	
T5	M		
	D1	Di1	Unit main switch
	D2	Di2	Evaporator flow switch (mandatory)
	D3	Di3	External alarm / Emergency stop (remove jumper 741)
	D4	Di4	Cool/Heat switch
	D5	Di5	Circuit 1 thermal protection
T6	A+	RS-485	Extension interface
	B-	RS-485	
T7	G	24 V DC	Unit control power supply
	G0	0 V	
T8	A	12 V DC	Expansion valve circuit 1
	B	12 V DC	
	C	12 V DC	
	D	12 V DC	
	COM		
	COM		
T9	A	12 V DC	Expansion valve circuit 2
	B	12 V DC	
	C	12 V DC	
	D	12 V DC	
	COM		
	COM		
T10	Q1 (NC)	24...230 V AC	ON-OFF control evaporator pump (optional)
	COM	24...230 V AC	
	Q1 (NO)	24...230 V AC	
T11	COM		
	Q2	16 V DC	Unit alarm (maximum load 10 mA – 16 V DC)
	Q3	16 V DC	Compressor 1 enable
	Q4	16 V DC	Compressor 2 enable

Terminal block	Terminal	Description
T12	COM	
	Q5	24...230 V AC Defrost evaporator / expansion vessel heater (OP191).
	Q6	24...230 V AC 4-way valve circuit 1
	Q7	24...230 V AC 4-way valve circuit 2
	Q8	24...230 V AC Oil heater circuit 1
	Q9	24...230 V AC Oil heater circuit 2
T13	DL1	
	DN	
T-SP		T-SP
T-ETHERNET		T-IP, Ethernet for Climatic IC
T-HMI		T-HMI (RJ45), not galvanically isolated

Option PCB EKRSCIOC



Terminal block	Terminal	Description
T1	C1	
	DO1	DO Cooling/Heating
	C2	
	DO2	DO Defrost C1
	C3-4	
	DO3	DO Defrost C2
	DO4	DO BivOps boiler start
T2	C5-6	
	DO5	DO
	DO6	DO DHW 3-way valve
	C7-8	
	DO7	DO DHW booster heater
	DO8	DO DHW legionella cycle start

Terminal block	Terminal	Description	
T3	C9-10		
	DO9	DO	Bypass valve (VPF)
	DO10	DO	
T4	DI4	DI	Double setpoint
	R4-5		
	DI5	DI	DHW legionella cycle start
T5	AI1		
	M		
	AI2		
	M		
	AI3		
T6	X1		DHW temperature
	M		
	X2		
	5V=		
	24V=		
	X3		
	M		
	X4		BivOps boiler setpoint
T7	X5		Demand limit
	M		
	X6		Evaporator DP or Domestic hot water end position
	5V=		
	24V=		
	X7		System DP or Domestic hot water start position
	M		
	X8		Setpoint reset/remove LWT setpoint
T8	D1		Low noise
	M		
	D2		Pump double speed setpoint
	M		
	D3		DHW enable

9.5 Safety devices

Unit based safety

Error	Input	Component	Description	Trigger	Reset	Retries ^(a)
U001	External alarm signal	External signal	External component triggers an alarm in the unit ^(b)	External alarm input is open	External alarm input is closed	This error does NOT stop the unit
U002	Internal clock	POL 468 And/Or Battery at POL 468	Internal clock is invalid	Timer NOT valid	Timer valid	1
U003	Flow switch	Flow switch	Detection of water flow loss to the chiller.	During start up (compressor OFF): Flow switch = Passive after "Evaporator Recirculation Timer" is completed During operation (compressor ON): Flow switch = Passive for the duration of "Flow proof" setting	Flow switch = Active	Timer based
U004	Outlet water thermistor And/Or Inlet water thermistor	ELWT and EEWT	Evaporator temperature is below the "Evaporator Freeze" setting and there is a risk of freezing it.	ELWT < Freeze limit and Error U006 NOT present for 3 seconds Or EEWT < Freeze limit and Error U007 NOT present for 3 seconds	ELWT > Freeze limit And EEWT > Freeze limit	Timer based
U005	External alarm signal	External signal	External component triggers an alarm in the unit ^(b)	External alarm input is open for 5 seconds	External alarm input is closed	1
U006	Outlet water thermistor	ELWT	Abnormal ELWT signal	$340\ \Omega \geq \text{ELWT}$ Or $\text{ELWT} \geq 300000\ \Omega$	$340\ \Omega \leq \text{ELWT}$ (for 10 seconds) And $\text{ELWT} \leq 300000\ \Omega$ (for 10 seconds)	1
U007	Inlet water thermistor	EEWT	Abnormal EEWT signal	$340\ \Omega \geq \text{EEWT}$ Or $\text{EEWT} \geq 300000\ \Omega$	$340\ \Omega \leq \text{ELWT}$ (for 10 seconds) And $\text{ELWT} \leq 300000\ \Omega$ (for 10 seconds)	1
U008	Air thermistor	OAT	Abnormal OAT signal	$340\ \Omega \geq \text{OAT}$ Or $\text{OAT} \geq 300000\ \Omega$	$340\ \Omega \leq \text{OAT}$ (for 10 seconds) And $\text{OAT} \leq 300000\ \Omega$ (for 10 seconds)	1

Error	Input	Component	Description	Trigger	Reset	Retries ^(a)
U009	External 0~10 V input for Demand Limit	External signal	Abnormal 0~10 V signal	External signal < -0.5 V Or External signal > 11 V	External signal ≥ -0.5 V (for 5 seconds) Or External Signal ≤ 11 V (for 5 seconds)	This error does NOT stop the unit
U010	External 0~10 V input for Setpoint reset	External signal	Abnormal 0~10 V signal	External signal < -0.5 V Or External signal > 11 V	External signal ≥ -0.5 V (for 5 seconds) Or External Signal ≤ 11 V (for 5 seconds)	This error does NOT stop the unit
U011	EKRSCIOCom communication wire	EKRSCIOC	Communication failure with the Optional PCB EKRSCIOC	Communication lost for 3 seconds And Unit has been powered for 60 seconds	Communication works for 5 seconds	1
U012	ACS communication input	ACS PCB	Communication failure with the ACS PCB	Communication lost after 20 tries	Communication works again	1
U013	Air thermistor	OAT	Low OAT protection	OAT < -20°C	OAT > -17.5°C	1
U014	Danfoss VFD alarm output	Danfoss VFD	Danfoss VFD registers an alarm	Danfoss VFD alarm register > 0	Danfoss VFD alarm register = 0	-
U015	Danfoss VFD communication wire	Danfoss VFD	Communication failure with the Danfoss VFD	Communication lost after 10 tries	Communication works again	1
U016	Domestic hot water inputs failure	3-way valve And/Or Domestic hot water thermistor	Error related to the domestic hot water components detected	Domestic hot water alarm code > 0 (for 3 seconds)	Domestic hot water = 0	1
U017	System leaving water temperature	CLWT	Abnormal CLWT signal	340 Ω ≥ CLWT Or CLWT ≥ 300000 Ω	340 Ω ≤ CLWT (for 10 seconds) And CLWT ≤ 300000 Ω (for 10 seconds)	1
U018	Inlet water thermistor	EEWT	Water overheat alarm	Entering water temperature ≥ 75.3°C for 30 seconds Or Entering water temperature ≥ 76°C	Automatic reset when entering water temperature < 72.5°C	1
U019	pCOe I/O module communication line	pCOe I/O module	Bad pCOe I/O module communication	Communication lost after 20 tries	Communication works again	1

Error	Input	Component	Description	Trigger	Reset	Retries ^(a)
U020	Digital input at EKRSCIOC	EKRSCIOC	Entering water temperature over unit envelope limit	Anti-legionella start command And Anti-legionella unable to start	Wait for next legionella cycle	1

^(a) Retries = Number of times the trigger happens, including the first time. E.g. if retries is 1, the alarm is raised the first time the trigger happens.

^(b) Check external alarm input settings.

