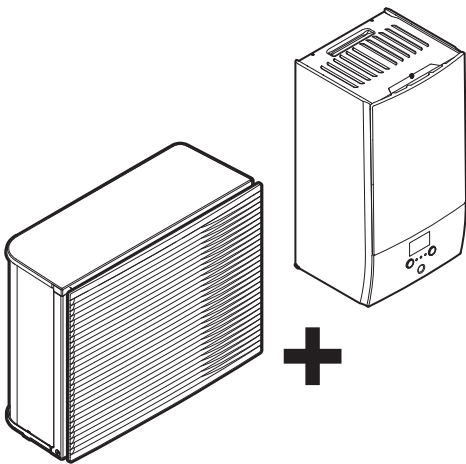




Service manual

Daikin Altherma 3 H HT W



UPRA036D ▲VK▼
UPRA043D ▲VK▼
UTBX040E ▲6VJ▼
▲ = 1, 2, 3, ..., 9, A, B, C, ..., Z
▼ = , , 1, 2, 3, ..., 9

Disclaimer

The present publication is drawn up by way of information only and does not constitute an offer binding upon Daikin Comfort Technologies Manufacturing, Inc.. Daikin Comfort Technologies Manufacturing, Inc. has compiled the content of this publication to the best of its knowledge. No express or implied warranty is given for the completeness, accuracy, reliability or fitness for particular purpose of its content and the products and services presented therein. Specifications are subject to change without prior notice. Daikin Comfort Technologies Manufacturing, Inc. explicitly rejects any liability for any direct or indirect damage, in the broadest sense, arising from or related to the use and/or interpretation of this publication. All content is copyrighted by Daikin Comfort Technologies Manufacturing, Inc..

Version log

Version code	Description	Date
ESIE25-03	Document release	February 2026

Table of Contents

1	Safety precautions	8
1.1	Meaning of warnings and symbols	8
1.2	Dangers.....	9
1.3	Warnings.....	9
1.4	Cautions.....	17
1.5	Notices.....	17
2	General operation	18
3	Troubleshooting	22
3.1	To display the help text in case of an error	22
3.2	To reset the error code	22
3.3	To check the error history.....	23
3.4	To check the running hours of the system	23
3.5	Error based troubleshooting.....	24
3.5.1	7H-01/04/05/06 – Water flow problem.....	24
3.5.2	7H-07 – Water flow problem. Pump unblocking active.....	26
3.5.3	80-01 – Entering water thermistor abnormality of outdoor unit.....	27
3.5.4	81-00 – Outlet water thermistor abnormality	27
3.5.5	81-06 – Entering water temperature thermistor abnormality (indoor unit)	28
3.5.6	89-01/02/03 – Heat exchanger freeze-up protection activated	28
3.5.7	89-05/06 – Heat exchanger freeze-up protection activated during cooling.....	30
3.5.8	8F-00 – Abnormal increase outlet water temperature (domestic hot water)	31
3.5.9	8H-00 – Abnormal increase outlet water temperature.....	32
3.5.10	8H-03 – Overheating space heating water circuit thermostat.....	33
3.5.11	A1-00 – Zero cross detection problem.....	33
3.5.12	AA-01 – Backup heater overheated	34
3.5.13	AC-00 – Booster heater overheated	35
3.5.14	AH-00 – Tank disinfection function not completed correctly.....	36
3.5.15	AJ-03 – Too long domestic hot water heat-up time required	37
3.5.16	C0-00 – Flow sensor malfunction	37
3.5.17	C4-00 – Heat exchanger thermistor problem	38
3.5.18	C5-00 – Heat exchanger thermistor abnormality	38
3.5.19	E1-00 – PCB failure	39
3.5.20	E2-00/01 – Leakage current detection error	39
3.5.21	E2-06 – Leakage current detection error	40
3.5.22	E3-00/01 – Outdoor unit: Actuation of high pressure switch	41
3.5.23	E3-24 – Outdoor unit: Actuation of high pressure switch	42
3.5.24	E4-00 – Abnormal suction pressure	43
3.5.25	E5-00/01 – Inverter compressor lock detection	44
3.5.26	E6-00 – Outdoor unit: Compressor startup defect	44
3.5.27	E7-01/05/63 – Malfunction of outdoor unit fan motor.....	45
3.5.28	E8-00 – Outdoor unit: Power input overvoltage.....	46
3.5.29	E9-00/01 – Malfunction of electronic expansion valve	46
3.5.30	E9-02 – Expansion valve error due to wetness.....	47
3.5.31	EA-00/01 – 4-way valve switching error	48
3.5.32	EC-00 – Abnormal increase tank temperature	49
3.5.33	EC-04 – Tank preheating.....	49
3.5.34	F3-00/01 – Outdoor unit: Malfunction of discharge pipe temperature.....	49
3.5.35	F3-24 – Compressor shell temperature error	50
3.5.36	H1-00 – External temperature sensor problem.....	51
3.5.37	H3-00/01 – Outdoor unit: Malfunction of high pressure switch.....	51
3.5.38	H4-00 – Malfunction of low pressure switch	52
3.5.39	H5-00 – Malfunction of compressor overload protection.....	52
3.5.40	H6-00 – Outdoor unit: Malfunction of position detection sensor.....	53
3.5.41	H8-00 – Outdoor unit: Malfunction of compressor input system.....	53
3.5.42	H9-00 – Outdoor unit: Malfunction of outdoor air thermistor	54
3.5.43	HC-00 – Tank temperature sensor problem	54
3.5.44	HJ-10 – Water pressure sensor abnormality.....	55
3.5.45	J3-00/01 – Outdoor unit: Malfunction of discharge pipe thermistor.....	55
3.5.46	J3-10 – Compressor port thermistor abnormality	55
3.5.47	J3-47 – Compressor shell thermistor abnormality.....	56
3.5.48	J5-00 – Malfunction of suction pipe thermistor	56
3.5.49	J6-00 – Outdoor unit: Malfunction of heat exchanger thermistor.....	56
3.5.50	J6-07 – Outdoor unit: Malfunction of heat exchanger thermistor.....	57

3.5.51	J6-32 – Leaving water temperature thermistor abnormality (outdoor unit).....	57
3.5.52	J6-33 – Sensor communication error.....	58
3.5.53	J8-00 – Malfunction of refrigerant liquid thermistor.....	58
3.5.54	JA-00/01 – Malfunction of high pressure sensor.....	59
3.5.55	JA-17 – Refrigerant pressure sensor abnormality.....	59
3.5.56	L1-01/02/03/04/06/31 – Malfunction of inverter PCB.....	60
3.5.57	L1-05/27 – Malfunction of inverter PCB.....	61
3.5.58	L1-54 – Malfunction of inverter PCB.....	61
3.5.59	L1-55 – Malfunction of inverter PCB.....	62
3.5.60	L3-00 – Outdoor unit: Electrical box temperature rise problem.....	62
3.5.61	L4-00/01 – Outdoor unit: Malfunction of inverter radiating fin temperature rise.....	63
3.5.62	L5-00 – Outdoor unit: Inverter instantaneous overcurrent.....	64
3.5.63	L8-00/01/02/03/04/05/14 – Malfunction by thermal protection inverter PCB.....	65
3.5.64	L9-01/02/03/13 – Prevention of compressor lock.....	65
3.5.65	LC-00 – Malfunction in communication system of outdoor unit.....	66
3.5.66	LC-01/03/05/33 – Transmission system abnormality.....	67
3.5.67	LC-02 – Malfunction in transmission system of outdoor unit.....	68
3.5.68	P1-00 – Open phase power supply imbalance.....	68
3.5.69	P3-00/01/04 – Abnormal direct current.....	69
3.5.70	P4-00/01/02/03 – Outdoor unit: Malfunction of radiating fin temperature sensor.....	69
3.5.71	PJ-00/01/04/09 – Capacity setting mismatch.....	70
3.5.72	U0-00 – Outdoor unit: Shortage of refrigerant.....	70
3.5.73	U0-13 – Outdoor unit: shortage of refrigerant (in heating mode).....	71
3.5.74	U0-14 – Outdoor unit: shortage of refrigerant (in cooling mode).....	72
3.5.75	U1-00 – Malfunction by reverse phase/open phase.....	72
3.5.76	U2-01/02/03/04/07/31/35/36/42/43/44 – Supply voltage error.....	73
3.5.77	U3-00 – Under floor heating screed dry-out function not completed correctly.....	74
3.5.78	U4-00 – Indoor/outdoor unit communication problem.....	74
3.5.79	U5-00 – User interface communication problem.....	75
3.5.80	U7-00 – Outdoor unit: Transmission malfunction between main microcomputer - inverter microcomputer.....	76
3.5.81	U8-04 – Unknown USB device.....	76
3.5.82	U8-05 – File malfunction.....	76
3.5.83	U8-07 – P1/P2 communication error.....	77
3.5.84	U8-11 – Connection with wireless gateway lost.....	77
3.5.85	UA-00 – Indoor unit, outdoor unit mismatching problem.....	78
3.5.86	UA-17 – Tank type problem.....	78
3.5.87	UF-00 – Reversed piping or bad communication wiring detection.....	79
3.6	Symptom based troubleshooting.....	80
3.6.1	Symptom: Incorrect energy metering read-out.....	80
3.6.2	Water pump related.....	80
3.6.3	Tap water related.....	82
3.6.4	Symptom: User interface is failure or frozen screen.....	83
3.6.5	Symptom: Leak.....	83
3.6.6	Symptom: Water flow or volume too low.....	84
3.6.7	Compressor related.....	84
3.6.8	Symptom: Abnormal presence of ice.....	87
3.6.9	Symptom: Domestic hot water capacity shortage.....	88
3.6.10	Symptom: General capacity shortage.....	89
3.6.11	Symptom: Space heating (cooling) capacity shortage.....	92
3.6.12	Symptom: Inaccurate temperature control.....	93
3.6.13	Symptom: Power consumption too high.....	94
3.6.14	Symptom: System does not start or operate.....	96
3.6.15	Symptom: The pump is blocked.....	98
4	Components	99
4.1	3-way valve.....	99
4.1.1	Checking procedures.....	99
4.1.2	Repair procedures.....	102
4.2	4-way valve.....	106
4.2.1	Checking procedures.....	106
4.2.2	Repair procedures.....	110
4.3	ACS digital I/O PCB.....	113
4.3.1	Checking procedures.....	113
4.3.2	Repair procedures.....	116
4.4	Backup heater.....	118
4.4.1	Checking procedures.....	118
4.4.2	Repair procedures.....	123
4.5	Backup heater thermal protector.....	127
4.5.1	Checking procedures.....	127

Table of Contents

4.5.2	Repair procedures	129
4.6	Booster heater.....	131
4.6.1	Checking procedures	131
4.6.2	Repair procedures	131
4.7	Booster heater thermal protector	132
4.7.1	Checking procedures	132
4.7.2	Repair procedures	132
4.8	Compressor	133
4.8.1	Checking procedures	133
4.8.2	Repair procedures	138
4.9	Current sensor.....	145
4.9.1	Checking procedures	145
4.9.2	Repair procedures	146
4.10	Expansion valve	148
4.10.1	Checking procedures	148
4.10.2	Repair procedures	152
4.11	Flash PCB	155
4.11.1	Checking procedures	155
4.11.2	Repair procedures	156
4.12	High pressure switch	158
4.12.1	Checking procedures	158
4.12.2	Repair procedures	161
4.13	Hydro PCB.....	164
4.13.1	Checking procedures	164
4.13.2	Repair procedures	168
4.14	Leakage current PCB	170
4.14.1	Checking procedures	170
4.14.2	Repair procedures	174
4.15	Low pressure switch.....	175
4.15.1	Checking procedures	175
4.15.2	Repair procedures	176
4.16	Magnetic filter/dirt separator.....	178
4.16.1	Checking procedures	178
4.16.2	Repair procedures	178
4.17	Main PCB	180
4.17.1	Checking procedures	180
4.17.2	Repair procedures	188
4.18	Noise filter PCB	190
4.18.1	Checking procedures	190
4.18.2	Repair procedures	194
4.19	Outdoor unit fan motor	197
4.19.1	Checking procedures	197
4.19.2	Repair procedures	200
4.20	Plate work.....	202
4.20.1	Outdoor unit	202
4.20.2	Indoor unit	206
4.21	Reactor	208
4.21.1	Checking procedures	208
4.21.2	Repair procedures	209
4.22	Refrigerant pressure sensor.....	209
4.22.1	Checking procedures	209
4.22.2	Repair procedures	212
4.23	Solenoid valve.....	214
4.23.1	Checking procedures	214
4.23.2	Repair procedures	216
4.24	Thermistors.....	221
4.24.1	Refrigerant side thermistors.....	221
4.24.2	Water side thermistors.....	228
4.24.3	Other thermistors	234
4.25	Transformer.....	236
4.25.1	Checking procedures	236
4.25.2	Repair procedures	237
4.26	User interface	238
4.26.1	Checking procedures	238
4.26.2	Repair procedures	241
4.27	Water flow sensor	244
4.27.1	Checking procedures	244
4.27.2	Repair procedures	245
4.28	Water pressure sensor	247

4.28.1	Checking procedures	247
4.28.2	Repair procedures	250
4.29	Water pump	252
4.29.1	Checking procedures	252
4.29.2	Repair procedures	254
5	Third party components	259
5.1	Electrical circuit	259
5.1.1	Checking procedures	259
5.1.2	Repair procedures	261
5.2	Refrigerant circuit.....	263
5.2.1	Checking procedures	263
5.2.2	Repair procedures	268
5.3	Water circuit.....	282
5.3.1	Checking procedures	282
5.3.2	Repair procedures	286
5.4	Manufacturer components.....	291
5.4.1	Checking procedures	291
5.4.2	Repair procedures	291
5.5	External factors.....	291
5.5.1	Checking procedures	291
6	Maintenance	293
6.1	To clean the outdoor unit heat exchanger	293
6.2	To clean the magnetic filter/dirt separator in case of trouble.....	293
6.3	To yearly clean the magnetic filter/dirt separator – flushing.....	294
6.4	To clean the integrated filter of the shut-off valve	295
7	Technical data	297
7.1	Detailed information setting mode.....	297
7.1.1	Detailed information setting mode: Indoor unit.....	297
7.1.2	Detailed information setting mode: Outdoor unit.....	297
7.1.3	Detailed information setting mode: Remote controller	297
7.2	Wiring diagram	298
7.2.1	Wiring diagram: Indoor unit.....	298
7.2.2	Wiring diagram: Outdoor unit	308
7.3	Piping diagram.....	312
7.3.1	Piping diagram: Indoor unit.....	312
7.3.2	Piping diagram: Outdoor unit.....	313
7.4	Component overview	315
7.4.1	Component overview: Indoor unit	315
7.4.2	Component overview: Outdoor unit	316
7.5	Field information report.....	317
7.6	Field settings.....	320
7.7	R32 (Difluoromethane) pressure-temperature chart.....	333

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 authorized 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

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 equalize, 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

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



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.
- there is continuity of ground bonding.



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, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.



WARNING

Make sure installation, testing and applied materials comply with applicable legislation (on top of the instructions described in the Daikin documentation). Work MUST be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.



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 pipework 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 pressurize 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 R32.
- 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 R32. 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 R32 (HFC) refrigerant, any flame in contact with (leaking) refrigerant is extremely dangerous.
- Electronic leak detectors may be used to detect refrigerant leaks but, in the case of FLAMMABLE REFRIGERANTS, the sensitivity may NOT be adequate or may need re-calibration (detection equipment MUST be calibrated in a refrigerant-free area).
- Leak detection equipment MUST be set at a percentage of the LFL of the refrigerant, MUST be calibrated to the refrigerant employed, and the appropriate percentage of gas (25% maximum) MUST be confirmed.



WARNING

- In order to prevent oxygen deficiency and R32 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 grounded prior to conducting maintenance or service or charging the system with refrigerant. Do NOT ground the unit to a utility pipe, surge protector, or telephone ground. Incomplete grounding 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 ground wiring. Do NOT ground the unit to a utility pipe, surge protector, or telephone ground. Incomplete grounding 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 ground leakage protector. Failure to do so may cause electrical shock or fire.
- When installing the ground leakage protector, make sure it is compatible with the inverter (resistant to high frequency electric noise) to avoid unnecessary opening of the ground leakage protector.
- Make sure to take into account the effects of aging or continuous vibration from sources such as the compressor or fan.
- Make sure that cabling will NOT be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.

**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 R32 refrigerant, to ensure a work environment free of refrigerant.

**WARNING**

- Equipment **MUST** be labeled 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 the 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 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 the 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 starting work on systems containing flammable refrigerant, safety checks are necessary to ensure that the risk of ignition is minimized. 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 labeled to recover R32. 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 R32 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 energized to accelerate this process. When oil is drained from a system, it MUST be carried out safely.

**WARNING**

Sealed electrical components MUST be replaced.

**WARNING**

Intrinsically safe components MUST be replaced.



WARNING

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures **MUST** be used. However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration. Adhere to the following procedure:

- Safely remove refrigerant following local and national regulation,
- Evacuate,
- Purge the circuit with inert gas (optional for A2L),
- Evacuate (optional for A2L),
- Continuously flush or purge with inert gas when using a flame to open the circuit,
- Open the circuit.

The refrigerant charge **MUST** be recovered into the correct recovery cylinders if venting is not allowed by local and national codes.

The system **MUST** be purged with oxygen-free nitrogen to make the appliance safe for flammable refrigerants. This process might need to be repeated several times. Do **NOT** use compressed air or oxygen to purge the refrigerant system.

Refrigerant purging **MUST** be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process **MUST** be repeated until **NO** refrigerant is within the system (optional for A2L).

When the final oxygen-free nitrogen charge is used, the system **MUST** be vented down to atmospheric pressure to enable work to take place.

Ensure that the outlet for the vacuum pump is **NOT** close to any potential ignition sources and that ventilation is available.



WARNING

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants be removed safely.

When transferring refrigerant into cylinders, ensure that **ONLY** appropriate refrigerant recovery cylinders are used. Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labeled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders **MUST** be complete with pressure relief valves and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment **MUST** be in good working order with a set of instructions concerning the equipment that is at hand and **MUST** be suitable for the recovery of the flammable refrigerant. Consult the manufacturer if in doubt. In addition, a set of calibrated weighing scales **MUST** be available and in good working order. Hoses **MUST** be complete with leak-free disconnect couplings and in good condition.

The recovered refrigerant **MUST** be processed according to local codes in the correct recovery cylinder, and the relevant waste transfer note arranged. Do **NOT** mix refrigerants in recovery units and especially **NOT** in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does **NOT** remain within the lubricant. Do **NOT** heat the compressor body with an open flame or other ignition sources to accelerate this process. Draining of oil from a system **MUST** be carried out safely.

**WARNING**

In addition to conventional charging procedures, the following requirements MUST be followed:

- Ensure that contamination of different refrigerants does NOT occur when using charging equipment. Hoses or lines MUST be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders MUST be kept in an appropriate position according to the instructions,
- Ensure that the refrigerating system is grounded prior to charging the system with refrigerant,
- Label the system when charging is complete (if not already),
- Take extreme care NOT to overfill the refrigerating system.

Prior to recharging the system, it MUST be pressure-tested with the appropriate purging gas. The system MUST be leak-tested on completion of charging, but prior to commissioning. A follow up leak test MUST be carried out prior to leaving the site.

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 aluminum 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 the applicable local codes.

**NOTICE**

Make sure refrigerant piping installation complies with the latest edition of ASHRAE 15.2, ASHRAE 15, ASHRAE 34 and applicable codes.

**NOTICE**

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

2 General operation

The High temperature split (Top Grade) is a Heat Pump used for cooling and/or heating in residential applications.

Outdoor units



The outdoor unit consists of:

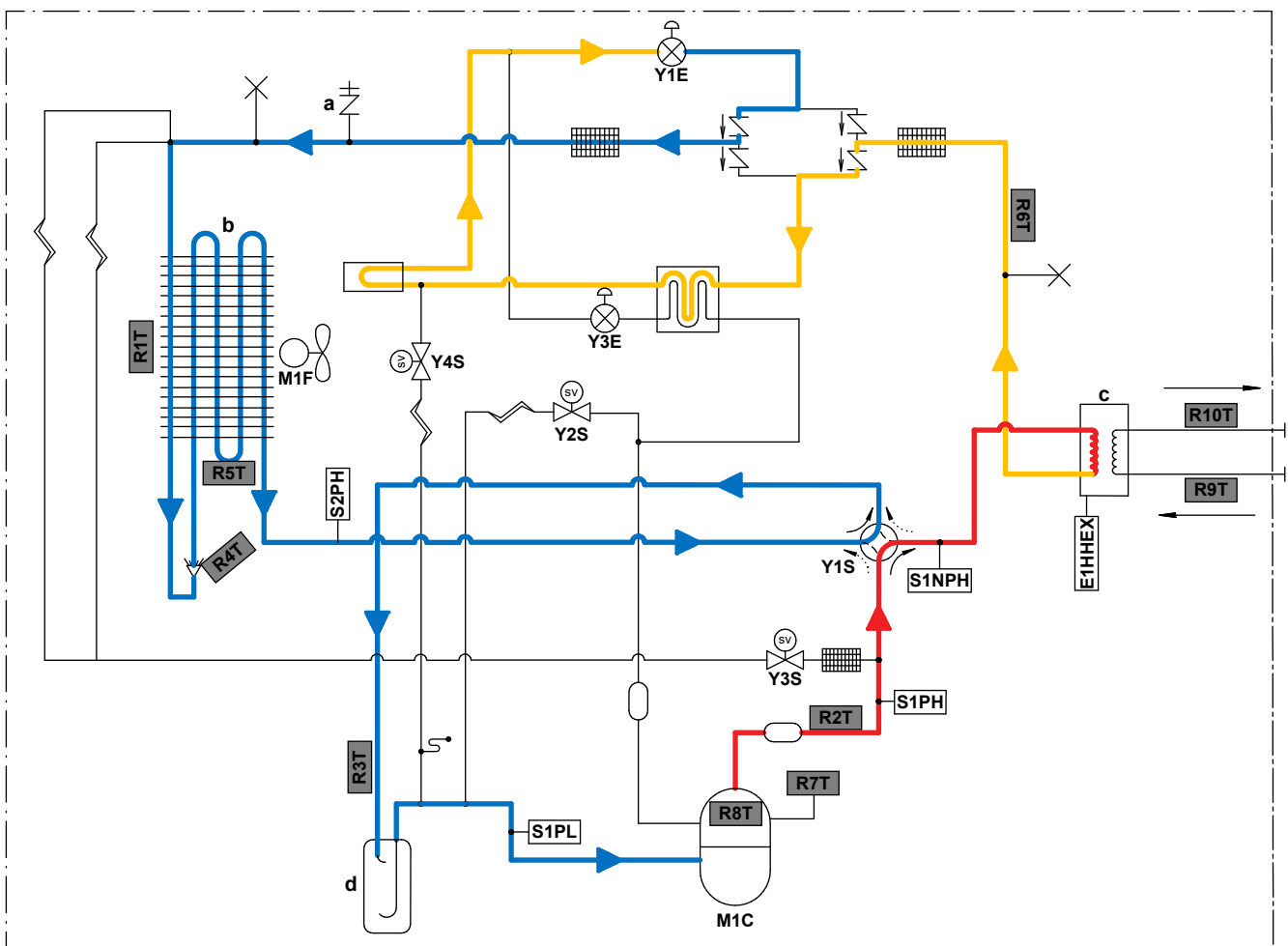
- Inverter compressor
- A switchbox containing necessary PCBs
- An air cooled heat-exchanger
- 2 expansion valves (main, and injection)
- Fan motor
- 2 water piping connections (Water IN and Water Out)

Heating mode

In heating, the fan in the outdoor unit draws the ambient air, from which the cooled refrigerant absorbs its heat and evaporates in the heat exchanger coil. The refrigerant is then compressed in the compressor which raises its temperature. The hot refrigerant transfers its heat to the water circuit in the plate heat exchanger without direct contact between the refrigerant and the water. The refrigerant travels further through the expansion valve where it expands, cools down again and the cycle repeats.

The compressor capacity step is defined by the condensing temperature, which is calculated through the high pressure sensor read-out.

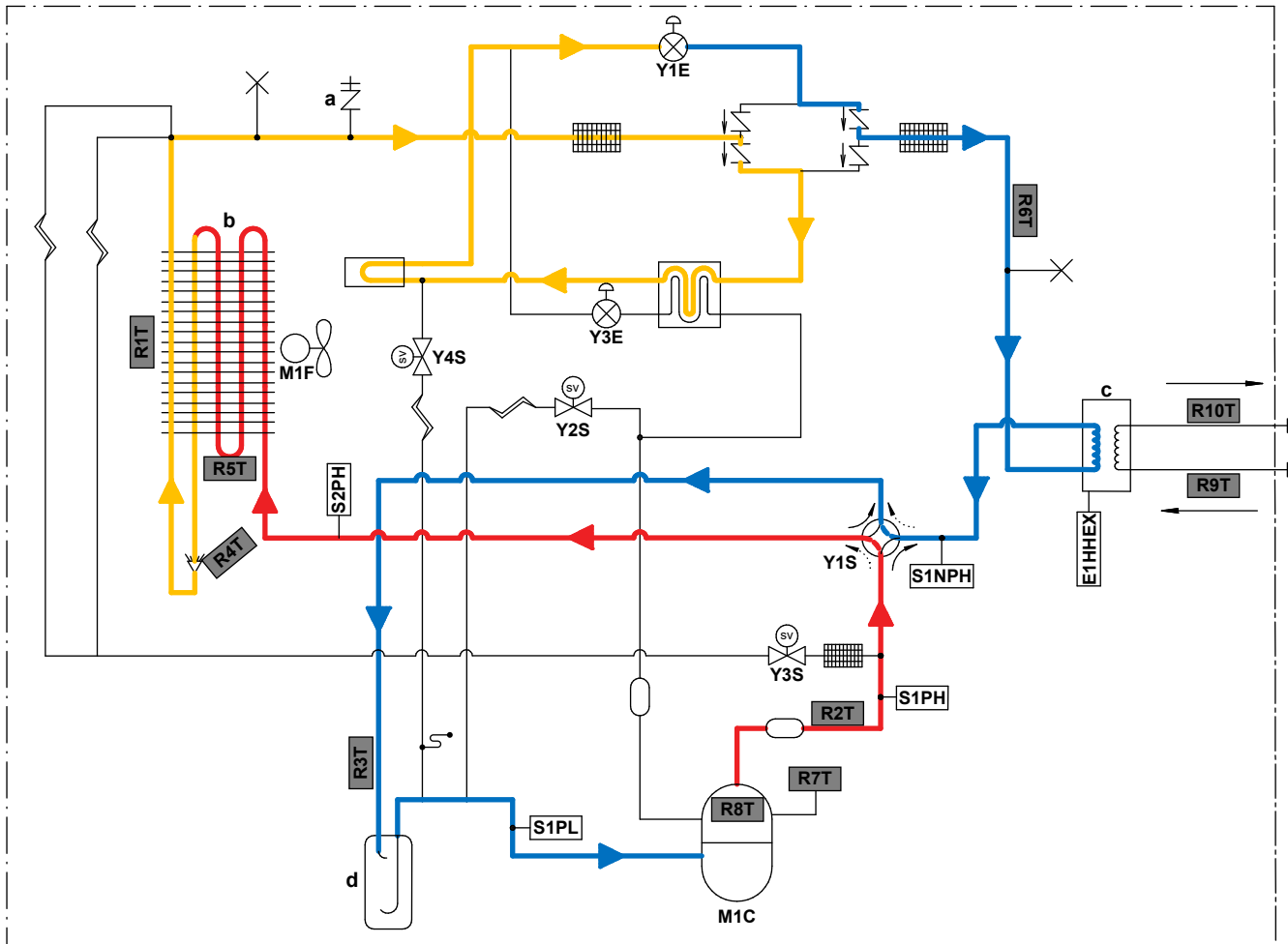
In defrost operation the heat exchanger coil functions as a condenser, while its fan is stopped.



Cooling mode

In cooling, the refrigerant flow direction is reversed by the 4-way valve. In this case, the heat is extracted from the indoor air and rejected to the outdoor air.

The compressor capacity step is defined by the evaporation temperature, which is calculated through the low pressure sensor read-out.



Indoor units

Below list is only for reference for compatible units. Always refer to the Engineering Databook for compatibility.

Wall mounted UTBX040E		Stainless domestic hot water tank UHWS40/50/80D3 VJ	
--------------------------	---	--	---

The indoor unit consists of:


- Switchbox containing all necessary PCB's and electrical connections
- Water pump
- Backup heater
- Flow sensor
- Water pressure sensor
- User interface

The indoor units of the Daikin Altherma system manage and distribute heating, cooling, and domestic hot water efficiently within a home.


3 Troubleshooting

3.1 To display the help text in case of an error

In case of an error, the following will appear on the home screen depending on the severity:


- : Error
- : Malfunction

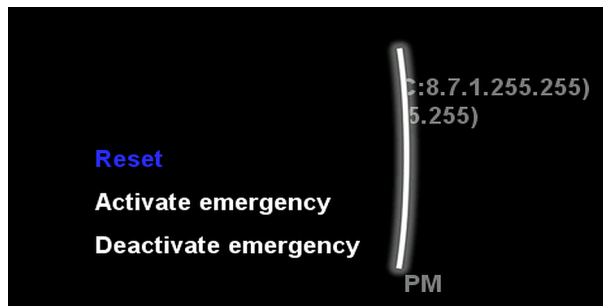
You can get a short and a long description of the error as follows:


1	Press the left dial to open the main menu and go to Error . Result: A short description of the error and the error code is displayed on the screen.	
2	Press ? in the error screen. Result: A long description of the error is displayed on the screen.	?

3.2 To reset the error code

- 1** Display the help text of the error, see ["3.1 To display the help text in case of an error" \[▶ 22\]](#).

1	Press the left dial to open the menu and go to Reset .	
----------	---	---



2	Press the left dial to reset the error. Result: The error has been reset.	
----------	---	---

3.3 To check the error history

Conditions: The user permission level is set to advanced end user.

1	Go to [8.2]: Information > Error history .	
----------	--	--

You see a list of the most recent errors.

7H-01	[E]	8 Apr 1971	11:06 PM
7H-01	[E]	14 July 1972	10:13 PM
7H-01	[E]	20 Oct 1973	09:20 PM
7H-01	[E]	26 Jan 1975	08:26 PM
7H-01	[E]	3 May 1976	07:33 PM
7H-01	[E]	9 Aug 1977	06:40 PM

3.4 To check the running hours of the system

1	Go to [8.9]: Information > Running hours .	
----------	--	--

You see a list of the running hours of the components.

8.9.1	
Pump	50
Compressor	
BUH	
BUH additional capacity step	
Solar pump	50
Booster heater	50

3.5 Error based troubleshooting



INFORMATION

When power reset of the unit is needed:

In case the indoor unit has a separate power supply, also reset the power of the indoor unit.

3.5.1 7H-01/04/05/06 – Water flow problem

Trigger	Effect	Reset
<p>7H-01</p> <p>System detects flow abnormality during operation.</p> <p>Water flow lower than:</p> <ul style="list-style-type: none"> ▪ 1.59 gal/min (6 l/min) (space heating or domestic hot water operation without backup heater) ▪ 3.17 gal/min (12 l/min) (space heating or domestic hot water operation with backup heater) ▪ 3.96 gal/min (15 l/min) (space cooling operation) ▪ 4.76 gal/min (18 l/min) (defrost operation if Ta >14°F (-10°C)) ▪ 5.28 gal/min (20 l/min) (defrost operation if Ta <14°F (-10°C)) 	Unit will stop operating.	Automatic reset.

Trigger	Effect	Reset
<p>7H-04</p> <p>System detects flow abnormality mainly during domestic hot water operation.</p> <p>Water flow lower than:</p> <ul style="list-style-type: none"> ▪ 1.59 gal/min (6 l/min) (without backup heater) ▪ 3.17 gal/min (12 l/min) (with backup heater) <p>Occurs after 11 automatic resets of error code 7H-01.</p>	Unit will stop operating.	Manual reset via user interface.
<p>7H-05</p> <p>System detects flow abnormality mainly during space heating operation.</p> <p>Water flow lower than:</p> <ul style="list-style-type: none"> ▪ 1.59 gal/min (6 l/min) (without backup heater) ▪ 3.17 gal/min (12 l/min) (with backup heater) <p>Occurs after 11 automatic resets of error code 7H-01.</p>		
<p>7H-06</p> <p>System detects flow abnormality mainly during space cooling or defrost operation.</p> <p>Water flow lower than:</p> <ul style="list-style-type: none"> ▪ 3.96 gal/min (15 l/min) (space cooling) ▪ 4.76 gal/min (18 l/min) (defrost if Ta >14°F (-10°C)) ▪ 5.28 gal/min (20 l/min) (defrost if Ta <14°F (-10°C)) <p>Occurs after 2 automatic resets of error code 7H-01.</p>		


To solve the error code



INFORMATION

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

- 1 Check that all stop valves of the water circuit are open. See ["5.3 Water circuit" \[▶ 282\]](#).
Possible cause: Closed stop valve in the water circuit.
- 2 Purge the water circuit. See ["5.3 Water circuit" \[▶ 282\]](#).
Possible cause: Air in the water circuit.
- 3 Check the water flow. See ["5.3 Water circuit" \[▶ 282\]](#).
Possible cause: Water flow is too low.
- 4 Check the water pressure. See ["5.3 Water circuit" \[▶ 282\]](#).
Possible cause: Water pressure is too low.
- 5 Check if a by-pass is installed in the water circuit. See ["5.3 Water circuit" \[▶ 282\]](#).
Possible cause: No by-pass installed in the water circuit.
- 6 Clean the integrated filter of the shut-off valve. See ["6 Maintenance" \[▶ 293\]](#).
Possible cause: Dirty filter in the shut-off valve.
- 7 Clean the magnetic filter/dirt separator. See ["6 Maintenance" \[▶ 293\]](#).
Possible cause: Faulty or dirty magnetic filter/dirt separator.
- 8 Perform an electrical check of the water flow sensor. See ["4.27 Water flow sensor" \[▶ 244\]](#).
Possible cause: Faulty water flow sensor.
- 9 Perform a check of the 3-way valve. See ["4.1 3-way valve" \[▶ 99\]](#).
Possible cause: Faulty 3-way valve.
- 10 Perform a check of the water pump. See ["4.29 Water pump" \[▶ 252\]](#).
Possible cause: Faulty water pump.




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

3.5.2 7H-07 – Water flow problem. Pump unblocking active

Trigger	Effect	Reset
Unit detects that the water pump might be blocked.	Unit will NOT stop operating. Water pump de-blocking routine started (30 minutes).	Automatic reset when water pump is de-blocked.

To solve the error code

- 1 No specific check / repair procedures can be performed to solve this error code. Wait until the water pump unblocking routine is finished (± 30 minutes maximum).



INFORMATION
As long as the water pump de-blocking routine is active, the error code will be displayed on the user interface.

**INFORMATION**

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

3.5.3 80-01 – Entering water thermistor abnormality of outdoor unit

Trigger	Effect	Reset
Inlet water thermistor is malfunctioning or bad connection.	Unit will stop operating.	Automatic reset.

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 (outdoor unit side). See "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty inlet water thermistor (outdoor unit side).
- 2 Perform a check of the ACS digital I/O PCB. See "[4.3 ACS digital I/O PCB](#)" [▶ 113].
Possible cause: Faulty ACS digital I/O PCB.

**INFORMATION**

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

3.5.4 81-00 – Outlet water thermistor abnormality

Trigger	Effect	Reset
Outlet water thermistor is malfunctioning or bad connection.	Unit will stop operating.	Automatic reset.

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 after heat exchanger thermistor. See "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty outlet water after heat exchanger thermistor.
- 2 Perform a check of the ACS digital I/O PCB. See "[4.3 ACS digital I/O PCB](#)" [▶ 113].
Possible cause: Faulty ACS digital I/O PCB.

**INFORMATION**

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

3.5.5 81-06 – Entering water temperature thermistor abnormality (indoor unit)

Trigger	Effect	Reset
Inlet water thermistor is malfunctioning or bad connection.	Unit will stop operating.	Automatic reset.

To solve the error code

- 1 Perform a check of the inlet water thermistor (indoor unit side). See "4.24 Thermistors" [▶ 221].

Possible cause: Faulty inlet water thermistor (indoor unit side).



INFORMATION

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

3.5.6 89-01/02/03 – Heat exchanger freeze-up protection activated

Trigger	Effect	Reset
<p>89-01</p> <p>Plate heat exchanger freeze up error is activated. Water temperature dropped too low and too long during defrost cycle or equivalent cycle e.g. oil return.</p> <p>During defrost mode: Plate heat exchanger outlet water temperature <42.8°F (6°C) or inlet water temperature <59°F (15°C) OR the negative capacity during defrost is below the safe threshold for the used plate heat exchanger.</p> <p>NOT during defrost mode: Saturated evaporation temperature in the plate heat exchanger <42.8°F (6°C) for 4 minutes while NOT in defrost or Cooling mode.</p>	Unit will stop operating.	Manual reset via user interface.

Trigger	Effect	Reset
89-02 Heat exchanger freeze up warning activated while NOT in defrost mode or Cooling mode (e.g. during oil return operation or after power reset of the unit).	Unit will stop operating.	Automatic reset.
89-03 Refrigerant temperature or outlet water temperature is too low during defrost.	Unit will NOT stop operating.	Automatic reset.

To solve the error code



INFORMATION

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



INFORMATION

Ensure latest software is installed on the indoor and outdoor unit. Check your local channel for downloading latest software.

- 1 Check the minimum required water volume in the circuit for defrost cycle. See installer reference guide for applicable values.
Possible cause: Water volume is too low.
- 2 Check the minimum required water flow for defrost operation. See ["5.3 Water circuit"](#) [▶ 282].
Possible cause: Water flow is too low caused by high pressure drop in the system (system clogged or pipe size too small).
- 3 Check the water pressure. See ["5.3 Water circuit"](#) [▶ 282].
Possible cause: Water pressure is too low.
- 4 If error code 89-02 is present in the error log before error code 89-01 is triggered, perform a functional check of the 4-way valve. See ["4.2 4-way valve"](#) [▶ 106].
Possible cause: 4-way valve NOT returning to Heating position.
- 5 Perform a check of the inlet water thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty inlet water thermistor.
- 6 Perform a check of the outlet water thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty outlet water thermistor.
- 7 Perform a check of the refrigerant liquid thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty refrigerant liquid thermistor or connector fault.
- 8 Perform a check of the suction pipe thermistor. See ["4.24 Thermistors"](#) [▶ 221].

Possible cause: Faulty suction pipe thermistor or connector fault.

- 9 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 263].

Possible cause: Refrigerant overcharge or shortage.

- 10 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▶ 263].

Possible cause: Clogged refrigerant circuit.



INFORMATION

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

3.5.7 89-05/06 – Heat exchanger freeze-up protection activated during cooling

Trigger	Effect	Reset
89-05 Water heat exchange freezing abnormality during cooling. Outlet water temperature plate heat exchanger <33.8°F (1°C) or 34.7°F (1.5°C) (anti-freeze) for 5 seconds OR saturated evaporation temperature (pressure sensor) <25.7°F (-3.5°C) or 23°F (-5°C) (anti-freeze) for 30 seconds. Occurs after 2 automatic resets of error code 89-06.	Unit will stop operating.	Power reset.
89-06 Water heat exchange freezing abnormality during cooling. Outlet water temperature plate heat exchanger <33.8°F (1°C) or 34.7°F (1.5°C) (anti-freeze) for 5 seconds OR saturated evaporation temperature (pressure sensor) <25.7°F (-3.5°C) or 23°F (-5°C) (anti-freeze) for 30 seconds.	Unit will stop operating.	Auto reset.

To solve the error code



INFORMATION

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

- 1 Check the minimum required water volume in the circuit for defrost cycle. See installer reference guide for applicable values.
Possible cause: Water volume is too low.
- 2 Check the minimum required water flow for Cooling operation. See ["5.3 Water circuit"](#) [▶ 282].
Possible cause: Water flow is too low caused by high pressure drop in the system (system clogged or pipe size too small).
- 3 Check the water pressure. See ["5.3 Water circuit"](#) [▶ 282].
Possible cause: Water pressure is too low.
- 4 Perform a check of the inlet water thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty inlet water thermistor.
- 5 Perform a check of the outlet water thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty outlet water thermistor.
- 6 Perform a check of the refrigerant liquid thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty refrigerant liquid thermistor or connector fault.
- 7 Perform a check of the suction pipe thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty suction pipe thermistor or connector fault.
- 8 Perform a check of the refrigerant pressure sensor. See ["4.22 Refrigerant pressure sensor"](#) [▶ 209].
Possible cause: Faulty refrigerant pressure sensor.
- 9 Check if the refrigerant circuit is correctly charged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Refrigerant overcharge or shortage.
- 10 Check if the refrigerant circuit is clogged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Clogged refrigerant circuit.

**INFORMATION**

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

3.5.8 8F-00 – Abnormal increase outlet water temperature (domestic hot water)

Trigger	Effect	Reset
Outlet water after backup heater thermistor detects a too high temperature during domestic hot water without electrical heater.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

**INFORMATION**

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

- 1 Check the water flow. See ["5.3 Water circuit"](#) [▶ 282].
Possible cause: Water flow is too low.
- 2 Perform a check of the outlet water after backup heater thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty outlet water after backup heater thermistor.
- 3 Check if the water circuit is clogged. See ["5.3 Water circuit"](#) [▶ 282].
Possible cause: Clogged water circuit.
- 4 Perform a check of the water pump. See ["4.29 Water pump"](#) [▶ 252].
Possible cause: Faulty water pump.
- 5 Perform a check of the backup heater contactor(s). See ["4.4 Backup heater"](#) [▶ 118].
Possible cause: Faulty backup heater contactor(s).



INFORMATION

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

3.5.9 8H-00 – Abnormal increase outlet water temperature

Trigger	Effect	Reset
Outlet water after backup heater thermistor detects a too high temperature during space heating without electrical heater.	Unit will stop operating.	Manual reset via user interface.

To solve the error code



INFORMATION

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

- 1 Check the water flow. See ["5.3 Water circuit"](#) [▶ 282].
Possible cause: Water flow is too low.
- 2 Perform a check of the outlet water after backup heater thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty outlet water after backup heater thermistor.
- 3 Check if the 3-way valve is leaking and bypassing the high temperature domestic hot water to the space heating circuit. See ["4.1 3-way valve"](#) [▶ 99].
Possible cause:
 - Wrongly set 3-way valve.
 - Faulty 3-way valve.
- 4 Check if the water circuit is clogged. See ["5.3 Water circuit"](#) [▶ 282].
Possible cause: Clogged water circuit.
- 5 Perform a check of the water pump. See ["4.29 Water pump"](#) [▶ 252].
Possible cause: Faulty water pump.
- 6 Perform a check of the backup heater contactor(s). See ["4.4 Backup heater"](#) [▶ 118].

Possible cause: Faulty backup heater contactor(s).



INFORMATION

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

3.5.10 8H-03 - Overheating space heating water circuit thermostat

Trigger	Effect	Reset
Safety thermostat Q4L has tripped due to too high water temperature in space heating circuit.	Pump will stop running.	Automatic reset.

To solve the error code



INFORMATION

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

- 1 Check if the safety thermostat Q4L connected on the X5M terminals and user interface settings matches. See "[4.26 User interface](#)" [▶ 238].

Possible cause: Mismatch of the physical connection and user interface setting.

- 2 Check if the 3-way valve is leaking and bypassing the high temperature domestic hot water to the space heating circuit. See "[4.1 3-way valve](#)" [▶ 99].

Possible cause:

- Wrongly set 3-way valve.
- Faulty 3-way valve.

- 3 Perform a check of the operation of the safety thermostat Q4L. See "[5.4 Manufacturer components](#)" [▶ 291].

Possible cause: Faulty safety thermostat Q4L.



INFORMATION

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

3.5.11 A1-00 – Zero cross detection problem

Trigger	Effect	Reset
Power supply abnormality. The sinus of the power supply crosses the 0-axis too often in ±10 seconds.	Unit will stop operating.	Manual reset via user interface.
		Power reset.

To solve the error code



INFORMATION

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

- 1 Perform a check of the main PCB. See "[4.17 Main PCB](#)" [▶ 180].

Possible cause: Faulty main PCB.

- 2 Perform a check of the noise filter PCB. See "[4.18 Noise filter PCB](#)" [▶ 190].

Possible cause: Faulty noise filter PCB.

- 3 Check if the power supply is compliant with the regulations. See "[5.1 Electrical circuit](#)" [▶ 259].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.



INFORMATION

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

3.5.12 AA-01 – Backup heater overheated

Trigger	Effect	Reset
Thermal protector is activated. Measured water temperature too high.	Unit will stop operating.	Power OFF the unit, perform manual reset of backup heater thermal protector and power unit back ON.

To solve the error code



INFORMATION

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

- 1 Check the water pressure. See "[5.3 Water circuit](#)" [▶ 282].
Possible cause: Water pressure is too low.
- 2 Check the water flow. See "[5.3 Water circuit](#)" [▶ 282].
Possible cause: Water flow is too low.
- 3 Purge the water circuit. See "[5.3 Water circuit](#)" [▶ 282].
Possible cause: Air in the water circuit.
- 4 Check the water circuit for an external heat source. See "[5.3 Water circuit](#)" [▶ 282].
Possible cause: Increased water temperature due to an external heat source.
- 5 Perform a check of the backup heater thermal protector. See "[4.5 Backup heater thermal protector](#)" [▶ 127].
Possible cause: Faulty backup heater thermal protector.
- 6 Perform a check of the outlet water after backup heater thermistor. See "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty outlet water after backup heater thermistor.
- 7 Perform a check of the backup heater. See "[4.4 Backup heater](#)" [▶ 118].
Possible cause: Faulty backup heater.
- 8 Perform a check of the hydro PCB. See "[4.13 Hydro PCB](#)" [▶ 164].

Possible cause: Faulty hydro PCB.



INFORMATION

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

3.5.13 AC-00 – Booster heater overheated

Trigger	Effect	Reset
If NO booster heater thermal protector is installed: Error will be triggered when bridge connection over booster heater contact is NOT made.	Unit will NOT stop operating.	Manual reset via user interface when bridge connection is made.
If booster heater thermal protector is installed: Error will be triggered when thermal protection of booster heater is activated (measured water temperature too high).	Unit will NOT stop operating.	Manual reset of thermal protector.
		Manual reset via user interface.

To solve the error code



INFORMATION

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

- 1 Check if either a bridge connector OR a booster heater thermal protector is installed (connected) on terminal X2M: 10-11a.
 - IF BRIDGE CONNECTOR IS INSTALLED:
 - 1 Check that the bridge connector is correctly connected to X21A of the hydro PCB. See "[7.2 Wiring diagram](#)" [▶ 298].

Possible cause: Open jumper on X21A on hydro PCB.
 - 2 Perform a check of the hydro PCB. See "[4.13 Hydro PCB](#)" [▶ 164].

Possible cause: Faulty hydro PCB.
 - IF BOOSTER HEATER THERMAL PROTECTOR IS INSTALLED:
 - 1 Check the water flow. See "[5.3 Water circuit](#)" [▶ 282].

Possible cause: Water flow is too low.
 - 2 Purge the water circuit. See "[5.3 Water circuit](#)" [▶ 282].

Possible cause: Air in the water circuit.
 - 3 Check the water circuit for an external heat source. See "[5.3 Water circuit](#)" [▶ 282].

Possible cause: Increased water temperature due to an external heat source.
 - 4 Check the domestic hot water tank and booster heater related settings. See "[4.26 User interface](#)" [▶ 238].

Possible cause: Faulty booster heater settings.

- 5 Perform a check of the booster heater thermal protector. See "[4.7 Booster heater thermal protector](#)" [▶ 132].
Possible cause: Faulty booster heater thermal protector.
- 6 If installed, perform a check of the booster heater. See "[4.6 Booster heater](#)" [▶ 131].
Possible cause: Faulty booster heater.
- 7 Perform a check of the hydro PCB. See "[4.13 Hydro PCB](#)" [▶ 164].
Possible cause: Faulty hydro PCB.
- 8 Perform a check of the power supply, connections, wiring,... between the outdoor unit, indoor unit and (separate) domestic hot water tank (if applicable). See "[5.1 Electrical circuit](#)" [▶ 259].
Possible cause: Faulty wiring between the outdoor unit, indoor unit and domestic hot water tank.



INFORMATION

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

3.5.14 AH-00 – Tank disinfection function not completed correctly

Trigger	Effect	Reset
Disinfection setpoint is NOT reached within 6 hours or NOT kept for the required time.	Unit will NOT stop operating.	Automatic reset when disinfection is completed.

To solve the error code



INFORMATION

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

- 1 Check when the disinfection is scheduled. Schedule it when there is little chance that water will be tapped so that the disinfection can finish in time.
Possible cause: Large quantity of hot water has been tapped during/before disinfection.
- 2 Check the disinfection settings [2-00] to [2-04] and backup heater settings [4-00]. See "[4.26 User interface](#)" [▶ 238].
Possible causes:
 - Incorrect disinfection setting(s),
 - Backup heater is restricted during disinfection.
- 3 Check the domestic hot water tank and booster heater related settings. See "[4.26 User interface](#)" [▶ 238].
Possible cause: Faulty booster heater settings.



INFORMATION

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

3.5.15 AJ-03 – Too long domestic hot water heat-up time required

Trigger	Effect	Reset
Domestic hot water heat-up time >6 hours.	Unit will switch to space heating/cooling for 3 hours.	Automatic reset after a domestic hot water heat-up time <6 hours.

To solve the error code

**INFORMATION**

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

- 1 Perform a check of the backup heater. See ["4.4 Backup heater"](#) [▶ 118].
Possible cause: Faulty backup heater.
- 2 Check if the power supply is compliant with the regulations. See ["5.1 Electrical circuit"](#) [▶ 259].
Possible cause:
 - Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
 - Power drop,
 - Short circuit.
- 3 Perform a check of the 3-way valve. See ["4.1 3-way valve"](#) [▶ 99].
Possible cause: Faulty 3-way valve.
- 4 Check the installation for a leaking field installed domestic hot water tap. See ["5.3 Water circuit"](#) [▶ 282].
Possible cause: Leaking field installed domestic hot water tap.
- 5 Check the settings of the backup heater [4-00]. See ["4.26 User interface"](#) [▶ 238].
Possible cause: Backup heater NOT allowed.
- 6 Check the software and EEPROM version on the user interface and PCB. See ["4.26 User interface"](#) [▶ 238].
Possible cause: Mismatch between the software ID and EEPROM on the PCB or user interface.
- 7 Check that the domestic hot water consumption is NOT too large. Lower if needed.
Possible cause: Domestic hot water consumption too large.

**INFORMATION**

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

3.5.16 C0-00 – Flow sensor malfunction

Trigger	Effect	Reset
Water flow sensor detects water flow 45 seconds after the water pump has stopped.	Unit will stop operating.	Manual reset via user interface.

To solve the error code



INFORMATION

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

- 1 Check the water circuit for an external pump. See ["5.3 Water circuit"](#) [▶ 282].
Possible cause: The detected water flow is caused by an external pump.
- 2 Perform an electrical check of the water flow sensor. See ["4.27 Water flow sensor"](#) [▶ 244].
Possible cause: Faulty water flow sensor.



INFORMATION

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

3.5.17 C4-00 – Heat exchanger thermistor problem

Trigger	Effect	Reset
Refrigerant liquid thermistor detects an open or short circuit during compressor operation.	Unit will stop operating.	Power reset.

To solve the error code

- 1 Perform a check of the refrigerant liquid thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty refrigerant liquid thermistor or connector fault.



INFORMATION

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

3.5.18 C5-00 – Heat exchanger thermistor abnormality

Trigger	Effect	Reset
Refrigerant heat exchanger thermistor is malfunctioning or bad connection.	Unit will stop operating.	Automatic reset.

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 (outdoor unit side). See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty inlet water thermistor (outdoor unit side).
- 2 Perform a check of the outlet water after heat exchanger thermistor. See ["4.24 Thermistors"](#) [▶ 221].

Possible cause: Faulty outlet water after heat exchanger thermistor.

- 3 Perform a check of the refrigerant liquid thermistor. See "4.24 Thermistors" [▶ 221].

Possible cause: Faulty refrigerant liquid thermistor or connector fault.

- 4 Perform a check of the ACS digital I/O PCB. See "4.3 ACS digital I/O PCB" [▶ 113].

Possible cause: Faulty ACS digital I/O PCB.

- 5 Perform a check of the main PCB. See "4.17 Main PCB" [▶ 180].

Possible cause: Faulty main PCB.



INFORMATION

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

3.5.19 E1-00 – PCB failure

Trigger	Effect	Reset
Several hardware related issues of the outdoor unit main PCB.	Unit will stop operating.	Power reset.

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 "5.1 Electrical circuit" [▶ 259].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.

- 2 Replace the main PCB, see "4.17 Main PCB" [▶ 180].

Possible cause: Faulty main PCB.



INFORMATION

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

3.5.20 E2-00/01 – Leakage current detection error

Trigger	Effect	Reset
Leakage current PCB detected leakage current by the unit on power supply line.	Unit will stop operating.	Power supply reset.

To solve the error code



INFORMATION

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

- 1 Perform a check of the current sensor. See "[4.9 Current sensor](#)" [▶ 145].
Possible cause: Faulty current sensor.
- 2 Check if the power supply is compliant with the regulations. See "[5.1 Electrical circuit](#)" [▶ 259].
Possible cause:
 - Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
 - Power drop,
 - Short circuit.
- 3 Perform a check of the leakage current PCB. See "[4.14 Leakage current PCB](#)" [▶ 170].
Possible cause: Faulty leakage current PCB.
- 4 Perform a check of the main PCB. See "[4.17 Main PCB](#)" [▶ 180].
Possible cause: Faulty main PCB.
- 5 Using a megger device, check the solenoid valve coils, 4-way valve coil, fan motors, compressor, crankcase heater (if present), bottom plate heater and plate heat exchanger heater if any ground leakage is found. Replace the component(s) that generate ground leakage.