Circuit based safety

Error	Input	Component	Description	Trigger	Reset	Retries ^(a)
C101	Logic based alarm	EVP1 and CNP1	Pressure ratio ^(b) is too low.	1. Pressure Ratio <1.35 for 60 seconds And 4-way valve = NOT changed And NO presence of C110/ C111 Or 2. Condenser pressure – evaporator pressure <40 kPa for 20 seconds	1. Pressure Ratio >1.35 Or 2. Condenser pressure – evaporator pressure >40 kPa	1
C201	Logic based alarm	EVP2 and CNP2	Pressure ratio ^(b) is too low.	1. Pressure Ratio <1.35 for 60 seconds And 4-way valve = NOT changed And NO presence of C210/ C211 Or 2. Condenser pressure – evaporator pressure <40 kPa for 20 seconds	1. Pressure Ratio >1.35 Or 2. Condenser pressure – evaporator pressure >40 kPa	1
C102	Logic based alarm regarding the compressor operation	M1C	No pressure change detected at start	[Evaporating pressure at start] - [Evaporating pressure 40 seconds after start] <7 kPa And [Condensing pressure 40 seconds after start] - [Condensing pressure at start] <25 kPa	Successful start	3

Error	Input	Component	Description	Trigger	Reset	Retries ^(a)
C202	Logic based alarm regarding the compressor operation	M2C	No pressure change detected at start	[Evaporating pressure at start] - [Evaporating pressure 40 seconds after start] <7 kPa And [Condensing pressure 40 seconds after start] - [Condensing pressure at start] <25 kPa	Successful start	3
C103	Fan communication line	A4P11 and/or A5P21	ACS fails to communicate with the fans PCB	No communication	Communication is established	1
C203	Fan communication line	A4P12 and/or A5P22	ACS fails to communicate with the fans PCB	No communication	Communication is established	1
C104	Compressor communication line	A3P1	ACS fails to communicate with the compressor PCB	No communication	Communication is established	1
C204	Compressor communication line	A3P2	ACS fails to communicate with the compressor PCB	No communication	Communication is established	1
C105	Evaporator pressure	EVP1	Pressure is detected too low	1. Evaporator pressure below 0.15 barg Or 2. Evaporator pressure <Evaporator low pressure limit ^(c) – 1°C for 20 seconds ^(d) Or 3. Evaporator pressure <Evaporator low pressure limit ^(c) – 1°C for 1 second ^(d) Or 4. Evaporator pressure <Evaporator low pressure limit ^(c) – 1°C+20 kPa for 1 second ^(d)	1. Evaporator pressure above 0.15 barg when compressor at 30 Hz or higher or above 0.43 barg when compressor speed below 30 Hz Or 2. Evaporator pressure >Evaporator low pressure limit ^(c) – 1°C for 20 seconds ^(d) Or 3. Evaporator pressure >Evaporator low pressure limit ^(c) – 1°C for 1 second ^(d) Or 4. Evaporator pressure >Evaporator low pressure limit ^(c) – 1°C+20 kPa for 1 second ^(d)	According to trigger 1 = 1 2 = 3 3 = Auto reset 4 = Auto Reset

Error	Input	Component	Description	Trigger	Reset	Retries ^(a)
C205	Evaporator pressure	EVP2	Pressure is detected too low	1. Evaporator pressure below 0.15 barg Or 2. Evaporator pressure <Evaporator low pressure limit ^(c) – 1°C for 20 seconds ^(d) Or 3. Evaporator pressure <Evaporator low pressure limit ^(c) – 1°C for 1 second ^(d) Or 4. Evaporator pressure <Evaporator low pressure limit ^(c) – 1°C+20 kPa for 1 second ^(d)	1. Evaporator pressure above 0.15 barg when compressor at 30 Hz or higher or above 0.43 barg when compressor speed below 30 Hz Or 2. Evaporator pressure >Evaporator low pressure limit ^(c) – 1°C for 20 seconds ^(d) Or 3. Evaporator pressure >Evaporator low pressure limit ^(c) – 1°C for 1 second ^(d) Or 4. Evaporator pressure >Evaporator low pressure limit ^(c) – 1°C+20 kPa for 1 second ^(d)	According to trigger 1 = 1 2 = 3 3 = Auto reset 4 = Auto Reset
C106	Condenser pressure	CNP1	Reading pressure is too high	1. Condensing saturated temperature >75°C Or 2. Condensing saturated temperature >Compressor unload ^(c) or 74°C for 5 seconds Or 3. Condensing saturated temperature >Compressor hold limit ^(c) or 73°C for 10 seconds	1. Condensing saturated temperature <Alarm Limit ^(c) Or 2. Condensing saturated temperature <Compressor unload ^(c) +1°K for 5 seconds Or 3. Condensing saturated temperature <Compressor hold limit ^(c) for 10 seconds	According to trigger 1 = 3 2 = Auto reset 3 = Auto Reset

Error	Input	Component	Description	Trigger	Reset	Retries ^(a)
C206	Condenser pressure	CNP2	Reading pressure is too high	1. Condensing saturated temperature >75°C Or 2. Condensing saturated temperature >Compressor unload ^(c) or 74°C for 5 seconds Or 3. Condensing saturated temperature >Compressor hold limit ^(c) or 73°C for 10 seconds	1. Condensing saturated temperature <Alarm Limit ^(c) Or 2. Condensing saturated temperature <Compressor unload ^(c) +1°K for 5 seconds Or 3. Condensing saturated temperature <Compressor hold limit ^(c) for 10 seconds	According to trigger 1 = 3 2 = Auto reset 3= Auto Reset
C107	Discharge temperature thermistor	DT1	Discharge temperature too high	1. Discharge temperature >Limit alarm ^(e) for 5 seconds Or 2. Discharge temperature >Limit unload ^(e) for 3 seconds Or 3. Discharge temperature >Limit hold ^(e)	1. Discharge temperature <Limit alarm ^(e) for 5 seconds Or 2. Discharge temperature <Limit unload ^(e) for 15 seconds or circuit OFF Or 3. Discharge temperature <Limit hold ^(e) for 30 seconds or circuit OFF	According to trigger 1 = 3 2 = Auto reset 3= Auto Reset
C207	Discharge temperature thermistor	DT2	Discharge temperature too high	1. Discharge temperature >Limit alarm ^(e) for 5 seconds Or 2. Discharge temperature >Limit unload ^(e) for 3 seconds Or 3. Discharge temperature >Limit hold ^(e)	1. Discharge temperature <Limit alarm ^(e) for 5 seconds Or 2. Discharge temperature <Limit unload ^(e) for 15 seconds or circuit OFF Or 3. Discharge temperature <Limit hold ^(e) for 30 seconds or circuit OFF	According to trigger 1 = 3 2 = Auto reset 3= Auto Reset

Error	Input	Component	Description	Trigger	Reset	Retries ^(a)
C108	Compressor PCB	A3P1	High current detected by the inverter PCB	1. Inverter current >High limit ^(e) Or 2. Inverter current >High limit ^(e) x 0.98 (for 60 seconds) Or 3. Inverter current >High limit ^(e) x 0,96 (for 5 minutes)	1. Inverter current <High limit ^(e) Or 2. Inverter current <High limit ^(e) x 0.97 (for 5 seconds) Or 3. Inverter current <High limit ^(e) x 0.94 (for 3 minutes)	According to trigger 1 = 3 2 = Auto reset 3= Auto Reset
C208	Compressor PCB	A3P2	High current detected by the inverter PCB	1. Inverter current >High limit ^(e) Or 2. Inverter current >High limit ^(e) x 0.98 (for 60 seconds) Or 3. Inverter current >High limit ^(e) x 0,96 (for 5 minutes)	1. Inverter current <High limit ^(e) Or 2. Inverter current <High limit ^(e) x 0.97 (for 5 seconds) Or 3. Inverter current <High limit ^(e) x 0.94 (for 3 minutes)	According to trigger 1 = 3 2 = Auto reset 3= Auto Reset
C109	Lack of pressure	EVP1 and CNP1	No pressure detected during compressor start up	During compressor startup if evaporating pressure <40 kPa And During compressor startup if condensing pressure <40 kPa	Compressor restarts with cleared trigger conditions	3
C209	Lack of pressure	EVP2 and CNP2	No pressure detected during compressor start up	During compressor startup if evaporating pressure <40 kPa And During compressor startup if condensing pressure <40 kPa	Compressor restarts with cleared trigger conditions	3
C110	Evaporator pressure	EVP1	Abnormal evaporator pressure signal	EVP1 <0.4 V Or EVP1 >4.6 V	EVP1 >0.4V (for 10 seconds) And EVP1 <4.6 V (for 10 seconds)	-
C210	Evaporator pressure	EVP2	Abnormal evaporator pressure signal	EVP1 <0.4 V Or EVP1 >4.6 V	EVP1 >0.4V (for 10 seconds) And EVP1 <4.6 V (for 10 seconds)	-
C111	Condenser pressure	CNP1	Abnormal condenser pressure signal	CNP1 <0.4 V Or CNP1 >4.6 V	CNP1 >0.4 V (for 10 seconds) And CNP1 <4.6V (for 10 seconds)	-