INFORMATION

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

3.5.21 E2-06 – Leakage current detection error

Trigger	Effect	Reset
Electrical leak detection core disconnected / Unit detects an open circuit on X1A leakage PCB (A3P).	Unit will stop operating.	Power reset.

To solve the error code



INFORMATION

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

- 1 Perform a check of the current sensor. See "[4.14 Leakage current PCB](#)" [▶ 170].
Possible cause: Faulty current sensor.
- 2 Check that connector X1A is correctly connected to the leakage current PCB (A3P). See "[4.14 Leakage current PCB](#)" [▶ 170].
Possible cause: Open circuit on connector X1A on leakage current (A3P) PCB.

**INFORMATION**

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

3.5.22 E3-00/01 – Outdoor unit: Actuation of high pressure switch

Trigger	Effect	Reset
High pressure switch S2PH opens during Cooling operation due to measured pressure above high pressure switch operating point.	Unit will stop operating. Error code is masked and NOT shown on the user interface.	Auto reset (up to 15 times within 5 hours) when the measured pressure falls below high pressure switch reset point.
High pressure switch S2PH opens more than 15 times within 5 hours during Cooling operation due to measured pressure above high pressure switch operating point.	Unit will stop operating. Error code is shown on the user interface.	Manual reset via user interface.

To solve the error code**INFORMATION**

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

- 1 Perform a check of the refrigerant pressure sensor. See ["4.22 Refrigerant pressure sensor"](#) [▶ 209].
Possible cause: Faulty refrigerant pressure sensor.
- 2 Perform a check of all high pressure switches. See ["4.12 High pressure switch"](#) [▶ 158].
Possible cause: Faulty high pressure switch.
- 3 Check the required space around the outdoor unit heat exchanger. See ["5.5 External factors"](#) [▶ 291].
Possible cause: Insufficient air flow or air by-pass due to required space specifications not met.
- 4 Clean the outdoor heat exchanger. See ["6 Maintenance"](#) [▶ 293].
Possible cause: Dirty outdoor heat exchanger.
- 5 Perform a check of the main PCB. See ["4.17 Main PCB"](#) [▶ 180].
Possible cause: Faulty main PCB.
- 6 Check if the refrigerant circuit is correctly charged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Refrigerant overcharge.
- 7 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Non-condensables and/or humidity in the refrigerant circuit.
- 8 Check if the refrigerant circuit is clogged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Clogged refrigerant circuit.

- 9 Perform a check of the outdoor unit fan motor. See ["4.19 Outdoor unit fan motor"](#) [▶ 197].

Possible cause: Faulty outdoor unit fan motor.



INFORMATION

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

3.5.23 E3-24 – Outdoor unit: Actuation of high pressure switch

Trigger	Effect	Reset
High pressure switch S1PH opens during Heating operation due to measured pressure above high pressure switch operating point.	Unit will stop operating. Error code is masked and NOT shown on the user interface.	Auto reset (up to 15 times within 5 hours) when the measured pressure falls below high pressure switch reset point.
High pressure switch S1PH opens more than 15 times within 5 hours during Heating operation due to measured pressure above high pressure switch operating point.	Unit will stop operating. Error code is shown on the user interface.	Manual reset via user interface.

To solve the error code



INFORMATION

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

- 1 Perform a check of the refrigerant pressure sensor. See ["4.22 Refrigerant pressure sensor"](#) [▶ 209].
Possible cause: Faulty refrigerant pressure sensor.
- 2 Perform a check of all high pressure switches. See ["4.12 High pressure switch"](#) [▶ 158].
Possible cause: Faulty high pressure switch.
- 3 Perform a check of the main PCB. See ["4.17 Main PCB"](#) [▶ 180].
Possible cause: Faulty main PCB.
- 4 Check if the refrigerant circuit is correctly charged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Refrigerant overcharge.
- 5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Non-condensables and/or humidity in the refrigerant circuit.
- 6 Check if the refrigerant circuit is clogged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Clogged refrigerant circuit.
- 7 Perform a check of the outdoor unit fan motor. See ["4.19 Outdoor unit fan motor"](#) [▶ 197].

Possible cause: Faulty outdoor unit fan motor.



INFORMATION

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

3.5.24 E4-00 – Abnormal suction pressure

Trigger	Effect	Reset
Suction pressure was too low (detected by thermistor/pressure sensor or low pressure switch) for several times.	Unit will stop operating.	Manual reset via user interface.

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 "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty suction pipe thermistor or connector fault.
- 2 Check if the refrigerant circuit is correctly charged. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Refrigerant shortage.
- 3 Check for the presence of humidity in the refrigerant circuit. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Humidity in the refrigerant circuit.
- 4 Check if the refrigerant circuit is clogged. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Clogged refrigerant circuit.
- 5 Perform a check of all expansion valves. See "[4.10 Expansion valve](#)" [▶ 148].
Possible cause: Faulty expansion valve.
- 6 Check the required space around the outdoor unit heat exchanger. See "[5.5 External factors](#)" [▶ 291].
Possible cause: Insufficient air flow or air by-pass due to required space specifications not met.
- 7 Clean the outdoor heat exchanger. See "[6 Maintenance](#)" [▶ 293].
Possible cause: Dirty outdoor heat exchanger.




INFORMATION

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


3.5.25 E5-00/01 – Inverter compressor lock detection

Trigger	Effect	Reset
The motor rotor does not rotate when the compressor is energized.	Unit will stop operating.	Manual reset via the user interface.

To solve the error code

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

- 1 Check if the refrigerant circuit is clogged. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Clogged refrigerant circuit.
- 2 Perform a check of the compressor M1C. See "[4.8 Compressor](#)" [▶ 133].
Possible cause:
 - Faulty compressor (mechanically seized).
 - Miswiring of the compressor power supply cable.
- 3 Check liquid back issues. Check expansion valve(s) Y3E/Y1E operation. See "[4.10 Expansion valve](#)" [▶ 148].
Possible cause: Expansion valve(s) opening is larger than commanded (mechanical issue).
- 4 Check if the refrigerant circuit is correctly charged. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Refrigerant shortage.
- 5 Perform a check of the 4-way valve. See "[4.2 4-way valve](#)" [▶ 106].
Possible cause: Faulty 4-way valve.
- 6 Perform a check of the discharge pipe thermistor. See "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty discharge pipe thermistor or connector fault.
- 7 Perform a check of the suction pipe thermistor. See "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty suction pipe thermistor or connector fault.

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

3.5.26 E6-00 – Outdoor unit: Compressor startup defect

Trigger	Effect	Reset
The motor rotor does NOT rotate when the compressor is energized.	Unit will NOT stop operating.	Automatic reset after a continuous run for 10 minutes.
	Unit will stop operating	Manual reset via user interface.

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 "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty discharge pipe thermistor or connector fault.
- 2 Check if the refrigerant circuit is clogged. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Clogged refrigerant circuit.
- 3 Check if the refrigerant circuit is correctly charged. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Refrigerant overcharge.
- 4 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Non-condensables and/or humidity in the refrigerant circuit.
- 5 Perform a check of the compressor. See "[4.8 Compressor](#)" [▶ 133].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.
- 6 Perform a check of the main PCB. See "[4.17 Main PCB](#)" [▶ 180].
Possible cause: Faulty main PCB.
- 7 Perform a check of all expansion valves. See "[4.10 Expansion valve](#)" [▶ 148].
Possible cause: Faulty expansion valve.

**INFORMATION**

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

3.5.27 E7-01/05/63 – Malfunction of outdoor unit fan motor

Trigger	Effect	Reset
E7-01 Faulty rpm detection of fan.	Unit will stop operating.	Manual reset via the user interface.
E7-05 Overcurrent detected on outdoor unit fan motor. Fan does NOT start 15~30 seconds after ON signal.		
E7-63 Fan is blocked from rotating.		

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 "[4.19 Outdoor unit fan motor](#)" [▶ 197].

Possible cause:

- Blocked or iced fan does NOT move.
- Faulty fan motor.



INFORMATION

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

3.5.28 E8-00 – Outdoor unit: Power input overvoltage

Trigger	Effect	Reset
Compressor running current exceeds standard value for 2.5 seconds.	Unit will stop operating.	Manual reset via user interface.

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 "[5.1 Electrical circuit](#)" [▶ 259].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.

- 2 Perform a check of the compressor. See "[4.8 Compressor](#)" [▶ 133].

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.

3.5.29 E9-00/01 – Malfunction of electronic expansion valve

Trigger	Effect	Reset
No continuity of the expansion valve.	Unit will stop operating.	Manual reset via user interface.

To solve the error code**INFORMATION**

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

- 1 Perform a check of all expansion valves. See ["4.10 Expansion valve"](#) [▶ 148].
Possible cause: Faulty expansion valve.

**INFORMATION**

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

3.5.30 E9-02 – Expansion valve error due to wetness

Trigger	Effect	Reset
Minimum expansion valve opening and suction superheat <4 K and discharge superheat <5 K.	Unit will stop operating.	Power reset via outdoor unit.

To solve the error code**INFORMATION**

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

- 1 Perform a check of all refrigerant side thermistors. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty refrigerant side thermistor(s).
- 2 Perform a check of all expansion valves. See ["4.10 Expansion valve"](#) [▶ 148].
Possible cause: Faulty expansion valve.
- 3 Check if the refrigerant circuit is clogged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Clogged refrigerant circuit.
- 4 Check if the refrigerant circuit is correctly charged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Refrigerant overcharge.
- 5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

**INFORMATION**

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

3.5.31 EA-00/01 – 4-way valve switching error

Trigger	Effect	Reset
After 4-way valve switching, if High/Low differential pressure stays <27.5 PSI (1.9 bar) for 2 minutes OR discharge temperature – suction temperature stays <30 K for more than 2 minutes.	Unit will stop operating after 4 th automatic retry.	Manual reset via user interface.

To solve the error code

**INFORMATION**

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

- 1 Perform a check of the 4-way valve. See "[4.2 4-way valve](#)" [▶ 106].
Possible cause: Faulty 4-way valve.
- 2 Perform a check of the main PCB. See "[4.17 Main PCB](#)" [▶ 180].
Possible cause: Faulty main PCB.
- 3 Perform a check of the refrigerant pressure sensor. See "[4.22 Refrigerant pressure sensor](#)" [▶ 209].
Possible cause: Faulty refrigerant pressure sensor.
- 4 Perform a check of the following thermistors. See "[4.24 Thermistors](#)" [▶ 221]:
 - Discharge pipe thermistor
 - Suction thermistor
 - Heat exchanger thermistor
 - Heat exchanger (middle) thermistor
 - Refrigerant liquid thermistor**Possible cause:** Faulty thermistor(s).
- 5 Check if the refrigerant circuit is clogged. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Clogged refrigerant circuit.
- 6 Check if the refrigerant circuit is correctly charged. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Refrigerant overcharge or shortage.
- 7 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

**INFORMATION**

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

3.5.32 EC-00 – Abnormal increase tank temperature

Trigger	Effect	Reset
Domestic hot water tank thermistor measures a too high temperature.	Unit will NOT stop operating.	Automatic reset.

To solve the error code

**INFORMATION**

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

- 1 Perform an electrical check of the booster heater contactor. See "[4.6 Booster heater](#)" [▶ 131].
Possible cause: Faulty booster heater contactor.
- 2 Perform a check of the domestic hot water tank thermistor. See "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty domestic hot water tank thermistor or connector fault.
- 3 Check the water circuit for an external heat source. See "[5.3 Water circuit](#)" [▶ 282].
Possible cause: Increased water temperature due to an external heat source.

**INFORMATION**

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

3.5.33 EC-04 – Tank preheating

Trigger	Effect	Reset
Unit is preheating the tank.	Unit will NOT stop operating.	Automatic reset.

To solve the error code

- 1 No specific check / repair procedures must be performed to solve this error code. The water in the heating system and the tank is too cold to perform defrost operation, so the tank needs to be preheated electrically. Wait until preheating operation is done.

**INFORMATION**

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

3.5.34 F3-00/01 – Outdoor unit: Malfunction of discharge pipe temperature

Trigger	Effect	Reset
Discharge pipe thermistor detects a too high temperature.	Unit will NOT stop operating.	Automatic reset when temperature drops normal level.
	If the error re-occurs too soon: unit will stop operating.	Manual reset via user interface.

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 "5.2 Refrigerant circuit" [▶ 263].
Possible cause: Refrigerant overcharge or shortage.
- 2 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 263].
Possible cause: Non-condensables and/or humidity in the refrigerant circuit.
- 3 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▶ 263].
Possible cause: Clogged refrigerant circuit.
- 4 Perform a check of the 4-way valve. See "4.2 4-way valve" [▶ 106].
Possible cause: Faulty 4-way valve.
- 5 Perform a check of all expansion valves. See "4.10 Expansion valve" [▶ 148].
Possible cause: Faulty expansion valve.
- 6 Perform a check of all refrigerant side thermistors. See "4.24 Thermistors" [▶ 221].
Possible cause: Faulty refrigerant side thermistor(s).

**INFORMATION**

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

3.5.35 F3-24 – Compressor shell temperature error

Trigger	Effect	Reset
Compressor shell thermistor temperature <math><T_c</math> (saturated condensation temperature) – 1 K for 30 minutes after compressor start-up.	Unit will stop operating after 4 th automatic retry.	Manual reset via user interface.

To solve the error code

**INFORMATION**

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

- 1 Perform a check of the compressor shell thermistor. See "4.24 Thermistors" [▶ 221].
Possible cause: Faulty compressor shell thermistor or connector fault.

**INFORMATION**

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

3.5.36 H1-00 – External temperature sensor problem

Trigger	Effect	Reset
Optional external indoor or outdoor ambient thermistor input is out of range.	Unit will NOT stop operating.	Automatic reset when input is in range.

To solve the error code

- 1 Perform a check of the external indoor or outdoor ambient thermistor. See "[4.24 Thermistors](#)" [▶ 221].

Possible cause: Faulty external indoor or outdoor ambient thermistor or loose connection.

**INFORMATION**

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

3.5.37 H3-00/01 – Outdoor unit: Malfunction of high pressure switch

Trigger	Effect	Reset
High pressure switch is activated when compressor is off.	Unit will stop operating.	Manual reset via user interface.

To solve the error code**INFORMATION**

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

- 1 Perform a check of all high pressure switches. See "[4.12 High pressure switch](#)" [▶ 158].

Possible cause: Faulty high pressure switch.

- 2 Perform a check of the main PCB. See "[4.17 Main PCB](#)" [▶ 180].

Possible cause: Faulty main PCB.

- 3 Check if the power supply is compliant with the regulations. See "[5.1 Electrical circuit](#)" [▶ 259].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.

**INFORMATION**

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

3.5.38 H4-00 – Malfunction of low pressure switch

Trigger	Effect	Reset
Low pressure switch is defective or NOT well connected.	Unit will stop operating.	Manual reset via user interface.

To solve the error code**INFORMATION**

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

- 1 Perform a check of the low pressure switch. See "[4.15 Low pressure switch](#)" [▶ 175].

Possible cause: Faulty low pressure switch.

- 2 Perform a check of the main PCB. See "[4.17 Main PCB](#)" [▶ 180].

Possible cause: Faulty main PCB.

**INFORMATION**

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

3.5.39 H5-00 – Malfunction of compressor overload protection

Trigger	Effect	Reset
Compressor overload protection is defective.	Unit will stop operating.	Manual reset via user interface.

To solve the error code**INFORMATION**

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

- 1 Check if the refrigerant circuit is clogged. See "[5.2 Refrigerant circuit](#)" [▶ 263].

Possible cause: Clogged refrigerant circuit.

- 2 Perform a check of the compressor. See "[4.8 Compressor](#)" [▶ 133].

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

- 3 Check liquid back issue. Check expansion valve operation. See "[4.10 Expansion valve](#)" [▶ 148].

Possible cause: Expansion valve CANNOT keep minimum superheat of 3 K while running as evaporator.

- 4 Check if the refrigerant circuit is correctly charged. See "[5.2 Refrigerant circuit](#)" [▶ 263].

Possible cause: Refrigerant overcharge.

- 5 Perform a check of the 4-way valve. See "[4.2 4-way valve](#)" [▶ 106].

Possible cause: Faulty 4-way valve.

- 6 Perform a check of the discharge pipe thermistor. See "[4.24 Thermistors](#)" [▶ 221].

Possible cause: Faulty discharge pipe thermistor or connector fault.

- 7 Perform a check of the main PCB. See ["4.17 Main PCB"](#) [▶ 180].

Possible cause: Faulty main PCB.



INFORMATION

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

3.5.40 H6-00 – Outdoor unit: Malfunction of position detection sensor

Trigger	Effect	Reset
Compressor fails to start within 15 seconds after the compressor run command signal is sent.	Unit will NOT stop operating.	Automatic reset after a continuous operation of 10 minutes.
	If the error re-occurs within 8 minutes: unit will stop operating.	Manual reset via user interface.

To solve the error code



INFORMATION

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

- 1 Perform a check of the compressor. See ["4.8 Compressor"](#) [▶ 133].

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

- 2 Perform a check of the main PCB. See ["4.17 Main PCB"](#) [▶ 180].

Possible cause: Faulty main PCB.

- 3 Check if the power supply is compliant with the regulations. See ["5.1 Electrical circuit"](#) [▶ 259].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.



INFORMATION

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

3.5.41 H8-00 – Outdoor unit: Malfunction of compressor input system

Trigger	Effect	Reset
DC voltage or current sensor abnormality based on the compressor running frequency and the input current.	Unit will NOT stop operating.	Automatic reset when compressor runs normally for 60 minutes.
	If the error re-occurs too soon: unit will stop operating.	Manual reset via user interface.

To solve the error code



INFORMATION

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

- 1 Perform a check of the main PCB. See ["4.17 Main PCB"](#) [▶ 180].
Possible cause: Faulty main PCB.
- 2 Perform a check of the compressor. See ["4.8 Compressor"](#) [▶ 133].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.
- 3 Perform a check of the reactor. See ["4.21 Reactor"](#) [▶ 208].
Possible cause: Faulty reactor.



INFORMATION

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

3.5.42 H9-00 – Outdoor unit: Malfunction of outdoor air thermistor

Trigger	Effect	Reset
Outdoor air thermistor input is out of range.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

- 1 Perform a check of the outdoor air thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty ambient air thermistor.



INFORMATION

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

3.5.43 HC-00 – Tank temperature sensor problem

Trigger	Effect	Reset
Domestic hot water tank thermistor input is out of range.	Unit will NOT stop operating.	Automatic reset when resistance is within range.

To solve the error code

- 1 Perform a check of the domestic hot water tank thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty domestic hot water tank thermistor or connector fault.



INFORMATION

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

3.5.44 HJ-10 – Water pressure sensor abnormality

Trigger	Effect	Reset
Water pressure input is out of range.	Unit will NOT stop operating.	Automatic reset when water pressure is within range.

To solve the error code**INFORMATION**

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

- 1 Check the main water supply and pressure of the installation. See "[5.3 Water circuit](#)" [▶ 282].
Possible cause: Main water supply or pressure outside expected range.
- 2 Check for leaks in the water circuit. See "[5.3 Water circuit](#)" [▶ 282].
Possible cause: Leak in the water circuit.
- 3 Perform a check of the water pressure sensor. See "[4.28 Water pressure sensor](#)" [▶ 247].
Possible cause: Faulty water pressure sensor or connector fault.

**INFORMATION**

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

3.5.45 J3-00/01 – Outdoor unit: Malfunction of discharge pipe thermistor

Trigger	Effect	Reset
Discharge pipe thermistor input is out of range.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

- 1 Perform a check of the discharge pipe thermistor. See "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty discharge pipe thermistor or connector fault.

**INFORMATION**

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

3.5.46 J3-10 – Compressor port thermistor abnormality

Trigger	Effect	Reset
Compressor port temperature out of range (<-58°F (-50°C) or >312.8°F (156°C)).	Unit will stop operating or CANNOT start operating.	Auto reset.

To solve the error code

- 1 Perform a check of the compressor port thermistor. See "[4.24 Thermistors](#)" [▶ 221].

Possible cause: Faulty compressor port thermistor or connector fault.



INFORMATION

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

3.5.47 J3-47 – Compressor shell thermistor abnormality

Trigger	Effect	Reset
Compressor is NOT running and compressor shell thermistor >329°F (165°C).	Unit will stop operating.	Manual reset via user interface.
Compressor is running for more than 20 minutes and compressor shell thermistor <-4°F (-20°C).		

To solve the error code

- 1 Perform a check of the compressor shell thermistor. See "4.24 Thermistors" [▶ 221].

Possible cause: Faulty compressor shell thermistor or connector fault.



INFORMATION

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

3.5.48 J5-00 – Malfunction of suction pipe thermistor

Trigger	Effect	Reset
Suction pipe thermistor input is out of range.	Unit will stop operating.	Automatic reset.

To solve the error code

- 1 Perform a check of the suction pipe thermistor. See "4.24 Thermistors" [▶ 221].

Possible cause: Faulty suction pipe thermistor or connector fault.



INFORMATION

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

3.5.49 J6-00 – Outdoor unit: Malfunction of heat exchanger thermistor

Trigger	Effect	Reset
Outdoor heat exchanger thermistor input is out of range.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

- 1 Perform a check of the heat exchanger thermistor. See ["4.24 Thermistors" \[▶ 221\]](#).

Possible cause: Faulty heat exchanger thermistor or connector fault.

**INFORMATION**

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

3.5.50 J6-07 – Outdoor unit: Malfunction of heat exchanger thermistor

Trigger	Effect	Reset
Heat exchanger thermistor input is out of range.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

- 1 Perform a check of the heat exchanger (middle) thermistor. See ["4.24 Thermistors" \[▶ 221\]](#).

Possible cause: Faulty heat exchanger (middle) thermistor or connector fault.

**INFORMATION**

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

3.5.51 J6-32 – Leaving water temperature thermistor abnormality (outdoor unit)

Trigger	Effect	Reset
Temperature sensor after plate type heat exchanger is broken.	Unit will NOT stop operating.	Automatic reset.

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 after heat exchanger thermistor. See ["4.24 Thermistors" \[▶ 221\]](#).

Possible cause: Faulty outlet water after heat exchanger thermistor.

- 2 Perform a check of the ACS digital I/O PCB. See ["4.3 ACS digital I/O PCB" \[▶ 113\]](#).

Possible cause: Faulty ACS digital I/O PCB.

**INFORMATION**

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

3.5.52 J6-33 – Sensor communication error

Trigger	Effect	Reset
Both sensors, outlet water after plate type heat exchanger and entering sensor of the indoor unit, are broken. Or entering sensor is broken and there is a communication error on the outdoor unit.	Unit will stop operating.	Automatic reset.

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 after heat exchanger thermistor. See "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty outlet water after heat exchanger thermistor.
- 2 Perform a check of the inlet water thermistor (outdoor unit side). See "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty inlet water thermistor (outdoor unit side).
- 3 Perform a check of the inlet water thermistor (indoor unit side). See "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty inlet water thermistor (indoor unit side).
- 4 Perform a check of the ACS digital I/O PCB. See "[4.3 ACS digital I/O PCB](#)" [▶ 113].
Possible cause: Faulty ACS digital I/O PCB.
- 5 Perform a check of the hydro PCB. See "[4.13 Hydro PCB](#)" [▶ 164].
Possible cause: Faulty hydro PCB.
- 6 Perform a check of the power supply, connections, wiring,... between the outdoor unit, indoor unit and (separate) domestic hot water tank (if applicable). See "[5.1 Electrical circuit](#)" [▶ 259].
Possible cause: Faulty wiring between the outdoor unit, indoor unit and domestic hot water tank.



INFORMATION

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

3.5.53 J8-00 – Malfunction of refrigerant liquid thermistor

Trigger	Effect	Reset
Refrigerant liquid thermistor detects an abnormal value (open or short circuit)	Unit will stop operating.	Automatic reset.

To solve the error code

- 1 Perform a check of the refrigerant liquid thermistor. See ["4.24 Thermistors"](#) [▶ 221].

Possible cause: Faulty refrigerant liquid thermistor or connector fault.

**INFORMATION**

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

3.5.54 JA-00/01 – Malfunction of high pressure sensor

Trigger	Effect	Reset
Refrigerant pressure sensor detects a value out of range (>812.2 PSI (5.6 Mpa) or <7.3 PSI (–0.05 Mpa)).	Unit will stop operating.	Manual reset via user interface.

To solve the error code

- 1 Perform a check of the refrigerant pressure sensor. See ["4.22 Refrigerant pressure sensor"](#) [▶ 209].

Possible cause: Faulty refrigerant pressure sensor.

**INFORMATION**

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

3.5.55 JA-17 – Refrigerant pressure sensor abnormality

Trigger	Effect	Reset
Refrigerant pressure sensor input is out of range.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

- 1 Perform a check of the refrigerant pressure sensor. See ["4.22 Refrigerant pressure sensor"](#) [▶ 209].

Possible cause: Faulty refrigerant pressure sensor.

**INFORMATION**

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

3.5.56 L1-01/02/03/04/06/31 – Malfunction of inverter PCB

Trigger	Effect	Reset
L1-01 Instantaneous overcurrent (at output of boot waveform)	Unit will stop operating.	Manual reset.
L1-02 Current sensor error.		
L1-03 Current offset error.		
L1-04 IGBT error / power module error.		
L1-06 SP/MP-PAM over voltage (hardware detection).		
L1-31 Error in internal power supply output.		

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 "[5.1 Electrical circuit](#)" [[▶ 259](#)].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.

- 2 Replace the main PCB, see "[4.17 Main PCB](#)" [[▶ 180](#)].

Possible cause: Faulty main PCB.

If the problem is not solved:

- 3 Replace the compressor. See "[4.8 Compressor](#)" [[▶ 133](#)].

**INFORMATION**

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

3.5.57 L1-05/27 – Malfunction of inverter PCB

Trigger	Effect	Reset
L1-05 Jumper setting error.	Unit will stop operating.	Manual reset.
L1-27 Inverter EEPROM error.		

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 "[5.1 Electrical circuit](#)" [▶ 259].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.

- 2 Replace the main PCB, see "[4.17 Main PCB](#)" [▶ 180].

Possible causes:

- Faulty main PCB,
- Incompatible software is present,
- Incorrect main PCB type (e.g. wrong capacity).

**INFORMATION**

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

3.5.58 L1-54 – Malfunction of inverter PCB

Trigger	Effect	Reset
Interleave error.	Unit will stop operating.	Automatic reset.

To solve the error code

**INFORMATION**

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

- 1 Perform a check of the reactor and the main PCB. See "[4.21 Reactor](#)" [▶ 208].

Possible cause: Loose connection.

If the problem is not solved:

- 2 Replace the main PCB, see "[4.17 Main PCB](#)" [▶ 180].

Possible cause: Faulty main PCB.

**INFORMATION**

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

3.5.59 L1-55 – Malfunction of inverter PCB

Trigger	Effect	Reset
1 fan driver error.	Unit will stop operating.	Manual reset.

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 "[5.1 Electrical circuit](#)" [[▶ 259](#)].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.

- 2 Replace the main PCB, see "[4.17 Main PCB](#)" [[▶ 180](#)].

Possible cause: Faulty main PCB.

- 3 Replace the fan motor. See "[4.19 Outdoor unit fan motor](#)" [[▶ 197](#)].

If the problem is not solved:

- 4 Replace the compressor. See "[4.8 Compressor](#)" [[▶ 133](#)].



INFORMATION

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

3.5.60 L3-00 – Outdoor unit: Electrical box temperature rise problem

Trigger	Effect	Reset
Switch box temperature is too high.	Unit will stop operating.	Manual reset via remote controller.

To solve the error code



INFORMATION

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

- 1 Perform a check of the main PCB. See "[4.17 Main PCB](#)" [[▶ 180](#)].

Possible cause: Faulty main PCB.

- 2 Perform a check of the outdoor unit fan motor. See "[4.19 Outdoor unit fan motor](#)" [[▶ 197](#)].

Possible cause: Faulty outdoor unit fan motor.

- 3 Check if the power supply is compliant with the regulations. See "[5.1 Electrical circuit](#)" [[▶ 259](#)].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.

- 4 Clean the outdoor heat exchanger. See "[6 Maintenance](#)" [▶ 293].

Possible cause: Dirty outdoor heat exchanger.



INFORMATION

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

3.5.61 L4-00/01 – Outdoor unit: Malfunction of inverter radiating fin temperature rise

Trigger	Effect	Reset
Radiating fin thermistor measures a too high temperature.	Unit will stop operating.	Manual reset via user interface.

To solve the error code



INFORMATION

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

- 1 Perform a check of the fin thermistor. See "[4.24 Thermistors](#)" [▶ 221].

Possible cause: Faulty fin thermistor.

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 2 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.

- 3 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.



INFORMATION

Make sure to use thermal interface grease Shin Etsu G-776 (spare part number 2269571).

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

Possible cause: Heat sink plate not correctly installed.



INFORMATION

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

3.5.62 L5-00 – Outdoor unit: Inverter instantaneous overcurrent

Trigger	Effect	Reset
An output overcurrent is detected by checking the current that flows in the inverter DC section.	Unit will stop operating.	Manual reset via user interface.

To solve the error code



INFORMATION

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

- 1 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▶ 263].
Possible cause: Clogged refrigerant circuit.
- 2 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 263].
Possible cause: Refrigerant overcharge or shortage.
- 3 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 263].
Possible cause: Non-condensables and/or humidity in the refrigerant circuit.
- 4 Perform a check of the main PCB. See "4.17 Main PCB" [▶ 180].
Possible cause: Faulty main PCB.
- 5 Perform a check of the compressor. See "4.8 Compressor" [▶ 133].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.
- 6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▶ 259].
Possible cause:
 - Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
 - Power drop,
 - Short circuit.

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 7 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.

- 8 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.



INFORMATION

Make sure to use thermal interface grease Shin Etsu G-776 (spare part number 2269571).

If the problem is not solved:

- 9 Replace the main PCB. See ["4.17 Main PCB"](#) [▶ 180].

Possible cause: Faulty main PCB.



INFORMATION

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

3.5.63 L8-00/01/02/03/04/05/14 – Malfunction by thermal protection inverter PCB

Trigger	Effect	Reset
Malfunction by thermal protection PCB.	Unit will stop operating.	Automatic reset.

To solve the error code



INFORMATION

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

- Check if the refrigerant circuit is clogged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Clogged refrigerant circuit.
- Check if the refrigerant circuit is correctly charged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Refrigerant overcharge or shortage.
- Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Non-condensables and/or humidity in the refrigerant circuit.
- Perform a check of the main PCB. See ["4.17 Main PCB"](#) [▶ 180].
Possible cause: Faulty main PCB.
- Perform a check of the compressor. See ["4.8 Compressor"](#) [▶ 133].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

If the problem is not solved:

- 6 Replace the main PCB, see ["4.17 Main PCB"](#) [▶ 180].

Possible cause: Faulty main PCB.

If the problem is not solved:

- 7 Replace the compressor. See ["4.8 Compressor"](#) [▶ 133].



INFORMATION

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

3.5.64 L9-01/02/03/13 – Prevention of compressor lock

Trigger	Effect	Reset
Output open phase error determined.	Unit will stop operating.	Automatic reset.

To solve the error code



INFORMATION

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

- 1 Perform a check of the compressor M1C. See ["4.8 Compressor"](#) [▶ 133].
Possible cause:
 - Faulty compressor.
 - Miswiring of the compressor power supply cable.
 - Main PCB detects phase loss to compressor on U, V, W.
- 2 Check if the power supply is compliant with the regulations. See ["5.1 Electrical circuit"](#) [▶ 259].
Possible cause:
 - Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
 - Power drop,
 - Short circuit.
- 3 Check if the refrigerant circuit is clogged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Clogged refrigerant circuit.
- 4 Check if the refrigerant circuit is correctly charged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Refrigerant overcharge or shortage.
- 5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Non-condensables and/or humidity in the refrigerant circuit.



INFORMATION

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

3.5.65 LC-00 – Malfunction in communication system of outdoor unit

Trigger	Effect	Reset
Malfunction in communication system inside the outdoor unit between inverter PCB and outdoor unit (ACS system configuration error).	Unit will stop operating.	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 main PCB. See ["4.17 Main PCB"](#) [▶ 180].
Possible cause: Faulty main PCB.
- 2 Perform a check of the ACS digital I/O PCB. See ["4.3 ACS digital I/O PCB"](#) [▶ 113].

Possible cause: Faulty ACS digital I/O PCB.

- 3 Perform a check of the outdoor unit fan motor. See "[4.19 Outdoor unit fan motor](#)" [▶ 197].

Possible cause: Faulty outdoor unit fan motor.

If the problem is not solved:

- 4 Replace the main PCB. See "[4.17 Main PCB](#)" [▶ 180].

Possible cause: Faulty main PCB.



INFORMATION

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

3.5.66 LC-01/03/05/33 – Transmission system abnormality

Trigger	Effect	Reset
Malfunction in communication system inside the outdoor unit, between inverter circuit and outdoor unit (fan in stoppage).	Unit will stop operating.	Manual reset via user interface.

To solve the error code



INFORMATION

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

- 1 Perform a check of the main PCB. See "[4.17 Main PCB](#)" [▶ 180].

Possible cause: Faulty main PCB.

- 2 Perform a check of the ACS digital I/O PCB. See "[4.3 ACS digital I/O PCB](#)" [▶ 113].

Possible cause: Faulty ACS digital I/O PCB.

If the problem is not solved:

- 3 Replace the ACS digital I/O PCB, see "[4.3 ACS digital I/O PCB](#)" [▶ 113].

Possible cause: Faulty ACS digital I/O PCB.

If the problem is not solved:

- 4 Replace the main PCB. See "[4.17 Main PCB](#)" [▶ 180].

Possible cause: Faulty main PCB.



INFORMATION

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

3.5.67 LC-02 – Malfunction in transmission system of outdoor unit

Trigger	Effect	Reset
Malfunction in communication system inside the outdoor unit between inverter circuit and outdoor unit.	Unit will stop operating.	Automatic reset.

To solve the error code

**INFORMATION**

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

- 1 Perform a check of the main PCB. See "[4.17 Main PCB](#)" [▶ 180].
Possible cause: Faulty main PCB.
- 2 Perform a check of the leakage current PCB. See "[4.14 Leakage current PCB](#)" [▶ 170].
Possible cause: Faulty leakage current PCB.

If the problem is not solved:

- 3 Replace the leakage current PCB, see "[4.14 Leakage current PCB](#)" [▶ 170].
Possible cause: Faulty leakage current PCB.

If the problem is not solved:

- 4 Replace the main PCB, see "[4.17 Main PCB](#)" [▶ 180].
Possible cause: Faulty main PCB.

**INFORMATION**

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

3.5.68 P1-00 – Open phase power supply imbalance

Trigger	Effect	Reset
Malfunction in transmission system inside the outdoor unit.	Unit will stop operating.	Automatic reset.

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 "[5.1 Electrical circuit](#)" [▶ 259].
Possible cause:
 - Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
 - Power drop,
 - Short circuit.
- 2 Perform a check of the main PCB. See "[4.17 Main PCB](#)" [▶ 180].

Possible cause: Faulty main PCB.

If the problem is not solved:

- 3 Replace the main PCB. See "4.17 Main PCB" [▶ 180].

Possible cause: Faulty main PCB.



INFORMATION

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

3.5.69 P3-00/01/04 – Abnormal direct current

Trigger	Effect	Reset
Malfunction decision by exceeding direct current limit value.	Unit will stop operating.	Automatic reset.

To solve the error code

- 1 Replace the main PCB. See "4.17 Main PCB" [▶ 180].

Possible cause: Onboard sensor error.



INFORMATION

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

3.5.70 P4-00/01/02/03 – Outdoor unit: Malfunction of radiating fin temperature sensor

Trigger	Effect	Reset
Radiating fin thermistor input is out of range.	Unit will stop operating.	Manual reset via user interface.

To solve the error code



INFORMATION

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

- 1 Perform a check of the radiation fin thermistor. See "4.24 Thermistors" [▶ 221].

Possible cause: Faulty radiation fin thermistor.

- 2 Perform a check of the main PCB. See "4.17 Main PCB" [▶ 180].

Possible cause: Faulty main PCB.

If the problem is not solved:

- 3 Replace the main PCB. See "4.17 Main PCB" [▶ 180].

Possible cause: Faulty main PCB.



INFORMATION

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

3.5.71 PJ-00/01/04/09 – Capacity setting mismatch

Trigger	Effect	Reset
Outdoor unit main PCB detects a defective capacity in EEPROM.	Unit will stop operating.	Manual reset via user interface.
		Power supply reset.

To solve the error code

- 1 Perform a check of the main PCB software. Use updater tool, see "[4.26 User interface](#)" [▶ 238].

Possible cause: Faulty software / EEPROM version.



INFORMATION

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

3.5.72 U0-00 – Outdoor unit: Shortage of refrigerant

Trigger	Effect	Reset
Refrigerant shortage detected.	Unit will stop operating.	Automatic reset.
		Power reset via outdoor unit.

To solve the error code



INFORMATION

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

- 1 Perform a check of all refrigerant side thermistors. See "[4.24 Thermistors](#)" [▶ 221].
Possible cause: Faulty refrigerant side thermistor(s).
- 2 Perform a check of the refrigerant pressure sensor. See "[4.22 Refrigerant pressure sensor](#)" [▶ 209].
Possible cause: Faulty refrigerant pressure sensor.
- 3 Check if the refrigerant circuit is clogged. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Clogged refrigerant circuit.
- 4 Check if the refrigerant circuit is correctly charged. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Refrigerant shortage.
- 5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "[5.2 Refrigerant circuit](#)" [▶ 263].
Possible cause: Non-condensables and/or humidity in the refrigerant circuit.
- 6 Perform a check of the compressor. See "[4.8 Compressor](#)" [▶ 133].
Possible cause: Faulty compressor or miswiring of the compressor power supply cable.
- 7 Perform a check of all expansion valves. See "[4.10 Expansion valve](#)" [▶ 148].
Possible cause: Faulty expansion valve.

- 8 Check for leaks in the refrigerant circuit. Look for oil traces on the unit(s). Check the brazing points on the field piping. Perform a pressure test, see ["5.2 Refrigerant circuit"](#) [▶ 263].

Possible cause: Leak in the refrigerant circuit.



INFORMATION

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

3.5.73 U0-13 – Outdoor unit: shortage of refrigerant (in heating mode)

Trigger	Effect	Reset
Refrigerant shortage detection during heating.	Unit will stop operating.	Power reset via outdoor unit.

To solve the error code



INFORMATION

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

- Perform a check of all expansion valves. See ["4.10 Expansion valve"](#) [▶ 148].
Possible cause: Faulty expansion valve.
- Perform a check of the suction pipe thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty suction pipe thermistor or connector fault.
- Perform a check of the discharge pipe thermistor. See ["4.24 Thermistors"](#) [▶ 221].
Possible cause: Faulty discharge pipe thermistor or connector fault.
- Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Non-condensables and/or humidity in the refrigerant circuit.
- Check if the refrigerant circuit is correctly charged. See ["5.2 Refrigerant circuit"](#) [▶ 263].
Possible cause: Refrigerant shortage.
- Perform a check of the refrigerant pressure sensor. See ["4.22 Refrigerant pressure sensor"](#) [▶ 209].
Possible cause: Faulty refrigerant pressure sensor.
- Perform a check of the compressor. See ["4.8 Compressor"](#) [▶ 133].
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.

3.5.74 U0-14 – Outdoor unit: shortage of refrigerant (in cooling mode)

Trigger	Effect	Reset
Refrigerant shortage (approximately 30% refrigerant) detection during cooling.	Unit will stop operating.	Power reset via outdoor unit.

To solve the error code



INFORMATION

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

- 1 Perform a check of all expansion valves. See "[4.10 Expansion valve](#)" [▶ 148].

Possible cause: Faulty expansion valve.
- 2 Perform a check of the suction pipe thermistor. See "[4.24 Thermistors](#)" [▶ 221].

Possible cause: Faulty suction pipe thermistor or connector fault.
- 3 Perform a check of the discharge pipe thermistor. See "[4.24 Thermistors](#)" [▶ 221].

Possible cause: Faulty discharge pipe thermistor or connector fault.
- 4 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "[5.2 Refrigerant circuit](#)" [▶ 263].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.
- 5 Check if the refrigerant circuit is correctly charged. See "[5.2 Refrigerant circuit](#)" [▶ 263].

Possible cause: Refrigerant shortage.
- 6 Perform a check of the refrigerant pressure sensor. See "[4.22 Refrigerant pressure sensor](#)" [▶ 209].

Possible cause: Faulty refrigerant pressure sensor.
- 7 Perform a check of the compressor. See "[4.8 Compressor](#)" [▶ 133].

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.

3.5.75 U1-00 – Malfunction by reverse phase/open phase

Trigger	Effect	Reset
Outdoor unit main PCB detects incorrect power supply (reverse/open phase).	Unit will stop operating.	Power reset via outdoor unit.

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 "[5.1 Electrical circuit](#)" [▶ 259].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.

- 2 Check the power supply to the main PCB. See "[4.17 Main PCB](#)" [▶ 180].

Possible cause: Power supply issue on main PCB.

**INFORMATION**

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

3.5.76 U2-01/02/03/04/07/31/35/36/42/43/44 – Supply voltage error

Trigger	Effect	Reset
Supply voltage error.	Unit will stop operating.	Manual reset.

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 "[5.1 Electrical circuit](#)" [▶ 259].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.

- 2 Perform a check of the compressor M1C. See "[4.8 Compressor](#)" [▶ 133].

Possible cause:

- Faulty compressor.
- Miswiring of the compressor power supply cable.
- Main PCB detects phase loss to compressor on U, V, W.

- 3 Perform a check of the reactor. See "[4.21 Reactor](#)" [▶ 208].

Possible cause: Faulty reactor.

- 4 Perform a check of the main PCB. See "[4.17 Main PCB](#)" [▶ 180].

Possible cause: Faulty main PCB.

- 5 Wait until the compressor restarts.

Possible cause:

- Momentary drop of voltage,
- Momentary power failure.

If the problem is not solved:

- 6 Replace the main PCB, see "4.17 Main PCB" [▶ 180].

Possible cause: Faulty main PCB.



INFORMATION

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

3.5.77 U3-00 – Under floor heating screed dry-out function not completed correctly

Trigger	Effect	Reset
Under floor heating screed dry-out is interrupted.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

- 1 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▶ 259].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.



INFORMATION

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

3.5.78 U4-00 – Indoor/outdoor unit communication problem

Trigger	Effect	Reset
Communication failure between outdoor and indoor unit.	Unit will stop operating.	Power reset via outdoor unit.

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 "5.1 Electrical circuit" [▶ 259].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.

- 2 Perform a check of the power supply, connections, wiring,... between the outdoor unit, indoor unit and (separate) domestic hot water tank (if applicable). See "5.1 Electrical circuit" [▶ 259].

Possible cause: Faulty wiring between the outdoor unit, indoor unit and domestic hot water tank.

- 3 Perform a check of the outdoor unit fan motor. See "[4.19 Outdoor unit fan motor](#)" [▶ 197].

Possible cause: Faulty outdoor unit fan motor.

- 4 Perform a check of the hydro PCB. See "[4.13 Hydro PCB](#)" [▶ 164].

Possible cause: Faulty hydro PCB.



INFORMATION

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

3.5.79 U5-00 – User interface communication problem

Trigger	Effect	Reset
Communication failure between unit and user interface.	Unit will stop operating.	Automatic reset.

To solve the error code



INFORMATION

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

- 1 Check the communication wiring between the user interface and the unit PCB. See "[4.26 User interface](#)" [▶ 238].

Possible cause: Faulty wiring between the user interface and the unit PCB.

- 2 Perform a power check of the user interface on the unit. See "[4.26 User interface](#)" [▶ 238].

Possible cause: User interface receives no power.

- 3 Check if the unit user interface functions correctly. See "[4.26 User interface](#)" [▶ 238].

Possible cause: Faulty user interface on unit.

- 4 Perform a check of the hydro PCB. See "[4.13 Hydro PCB](#)" [▶ 164].

Possible cause: Faulty hydro PCB.

- 5 Check if the power supply is compliant with the regulations. See "[5.1 Electrical circuit](#)" [▶ 259].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
- Power drop,
- Short circuit.



INFORMATION

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

3.5.80 U7-00 – Outdoor unit: Transmission malfunction between main microcomputer - inverter microcomputer

Trigger	Effect	Reset
Communication abnormality between main and inverter microcomputer.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

- 1 Perform a check of the main PCB. See "[4.17 Main PCB](#)" [▶ 180].

Possible cause: Faulty main PCB.



INFORMATION

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

3.5.81 U8-04 – Unknown USB device

Trigger	Effect	Reset
Unknown USB device.	Unit will NOT stop operating.	Manual reset via the user interface.

To solve the error code

- 1 Remove the USB from the user interface.

Possible cause: Connected USB to update the user interface or upload e-configuration data is NOT USB mass storage device. The USB's format MUST be FAT-32.



CAUTION

Always safely remove and eject media.



INFORMATION

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

3.5.82 U8-05 – File malfunction

Trigger	Effect	Reset
File malfunction.	Unit will NOT stop operating.	Manual reset via the user interface.

To solve the error code

- 1 Remove the USB from the user interface.

Possible cause: Connected USB to update the user interface or upload e-configuration data CANNOT be read because wrongly formatted, or the file config.cfg CANNOT be found on the USB.



CAUTION

Always safely remove and eject media.

**INFORMATION**

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

3.5.83 U8-07 – P1/P2 communication error

Trigger	Effect	Reset
Lost communication between unit user interface (MMI) and unit.	Unit will NOT stop operating.	Automatic reset.

To solve the error code**INFORMATION**

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

- 1 Check the communication wiring between the user interface and the unit PCB. See "4.26 User interface" [▶ 238].
Possible cause: Faulty wiring between the user interface and the unit PCB.
- 2 Perform a power check of the user interface on the unit. See "4.26 User interface" [▶ 238].
Possible cause: User interface receives no power.
- 3 Check if the unit user interface functions correctly. See "4.26 User interface" [▶ 238].
Possible cause: Faulty user interface on unit.
- 4 Perform a check of the hydro PCB. See "4.13 Hydro PCB" [▶ 164].
Possible cause: Faulty hydro PCB.
- 5 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▶ 259].
Possible cause:
 - Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage $\pm 10\%$),
 - Power drop,
 - Short circuit.

**INFORMATION**

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

3.5.84 U8-11 – Connection with wireless gateway lost

Trigger	Effect	Reset
Communication abnormality between unit and wireless gateway.	Unit will NOT stop operating.	Automatic reset.

To solve the error code

- 1 Check that the AP mode is active (= WLAN adapter active as access point).

**INFORMATION**

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

3.5.85 UA-00 – Indoor unit, outdoor unit mismatching problem

Trigger	Effect	Reset
Signal transmission between outdoor and indoor unit abnormality. Improper combination of outdoor and indoor unit.	Unit will stop operating.	Power reset via outdoor unit.

To solve the error code**INFORMATION**

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

- 1 Check for improper combination of the indoor unit and the outdoor unit. See the combination table in the Databook for more information.
- 2 Perform a check of the power supply, connections, wiring,... between the outdoor unit, indoor unit and (separate) domestic hot water tank (if applicable). See ["5.1 Electrical circuit"](#) [▶ 259].

Possible cause: Faulty wiring between the outdoor unit, indoor unit and domestic hot water tank.

- 3 Perform a check of the main PCB. See ["4.17 Main PCB"](#) [▶ 180].

Possible cause: Faulty main PCB.

- 4 Perform a check of the hydro PCB. See ["4.13 Hydro PCB"](#) [▶ 164].

Possible cause: Faulty hydro PCB.

**INFORMATION**

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

3.5.86 UA-17 – Tank type problem

Trigger	Effect	Reset
[E-05] is not set as 1, or [E-07] is not set correctly.	Unit will stop operating.	Power reset via outdoor unit.

To solve the error code**INFORMATION**

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

- 1 Check for improper combination of the indoor unit and the water tank. See the combination table in the Databook for more information.
- 2 Check the setting [E-05] and [E-07] via the user interface. See ["4.26 User interface"](#) [▶ 238].

Possible cause: Faulty [E-05] or [E-07] setting.

- 3 Perform a check of the hydro PCB. See ["4.13 Hydro PCB"](#) [▶ 164].

Possible cause: Faulty hydro PCB.



INFORMATION

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

3.5.87 UF-00 – Reversed piping or bad communication wiring detection

Trigger	Effect	Reset
Reversed piping or bad communication, wiring detection.	Unit will NOT start operating.	Manual reset via user interface.

To solve the error code



INFORMATION

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

- 1 Check that the piping and wiring connections of the system are correctly installed. See ["7.3 Piping diagram"](#) [▶ 312] and ["7.2 Wiring diagram"](#) [▶ 298].

Possible cause: Piping and/or wiring mismatch.



INFORMATION

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

3.6 Symptom based troubleshooting

3.6.1 Symptom: Incorrect energy metering read-out

Root cause category: hardware

Possible failure	Root cause	Check	Repair
kWh values measured with field supplied meters show different values as the user interface.	Backup heater wiring is NOT correct.	Check backup heater wiring, see the installer reference guide.	Adjust wiring if required.
Values on user interface are incorrect, show strange values.	User interface is replaced or reset to factory settings; Previous measurements are lost.	Check if user interface is replaced or reset.	Reset measurements of field supplied electrical meters and reset user interface and hydro PCB to factory settings.
Values on user interface are incorrect, show strange values.	Hydro PCB is replaced or reset to factory settings; Previous settings are lost.	Check if hydro PCB is replaced or reset.	Reset measurements of field supplied electrical meters and reset user interface and hydro PCB to factory settings.
Unit operates in emergency mode.	Backup heater is allowed in emergency mode, setting [4-00].	Check setting.	If you do NOT want the backup heater to run automatically in emergency mode, adjust setting.

3.6.2 Water pump related

Symptom: Increased water pump sound level

Root cause category: installation

Possible failure	Root cause	Check	Repair
Water filter blocked.	Dirty water.	<ul style="list-style-type: none"> ▪ Check water filter, ▪ Check water quality. 	Clean the water filter.
Air in the water circuit.	NOT enough air purged.	<ul style="list-style-type: none"> ▪ Check if all air purge valves are open, ▪ Check if air purge valves are installed on all highest points of the field installed water circuit. 	Purge air out of the unit and field supplied water system and backup heater.
Water pressure too low.	<ul style="list-style-type: none"> ▪ Water pressure NOT checked during filling, ▪ Air was purged from the water circuit after filling, ▪ Leakage. ▪ Expansion vessel is broken or not properly pre-adjusted. 	Check water pressure.	Adjust water pressure if required (21.7~24.5 PSI).

Possible failure	Root cause	Check	Repair
Water circuit partially blocked.	Obstruction in the water circuit.	Check water circuit for blockages.	Remove possible blockages and check the water quality.

Root cause category: component – mechanical

Possible failure	Root cause	Check	Repair
Water pump mechanical problem.	Internal pump friction.	Check water pump.	Replace water pump.
Air purge blocked - air trapped in water circuit.	Component failure.	Check air purge valve.	Replace air purge valve.

Symptom: Incorrect water pump operation

Root cause category: software control

Possible failure	Root cause	Check	Repair
Unexpected water pump behavior.	Water pump software control.	<p>Water pump start/stop conditions:</p> <ul style="list-style-type: none"> ▪ During space heating (cooling) or domestic hot water off: the pump is off, ▪ During space heating (cooling) or domestic hot water on: pump operation depends on setting [F-OD] (continuous, sample or request). <p>Remark: in domestic hot water operation the pump starts later than the compressor to avoid that the tank is cooled down by the cold water loop.</p>	Replace water pump.

Root cause category: parameter (setting)

Possible failure	Root cause	Check	Repair
Incorrect setting of pump operation mode (continuous, sample, request) (setting [F-OD]).	Incorrect setting.	Confirm setting [F-0].	Adapt setting [F-0] if required (factory setting: [F-0]=1).

3.6.3 Tap water related

Symptom: High water pressure at tapping point

Root cause category: component – mechanical

Possible failure	Root cause	Check	Repair
Safety valve water side blocked.	Component failure.	Check safety valve.	If required, replace safety valve.
Field installed pressure reducing valve problem.	<ul style="list-style-type: none"> ▪ Pressure reducing valve (to reduce pressure of the main water supply) NOT installed, ▪ Pressure reducing valve problem. 	Check water system pressure before and after the water pressure reducing valve.	Install or replace water pressure reducing valve.

Symptom: Tap water has white color

Root cause category: installation

Possible failure	Root cause	Check	Repair
Extreme formation of anode residue.	Water quality and composition of the water (chlorides, conductivity) can lead to accelerated reduction of the anode in the tank and aluminumhydroxides will be formed on the bottom of the tank. (Remark: a NOT well controlled water softener can cause an increased amount of chlorides in the water.)	Visual check for aluminumhydroxide residue is ONLY possible with endoscope.	<ul style="list-style-type: none"> ▪ Drain and flush the tank to remove the aluminumhydroxides, ▪ Check correct setting of field supplied water softener (if installed).



INFORMATION

ONLY for optional third party water tank with anode. See addendum book for impressed current anode system for further troubleshooting.

Symptom: Tap water has bad odor

Root cause category: installation

Possible failure	Root cause	Check	Repair
Water circuit - bad odor of supply water.	Bad quality/contamination of supply water.	Check the water quality (odor/contamination) at cold domestic water inlet.	Assure that quality of entering water is OK.