Error	Input	Component	Description	Trigger	Reset	Retries ^(a)
C211	Condenser pressure	CNP2	Abnormal condenser pressure signal	CNP1 <0.4 V Or CNP1 >4.6 V	CNP1 >0.4 V (for 10 seconds) And CNP1 <4.6V (for 10 seconds)	-
C112	Compressor thermal protection	S1	High compressor casing temperature	Thermal input wiring is open for 2 seconds	Thermal input wiring is closed for 5 minutes	1
C212	Compressor thermal protection	S2	High compressor casing temperature	Thermal input wiring is open for 2 seconds	Thermal input wiring is closed for 5 minutes	1
C113	Suction temperature thermistor	ST1	Abnormal suction temperature signal	$340\ \Omega \geq ST1$ Or $ST1 \geq 300000\ \Omega$	$340\ \Omega \leq ST1$ (for 10 seconds) And $ST1 \leq 300000\ \Omega$ (for 10 seconds)	1
C213	Suction temperature thermistor	ST2	Abnormal suction temperature signal	$340\ \Omega \geq ST2$ Or $ST2 \geq 300000\ \Omega$	$340\ \Omega \leq ST2$ (for 10 seconds) And $ST2 \leq 300000\ \Omega$ (for 10 seconds)	1
C114	Discharge temperature thermistor	DT1	Abnormal discharge temperature signal	DT1 has been detected open or shorted	Signal recovered for 10 seconds	1
C214	Discharge temperature thermistor	DT2	Abnormal discharge temperature signal	DT2 has been detected open or shorted	Signal recovered for 10 seconds	1
C115	Logic based alarm	-	Pump down failed	Pump down state lasted for 120 seconds Or Condensing pressure >High pressure unload limit during pump down	Alarm resets automatically when circuit state is OFF	-
C215	Logic based alarm	-	Pump down failed	Pump down state lasted for 120 seconds Or Condensing pressure >High pressure unload limit during pump down	Alarm resets automatically when circuit state is OFF	-

Error	Input	Component	Description	Trigger	Reset	Retries ^(a)
C116	Compressor and its inverter	M1C and/or A3P1	Alarm detected coming from the compressor inverter	Alarm presence on compressor inverter	Clear alarm subcode	-
	See subcode tables below.					
C216	Compressor and its inverter	M2C and/or A3P2	Alarm detected coming from the compressor inverter	Alarm presence on compressor inverter	Clear alarm subcode	-
	See subcode tables below.					
C117	Fan's inverter	A4P11 and/or A5P21	Alarm detected coming from the fan inverter	Alarm presence on fan inverter	Clear alarm subcode	-
	See subcode tables below.					
C217	Fan's inverter alarm	A4P12 and/or A5P22	Alarm detected coming from the fan inverter	Alarm presence on fan inverter	Clear alarm subcode	-
C119	Logic based alarm	-	Low discharge superheat ^(f) detected	Discharge superheat <3 for 10 minutes	Discharge superheat >5	3
C219	Logic based alarm	-	Low discharge superheat ^(f) detected	Discharge superheat <3 for 10 minutes	Discharge superheat >5	3
C120	High pressure switch	F131	High pressure switch wired at compressor PCB has been triggered	High pressure switch trigger point 36.8 bar (± 0.7 bar)	Manually using the button but only if pressure is below 27 bar (± 1 bar)	3
C220	High pressure switch	F132	High pressure switch wired at compressor PCB has been triggered	High pressure switch trigger point 36.8 bar (± 0.7 bar)	Manually using the button but only if pressure is below 27 bar (± 1 bar)	3
C121	Economizer Pressure sensor	ECP1	Economizer Pressure sensor on C1 not detected	ECP1 <0.4 V Or ECP1 >4.6 V	ECP1 >0.4 V (for 10 seconds) And ECP1 <4.6 V (for 10 seconds)	1
C221	Economizer Pressure sensor	ECP2	Economizer Pressure sensor on C2 not detected	ECP2 <0.4 V Or ECP2 >4.6 V	ECP2 >0.4 V (for 10 seconds) And ECP2 <4.6 V (for 10 seconds)	1
C122	Economizer Temperature sensor	ECT1	Economizer Temperature sensor on C1 not detected	While pCO _e is enabled: 340 Ω $\geq$ ECT1 Or ECT1 $\geq$ 300000 Ω	340 Ω $\leq$ ECT1 (for 10 seconds) And ECT1 $\leq$ 300000 Ω	1

Error	Input	Component	Description	Trigger	Reset	Retries ^(a)
C222	Economizer Temperature sensor	ECT2	Economizer Temperature sensor on C2 not detected	While pCO _e is enabled: 340Ω ≥ ECT2 Or ECT2 ≥ 300000Ω	340Ω ≤ ECT2 (for 10 seconds) And ECT2 ≤ 300000Ω	1

^(a) Retries = Number of times the trigger happens, including the first time. E.g. if retries is 1, the alarm is raised the first time the trigger happens.

^(b) Pressure ratio calculation uses absolute pressure values, so values MUST be +1 bar. Pressure ratio = Absolute high pressure / Absolute low pressure.

^(c) Low and high pressure limit: see values in Main Menu > Circuit # > C# Data > Pressure Limits.

^(d) It is ignored during the first 120 seconds of compressor start-up.

^(e) Limits are set by current unit operation. Check the limits with the service monitoring tool at Commission Unit > Alarm Limit.

^(f) Discharge superheat = Discharge temperature – Condensing saturated temperature.

C116 and C216 Subcode tables

Error	Input	Daikin code equivalent	Description	Trigger	Reset	Retries ^(a)
33	Instantaneous Overcurrent (OCP)	L5	DC current monitoring on PCB is high	Compressor Motor Demagnetization Current = 134 Ap OR Instantaneous Overcurrent Typical >98.6 Ap	Instantaneous Overcurrent < 91.6 Ap	7 times within 60 min
35	Electrical Thermal 1	L8	Overheat caused by current increase	Electronic Thermal value >42.8 Arms for 260 seconds	Electronic Thermal value <42.8 Arms	4 times within 60 min
36	Electrical Thermal 2	L8	Overheat caused by current increase	Electronic Thermal value >45.9 Arms for 5 seconds	Electronic Thermal value <42.8 Arms	4 times within 60 min
37	Step Out (Overload Stop)	L8	Position detection is out of synchronization and an overload abnormality is detected. However, if it is detected during start up acceleration, it is determined to be start up failure or compressor lock	Magnetic flux feedback controller is estimated as larger than the threshold value	Value within threshold	4 times within 60 min
38	Lightning Strike Detected	L8	To prevent malfunction when lightning surge is applied way above target.	Rotational Speed >[target +125] for 5 seconds	Value within threshold	4 times within 60 min
40	Start Failure (Stall Prevention)	L9	The compressor cannot be started due to high differential pressure or the abnormality of the compressor and the printed circuit board.	Large Current Input at INV OR Motor position abnormality detected 3 times in 3 seconds at start up	Correct Start up	5 times in 60 min

Error	Input	Daikin code equivalent	Description	Trigger	Reset	Retries ^(a)
43	Power Open Phase Circuit	L1	Detect disconnection and connection leakage of the compressor motor line to prevent operation under abnormal conditions.	Open Phase detected	Value within threshold	4 times within 60 min
43	Clamp Diode Short circuit Error	L1	To prevent abnormal heat generation of a balance resistor when a/clamp diode is short-circuited.	Overripple voltage protection >10 Vp-p	Value within threshold	4 times within 60 min
44	Fin Thermal Abnormality	F7	In order to prevent damage to the electrical components due to the temperature rise in the inverter.	Fin Temp > 105°C for 30 min (Compressor speed will be reduced at this time)	Tfin ≤102°C is continuous and 3 minutes continuous.	2 times in 30 min
45	Fin Temperature Sensor Error	P4	Not possible to read fin temperature	Fin thermistor resistance value detects open (-30°C or Less) or short (120°C or more) circuit	Value within threshold	1
46	Instantaneous Overcurrent (During Boot)	L5	The compressor cannot be started due to high differential pressure or the abnormality of the compressor and the printed circuit board.	Motor position abnormality detected 3 times in 3 seconds at boot	Correct Boot	7 times within 60 min
47	Current Sensor Error/ Overcurrent Protection Circuit Error	U1	Prevention of IPM destruction at shunt resistor short circuit	Current detection during DC excitation <0.75 A OR Current detection after DC excitation <0.38 A	Value within threshold	1
49	Power Unbalance	P1	Power unbalance detected at the power input at INV PCB	An unbalance of 350 V VP-P (Estimated deviation of 31%)	Value within threshold	4 times within 30 min
54	Current Offset Error	L1	Detects the failure of the current sensor circuit and prevents operation	Current detection port below 0.5 V or above 4.5 V	Value within threshold	4 times within 60 min