3.6.4 Symptom: User interface is failure or frozen screen

Root cause category: component – electrical

Possible failure	Root cause	Check	Repair
Hydro PCB NOT operational.	<ul style="list-style-type: none"> ▪ No power supply, ▪ Faulty transformer, ▪ PCB malfunction. 	<ul style="list-style-type: none"> ▪ Confirm if a small green led is blinking in regular intervals, ▪ Confirm power supply towards hydro PCB, ▪ Check good operation of transformer. 	<ul style="list-style-type: none"> ▪ Re-establish power to hydro PCB, ▪ Replace hydro PCB in case power supply and transformer are OK but led is NOT blinking.
Reactor coil broken.	Component problem.	Check continuity of the reactor coil.	Replace the reactor coil in case faulty.
P1/P2 transmission cable broken/short-circuit.		Check P1/P2 cable (16 V DC on remote controller terminals and cable continuity).	Repair P1/P2 cable if required.
User interface failure.		Check user interface software version.	Update user interface software to the latest version. If problem persists, replace the user interface.
No display.	Display contrast too high or too low.		Adjust contrast.
Blocked screen.	Mismatch between software and EEPROM on user interface.		Power reset and user interface reset.

3.6.5 Symptom: Leak

Root cause category: installation

Possible failure	Root cause	Check	Repair
Drain connection of water safety valve leaking.	Bad connection between unit drain pipe and field drain pipe.	Check the drain connection of the water safety valve.	Correct the drain connection if required.
Drain of bottom drain plate NOT well connected.	Bad connection of bottom drain plate and field drain connection.	Check the drain connection between the bottom drain plate and the field drain.	Correct the drain connection if required.
Leakage of drain valve.	Valve NOT completely closed.	Check if drain valve is closed.	Close the drain valve.

Root cause category: component – mechanical

Possible failure	Root cause	Check	Repair
Expansion vessel NOT pressurized.	Component failure.	Check expansion vessel.	Replace expansion vessel.
Safety valve blocked.	Component failure.	Check safety valve.	Replace safety valve.
Safety valve leaking.	Component failure.	Check safety valve.	Replace safety valve.
Leakage of drain valve.	Component failure.	Check drain valve.	Replace drain valve.

Possible failure	Root cause	Check	Repair
Domestic hot water tank leakage.	Component failure.	Check tank visually for leakages.	Repair leakages. If NOT possible, complete unit has to be replaced.
Air Purge leakage.	Component failure.	Check air purge valve for leakages.	Replace air purge valve.

3.6.6 Symptom: Water flow or volume too low

- 1 If this symptom is determined, check the steps in error codes 7H-xx to solve the error. See "[3.5 Error based troubleshooting](#)" [▶ 24].

3.6.7 Compressor related

Symptom: Compressor does not start

Root cause category: software control

Possible failure	Root cause	Check	Repair
Compressor does NOT start because water loop temperature is too low.	Special software control activated - Water loop temperature is too low causing ONLY the backup heater to operate. Compressor will start when water temperature is high enough (for detailed water temperature values, see the operation range in the databook).	Normal unit operation – no specific countermeasure required.	—
Compressor guard timer active.	Compressor guard timer active. Once compressor has stopped it takes 180 seconds before it can restart.	Normal unit operation – no specific countermeasure required.	—

Root cause category: component – electrical

Possible failure	Root cause	Check	Repair
Power cables (U, V, W) incorrectly connected to compressor.	Wrong assembly during repair.	Confirm that the U, V, W wiring is correctly connected. See " 7.2 Wiring diagram " [▶ 298] for an indication how to connect correctly.	Correct the U, V, W wiring.

Symptom: Compressor does not increase frequency**Root cause category: software control**

Possible failure	Root cause	Check	Repair
Compressor frequency limited - high discharge temperature protection function active.	In case the discharge temperature is higher than 221°F (105°C) the compressor frequency will be reduced. When the discharge temperature is lower than 221°F (105°C) the frequency can increase again.	Activation of the protection function can be caused by various reasons, therefore we recommend checking the following: <ul style="list-style-type: none"> ▪ Check refrigerant charge, ▪ Check expansion valve for correct operation, ▪ Check suction thermistor, ▪ Check discharge pipe thermistor. 	Based on the diagnosis execute one of the following actions: <ul style="list-style-type: none"> ▪ Correct the refrigerant charge, ▪ Replace expansion valve, ▪ Replace suction thermistor, ▪ Replace discharge pipe thermistor.
Compressor frequency limited - high pressure protection function active.	In case high pressure is higher than 703 PSI (48.5 bar) the compressor frequency will be reduced. When the pressure drops below 674.5 PSI (46.5 bar) the compressor frequency can increase again.	Activation of the protection function can be caused by various reasons, therefore we recommend to check the following: <ul style="list-style-type: none"> ▪ Check refrigerant pressure sensor, ▪ Check high pressure side plate type heat exchanger for good water flow and heat exchange, ▪ Check the refrigerant charge. 	Based on the diagnosis execute one of the following actions: <ul style="list-style-type: none"> ▪ Replace refrigerant pressure sensor, ▪ Optimize the water flow through the high pressure side plate type heat exchanger, ▪ Correct the refrigerant charge.
Compressor frequency limited.	Inverter control active – target water leaving temperature (target sat. high pressure) reached.	Check if saturated high pressure temperature is within range to heat up the water to the required temperature.	—
Compressor frequency limited - suction pipe superheat protection function active.	This protection control activates when suction superheat is >10° and expansion valve is fully open (480 pulse). Unit returns to normal operation when suction superheat is <4°. <p>Remark: check the suction superheat by measuring the suction temperature (with contact thermometer) before the compressor and comparing with the saturated evaporation temperature.</p>	Activation of the protection function can be caused by various reasons, therefore we recommend to check the following: <ul style="list-style-type: none"> ▪ Check refrigerant charge, ▪ Check expansion valve for correct operation, ▪ Check suction thermistor, ▪ Check the refrigerant circuit for blockages. 	Based on the diagnosis execute one of the following actions: <ul style="list-style-type: none"> ▪ Correct the refrigerant charge, ▪ Replace expansion valve, ▪ Replace suction thermistor, ▪ Remove detected blockages from the refrigerant circuit.

Root cause category: installation

Possible failure	Root cause	Check	Repair
PHE condenser (water side) (partial) blockage.	Dirty water (particles).	<ul style="list-style-type: none"> Check water flow rate registered by flow sensor, Check water side plate type heat exchanger for blockage. 	<ul style="list-style-type: none"> If required replace the water plate type heat exchanger, Check the water quality.

Root cause category: component – mechanical

Possible failure	Root cause	Check	Repair
Limited heat exchange between refrigerant loop and heat sink inverter could result in high inverter temperatures and limited compressor frequency.	<ul style="list-style-type: none"> Bad contact between refrigerant loop and inverter heat sink, Lack of refrigerant. 	Check contact between refrigerant loop and PCB heat sink.	—

Root cause category: component – electrical

Possible failure	Root cause	Check	Repair
Discharge pipe thermistor – higher temperature measured than actual.	Deviation of thermistor (higher temperature measured than actual).	Check discharge pipe thermistor.	Replace discharge pipe thermistor or main PCB.
Heat sink inverter thermistor - deviation.	Deviation of thermistor (higher temperature measured than actual).	<ul style="list-style-type: none"> Check heat sink inverter thermistor, Check PCB. 	<ul style="list-style-type: none"> Replace heat sink inverter thermistor, Replace PCB.
Expansion valve incorrect control - superheat too high.	<ul style="list-style-type: none"> Faulty suction thermistor, Faulty expansion valve control. 	<ul style="list-style-type: none"> Check suction thermistor, Check the expansion valve. 	<ul style="list-style-type: none"> Replace suction thermistor, Replace expansion valve.

Symptom: Increased compressor sound level

Root cause category: component – mechanical

Possible failure	Root cause	Check	Repair
Compressor increased bearing friction/bearing failure.	<ul style="list-style-type: none"> Bad lubrication of compressor internal rotating parts, Compressor at end of lifetime. 	No checks possible.	Replace compressor.
Unit produces (loud) noise or shakes.	<ul style="list-style-type: none"> Refrigerant overcharge, Mixing of air in refrigerant system, Refrigerant undercharge. 	Check refrigerant.	After vacuum drying, charge correct amount of refrigerant.

Root cause category: component – electrical

Possible failure	Root cause	Check	Repair
Expansion valve incorrect control - superheat too low.	<ul style="list-style-type: none"> Faulty suction thermistor, Faulty expansion valve control. 	<ul style="list-style-type: none"> Check suction thermistor, Check the expansion valve. 	<ul style="list-style-type: none"> Replace thermistor when required, Replace expansion valve when required.

3.6.8 Symptom: Abnormal presence of ice

Possible failure	Root cause	Check	Repair
General ice build-up.	—	—	Outdoor unit installation MUST be protected from weather (wind, snow, ...). See installer reference guide for correct installation.
Ice build-up on the outdoor unit.	<ul style="list-style-type: none"> Clogged drain holes, Snow on the outdoor unit, Ice building up on the casing. 	Ice is NOT in direct contact with fins.	<ul style="list-style-type: none"> Unclog drain holes or remove any scraps that can be used for ice to build up, Remove ice.
Defrost operation malfunction.	NOT enough defrost power: shortage of refrigerant.	<ul style="list-style-type: none"> Check refrigerant charge, Check for leaks. 	<ul style="list-style-type: none"> Replace refrigerant, Fix leaks.
Ice build-up at entry spot of refrigerant.	Refrigerant shortage.	<ul style="list-style-type: none"> Check refrigerant charge, Check for leaks. 	<ul style="list-style-type: none"> Replace refrigerant, Fix leaks.
Partial ice up of coil.	Partial refrigerant blockage.	Check refrigerant circuit.	Replace part where blockage occurs.
	Dirty coil.	Check if coil is dirty.	Clean coil.
	Bad weather conditions.	Unit is NOT powerful enough to defrost due to too strong wind, snow, ...	Outdoor unit installation MUST be protected from weather (wind, snow, ...). See installer reference guide for correct installation.

3.6.9 Symptom: Domestic hot water capacity shortage

Root cause category: end user

Possible failure	Root cause	Check	Repair
Too low domestic hot water setpoint.	User set too low domestic hot water setpoint by schedule or manual operation.	Check domestic hot water tank set temperature in combination with boiler volume and hot water usage.	Adapt domestic hot water setpoint (e.g.122~131°F (50~55°C)). (Remark: check the Outdoor Reset settings (relation outdoor temperature - setpoint) in case Outdoor Reset control is activated.)
Domestic hot water NOT activated.	—	Check if domestic hot water heating is activated.	—

Root cause category: parameter (setting)

Possible failure	Root cause	Check	Repair
Setting domestic hot water operation mode [6-0D] NOT set optimally.	Setting domestic hot water operation mode [6-0D] is set to 2 (scheduled ONLY).	Check setting [6-0D].	In case schedule is ONLY used, assure that the programmed schedule is in line with the timings hot water is required. Adapt the schedules if necessary.

Root cause category: installation

Possible failure	Root cause	Check	Repair
3-way valve does NOT switch correctly between space heating (cooling) connection and domestic hot water connection.	3-way valve incorrectly mounted.	Check the 3-way valve.	Correct the position of the 3-way valve.

Root cause category: component – electrical

Possible failure	Root cause	Check	Repair
3-way valve blocked.	Component failure.	Check the 3-way valve.	Replace the 3-way valve.
Deviation of domestic hot water tank thermistor.	Domestic hot water tank thermistor measures a higher temperature than actual (component failure).	Check domestic hot water tank thermistor.	Replace domestic hot water tank thermistor.

3.6.10 Symptom: General capacity shortage

Root cause category: software control

Possible failure	Root cause	Check	Repair
Compressor frequency limited - high discharge temperature protection function active.	In case the discharge temperature is higher than 221°F (105°C) the compressor frequency will be reduced. When the discharge temperature is lower than 221°F (105°C) the frequency can increase again.	Activation of the protection function can be caused by various reasons, therefore we recommend to check the following: <ul style="list-style-type: none"> Check refrigerant charge, Check expansion valve for correct operation, Check suction thermistor, Check discharge pipe thermistor. 	Based on the diagnosis execute one of the following actions: <ul style="list-style-type: none"> Correct the refrigerant charge, Replace expansion valve, Replace suction thermistor, Replace discharge pipe thermistor.
Compressor frequency limited - high pressure protection function active.	In case high pressure is higher than 703 PSI (48.5 bar) the compressor frequency will be reduced. When the pressure drops below 674.5 PSI (46.5 bar) the compressor frequency can increase again.	Activation of the protection function can be caused by various reasons, therefore we recommend to check the following: <ul style="list-style-type: none"> Check refrigerant pressure sensor, Check high pressure side plate type heat exchanger for good water flow and heat exchange, Check the refrigerant charge. 	Based on the diagnosis execute one of the following actions: <ul style="list-style-type: none"> Replace refrigerant pressure sensor, Optimize the water flow through the high pressure side plate type heat exchanger, Correct the refrigerant charge.
<ul style="list-style-type: none"> Compressor frequency limited, Suction pipe superheat protection function active. 	<p>This protection control activates when suction superheat is >10° and expansion valve is fully open (480 pulse). Unit returns to normal operation when suction superheat is <4°.</p> <p>Remark: check the suction superheat by measuring the suction temperature (with contact thermometer) before the compressor and comparing with the saturated evaporation temperature.</p>	Activation of the protection function can be caused by various reasons, therefore we recommend to check the following: <ul style="list-style-type: none"> Check refrigerant charge, Check expansion valve for correct operation, Check suction thermistor, Check the refrigerant circuit for blockages. 	Based on the diagnosis execute one of the following actions: <ul style="list-style-type: none"> Correct the refrigerant charge, Replace expansion valve, Replace suction thermistor, Remove detected blockages from the refrigerant circuit.

Root cause category: end user

Possible failure	Root cause	Check	Repair
Space heating (cooling) or domestic hot water operation is NOT activated on the user interface.	—	Confirm if space heating (cooling) operation or domestic hot water operation is activated on user interface.	Activate space heating (cooling) or domestic hot water operation on the user interface.

Root cause category: parameter (setting)

Possible failure	Root cause	Check	Repair
Displayed date/time is wrong - schedules NOT correctly executed.	<ul style="list-style-type: none"> ▪ NOT set date/time after initial start-up, ▪ No power supply for more than 48 hours. 	Check date/setting and content of schedules.	Set date/time according to operation manual instructions.
Displayed date/time is wrong - schedules NOT correctly executed.	Daylight Saving Time NOT set correctly.	Check Daylight Saving Time settings.	Set Daylight Saving Time according to operation manual.
Schedules NOT activated.	Schedules were NOT confirmed (see the schedule settings).	Check schedules on the user interface.	Set schedule according to user reference guide.
Vacation setting active.	Vacation setting is activated in the user interface.	Check vacation settings.	Set vacation settings correctly.
Backup heater operation disabled.	Setting backup heater operation mode [4-00] is set to 0 (disable).	Check setting [4-00].	Change setting [4-00] to 1.
Second step of the backup heater is NOT allowed.	Setting "enable backup heater step 2" [4-07] is set to 0 (NOT allowed).	Check setting [4-07].	Change setting [4-07] to 1.
Backup heater equilibrium point was set too low.	Setting "equilibrium temperature" [5-01] was set too low.	Check setting [5-01].	Change setting [5-01] to 0 or higher to more quickly allow backup heater operation.

Root cause category: installation

Possible failure	Root cause	Check	Repair
PHE condenser (partial) blockage.	Dirty water (particles).	<ul style="list-style-type: none"> ▪ Check water flow rate registered by flow sensor, ▪ Check plate heat exchanger for blockage. 	<ul style="list-style-type: none"> ▪ If required replace the plate heat exchanger, ▪ Check the water quality.
3-way valve bypass between domestic hot water and space heating (cooling).	3-way valve incorrectly mounted.	Check the 3-way valve.	Correct the position of the 3-way valve.
Water filter blocked.	Dirty water.	<ul style="list-style-type: none"> ▪ Check water filter, ▪ Check water quality. 	<ul style="list-style-type: none"> ▪ Clean the water filter, ▪ Check the water quality.

Possible failure	Root cause	Check	Repair
Air in the water circuit.	NOT enough air purged.	<ul style="list-style-type: none"> ▪ Check if all air purge valves are open, ▪ Check if air purge valves are installed on all highest points of the field installed water circuit. 	Purge air out of unit and field supplied water system and backup heater.
Water circuit (partially) blocked.	Dirty water.	Check water circuit (unit + field) for blockages.	Remove possible blockages and check the water quality.

Root cause category: component – mechanical

Possible failure	Root cause	Check	Repair
Refrigerant shortage.	<ul style="list-style-type: none"> ▪ Refrigerant leakage, ▪ Incorrectly charged. 	<ul style="list-style-type: none"> ▪ Check refrigerant charge, ▪ Pressure test the system to check for leakage. 	If required, repair the leak and charge the correct refrigerant amount.
Air Purge blocked - air trapped in water system.	Component failure.	Check air purge valve.	Replace air purge valve.

Root cause category: component – electrical

Possible failure	Root cause	Check	Repair
Refrigerant pressure sensor - higher pressure measured than actual.	Deviation of refrigerant pressure sensor (higher value measured than actual).	Check refrigerant pressure sensor.	Replace refrigerant pressure sensor.
Discharge pipe thermistor – higher temperature measured than actual.	Deviation of thermistor (higher temperature measured than actual).	Check discharge pipe thermistor.	Replace discharge pipe thermistor or replace PCB.
Expansion valve incorrect control - superheat too high.	<ul style="list-style-type: none"> ▪ Faulty suction thermistor, ▪ Faulty expansion valve control. 	<ul style="list-style-type: none"> ▪ Check suction thermistor, ▪ Check the expansion valve. 	Replace suction thermistor or replace expansion valve.
Backup heater NOT working.	Component failure.	Check backup heater.	Replace backup heater.
Deviation of outlet water after backup heater thermistor will influence the backup heater control.	<ul style="list-style-type: none"> ▪ Deviation of thermistor (higher temperature measured than actual), ▪ Bad contact between sensor and pipe. 	Check outlet water after backup heater thermistor.	Replace outlet water after backup heater thermistor or PCB A1P.
Flow sensor deviation – flow measured higher than actual.	Component failure.	Check the flow sensor.	Replace the flow sensor.
3-way valve blocked.	Component failure.	Check the 3-way valve.	Replace the 3-way valve.

3.6.11 Symptom: Space heating (cooling) capacity shortage

Root cause category: end user

Possible failure	Root cause	Check	Repair
Space heating: too low leaving water temperature setpoint. Space cooling: too high leaving water temperature setpoint.	User set too low (space heating) or too high (space cooling) leaving water temperature setpoint by schedule or manual operation.	Check leaving water setpoint.	Adapt leaving water setpoint. (Remark: check the Outdoor Reset settings (relation outdoor temperature - setpoint) in case Outdoor Reset control is activated.)
Too low (space heating) or too high (space cooling) setpoint on room thermostat.	User set too low (space heating) or too high (space cooling) room setpoint by schedule or manual operation.	Check room thermostat setpoint.	Adapt room thermostat setpoint. (Remark: check the Outdoor Reset settings (relation outdoor temperature - setpoint) in case Outdoor Reset control is activated.)
Space heating (cooling) NOT activated.		Check if space heating (cooling) is activated.	

Root cause category: parameter (setting)

Possible failure	Root cause	Check	Repair
External room thermostat used with setting [C-07] on value 2 (= RT control).	Wrong setting of [C-07] - unit control method.	Check setting [C-07].	Adjust setting to match application - see installer reference guide.
Backup heater operation disabled (setting [4-00] is set to 0 or 2).	Setting backup heater operation mode [4-00] is set 0 (backup heater disabled) or 2 (ONLY domestic hot water).	Check setting [4-00].	Change setting [4-00] to 1.
Setting domestic hot water operation mode [6-0D] NOT set optimally.	Setting domestic hot water operation mode [6-0D] is set to 0 (reheat ONLY). This will cause the system to work too frequently in domestic hot water operation and less in space heating.	Check setting [6-0D].	It is advisable to set to factory setting (reheat + schedule) and program the schedule to heat the domestic hot water during periods of no space heating required.

Root cause category: installation

Possible failure	Root cause	Check	Repair
3-way valve does NOT switch correctly between space heating (cooling) connection and domestic hot water connection.	3-way valve incorrectly mounted.	Check the 3-way valve.	Correct the position of the 3-way valve.

Root cause category: component – electrical

Possible failure	Root cause	Check	Repair
3-way valve blocked.	Component failure.	Check the 3-way valve.	Replace the 3-way valve.

Root cause category: system design

Possible failure	Root cause	Check	Repair
Water circuit – requested capacity too high.	Incorrect system selection.	Check required capacity by heat load calculation. See the capacity tables in the engineering data book to know max. system capacity at indicated conditions.	Adapt system design.
Water circuit - water volume too big.	<ul style="list-style-type: none"> ▪ Long water piping, ▪ Too many heating emitters. 	Check required capacity by heat load calculation. See the capacity tables in the engineering data book to know max. system capacity at indicated conditions.	Adapt system design.
Water circuit - pressure drop too big.	<ul style="list-style-type: none"> ▪ Too small water piping, ▪ Too long water piping, ▪ Too many heating emitters. 	Compare the pressure drop of the total system with the water pump characteristics (See check of water pump). Decreased water flow will cause a drop in capacity.	Adapt system design.

3.6.12 Symptom: Inaccurate temperature control

Root cause category: parameter (setting)

Possible failure	Root cause	Check	Repair
Incorrect setting of unit control method (setting [C-07]).	Incorrect setting of unit control method (setting [C-07]) (leaving water control, room thermostat control, ext. room thermostat control).	Check if setting [C-07] (leaving water control, room thermostat control, ext. room thermostat control) is set according to the application.	Adjust setting to match application.
Incorrect setting of pump operation mode (continuous, sample, request) (setting [F-0D]).	Incorrect setting.	Confirm setting [F-0].	Adjust setting [F-0] if required. (Factory setting: [F-0]=1).

Root cause category: installation

Possible failure	Root cause	Check	Repair
User interface – thermostat sensor value NOT representing room temperature.	Bad location of thermostat sensor (external influence) in case of room thermostat control (setting [C-07]=2).	Check if user interface is mounted in the correct position to measure the correct room temperature.	Correct the position of the user interface for more accurate room temperature measurement.

Root cause category: component – electrical

Possible failure	Root cause	Check	Repair
Outlet water after backup heater thermistor deviation causes incorrect temperature control.	<ul style="list-style-type: none"> Deviation of thermistor (lower temperature measured than actual), Bad contact between sensor and pipe. 	Check outlet water after backup heater thermistor.	Replace outlet water after backup heater thermistor or hydro PCB.
Deviation of domestic hot water tank thermistor. (Remark: ONLY valid for inaccurate domestic hot water temperature control.)	<ul style="list-style-type: none"> Deviation of thermistor, Bad contact between sensor and pipe. 	Check domestic hot water tank thermistor.	Replace domestic hot water tank thermistor or hydro PCB.
User interface – thermostat sensor has incorrect reading of room temperature.	Deviation of user interface room temperature sensor.	Compare temperature measured by user interface with actual room temperature.	In case of deviation the room temperature offset can be adjusted through setting [2-0A].

3.6.13 Symptom: Power consumption too high

Root cause category: end user

Possible failure	Root cause	Check	Repair
Too high domestic hot water setpoint.	User set too high domestic hot water setpoint by schedule or manual operation.	Check domestic hot water tank set temperature; avoid electric heater use.	Adapt domestic hot water setpoint (e.g. 122~131°F (50~55°C)).
Too high leaving water temperature setpoint.	User set too high leaving water temperature setpoint by schedule or manual operation.	Check leaving water setpoint.	Adapt leaving water setpoint (e.g. <131°F (55°C) will reduce backup heater operation).
Too high (space heating) or too low (space cooling) setpoint on room thermostat.	User set too high (space heating) or too low (space cooling) room setpoint by schedule or manual operation.	Check room thermostat setpoint.	Adapt room thermostat setpoint.

Root cause category: parameter (setting)

Possible failure	Root cause	Check	Repair
Too high leaving water temperature (LWT) - Outdoor Reset.	Incorrect Outdoor Reset setting --> too high LWT limit set [1-00]~[1-09].	Check leaving water temperature (LWT) high limit in Outdoor Reset (setting [1-03]).	Adapt high leaving water temperature (LWT) limit for Outdoor Reset heating (setting [1-03]).
User interface thermostat used with setting [C-07] on value 1 (= external thermostat control).	Wrong setting of [C-07] - unit control method.	Check setting [C-07].	Adjust setting to match application - see installer reference guide.

Possible failure	Root cause	Check	Repair
Pump keeps running all the time during space heating (cooling) operation.	Wrong setting of [F-0D] - pump operation.	Check pump operation mode setting [F-0D].	Change setting [F-0D] from continuous operation (value 0) to Sample (1) or Request (2). See installer reference guide for applicable value.
Setting disinfection operation day [2-00] was set to 0 (each day).	Setting disinfection operation day [2-00] was set to 0 (each day).	Check setting [2-00].	Adjust setting if necessary.
Unit is running in emergency operation and is using backup heater ONLY. [4-06] is set to 1.	Unit is running in emergency operation and is using backup heater ONLY. [4-06] is set to 1.	Check setting [4-06].	Adjust setting if necessary.
Backup heater equilibrium point was set too high.	Setting "equilibrium temperature" [5-01] was set too high.	Check setting [5-01].	Change setting [5-01] to less quickly allow backup heater operation.
Setting domestic hot water operation mode [6-0D] NOT set optimally.	Setting domestic hot water operation mode [6-0D] is set to 0 (reheat ONLY). This will cause the system to work too frequently in domestic hot water operation and less in space heating.	Check setting [6-0D] in combination with the reheat setpoint [6-0C].	It is advisable to set to factory setting (reheat + schedule) and program the schedule to heat the domestic hot water during periods of no space heating required.

Root cause category: component – electrical

Possible failure	Root cause	Check	Repair
Deviation of outlet water after backup heater thermistor will influence the backup heater control.	<ul style="list-style-type: none"> ▪ Deviation of outlet water after backup heater thermistor (lower temperature measured than actual), ▪ Bad contact between sensor and pipe. 	Check outlet water after backup heater thermistor.	<ul style="list-style-type: none"> ▪ Replace outlet water after backup heater thermistor when required, ▪ Replace hydro PCB when required.

Root cause category: system design

Possible failure	Root cause	Check	Repair
Water circuit – requested capacity too high causing the system to run at full capacity.	Incorrect system selection.	Check required capacity by heat load calculation. See the capacity tables in the engineering data book to know max. system capacity at indicated conditions.	Adapt system design.

3.6.14 Symptom: System does not start or operate

Root cause category: software control

Possible failure	Root cause	Check	Repair
Thermostat ON conditions for space heating (cooling) are NOT met.	Thermostat ON conditions for space heating (cooling) are NOT met.	<p>Confirm thermostat on conditions depending on the unit control method (setting [C-07]):</p> <ul style="list-style-type: none"> ▪ Setting 1: external room thermostat indicates by contact when to start/stop, ▪ Setting 2: room thermostat control => compare setpoint with room thermistor value. <ul style="list-style-type: none"> - Thermo on: room temperature = setpoint - (differential/2), - Thermo off = room temperature + (differential/2). For setting of differential, see setting [9-0C], ▪ Setting 3: outlet water temperature control => Thermo on: outlet water temperature = setpoint. Thermo off: outlet water temperature -1.5°. 	Change setpoint if required.
Thermostat ON conditions for domestic hot water operation are NOT met.	Thermostat ON conditions for domestic hot water operation are NOT met.	Confirm thermostat on conditions depending on the selected domestic hot water control type (setting [6-0D]).	Change setpoint if required.
Out of operation range (ambient temperature above 95°F (35°C)).	Ambient temperature higher than 95°F (35°C).	No action - unit CANNOT operate when ambient temperature is above 95°F (35°C).	

Root cause category: end user

Possible failure	Root cause	Check	Repair
Space heating (cooling) or domestic hot water operation is NOT activated on the user interface.		Confirm if space heating (cooling) operation or domestic hot water operation is activated on user interface.	Activate space heating (cooling) or domestic hot water operation on the user interface.

Root cause category: parameter (setting)

Possible failure	Root cause	Check	Repair
Displayed date/time is wrong - schedules NOT correctly executed.	<ul style="list-style-type: none"> NOT set date/time after initial start-up, No power supply for more than 48 hours. 	Set date/time according to operation manual instructions.	Set date/time according to operation manual instructions.
Displayed date/time is wrong - schedules NOT correctly executed.	Daylight Saving Time NOT set correctly.	Check Daylight Saving Time settings.	Set Daylight Saving Time according to operation manual.
Incorrect setting of unit control method (setting [C-07]).	Incorrect setting of unit control method (setting [C-07]) (leaving water control, room thermostat control, ext. room thermostat control).	Check if setting [C-07] (leaving water control, room thermostat control, ext. room thermostat control) is in set according to the application.	
Incorrect setting of space heating OFF temperature (setting [4-02]) or space cooling OFF temperature (setting [F-01]).	Incorrect setting of space heating OFF temperature (setting [4-02]) or space cooling OFF temperature (setting [F-01]).	Check if setting space heating OFF temperature (setting [4-02]) is correct (keep at 95°F (35°C)) or check if setting space cooling OFF temperature (setting [F-01]) is correct (keep at 50°F (10°C)).	
Reduced tariff kWh power supply settings and electrical connections do NOT match.	Reduced tariff kWh power supply settings and electrical connections do NOT match.	Check reduced tariff kWh power supply settings and electrical connections (see installer reference guide).	

Root cause category: component – electrical

Possible failure	Root cause	Check	Repair
Hydro PCB NOT operational.	<ul style="list-style-type: none"> No power supply, Faulty transformer, Hydro PCB malfunction. 	<ul style="list-style-type: none"> Confirm that HAP led is blinking in regular intervals, Confirm power supply towards hydro PCB, Check good operation of transformer. 	<ul style="list-style-type: none"> Re-establish power to hydro PCB. Replace hydro PCB in case power supply and transformer are OK but led is NOT blinking.
Outdoor unit PCB malfunction (Main PCB, inverter PCB, ...)	<ul style="list-style-type: none"> No power supply, Outdoor unit PCB malfunction. 	<ul style="list-style-type: none"> Confirm that HAP led is blinking in regular intervals, Confirm power supply towards outdoor unit PCB, Check good operation of outdoor unit PCB. 	<ul style="list-style-type: none"> Re-establish power to outdoor unit PCB. Replace outdoor unit PCB in case power supply is OK but led is NOT blinking or in case of PCB not operating correctly.
Reactor coil broken.	Component problem.	Check continuity of the reactor coil.	Replace the reactor coil in case faulty.

Root cause category: hardware

Possible failure	Root cause	Check	Repair
Cooling/heating operation starts, but stops immediately.	<ul style="list-style-type: none"> Refrigerant overcharge, Mixing of air in refrigerant system. 	Check refrigerant.	After vacuum drying, charge correct amount of refrigerant.

3.6.15 Symptom: The pump is blocked



NOTICE

The pump is equipped with an anti-blockage safety routine. This means that the pump operates for a short period of time every 24 hours during long periods of inactivity to ensure it does not get stuck. To enable this function, the unit must be connected to the power supply all year round.

Possible causes	Corrective action
If the unit has been powered off for a long time, lime might block the rotor of the pump.	<p>Remove the screw of the stator housing and use a screwdriver to turn back and forth the ceramic shaft of the rotor until the rotor is unblocked.^(a)</p> <p>Note: Do NOT use excessive force.</p>

^(a) If you cannot unblock the rotor of the pump with this method, you will need to disassemble the pump and turn the rotor by hand.

4 Components



CAUTION

When replacing a component ALWAYS make sure the correct spare part for your unit is installed.

4.1 3-way valve



NOTICE

This optional 3-way valve is ONLY used for wall mounted units combined with a domestic hot water tank and is field installed (outside the unit).

4.1.1 Checking procedures



INFORMATION

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

To perform a mechanical check of the 3-way valve

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 The 3-way valve knob MUST be fully pressed (= motor control). If NOT fully pressed, press the 3-way valve knob.
- 2 The 3-way valve knob MUST be in domestic hot water or space heating position, NOT in intermediate position. If in intermediate position, put the 3-way valve switch in domestic hot water or space heating position.

Is the problem solved?	Action
Yes	No further actions required.
No	Perform an electrical check of the 3-way valve, see " 4.1.1 Checking procedures " [▶ 99].

To perform an electrical check of the 3-way valve

Prerequisite: First perform a mechanical check of the 3-way valve, see "[4.1.1 Checking procedures](#)" [▶ 99].

- 1 Turn ON the power of the unit.
- 2 Activate **DHW operation** via the user interface.
- 3 Measure the voltage on connector X2M pin 13 and pin 14a.
Result: The measured voltage MUST be 24 V AC.
- 4 Measure the voltage on connector X2M pin 13 and pin 12.
Result: The measured voltage MUST be 24 V AC.
- 5 De-activate **DHW operation** and activate **Space operation** via the user interface.
- 6 Measure the voltage on connector X2M pin 13 and pin 14a.
Result: The measured voltage MUST be 24 V AC.

7 Measure the voltage on connector X2M pin 13 and pin 12.

Result: The measured voltage MUST be 0 V AC.

Are the measured voltages correct?	Action
Yes	Perform a position check of the 3-way valve (automatic procedure), see "4.1.1 Checking procedures" [▶ 99].
No	Continue with the next step.

8 Measure the voltage on connector X17A pin 5 and 7.

Result: The measured voltage MUST be 24 V AC.

Is the measured voltage on connector X17A correct?	Action
Yes	Continue with the next step.
No	Perform a check of the hydro PCB, see "4.13.1 Checking procedures" [▶ 164].

9 Disconnect connector X20A from the hydro PCB.

10 Activate **DHW operation** via the user interface.

11 Measure the resistance between X20A pin 3 and 5.

Result: The measured resistance MUST be 0 Ω.

12 De-activate **DHW operation** and activate **Space operation** via the user interface.

13 Measure the resistance between X20A pin 1 and 5.

Result: The measured resistance MUST be 0 Ω.

Is the resistance for both measurements on connector X20A correct?	Action
Yes	Relay KVR is switching correctly. Correct the wiring between X20A, X17A and X2M, see "7.2 Wiring Diagram" [▶ 298].
No	Relay KVR is NOT switching correctly. Replace the hydro PCB, see "4.13.2 Repair procedures" [▶ 168],

To perform a position check of the 3-way valve (automatic procedure)

Prerequisite: First perform an electrical check of the 3-way valve, see ["4.1.1 Checking procedures"](#) [▶ 99].

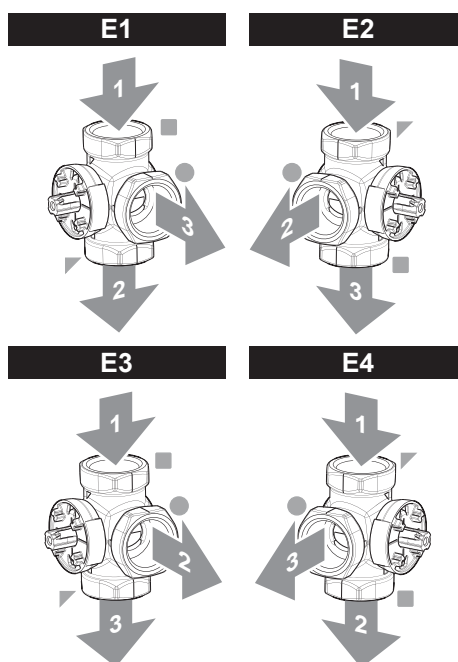
1 Turn ON the power of the unit.

2 Activate **DHW operation** via the user interface.

3 Use a contact thermometer to measure the temperature at the 3-way valve water inlet, the domestic hot water exit and the space heating/cooling exit.

Exit	Temperature
Domestic hot water	Same as the 3-way valve inlet
Space heating/cooling	"Much" lower than the 3-way valve inlet

4 The 3-way valve can be installed in accordance with one of the following four configurations. Water inlet and exit locations differ depending on the configuration used in your unit.



- 1 Water inlet
- 2 Domestic hot water exit
- 3 Space heating/cooling exit

- 5 De-activate **DHW operation** and activate **Space operation** via the user interface.
- 6 Use a contact thermometer to measure the temperature at the 3-way valve water inlet, the domestic hot water exit and the space heating/cooling exit.

Exit	Temperature
Domestic hot water	"Much" lower than the 3-way valve inlet
Space heating/cooling	Same as the 3-way valve inlet

Both temperature checks performed above are correct?	Action
Yes	Component is OK. Return to the troubleshooting of the specific error and continue with the next step.
No	Perform a position check of the 3-way valve (manual procedure), see "4.1.1 Checking procedures" [▶ 99].

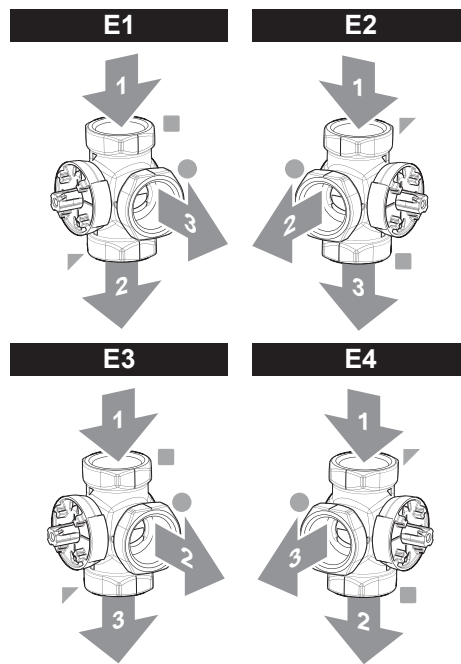
To perform a position check of the 3-way valve (manual procedure)

Prerequisite: First perform a position check (automatic procedure), see ["4.1.1 Checking procedures"](#) [▶ 99].

- 1 Manually put the 3-way valve in the domestic hot water position by rotating the 3-way valve knob.
- 2 Use a contact thermometer to measure the temperature at the 3-way valve water inlet, the domestic hot water exit and the space heating/cooling exit.

Exit	Temperature
Domestic hot water	Same as the 3-way valve inlet
Space heating/cooling	"Much" lower than the 3-way valve inlet

- 3 The 3-way valve can be installed in accordance with one of the following four configurations. Water inlet and exit locations differ depending on the configuration used in your unit.



- 1 Water inlet
- 2 Domestic hot water exit
- 3 Space heating/cooling exit

- 4 Manually put the 3-way valve in the space heating/cooling position by rotating the 3-way valve knob.
- 5 Use a contact thermometer to measure the temperature at the 3-way valve water inlet, the domestic hot water exit and the space heating/cooling exit.

Exit	Temperature
Domestic hot water	"Much" lower than the 3-way valve inlet
Space heating/cooling	Same as the 3-way valve inlet
Both temperature checks performed above are correct?	Action
Yes	Install a new 3-way valve motor, see "4.1.2 Repair procedures" [▶ 102].
No	Replace the valve body, see "4.1.2 Repair procedures" [▶ 102].

4.1.2 Repair procedures

To remove the 3-way valve motor

Prerequisite: Stop the unit operation via the user interface.

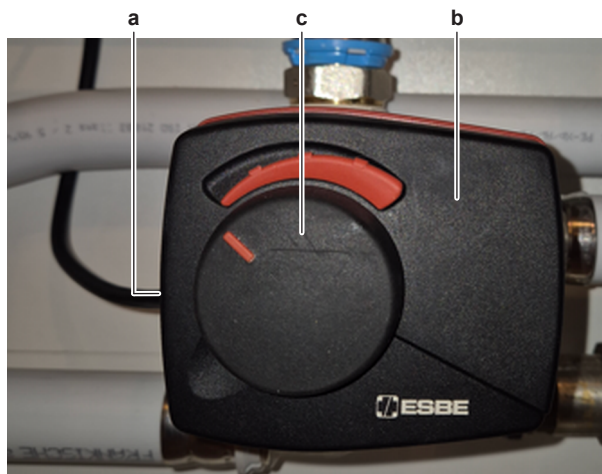
Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].
- 2 Disconnect the 3-way valve motor wiring from the wire terminal X2M.

Note: Note down the current wiring sequence / color code on the specific terminals.

- 3 Route the 3-way valve motor harness through the grommet in the switch box.

- 4 Cut all tie straps that fix the 3-way valve motor harness.
- 5 Loosen the motor cover fixation screw and remove the 3-way valve motor cover.

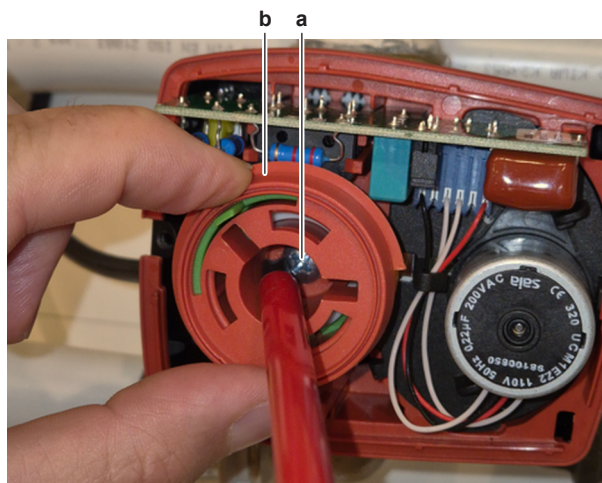


- a Fixation screw (motor cover)
- b 3-way valve motor cover
- c 3-way valve knob

**CAUTION**

Do NOT touch the PCB of the 3-way valve motor.

- 6 Pull the 3-way valve knob and remove it from the 3-way valve motor.
- 7 Loosen the valve motor fixation screw while keeping the red rotary knob in place by hand to preserve the valve body position.



- a Fixation screw (valve motor)
- b Red rotary knob

- 8 Remove the 3-way valve motor from the 3-way valve body.
- 9 To install the 3-way valve motor, see "[4.1.2 Repair procedures](#)" [[▶ 102](#)].

To remove the 3-way valve body

Prerequisite: Remove the 3-way valve motor, see "[4.1.2 Repair procedures](#)" [[▶ 102](#)].

Prerequisite: Drain water from the piping to which the 3-way valve body is connected.

- 1 If applicable, remove the insulation that covers the 3-way valve body.

- 2 Remove the 3-way valve body from the water piping.
- 3 To install the 3-way valve body, see "[4.1.2 Repair procedures](#)" [▶ 102].

To install the 3-way valve body



NOTICE

Check the condition of the O-rings and replace if needed. Apply water or silicon grease to the O-rings before installation.

- 1 Install the 3-way valve body in the correct location on the water piping.
- 2 If applicable, install the insulation around the 3-way valve body.
- 3 Install the 3-way valve motor on the 3-way valve body, see "[4.1.2 Repair procedures](#)" [▶ 102].
- 4 Open the stop valves and add water to the water circuit if 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.

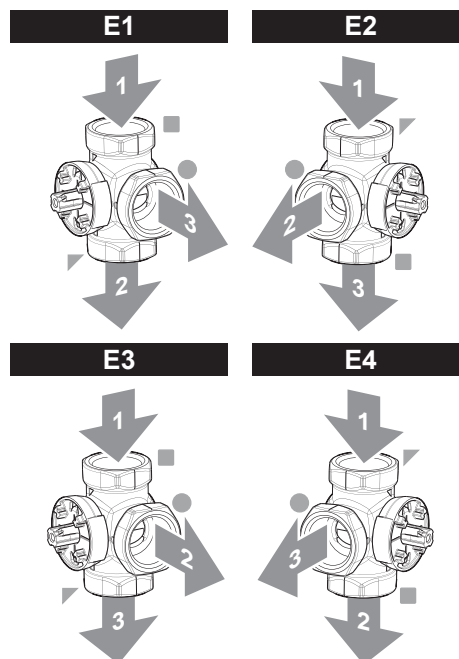
To install the 3-way valve motor



CAUTION

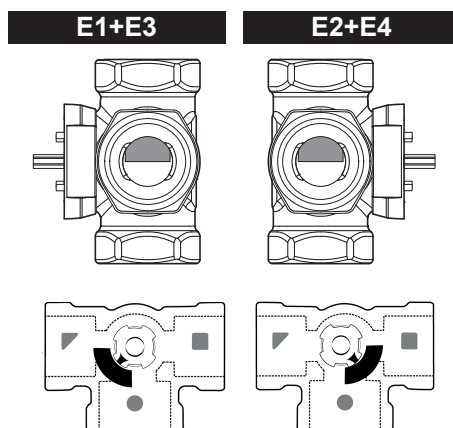
Make sure the 3-way valve body axle is aligned with the 3-way valve motor when installing the 3-way valve motor on the 3-way valve body. The 3-way valve motor is shipped with the 3-way valve knob in the central position. Do NOT change this position!

- 1 The 3-way valve can be installed in accordance with one of the following four configurations.



- 1 Water inlet
- 2 Domestic hot water exit
- 3 Space heating/cooling exit

- 2 Depending on the configuration used in your unit, put the 3-way valve body axle (notch) in the correct position (see image below).

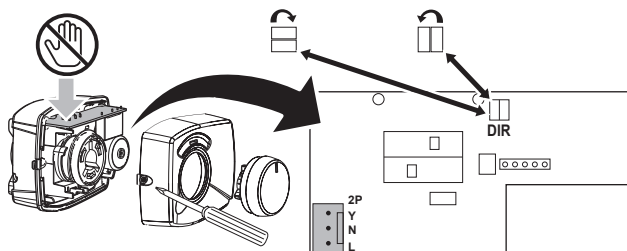


- 3 Loosen the valve motor cover fixation screw and remove the 3-way valve motor cover.

**CAUTION**

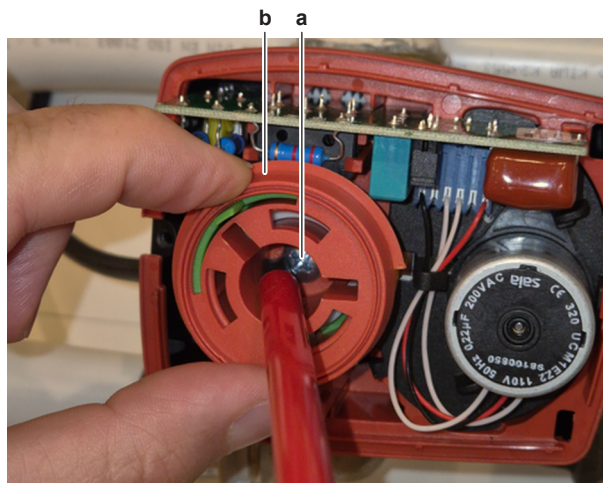
Do NOT touch the PCB of the 3-way valve motor.

- 4 Pull the 3-way valve knob and remove it from the 3-way valve motor.
5 When installing in accordance with configurations E3 or E4, change the jumper so as to change the rotation direction of the valve.



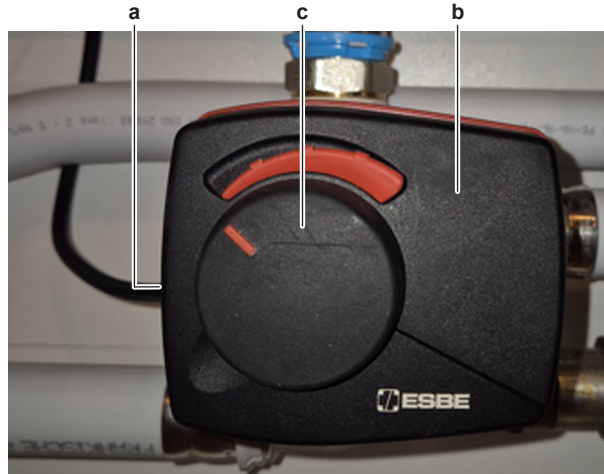
- Position of the jumper in case of installation according to configurations E1 and E2.
- Position of the jumper in case of installation according to configurations E3 and E4.

- 6 Install the 3-way valve motor on the 3-way valve body.
7 While keeping the red rotary knob in place by hand (to preserve the valve body position), tighten the screw to fix the 3-way valve motor to the 3-way valve body.



- a Fixation screw (valve motor)
- b Red rotary knob

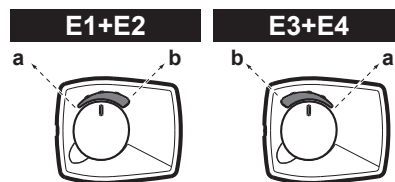
- 8 Install the 3-way valve knob on the 3-way valve motor.



- a Fixation screw (motor cover)
- b 3-way valve motor cover
- c 3-way valve knob

- 9 Install the valve motor cover in the correct location on the 3-way valve motor. Install and tighten the fixation screw to fix the valve motor cover.

- 10 Put the scale on the valve according to the applicable configuration.



- a DHW tank
- b Space heating/cooling

- 11 Route the 3-way valve motor harness through the grommet in the switch box.

- 12 Connect the 3-way valve motor wiring to the wire terminal X2M.

- 13 Install new tie straps to fix the 3-way valve harness.

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 4-way valve

4.2.1 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 respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 If applicable, remove the insulation from the 4-way valve.

**DANGER: RISK OF BURNING/SCALDING**

The coil gets hot while energized. 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 "4.2.1 Checking procedures" [▶ 106].
No	Fix or replace the 4-way valve coil, see "4.2.2 Repair procedures" [▶ 110].

To perform an electrical check of the 4-way valve

- 1 First perform a mechanical check of the 4-way valve, see ["4.2.1 Checking procedures"](#) [▶ 106].

**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 Unplug the 4-way valve connector from the appropriate PCB.
- 3 Measure the resistance of the 4-way valve coil between the pins of the 4-way valve connector.

Result: The measured value must be 1.2 kΩ ± 10%

Is the measured value correct?	Action
Yes	Continue with the next step.
No	Replace the 4-way valve coil, see "4.2.2 Repair procedures" [▶ 110].

- 4 Connect the 4-way valve connector to the appropriate PCB.
- 5 Turn ON the power using the respective circuit breaker.
- 6 Activate **Heating** or **Domestic hot water** operation via the user interface.

**INFORMATION**

When **Heating** operation is NOT possible due to too high outdoor temperature (see the databook on Business Portal for the temperature range of the operation modes), activate **Domestic hot water** operation.

When your unit is a wall mounted unit without optional domestic hot water tank installed, **Domestic hot water** operation is NOT possible. In this case it is NOT possible to check the operation of the 4-way valve during **Domestic hot water**.

- 7 With the 4-way valve connector connected to the PCB, measure the voltage on the 4-way valve connection of the PCB.

Result: The measured voltage MUST be 230 V AC.

- 8 De-activate **Heating** or **Domestic hot water** and activate **Cooling** (if the system is set as Heating + Cooling) or **Forced defrost** (if the system is set as Heating ONLY) operation via the user interface.

**INFORMATION**

When **Cooling** operation is NOT possible due to too low outdoor temperature (see the databook on Business Portal for the temperature range of the operation modes), activate **Forced defrost** operation.

If your system is set as Heating ONLY and the outdoor temperature is too high, it is possible that the **Forced defrost** operation stops after a few seconds. In this case it is NOT possible to check the operation of the 4-way valve during **Forced defrost**.

- 9 Measure the voltage on the 4-way valve connection on the PCB.

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 " 4.2.1 Checking procedures " [▶ 106].
No	Perform a check the main PCB, see " 4.17 Main PCB " [▶ 180].

To perform a position check of the 4-way valve

- 1 First perform an electrical check of the 4-way valve, see "[4.2.1 Checking procedures](#)" [▶ 106].
- 2 Activate **Heating** or **Domestic hot water** operation via the user interface.

**INFORMATION**

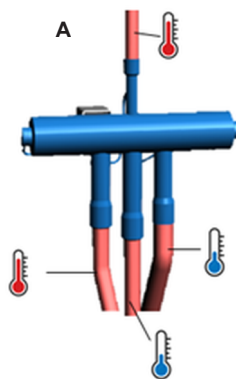
When **Heating** operation is NOT possible due to too high outdoor temperature (see the databook on Business Portal for the temperature range of the operation modes), activate **Domestic hot water** operation.

When your unit is a wall mounted unit without optional domestic hot water tank installed, **Domestic hot water** operation is NOT possible. In this case it is NOT possible to check the operation of the 4-way valve during **Domestic hot water**.

**INFORMATION**

It is recommended to connect the service monitoring tool to the unit and verify the operation mode of the 4-way valve.

- 3 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 "[7.3 Piping diagram](#)" [▶ 312]).



A Refrigerant flow through 4-way valve in heating or domestic hot water operation

- 4 The flow through the 4-way valve is correct if:
- High pressure side: Saturated condensation temperature is equal to OR slightly higher than outlet water temperature after the heat exchanger.
 - Low pressure side: Saturated evaporation temperature is 5~10K lower than the ambient temperature.

Is the flow correct?	Action
Yes	Skip the next step of this procedure.
No	Perform the next step of this procedure.

- 5 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 "4.2.2 Repair procedures" [▶ 110].
No	Leaks may be found in the refrigerant circuit. Perform a pressure test of the refrigerant circuit, see "5.2.1 Checking procedures" [▶ 263].

- 6 De-activate **Heating** or **Domestic hot water** and activate **Cooling** (if the system is set as Heating + Cooling) or **Forced defrost** (if the system is set as Heating ONLY) operation via the user interface.

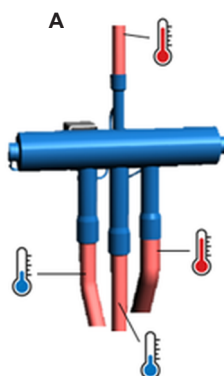


INFORMATION

When **Cooling** operation is NOT possible due to too low outdoor temperature (see the databook on Business Portal for the temperature range of the operation modes), activate **Forced defrost** operation.

If your system is set as Heating ONLY and the outdoor temperature is too high, it is possible that the **Forced defrost** operation stops after a few seconds. In this case it is NOT possible to check the operation of the 4-way valve during **Forced defrost**.

- 7 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 ["7.3 Piping diagram"](#) [▶ 312]).