Error	Input	Daikin code equivalent	Description	Trigger	Reset	Retries ^(a)
56	IGBT Error	L1	Detects failure of the input port of the power module by the Insulated Gate Bipolar Transistors and gives error before operation	When the port (U, V, W, X, Y, Z) state is read and the state determination cannot be made continues for 1 second or more, the IGBT becomes abnormal	Value within threshold	1
57	JP Setting Error	L1	To prevent operation in an abnormal state by detecting the state of an input port/model setting JP	JP (inv. model setting) fails to be processed at power on	Setting read at power on	1
58	Unit Type Setting Error	PJ	there is a combination error in the setting of the PCB that doesn't match with received communication	INV type and/or Power supply settings doesn't match with received communication from ACS	Value within threshold	1
59	Data Flash Error	L1	When the power is turned on, the data flash is checked, and when both the data and the data of the backup are damaged	At power on data flash is found empty or corrupted	Value within threshold	1
61	Compressor Lock	E5	Lock of the compressor detected to prevent the locked operation.	The motor position detection determines that the compressor does not move at all	Unlocked compressor	4 times within 60 min
63	High Pressure Protection	H3	The inverter microcomputer detects the state of the HPS and makes the system take and immediate stop	HPS Input open	HPS Input closed	1
114	Power Open Phase Detected	U1	When a power supply is turned on, the time difference between the zero-cross signal between L1 and L2 and the zero-cross signal between L2 and L3 is used to detect the absence of a power supply phase	Open Phase detected for 5 seconds	Value within threshold	5 times in 60 min

Error	Input	Daikin code equivalent	Description	Trigger	Reset	Retries ^(a)
115	Output Open Phase	L9	PCB detects disconnection or connection leakage of the compressor motor line and stops to prevent operation under abnormal conditions.	Output missing phase during DC excitation <2 A for 0.3 seconds	Value within threshold	4 times in 100 min
116	Voltage Sensor Failure	U2	PCB detects a failure of a DC voltage sensor	Dc voltage of reactor during operation <50 V	Value within threshold	4 times within 30 min
117	Over-Voltage During Operation	U2	The main circuit DC voltage resonates due to the distortion of the power supply voltage and the influence of the power supply impedance	DC voltage >800 V	Value within threshold	4 times within 30 min
118	Under-Voltage During Operation	U2	Undervoltage protection (LVP) in order to detect a power supply voltage drop due to an instantaneous power failure, etc.	DC voltage <300 V	Value within threshold	4 times within 30 min
145	Power Frequency Error	U1	failure of frequency determination due to failure of a zero-cross circuit	Frequency not possible to determine for 5 seconds during operation	Value within threshold	5 times in 60 min

^(a) Retries = Number of times the trigger happens, including the first time. E.g. if retries is 1, the alarm is raised the first time the trigger happens.

C117 and C217 Subcode tables

Error	Input	Daikin code equivalent	Description	Trigger	Reset	Retries ^(a)
65	Hardware Overcurrent Protection (Instantaneous Overcurrent)	E7	Fan motor instantaneous overcurrent/lock error	Fan Inverter PCB Amps detection >9.55 A	Current within range	4 (15 sec guard at start up)
			Motor Lock error (Voltage command error at start up)	Voltage drop detected when start up speed (190 rpm) command is sent	Voltage within range	3
68	Fin Temperature Overheat Error	L4	Heat dissipation fin temperature rise	Fan Inverter PCB temp >90°C	Fan Inverter PCB temp < 800°C	1

Error	Input	Daikin code equivalent	Description	Trigger	Reset	Retries ^(a)
69	Fin Thermistor Failure Error	P4	Fin thermistor value out of range	Fan Inverter PCB temp >150°C OR Open Line on the fin thermistor value	Fin thermistor Closed and below 150°C	1
72	Fan Motor Current Overload / Overcurrent / Abnormality	E7	Load Angle Error, Outdoor unit fan motor error (Malfunction of rotation detection for MF)	Abnormality on current readings causes RPM detection to fail. No rpm detection	Rpm detection correct	3
			Voltage out of range	DC Link >824 V (Approx. 583 V on the output AC line) OR DC link < 287 V (Approx. 203 V on the output AC line)	Voltage within range	3
			Drop Current Protection has been activated	Between 100-200 rpm ->Arms <0.9 Between 300-400 rpm ->Arms <1.5 Between 500-600 rpm ->Arms <2 700 rpm or more ->Arms <2.84	Current within range	1 (after dropping frequency 3 times)
75	IPM Error – Circuit Error Detected During Waveform Output	H7	Intelligent Power Module Fault Output Activates after detecting out of specification voltage values from expected value	Waveform offset above 5 V	Waveform offset below 5 V	4
86	Current Detecting Circuit Offset Value	H7	Current Offset detection value error. The PCB measures the DC link current constantly and has detected abnormal values	The PCB measures the DC link current constantly and has detected abnormal values	Values within range	1 (Power off for 10 minutes and restart)
88	Gate Driving Circuit Failure	H7	Microcomputer controlling PCB is having power issues	Microcomputer operating voltage below 4.5 V or higher than 5.5 V	Microcomputer operating voltage between 4.5 to 5.5 V	1 (Power off for 10 minutes and restart)
90	Model Setting Error	PJ	Incorrect combination of inverter and fan driver	printed circuit board mismatch detected by internal communication	Reset power	1

Error	Input	Daikin code equivalent	Description	Trigger	Reset	Retries ^(a)
91	EEPROM Failure Error	H7	The EEPROM chip in PCB malfunctions	EEPROM cannot be read	EEPROM is operating	1

^(a) Retries = Number of times the trigger happens, including the first time. E.g. if retries is 1, the alarm is raised the first time the trigger happens.

9.6 Field information report

See next page.

In case a problem occurred on the unit which could not be resolved by using the content of this service manual or in case you have a problem which could be resolved but of which the manufacturer should be notified, we advise you to contact your distributor.

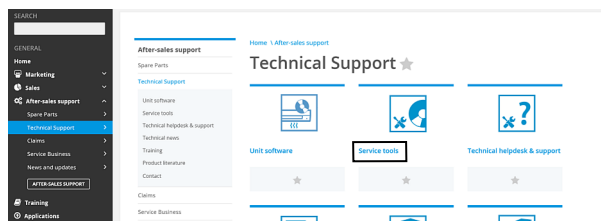
To facilitate the investigation, additional information is required. Please fill out the following form before contacting your distributor.

FIELD INFORMATION REPORT	
Key person information	
Name:	Company name:
Your contact details	
Phone number:	E-mail address:
Site address:	
Your reference:	Date of visit:
Claim information	
Title:	
Problem description:	
Error code:	Trouble date:
Problem frequency:	
Investigation steps done:	
Insert picture of the trouble.	
Current situation (solved, not solved,...):	
Countermeasures taken:	
Comments and proposals:	
Part available for return (if applicable):	

Application information	
Application (house, apartment, office,...):	
New project or reimbursement:	
Heat emitters (radiators / under floor heating / fan coils /...):	
Hydraulic layout (simple schematic):	
Unit / Installation information	
Model name:	Serial number:
Installation / commissioning date:	Software version main PCB:
Software version user interface:	Software version 2 nd PCB (if applicable):
Minimum water volume:	Maximum water volume:
Brine composition and mixture:	
Brine freeze up temperature:	
Space heating control (leaving water temperature, room thermostat, external room thermostat):	
Space heating setpoint:	
Domestic hot water control (reheat only, schedule only, reheat + schedule):	
Domestic hot water setpoint:	
Provide pictures of the field settings overview (viewable on the user interface).	

9.7 Service tools

- 1 For an overview of the available service tools, check the Daikin Business Portal (authentication required).
- 2 Go to the tab After-sales support on the left navigation pane and select Technical support.



- 3 Click the button Service tools. An overview of the available service tools for the different products is shown. Also additional information on the service tools (instruction, latest software) can be found here.

9.8 Field settings

9.8.1 User interface parameters

The table below shows the complete user interface structure from the main menu to any single parameter including the screen saver pages.

Typically, the user interface is composed by pages, containing the parameters, accessible from the main menu. In some cases there is a two-level structure where a page contains sub-pages instead of parameters.



INFORMATION

If a parameter indicated here is NOT being displayed on your user interface, check if the latest software is installed.

For more information about the parameters and how to set them, see the operating manual.