A Refrigerant flow through 4-way valve in cooling or forced defrost operation

- 8 The flow through the 4-way valve is correct if:

- High pressure side: Saturated condensation temperature is 10~25K higher than the ambient temperature.
- Low pressure side: Saturated evaporation temperature is 5~10K lower than the outlet water temperature after the heat exchanger.

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	Replace the body of the 4-way valve, see " 4.2.2 Repair procedures " [▶ 110].

4.2.2 Repair procedures

To remove the 4-way valve coil

Prerequisite: Stop the unit operation via the user interface.

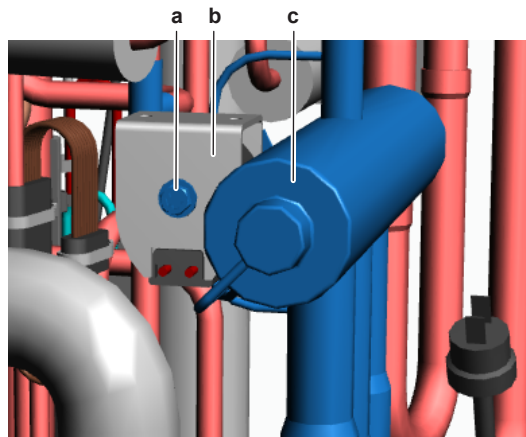
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

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.



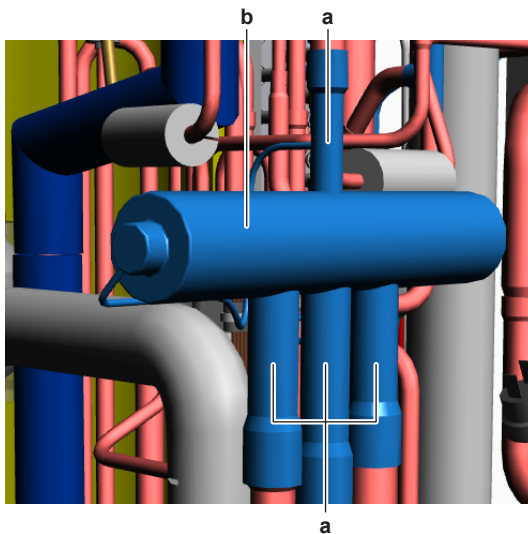
- a Screw
- b 4-way valve coil
- c 4-way valve body

- 2 Cut all tie straps that fix the 4-way valve coil harness.
- 3 Unplug the 4-way valve connector from the appropriate PCB.
- 4 To install the 4-way valve coil, see "[4.2.2 Repair procedures](#)" [▶ 110].

To remove the 4-way valve body

- 1 Recuperate the refrigerant from the refrigerant circuit, see "[5.2.2 Repair procedures](#)" [▶ 268].
- 2 Remove the 4-way valve coil from the 4-way valve body, see "[4.2.2 Repair procedures](#)" [▶ 110].
- 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 2.9 PSI (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.



- a 4-way valve pipe
b 4-way valve

- 6 Stop the nitrogen supply when the piping has cooled down.
- 7 Remove the 4-way valve.



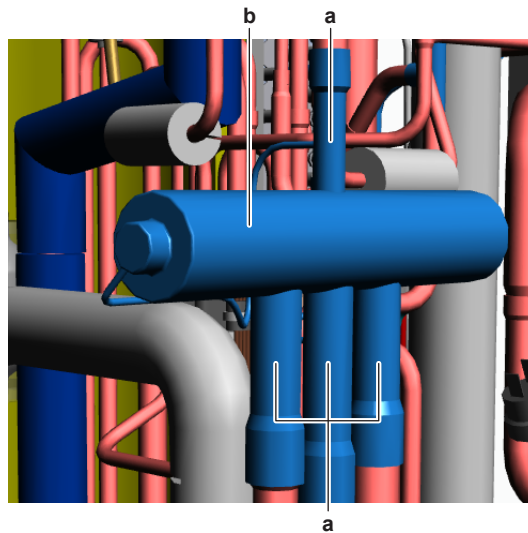
INFORMATION

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 "[4.2.2 Repair procedures](#)" [▶ 110].

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 2.9 PSI (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.



- a 4-way valve pipe
- b 4-way valve



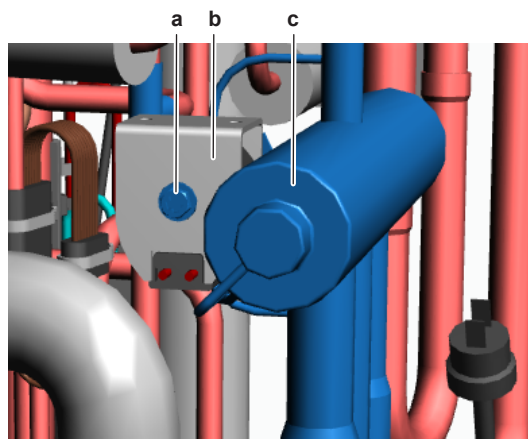
CAUTION

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 "[4.2.2 Repair procedures](#)" [▶ 110].
- 9 Perform a pressure test, see "[5.2.1 Checking procedures](#)" [▶ 263].
- 10 Add refrigerant to the refrigerant circuit, see "[5.2.2 Repair procedures](#)" [▶ 268].

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 Route the 4-way valve coil harness towards the appropriate PCB.
- 4 Connect the 4-way valve connector to the appropriate PCB.

**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.

- 5 Fix the 4-way valve coil harness using new tie straps.
- 6 If applicable, install the insulation on the 4-way valve.

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 ACS digital I/O PCB

4.3.1 Checking procedures

**INFORMATION**

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

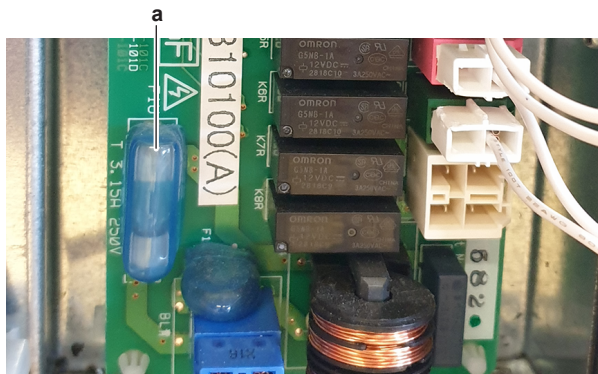
To check the fuse of the ACS digital I/O PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Measure the continuity of the fuse. If no continuity is measured, the fuse has blown.



a Fuse

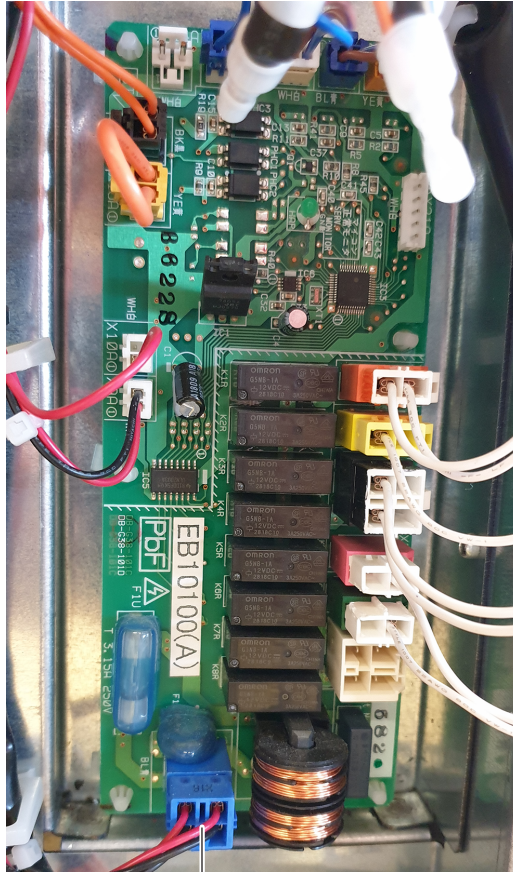
Blown fuse on the ACS digital I/O PCB?	Action
Yes	Replace the ACS digital I/O PCB, see "4.3.2 Repair procedures" [▶ 116].
No	Return to "4.3.1 Checking procedures" [▶ 113] of the ACS digital I/O PCB and continue with the next procedure.

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 ["4.3.1 Checking procedures"](#) [▶ 113].

- 1 Turn ON the power of the unit.
- 2 Measure the voltage on connector X1A of the ACS digital I/O PCB.

Result: The measured voltage MUST be 200~240 V AC.



a X1A connector

Is the measured voltage on the ACS digital I/O PCB correct?	Action
Yes	Return to "4.3.1 Checking procedures" [▶ 113] of the ACS digital I/O PCB and continue with the next procedure.
No	Continue with the next step.

- 3 Measure the output voltage on connector X803A on the noise filter PCB.

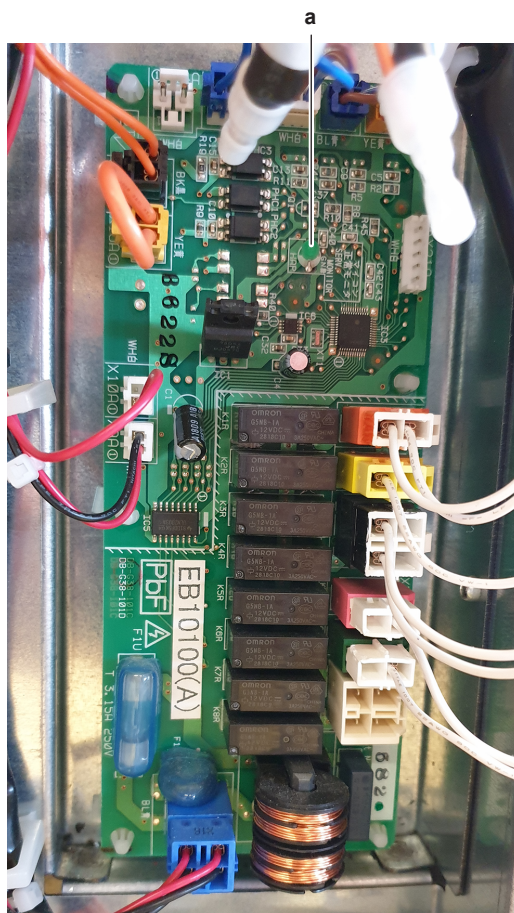
Result: The measured voltage MUST be 200~240 V AC.

Is the measured output voltage on the noise filter PCB correct?	Action
Yes	Correct the wiring between the noise filter PCB and the ACS digital I/O PCB, see "5.1.2 Repair procedures" [▶ 261].
No	Perform a check of the noise filter PCB, see "4.18.1 Checking procedures" [▶ 190].

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 "4.3.1 Checking procedures" [▶ 113].

- 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 "4.3.1 Checking procedures" [▶ 113] of the ACS digital I/O PCB and continue with the next procedure.
No	Replace the ACS digital I/O PCB, see "4.3.2 Repair procedures" [▶ 116].

To check if the correct spare part is installed

- 1 First perform all earlier checks of the ACS digital I/O PCB, see "4.3.1 Checking procedures" [▶ 113].
- 2 Visit the Daikin Spare Parts Bank (<https://daikincomfort.com/resource-center/parts-supplies>).
- 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 Daikin Spare Parts Bank.

Is the correct spare part for the ACS digital I/O PCB installed?	Action
Yes	Return to " 4.3.1 Checking procedures " [▶ 113] of the ACS digital I/O PCB and continue with the next procedure.
No	Replace the ACS digital I/O PCB, see " 4.3.2 Repair procedures " [▶ 116].

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 "[4.3.1 Checking procedures](#)" [▶ 113].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 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 "[7.2 Wiring diagram](#)" [▶ 298].



INFORMATION

Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.3.1 Checking procedures " [▶ 113] 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.

4.3.2 Repair procedures

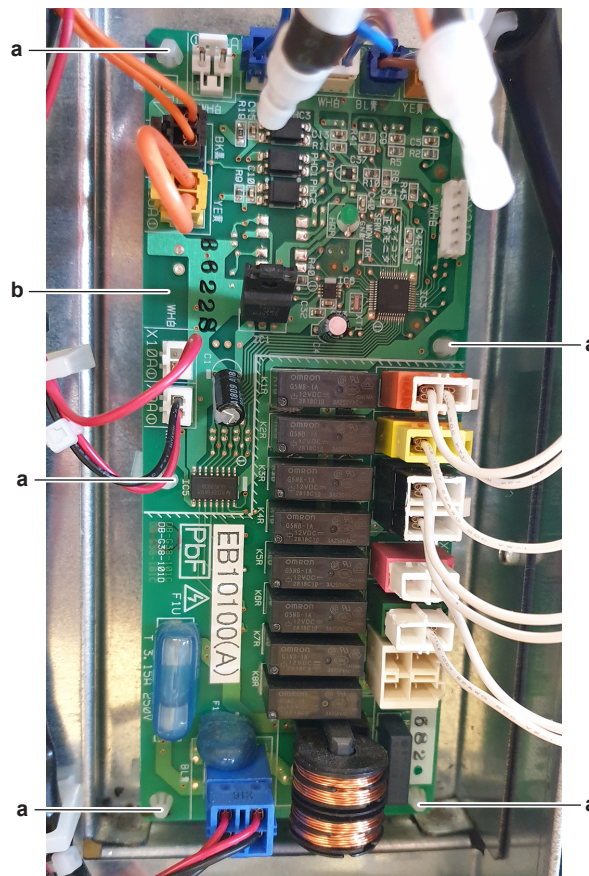
To remove the ACS digital I/O PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 Disconnect all connectors from the ACS digital I/O PCB.
- 2 Carefully pull the ACS digital I/O PCB and unlatch the PCB supports one by one using a small pair of pliers.

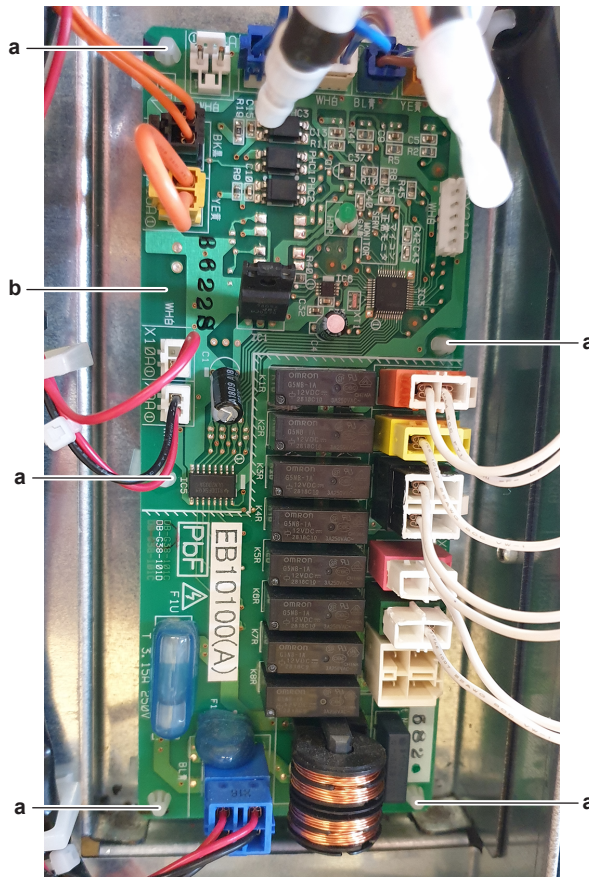


- a PCB support
- b ACS digital I/O PCB

- 3 Remove the ACS digital I/O PCB from the switch box.
- 4 To install the ACS digital I/O PCB, see "[4.3.2 Repair procedures](#)" [▶ 116].

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 PCB support
b ACS digital I/O PCB

3 Connect all connectors to the ACS digital I/O PCB.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.3.1 Checking procedures" [▶ 113] of the ACS digital I/O PCB and continue with the next procedure.

4.4 Backup heater

4.4.1 Checking procedures



INFORMATION

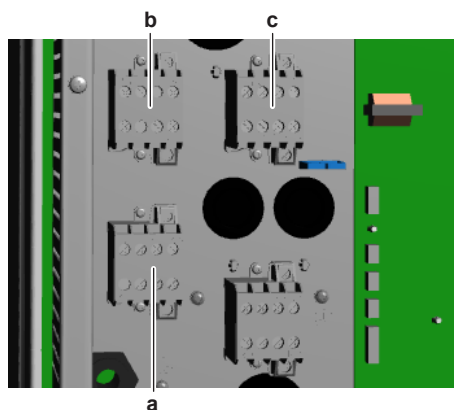
It is recommended to perform the checks in the listed order.

To perform a resistance check of the backup heater

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].



- a Backup heater contactor K5M
- b Backup heater contactor K1M
- c Backup heater contactor K2M

2 Measure the backup heater resistance as shown in the table below. Tolerance = $\pm 10\%$.

Measure between ...		Resistance
K1M/1	K1M/3	26.5 Ω
	K1M/5	OL
K1M/3	K1M/5	OL
K2M/1	K5M/14	26.5 Ω
	K2M/3	OL
	K2M/5	OL
K2M/3	K2M/5	26.5 Ω



INFORMATION

See the "7.2 Wiring diagram" [▶ 298] for more detailed information.



INFORMATION

Make sure that the wiring between the backup heater contactors and the backup heater connector is properly connected and NOT damaged (check continuity), see "7.2 Wiring diagram" [▶ 298].

Is the measured backup heater resistance correct?	Action
Yes	Return to "4.4.1 Checking procedures" [▶ 118] of the backup heater and continue with the next procedure.
No	Replace the backup heater, see "4.4.2 Repair procedures" [▶ 123].

To perform an insulation check of the backup heater

Prerequisite: First perform a resistance check of the backup heater, see "4.4.1 Checking procedures" [▶ 118].

- 1 Open all circuit breakers.

**CAUTION**

To prevent damage to the unit, all circuit breakers **MUST** be opened before using a Megger.

- 2 Set the Megger voltage to 500 V AC.
- 3 Connect the Megger ground test lead directly to the backup heater ground wire.

**CAUTION**

Do **NOT** connect the Megger ground test lead to any other ground wire.

- 4 Measure the insulation resistance between the following terminals. The measured insulation resistance **MUST** be $>3 \text{ M}\Omega$.

Terminals

K1M1-ground, K1M3-ground, K2M1-ground, K2M3-ground, K2M5-ground.

Is the measured backup heater insulation resistance correct?	Action
Yes	Return to " 4.4.1 Checking procedures " [▶ 118] of the backup heater and continue with the next procedure.
No	Replace the backup heater, see " 4.4.2 Repair procedures " [▶ 123].

To perform an electrical check of the backup heater

Prerequisite: First perform an insulation check of the backup heater, see "[4.4.1 Checking procedures](#)" [▶ 118].

Prerequisite: Check the circuit breaker. Reset if it has tripped.

Prerequisite: Check that the backup heater thermal protector functions correctly. Reset if it has tripped. See "[4.5 Backup heater thermal protector](#)" [▶ 127].

- 1 Turn ON the power of the unit.

**INFORMATION**

If the circuit breaker or the backup heater thermal protector trips again, determine the root cause of the problem. Something is overloading the electrical circuit or creating a short-circuit.

- 2 Activate **Installer** on the user interface. See the installer reference guide for the correct procedure.
- 3 Go to **Actuator test run** via the user interface.
- 4 Activate backup heater: step 1.
- 5 Activate backup heater: step 2.
- 6 Check the status in the Actuators menu of the user interface. This **MUST** be:
 - Backup heater: step 1 = ON
 - And/Or
 - Backup heater: step 2 = ON
- 7 Check if the field installed circuit breaker has tripped.

Did the fuse blow or did the field supplied circuit breaker of the backup heater trip?	Action
Yes	Replace the backup heater, see "4.4.2 Repair procedures" [▶ 123].
No	Return to "4.4.1 Checking procedures" [▶ 118] of the backup heater and continue with the next procedure.

To perform a check of the backup heater contactor(s)

Prerequisite: First perform an electrical check of the backup heater, see ["4.4.1 Checking procedures"](#) [▶ 118].

- 1 Measure the power supply voltage between the following terminals of the backup heater contactors:

- K5M: 1-3, 3-5, 5-13

All measured voltages MUST be 208~230 V AC.

Is the measured power supply voltage correct?	Action
Yes	Skip the next step.
No	Continue with the next step.

- 2 Check the power supply (source) of the backup heater.

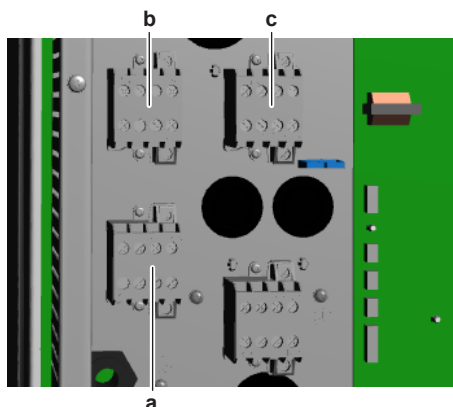
Is the power supply (source) of the backup heater correct?	Action
Yes	Correct the wiring and/or components between the power supply (source) and the backup heater contactor, see "7.2 Wiring diagram" [▶ 298].
No	Adjust the power supply (source) of the backup heater.

- 3 With the **Actuator test run** still active, activate backup heater: step 1.

- 4 Measure the voltage between the following terminals of the backup heater contactors.

- K1M: 2-4 / 1-3
- K5M: 2-4 / 1-3, 4-6 / 3-5, 6-14 / 5-13

All measured voltages MUST be 208~230 V AC (contacts closed).



- a Backup heater contactor K5M
- b Backup heater contactor K1M
- c Backup heater contactor K2M

- 5 Activate backup heater: step 2.
- 6 Measure the voltage between the following terminals of the backup heater contactors.
 - K2M: 2-4 / 1-3, 4-6 / 3-5
 - K5M: 2-4 / 1-3, 4-6 / 3-5, 6-14 / 5-13
 All measured voltages MUST be 208~230 V AC (contacts closed).

i	<p>INFORMATION</p> <p>Make sure that the wiring between the backup heater contactors is properly connected and NOT damaged (check continuity), see "7.2 Wiring diagram" [▶ 298].</p>
----------	---

Are the measured voltages of the backup heater contactors correct (contacts closed)?	Action
Yes	Continue with the next step.
No	Skip the next steps and continue with the operating voltage check of the specific contactor.

- 7 Deactivate backup heater: Step 2 and backup heater: Step 1.
- 8 Measure the voltage between the following terminals of the backup heater contactors.
 - K1M: 1-3
 - K2M: 1-3, 3-5
 - K5M: 2-4, 4-6, 6-14
 All measured voltages MUST be 0 V AC (contacts open).

Are the measured voltages of the backup heater contactors correct (contacts open)?	Action
Yes	Return to "4.4.1 Checking procedures" [▶ 118] of the backup heater and continue with the next procedure.
No	Continue with the next step.

- 9 Measure the operating voltage on the specific contactor.

Result: The measured operating voltage MUST be:

 - 208~230 V AC when the contacts should be closed.
 - 0 V AC when the contacts should be open.

Is the measured operating voltage of the backup heater contactor correct?	Action
Yes	Replace the specific backup heater contactor(s), see "4.4.2 Repair procedures" [▶ 123].
No	Check for the reason of faulty operating voltage (wiring, faulty contact, ...), see "7.2 Wiring diagram" [▶ 298].

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

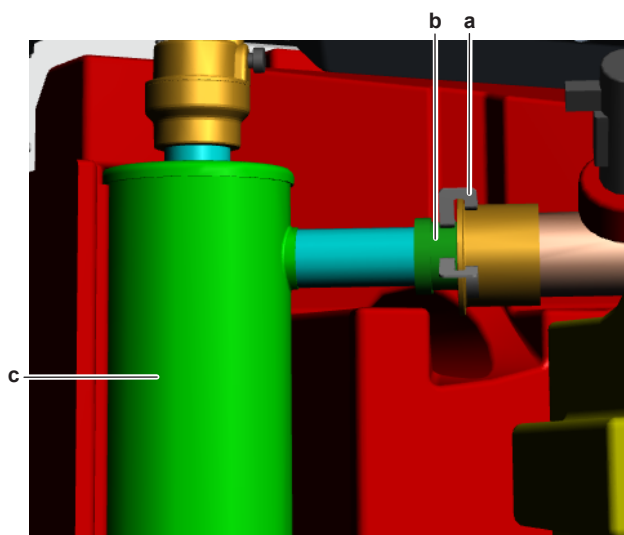
To remove the backup heater

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 Drain water from the water circuit, see "[5.3.2 Repair procedures](#)" [▶ 286].
- 2 Cut all tie straps that fix the backup heater harness.
- 3 Remove the foam insulation.
- 4 Unscrew and remove the air purge valve from the backup heater. Keep for reuse.



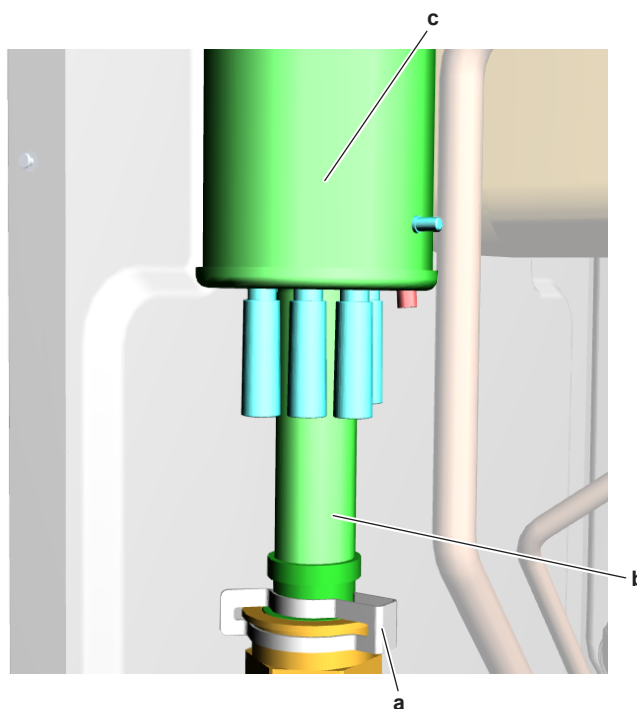
- a Clip
- b Upper backup heater coupling
- c Backup heater

- 5 Remove the clip from the upper backup heater coupling.
- 6 Separate the upper backup heater coupling.

**INFORMATION**

Make sure that the O-ring stays in place.

- 7 Remove the backup heater thermal protector sensor from the backup heater.
- 8 Remove the clip from the lower backup heater coupling.



- a Clip
- b Lower backup heater coupling
- c Backup heater

9 Separate the lower backup heater coupling.



INFORMATION

Make sure that the O-ring stays in place.

- 10 Disconnect the backup heater connector OR if NO connector, loosen the screws and disconnect the backup heater wiring (and ground wire) from the wire terminals in the switch box.
- 11 If needed, guide the backup heater wiring (and ground wire) out of the switch box (through the grommet).
- 12 Remove the backup heater from the unit.
- 13 To install the backup heater, see "[4.4.2 Repair procedures](#)" [▶ 123].

To install the backup heater

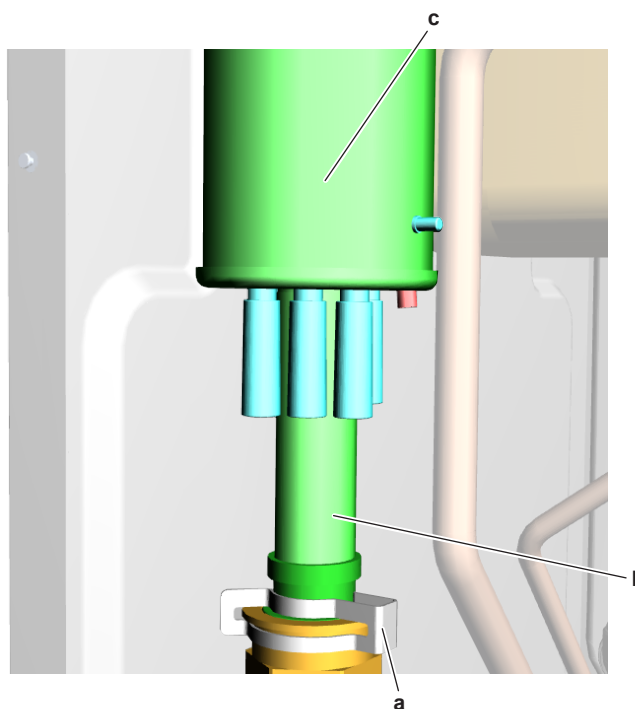
- 1 Install the backup heater in the correct location.



NOTICE

Check the condition of the O-rings and replace if needed. Apply water or silicon grease to the O-rings before installation.

- 2 Install the lower backup heater coupling and install the clip.

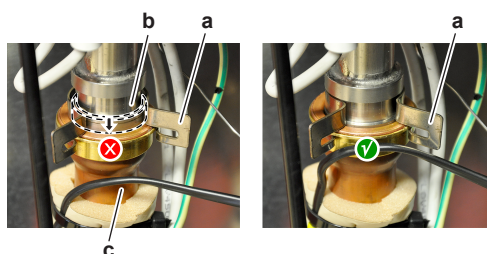


- a Clip
- b Lower backup heater coupling
- c Backup heater



INFORMATION

Make sure that the back-up heater pipe is fully inserted in the back-up heater coupling.



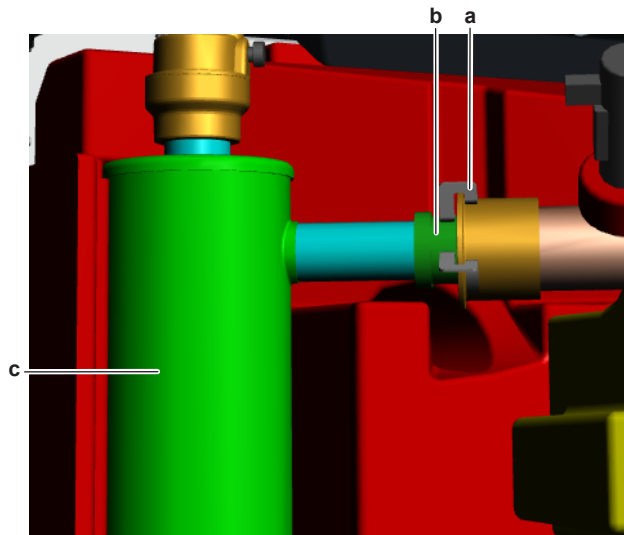
- a Clip
- b Backup heater pipe
- c Backup heater coupling



NOTICE

Check the condition of the O-rings and replace if needed. Apply water or silicon grease to the O-rings before installation.

- 3 Install the upper backup heater coupling. Install the clip.



a Clip
 b Upper backup heater coupling
 c Backup heater

- 4 If needed, route the backup heater wiring (and ground wire) inside the switch box (through the grommet).
- 5 Connect the backup heater connector OR if NO connector, connect the backup heater wiring (and ground wire) to the wire terminals in the switch box and tighten the screws.
- 6 Re-install the air purge valve on the backup heater.
- 7 Install and restore all insulation.
- 8 Install the backup heater thermal protector sensor in the backup heater.
- 9 Fix the backup heater wiring using new tie straps.



INFORMATION

Take care NOT to damage the insulation during installation.

- 10 Open the valve (if equipped) of the water circuit towards the expansion vessel.



CAUTION

Make sure to open the valve (if equipped) towards the expansion vessel, otherwise the overpressure will be generated.

- 11 Open the stop valves and add water to the water circuit if needed, see "5.3.2 Repair procedures" [▶ 286].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.4.1 Checking procedures" [▶ 118] of the backup heater and continue with the next procedure.

To remove the backup heater contactor(s)

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn off the respective circuit breaker of the unit and the backup heater.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Disconnect the wiring from the backup heater contactor terminals.
- 2 Remove the screws (if applicable) and remove the backup heater contactor(s) from the switch box.
- 3 To install the backup heater contactor(s), see ["4.4.2 Repair procedures"](#) [▶ 123].

To install the backup heater contactor(s)

- 1 Install the backup heater contactor(s) in the switch box.
- 2 If applicable, install and tighten the screws to fix the backup heater contactor(s).
- 3 Connect the wiring to the correct backup heater contactor terminals.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.4.1 Checking procedures" [▶ 118] of the backup heater and continue with the next procedure.

4.5 Backup heater thermal protector

4.5.1 Checking procedures



INFORMATION

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

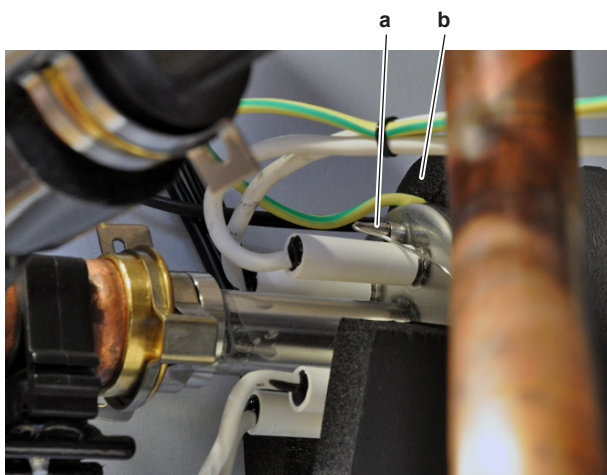
To perform a mechanical check of the backup heater thermal protector

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn off the respective circuit breaker of the unit and the backup heater.


Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 If the backup heater thermal protector has tripped:
 - Sufficiently cool the sensor
 - Press the red button to reset the backup heater thermal protector



- a Backup heater thermal protector sensor
- b Backup heater

- 2 Remove the backup heater thermal protector sensor from the backup heater.
- 3 Submerge the backup heater thermal protector sensor in water.



DANGER: RISK OF BURNING/SCALDING

- 4 Heat the water above 203°F (95°C).
- 5 Measure the temperature of the water. The backup heater thermal protector MUST trip at a temperature of approximately 203°F (95°C).

Does the backup heater thermal protector trip at correct temperature?	Action
Yes	Perform an electrical check of the backup heater thermal protector, see "4.5.1 Checking procedures" [▶ 127]
No	Replace the backup heater thermal protector, see "4.5.2 Repair procedures" [▶ 129].

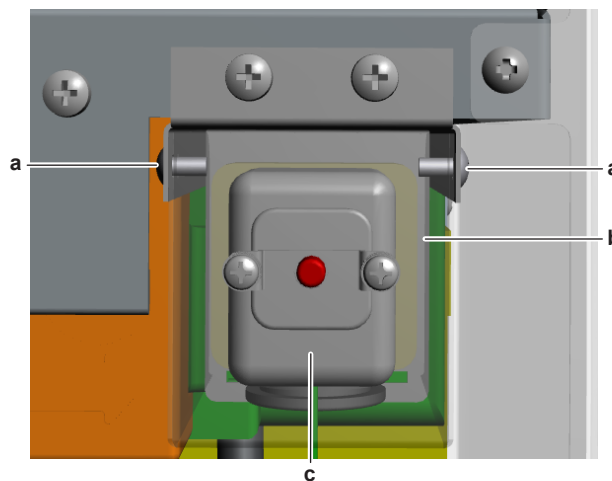
To perform an electrical check of the backup heater thermal protector

Prerequisite: First perform a mechanical check of the backup heater thermal protector, see ["4.5.1 Checking procedures"](#) [▶ 127].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

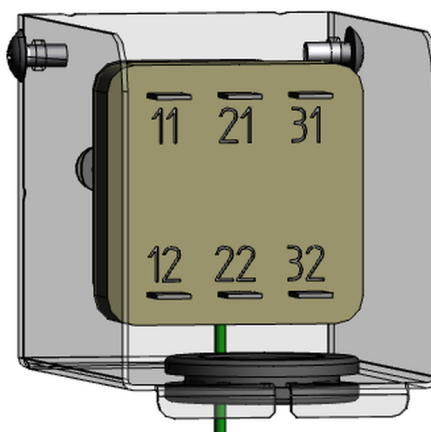
- 1 Remove the 2 screws from the backup heater thermal protector bracket.



- a Screw
- b Backup heater thermal protector bracket
- c Backup heater thermal protector

- 2 Pull the backup heater thermal protector and bracket slightly to the front so the wire terminals (at the back of the thermal protector) are reachable.
- 3 Disconnect the wires from the backup heater thermal protector.
- 4 Measure the resistance between the backup heater thermal protector terminals 11-12 and 31-32.

Result: All contacts MUST be closed.



Are all contacts closed?	Action
Yes	Backup heater thermal protector is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the backup heater thermal protector, see " 4.5.2 Repair procedures " [▶ 129].

4.5.2 Repair procedures

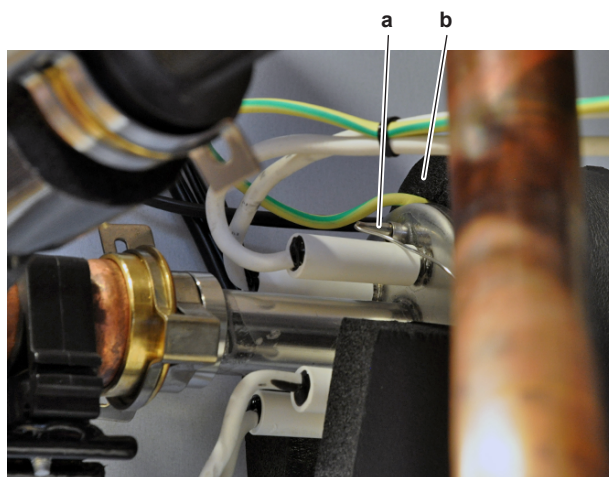
To remove the backup heater thermal protector

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

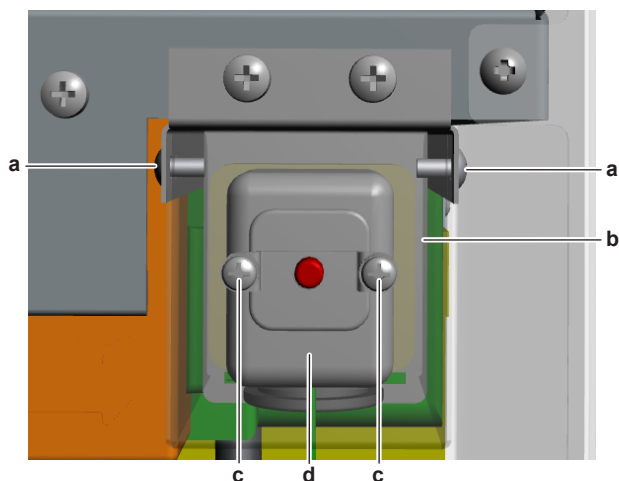
Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 Remove the backup heater thermal protector sensor from the backup heater.



- a** Backup heater thermal protector sensor
b Backup heater

- 2 Loosen and remove the 2 screws that fix the backup heater thermal protector bracket to the switch box.

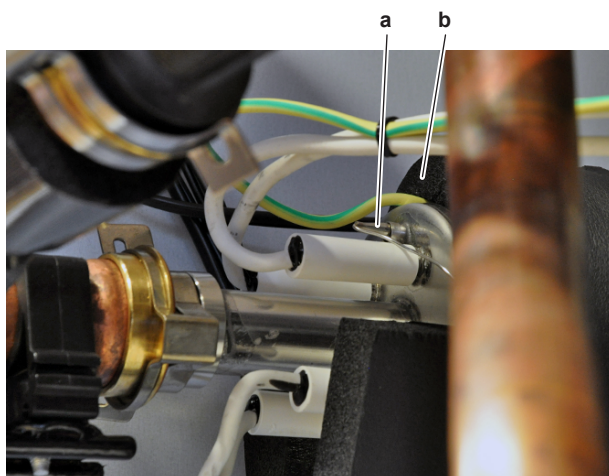


- a Screw
- b Backup heater thermal protector bracket
- c Screw
- d Backup heater thermal protector

- 3 Pull the backup heater thermal protector bracket towards the front.
- 4 Disconnect the wires from the backup heater thermal protector terminals.
- 5 Loosen and remove the 2 screws that fix the backup heater thermal protector to the bracket.
- 6 Remove the backup heater thermal protector and sensor from the unit.
- 7 To install the backup heater thermal protector, see "[4.5.2 Repair procedures](#)" [▶ 129].

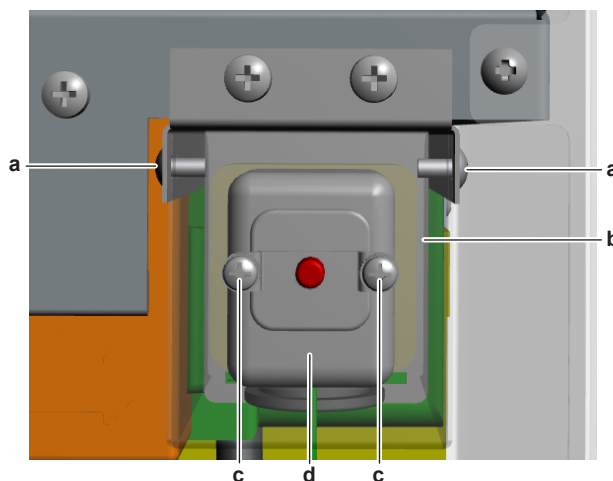
To install the backup heater thermal protector

- 1 Insert the backup heater thermal protector sensor in the backup heater.



- a Backup heater thermal protector sensor
- b Backup heater

- 2 Connect the wires to the wire terminals at the back of the backup heater thermal protector.
- 3 Install the backup heater thermal protector on the bracket. Install and tighten the 2 screws.



- a Screw
- b Backup heater thermal protector bracket
- c Screw
- d Backup heater thermal protector

- 4 Install the backup heater thermal protector bracket on the unit. Install and tighten the 2 screws.

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 Booster heater

4.6.1 Checking procedures

To perform an electrical check of the booster heater

- 1 For the correct procedure, see the installation manual of the water tank.

Does the booster heater function correctly?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the booster heater, see "4.6.2 Repair procedures" [▶ 131].

4.6.2 Repair procedures

To remove the booster heater

- 1 For the correct procedure, see the installation manual of the water tank.
- 2 To install the booster heater, see ["4.6.2 Repair procedures"](#) [▶ 131].

To install the booster heater

- 1 For the correct procedure, see the installation manual of the water tank.

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.

4.7 Booster heater thermal protector

4.7.1 Checking procedures



INFORMATION

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

To perform a mechanical check of the booster heater thermal protector

- 1 For the correct procedure, see the installation manual of the water tank.

Does the booster heater thermal protector trip at the correct temperature?	Action
Yes	Perform an electrical check of the booster heater thermal protector, see " 4.7.1 Checking procedures " [▶ 132].
No	Replace the booster heater thermal protector, see " 4.7.2 Repair procedures " [▶ 132].

To perform an electrical check of the booster heater thermal protector

- 1 For the correct procedure, see the installation manual of the water tank.

All measured contacts are closed?	Action
Yes	Booster heater thermal protector is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the booster heater thermal protector, see " 4.7.2 Repair procedures " [▶ 132].

4.7.2 Repair procedures

To remove the booster heater thermal protector

- 1 For the correct procedure, see the installation manual of the water tank.
- 2 To install the booster heater thermal protector, see "[4.7.2 Repair procedures](#)" [▶ 132].

To install the booster heater thermal protector

- 1 For the correct procedure, see the installation manual of the water tank.

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.

4.8 Compressor

4.8.1 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 respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 Remove the compressor insulation, see "[4.8.2 Repair procedures](#)" [▶ 138].
- 2 Turn ON the power using the respective circuit breaker.
- 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 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 " 4.8.2 Repair procedures " [▶ 138].
No	Perform an mechanical check of the compressor, see " 4.8.1 Checking procedures " [▶ 133].


To perform a mechanical check of the compressor

Prerequisite: First perform an auditive check of the compressor, see "4.8.1 Checking procedures" [▶ 133].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

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 "4.8.1 Checking procedures" [▶ 133].
No	Replace the compressor and/or damaged dampers, see "4.8.2 Repair procedures" [▶ 138].

To perform an electrical check of the compressor

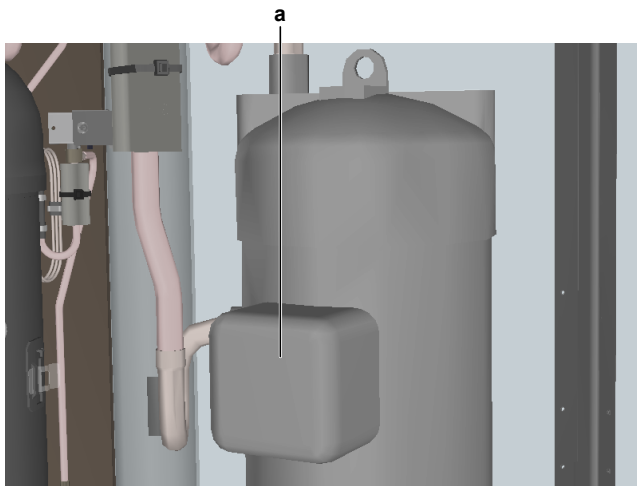
- 1 First perform a mechanical check of the compressor, see "[4.8.1 Checking procedures](#)" [▶ 133].



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.



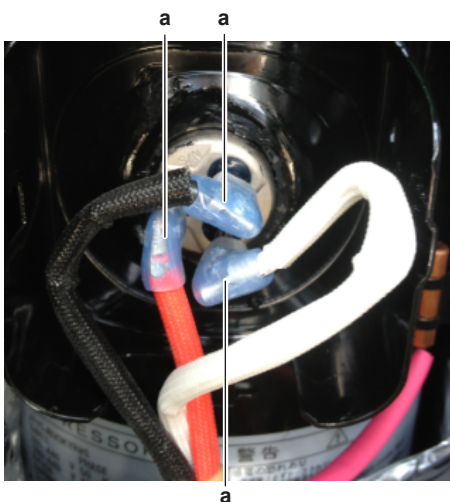
a Compressor wire terminals cover

- 3 Disconnect the Faston connectors from the compressor wire terminals U, V and W.



INFORMATION

Note the position of the Faston connectors on the compressor wire terminals to allow correct connection during installation.



a Faston connector



CAUTION

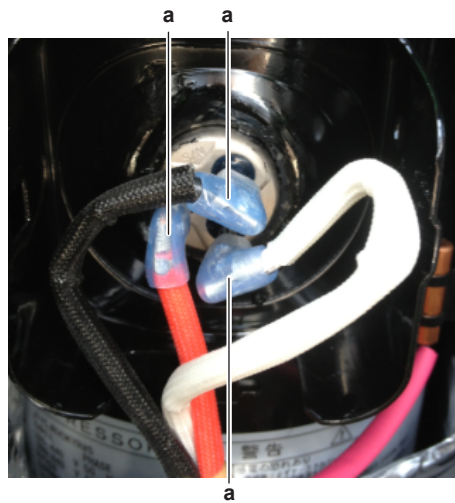
Before measuring the compressor motor windings resistance, measure the resistance of the multimeter probes by holding the probes against each other. If the measured resistance is NOT 0 Ω, this value MUST be subtracted from the measured winding resistance.

- 4 Measure the resistance between the compressor motor windings U-V, V-W and U-W.

Result: All measurements MUST be $0.4 \Omega \pm 5\%$ and equal.

Compressor motor winding measurements are correct?	Action
Yes	Continue with the next step.
No	Replace the compressor, see "4.8.2 Repair procedures" [▶ 138].

- 5 Measure the continuity of the U, V and W wires between the compressor and the PCB. If no continuity, correct as needed, see "7.2 Wiring diagram" [▶ 298].
- 6 Connect the Faston connectors to the compressor wire terminals U, V and W



a Faston connector

- 7 Install the compressor wire terminals cover.
- 8 Install the compressor insulation.
- 9 Turn ON the power of the unit.
- 10 Start the unit operation via the user interface.



CAUTION

NEVER operate the compressor with the compressor wire terminals cover removed.

- 11 Wait for – or create condition to operate the compressor.
- 12 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" [▶ 99].

- 13 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 "4.8.1 Checking procedures" [▶ 133].
No	Preventively replace the compressor, see "4.8.2 Repair procedures" [▶ 138].

To perform an insulation check of the compressor

Prerequisite: First perform an electrical check of the compressor, see ["4.8.1 Checking procedures"](#) [▶ 133].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

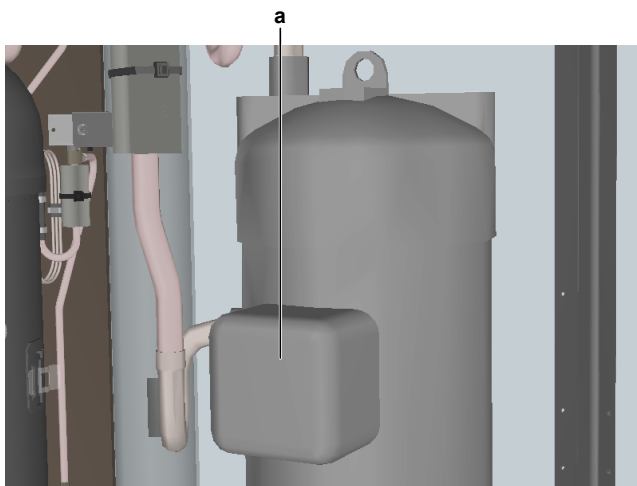
- 1 Before proceeding:



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.



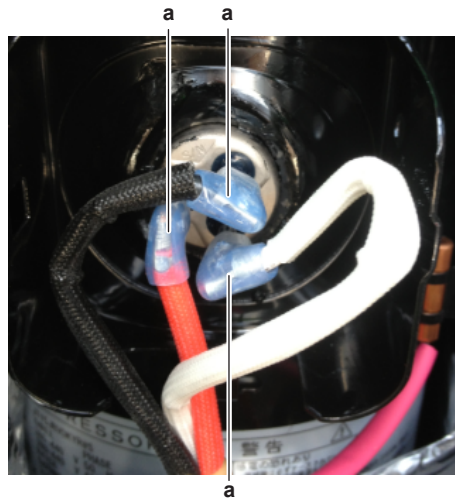
a Compressor wire terminals cover

- 3 Disconnect the Faston connectors from the compressor wire terminals U, V and W.



INFORMATION

Note the position of the Faston connectors on the compressor wire terminals to allow correct connection during installation.



a Faston connector

- 4 Set the Megger voltage to 500 V DC or 1000 V DC.
- 5 Measure the insulation resistance between the following terminals. The measured insulation resistance MUST be >3 MΩ.
 - U-ground,
 - V-ground,
 - W-ground.
- 6 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 "4.8.2 Repair procedures" [▶ 138].

4.8.2 Repair procedures

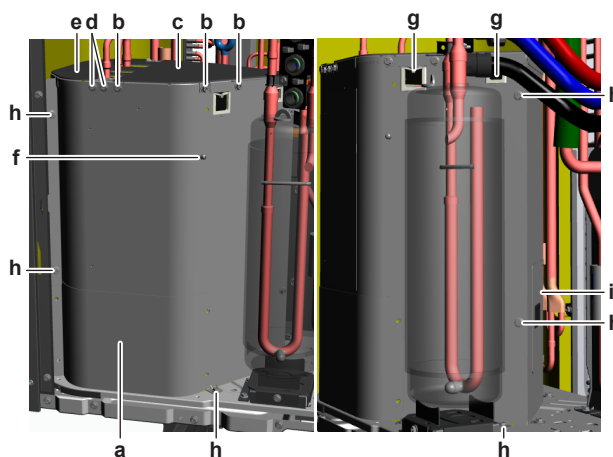
To remove the compressor insulation

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Remove the 4 bolts and remove the lower cover from the compressor compartment.

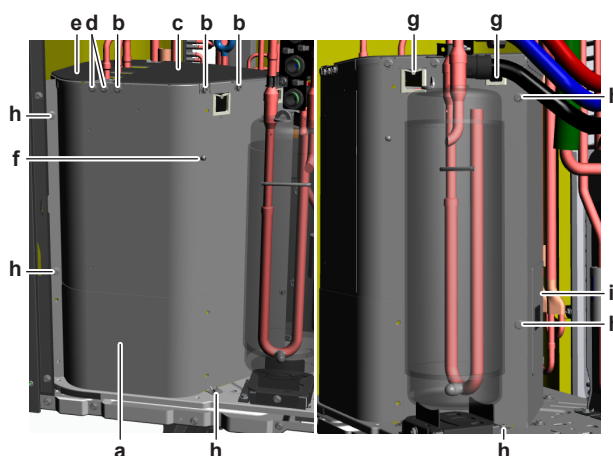


- a** Lower cover
- b** Bolt (top right cover)
- c** Top right cover
- d** Bolt (top left cover)
- e** Top left cover
- f** Screw (ground wire)
- g** Rubber grommet
- h** Bolt (front cover)
- i** Access cover (compressor thermal protector)

- 2** Remove the 3 bolts from the top right cover. Slightly pull the protruding parts of the top right cover and remove the cover from the compressor compartment.
- 3** Remove the 2 bolts from the top left cover. Slightly tilt the top left cover and remove it from the compressor compartment.
- 4** Remove the screw and disconnect the ground wire from the front cover of the compressor compartment.
- 5** Route the compressor wiring and compressor thermal protector wiring out of the rubber grommets.
- 6** Remove the 6 bolts and remove the front cover of the compressor compartment.
- 7** To get access to the compressor thermal protector, remove the cover at the back side of the compressor compartment.
- 8** To install the compressor insulation, see "[4.8.2 Repair procedures](#)" [▶ 138].

To install the compressor insulation

- 1** Make sure the cover at the back side of the compressor compartment (access to compressor thermal protector) is installed correctly.



- a Lower cover
- b Bolt (top right cover)
- c Top right cover
- d Bolt (top left cover)
- e Top left cover
- f Screw (ground wire)
- g Rubber grommet
- h Bolt (front cover)
- i Access cover (compressor thermal protector)

- 2 Install the front cover of the compressor compartment in the correct location. Install and tighten the 6 bolts to fix the front cover.
- 3 Route the compressor wiring and the compressor thermal protector wiring through the rubber grommets.
- 4 Install the top left cover in the correct location. Install and tighten the 2 bolts to fix the top left cover.
- 5 Install the top right cover in the correct location. Install and tighten the 3 bolts to fix the top right cover.
- 6 Fix the ground wire to the compressor compartment. Install and tighten the screw.
- 7 Install the lower cover in the correct location. Install and tighten the 4 bolts to fix the lower cover.