Menu	Parameter	Sub-parameter	Read/Write	Password level
[0] Password	[00.00] Enter PSW	N/A	W	0
[1] Unit	[01.00] UEN	N/A	W	1
	[01.01] C1EN	N/A	W	1
	[01.02] C2EN	N/A	W	1
[2] Mode	[02.00] Available Modes	N/A	W	2
	[02.01] Mode Source	N/A	W	0
	[02.02] UnitCoolHeatSw	N/A	W	0
	[02.03] Heating Only	N/A	W	1
[3] Capacity	[03.00] C1_Cap	N/A	R	0
	[03.01] C1_FanStg	N/A	R	0
	[03.02] C1_FanCap	N/A	R	0
	[03.03] C2_Cap	N/A	R	0
	[03.04] C2_FanStg	N/A	R	0
	[03.05] C2_FanCap	N/A	R	0
	[03.06] SumCurrent	N/A	R	0
[4] Net	[04.00] Sour	N/A	W	1
	[04.01] En	N/A	R	0
	[04.02] C.SP	N/A	R	0
	[04.03] H.SP	N/A	R	0
	[04.04] Mode	N/A	R	0
	[04.05] Capacity Limit	N/A	R	0
	[04.06] Current Limit	N/A	R	0
[5] Setp	[05.00] C1	N/A	W	0
	[05.01] C2	N/A	W	0
	[05.02] H1	N/A	W	0
	[05.03] H2	N/A	W	0

Menu	Parameter	Sub-parameter	Read/Write	Password level
[6] Tmps	[06.00] In	N/A	R	0
	[06.01] Out	N/A	R	0
	[06.02] OAT	N/A	R	0
	[06.03] Domestic Temperature	N/A	R	0
	[06.04] Syst	N/A	R	0
[7] Alms	[07.00] Alarm List	N/A	R	0
	[07.01] Alarm Clear	N/A	W	1
[8] Pump	[08.00] RecT	N/A	W	1
	[08.01] Standby Speed	N/A	W	1
	[08.02] Speed	N/A	R	1
	[08.03] Max Speed	N/A	W	1
	[08.04] Min Speed	N/A	W	1
	[08.05] Speed 1	N/A	W	1
	[08.06] Speed 2	N/A	W	1
	[08.07] LoadPressDropSp	N/A	W	1
	[08.08] EvapPressDropSp	N/A	W	1
	[08.09] BypassValve state	N/A	R	1
	[08.10] LoadPD	N/A	R	1
	[08.11] EvapPD	N/A	R	1
	[08.12] Parameter Ti	N/A	W	1
	[08.13] Setpoint DT	N/A	W	1
	[08.14] Alarm Code	N/A	R	1
	[08.15] Sensor scaler	N/A	W	1
	[08.16] Pump On Limit	N/A	W	1
[9] Thermostatic control	[9.00] Startup	N/A	W	1
	[9.01] Shutdown	N/A	W	1
	[9.02] Stage up	N/A	W	1
	[9.03] Stage down	N/A	W	1
	[9.04] Stage up delay	N/A	W	1
	[9.05] Stage dn delay	N/A	W	1
	[9.06] Evap Freeze	N/A	W	2
	[9.07] Low Press Unld	N/A	W	2
[10] Date	[10.00] Day	N/A	W	0
	[10.01] Month	N/A	W	0
	[10.02] Year	N/A	W	0
[11] Time	[11.0] Hour	N/A	W	0
	[11.1] Minute	N/A	W	0

Menu	Parameter	Sub-parameter	Read/Write	Password level
[12] DoS	[12.00] Enable	N/A	W	0
	[12.01] State	N/A	R	0
[13] IPst	[13.00] DHCP	N/A	W	0
	[13.01] Actual IP	N/A	R	0
	[13.02] Actual Mask	N/A	R	0
	[13.03] Manual IP		R	0
		[13.03.0] IP#1	W	0
		[13.03.1] IP#2	W	0
		[13.03.2] IP#3	W	0
		[13.03.3] IP#4	W	0
	[13.04] Manual Mask		W	0
		[13.04.0] Msk#1	W	0
		[13.04.1] Msk#2	W	0
		[13.04.2] Msk#3	W	0
		[13.04.3] Msk#4	W	0

Menu	Parameter	Sub-parameter	Read/Write	Password level
[14] Service Configuration	[14.00] Unit Type	N/A	W	2
	[14.01] Size	N/A	W	2
	[14.02] Pump Type	N/A	W	2
	[14.03] Option	N/A	W	2
	[14.05] HMI Type	N/A	W	2
	[14.06] Parameter Save	N/A	W	2
	[14.07] Parameter Restore	N/A	W	2
	[14.08] Preop% C1	N/A	W	2
	[14.09] DeltaP C1	N/A	W	2
	[14.10] Preop% C2	N/A	W	2
	[14.11] DeltaP C2	N/A	W	2
	[14.12] Min Speed C1	N/A	W	2
	[14.13] Min Speed C2	N/A	W	2
	[14.14] Not used	-	-	-
	[14.15] Not used	-	-	-
	[14.16] Min Spd A	N/A	W	2
	[14.17] Min Spd B	N/A	W	2
	[14.18] Min Spd C	N/A	W	2
	[14.19] Not used	-	-	-
	[14.20] Not used	-	-	-
	[14.21] Not used	-	-	-
	[14.22] Not used	-	-	-
	[14.23] Oil return Enable	N/A	W	2
	[14.24] Oil return Speed	N/A	W	2
	[14.25] Oil return Trigger	N/A	W	2
	[14.26] Oil return Start Time	N/A	W	2
	[14.27] Oil return Stop Time	N/A	W	2
	[14.28] Domestic hot water temperature probe type	N/A	W	2

Menu	Parameter	Sub-parameter	Read/Write	Password level
[15] Customer Configuration	[15.00] Unit Boost	N/A	W	1
	[15.01] Fan Boost	N/A	W	1
	[15.02] IO Ext Module	N/A	W	1
	[15.03] Pump Ctrl Type	N/A	W	1
	[15.04] Address	N/A	W	1
	[15.05] Ext Alm	N/A	W	1
	[15.06] Cost. Heating	N/A	W	1
	[15.07] SCM Number of Units	N/A	W	1
	[15.08] FanSilentSpd	N/A	W	1
	[15.09] DHW Enable	N/A	W	1
	[15.10] SG Enable	N/A	W	1
	[15.11] SwOptLite	N/A	R	1
	[15.12] Heating Customized Enable	N/A	W	1
[16] Master/Slave (Available only for Master unit))	[16.00] Start Up Limit	N/A	W	1
	[16.01] Shut Dn Limit	N/A	W	1
	[16.02] Stage Up Time	N/A	W	1
	[16.03] Stage Dn Time	N/A	W	1
	[16.04] Threshold	N/A	W	1
	[16.05] PrioSlave#1	N/A	W	1
	[16.06] PrioSlave#2	N/A	W	1
	[16.07] PrioSlave#3	N/A	W	1
	[16.08] MasterPriority	N/A	W	1
	[16.09] Master Enable	N/A	W	1
	[16.10] Standby Chiller	N/A	W	1
	[16.11] Cycling Type	N/A	W	1
	[16.12] Interval Time	N/A	W	1
	[16.13] Switch Time	N/A	W	1
	[16.14] Temp Compensation	N/A	W	1
	[16.15] Tmp Cmp Time	N/A	W	1
	[16.16] M/S Alarm Code	N/A	R	1
	[16.17] M/S UnitStates	N/A	R	1
	[16.18] Switch Set	N/A	W	1

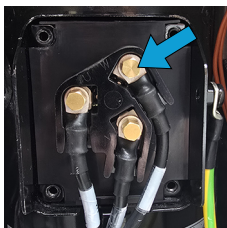
Menu	Parameter	Sub-parameter	Read/Write	Password level
[17] Scheduler	[17.00] Monday		W	1
		[17.00.0] Time 1	W	1
		[17.00.1] Value 1	W	1
		[17.00.2] Time 2	W	1
		[17.00.3] Value 2	W	1
		[17.00.4] Time 3	W	1
		[17.00.5] Value 3	W	1
		[17.00.6] Time 4	W	1
		[17.00.7] Value 4	W	1
	[17.01] Tuesday		W	1
		[17.01.0] Time 1	W	1
		[17.01.1] Value 1	W	1
		[17.01.2] Time 2	W	1
		[17.01.3] Value 2	W	1
		[17.01.4] Time 3	W	1
		[17.01.5] Value 3	W	1
		[17.01.6] Time 4	W	1
		[17.01.7] Value 4	W	1
	...	...	...	...
	[17.06] Sunday		W	1
		[17.06.0] Time 1	W	1
		[17.06.1] Value 1	W	1
		[17.06.2] Time 2	W	1
		[17.06.3] Value 2	W	1
		[17.06.4] Time 3	W	1
		[17.06.5] Value 3	W	1
		[17.06.6] Time 4	W	1
		[17.06.7] Value 4	W	1
[18] Power Conservation	[18.00] Dem Lim EN	N/A	W	1
	[18.01] Current Lim Sp	N/A	W	1

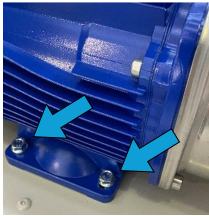
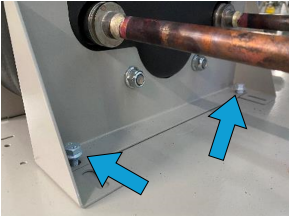
Menu	Parameter	Sub-parameter	Read/Write	Password level
[19] DHW	[19.00] Setpoint	N/A	W	1
	[19.01] Start Db	N/A	W	1
	[19.02] Delay	N/A	W	1
	[19.03] Temperature	N/A	R	1
	[19.04] 3WV State	N/A	R	1
	[19.05] DHW Alarm Code	N/A	R	1
	[19.06] 3WV Type	N/A	W	1
	[19.07] 3WV Switch Time	N/A	W	1
	[19.08] Max Time	N/A	W	1
	[19.09] Standby Mode	N/A	W	1
	[19.10] DHW Remote Enable	N/A	W	1
	[19.11] DHW Units States	N/A	R	1
	[19.12] Lwt Control Target En	N/A	W	1
	[19.13] Second Fixed Speed En	N/A	W	1
	[19.14] Anti Leg Period	N/A	W	1
	[19.15] Anti Leg Time	N/A	W	1
	[19.16]] Anti Leg Set Cycle	N/A	W	1
	[19.17] Anti Leg Days Left	N/A	R	1
[20] Setpoint reset	[20.00] Reset Type	N/A	W	1
	[20.01] Max Reset DT	N/A	W	1
	[20.02] Start Reset DT	N/A	W	1
	[20.03] Max Reset CH	N/A	W	1
	[20.04] Start Reset CH	N/A	W	1
	[20.05] Max Reset HP	N/A	W	1
	[20.06] Start Reset HP	N/A	W	1

Menu	Parameter	Sub-parameter	Read/Write	Password level
[21] Inverter Alarms	[21.00] InvCmpC1 Alarm Code	N/A	W	1
	[21.01] InvCmpC2 Alarm Code	N/A	W	1
	[21.02] InvFan1C1 Alarm Code	N/A	W	1
	[21.03] InvFan2C1 Alarm Code	N/A	W	1
	[21.04] InvFan1C2 Alarm Code	N/A	W	1
	[21.05] InvFan2C2 Alarm Code	N/A	W	1
	[21.06] Pump Alarm Digits 0-3	N/A	W	1
	[21.07] Pump Alarm Digits 4-7	N/A	W	1
	[21.08] Pump Alarm Digits 8-11	N/A	W	1
	[21.09] Pump Alarm Digits 12-15	N/A	W	1
	[21.10] Pump Alarm Digits 16-19	N/A	W	1
	[21.11] Pump Alarm Digits 20-23	N/A	W	1
	[21.12] Pump Alarm Digits 24-27	N/A	W	1
	[21.13] Pump Alarm Digits 28-31	N/A	W	1
[22] Protocol Communication	[22.00] Mb Address	N/A	W	1
	[22.01] Mb BAUD	N/A	W	1
	[22.02] Mb Parity	N/A	W	1
	[22.03] Mb 2StopBit	N/A	W	1
	[22.04] Mb Timeout	N/A	W	1
	[22.05] BN Address	N/A	W	1
	[22.06] BN BAUD	N/A	W	1
	[22.07] BN Device ID (X.XXX.---)	N/A	W	1
	[22.08] BN Device ID (-.---.XXX)	N/A	W	1
	[22.9] BN Port (X.---)	N/A	W	1
	[22.10] BN Port(-X.XXX)	N/A	W	1
	[22.11] BN Timeout	N/A	W	1
	[22.12] Licence Mngr	N/A	R	1
	[22.13] BacNETOverRS	N/A	W	1
	[22.14] BacNET-IP	N/A	W	1
	[22.15] BasProtocol	N/A	W	1
	[22.16] BusPolarization	N/A	W	1
[23] PLC	[23.00] AppSave	N/A	W	1
	[23.01] Apply Changes	N/A	W	1
	[23.02] Update Sw	N/A	W	2
[24] About	[24.00] App Vers	N/A	R	0
	[24.01] BSP	N/A	R	0

Menu	Parameter	Sub-parameter	Read/Write	Password level
[25] Screen Saver	- LWT (String Up) - Setpoint Act (String Dn)	- Unit Cap (String Up) - Actual Mode (String Dn)	R	0
[26] Collective Housing	[26.00] Collective Housing Enable	N/A	W	1
	[26.01] Upper Lim	N/A	W	1
	[26.02] Lower Lim	N/A	W	1
	[26.03] Tank Temp Sp	N/A	W	1
	[26.04] Tank Temp	N/A	R	1
	[26.05] Tank Sens Ofs	N/A	W	1
[27] Bivalent Operation	[27.00] Bivalent Ops Enable	N/A	W	1
	[27.01] Tamb Design	N/A	W	1
	[27.02] System Lwt Design	N/A	W	1
	[27.03] System Lwt@20	N/A	W	1
	[27.04] Tcut-off	N/A	W	1
	[27.05] Tbivalent	N/A	W	1
	[27.06] System DeltaT	N/A	W	1
	[27.07] Boiler Delay	N/A	W	1
[28] BEG	[28.00] EM Index	N/A	W	1
	[28.01] EM Value	N/A	R	1
	[28.02] EM Reset	N/A	W	1
	[28.03] SG State	N/A	R	1

9.9 Tightening torques

Assembly type		Tightening torque (N•m)	Bit size (mm)	Threadlocker
	Anti-vibration compressor mounting	20	12	Loctite 243 Lorexal 55-03
	Compressor mounting bolt assy (M8x60)			
	Compressor wiring terminals with brass hexagon head screws with Poka Yoke	2.7		NO

Assembly type	Tightening torque (N•m)	Bit size (mm)	Threadlocker
 liquid receivers base M8x20 Threadlocker-Zinc Lamella	20	13	Loctite 243 Loxal 55-03
 Pump feet to the frame M8x30 Threadlocker-Zinc Lamella	20	13	Loctite 243 Loxal 55-03
 The evaporator receiver brackets on the base M8x20 Threadlocker-Zinc Lamella	20	12	Loctite 243 Loxal 55-03
 Fixing the blade on the fan motor shaft M10 Blind Nut	40	17	NO
 Fan anti-vibration fixing Rubber Vibration Isolator Mounting Bolt (M6x27)	9	10	NO
 Fixing fan motor to spacer disc M6X30 UNI5739-8.8 Zinc Lamella	9	10	NO
 Frame side used for aligning/centering the frames on 2 circuit units Conical centering pin M10	25	10	NO

9.10 Parameters of the pump inverter

On the units EWYE(P)-A, a pump inverter is installed which is factory programmed with the following parameters:

Menu	Sub-menu	Setting	Setting value
0-** Operation/ Display	0-0* Basic Settings	0-03 Regional Settings	^(a) [0] International
		0-04 Oper. State at Power-up	^(a) [1] Forced stop, ref=old
	0-1* Set-up Handling	0-10 Active Set-up	^(a) [1] Set-up 1
		0-11 Edit Set-up	^(a) [1] Set-up 1
		0-12 Link Set-ups	^(a) [20] Linked
		0-31 Custom Readout Min Scale	^(a) 0.00
		0-32 Custom Readout Max Scale	^(a) 100.0
	0-4* LCP Keypad	0-40 [Hand on] Key on LCP	^(a) [1] Enabled
		0-41 [Off / Reset] Key on LCP	^(a) [1] Enable All
		0-42 [Auto on] Key on LCP	^(a) [1] Enabled
	0-5* Copy/Save	0-50 LCP Copy	^(a) [0] No copFNy
		0-51 Set-up Copy	^(a) [0] No copy
	0-6* Password	0-60 (Main) Menu Password	^(a) 0
		0-61 Access to Main/Quick Menu w/o Password	^(a) [0] Full access