To remove the compressor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

Prerequisite: Remove the compressor insulation.

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "[5.2.2 Repair procedures](#)" [▶ 268].

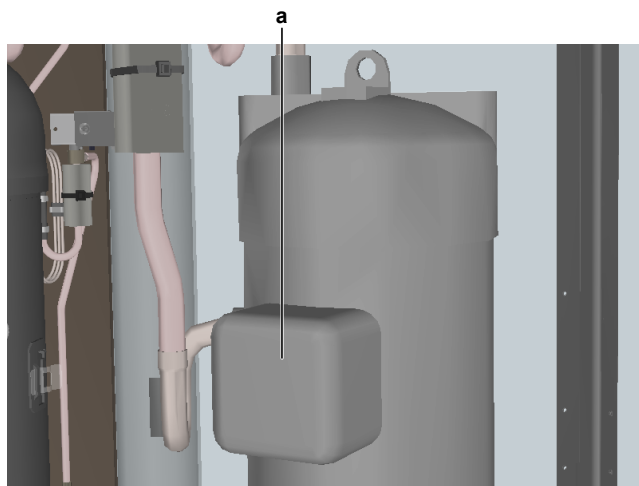
- 1 If needed, remove any parts to create more space for the removal of the compressor.



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.

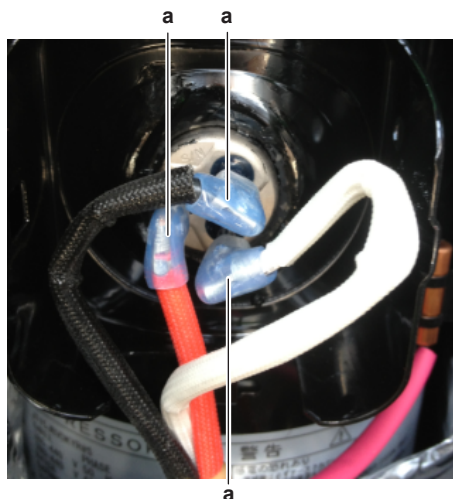


a Compressor wire terminals cover

- 3 Disconnect the Faston connectors from the compressor wire terminals U, V and W.

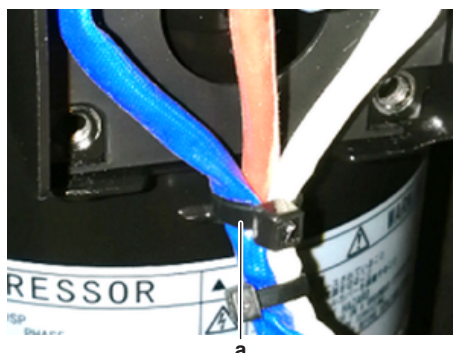
**INFORMATION**

Note the position of the Faston connectors on the compressor wire terminals to allow correct connection during installation.



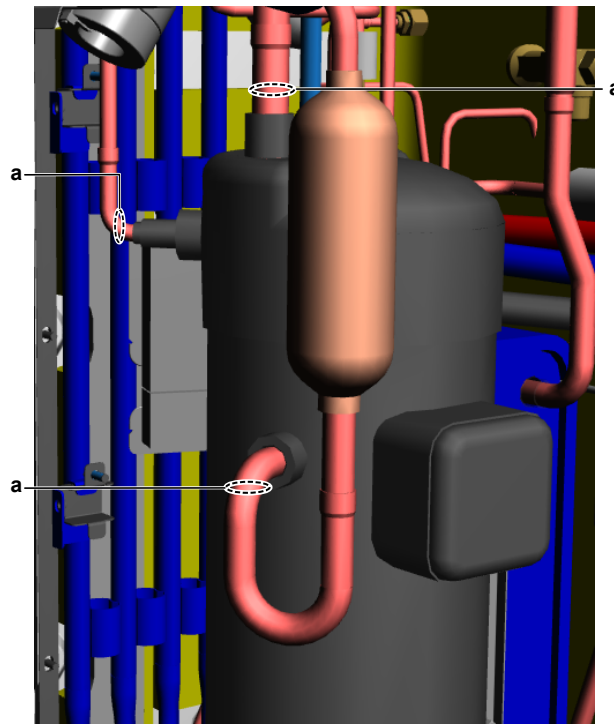
a Faston connector

- 4 Cut the tie strap and remove the compressor wiring from the compressor body.



a Tie strap

- 5 If applicable, remove the screw and disconnect the ground wire from the compressor.
- 6 Remove the following thermistors from their holder:
 - Suction thermistor
 - Discharge pipe thermistor
 - Compressor body thermistor (if applicable)
- 7 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 2.9 PSI (0.02 MPa).
- 8 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.



a Compressor pipe

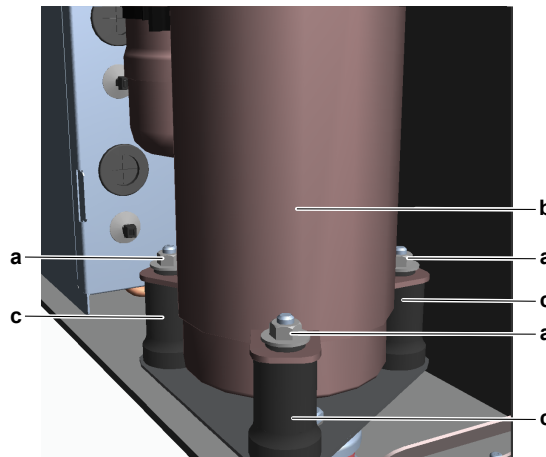
9 Stop the nitrogen supply when the piping has cooled down.



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.

10 Remove the nuts and bolts and remove the compressor from the unit.



a Nut
b Compressor
c Damper

11 Remove the 3 dampers from the compressor.



INFORMATION

The compressor dampers may look different.

12 Remove the bushings and keep them for re-use.

13 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.

14 To install the compressor, see "[4.8.2 Repair procedures](#)" [▶ 138].

To install the compressor**INFORMATION**

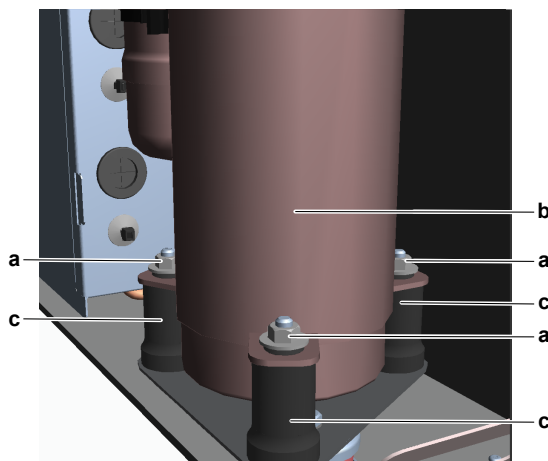
If the pipes that were removed together with the compressor are NOT included in the spare part compressor, install and braise the reused or new pipes to the spare part compressor before installing the compressor.

- 1** Check the state of the dampers. Replace if worn.
- 2** Install the 3 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.

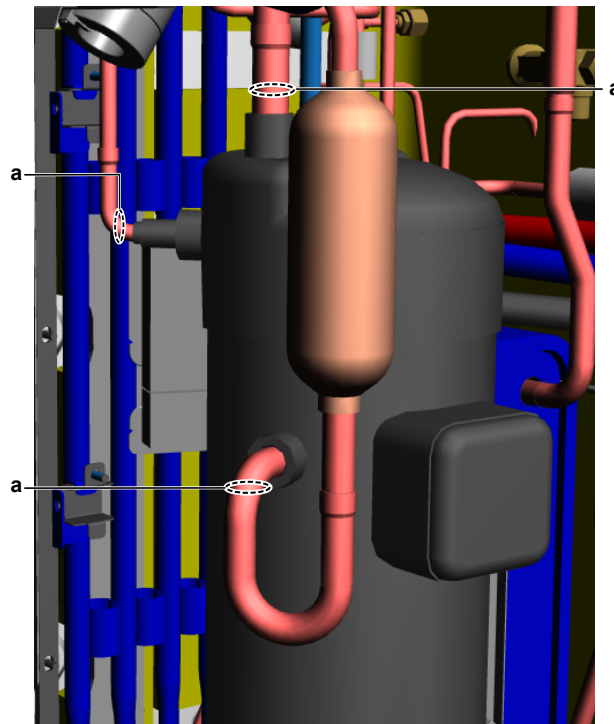


- a** Nut
- b** Compressor
- c** Damper

**INFORMATION**

The compressor dampers may look different.

- 7** Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 2.9 PSI (0.02 MPa).
- 8** Wrap a wet rag around the compressor pipes and any other components near the compressor and braise the compressor pipes to the refrigerant pipes.



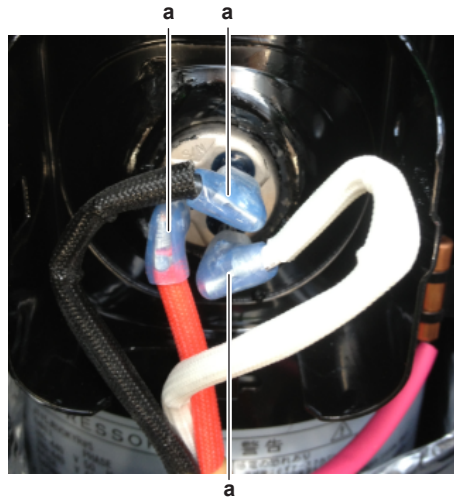
a Compressor pipe



CAUTION

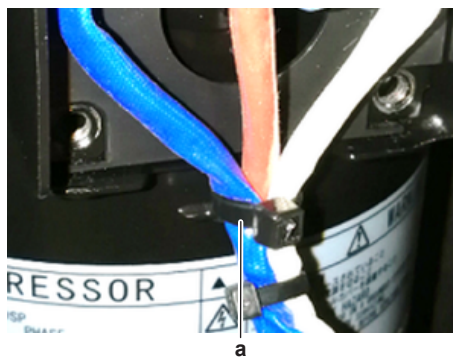
Overheating the compressor pipes (and the oil inside the compressor pipes) will damage or destroy the compressor.

- 9 After brazing is done, stop the nitrogen supply after the component has cooled-down.
- 10 Connect the Faston connectors to the compressor wire terminals U, V and W



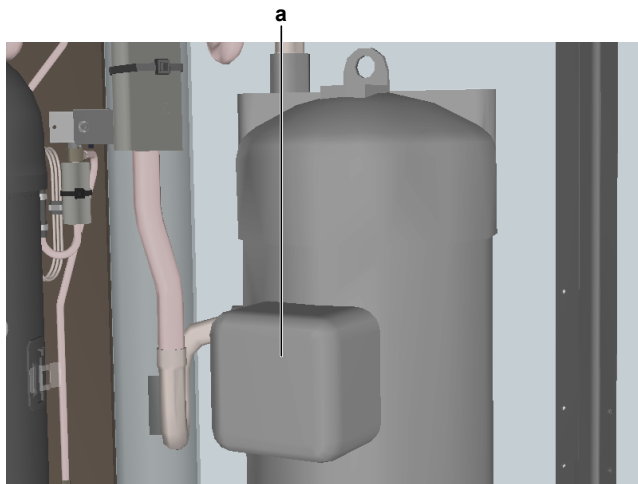
a Faston connector

- 11 Fix the compressor wiring to the protrusion on the compressor body using a new tie strap.



a Tie strap

12 Install the cover of the compressor wire terminals.



a Compressor wire terminals cover

13 If applicable, connect the ground wire to the compressor. Install and tighten the screw to fix the ground wire.

14 Install the following thermistors in their holder:

- Suction thermistor
- Discharge pipe thermistor
- Compressor body thermistor (if applicable)

15 Install the compressor insulation, see "[4.8.2 Repair procedures](#)" [▶ 138].

16 Perform a pressure test, see "[5.2.1 Checking procedures](#)" [▶ 263].

17 Add refrigerant to the refrigerant circuit, see "[5.2.2 Repair procedures](#)" [▶ 268].

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 Current sensor


4.9.1 Checking procedures

To perform an electrical check of the current sensor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

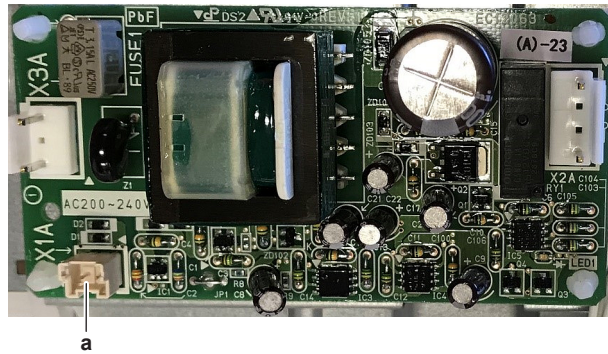
Prerequisite: Remove the required plate work, see "4.20 Plate work" [▶ 202].



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.

- 1 Visually check the current sensor for any damage or burnt-out components. If any damage is found, replace the current sensor, see "4.9.2 Repair procedures" [▶ 146].
- 2 Locate the current sensor connector on the leakage current PCB, see "7.2 Wiring diagram" [▶ 298].



a Connector X1A

- 3 Check the wiring from pins 1 and 2 of connector X1A to the current sensor.
- 4 Disconnect the current sensor connector from the connector X1A on the leakage current PCB and measure the resistance between pins 1 and 2 of current sensor connector.

Result: The measured value MUST be approximately 27 Ω.

- 5 Set the Megger voltage to at least 500 V DC.
- 6 Connect one of the Megger leads to one of the pins of the disconnected current sensor connector and the other lead to the ground / conductive part of the unit casing.
- 7 Measure the insulation resistance of the current sensor.

Result: The measured insulation resistance MUST be >1000 MΩ.

Are the measurements correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the current sensor, see "4.9.2 Repair procedures" [▶ 146].

4.9.2 Repair procedures

To remove the current sensor

Prerequisite: Stop the unit operation via the user interface.

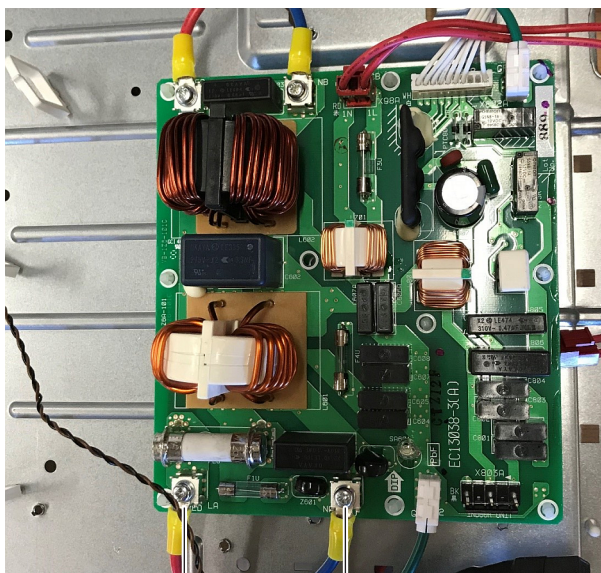
Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see "4.20 Plate work" [▶ 202].

**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 current sensor connector from the leakage current PCB.
- 3 Loosen the screws and disconnect the power wiring LA and NA from the noise filter PCB.

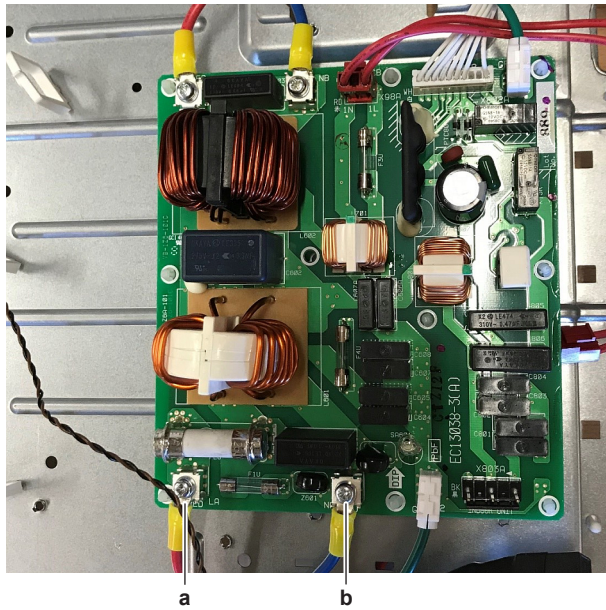


a LA
b NA

- 4 Remove the necessary tie straps from the wiring of the current sensor and the power wiring.
- 5 Slide the current sensor on the power wiring and remove the current sensor.
- 6 To install the current sensor, see "[4.9.2 Repair procedures](#)" [▶ 146].

To install the current sensor

- 1 Slide the current sensor on the power wiring LA and NA and install the current sensor in place.
- 2 Route the power wiring LA and NA to the noise filter PCB. Connect the wiring and tighten the screws.



- a LA
- b NA

- 3 Route the current sensor wiring towards the leakage current PCB.
- 4 Connect the current sensor connector to the leakage current PCB.
- 5 Install new tie wraps on the wiring of the current sensor and on the power wiring.

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 Expansion valve

4.10.1 Checking procedures



INFORMATION

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

To perform a mechanical check of the expansion valve

Prerequisite: Power OFF the unit for 3 minutes. 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 "[4.10.1 Checking procedures](#)" [[▶ 148](#)].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [[▶ 202](#)].

- 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 ["4.10.2 Repair procedures"](#) [▶ 152].
- 2 Remove the expansion valve coil from the expansion valve body, see ["4.10.2 Repair procedures"](#) [▶ 152].
 - 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 "4.10.1 Checking procedures" [▶ 148].
No	Replace the expansion valve body, see "4.10.2 Repair procedures" [▶ 152].

To perform an electrical check of the expansion valve

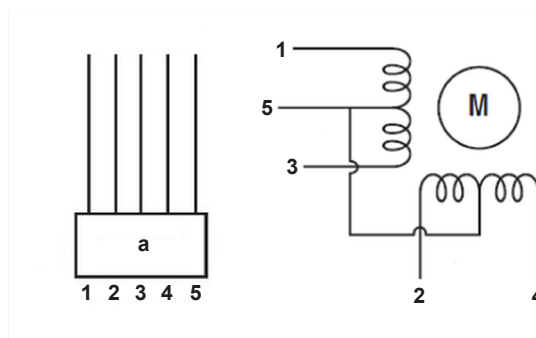
- 1 First perform a mechanical check of the expansion valve, see ["4.10.1 Checking procedures"](#) [▶ 148].
- 2 Disconnect the electrical connector of the expansion valve coil from the appropriate PCB and measure the resistance of all windings (between the pins of each phase (wire) and the common wire) using a multi meter. All measurements MUST be approximately the same.

Name	Symbol	Location (PCB)	Connector	Winding resistance
Main expansion valve	Y1E	A1P (main)	X21A	46±3 Ω
Injection expansion valve	Y3E	A1P (main)	X22A	46±3 Ω

**INFORMATION**

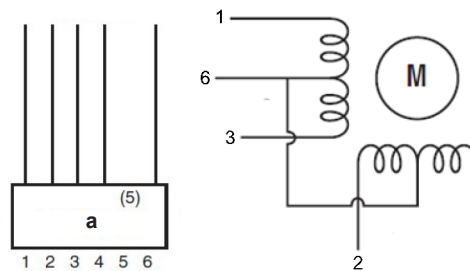
Below are shown examples of the resistance measurements in which the common wire is connected to pin 5 or to pin 6 of the expansion valve coil connector. Connections may differ according to the type of expansion valve.

- Connector pin 1-5,
- Connector pin 2-5,
- Connector pin 3-5,
- Connector pin 4-5.



a Connector

- Connector pin 1-6,
- Connector pin 2-6,
- Connector pin 3-6,
- Connector pin 4-6.



a Connector

3 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 "4.10.1 Checking procedures" [▶ 148].
No	Replace the expansion valve coil, "4.10.2 Repair procedures" [▶ 152].

To perform an operation check of the expansion valve

Prerequisite: First perform an electrical check of the expansion valve, see ["4.10.1 Checking procedures"](#) [▶ 148].

1 Turn ON the power of the unit.

**INFORMATION**

When power is switched ON, PCB checks all expansion valve coil windings by current check. If winding is short or open, expansion valve error is triggered.

- 2 Start the unit operation via the user interface.
- 3 With the unit operating, connect the service monitoring tool to the unit.
- 4 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.

- 5 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.

- 6 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)).

- 7 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.

- 8 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.

- 9 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 " 4.10.2 Repair procedures " [▶ 152].

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.

4.10.2 Repair procedures

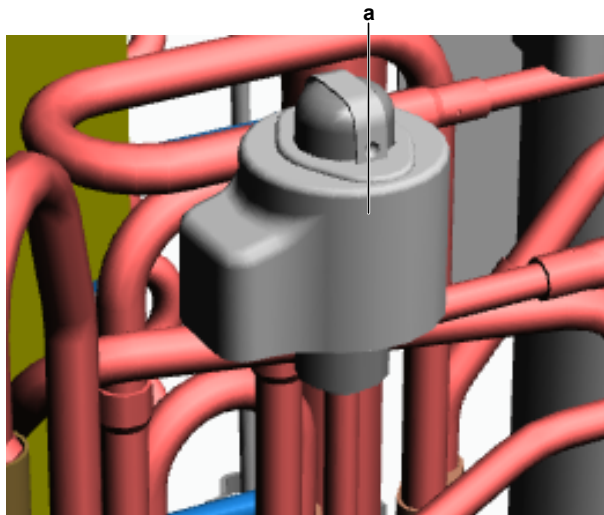
To remove the expansion valve coil

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 If needed, remove any parts or insulation to create more space for the removal.



a Expansion valve coil

- 2 Pull the expansion valve coil to remove it from the expansion valve body.

**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.

- 3 Cut all tie straps that fix the expansion valve coil harness.
- 4 Disconnect the expansion valve coil connector (X21A for main expansion valve Y1E and X22A for injection expansion valve Y3E) from the main PCB.
- 5 To install the expansion valve coil, see ["4.10.2 Repair procedures"](#) [▶ 152].

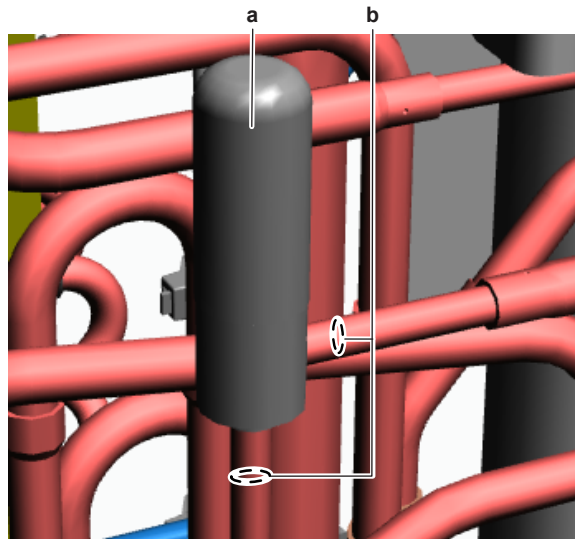
To remove the expansion valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see ["5.2.2 Repair procedures"](#) [▶ 268].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

- 1 Remove the expansion valve coil, see ["4.10.2 Repair procedures"](#) [▶ 152].

- 2 Using a valve magnet, open the expansion valve.
- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 2.9 PSI (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 Expansion valve body
b Expansion valve pipe

- 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 "[4.10.2 Repair procedures](#)" [▶ 152].

To install the expansion valve body

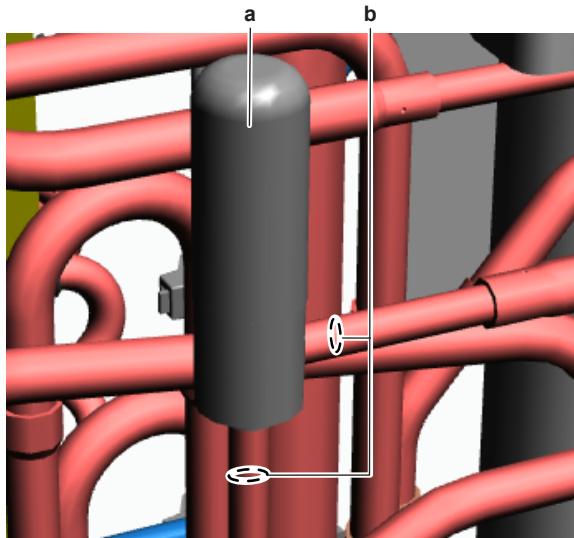
- 1 Remove the plugs or caps from the refrigerant piping and make sure they are clean.
- 2 Remove the expansion valve coil from the spare part expansion valve body.
- 3 Install the expansion valve body in the correct location and correctly oriented. Insert the pipe ends in the pipe expansions.
- 4 Open the expansion valve using a valve magnet.
- 5 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 2.9 PSI (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 Expansion valve body
- b Expansion valve pipe

- 8 To install the expansion valve coil, see "4.10.2 Repair procedures" [▶ 152].
- 9 Perform a pressure test, see "5.2.1 Checking procedures" [▶ 263].
- 10 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▶ 268].

To install the expansion valve coil with bracket

- 1 Install the expansion valve coil on the expansion valve body.



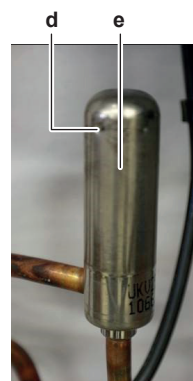
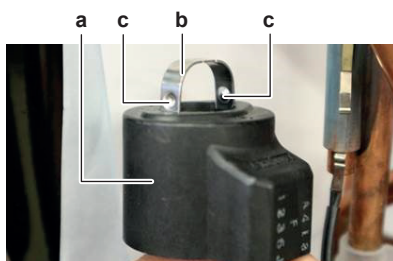
INFORMATION

The expansion valve coil is equipped with a metal bracket. Fit the nipples of the metal bracket into the notches of the expansion valve body.



CAUTION

Make sure to install the expansion valve coil in the correct position (orientation).



- a Expansion valve coil
- b Metal bracket
- c Nipple
- d Notch

- e Expansion valve body
- 2 Route the expansion valve coil harness towards the appropriate PCB.
 - 3 Connect the expansion valve coil connector to the appropriate PCB.

**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.

- 4 Fix the expansion valve coil harness using new tie straps.
- 5 Install the insulation cap on the expansion valve coil (if applicable).

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.10.1 Checking procedures " [▶ 148] of the expansion valve and continue with the next procedure.

4.11 Flash PCB

4.11.1 Checking procedures

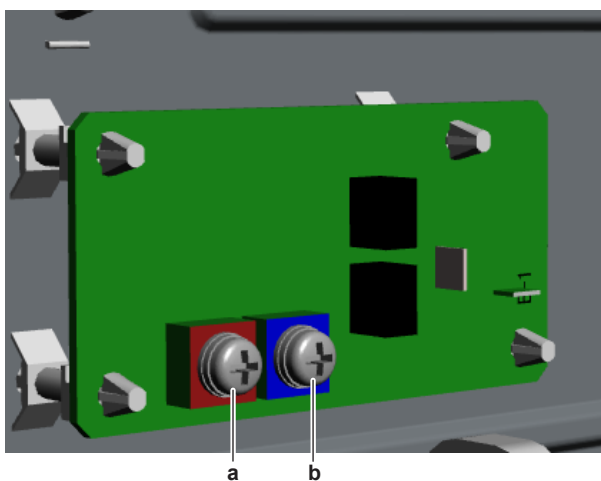
To perform a power check of the flash PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].
- 2 Turn ON the power of the unit.
- 3 Measure the voltage between the wires L1-N1 on the flash PCB.

Result: The measured voltage MUST be 230 V AC.

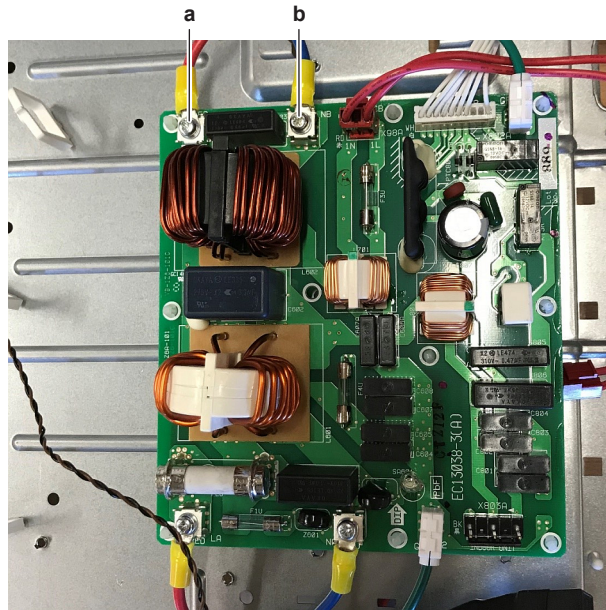


a L1
b N1

Is the measured voltage on the PCB correct?	Action
Yes	No further checks available.
No	Continue with the next step.

- 4 Measure the output voltage between the wires LB-NB on the noise filter PCB.

Result: The measured voltage MUST be 230 V AC.



a LB
b NB

Is the output voltage on the noise filter PCB correct?	Action
Yes	Correct the wiring between the flash PCB and the noise filter PCB, see "5.1.2 Repair procedures" [▶ 261].
No	Perform a check of the noise filter PCB, see "4.18.1 Checking procedures" [▶ 190].

4.11.2 Repair procedures

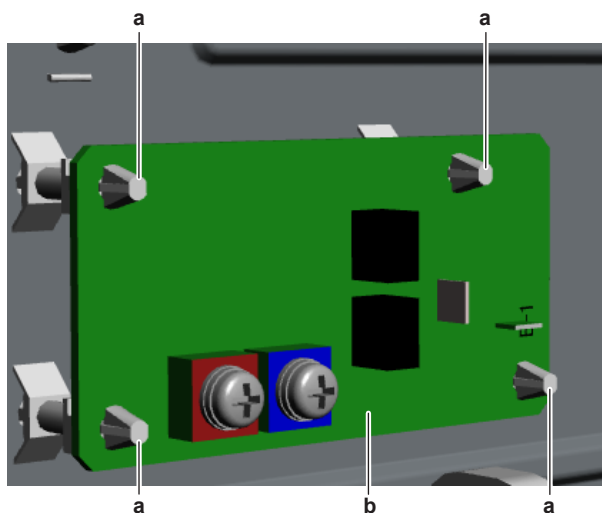
To remove the flash PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Loosen the screws to disconnect the wires L1 and N1 from the flash PCB.
- 2 Disconnect the ground wire from the flash 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 flash PCB from the main PCB mounting plate.

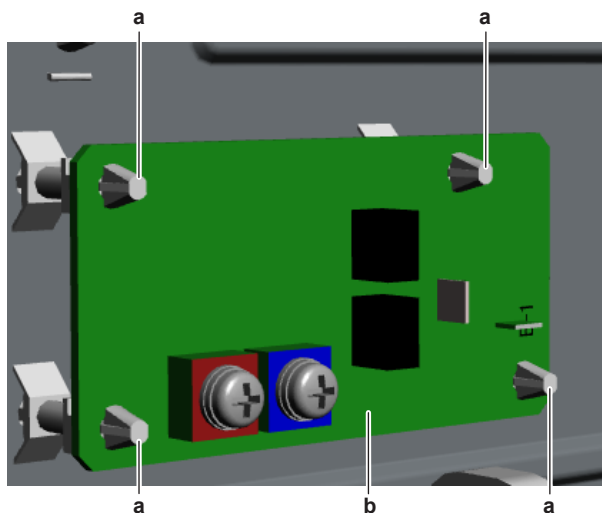


- a** PCB support
b Flash PCB

- 5 To install the new flash PCB, see "[4.11.2 Repair procedures](#)" [▶ 156].

To install the flash PCB

- 1 Install the flash PCB on its correct location.
- 2 Latch the PCB supports using a small pair of pliers to fix the PCB.



- a** PCB support
b Flash PCB

- 3 Connect the ground wire to the flash PCB.
- 4 Connect the L1 and N1 wires to the flash PCB and tighten the screws.

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.

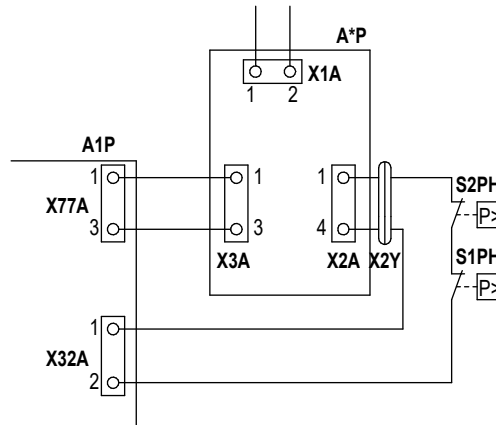
4.12 High pressure switch

4.12.1 Checking procedures

To perform an electrical check of the high pressure switch

Functional description

The high pressure safety chain consists of 2 high pressure switches (S1PH and S2PH) and a leakage current PCB ALL wired in series.



A1P Main PCB
A*P Leakage current PCB

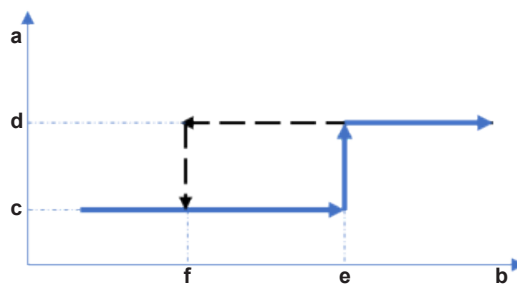
Under normal circumstances the operation logic of outdoor unit and indoor unit will prevent the refrigerant pressure would rise above the high pressure switch operating (opening) point by reducing the compressor speed or stopping the outdoor unit.

The pressure switches have an automatic reset function. Once the pressure in the system drops below reset point minus some differential, the pressure switch closes again.



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.



- 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

High pressure switch	Operating pressure	Reset pressure
S1PH	748.4~812.2 PSI (5.16~5.6 MPa)	565.6~580.2 PSI (3.9~4.0 MPa)

High pressure switch	Operating pressure	Reset pressure
S2PH	594.7~604.8 PSI (4.1~4.17 MPa)	435.1~493.1 PSI (3.0~3.4 MPa)

Due to its construction nature a high pressure switch will remain open when an internal defect occurs. Its recommended to check the electrical continuity of the switching contacts while the system pressure is below the operating point to verify the correct operation of the high pressure switch (i.e verifying contact remains closed when pressure is below the operating point).

It is NOT recommended to pressurize the system with nitrogen to test functionality of the high pressure switch due to test pressure limitations on some other parts of the refrigerant circuit.



CAUTION

Since low pressure side CANNOT be separated from high pressure side in recovery mode, use the Ps low side value indicated on the unit nameplate (435 PSI (3.0 MPa)) as reference for pressure test / air tightness test.

NEVER pressurize the refrigerant circuit >604 PSI (4.17 MPa).

Due to the concept of the high pressure safety chain, a different approach for troubleshooting is required depending on the established "state" of the safety chain.

High pressure safety chain state	Related error code	Presumable cause	Reset method	Indoor unit behavior	Component check
Opens just after compressor start in cool or heat mode and high pressure <217 PSI (15 bar)	E2-01 – Leakage current detection error	Ground leak contact X2A open	Power reset of the outdoor unit	<ul style="list-style-type: none"> Error message on user interface Pump runs continuously, NO cool or heat functionality 	Check Leakage current PCB, see "4.14.1 Checking procedures" [170]
Is already open before compressor is running AND a request to start outdoor unit in cool or heat is given by indoor unit	H3-01 - Malfunction of high pressure switch	S1PH or S2PH remains open due to component malfunction/failure	Manual reset on user interface possible when contact of high pressure switch is closed again	<ul style="list-style-type: none"> Error message on user interface Pump will run continuously, NO cool or heat output 	Check S1PH and S2PH
Opens during compressor operation and high pressure >217 PSI (15 bar) in heating	E3-24 - Actuation of high pressure switch	S1PH opened	High pressure switch activation reset is automatic, when switch contact closes and error occurred less than 16 times in 5 hours	<ul style="list-style-type: none"> Error is masked and ONLY shown on user interface if S1PH opens more than 15 times within 5 hours Pump runs continuously Restart outdoor unit when safety chain closes again 	Check S1PH and S2PH Check refrigerant circuit: reasons for high pressure, see "5.2.1 Checking procedures" [263]
Opens during compressor operation and high pressure >217 PSI (15 bar) in cooling	E3-00/01 - Actuation of high pressure switch	S2PH opened	High pressure switch activation reset is automatic, when switch contact closes and error occurred less than 16 times in 5 hours	<ul style="list-style-type: none"> Error is masked and ONLY shown on user interface if S2PH opens more than 15 times within 5 hours Pump runs continuously Restart outdoor unit when safety chain closes again 	Check S1PH and S2PH Check refrigerant circuit: reasons for high pressure, see "5.2.1 Checking procedures" [263]

Procedure

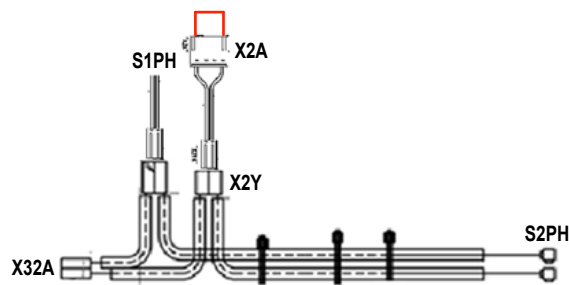
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.20 Plate work" [202].

- 1 Turn ON the power of the unit.
- 2 This check procedure MUST be performed both when the unit is operating in Heating or domestic hot water mode (typically to check the correct functioning of S1PH) AND when the unit is operating in Cooling mode (typically to check the correct functioning of S2PH).

- When activating Heating or domestic hot water operation via the user interface, set a setpoint (water temperature >122°F (50°C)) on the indoor unit that will allow high pressure to rise above 435 PSI (30 bar / 3.0 MPa).
 - When activating Cooling operation via the user interface, set a setpoint on the indoor unit that will allow the unit to run in Cooling mode long enough. High pressure rise will depend on the outdoor ambient conditions. Try to reach high pressure above 435 PSI (30 bar / 3.0 MPa).
- 3 Stop the unit operation via the user interface.
 - 4 Turn OFF the respective circuit breaker.
 - 5 Disconnect the connector X32A from the main PCB and the connector X2A from the leakage current PCB and ensure ALL other connectors of the high pressure switches circuit are properly connected, see "7.2 Wiring diagram" [▶ 298].



- 6 Install a wire jumper on the disconnected connector X2A.
- 7 Measure the resistance between the pins 1-2 of connector X32A to check the correct wiring (continuity) of the high pressure switches circuit.

Result: The measured resistance MUST be 0 Ω (both switches S1PH and S2PH closed).

Is the measured resistance correct?	Then
Yes	Perform the check procedure with the unit operating in the opposite mode. If measured resistance is correct for both operating modes, high pressure switches are OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

- 8 Disconnect the connector of the high pressure switch S1PH.
- 9 Measure the resistance between the pins of the disconnected high pressure switch (S1PH) connector.

Result: The measured resistance MUST be 0 Ω (S1PH closed).

Is the measured resistance correct?	Then
Yes	Continue with the next step.
No	Replace the high pressure switch S1PH, see "4.12.2 Repair procedures" [▶ 161].

- 10 Disconnect the Faston connectors from the high pressure switch S2PH.

- 11** Measure the resistance between the Faston connections of the high pressure switch S2PH.

Result: The measured resistance MUST be 0 Ω (S2PH closed).

Is the measured resistance correct?	Then
Yes	Correct the wiring of the high pressure switches circuit (between high pressure switches, main PCB, ...), see " 7.2 Wiring diagram " [▶ 298].
No	Replace the high pressure switch S2PH, see " 4.12.2 Repair procedures " [▶ 161].

4.12.2 Repair procedures

To remove the high pressure switch

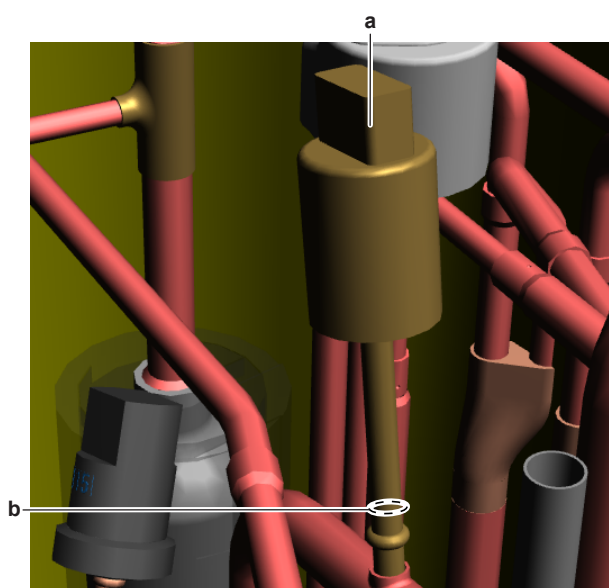
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

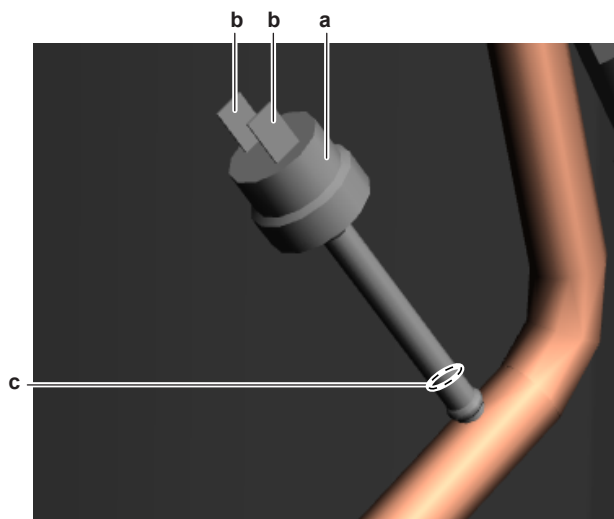
Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [[▶ 202](#)].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "[5.2.2 Repair procedures](#)" [[▶ 268](#)].

- 1 If needed, remove any parts or putty (if installed) to create more space for the removal of the high pressure switch.
- 2 For S1PH removal: disconnect the high pressure switch connector.
- 3 For S2PH removal: disconnect the Faston connectors from the high pressure switch.
- 4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 2.9 PSI (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.



- a** High pressure switch S1PH
b High pressure switch pipe



- a High pressure switch S2PH
- b Faston connection
- c High pressure switch pipe

- 6 Stop the nitrogen supply when the piping has cooled down.
- 7 Remove the high pressure switch.



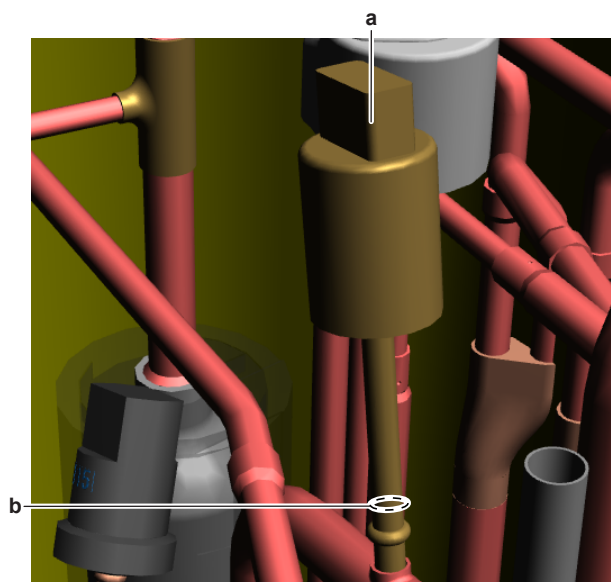
INFORMATION

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.

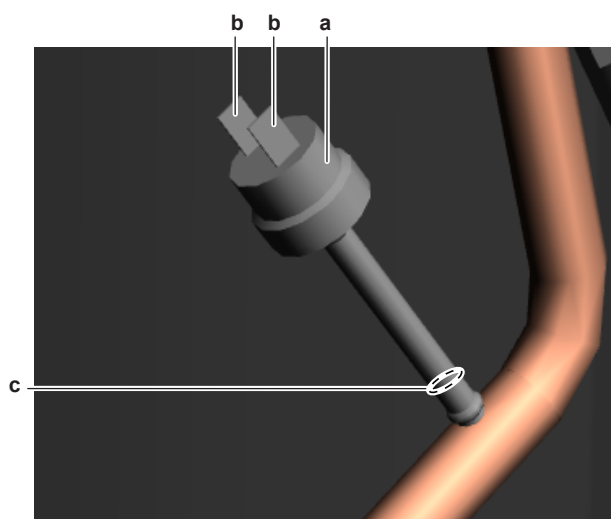
- 8 Install a plug or cap on the refrigerant piping to avoid dirt or impurities from entering the piping.
- 9 To install the high pressure switch, see "[4.12.2 Repair procedures](#)" [▶ 161].

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 2.9 PSI (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 S1PH
b High pressure switch pipe



a High pressure switch S2PH
b Faston connection
c 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 For S1PH installation: connect the high pressure switch connector.
- 7 For S2PH installation: connect the Faston connectors to the high pressure switch.
- 8 Install all removed parts or putty (as needed) that were removed for space creation purposes.
- 9 Perform a pressure test, see "[5.2.1 Checking procedures](#)" [[▶ 263](#)].
- 10 Add refrigerant to the refrigerant circuit, see "[5.2.2 Repair procedures](#)" [[▶ 268](#)].

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 Hydro PCB

4.13.1 Checking procedures



INFORMATION

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

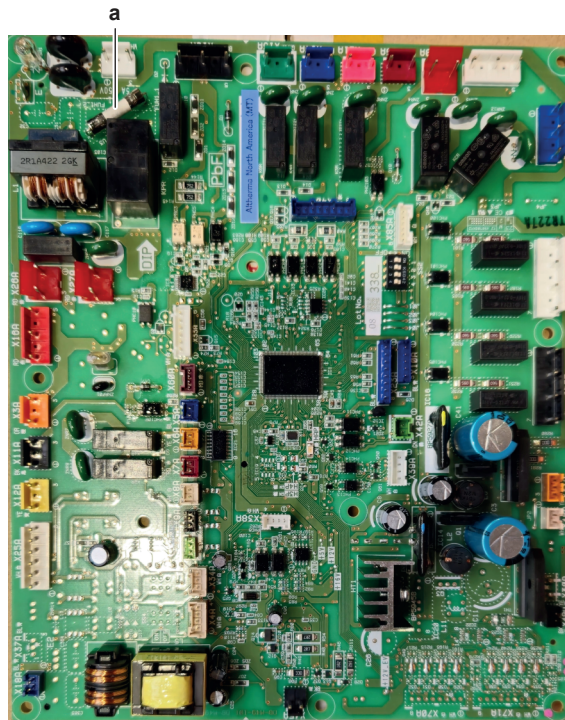
To check the fuse of the hydro PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 Measure the continuity of the fuse. If no continuity is measured, the fuse has blown.



a Fuse FU1

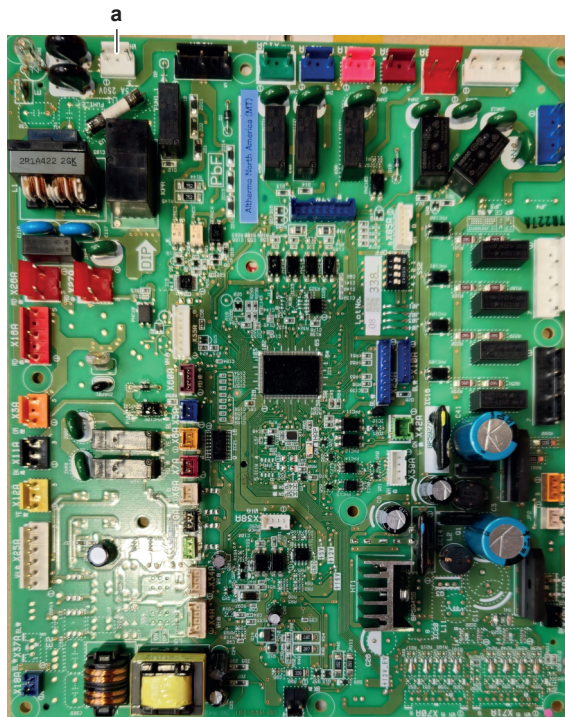
Blown fuse on the hydro PCB?	Action
Yes	Replace the hydro PCB, see " 4.13.2 Repair procedures " [▶ 168]
No	Return to " 4.13.1 Checking procedures " [▶ 164] of the hydro PCB and continue with the next procedure.

To perform a power check of the hydro PCB

Prerequisite: First check the fuse of the hydro PCB, see ["4.13.1 Checking procedures"](#) [▶ 164].

- 1 Turn ON the power of the unit.
- 2 Measure the voltage on the connector X1A on the PCB.

Result: The measured voltage MUST be 230 V AC.



a Connector X1A

Is the measured voltage on the hydro PCB correct?	Action
Yes	Return to "4.13.1 Checking procedures" [▶ 164] of the hydro PCB and continue with the next procedure.
No	Continue with the next step.

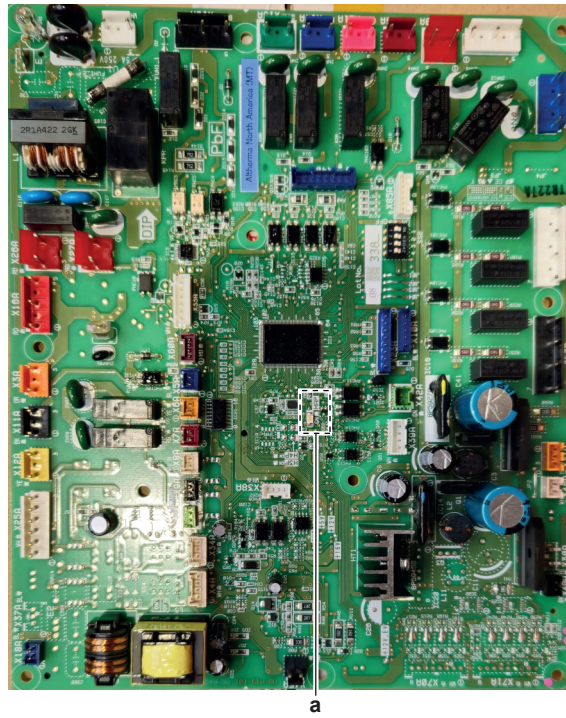
- 3 Check the power supply to the indoor unit, see ["5.1.1 Checking procedures"](#) [▶ 259].

Is the power supply to the indoor unit correct?	Action
Yes	Correct the wiring between the power supply terminal of the indoor unit and the hydro PCB, see "4.13.2 Repair procedures" [▶ 168].
No	See "To check the power supply to the indoor unit" ("5.1.1 Checking procedures" [▶ 259]) for the next steps.

To check the HAP LED of the hydro PCB

Prerequisite: First check the power supply to the hydro PCB, see ["4.13.1 Checking procedures"](#) [▶ 164].

- 1 Locate the HAP LED on the hydro PCB.



a HAP LED



INFORMATION

Make sure the correct software is available on the PCB. If NOT, update using the updater tool.

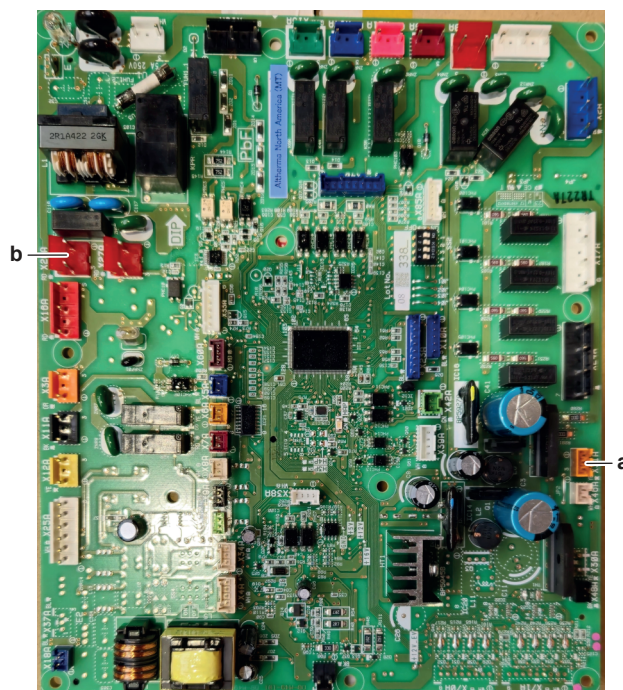
Does the HAP LED blink in regular intervals (1 second ON/1 second OFF)?	Action
Yes	Return to " 4.13.1 Checking procedures " [▶ 164] of the hydro PCB and continue with the next procedure.
No	Replace the hydro PCB, see " 4.13.2 Repair procedures " [▶ 168]

To perform an electrical check of the hydro PCB

Prerequisite: First perform all earlier hydro PCB checks, see "[4.13.1 Checking procedures](#)" [▶ 164].

- 1 Measure the (transformer output) voltage between pins 1-3 of the connector X31A on the hydro PCB.

Result: The measured voltage MUST be 24 V AC.



- a Connector X31A
b Connector X26A

Is the measured voltage on the hydro PCB correct?	Action
Yes	Return to "4.13.1 Checking procedures" [▶ 164] of the hydro PCB and continue with the next procedure.
No	Continue with the next step.

- 2 Measure the (transformer input) voltage between pins 1-2 of connector X26A on the hydro PCB.

Result: The measured voltage MUST be 230 V AC.

Is the measured (transformer input) voltage correct?	Action
Yes	Replace the transformer, see "4.25.2 Repair procedures" [▶ 237].
No	Replace the hydro PCB, see "4.13.2 Repair procedures" [▶ 168]

To check if the correct spare part is installed

Prerequisite: First perform all earlier hydro PCB checks, see "4.13.1 Checking procedures" [▶ 164].

- 1 Visit the Daikin Spare Parts Bank (<https://daikincomfort.com/resource-center/parts-supplies>).
- 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 Daikin Spare Parts Bank.

Is the correct spare part for the hydro PCB installed?	Action
Yes	Return to " 4.13.1 Checking procedures " [▶ 164] of the hydro PCB and continue with the next procedure.
No	Replace the hydro PCB, see " 4.13.2 Repair procedures " [▶ 168]

To check the wiring of the hydro PCB

Prerequisite: First perform all earlier hydro PCB checks, see "[4.13.1 Checking procedures](#)" [▶ 164].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 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 "[7.2 Wiring diagram](#)" [▶ 298].



INFORMATION

Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.13.1 Checking procedures " [▶ 164] of the hydro 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.

4.13.2 Repair procedures

To correct the wiring from the main power supply terminal to the hydro PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].
- 2 Make sure that all wires are firmly and correctly connected, see "[7.2 Wiring diagram](#)" [▶ 298].
- 3 Check the continuity of all wires.
- 4 Replace any damaged or broken wires.

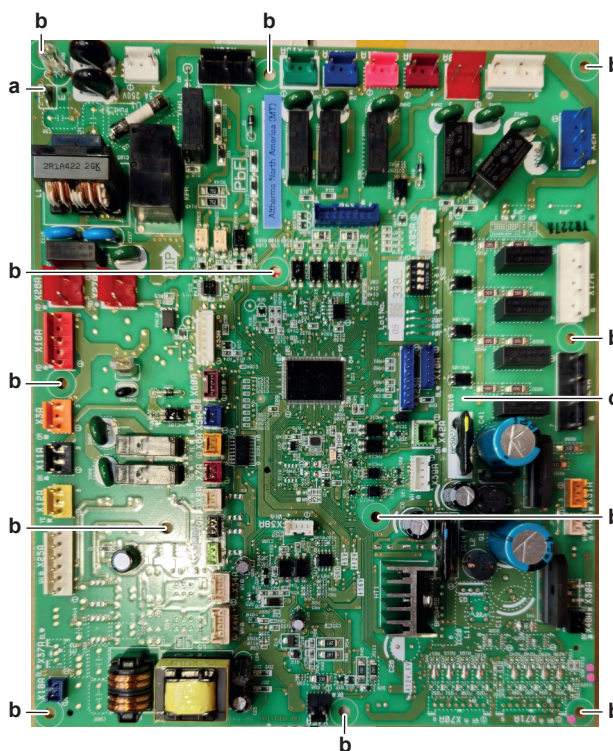
Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.13.1 Checking procedures" [▶ 164] of the hydro PCB and continue with the next procedure.

To remove the hydro PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].
- 2 Disconnect all connectors and the ground wire from the hydro PCB.
- 3 Carefully pull the hydro PCB and unlatch the PCB supports one by one using a small pliers.

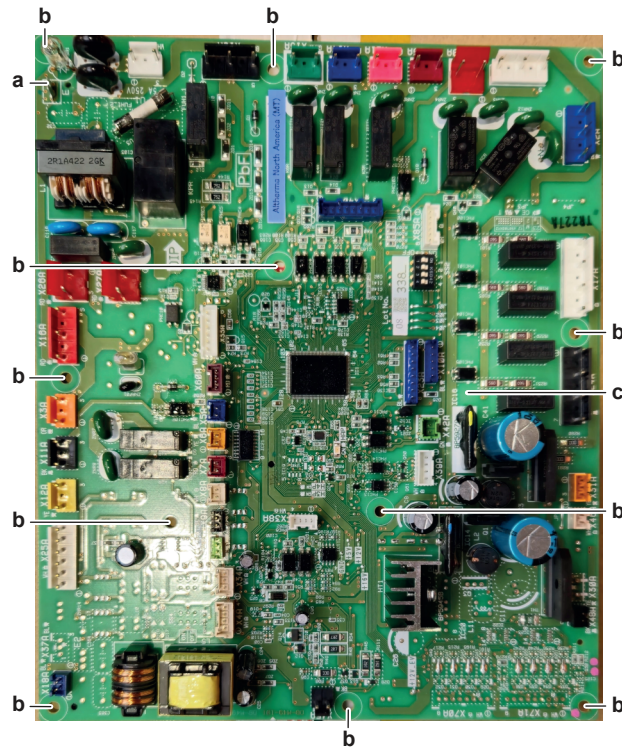


- a Faston connector (ground wire)
- b PCB support (location)
- c Hydro PCB

- 4 Remove the hydro PCB from the switch box.
- 5 To install the hydro PCB, see ["4.13.2 Repair procedures"](#) [▶ 168].

To install the hydro PCB

- 1 Install the hydro PCB in the correct location in the switch box.
- 2 Correctly install the hydro PCB on the PCB supports.



- a Faston connector (ground wire)
- b PCB support (location)
- c Hydro PCB

3 Connect all connectors and ground wire to the hydro PCB.



INFORMATION

Use the wiring diagram and connection diagram for correct installation of the connectors, see "7.2 Wiring diagram" [▶ 298].



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 problem solved?	Action
Yes	No further actions required.
No	Return to "4.13.1 Checking procedures" [▶ 164] of the hydro PCB and continue with the next procedure.

4.14 Leakage current PCB

4.14.1 Checking procedures



INFORMATION

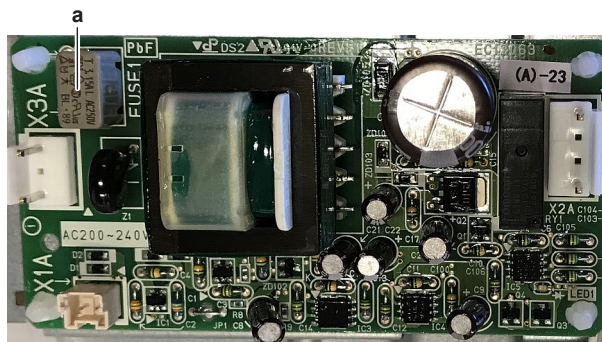
It is recommended to perform the checks in the listed order.

To check the fuses of the leakage current PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].
- 2 Measure the continuity of the fuse. If no continuity is measured, the fuse has blown.



a Fuse

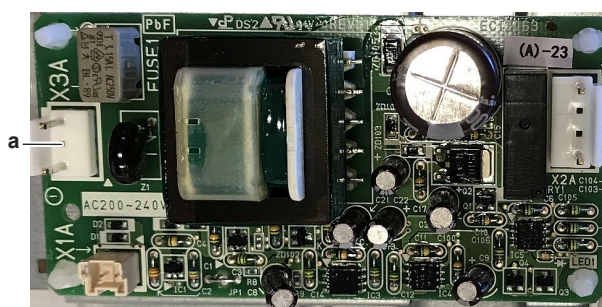
Blown fuse on the leakage current PCB?	Action
Yes	Replace the leakage current PCB, see "4.14.2 Repair procedures" [▶ 174].
No	Return to "4.14.1 Checking procedures" [▶ 170] of the leakage current PCB and continue with the next procedure.

To perform a power check of the leakage current PCB

Prerequisite: First check the fuse of the leakage current PCB, see ["4.14.1 Checking procedures"](#) [▶ 170].

- 1 Turn ON the power of the unit.
- 2 Measure the voltage on connector X3A when connected to the leakage current PCB.

Result: The measured voltage MUST be 200~240 V AC.



a Connector X3A

Is the measured voltage correct?	Action
Yes	Return to "4.14.1 Checking procedures" [▶ 170] of the leakage current PCB and continue with the next procedure.
No	Continue with the next step.

- 3 Measure the output voltage between the pins 1-3 on the connector X77A on the main PCB.

Result: The measured voltage MUST be 200~240 V AC.

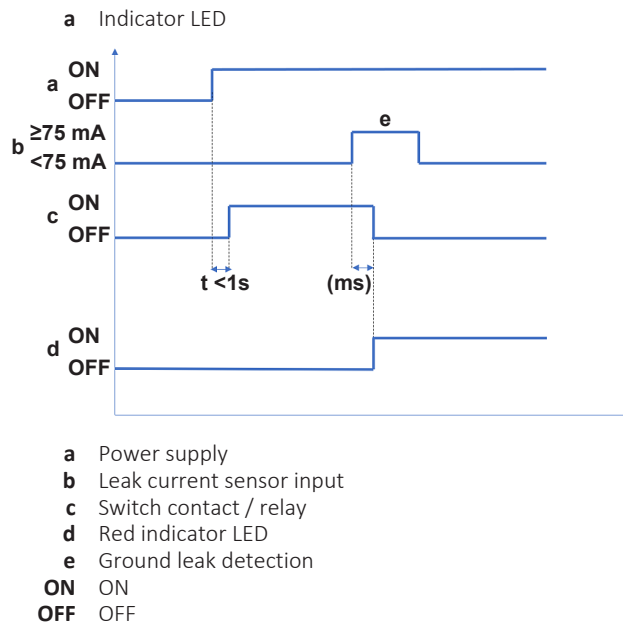
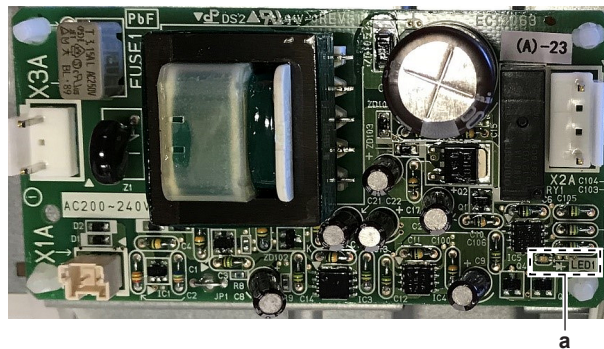
Is the measured output voltage on the main PCB correct?	Action
Yes	Correct the wiring between the main PCB and the leakage current PCB, see "5.1.2 Repair procedures" [▶ 261].
No	Perform a check of the main PCB, see "4.17 Main PCB" [▶ 180].

To perform an operation check of the leakage current PCB

Operation principle

The leakage current PCB has an indicator LED:

- The red indicator LED MUST be OFF during normal operation
- The red indicator LED MUST be ON when an ground leak is detected. Error E2-01 is triggered. See "3.5 Error based troubleshooting" [▶ 24].



Operation check procedure

Prerequisite: First check the power supply to the leakage current PCB, see "4.14.1 Checking procedures" [▶ 170].

- 1 Check if the indicator LED of the leakage current PCB is ON or OFF.
- 2 Disconnect wiring harness from connector X2A of the leakage current PCB.

- 3 Measure the resistance between pins 1-4 of connector X2A on the leakage current PCB.
 - If short-circuit (normal operation) is measured, red indicator LED MUST be OFF.
 - If open circuit (ground leak detected) is measured, red indicator LED MUST be ON.
- 4 When no ground leak is detected (normal operation), measure the resistance between pins 1-4 of connector X2A on the leakage current PCB in the following conditions:

X1A connector	Measurement
Connected	Short-circuit
Disconnected	Open circuit

Does the leakage current PCB function correctly?	Action
Yes	Return to " 4.14.1 Checking procedures " [▶ 170] of the leakage current PCB and continue with the next procedure.
No	Replace the leakage current PCB, see " 4.14.2 Repair procedures " [▶ 174].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the leakage current PCB, see "[4.14.1 Checking procedures](#)" [▶ 170].

- 1 Visit the Daikin Spare Parts Bank (<https://daikincomfort.com/resource-center/parts-supplies>).
- 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 Daikin Spare Parts Bank.

Is the correct spare part for the leakage current PCB installed?	Action
Yes	Return to " 4.14.1 Checking procedures " [▶ 170] of the leakage current PCB and continue with the next procedure.
No	Replace the leakage current PCB, see " 4.14.2 Repair procedures " [▶ 174].

To check the wiring of the leakage current PCB

Prerequisite: First perform all earlier checks of the leakage current PCB, see "[4.14.1 Checking procedures](#)" [▶ 170].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 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 "[7.2 Wiring diagram](#)" [▶ 298].

**INFORMATION**

Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.14.1 Checking procedures " [▶ 170] of the leakage current PCB and continue with the next procedure.

Problem solved?

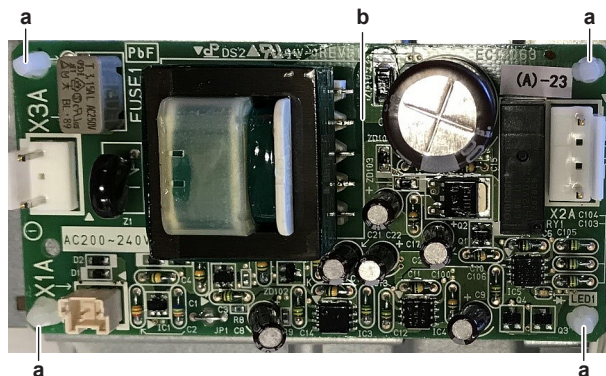
After all checking procedures listed above have been performed:

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.

4.14.2 Repair procedures

To remove the leakage current PCB**Prerequisite:** Stop the unit operation via the user interface.**Prerequisite:** Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].
- 2 Disconnect all connectors from the leakage current 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 leakage current PCB from the main PCB mounting plate.

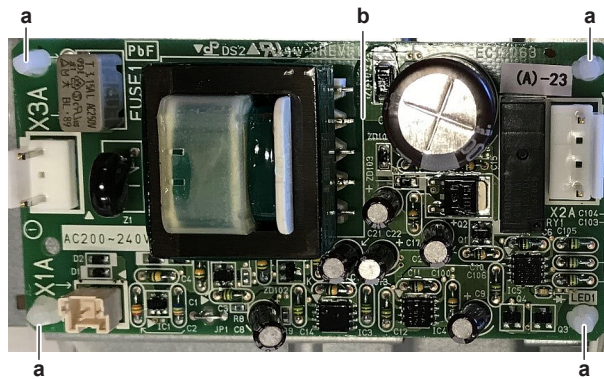


- a** PCB support
b Leakage current PCB

- 5 To install the new leakage current PCB, see "[4.14.2 Repair procedures](#)" [▶ 174].

To install the leakage current PCB

- 1 Align the PCB on the PCB supports, firmly latch the PCB supports to fix the PCB.



- a PCB support
- b Leakage current PCB

2 Connect all connectors to the leakage current PCB.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.14.1 Checking procedures " [▶ 170] of the leakage current PCB and continue with the next procedure.

4.15 Low pressure switch

4.15.1 Checking procedures

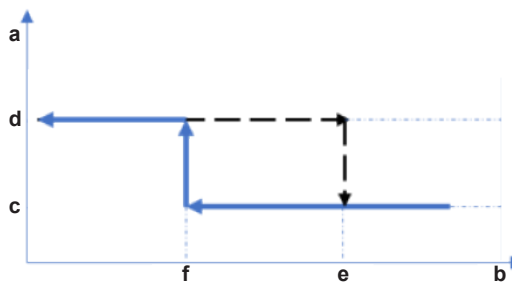
To perform an electrical check of the low pressure switch

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].


- 1 Recuperate the refrigerant from the refrigerant circuit, see "[5.2.2 Repair procedures](#)" [▶ 268].
- 2 Connect a vacuum pump to the gas service port of the refrigerant circuit and vacuum to just above operating pressure of the low pressure switch.



- a Low pressure switch protection control
- b Pressure
- c Low pressure switch closed
- d Low pressure switch open
- e Low pressure switch reset pressure
- f Low pressure switch operating pressure

Low pressure switch	Operating pressure	Reset pressure
S1PL	-7.25~-1.45 PSI (-0.05~-0.01 MPa)	2.90~11.60 PSI (0.02~0.08 MPa)

- 3 Disconnect the low pressure switch connector from the appropriate PCB.
- 4 Measure contacts between the pins 1-2 of the low pressure switch connector.
Result: The switch MUST be closed.
- 5 Vacuum until pressurized just below operating pressure of the low pressure switch.
- 6 Measure again contacts between the pins 1-2 of the low pressure switch connector.
Result: The switch MUST be open.



INFORMATION
If the low pressure switch was triggered open, it will stay open until the refrigerant pressure rises above the reset pressure of the low pressure switch.

- 7 Fill the refrigerant circuit with nitrogen until pressurized just below reset pressure of the low pressure switch.
- 8 Measure again contacts between the pins 1-2 of the low pressure switch connector.
Result: The switch MUST be open.
- 9 Fill the refrigerant circuit with nitrogen until pressurized just above reset pressure of the low pressure switch.
- 10 Measure again contacts between the pins 1-2 of the low pressure switch connector.
Result: The switch MUST be closed.

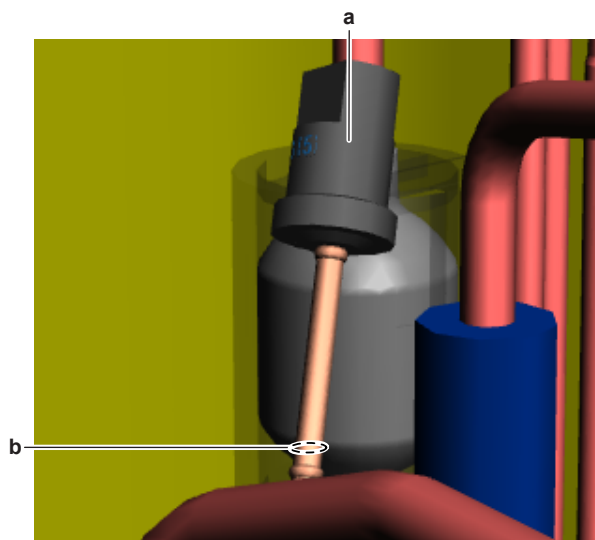
Low pressure switch connector measurements are correct?	Then
Yes	Low pressure switch is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the low pressure switch, see " 4.15.2 Repair procedures " [▶ 176].

4.15.2 Repair procedures

To remove the low pressure switch

- Prerequisite:** Stop the unit operation via the user interface.
- Prerequisite:** Turn OFF the respective circuit breaker.
- Prerequisite:** Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].
- Prerequisite:** Recuperate the refrigerant from the refrigerant circuit, see "[5.2.2 Repair procedures](#)" [▶ 268].
- 1 If needed, remove any parts to create more space for the removal of the low pressure switch.
- 2 Disconnect the low pressure switch connector from the appropriate PCB.
- 3 Cut all tie straps that fix the low pressure switch harness.
- 4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 2.9 PSI (0.02 MPa).
- 5 Wrap a wet rag around the components near the low pressure switch. Heat the brazing point of the low pressure switch pipe using an oxygen acetylene

torch and remove the low pressure switch pipe from the refrigerant pipe using pliers.



- a** Low pressure switch
- b** Low pressure switch pipe

- 6** Stop the nitrogen supply when the piping has cooled down.
- 7** Remove the low pressure switch from the unit.



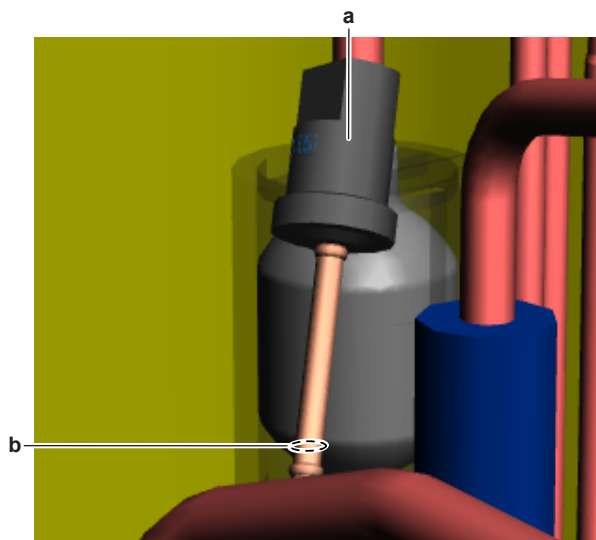
INFORMATION

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 low pressure switch, see "[4.15.2 Repair procedures](#)" [▶ 176].

To install the low pressure switch

- 1** Remove the plug or cap from the refrigerant piping and make sure it is clean.
- 2** Install the low pressure switch in the correct location.
- 3** Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 2.9 PSI (0.02 MPa).
- 4** Wrap a wet rag around the low pressure switch and any other components near the low pressure switch and braze the low pressure switch pipe to the refrigerant pipe.



a Low pressure switch
b Low 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 low pressure switch harness towards the appropriate PCB.
- 7 Fix the harness using new tie straps.
- 8 Connect the low pressure switch connector to the appropriate PCB.
- 9 Perform a pressure test, see "[5.2.1 Checking procedures](#)" [▶ 263].
- 10 Add refrigerant to the refrigerant circuit, see "[5.2.2 Repair procedures](#)" [▶ 268].

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 Magnetic filter/dirt separator

4.16.1 Checking procedures

To perform a check of the magnetic filter/dirt separator

- 1 Perform To clean the magnetic filter/dirt separator in case of trouble, see "[6 Maintenance](#)" [▶ 293].

4.16.2 Repair procedures

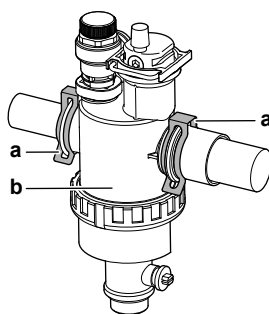
To remove the magnetic filter/dirt separator

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 Drain water from the water circuit, see ["5.3.2 Repair procedures"](#) [▶ 286].
- 2 Remove the 2 clips that fix the magnetic filter/dirt separator.



- a Clip
- b Magnetic filter/dirt separator

- 3 Remove the magnetic filter/dirt separator.

**NOTICE**

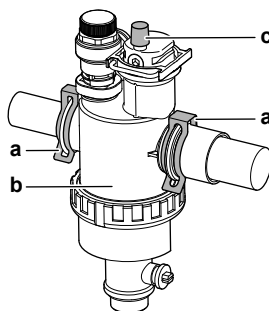
Although the water circuit is drained, some water may be spilled when removing the magnetic filter/dirt separator from the filter housing. ALWAYS clean up spilled water.

- 4 To install the magnetic filter/dirt separator, see ["4.16.2 Repair procedures"](#) [▶ 178].

To install the magnetic filter/dirt separator**NOTICE**

Check the condition of the O-rings and replace if needed. Apply water or silicon grease to the O-rings before installation.

- 1 Install the magnetic filter/dirt separator in the correct location.



- a Clip
- b Magnetic filter/dirt separator
- c Air purge valve

- 2 Install the 2 clips to fix the magnetic filter/dirt separator to the water circuit pipes.
- 3 Make sure that the air purge valve of the magnetic filter/dirt separator is in the open position.
- 4 Open the valve (if equipped) of the water circuit towards the expansion vessel.

**CAUTION**

Make sure to open the valve (if equipped) towards the expansion vessel, otherwise the overpressure will be generated.

- 5 Open the stop valves and add water to the water circuit if needed, see ["5.3.2 Repair procedures"](#) [▶ 286].

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 Main PCB

4.17.1 Checking procedures



INFORMATION

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

To check the fuse of the main PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

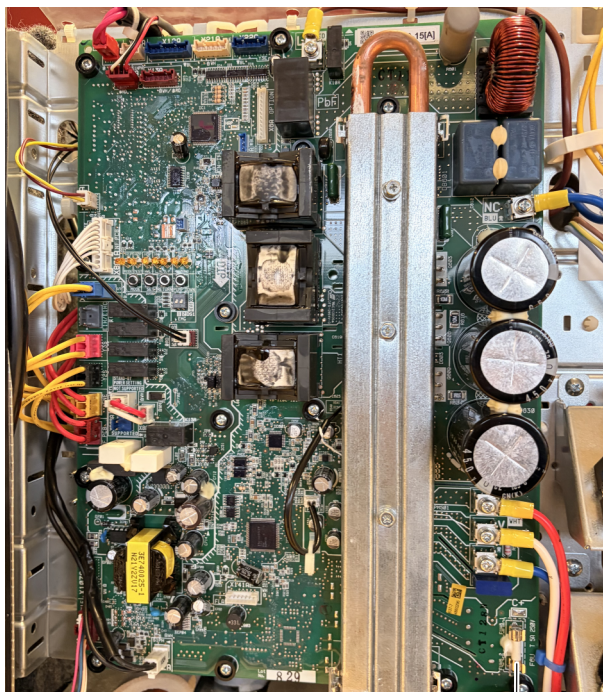
- 1 Remove the required plate work, see "4.20 Plate work" [▶ 202].



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 Measure the continuity of the fuse. If no continuity is measured, the fuse has blown.



a

a Fuse

Blown fuse on the main PCB?	Action
Yes	Replace the main PCB, see "4.17.2 Repair procedures" [▶ 188].

Blown fuse on the main PCB?	Action
No	Return to "4.17.1 Checking procedures" [▶ 180] of the main PCB and continue with the next procedure.

To perform a power check of the main PCB

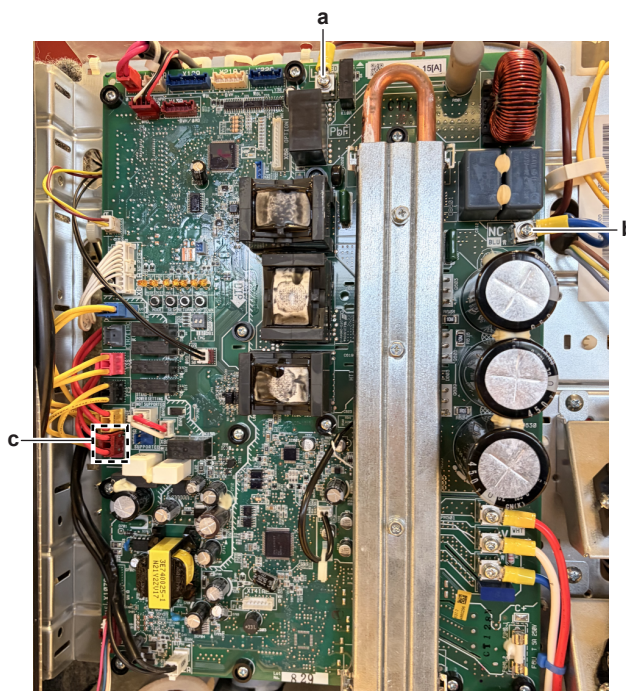
Prerequisite: First check the fuse of the main PCB, see ["4.17.1 Checking procedures"](#) [▶ 180].

- 1 Turn ON the power of the unit.
- 2 Measure the voltage between the wires LC-NC on the main PCB.

Result: The measured voltage MUST be 230 V AC.

- 3 Measure the voltage on connector X99A on the main PCB.

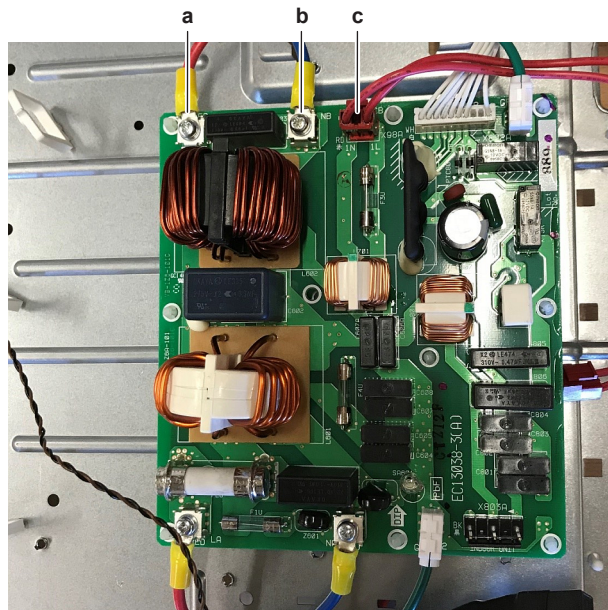
Result: The measured voltage MUST be 230 V AC.



- a LC
- b NC
- c Connector X99A

Does the main PCB receive power?	Action
Yes	Return to "4.17.1 Checking procedures" [▶ 180] of the main PCB and continue with the next procedure.
No	Continue with the next step.

- 4 Measure the output voltage between the wires LB-NB on the noise filter PCB.
Result: The measured voltage MUST be 230 V AC.
- 5 Measure the output voltage on connector X98A on the noise filter PCB.
Result: The measured voltage MUST be 230 V AC.



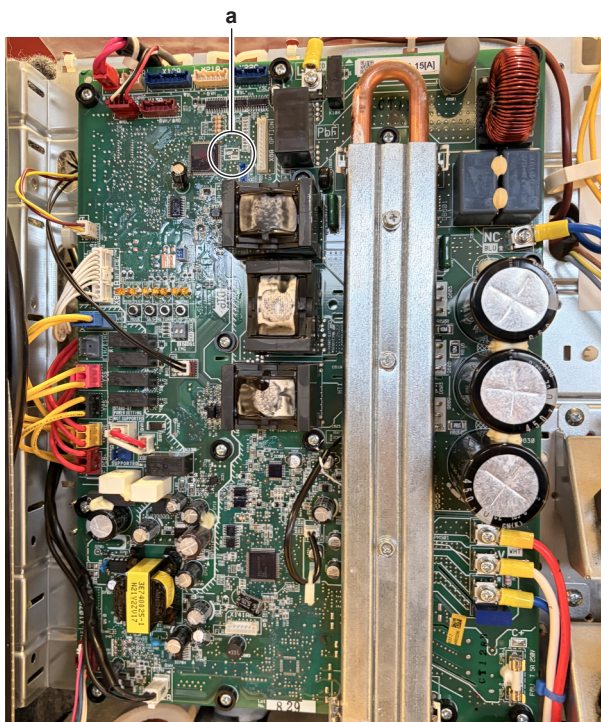
- a LB
- b NB
- c Connector X98A

Output voltage on noise filter PCB correct?	Action
Yes	Correct the wiring between the main PCB and the noise filter PCB, see "5.1.2 Repair procedures" [▶ 261].
No	Perform a check of the noise filter PCB, see "4.18.1 Checking procedures" [▶ 190].

To check the HAP LED of the main PCB

Prerequisite: First check the power supply to the main PCB, see ["4.17.1 Checking procedures"](#) [▶ 180].

- 1 Locate the HAP LED on the main PCB.



a HAP LED

**INFORMATION**

Make sure the correct software is available on the PCB. If NOT, update using the updater tool.

Does the HAP LED blink in regular intervals (1 second ON/1 second OFF)?	Action
Yes	Return to "4.17.1 Checking procedures" [▶ 180] of the main PCB and continue with the next procedure.
No	Replace the main PCB, see "4.17.2 Repair procedures" [▶ 188].

To check if the correct spare part is installed

Prerequisite: First perform all earlier main PCB checks, see "4.17.1 Checking procedures" [▶ 180].

- 1 Visit the Daikin Spare Parts Bank (<https://daikincomfort.com/resource-center/parts-supplies>).
- 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 Daikin Spare Parts Bank.

**NOTICE**

Also check that the correct spare part is installed for the capacity adapter.

Is the correct spare part for the PCB installed?	Action
Yes	Return to "4.17.1 Checking procedures" [▶ 180] of the main PCB and continue with the next procedure.

Is the correct spare part for the PCB installed?	Action
No	Replace the main PCB, see "4.17.2 Repair procedures" [▶ 188].

To check the wiring of the main PCB

Prerequisite: First perform all earlier main PCB checks, see "4.17.1 Checking procedures" [▶ 180].

Prerequisite: Stop the unit operation via the user interface.

- 1 Turn OFF the respective circuit breaker.
- 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 "7.2 Wiring diagram" [▶ 298].



INFORMATION

Correct the wiring as needed.

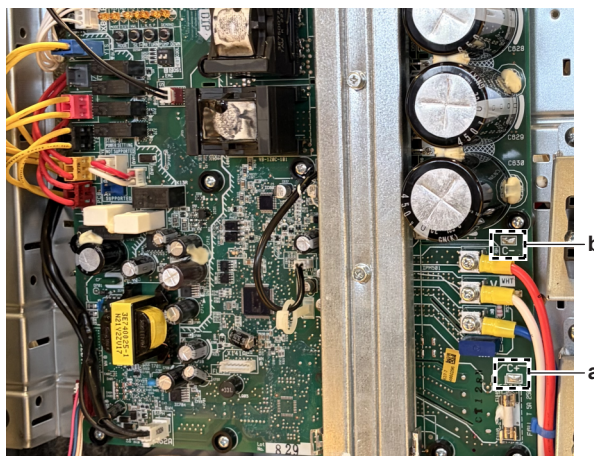
Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.17.1 Checking procedures" [▶ 180] of the PCB and continue with the next procedure.

To check the rectifier voltage of the main PCB

Prerequisite: First perform all earlier main PCB checks, see "4.17.1 Checking procedures" [▶ 180].

- 1 Turn ON the power of the unit.
- 2 Measure the voltage on the rectifier voltage check terminals (+ and –) on the main PCB.

Result: The measured voltage MUST be 310~325 V DC if compressor is NOT running and 350~365 V DC if compressor is running.



- a + terminal
b – terminal

**INFORMATION**

When measuring on the front of the main PCB, make sure to locally remove (pinch) the protective varnish with the test leads of the multi meter.

Is the measured rectifier voltage correct?	Action
Yes	Perform a check of the power modules, see "4.17.1 Checking procedures" [▶ 180].
No	Replace the main PCB, see "4.17.2 Repair procedures" [▶ 188].

To perform a diode module check

- 1 First check the rectifier voltage of the main PCB, see ["4.17.1 Checking procedures"](#) [▶ 180].

**INFORMATION**

If the rectifier voltage is OK, the diode module is OK. If rectifier voltage is NOT OK, replace the main PCB.

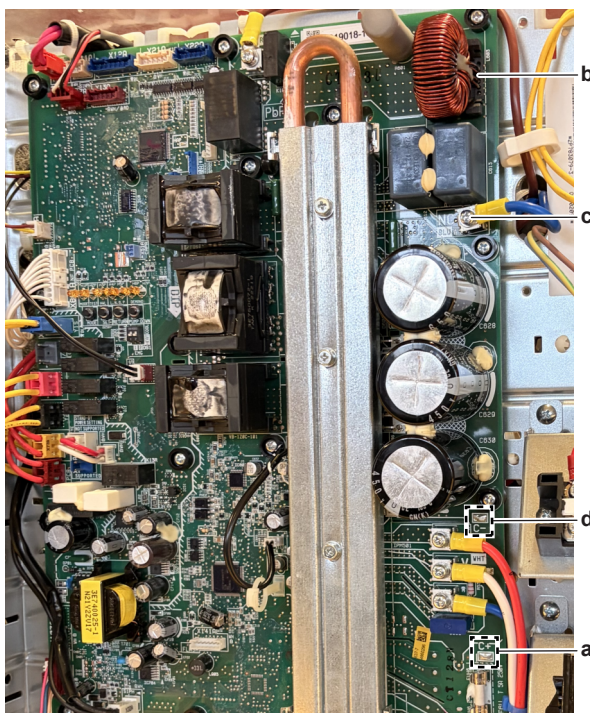
Below procedure describes how to check the diode module itself.

- 2 Stop the unit operation via the user interface.
- 3 Turn OFF the respective circuit breaker.

**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 NC wire from the main PCB.
- 5 Check the diode module in reference with the image and the table below.



- a V DC out (+)
b V AC in (L803 coil leads)

- c V AC in (NC)
- d V DC out (-)

**INFORMATION**

When measuring on the front of the main PCB, make sure to locally remove (pinch) the protective varnish with the test leads of the multi meter.

VDC	Com	Ref	VDC	Com	Ref
d	b	0.51 V	b	d	OL
b	a	0.89 V	a	b	OL
d	c	0.51 V	c	d	OL
c	a	0.89 V	a	c	OL

- 6 If the diode module is NOT OK, replace the main PCB, see "[4.17.2 Repair procedures](#)" [▶ 188].

To perform a power module check

Prerequisite: First check the rectifier voltage of the main PCB, see "[4.17.1 Checking procedures](#)" [▶ 180].

Prerequisite: Stop the unit operation via the user interface.

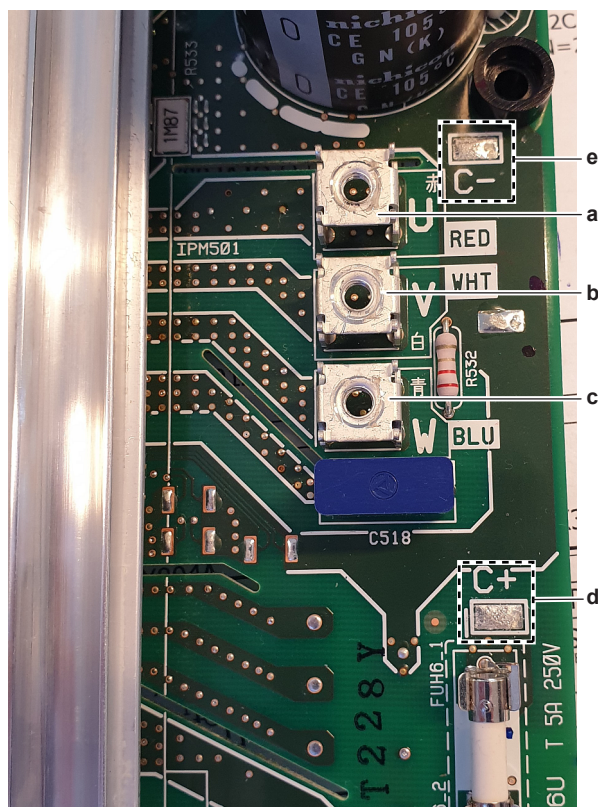
- 1 Turn OFF the respective circuit breaker.

**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.

Power module V1R for compressor

- 2 Disconnect the compressor wires (screw connections) from the main PCB.
- 3 Check the power module V1R in reference with the image and the table below.



- a U
- b V
- c W
- d C+
- e C-



INFORMATION

When measuring on the front of the main PCB, make sure to locally remove (pinch) the protective varnish with the test leads of the multi meter.

VDC	Com	Ref	VDC	Com	Ref
U	C+	0.407 V	C+	U	OL
V	C+	0.407 V	C+	V	OL
W	C+	0.407 V	C+	W	OL
C-	U	0.407 V	U	C-	OL
C-	V	0.407 V	V	C-	OL
C-	W	0.407 V	W	C-	OL

Are the test results OK?	Action
Yes	Power modules are OK. Return to "4.17.1 Checking procedures" [▶ 180] of the main PCB and continue with the next procedure.
No	Replace the main PCB, see "4.17.2 Repair procedures" [▶ 188].

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

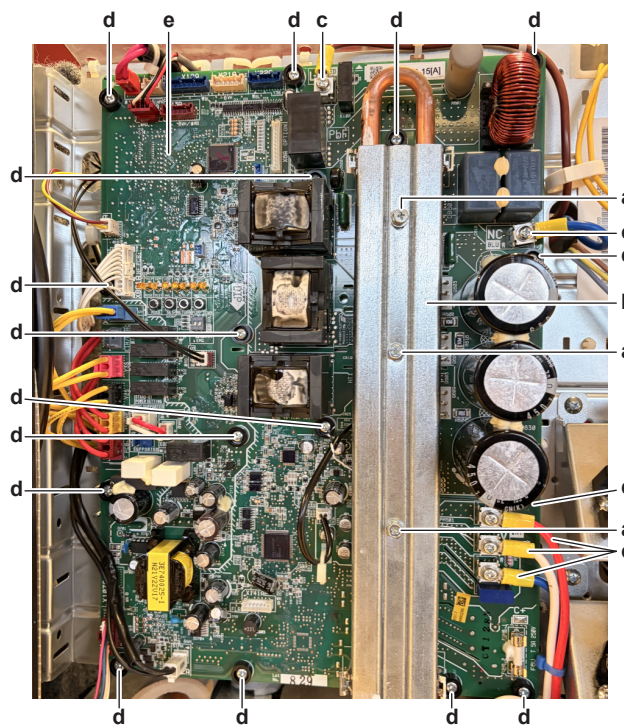
To remove the main PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.20 Plate work" [▶ 202].

- 1 Remove the 3 bolts from the main PCB heat sink cover.
- 2 Lift and pull the cover to remove it from the heat sink.



- a Heat sink cover screw
- b Heat sink cover
- c Wires LC, NC, U, V and W
- d PCB fixation screw
- e Main PCB

- 3 Disconnect all connectors from the main PCB.
- 4 Loosen the screws to disconnect the LC, NC, U, V and W wires.
- 5 Remove all main PCB fixation screws.
- 6 Pull the refrigerant pipe forward and move the main PCB out.
- 7 Remove the bottom screw on the back of the main PCB to disconnect the ground wire.
- 8 To install the main PCB, see "4.17.2 Repair procedures" [▶ 188].

To install the main PCB

- 1 Use a piece of cloth to remove the old thermal interface grease and clean the refrigerant pipe.

- 2 Install the ground wire at the bottom back side of the main PCB. Install and tighten the screw.
- 3 Apply grease to the refrigerant pipe contact surface of the heat sink (on the main PCB). Distribute the grease as evenly as possible.

**CAUTION**

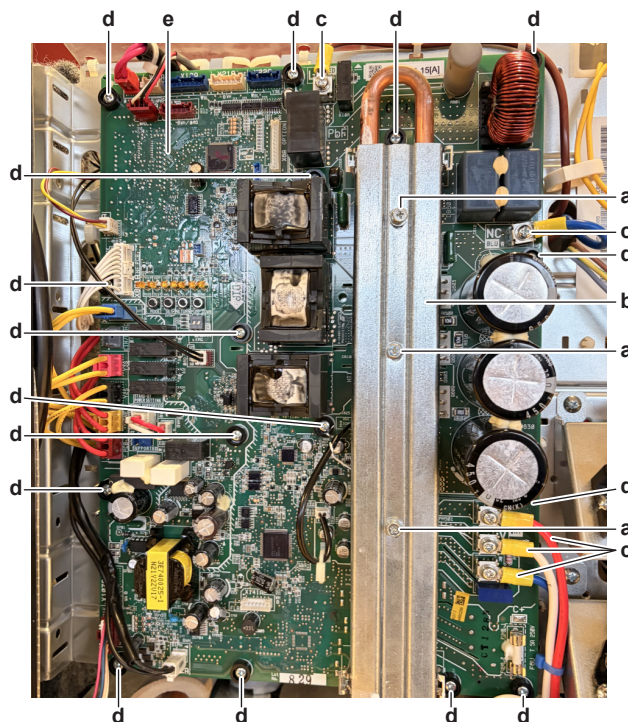
ALWAYS apply new grease on the heat sink contact surface. NOT doing so may cause the PCB to fail due to insufficient cooling.

- 4 Carefully pull the refrigerant pipe forward and install the main PCB on its mounting plate in the correct location. Install and tighten the fixation screws.

**INFORMATION**

Make sure that the refrigerant pipe is correctly installed on the main PCB heat sink. Do NOT touch the part of the refrigerant pipe that is mounted in the heat sink.

- 5 Install the heat sink cover. Close and slide it downwards to fix the 2 hooks.
- 6 Install and tighten the 3 screws so that the heat sink cover presses the refrigerant pipe.



- a Heat sink cover screw
- b Heat sink cover
- c Wires LC, NC, U, V and W
- d PCB fixation screw
- e Main PCB

- 7 Connect the LC, NC, U, V and W wires to the main PCB and tighten the screws.
- 8 Connect all connectors to the main PCB.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.17.1 Checking procedures " [▶ 180] of the PCB and continue with the next procedure.

4.18 Noise filter PCB

4.18.1 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 respective circuit breaker.

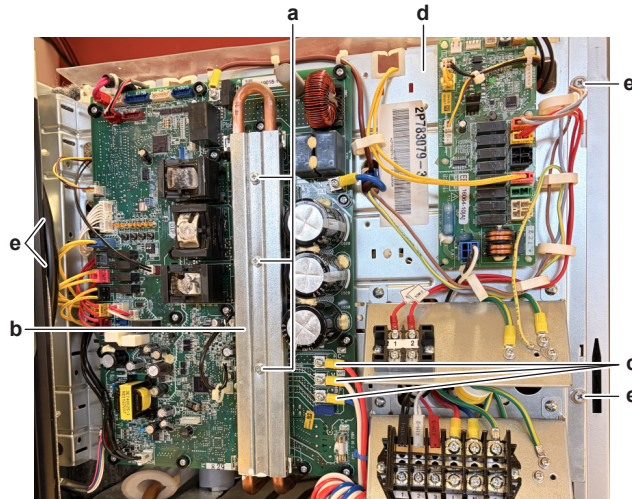
- 1 Remove the required plate work, see "4.20 Plate work" [▶ 202].



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 3 screws from the main PCB heat sink cover.
- 3 Lift and pull the cover to remove it from the heat sink.



- a Heat sink cover screw
- b Heat sink cover
- c Wires U, V and W
- d Main PCB mounting plate
- e Main PCB mounting plate fixation screw

- 4 Disconnect all connectors from the main PCB.
- 5 Loosen the screws to disconnect the U, V and W wires.
- 6 Cut all cable ties that fix cables to the main PCB mounting plate.
- 7 Remove all main PCB mounting plate fixation screws.
- 8 Pull the refrigerant pipe forward and put the main PCB mounting plate aside so that the PCB's on the back side are easily accessible.

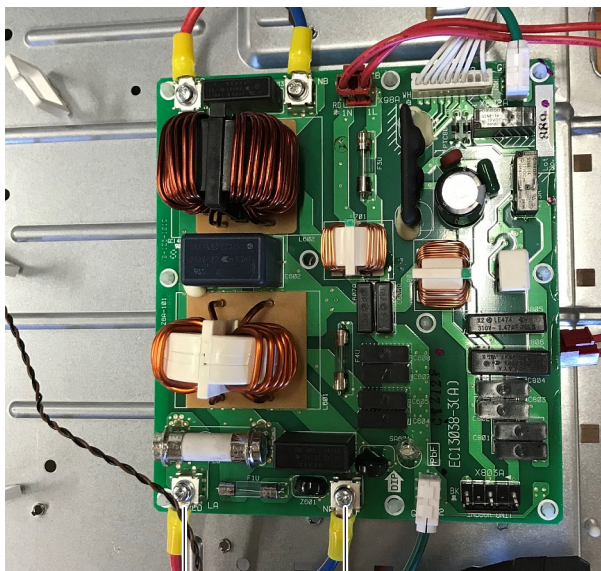


CAUTION

The leakage current PCB and the noise filter PCB are still connected. Do NOT completely remove the main PCB mounting plate.

- 9 Turn ON the power of the unit.

- 10** Measure the voltage between the wires LA-NA of the noise filter PCB. Measured voltage MUST be 230 V AC.



a LA
b NA

Is the measured voltage on the PCB correct?	Action
Yes	Return to " 4.18.1 Checking procedures " [▶ 190] procedures of the PCB and continue with the next procedure.
No	Continue with the next step.

- 11** Check the power supply to the unit, see "[5.1.1 Checking procedures](#)" [▶ 259].

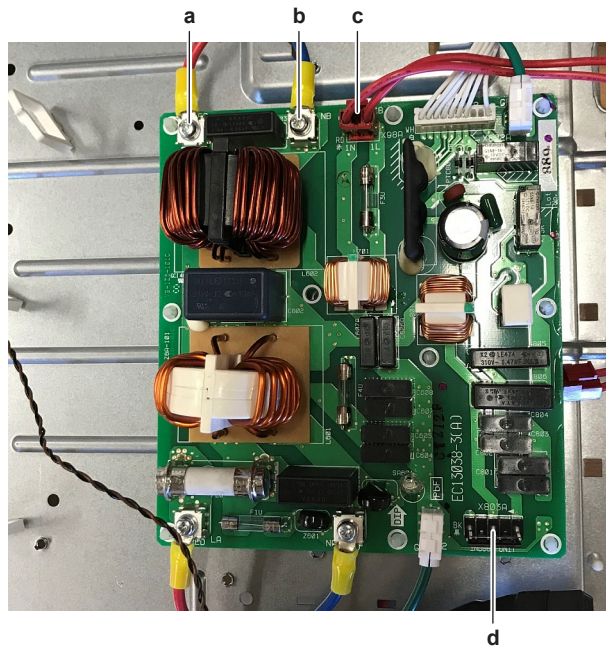
Does the unit receive power?	Action
Yes	Correct the wiring from the main power supply terminal to the noise filter PCB, see " 4.18.2 Repair procedures " [▶ 194].
No	Adjust the power supply to the unit, see " 5.1.2 Repair procedures " [▶ 261].

To perform an electrical check of the noise filter PCB

Prerequisite: First check the power supply to the noise filter PCB, see "[4.18.1 Checking procedures](#)" [▶ 190].

- 1 Measure the voltage between the output wires LB-NB of the noise filter PCB. The measured voltage MUST be 230 V AC.
- 2 Measure the voltage on the output connector X98A and between the pins 1-3 of output connector X803A.

Result: The measured voltage MUST be 230 V AC.



- a LB
- b NB
- c Connector X98A
- d Connector X803A

Is the output voltage on the noise filter PCB correct?	Action
Yes	Return to "4.18.1 Checking procedures" [▶ 190] of the noise filter PCB and continue with the next procedure.
No	Replace the noise filter PCB, see "4.18.2 Repair procedures" [▶ 194].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the noise filter PCB, see "4.18.1 Checking procedures" [▶ 190].

- 1 Visit the Daikin Spare Parts Bank (<https://daikincomfort.com/resource-center/parts-supplies>).
- 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 Daikin Spare Parts Bank.

Is the correct spare part for the noise filter PCB installed?	Action
Yes	Return to "4.18.1 Checking procedures" [▶ 190] of the noise filter PCB and continue with the next procedure.
No	Replace the noise filter PCB, see "4.18.2 Repair procedures" [▶ 194].

To check the wiring of the noise filter PCB

Prerequisite: First perform all earlier checks of the noise filter PCB, see "4.18.1 Checking procedures" [▶ 190].

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 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 "7.2 Wiring diagram" [▶ 298].



INFORMATION

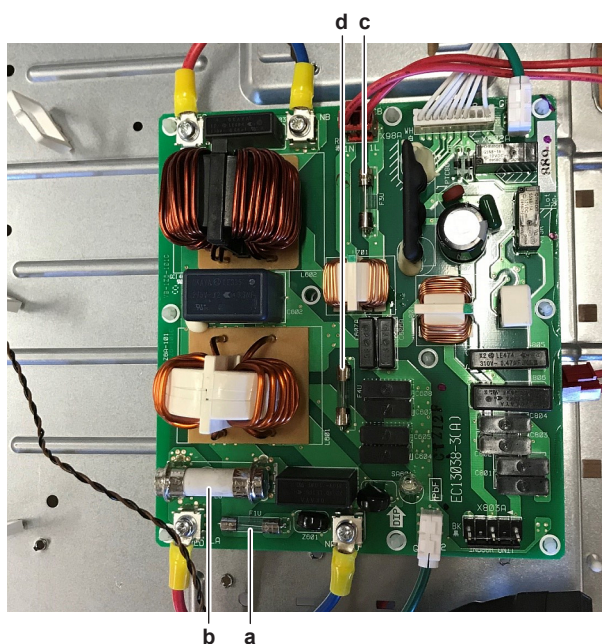
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.18.1 Checking procedures" [▶ 190] 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 "4.18.1 Checking procedures" [▶ 190].

- 1 Measure the continuity of the fuse. If no continuity is measured, the fuse has blown.



- a Fuse F1U
- b Fuse F2U
- c Fuse F3U
- d Fuse F4U

Blown fuse on the noise filter PCB?	Action
Yes	Replace the noise filter PCB, see "4.18.2 Repair procedures" [▶ 194].

Blown fuse on the noise filter PCB?	Action
No	Return to " 4.18.1 Checking procedures " [▶ 190] 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.

4.18.2 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 respective circuit breaker.

- 1 Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].
- 2 Make sure that all wires are firmly and correctly connected, see "[7.2 Wiring diagram](#)" [▶ 298].
- 3 Check the continuity of all wires.
- 4 Replace any damaged or broken wires.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.18.1 Checking procedures " [▶ 190] 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.

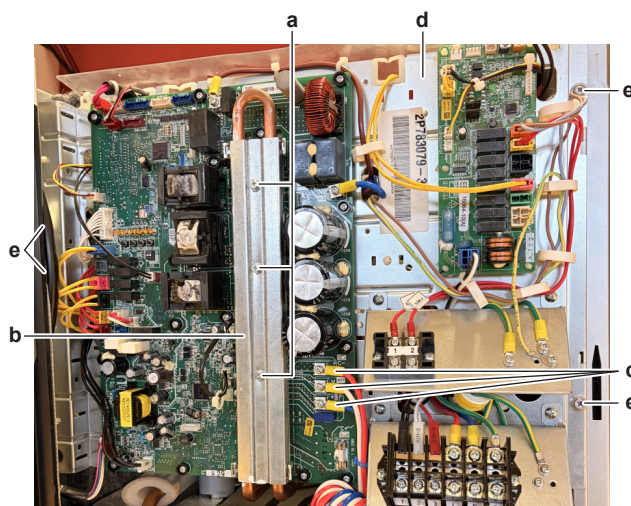
Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

**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 3 screws from the main PCB heat sink cover.
- 3 Lift and pull the cover to remove it from the heat sink.