Menu	Sub-menu	Setting	Setting value
1-** Load/Motor	1-0* General Settings	1-00 Configuration Mode	^(a) [0] Speed open loop
		1-01 Motor Control Principle	[0] U/f
		1-03 Torque Characteristics	[2] Auto Energy Optmization
		1-05 Local Mode Configuration	^(a) [2] As config in par. 1-00
	1-2* Motor Data	1-20 Motor Power [kW]	- EWYE019CZP-A1: 1.1 [kW] - EWYE022CZP-A1: 1.1 [kW] - EWYE025CZP-A1: 1.1 [kW] - EWYE030CZP-A1: 1.1 [kW] - EWYE035CZP-A1: 1.1 [kW] - EWYE050CZP-A2: 2.2 [kW] - EWYE060CZP-A2: 2.2 [kW] - EWYE070CZP-A2: 2.2 [kW]
		1-22 Motor Voltage	400 V
		1-23 Motor Frequency	50 Hz
		1-24 Motor Current	- EWYE019CZP-A1: 2.4 [A] - EWYE022CZP-A1: 2.4 [A] - EWYE025CZP-A1: 2.4 [A] - EWYE030CZP-A1: 2.4 [A] - EWYE035CZP-A1: 2.4 [A] - EWYE050CZP-A2: 4.56 [A] - EWYE060CZP-A2: 4.56 [A] - EWYE070CZP-A2: 4.56 [A]
		1-25 Motor Nominal Speed	2900 rpm
		1-29 Automatic Motor Tuning	^(a) [0] Off
	1-3* Adv. Motor Data	1-30 Stator Resistance (Rs)	[Ohm] * Dep. on motor data
		1-33 Stator Leakage Reactance	[Ohm] * Dep. on motor data
		1-35 Main Reactance (Xh)	[Ohm] * Dep. on motor data
	1-5* Load Indep. Setting	1-50 Motor Magnetisation at 0 speed	^(a) 100%
		1-52 Min Speed Norm. Magnet. [Hz]	^(a) 0.0Hz
		1-55 U/f Characteristic - U	0-999.9 V
		1-56 U/f Characteristic - F	0-400 Hz

Menu	Sub-menu	Setting	Setting value
1-** Load/Motor (continued)	1-6* Load Depen. Setting	1-60 Low Speed Load Compensation	^(a) 100%
		1-61 High Speed Load Compensation	^(a) 100%
		1-62 Slip Compensation	^(a) 100%
		1-63 Slip Compensation Time Constant	^(a) 0.10 s
	1-7* Start Adjustments	1-71 Start Delay	^(a) 0.0 s
		1-72 Start Function	^(a) [2] Coast/delay time
		1-73 Flying Start	^(a) [0] Disabled
	1-8* Stop Adjustments	1-80 Function at Stop	^(a) [0] Coast
		1-82 Min Speed for Funct. At Stop [Hz]	^(a) 0.0 Hz
	1-9* Motor Temperature	1-90 Motor Thermal Protection	^(a) [0] No protection
		1-93 Thermistor Resource	^(a) [0] None
2-** Brakes	2-0* DC-Brake	2-00 DC Hold Current	^(a) 50%
		2-01 DC Brake Current	^(a) 50%
		2-02 DC Braking Time	^(a) 10.0 s
		2-04 DC Brake Cut In Speed	^(a) 0.0Hz
	2-1* Brake Energy Funct.	2-10 Brake Function	^(a) [0] Off
		2-11 Brake Resistor (ohm)	Min/Max/default: Powersize dep.
		2-14 Brake Voltage reduce	^(a) 0
		2-16 AC Brake, Max current	^(a) 100%
		2-17 Overvoltage Control	^(a) [0] Disabled
	2-2* Mechanical Brake	2-20 Release Brake Current	^(a) 0.00 A
		2-22 Activate Brake Speed [Hz]	^(a) 0.0 Hz

Menu	Sub-menu	Setting	Setting value
3-** Reference / Ramps	3-0* Reference Limits	3-00 Reference Range	[0] Min - Max
		3-02 Minimum Reference	30.00
		3-03 Maximum Reference	50.00
	3-1* References	3-10 Preset Reference	^(a) 0.00%
		3-11 Jog Speed [Hz]	^(a) 5.0 Hz
		3-12 Catch up/slow Down Value	^(a) 0.00%
		3-14 Preset Relative Reference	^(a) 0.00%
		3-15 Reference Resource 1	[11] Local Bus Reference
		3-16 Reference Resource 2	[0] No Function
		3-17 Reference Resource 3	[0] No Function
		3-18 Relative Scaling Ref. Resource	^(a) [0] No function
	3-4* Ramp 1	3-40 Ramp 1 Type	^(a) [0] Linear
		3-41 Ramp 1 Ramp up Time	15 s
		3-42 Ramp 1 Ramp Down Time	15 s
	3-5* Ramp 2	3-50 Ramp 2 Type	^(a) [0] Linear
		3-51 Ramp 2 Ramp up Time	^(a) 3.00 s (10.00)
		3-52 Ramp 2 Ramp down Time	^(a) 3.00 s (10.00)
	3-8* Other Ramps	3-80 Jog Ramp Time	^(a) 3.00 s (10.00)
		3-81 Quick Stop Ramp Time	^(a) 3.00 s (10.00)

Menu	Sub-menu	Setting	Setting value
4-** Limits/ Warnings	4-1* Motor Limits 4-10 Motor	4-10 Motor Speed Direction	[2] Both
		4-12 Motor Speed Low Limit [Hz]	30 Hz
		4-14 Motor Speed High Limit [Hz]	50 Hz
		4-16 Torque Limit Motor Mode	^(a) 150%
		4-17 Torque Limit Generator Mode	^(a) 100%
	4-4* Adj. Warnings 2	4-40 Warning Frequency Low	^(a) 0.0 Hz
		4-41 Warning Frequency High	^(a) 400.00 Hz
	4-5* Adj. Warnings	4-50 Warning Current Low	^(a) 0.00 A
		4-51 Warning Current High	^(a) 100.00 A
		4-54 Warning Reference Low	^(a) -4999.000
		4-55 Warning Reference High	^(a) 4999.000
		4-56 Warning Feedback Low	^(a) -4999.000
		4-57 Warning Feedback High	^(a) 4999.000
		4-58 Missing Motor Phase Function	^(a) [1] On
	4-6* Speed Bypass	4-61 Bypass Speed From [Hz]	^(a) 0.0 Hz
		4-63 Bypass Speed To [Hz]	^(a) 0.0 Hz
5-** Inputs and Outputs	5-1* Digital Inputs	5-10 Terminal 18 Digital Input	[0] No function
		5-11 Terminal 19 Digital Input	[0] No function
		5-12 Terminal 27 Digital Input	[8] Start
		5-13 Terminal 29 Digital Input	[0] No operation
		5-15 Terminal 33 Digital Input	[0] No operation
	5-3* Digital Outputs	5-34 On Delay, Terminal 42 Digital Output	^(a) 0.01 s
		5-35 Off Delay, Terminal 42 Digital Output	^(a) 0.01 s
	5-4* Relays	5-40 Function Relay	Not used
		5-41 On Delay, Relay	^(a) 0.01 s
		5-42 Off Delay, Relay	^(a) 0.01 s
	5-5* Pulse Input	5-55 Terminal 33 Low Frequency	^(a) 20 Hz
		5-56 Terminal 33 High Frequency	^(a) 5000 Hz
		5-57 Term. 33 Low Ref./Feedb. Value	^(a) 0.000
		5-58 Term. 33 High Ref./Feedb. Value	^(a) 50.000

Menu	Sub-menu	Setting	Setting value
6-** Analog In/ Out	6-0* Analog I/O Mode	6-00 Live Zero Timeout Time	^(a) 10 s
		6-01 Live Zero TimeoutFunction	^(a) [0] Off
	6-1* Analog Input 1	6-10 Terminal 53 Low Voltage	^(a) 0.07 V
		6-11 Terminal 53 High Voltage	^(a) 10.00 V
		6-12 Terminal 53 Low Current	^(a) 0.14 mA
		6-13 Terminal 53 High	^(a) 20.00 mA
		6-14 Term. 53 Low Ref./Feedb. Value	^(a) 0.000
		6-15 Term. 53 High Ref./Feedb. Value	^(a) 50.000
		6-16 Terminal 53 Filter Time Constant	^(a) 0.01 s
		6-19 Terminal 53 mode	^(a) [0] Voltage mode
	6-2* Analog Input 2	6-22 Terminal 60 Low Current	^(a) 0.14 mA
		6-23 Terminal 60 High Current	^(a) 20.00 mA
		6-24 Term. 60 Low Ref./Feedb. Value	^(a) 0.000
		6-25 Term. 60 High Ref./Feedb. Value	^(a) 50.000
		6-26 Terminal 60 Filter Time Constant	^(a) 0.01 s
	6-8* LCP Potentiometer	6-80 LCP Potmeter Enable	^(a) [1] Enable
		6-81 LCP potm. Low Reference	^(a) 0.000
		6-82 LCP potm. High Reference	^(a) 50.00
	6-9* Analog Output xx	6-90 Terminal 42 Mode	^(a) [0] 0-20 mA
		6-91 Terminal 42 Analog Output	^(a) [0] No operation
		6-92 Terminal 42 Digital Output	^(a) [0] No Operation
		6-93 Terminal 42 Output Min Scale	^(a) 0.00%
		6-94 Terminal 42 Output Max Scale	^(a) 100.00%