- a Heat sink cover screw
- b Heat sink cover
- c Wires U, V and W
- d Main PCB mounting plate
- e Main PCB mounting plate fixation screw

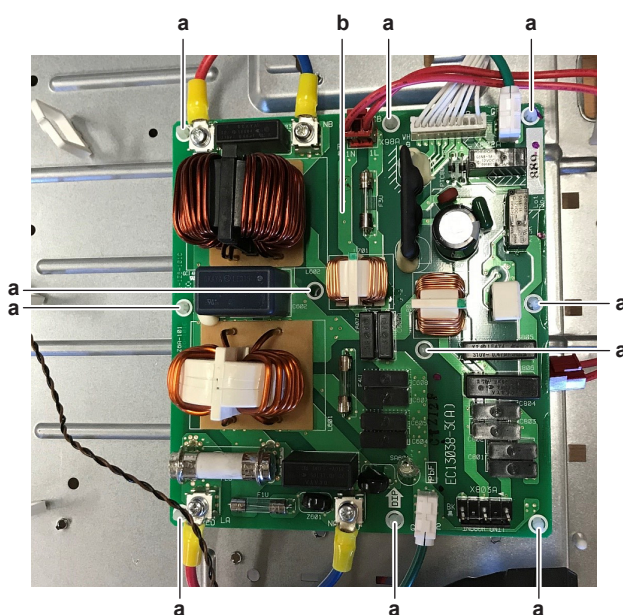
- 4 Disconnect all connectors from the main PCB.
- 5 Loosen the screws to disconnect the U, V and W wires.
- 6 Cut all cable ties that fix cables to the main PCB mounting plate.
- 7 Remove all main PCB mounting plate fixation screws.
- 8 Pull the refrigerant pipe forward and put the main PCB mounting plate aside so that the PCB's on the back side are easily accessible.



CAUTION

The leakage current PCB and the noise filter PCB are still connected. Do NOT completely remove the main PCB mounting plate.

- 9 Disconnect all connectors and FASTON connectors from the noise filter PCB.
- 10 Loosen the screws to disconnect the LA, LB, NA and NB wires.
- 11 Carefully pull the PCB at the side and unlatch the PCB supports one by one using a small pair of pliers.
- 12 Remove the noise filter PCB from the main PCB mounting plate.

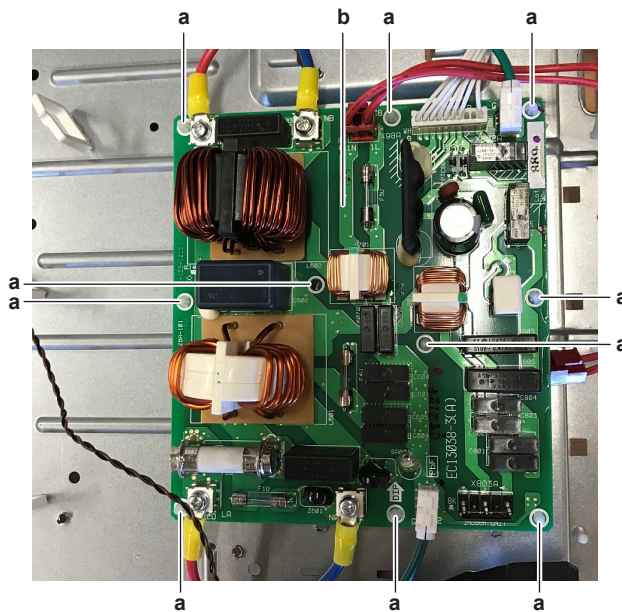


- a PCB support
- b Noise filter PCB

13 To install the new noise filter PCB, see "4.18.2 Repair procedures" [▶ 194].


To install the noise filter PCB

1 Install the noise filter PCB on its correct location.




- a PCB support
- b Noise filter PCB

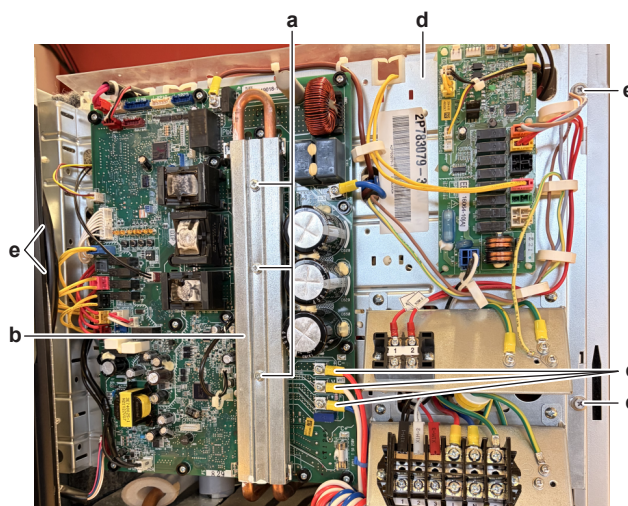
- 2 Connect all connectors and FASTON connectors to the noise filter PCB.
- 3 Connect the LA, LB, NA and NB wires to the noise filter PCB and tighten the screws.
- 4 Remove the grease and apply new grease to the heat sink on the main PCB.

 **CAUTION**
 ALWAYS apply new grease on the heat sink contact surface. NOT doing so may cause the PCB to fail due to insufficient cooling.

5 Pull the refrigerant pipe forward and install the main PCB mounting plate on its correct location. Install and tighten the fixation screws.

 **INFORMATION**
 Make sure that the refrigerant pipe is correctly installed on the main PCB heat sink. Do NOT touch the part of the refrigerant pipe that is mounted in the heat sink.

- 6 Install the heat sink cover. Close and slide it downwards to fix the 2 hooks.
- 7 Install and tighten the 3 screws so that the heat sink cover presses the refrigerant pipe.



- a Heat sink cover screw
- b Heat sink cover
- c Wires U, V and W
- d Main PCB mounting plate
- e Main PCB mounting plate fixation screw

- 8 Connect the U, V and W wires to the main PCB and tighten the screws.
- 9 Connect all connectors to the main PCB.
- 10 Fix the cables to the main PCB mounting plate using new tie straps.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.18.1 Checking procedures " [▶ 190] of the noise filter PCB and continue with the next procedure.

4.19 Outdoor unit fan motor

4.19.1 Checking procedures



INFORMATION

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

To perform a mechanical check of the propeller fan blade assembly

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 If propeller fan blade touches the bell mouth, check if the fan motor is correctly mounted on its base, see "[4.19.2 Repair procedures](#)" [▶ 200].
- 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 " 4.19.2 Repair procedures " [▶ 200].

Is the propeller fan blade assembly damaged?	Action
No	Perform a mechanical check of the fan motor assembly, see "4.19.1 Checking procedures" [▶ 197].

To perform a mechanical check of the fan motor assembly


Prerequisite: First perform a mechanical check of the propeller fan blade assembly, see "4.19.1 Checking procedures" [▶ 197].

- 1 Visually check:
 - For any burnt-out part or wire. If found, replace the fan motor, see "4.19.2 Repair procedures" [▶ 200].
 - 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 fan motor shaft bearing.

Is the fan motor shaft friction normal?	Action
Yes	Perform an electrical check of the fan motor assembly, see "4.19.1 Checking procedures" [▶ 197].
No	Replace the fan motor assembly, see "4.19.2 Repair procedures" [▶ 200].

To perform an electrical check of the fan motor assembly


- 1 First perform a mechanical check of the fan motor assembly, see "4.19.1 Checking procedures" [▶ 197].



INFORMATION
Check the fan motor power supply (voltage) circuit on the PCB.

- 2 Turn ON the power of the unit.
- 3 Activate **Cooling** or **Heating** operation via the user interface.
- 4 Check the functioning of the outdoor unit fan.

Outdoor unit fan ...	Action
Rotates continuously (without interruption)	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.



INFORMATION
The fan motor connector **MUST** be plugged into the appropriate PCB.

- 5 Confirm via the service monitoring tool that the fan motor assembly receives an ON signal.
- 6 Turn OFF the unit via the user interface.
- 7 Turn OFF the respective circuit breaker.

**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.

- 8** Disconnect the fan motor connector X106A from the appropriate PCB and measure the resistance on the connector pins shown below.

Result: The measured resistance MUST be:

VDC	Comm	Resistance	VDC	Comm	Resistance
2	1	OL	1	2	OL
2	3	29.4 kΩ	3	2	29.4 kΩ
2	4	28.1 kΩ	4	2	28.1 kΩ
2	7	OL	7	2	OL

**INFORMATION**

The measured resistance values may deviate from the listed values due to instability during the measurements.

Fan motor resistance measurements are correct?	Action
Yes	Continue with the next step.
No	Replace the fan motor, see "4.19.2 Repair procedures" [▶ 200].

- 9** Turn ON the power of the unit.
- 10** With the fan motor connector X106A disconnected from the main PCB, measure the voltage on the connector pins 1-2 (= fan motor power supply) of the connector on the main PCB.

Result: The voltage MUST be 200~390 V DC.

- 11** Measure the voltage on the connector pins 2-3 (= fan motor control) of the connector on the main PCB.

Result: The voltage MUST be 15±10% V DC.

Are both measured voltages correct?	Action
Yes	Continue with the next step.
No	Perform a check of the main PCB, see "4.17.1 Checking procedures" [▶ 180].

- 12** Measure the voltage on the fan motor connector X106A pins 2-4 (= rotation command) on the main PCB.

Result: The measured voltage should be 0~7 V DC. It should NOT be 0 V DC.

Is the measured voltage 0 V DC?	Action
Yes	Perform a check of the main PCB, see "4.17.1 Checking procedures" [▶ 180].
No	Continue with the next step.

- 13** Connect the fan motor connector to the PCB. Remove the plastic insert from the connector for easier measurement.



CAUTION

Ensure that the system CANNOT start the fan. Disable all modes (heating, cooling, ...) on the unit. The unit MUST be kept powered.

14 Manually (slowly) rotate the fan blade propeller 1 turn and measure the voltage on the fan motor connector pins 2-7.

Result: 4 pulses MUST be measured.

Pulses are measured during fan blade propeller rotation?	Action
Yes	Perform a check of the main PCB, see "4.17.1 Checking procedures" [▶ 180].
No	Replace the fan motor, see "4.19.2 Repair procedures" [▶ 200].

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.

4.19.2 Repair procedures

To remove the propeller fan blade assembly

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see "4.20 Plate work" [▶ 202].
- 2 Remove the nut that fixes the propeller fan blade assembly.



- a Nut
- b Propeller fan blade assembly

- 3 Pull and remove the propeller fan blade assembly from the fan motor assembly.

**INFORMATION**

Use a pulley remover if the propeller cannot be removed manually.

- 4 To install the propeller fan blade assembly, see ["4.19.2 Repair procedures"](#) [▶ 200].

To remove the fan motor assembly

- 1 Remove the propeller fan blade assembly from the fan motor assembly, see ["4.19.2 Repair procedures"](#) [▶ 200].

**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 fan motor connector from the main PCB.
- 3 Cut the tie straps that fix the fan motor harness.
- 4 Slightly bend the harness retainers to detach the fan motor harness.
- 5 Remove the 4 screws that fix the fan motor assembly.
- 6 Remove the fan motor assembly from the unit.
- 7 To install the fan motor assembly, see ["4.19.2 Repair procedures"](#) [▶ 200].

To install the fan motor assembly

- 1 Install the fan motor assembly in the correct location.
- 2 Fix the fan motor assembly to the unit by tightening the screws.
- 3 Route the fan motor harness through the harness retainers and bend the harness retainers to attach the fan motor harness.
- 4 Install new tie straps to fix the fan motor harness.
- 5 Connect the fan motor connector to the connector on the main PCB.
- 6 Install the propeller fan blade assembly, see ["4.19.2 Repair procedures"](#) [▶ 200].

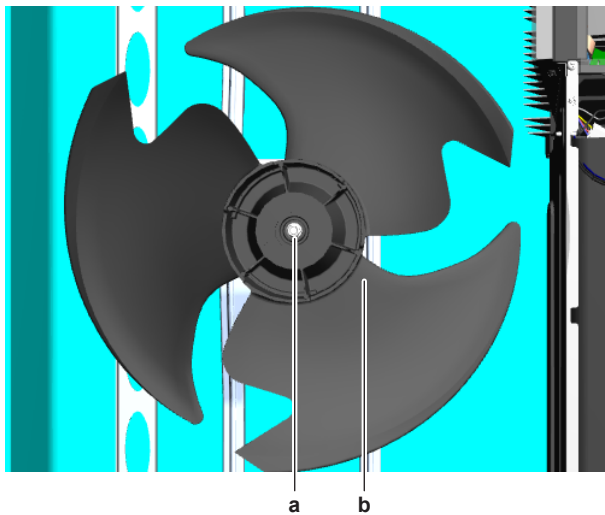
To install the propeller fan blade assembly

- 1 Install the propeller fan blade assembly on the DC fan motor assembly.

**CAUTION**

Do NOT install a damaged propeller fan blade assembly.

- 2 Install and tighten the nut to fix the propeller fan blade assembly.



- a Nut
- b Propeller fan blade assembly

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.19.1 Checking procedures " [▶ 197] of the outdoor unit fan motor and continue with the next procedure.

4.20 Plate work

4.20.1 Outdoor unit

To remove the discharge grille, and put the grille in the safety position

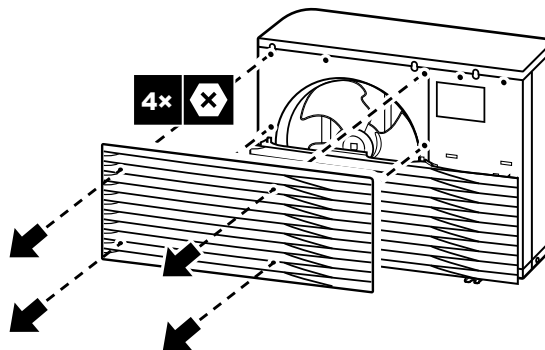


WARNING

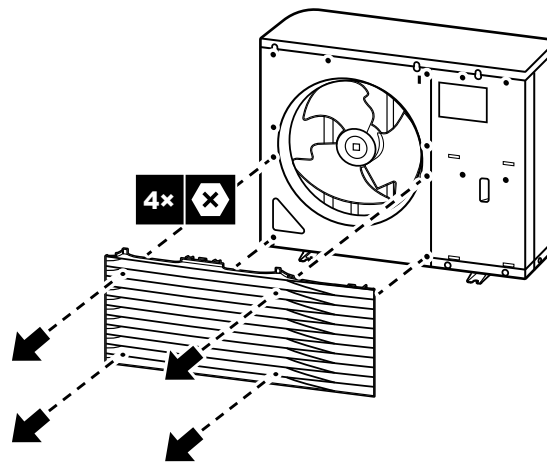
Rotating fan. Before powering ON or servicing the outdoor unit, make sure that the discharge grille covers the fan as protection against a rotating fan. See:

- "[To install the discharge grille](#)" [▶ 204]
- "[To remove the discharge grille, and put the grille in the safety position](#)" [▶ 202]

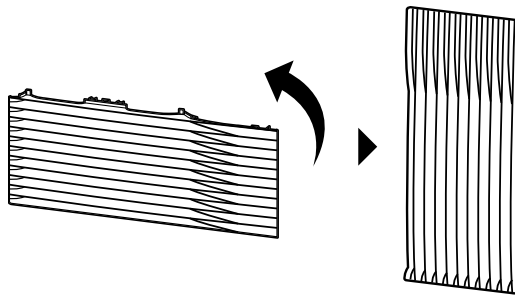
- 1 Remove the upper part of the discharge grille.



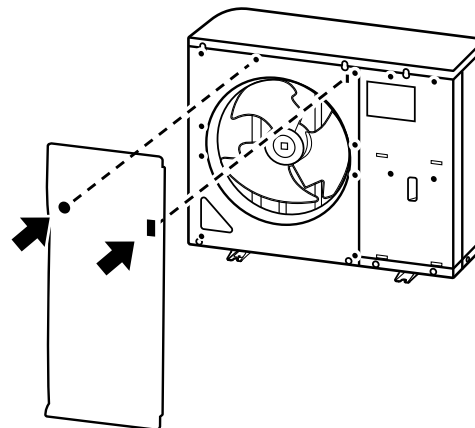
- 2 Remove the lower part of the discharge grille.



- 3 Rotate the lower part of the discharge grille.

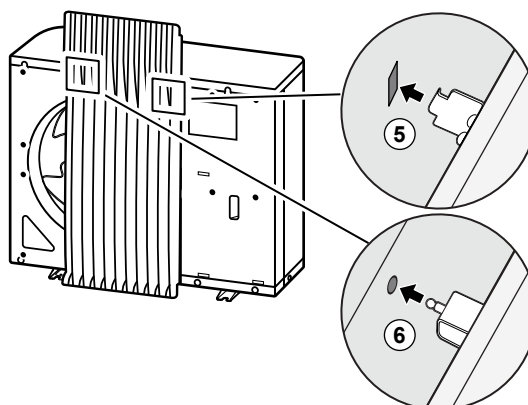


- 4 Align the ball stud and hook on the grille with their counterparts on the unit.



- 5 Insert the hook.

- 6 Insert the ball stud.



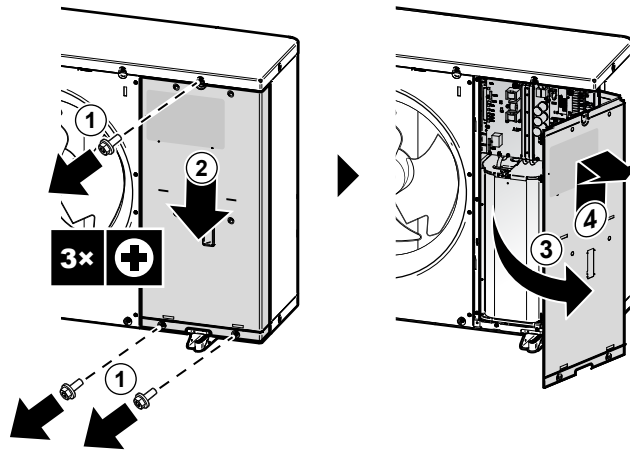
To open the outdoor unit



DANGER: RISK OF ELECTROCUTION



DANGER: RISK OF BURNING/SCALDING

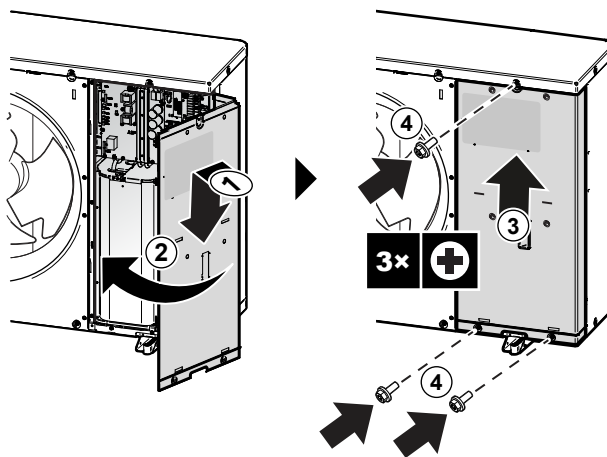


To close the outdoor unit



NOTICE

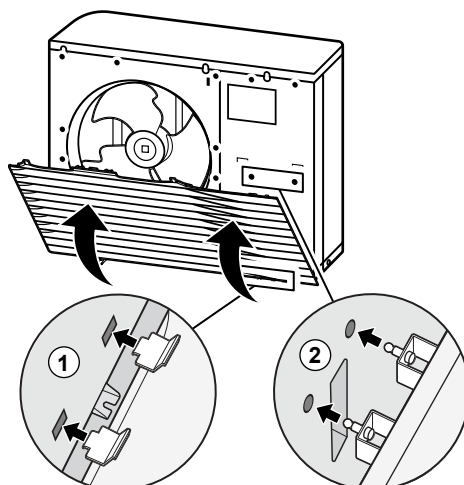
When closing the outdoor unit cover, make sure that the tightening torque does NOT exceed 3.0 lbf•ft (4.1 N•m).



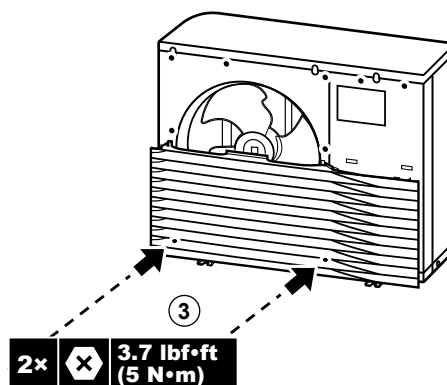
To install the discharge grille

Install the lower part of the discharge grille

- 1 Insert the hooks.
- 2 Insert the ball studs.



- 3 Fix the 2 lower screws.



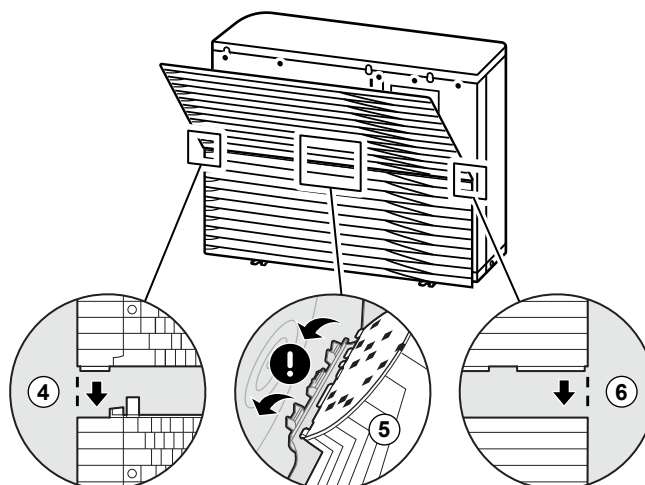
Install the upper part of the discharge grille



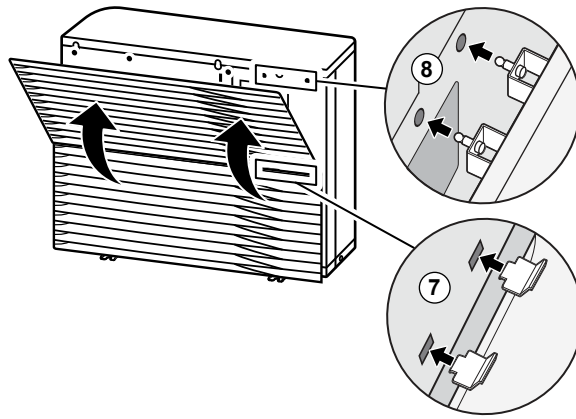
NOTICE

Vibrations. Make sure the upper part of the discharge grille is attached seamlessly to the lower part to prevent vibrations.

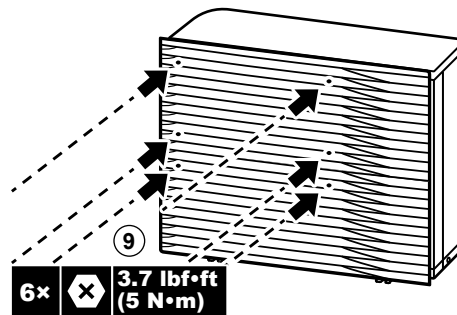
- 4 Align and attach the left side.
5 Align and attach the middle part.
6 Align and attach the right side.



- 7 Insert the hooks.
8 Insert the ball studs.



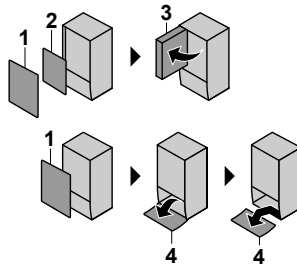
9 Fix the 6 remaining screws.



4.20.2 Indoor unit

To open the indoor unit

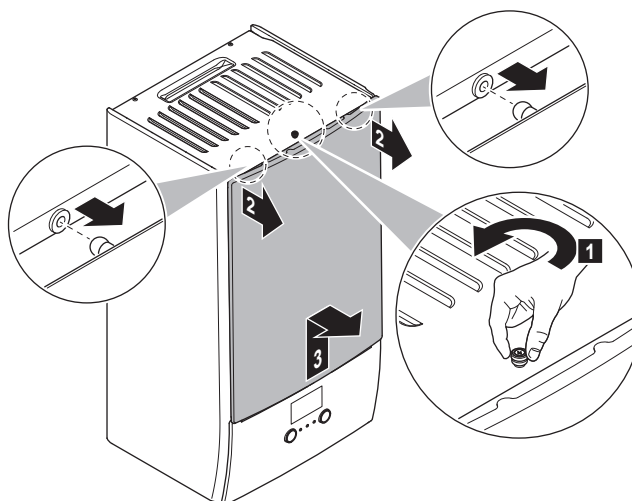
Overview



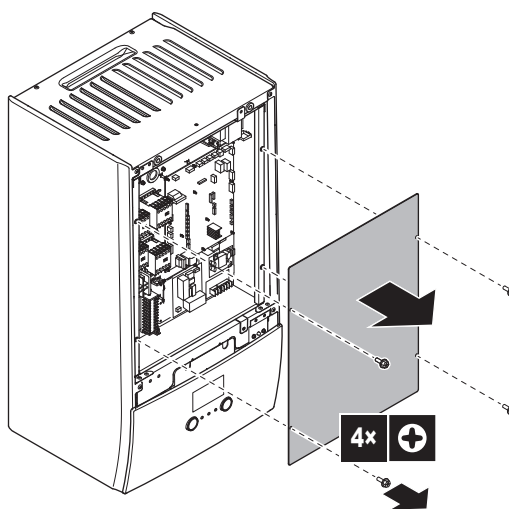
- 1 Front panel
- 2 Switch box cover
- 3 Switch box
- 4 User interface panel

Open

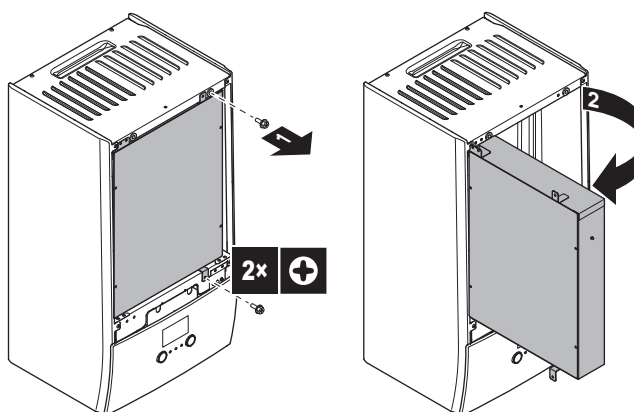
1 Remove the front panel.



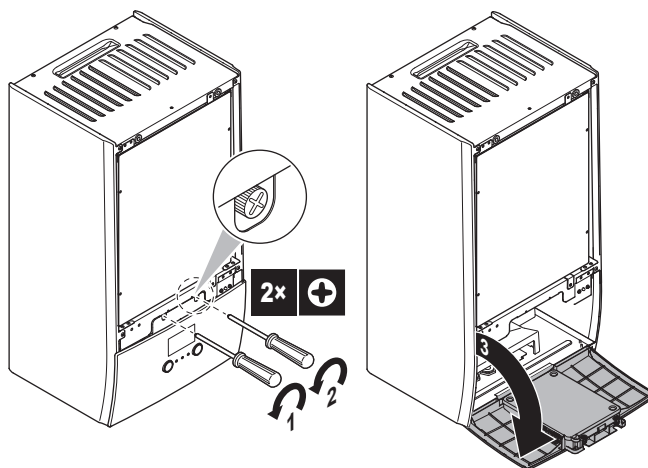
- 2** If you have to connect electrical wiring, remove the switch box cover.



- 3** If you have to do work behind the switch box, open the switch box.



- 4** If you have to do work behind the user interface panel or upload new software into the user interface, open the user interface panel.

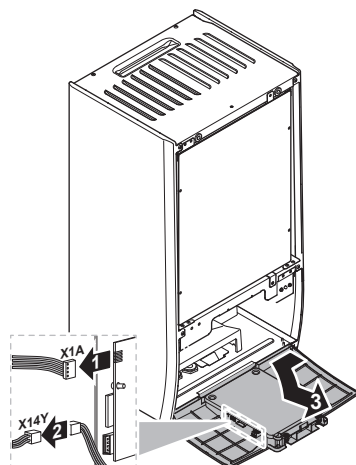


5 Optional: Remove the user interface panel.



NOTICE

If you remove the user interface panel, also disconnect the cables from the back of the user interface panel to prevent damage.



4.21 Reactor

4.21.1 Checking procedures

To perform an electrical check of the reactor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

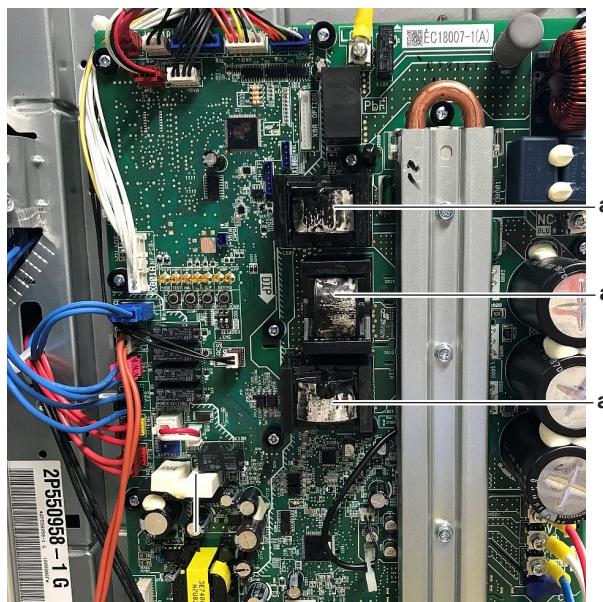
- 1 Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].



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 "[4.21.2 Repair procedures](#)" [▶ 209].
- 3 Check that the reactors are firmly installed on the main PCB.



a Reactor

- 4 Using a megger device of 500 V DC, check the insulation resistance. Make sure there is no ground leakage.

Is the measured insulation resistance correct?	Action
Yes	Continue with the next step.
No	Replace the reactor, see "4.21.2 Repair procedures" [▶ 209].

- 5 Measure the continuity of the reactor.

Is the continuity measurement correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next step.
No	Replace the reactor, see "4.21.2 Repair procedures" [▶ 209].

4.21.2 Repair procedures

As the reactors are part of the main PCB, replace the complete main PCB. See ["4.17 Main PCB"](#) [▶ 180].

4.22 Refrigerant pressure sensor

4.22.1 Checking procedures

To perform an electrical check of the refrigerant pressure sensor

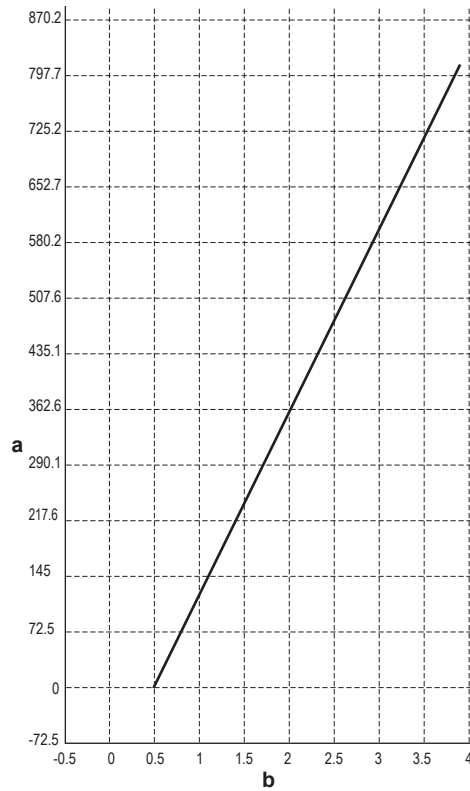
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Turn ON the power of the unit.
- 2 Start the unit operation and let it operate for a while in stable conditions.

- 3 Near the refrigerant pressure sensor, measure the refrigerant temperature using a contact thermometer.
- 4 Using the R32 refrigerant thermodynamic properties table (see R32 refrigerant service manual for more information), determine the refrigerant pressure that corresponds with the measured refrigerant temperature.
- 5 Using the graphic below, determine the expected sensor output voltage based on the pressure obtained in the previous step.



a Detected pressure (PSI)
b Output voltage (V DC)

V (DC)	Detected pressure
0.5	0.00 PSI (0.00 MPa)
0.6	24.7 PSI (0.17 MPa)
0.7	47.9 PSI (0.33 MPa)
0.8	72.5 PSI (0.50 MPa)
0.9	97.2 PSI (0.67 MPa)
1.0	120.4 PSI (0.83 MPa)
1.1	145.0 PSI (1.00 MPa)
1.2	169.7 PSI (1.17 MPa)
1.3	192.9 PSI (1.33 MPa)
1.4	217.6 PSI (1.50 MPa)
1.5	242.2 PSI (1.67 MPa)
1.6	265.4 PSI (1.83 MPa)
1.7	290.1 PSI (2.00 MPa)
1.8	314.7 PSI (2.17 MPa)

V (DC)	Detected pressure
1.9	337.9 PSI (2.33 MPa)
2.0	362.6 PSI (2.50 MPa)
2.1	387.3 PSI (2.67 MPa)
2.2	410.5 PSI (2.83 MPa)
2.3	435.1 PSI (3.00 MPa)
2.4	459.8 PSI (3.17 MPa)
2.5	483.0 PSI (3.33 MPa)
2.6	507.6 PSI (3.50 MPa)
2.7	532.3 PSI (3.67 MPa)
2.8	555.5 PSI (3.83 MPa)
2.9	580.2 PSI (4.00 MPa)
3.0	604.8 PSI (4.17 MPa)
3.1	628.0 PSI (4.33 MPa)
3.2	652.7 PSI (4.50 MPa)
3.3	677.3 PSI (4.67 MPa)
3.4	700.5 PSI (4.83 MPa)
3.5	725.2 PSI (5.00 MPa)
3.6	749.8 PSI (5.17 MPa)
3.7	773.1 PSI (5.33 MPa)
3.8	797.7 PSI (5.50 MPa)
3.9	822.4 PSI (5.67 MPa)

- 6 Measure the voltage on X17A: pins 1–3 (= refrigerant pressure sensor output signal).
- 7 Check that the measured voltage is in line with the expected voltage through the read refrigerant pressure.



INFORMATION

Connect the service monitoring tool to monitor the high pressure.

If the measured output voltage value matches the voltage determined through the measured pressure, but the pressure via the service monitoring tool is NOT correct, replace the applicable 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 Unplug the refrigerant pressure sensor connector X17A and measure the voltage (power supply) between pins 3–4 on main PCB.

Result: The measured voltage MUST be +5 V DC.

Is the measured voltage +5 V DC?	Then
Yes	Replace the refrigerant pressure sensor, see "4.22.2 Repair procedures" [▶ 212].
No	Perform a check of the main PCB, see "4.17 Main PCB" [▶ 180].

4.22.2 Repair procedures

To remove the refrigerant pressure sensor

Prerequisite: Stop the unit operation via the user interface.

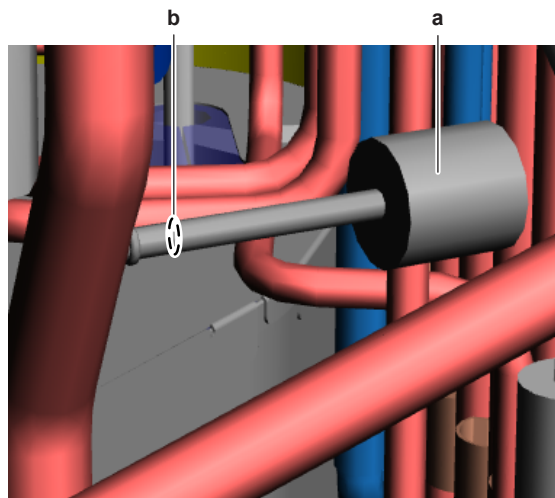
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.20 Plate work" [▶ 202].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▶ 268].

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 refrigerant pressure sensor connector from the PCB.
- 3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 2.9 PSI (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

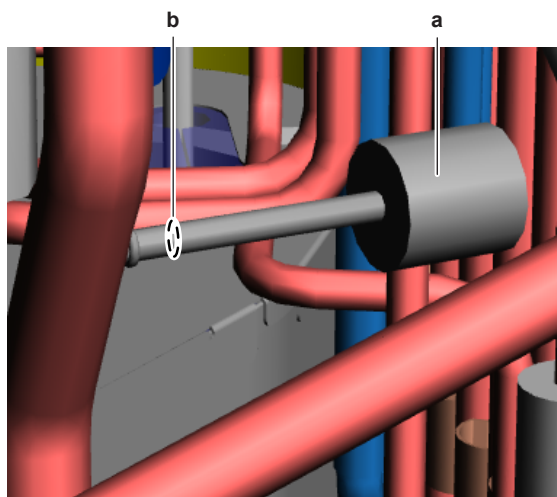
It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

- 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 ["4.22.2 Repair procedures"](#) [▶ 212].

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 2.9 PSI (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
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 Route the refrigerant pressure sensor harness towards the appropriate PCB.
- 7 Connect the refrigerant pressure sensor connector to the appropriate PCB.
- 8 Fix the refrigerant pressure sensor harness using new tie straps.
- 9 Perform a pressure test, see ["5.2.1 Checking procedures"](#) [▶ 263].
- 10 Add refrigerant to the refrigerant circuit, see ["5.2.2 Repair procedures"](#) [▶ 268].

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.

4.23 Solenoid valve

4.23.1 Checking procedures



INFORMATION

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

To perform a mechanical check of the solenoid valve

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.20 Plate work" [▶ 202].

- 1 Verify that the coil screw is firmly fixing the coil to the valve body.
- 2 Check coil and coil wires if any damage or burst is present.
- 3 Visually check:
 - For oil drops around the solenoid valve. Locate and fix as needed.
 - Pipes for signs of damage. Replace pipes as needed.

Is the solenoid valve coil firmly fixed and not visually damaged?	Action
Yes	Perform an electrical check of the solenoid valve, see "4.23.1 Checking procedures" [▶ 214].
No	Fix or replace the solenoid valve coil, see "4.23.2 Repair procedures" [▶ 216].

To perform an electrical check of the solenoid valve

Prerequisite: First perform a mechanical check of the solenoid valve, see "4.23.1 Checking procedures" [▶ 214].

- 1 Unplug the solenoid valve connector from the appropriate PCB.
- 2 Measure the resistance of the solenoid valve coil.

Name	Symbol	Location (PCB)	Connector	Winding resistance
Low pressure by-pass valve	Y2S	Main	X26A	1.6 kΩ±10%
Hot gas by-pass valve	Y3S	Main	X27A	1.6 kΩ±10%
Liquid injection valve	Y4S	ACS digital I/O	X7A	1.6 kΩ±10%

Is the measured value correct?	Action
Yes	Continue with the next step.
No	Replace the solenoid valve coil, see "4.23.2 Repair procedures" [▶ 216].

- 3 Re-connect the solenoid valve connector to the appropriate PCB.
- 4 Turn ON the power using the respective circuit breaker.
- 5 Turn on the unit using the user interface.

- 6 Connect the service monitoring tool to the unit and check if the specific solenoid valve is activated or NOT.
- 7 Measure the voltage (power supply) on the solenoid valve connection on the PCB. The measured voltage MUST be:
 - 0 V AC when the solenoid valve is NOT activated
 - 230 V AC when the solenoid valve is activated
- 8 Wait for the activation or deactivation of the specific solenoid valve and again measure the voltage (power supply) on the solenoid valve connection on the PCB.

For Y2S and Y3S

Are the measured voltages correct?	Action
Yes	Perform an operation check of the solenoid valve, see " 4.23.1 Checking procedures " [▶ 214].
No	Perform a check of the main PCB, see " 4.17 Main PCB " [▶ 180].

For Y4S

Are the measured voltages correct?	Action
Yes	Perform an operation check of the solenoid valve, see " 4.23.1 Checking procedures " [▶ 214].
No	Perform a check of the ACS digital I/O PCB, see " 4.3.1 Checking procedures " [▶ 113].

To perform an operation check of the solenoid valve

Prerequisite: First perform an electrical check of the solenoid valve, see "[4.23.1 Checking procedures](#)" [▶ 214].

- 1 Connect the service monitoring tool to the unit and check if the specific solenoid valve is activated or NOT.
- 2 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
- 3 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 "[4.23.2 Repair procedures](#)" [▶ 216].
- 4 If the solenoid valve is open, check with a contact thermometer (or by touching) if refrigerant flows through the solenoid valve.
- 5 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.

Is the solenoid valve operating correctly?	Action
No	Replace the solenoid valve body, see "4.23.2 Repair procedures" [▶ 216].

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.

4.23.2 Repair procedures

To remove the solenoid valve coil

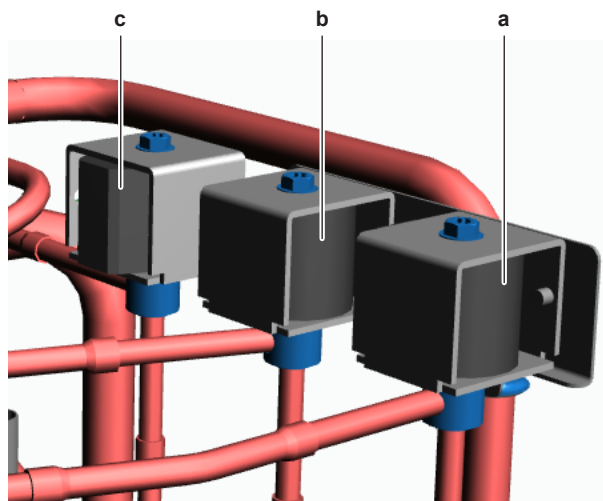
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

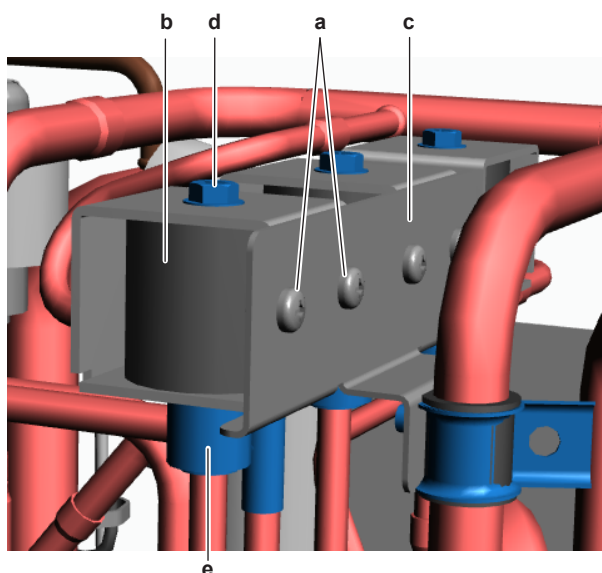
Prerequisite: Remove the required plate work, see "4.20 Plate work" [▶ 202].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

- 1 For the low pressure by-pass solenoid valve Y2S and the hot gas by-pass solenoid valve Y3S ONLY: Remove the screws that fix the solenoid valve to the bracket.



- a Solenoid valve Y2S
- b Solenoid valve Y3S
- c Solenoid valve Y4S



- a Screw
- b Solenoid valve coil
- c Bracket
- d Screw
- e Solenoid valve body

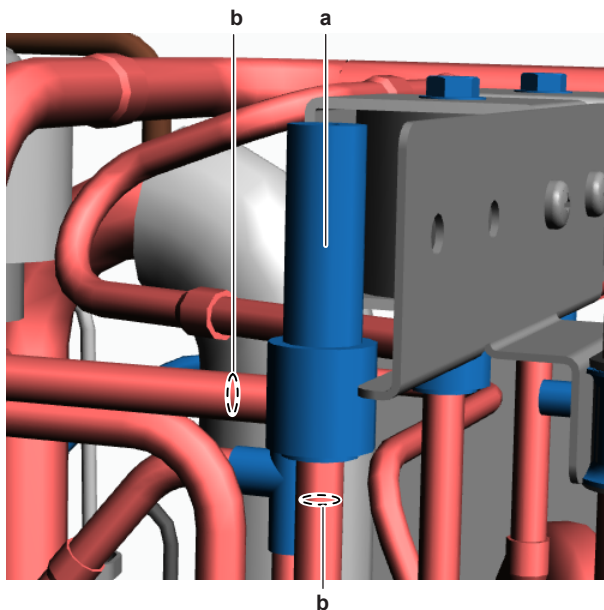
- 2 Remove the screw that fixes the solenoid valve coil to the solenoid valve body.
- 3 Remove the solenoid valve coil from the solenoid valve body.
- 4 Disconnect the solenoid valve connector from the appropriate PCB.
- 5 Cut all tie straps that fix the solenoid valve harness.
- 6 To install the solenoid valve coil, see "[4.23.2 Repair procedures](#)" [▶ 216].

To remove the solenoid valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "[5.2.2 Repair procedures](#)" [▶ 268].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

- 1 Remove the solenoid valve coil, see "[4.23.2 Repair procedures](#)" [▶ 216].
- 2 Remove the insulation from the solenoid valve pipes (if applicable). Keep for reuse.
- 3 Using a valve magnet, open the solenoid valve.
- 4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 2.9 PSI (0.02 MPa).
- 5 Wrap a wet rag around the components near the solenoid valve body pipes. Heat the brazing points of the solenoid valve body pipes using an oxygen acetylene torch and remove the solenoid valve body pipes from the refrigerant pipes using pliers.



- a Solenoid valve body
- b Pipe

- 6 Stop the nitrogen supply when the piping has cooled down.
- 7 Remove the solenoid valve body.



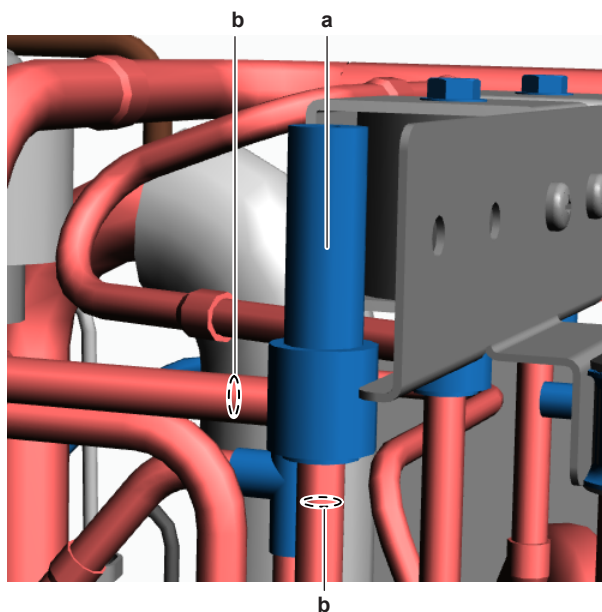
INFORMATION

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.

- 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 "[4.23.2 Repair procedures](#)" [▶ 216].

To install the 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 2.9 PSI (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 Solenoid valve body
- b Pipe

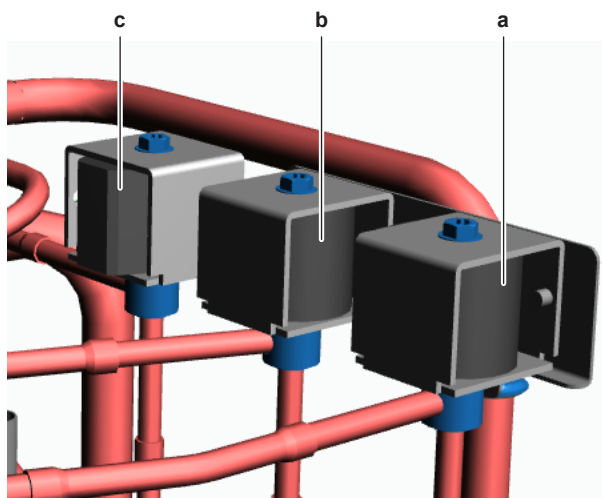
**CAUTION**

Overheating the valve will damage or destroy it.

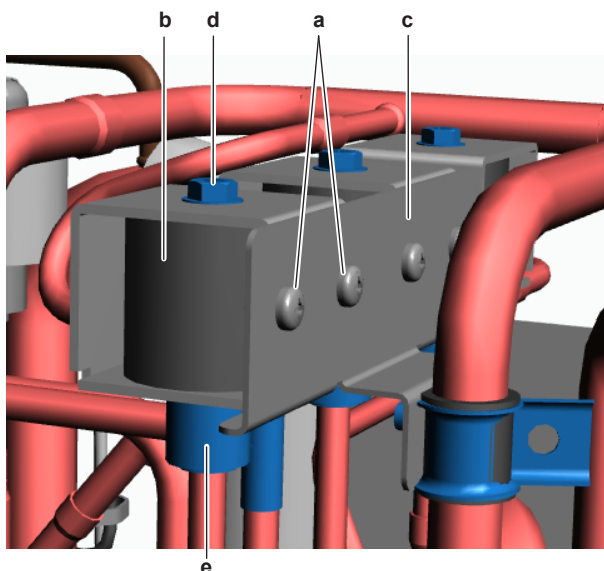
- 7 After brazing is done, stop the nitrogen supply after the component has cooled-down.
- 8 Install the insulation in the original location on the oil return valve pipes (if applicable).
- 9 Install the solenoid valve coil, see "[4.23.2 Repair procedures](#)" [▶ 216].
- 10 Perform a pressure test, see "[5.2.1 Checking procedures](#)" [▶ 263].
- 11 Add refrigerant to the refrigerant circuit, see "[5.2.2 Repair procedures](#)" [▶ 268].

To install the solenoid valve coil

- 1 Install the solenoid valve coil on the solenoid valve body.



- a Solenoid valve Y2S
- b Solenoid valve Y3S
- c Solenoid valve Y4S



- a Screw
- b Solenoid valve coil
- c Bracket
- d Screw
- e Solenoid valve body

- 2 Install and tighten the screw to fix the solenoid valve coil to the solenoid valve body.
- 3 For the low pressure by-pass solenoid valve Y2S and the hot gas by-pass solenoid valve Y3S ONLY: Install and tighten the screws to fix the solenoid valve to the bracket.
- 4 Route the solenoid valve harness towards the switch box.
- 5 Connect the solenoid valve connector to the appropriate PCB.



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.

- 6 Fix the solenoid valve harness using new tie straps.



INFORMATION

Replace all cable ties that were cut during removal.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.23.1 Checking procedures " [▶ 214] of the solenoid valve and continue with the next procedure.

4.24 Thermistors

4.24.1 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 respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 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 " [▶ 221].
No	Correctly install the thermistor, see " Repair procedures " [▶ 225].

To perform an electrical check of the specific thermistor

- 1 First perform a mechanical check of the thermistor, see "[Checking procedures](#)" [▶ 221].
- 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)	Connector (pins)	Intermediate connector (pins)	Reference (table)
Air thermistor	R1T	Main (O/U)	X11A:1-2	-	A
Discharge pipe thermistor	R2T	Main (O/U)	X12A:1-2	-	B
Suction thermistor	R3T	Main (O/U)	X12A:3-4	-	A
Heat exchanger thermistor	R4T	Main (O/U)	X12A:5-6	-	A

Name	Symbol	Location (PCB)	Connector (pins)	Intermediate connector (pins)	Reference (table)
Heat exchanger (middle) thermistor	R5T	Main (O/U)	X12A:7-8	-	A
Refrigerant liquid thermistor	R6T	Main (O/U)	X13A: 1-2	-	A
Compressor protection (shell) thermistor	R7T	Main (O/U)	X13A: 3-4	Yes ^(a)	B
Compressor protection (port) thermistor	R8T	Main (O/U)	X13A: 5-6	Yes ^(a)	B

^(a) Thermistor has intermediate connector (symbol unknown).

- 4** Determine the thermistor resistance that matches the measured temperature.

Thermistor – Table A

T °F	kΩ	T °F	kΩ	T °F	kΩ	T °F	kΩ
-4.0	197.81	50.0	39.96	104.0	10.63	158.0	3.44
-2.2	186.53	51.8	38.08	105.8	10.21	159.8	3.32
-0.4	175.97	53.6	36.30	107.6	9.81	161.6	3.21
1.4	166.07	55.4	34.62	109.4	9.42	163.4	3.11
3.2	156.80	57.2	33.02	111.2	9.06	165.2	3.01
5.0	148.10	59.0	31.50	113.0	8.71	167.0	2.91
6.8	139.94	60.8	30.06	114.8	8.37	168.8	2.82
8.6	132.28	62.6	28.70	116.6	8.05	170.6	2.72
10.4	125.09	64.4	27.41	118.4	7.75	172.4	2.64
12.2	118.34	66.2	26.18	120.2	7.46	174.2	2.55
14.0	111.99	68.0	25.01	122.0	7.18	176.0	2.47

T °F	kΩ	T °F	kΩ	T °F	kΩ	T °F	kΩ
15.8	106.03	69.8	23.91	123.8	6.91		
17.6	100.41	71.6	22.85	125.6	6.65		
19.4	95.14	73.4	21.85	127.4	6.41		
21.2	90.17	75.2	20.90	129.2	6.65		
23.0	85.49	77.0	20.00	131.0	6.41		
24.8	81.08	78.8	19.14	132.8	6.18		
26.6	76.93	80.6	18.32	134.6	5.95		
28.4	73.01	82.4	17.54	136.4	5.74		
30.2	69.32	84.2	16.80	138.2	5.14		
32.0	65.84	86.0	16.10	140.0	4.87		
33.8	62.54	87.8	15.43	141.8	4.70		
35.6	59.43	89.6	14.79	143.6	4.54		
37.4	56.49	91.4	14.18	145.4	4.38		
39.2	53.71	93.2	13.59	147.2	4.23		
41.0	51.09	95.0	13.04	149.0	4.08		
42.8	48.61	96.8	12.51	150.8	3.94		
44.6	46.26	98.6	12.01	152.6	3.81		
46.4	44.05	100.4	11.52	154.4	3.68		
48.2	41.95	102.2	11.06	156.2	3.56		

Thermistor – Table B

T °F	kΩ	T °F	kΩ	T °F	kΩ	T °F	kΩ
32	806.5	104	118.7	176	25.38	248	7.131
41	618.9	113	96.13	185	21.37	257	6.181
50	478.8	122	78.29	194	18.06	266	5.374
59	373.1	131	64.1	203	15.33	275	4.686
68	292.9	140	52.76	212	13.06	284	4.098
77	231.4	149	43.63	221	11.17	293	3.594
86	184.1	158	36.26	230	9.585	302	3.161
95	147.4	167	30.27	239	8.254		

- 5 Disconnect the thermistor connector from the appropriate PCB.
- 6 Measure the resistance between the appropriate pins of the thermistor connector.
- 7 Check that the measured resistance value matches the resistance determined through the measured temperature (earlier step in the procedure).