Menu	Sub-menu	Setting	Setting value
7-** Controllers	7-2* Process Ctrl. Feedb	7-20 Process CL Feedback 1 Resource	^(a) [0] NoFunction
	7-3* Process PI Ctrl.	7-30 Process PI Normal/Inverse Ctrl	^(a) [0] Normal
		7-31 Process PI Anti Windup	^(a) [1] Enable
		7-32 Process PI Start Speed	^(a) 0.0 Hz
		7-33 Process PI Proportional Gain	^(a) 0.01
		7-34 Process PI Integral Time	^(a) 9999 s
		7-38 Process PI Feed Forward Factor	^(a) 0%
		7-39 On Reference Bandwidth	^(a) 5%

Menu	Sub-menu	Setting	Setting value
8-** Comm. and Options	8-0* General Settings	8-01 Control Site	[0] Digital and Control Word
		8-02 Control Word Source	^(a) [1] FC RS485
		8-03 Control Word Timeout Time	^(a) 1.0 s
		8-04 Control Word Timeout Function	^(a) [0] Off
		8-06 Reset Control Word	^(a) [0] No Function
	8-3* FC Port Settings	8-30 Protocol	[2] Modbus RTU
		8-31 Address	[2] Pump
		8-32 FC Port Baud Rate	[3] 19200
		8-33 FC Port Parity	[3] No Parity, 2 Stop Bits
		8-35 Minimum Response Delay	^(a) 0.010 s
		8-36 Max Response Delay	^(a) 5.000 s
	8-4* FC MC protocol set	8-42.00 FC Port PCD Write Configuration	[14] [1685] Control Word
		8-42.01 FC Port PCD Write Configuration	[15] [1686] REF
		8-43.00 PCD Read Configuration	[7] [1603] Status Word
		8-43.01 PCD read configuration	[8] [1605] Main Actual Value [%]
		8-43.02 PCD read configuration	[13] [1613] Frequency
		8-43.03 PCD read configuration	[14] [1614] Motor Current
		8-43.04 PCD read configuration	[34] [1690] Alarm Word
		8-43.05 PCD read configuration	[34] [1690] Alarm Word
		8-43.06 PCD read configuration	[18] [1634] Heatsink Temperatures
		8-43.07 PCD read configuration	[10] [1610] Power [kW]
		8-43.08 PCD read configuration	[3] [1502] kWh Counter
		8-43.9 PCD read configuration	[3] [1502] kWh Counter
		8-43.10 PCD read configuration	[17] [1630] DC Link Voltage
		8-43.11 PCD read configuration	[19] [1635] Inverter Thermal
		8-43.12 PCD read configuration	[35] [1692] Warning Word
		8-43.13 PCD read configuration	[35] [1692] Warning Word
		8-43.14 PCD read configuration	[16] [1618] Motor Thermal

Menu	Sub-menu	Setting	Setting value
8-** Comm. and Options (continued)	8-5* Digital/Bus	8-50 Coasting Select	^(a) [3] LogicOr
		8-51 Quick Stop Select	^(a) [3] LogicOr
		8-52 DC Brake Select	^(a) [3] LogicOr
		8-53 Start Select	^(a) [3] LogicOr
		8-54 Reversing Select	^(a) [3] LogicOr
		8-55 Set-up Select	^(a) [3] LogicOr
		8-56 Preset Reference Select	^(a) [3] LogicOr
	8-8* Bus communication Diagnostics	8-80 Bus Message Count	^(a) 0 N/A
		8-81 Bus Error Count	^(a) 0 N/A
		8-82 Slave Messages Rcvd	^(a) 0 N/A
		8-83 Slave Error Count	^(a) 0 N/A
	8-9* Bus Jog / Feedback	8-94 Bus feedback 1	0x8000-0x7FFF *0
13-** Smart Logic	13-0* SLC Settings	13-00 SL Controller Mode	^(a) [0] Off
		13-01 Start Event	^(a) [39] StartCommand
		13-02 Stop Event	^(a) [39] StartCommand
		13-03 Reset SLC	^(a) [0] Do not reset
	13-1* Comparators	13-10 Comparator Operand	^(a) [0] Disabled
		13-11 Comparator Operator	^(a) [1] Approximately equals
		13-12 Comparator Value	^(a) 0.0
	13-2* Timers	13-20 SL Controller Timer	^(a) 0.0 S
	13-4* Logic Rules	13-40 Logic Rule Boolean 1	^(a) [0] False
		13-41 Logic Rule Operator 1	^(a) [0] Disabled
		13-42 Logic Rule Boolean 2	^(a) [0] False
		13-43 Logic Rule Operator 2	^(a) [0] Disabled
		13-44 Logic Rule Boolean 3	^(a) [0] False
	13-5* States	13-51 SL Controller Event	^(a) [0] False
		13-52 SL Controller Action	^(a) [0] Disabled

Menu	Sub-menu	Setting	Setting value
14-** Special Functions	14-0* Inverter Switching	14-01 Switching Frequency	^(a) [1] 4 kHz
		14-03 Overmodulation	^(a) [1] On
	14-1* Mains monitoring	14-12 Function at mains imbalance	^(a) [0] Trip
	14-2* Trip Reset	14-20 Reset Mode	^(a) [0] Manual reset
		14-21 Automatic Restart Time	^(a) 10s
		14-22 Operation Mode	^(a) [0] Normal Operation
		14-26 Action At Inverter Fault	^(a) [0] Trip
	14-4* Energy Optimising	14-41 AEO Minimum Magnetisation	^(a) 66 %
	14-9* Fault Settings	14-90 Fault level	[3] Trip Lock
15-** Drive Information	15-0* Operating Data	15-00 Operating Days	-
		15-01 Running Hours	-
		15-02 kWh Counter	-
		15-03 Power Ups	-
		15-04 Over Temps	-
		15-05 Over Volts	-
		15-06 Reset kWh Counter	^(a) [0] Do not reset
		15-07 Reset Running Hours Counter	^(a) [0] Do not reset and [1] Reset counter
	15-3* Fault Log	15-30 Fault Log: Error Code	-
	15-4* Drive Identification	15-40 FC Type	-
		15-41 Power Section	-
		15-42 Voltage	-
		15-43 Software Version	-
		15-46 Frequency Converter Order. No	-
		15-48 LCP Id No	-
		15-51 Frequency Converter Serial No	-

Menu	Sub-menu	Setting	Setting value
16-** Data Readouts	16-0* General Status	16-00 Control Word	0-0XFFFF
		16-01 Reference [Unit]	^(a) 0.000
		16-02 Reference %	^(a) 0.0%
		16-03 Status Word	0-0XFFFF
		16-05 Main Actual Value [%]	^(a) 0.0%
		16-09 Custom Readout	-
	16-1* Motor Status	16-10 Power [kW]	-
		16-11 Power [hp]	-
		16-12 Motor Voltage [V]	-
		16-13 Frequency [Hz]	-
		16-14 Motor Current [A]	-
		16-15 Frequency [%]	-
		16-18 Motor Thermal [%]	-
	16-3* Drive Status	16-30 DC Link Voltage	-
		16-34 Heat sink Temp.	-
		16-35 Inverter Thermal	-
		16-36 Inv.Nom. Current	-
		16-37 Inv. Max. Current	-
		16-38 SL Controller State	-
	16-5* Ref./ Feedb.	16-50 External Reference	-
		16-51 Pulse Reference	-
		16-52 Feedback [Unit]	-
	16-6* Inputs/ Outputs	16-60 Digital Input 18,19,27,33	-
		16-61 Digital Input 29	-
		16-62 Analog Input 53 (volt)	-
		16-63 Analog Input 53 (current)	-
		16-64 Analog Input 60	-
		16-65 Analog Output 42 [mA]	-
		16-68 Pulse Input [Hz]	-
		16-71 Relay Output [bin]	-
		16-72 Counter A	-
		16-73 Counter B	-
	16-8* Fieldbus/ FC Port	16-86 FC Port REF 1	0x8000-0x7FFFF
	16-9* Diagnosis Readouts	16-90 Alarm Word	0-0XFFFFFFFF
		16-92 Warning Word	0-0XFFFFFFFF
		16-94 Ext. Status Word	0-0XFFFFFFFF

Menu	Sub-menu	Setting	Setting value
18-** Extended Motor Data	18-8* Motor Resistors	18-80 Stator Resistance (High resolution)	^(a) 0.000 ohm
		18-81 Stator Leakage Reactance (High resolution)	^(a) 0.000 ohm

^(a) A spare part will arrive with the settings indicated with an ^(a) and can be left as they are.

When you want to check / update these parameters on a properly functioning pump inverter OR when you need to set the parameters on a new pump inverter, the Danfoss keypad (PN 5902740) is needed (order as spare part).

To set the parameters

See "4.24.2 Repair procedures" [▶ 275].