- E.g. R1T thermistor:
- Measured temperature with contact thermometer: 73.6°F (23.1°C),
- Resistance value determined through temperature (using the thermistor table A):
Resistance at 73.4°F (23°C): 21.85 kΩ,
Resistance at 75.2°F (24°C): 20.90 kΩ,
- Disconnect connector and measure resistance between X11A pin 1-2:
Measured resistance: 21.80 kΩ,
- Measured resistance value is inside the range. R1T thermistor passes the check.

i **INFORMATION**
All thermistors have a resistance tolerance of 3%.

i **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.

i **INFORMATION**
See the overview of the thermistors at the start of the procedure and the "[7.2 Wiring diagram](#)" [▶ 298] to determine if the specific thermistor is either:

- Directly connected to the PCB
- Connected to an intermediate connector or terminal 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?	Action
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 " [▶ 225].

- FOR THERMISTORS CONNECTED TO AN INTERMEDIATE CONNECTOR OR TERMINAL

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 from the intermediate connector or terminal and measure the resistance of the thermistor (between the appropriate thermistor wires or pins of the connector).

Does the measured resistance of the thermistor match with the temperature determined resistance?	Action
Yes	Correct the wiring between the thermistor connector on the PCB and the intermediate connector or terminal, see "7.2 Wiring diagram" [▶ 298].
No	Replace the specific thermistor, see "Repair procedures" [▶ 225].

Repair procedures

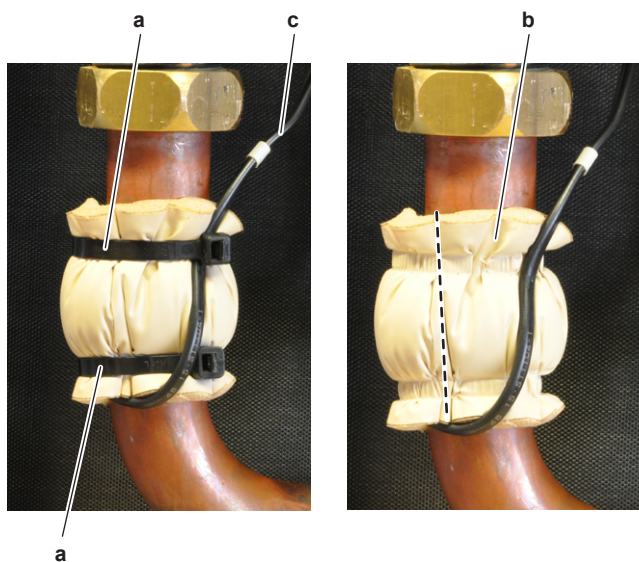
To remove the thermistor

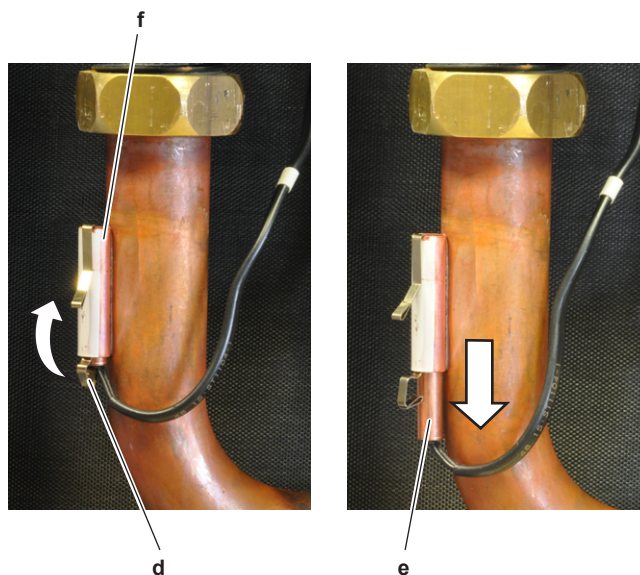
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Locate the thermistor that needs to be removed.
- 2 Remove the thermistor from the thermistor holder as follows:
 - For air (ambient) thermistor:
Open the thermistor holder and remove the thermistor from the holder.
 - For refrigerant piping thermistors:
 - Cut the tie straps that fix the insulation and the thermistor wire.
 - Cut and remove the insulation.
 - Pull the clip that fixes the thermistor.
 - Remove the thermistor from the thermistor holder.





- a Tie strap
- b Insulation
- c Thermistor wire
- d Clip
- e Thermistor
- f Thermistor holder

3 Cut all tie straps that fix the thermistor harness.



INFORMATION

See the overview of the thermistors at the start of the electrical check procedure and the "[7.2 Wiring diagram](#)" [▶ 298] to determine if the specific thermistor is either:

- Directly connected to the PCB
- Connected to an intermediate connector which is connected to the PCB

4 If connected to an intermediate connector, disconnect the thermistor connector from the intermediate connector. If directly connected to the PCB, disconnect the thermistor connector from the PCB.



INFORMATION

Some of the thermistors are wired to the same connector. See connector and pin information of the thermistors at the start of the electrical check procedure and "[7.2 Wiring diagram](#)" [▶ 298]. ALWAYS replace the complete set of thermistors wired to the same connector.

5 When removing the complete set of thermistors wired to the same connector:

- Remove all other thermistors wired to the connector from their thermistor holder,
- Cut all tie straps that fix the thermistor wiring harness,
- Disconnect the thermistor connector,
- Remove the complete set of thermistors.

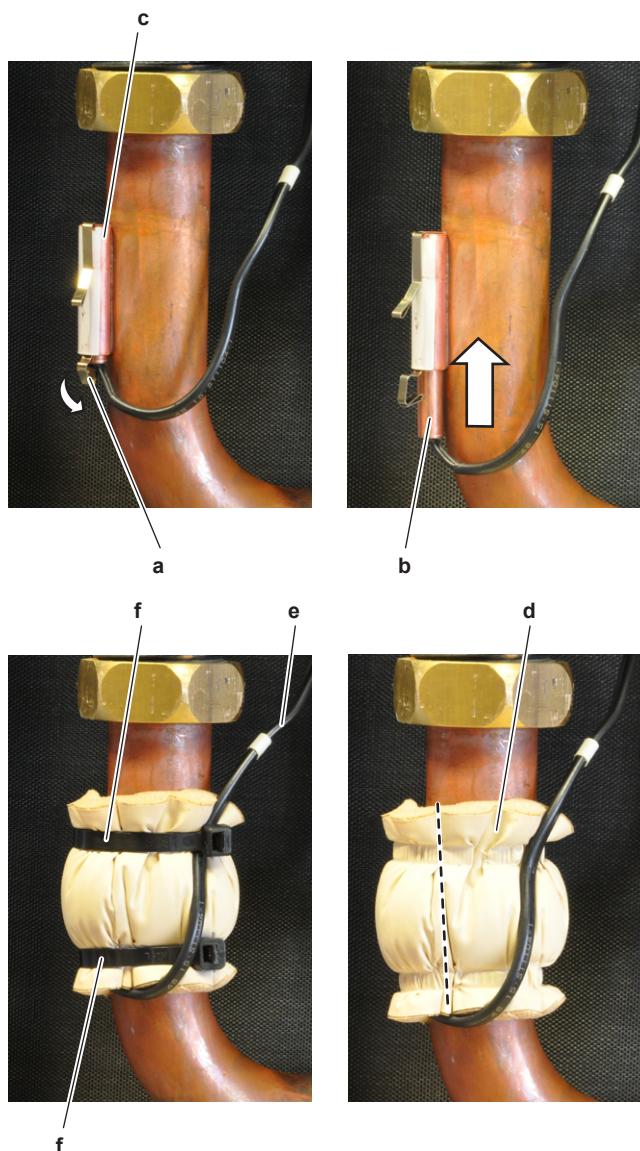
6 To install the thermistor, see "[Repair procedures](#)" [▶ 225].

To install the thermistor

1 Install the thermistor in the thermistor holder as follows:

- For air (ambient) thermistor:
Correctly install the thermistor in the holder and close the thermistor holder.

- For refrigerant piping thermistors:
Pull the clip and install the thermistor in the specific thermistor holder. Make sure the clip is in the correct position (blocking the thermistor).



- a Clip
- b Thermistor
- c Thermistor holder
- d Insulation
- e Thermistor wire
- f Tie strap



INFORMATION

See the overview of the thermistors at the start of the electrical check procedure and the "7.2 Wiring diagram" [▶ 298] to determine if the specific thermistor is either:

- Directly connected to the PCB
- Connected to an intermediate connector which is connected to the PCB

- 2 Route the thermistor harness towards the appropriate PCB or intermediate connector.
- 3 If connected to an intermediate connector, connect the thermistor connector to the intermediate connector. If directly connected to the PCB, connect the thermistor connector to the appropriate PCB.



INFORMATION

Some of the thermistors are wired to the same connector. See connector and pin information of the thermistors at the start of the electrical check procedure and "7.2 Wiring diagram" [▶ 298]. ALWAYS replace the complete set of thermistors wired to the same connector.

- 4 When installing the complete set of thermistors wired to the same connector:
 - Install all other thermistors wired to the connector in their thermistor holder,
 - Route the thermistor harness of all thermistors towards the appropriate PCB or intermediate connector,
 - Connect the thermistor connector.



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.

- 5 Fix the thermistor harness using new tie straps
- 6 Install the insulation around the thermistor.
- 7 Fix the insulation and the thermistor wire 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.

4.24.2 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 respective circuit breaker.

- 1 Remove the required plate work, see "4.20 Plate work" [▶ 202].
- 2 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.

Is the thermistor correctly installed?	Action
Yes	Perform an electrical check of the specific thermistor, see "Checking procedures" [▶ 228].
No	Correctly install the thermistor, see "Repair procedures" [▶ 231].

To perform an electrical check of the specific thermistor

- 1 First perform a mechanical check of the thermistor, see "[Checking procedures](#)" [▶ 228].
- 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.

Outdoor units

Name	Symbol	Location (PCB)	Connector (pins)	Intermediate connector (pins)	Reference (table)
Inlet water thermistor (outdoor unit side)	R9T	A4P (O/U)	X11A: 1-2	–	A
Outlet water after plate type heat exchanger thermistor	R10T	A4P (O/U)	X12A: 1-2	–	A

Indoor units

Name	Symbol	Location (PCB)	Connector (pins)	Intermediate connector (pins)	Reference (table)
Inlet water thermistor (indoor unit side)	R1T	Hydro (I/U)	X5A: 1-2	–	A
Outlet water after backup heater thermistor	R2T	Hydro (I/U)	X6A: 1-2	–	A
Domestic hot water tank thermistor (ONLY with optional domestic hot water tank installed)	R5T	Hydro (I/U)	X9A: 1-2	–	B

- 4 Determine the thermistor resistance that matches the measured temperature.

Thermistor – Table A

T °F	kΩ	T °F	kΩ	T °F	kΩ	T °F	kΩ
-4.0	197.81	50.0	39.96	104.0	10.63	158.0	3.44
-2.2	186.53	51.8	38.08	105.8	10.21	159.8	3.32
-0.4	175.97	53.6	36.30	107.6	9.81	161.6	3.21
1.4	166.07	55.4	34.62	109.4	9.42	163.4	3.11
3.2	156.80	57.2	33.02	111.2	9.06	165.2	3.01
5.0	148.10	59.0	31.50	113.0	8.71	167.0	2.91
6.8	139.94	60.8	30.06	114.8	8.37	168.8	2.82
8.6	132.28	62.6	28.70	116.6	8.05	170.6	2.72
10.4	125.09	64.4	27.41	118.4	7.75	172.4	2.64
12.2	118.34	66.2	26.18	120.2	7.46	174.2	2.55
14.0	111.99	68.0	25.01	122.0	7.18	176.0	2.47
15.8	106.03	69.8	23.91	123.8	6.91		
17.6	100.41	71.6	22.85	125.6	6.65		
19.4	95.14	73.4	21.85	127.4	6.41		
21.2	90.17	75.2	20.90	129.2	6.65		
23.0	85.49	77.0	20.00	131.0	6.41		
24.8	81.08	78.8	19.14	132.8	6.18		
26.6	76.93	80.6	18.32	134.6	5.95		
28.4	73.01	82.4	17.54	136.4	5.74		
30.2	69.32	84.2	16.80	138.2	5.14		
32.0	65.84	86.0	16.10	140.0	4.87		
33.8	62.54	87.8	15.43	141.8	4.70		
35.6	59.43	89.6	14.79	143.6	4.54		
37.4	56.49	91.4	14.18	145.4	4.38		
39.2	53.71	93.2	13.59	147.2	4.23		
41.0	51.09	95.0	13.04	149.0	4.08		
42.8	48.61	96.8	12.51	150.8	3.94		
44.6	46.26	98.6	12.01	152.6	3.81		
46.4	44.05	100.4	11.52	154.4	3.68		
48.2	41.95	102.2	11.06	156.2	3.56		

Thermistor – Table B

T °F	kΩ	T °F	kΩ	T °F	kΩ	T °F	kΩ
32	806.5	104	118.7	176	25.38	248	7.131
41	618.9	113	96.13	185	21.37	257	6.181
50	478.8	122	78.29	194	18.06	266	5.374
59	373.1	131	64.1	203	15.33	275	4.686
68	292.9	140	52.76	212	13.06	284	4.098
77	231.4	149	43.63	221	11.17	293	3.594
86	184.1	158	36.26	230	9.585	302	3.161
95	147.4	167	30.27	239	8.254		

- 5 Disconnect the thermistor connector from the appropriate PCB and measure the resistance between the appropriate pins of the thermistor connector.
- 6 Check that the measured resistance value matches the resistance determined through the measured temperature (earlier step in the procedure). E.g. R9T thermistor:
 - Measured temperature with contact thermometer: 73.6°F (23.1°C),
 - Resistance value determined through temperature (using the thermistor table A):
Resistance at 73.4°F (23°C): 21.85 kΩ,
Resistance at 75.2°F (24°C): 20.90 kΩ,
 - Disconnect connector and measure resistance between X11A pin 1-2:
Measured resistance: 21.86 kΩ,
 - Measured resistance value is inside the range ±10%. R9T 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?	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" [▶ 231].

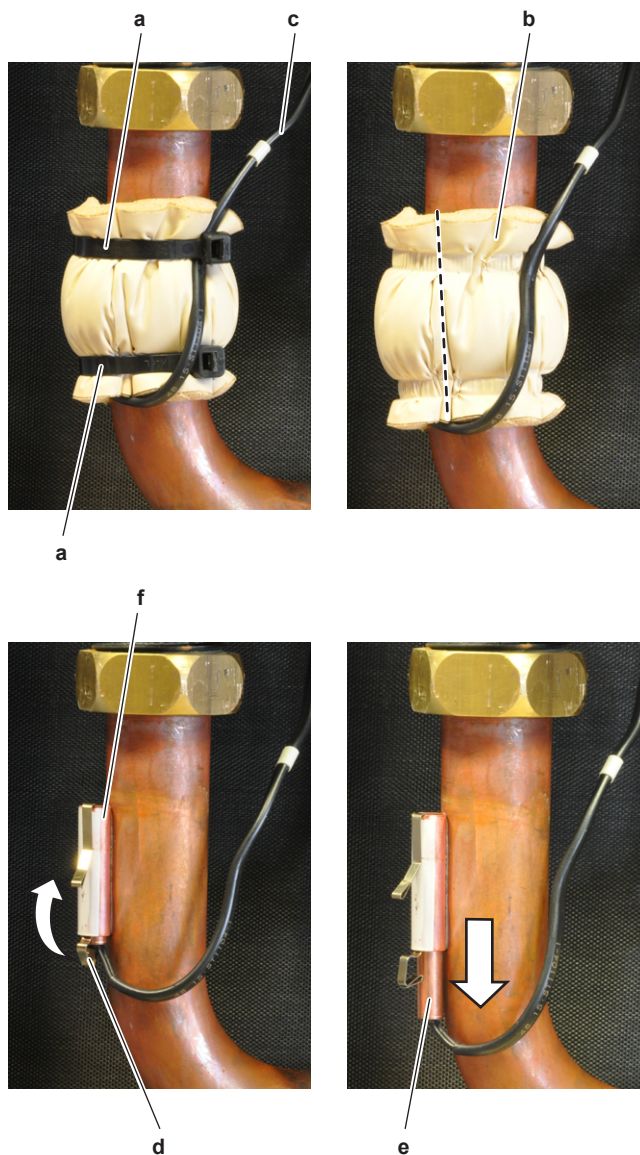
Repair procedures**To remove the thermistor**

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [[▶ 202](#)].

- 1 Locate the thermistor that needs to be removed.
- 2 Cut the tie straps that fix the insulation and the thermistor wire.

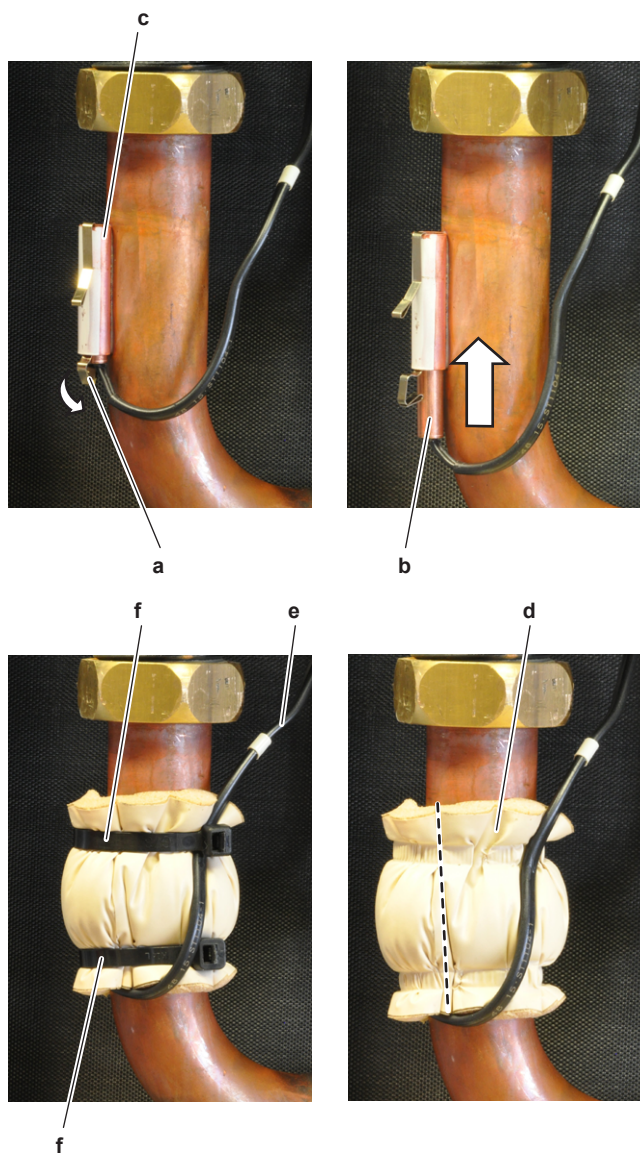


- a Tie strap
- b Insulation
- c Thermistor wire
- d Clip
- e Thermistor
- f Thermistor holder

- 3 Cut and remove the insulation.
- 4 Pull the clip that fixes the thermistor.
- 5 Remove the thermistor from the thermistor holder.
- 6 Disconnect the thermistor connector from the appropriate PCB and remove the thermistor.
- 7 To install the thermistor, see "[Repair procedures](#)" [[▶ 231](#)].

To install the thermistor

- 1 Pull the clip and install the thermistor in the specific thermistor holder. Make sure the clip is in the correct position (blocking the thermistor).



- a Clip
- b Thermistor
- c Thermistor holder
- d Insulation
- e Thermistor wire
- f Tie strap

- 2 Install the insulation around the thermistor.
- 3 Fix the insulation and the thermistor wire using new tie straps.
- 4 Connect the thermistor connector to the appropriate PCB.

**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 problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.24.3 Other thermistors

Checking procedures**To perform an electrical check of the fin thermistor**

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.20 Plate work" [▶ 202].

- 1 Locate the thermistor on the appropriate PCB.
- 2 Measure the temperature using a contact thermometer.

Name	Symbol	Location (PCB)	Connector (pins)	Reference (table)
Radiation fin thermistor	R11T	Main (O/U)	X111A: 1-2	A

**INFORMATION**

The thermistors may vary according to the specific unit.

- 3 Determine the thermistor resistance that matches the measured temperature.

Thermistor – Table A

T °F	kΩ	T °F	kΩ	T °F	kΩ	T °F	kΩ
-4.0	197.81	50.0	39.96	104.0	10.63	158.0	3.44
-2.2	186.53	51.8	38.08	105.8	10.21	159.8	3.32
-0.4	175.97	53.6	36.30	107.6	9.81	161.6	3.21
1.4	166.07	55.4	34.62	109.4	9.42	163.4	3.11
3.2	156.80	57.2	33.02	111.2	9.06	165.2	3.01
5.0	148.10	59.0	31.50	113.0	8.71	167.0	2.91
6.8	139.94	60.8	30.06	114.8	8.37	168.8	2.82
8.6	132.28	62.6	28.70	116.6	8.05	170.6	2.72
10.4	125.09	64.4	27.41	118.4	7.75	172.4	2.64
12.2	118.34	66.2	26.18	120.2	7.46	174.2	2.55
14.0	111.99	68.0	25.01	122.0	7.18	176.0	2.47

T °F	kΩ	T °F	kΩ	T °F	kΩ	T °F	kΩ
15.8	106.03	69.8	23.91	123.8	6.91		
17.6	100.41	71.6	22.85	125.6	6.65		
19.4	95.14	73.4	21.85	127.4	6.41		
21.2	90.17	75.2	20.90	129.2	6.65		
23.0	85.49	77.0	20.00	131.0	6.41		
24.8	81.08	78.8	19.14	132.8	6.18		
26.6	76.93	80.6	18.32	134.6	5.95		
28.4	73.01	82.4	17.54	136.4	5.74		
30.2	69.32	84.2	16.80	138.2	5.14		
32.0	65.84	86.0	16.10	140.0	4.87		
33.8	62.54	87.8	15.43	141.8	4.70		
35.6	59.43	89.6	14.79	143.6	4.54		
37.4	56.49	91.4	14.18	145.4	4.38		
39.2	53.71	93.2	13.59	147.2	4.23		
41.0	51.09	95.0	13.04	149.0	4.08		
42.8	48.61	96.8	12.51	150.8	3.94		
44.6	46.26	98.6	12.01	152.6	3.81		
46.4	44.05	100.4	11.52	154.4	3.68		
48.2	41.95	102.2	11.06	156.2	3.56		

- 4 Measure the resistance between the appropriate connection points of the thermistor.
- 5 Check that the measured resistance value matches the resistance determined through the measured temperature (earlier step in the procedure). E.g. R11T thermistor:
 - Measured temperature with contact thermometer: 73.6°F (23.1°C),
 - Resistance value determined through temperature (using the thermistor table A):
Resistance at 73.4°F (23°C): 21.85 kΩ,
Resistance at 75.2°F (24°C): 20.90 kΩ,
 - Measure resistance between X111A pin 1-2:
Measured resistance: 21.86 kΩ,
 - Measured resistance value is inside the range. R11T thermistor passes the check.

**INFORMATION**

All thermistors have a resistance tolerance of 3%.

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	Replace the specific PCB, see "4 Components" [▶ 99].

4.25 Transformer

4.25.1 Checking procedures

To perform an electrical check of the transformer

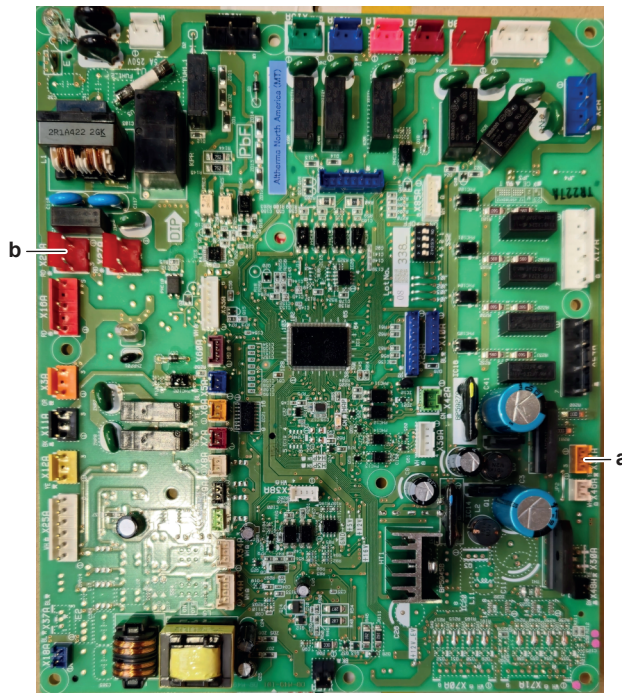
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.20 Plate work" [▶ 202].

- 1 Turn ON the power of the unit.
- 2 Measure the (transformer output) voltage between pins 1-3 of the connector X31A on the hydro PCB.

Result: The measured voltage MUST be 24 V AC.



a Connector X31A
b Connector X26A

Is the measured voltage on the hydro PCB correct?	Action
Yes	Transformer 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 (transformer input) voltage between pins 1-2 of connector X26A on the hydro PCB.

Result: The measured voltage MUST be 230 V AC.

Is the measured (transformer input) voltage correct?	Action
Yes	Replace the transformer, see "4.25.2 Repair procedures" [▶ 237].

Is the measured (transformer input) voltage correct?	Action
No	Perform a check of the hydro PCB, see "4.13.1 Checking procedures" [▶ 164].

4.25.2 Repair procedures

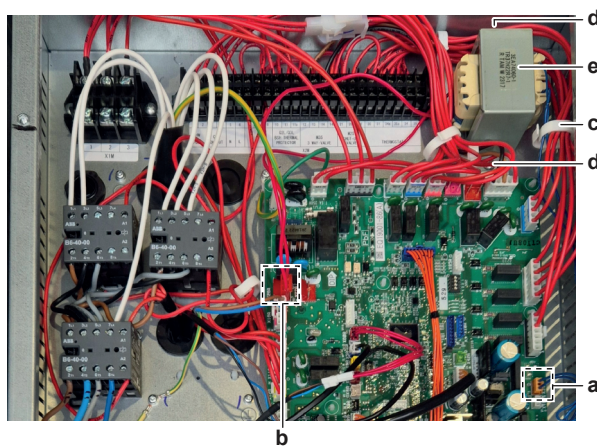
To remove the transformer

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Disconnect the transformer wiring (connectors X26A and X31A) from the hydro PCB.

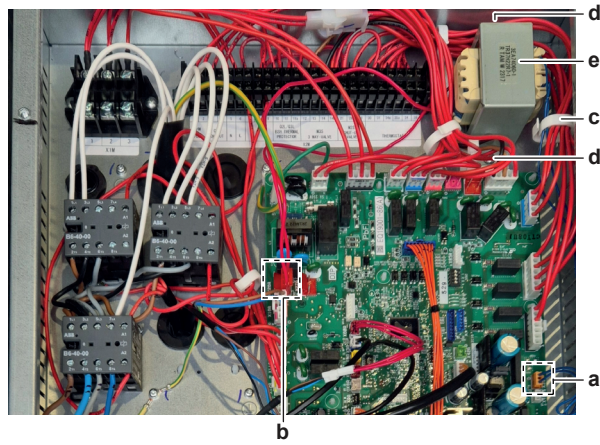


- a Connector X31A
- b Connector X26A
- c Cable clamp
- d Screw (transformer)
- e Transformer

- 2 Cut ALL tie straps that fix the transformer wiring.
- 3 Route the transformer wiring out of the cable clamp.
- 4 Remove the 2 screws that fix the transformer to the switch box.
- 5 Remove the transformer from the unit.
- 6 To install the transformer, see ["4.25.2 Repair procedures"](#) [▶ 237].


To install the transformer

- 1 Install the transformer in the correct location in the switch box.
- 2 Install and tighten the 2 screws to fix the transformer.




- a** Connector X31A
- b** Connector X26A
- c** Cable clamp
- d** Screw (transformer)
- e** Transformer

- 3** Route the transformer wiring through the appropriate cable clamp towards the hydro PCB.
- 4** Connect the transformer wiring (connectors X26A and X31A) to the hydro PCB.

 **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.


- 5** Install new tie straps (as needed) to fix the transformer wiring.

 **INFORMATION**
Replace all cable ties that were cut during removal.

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 User interface

4.26.1 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 respective circuit breaker.

- 1** Remove the user interface panel from the unit, see "4.20 Plate work" [▶ 202]. Make sure to keep it connected electrically.

- 2 Turn ON the power to the unit.
- 3 Measure the voltage on the connector X1A pins 1-4 OR connector X1B pins 1-2 (depending on which connector is installed) on the user interface main PCB.

Result: The measured voltage MUST be 12 V DC.

Does the user interface receive power?	Action
Yes	Check if the user interface functions correctly, see "4.26.1 Checking procedures" [▶ 238].
No	Continue with the next step.

- 4 Measure the voltage on the connector X48A on the hydro PCB.

Result: The measured voltage MUST be 12 V DC.

Is the measured voltage correct?	Action
Yes	Correct the wiring between the hydro PCB and the user interface, see "7.2 Wiring diagram" [▶ 298].
No	Perform a check of the hydro PCB, see "4.13.1 Checking procedures" [▶ 164].

To check the correct functioning of the user interface

Prerequisite: First perform a power check of the user interface, see ["4.26.1 Checking procedures"](#) [▶ 238].

- 1 Check the display for the following items:
 - Pinhole, bright spot, black spot, white spot, black line, white line, foreign particle, bubble:
The color of a small area is different from the remainder. The phenomenon does NOT change with voltage.
 - Contrast variation:
The color of a small area is different from the remainder. The phenomenon changes with voltage.
 - Polarizer defect:
Scratch, dirt, particle, bubble on polarizer or between polarizer 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 ["4.26.2 Repair procedures"](#) [▶ 241].

Does the user interface function correctly?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.

Does the user interface function correctly?	Action
No	Continue with the next step.

- 4 Perform a check of the communication wiring between the user interface and the unit PCB.



INFORMATION

Malfunction of the user interface might ALSO be caused by a faulty user interface PCB. Replace relevant PCB as needed, see ["4.26.2 Repair procedures"](#) [▶ 241].

Is the communication wiring correct?	Action
Yes	Replace the relevant part of the user interface, see "4.26.2 Repair procedures" [▶ 241].
No	Correct the wiring between the user interface and the unit PCB, see "7.2 Wiring diagram" [▶ 298].

To check the settings

- 1 See the relevant documentation (installer reference guide, ...) to check the specific setting.

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 "4.26.2 Repair procedures" [▶ 241].

To check the software and EEPROM version

- 1 Compare the software ID and EEPROM version of the user interface and the PCB with the ones provided in the Updater Tool. Re-install the software with the Updater Tool if versions do NOT match.

Is the installed software and EEPROM version correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Re-install the software with the Updater Tool see "4.26.2 Repair procedures" [▶ 241].

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 respective circuit breaker.

- 1 Remove the user interface panel from the unit, see ["4.20 Plate work"](#) [▶ 202]. Make sure to keep it connected electrically.
- 2 Make sure that all wires between the user interface connector X1A OR X1B (depending on which connector is installed) and the connector X18A on the

hydro PCB are firmly and correctly connected, see "7.2 Wiring diagram" [▶ 298].

- 3 Check the continuity of all wires.
- 4 Replace any damaged or broken wires.



INFORMATION

Correct the wiring 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.

4.26.2 Repair procedures

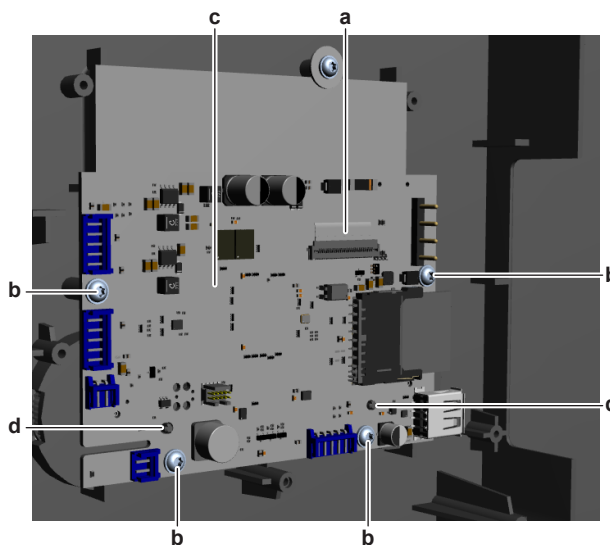
To remove the user interface

TO REMOVE THE USER INTERFACE MAIN PCB

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the user interface panel from the unit, see "4.20 Plate work" [▶ 202].
- 2 Remove the 4 screws and remove the cover at the back of the user interface panel.
- 3 Disconnect all wire connectors from the user interface main PCB.



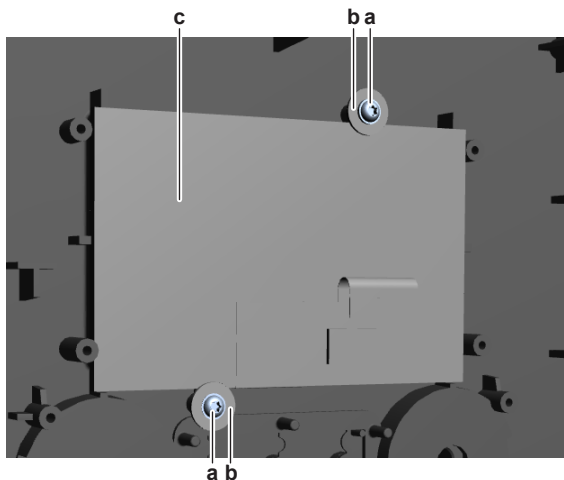
- a Display connector
- b Screw
- c User interface main PCB
- d PCB support

- 4 Disconnect the display connector from the user interface main PCB.
- 5 Remove the 4 screws from the user interface main PCB.
- 6 Carefully pull the user interface display PCB and unlatch the PCB supports one by one using a small pliers.
- 7 Carefully remove the user interface main PCB from the user interface panel while guiding the display connector through the hole in the PCB.

TO REMOVE THE USER INTERFACE DISPLAY

Prerequisite: Remove the user interface main PCB.

- 1 Remove the 2 screws and remove the 2 spacers.

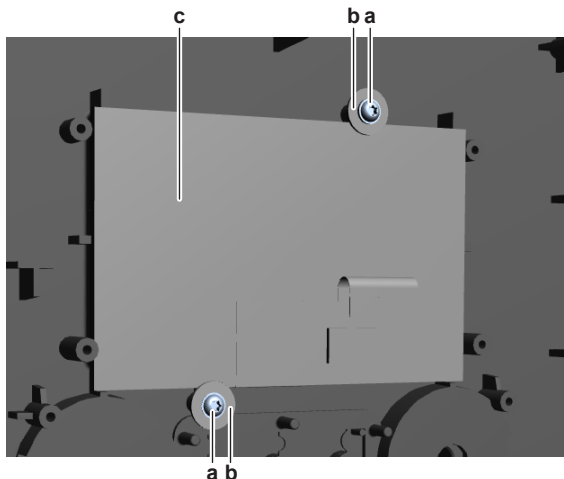


- a Screw
- b Spacer
- c User interface display

- 2 Carefully pull and remove the display from the user interface panel.
- 3 To install the user interface, see "[4.26.2 Repair procedures](#)" [▶ 241].

To install the user interface**TO INSTALL THE USER INTERFACE DISPLAY**

- 1 Install the user interface display in the correct location and correct orientation on the user interface panel.



- a Screw
- b Spacer
- c User interface display

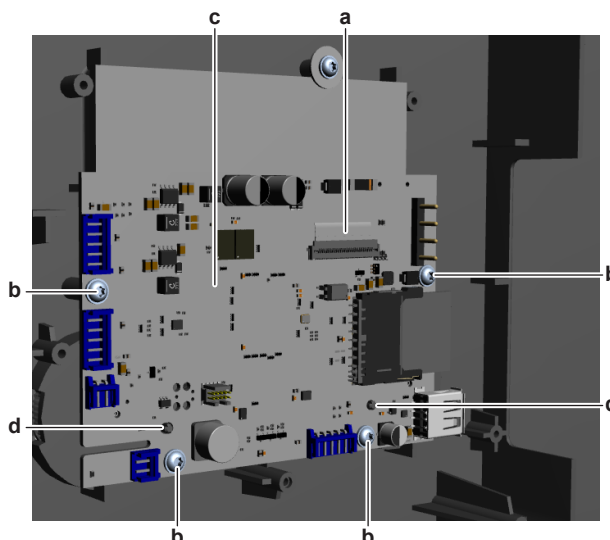
- 2 Install the 2 spacers. Install and tighten the 2 screws to fix the user interface display.

TO INSTALL THE USER INTERFACE MAIN PCB

Prerequisite: Make sure the user interface display is correctly installed.

- 1 Route the display connector through the hole in the user interface main PCB.
- 2 Carefully install the user interface main PCB on its PCB supports and make sure the display connector is positioned correctly.

- 3 Fix the user interface main PCB using the 4 screws.



- a Display connector
- b Screw
- c User interface main PCB
- d PCB support

- 4 Connect the display connector to the user interface main PCB.



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.

- 5 Connect all wire connectors to the user interface main PCB.
 6 Install the cover and fix it using the 4 screws.
 7 Install the user interface panel on 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 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.

To install the software

- 1 Install the software using the Updater Tool. See the Daikin Comfort website (authentication required) for more information about the Updater Tool.

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.

4.27 Water flow sensor

4.27.1 Checking procedures

To perform an electrical check of the water flow sensor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.20 Plate work" [▶ 202].

- 1 Turn ON the power of the unit.
- 2 Activate **Installer** on the user interface. See the installer reference guide for the correct procedure.
- 3 Go to **Actuator test run** via the user interface.
- 4 Activate the **Pump**.
- 5 Select **Flow rate**.

Result: The displayed flow rate MUST be 1.32~15.85 gal/min (5~60 l/min).

- 6 Measure the water flow with a calibrated external flow meter.
- 7 Measure the frequency on connector X34A between pins 2-3 (= flow sensor output signal) on the hydro PCB.



INFORMATION

The flow sensor connector MUST be plugged into X34A on hydro PCB.

- 8 Using the following formula, calculate the water flow rate:

$$\text{Flow rate [gal/min]} = ((\text{output frequency [Hz]} \times 0.3) - 1.2) \times 0.264$$
- 9 Check that the calculated water flow rate is in line with the measured water flow.



INFORMATION

In most cases, the user interface allows to monitor the water flow.

If the calculated water flow matches the measured water flow, but the water flow is NOT correct on the user interface display, replace the applicable PCB.

Do the measured and calculated water flow match?	Action
Yes	Water flow sensor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

- 10 Unplug the water flow sensor connector X34A and measure the voltage (power supply) between pins 1–2 on hydro PCB.

Result: The measured voltage MUST be +5 V DC.

Is measured voltage +5 V DC?	Then
Yes	Continue with the next step.
No	Perform a check of the hydro PCB, see "4.13.1 Checking procedures" [▶ 164].

- 11** Disconnect the water flow sensor harness from the water flow sensor and from the connector X34A. Measure the continuity of the wiring harness.

Is continuity of the wiring harness correct?	Action
Yes	Replace the water flow sensor, see "4.27.2 Repair procedures" [▶ 245].
No	Replace the water flow sensor harness, see "4.27.2 Repair procedures" [▶ 245].

4.27.2 Repair procedures

To remove the water flow sensor wiring harness

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Disconnect the connector from the water flow sensor.
- 2 Disconnect the other end of the wiring harness from the hydro PCB.
- 3 Cut all tie straps that fix the wiring harness, and remove the wiring harness from the unit.
- 4 To install the water flow sensor wiring harness, see ["4.27.2 Repair procedures"](#) [▶ 245].

To install the water flow sensor wiring harness

- 1 Connect the wiring harness to the connector X34A on the hydro PCB.
- 2 Route the wiring harness towards the water flow sensor and connect the wiring harness to the water flow sensor.
- 3 Fix the wiring harness using new tie straps.

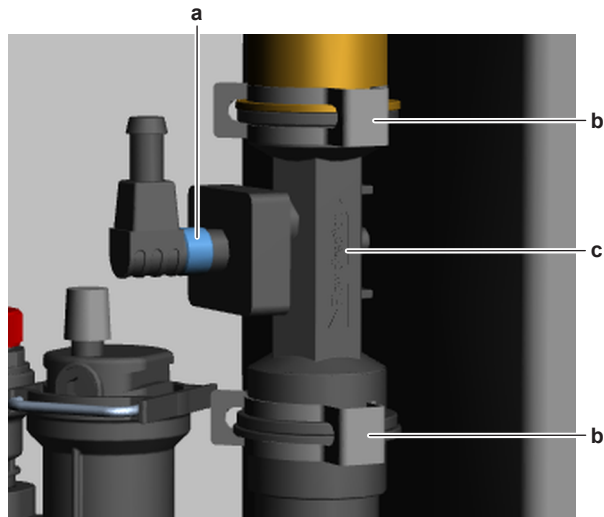
Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To remove the water flow sensor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].
- 2 Drain the water circuit, see ["5.3.2 Repair procedures"](#) [▶ 286].
- 3 Loosen the water flow sensor connector nut.



- a Water flow sensor connector nut
- b Clip
- c Water flow sensor

- 4 Unplug the water flow sensor harness from the water flow sensor.
- 5 Remove the 2 clips that fix the water flow sensor.
- 6 Remove the water flow sensor.
- 7 Clean any spilled water.
- 8 To install the new water flow sensor, see "[4.27.2 Repair procedures](#)" [▶ 245].

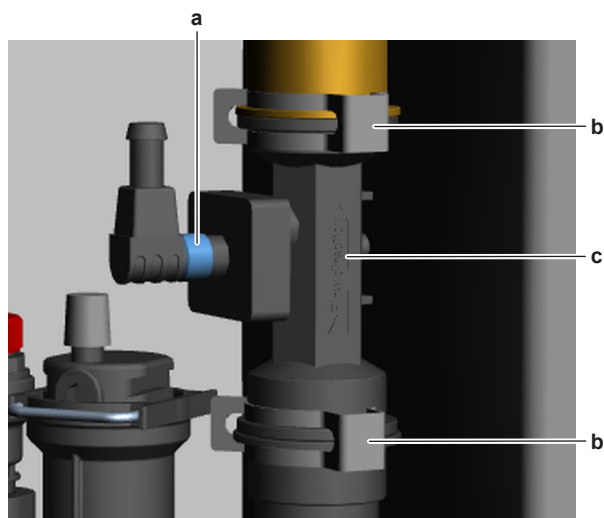
To install the water flow sensor



NOTICE

Check the condition of the O-rings and replace if needed. Apply water or silicon grease to the O-rings before installation.

- 1 Mount the O-rings on the water flow sensor.
- 2 Install the water flow sensor on the inlet pipe. Ensure that the O-ring does NOT get damaged.
- 3 Slide the clip over the connection until it snaps into place.



- a Water flow sensor connector nut
- b Clip
- c Water flow sensor

- 4 Install the water flow sensor on the outlet pipe. Ensure that the O-ring does NOT get damaged.
- 5 Slide the clip over the connection until it snaps into place.
- 6 Connect the water flow sensor harness to the water flow sensor.
- 7 Tighten the water flow sensor connector nut.

**INFORMATION**

Replace all cable ties that were cut during removal.

- 8 Open the valve (if equipped) of the water circuit towards the expansion vessel.

**CAUTION**

Make sure to open the valve (if equipped) towards the expansion vessel, otherwise the overpressure will be generated.

- 9 Open the stop valves and add water to the water circuit if needed, see ["5.3.2 Repair procedures"](#) [▶ 286].

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 Water pressure sensor

4.28.1 Checking procedures

To perform an electrical check of the water pressure sensor

Prerequisite: Stop the unit operation via the user interface.

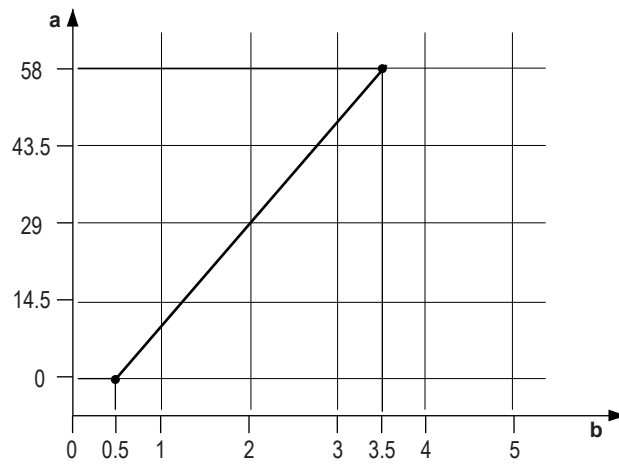
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Turn ON the power of the unit.
- 2 Read the water pressure on the home screen of the user interface.

Result: The pressure MUST be 14.5~29.0 PSI (1~2 bar).

- 3 Measure the water pressure using a pressure gauge.
- 4 Using the graphic below, determine the expected sensor output voltage based on the measured pressure.



a Pressure (PSI)
b Output voltage (V)

V DC	Detected pressure
0.5	0.00 PSI (0.00 bar)
0.6	1.89 PSI (0.13 bar)
0.7	3.77 PSI (0.26 bar)
0.8	5.80 PSI (0.40 bar)
0.9	7.69 PSI (0.53 bar)
1.0	9.57 PSI (0.66 bar)
1.1	11.60 PSI (0.80 bar)
1.2	13.49 PSI (0.93 bar)
1.3	15.37 PSI (1.06 bar)
1.4	17.41 PSI (1.20 bar)
1.5	19.29 PSI (1.33 bar)
1.6	21.18 PSI (1.46 bar)
1.7	23.06 PSI (1.59 bar)
1.8	25.09 PSI (1.73 bar)
1.9	26.98 PSI (1.86 bar)
2.0	28.86 PSI (1.99 bar)
2.1	30.89 PSI (2.13 bar)
2.2	32.78 PSI (2.26 bar)
2.3	34.66 PSI (2.39 bar)
2.4	36.69 PSI (2.53 bar)
2.5	38.58 PSI (2.66 bar)
2.6	40.47 PSI (2.79 bar)
2.7	42.06 PSI (2.9 bar)
2.8	44.38 PSI (3.06 bar)
2.9	46.27 PSI (3.19 bar)
3.0	48.15 PSI (3.32 bar)

V DC	Detected pressure
3.1	50.18 PSI (3.46 bar)
3.2	52.07 PSI (3.59 bar)
3.3	53.95 PSI (3.72 bar)
3.4	55.98 PSI (3.86 bar)
3.5	57.87 PSI (3.99 bar)

**INFORMATION**

The water pressure sensor connector **MUST** be plugged into the appropriate PCB.

- 5 Measure the voltage on connector X60A between pins 2–3 (= water pressure sensor output) on the hydro PCB.
- 6 Check that the measured voltage is in line with the expected voltage through the measured water pressure.

**INFORMATION**

In most cases, the user interface allows to monitor the water pressure.

If the measured output voltage value matches the voltage determined through the measured water pressure, but the water pressure is **NOT** correct on the user interface display, replace the applicable PCB.

The measured voltage is inside the expected range?	Action
Yes	Water pressure sensor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

- 7 With the water pressure sensor connector X7Y connected, measure the voltage between pin 1–2 (= water pressure output).
- 8 Check that the measured voltage is in line with the expected voltage through the measured water pressure.

The measured voltage is inside the expected range?	Action
Yes	Correct the wiring between the hydro PCB and the water pressure sensor connector X7Y, see " 7.2 Wiring diagram " [▶ 298].
No	Continue with the next step.

- 9 Measure the voltage between pin 2–3 (= water pressure sensor power supply) of the water pressure sensor connector X7Y.

I measured voltage...	Then
Is +5 V DC	Skip the next step.
Is NOT +5 V DC	Continue with the next step in the procedure

- 10 Unplug the connector X60A and measure the voltage (power supply) between pin 3–4 on hydro PCB.

Is the measured voltage +5 V DC?	Action
Yes	Correct the wiring between the hydro PCB and the connector X7Y, see "7.2 Wiring diagram" [▶ 298].
No	Perform a check of the hydro PCB, see "4.13.1 Checking procedures" [▶ 164].

- 11** Disconnect the connector from the water pressure sensor and the connector X7Y and measure the continuity of the wiring harness.

Is continuity of the wiring harness correct?	Action
Yes	Replace the water pressure sensor, see "4.28.2 Repair procedures" [▶ 250].
No	Replace the water pressure sensor harness, see "4.28.2 Repair procedures" [▶ 250].

4.28.2 Repair procedures

To remove the water pressure sensor wiring harness

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Disconnect the connector from the water pressure sensor.
- 2 Disconnect the other end of the wiring harness from the connector X7Y.
- 3 Cut all tie straps that fix the wiring harness, and remove the wiring harness from the unit.
- 4 To install the water pressure sensor wiring harness, see ["4.28.2 Repair procedures"](#) [▶ 250].

To install the water pressure sensor wiring harness

- 1 Connect the wiring harness to the connector X7Y.
- 2 Route the wiring harness towards the water pressure sensor and connect the wiring harness to the water pressure sensor.
- 3 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 remove the water pressure sensor

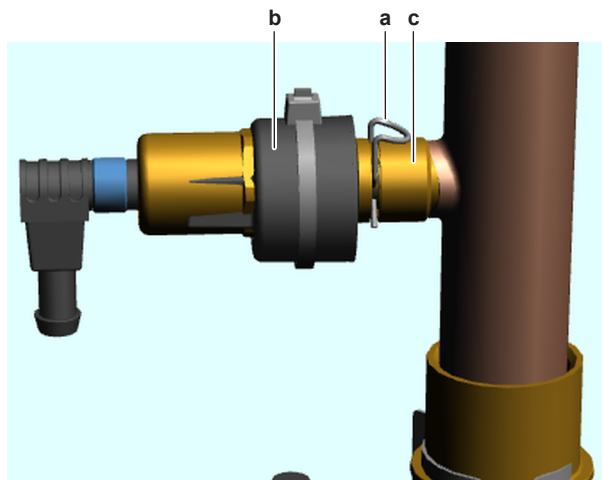
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Drain water from the water circuit, see ["5.3.2 Repair procedures"](#) [▶ 286].

- 2 Disconnect the water pressure sensor connector from the water pressure sensor.
- 3 Remove the clip that fixes the water pressure sensor to the coupling piece.

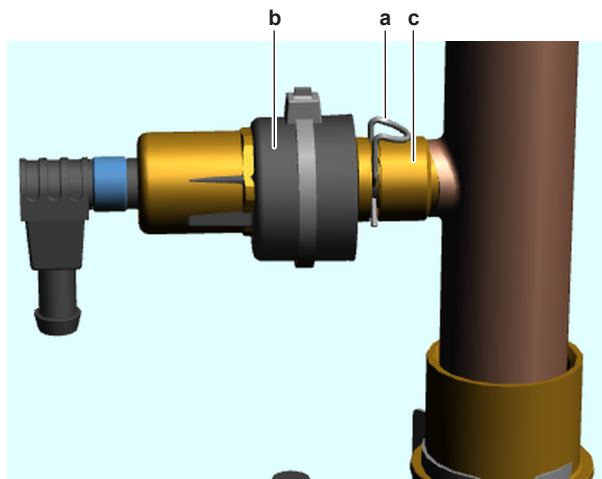


- a Clip
- b Water pressure sensor
- c Coupling piece

- 4 Push the water pressure sensor to release and remove it from the coupling piece. Remove the O-ring.
- 5 To install the water pressure sensor, see "[4.28.2 Repair procedures](#)" [[▶](#) 250].

To install the water pressure sensor

- 1 Install the new O-ring in the coupling piece.
- 2 Install the water pressure sensor in the coupling piece and push to secure it.



- a Clip
- b Water pressure sensor
- c Coupling piece

- 3 Install the clip to secure the water pressure sensor to the coupling piece.
- 4 Connect the water pressure sensor connector to the water pressure sensor.



INFORMATION

Replace all cable ties that were cut during removal.

- 5 Open the valve (if equipped) of the water circuit towards the expansion vessel.

**CAUTION**

Make sure to open the valve (if equipped) towards the expansion vessel, otherwise the overpressure will be generated.

- 6 Open the stop valves and add water to the water circuit if needed, see "[5.3.2 Repair procedures](#)" [▶ 286].
- 7 Purge the water circuit, see "[5.3.2 Repair procedure](#)" [▶ 286].

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.

4.29 Water pump

4.29.1 Checking procedures

**INFORMATION**

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

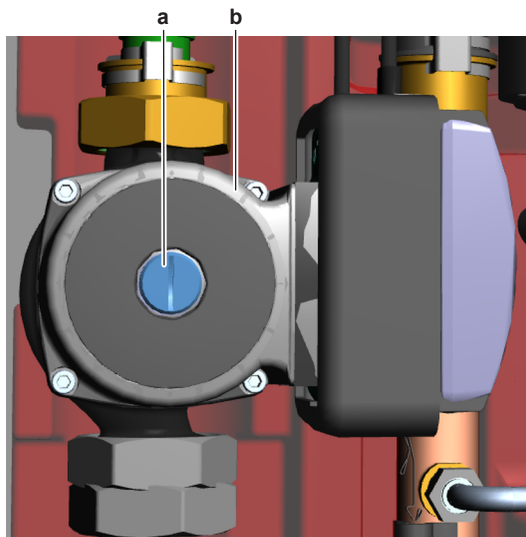
To perform a mechanical check of the water pump

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 Remove the seal cover from the pump and 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 Seal
- b Water pump motor

Does the rotor of the water pump motor rotate smoothly?	Action
Yes	Perform an electrical check of the water pump, see "4.29.1 Checking procedures" [▶ 252].
No	Continue with the next step.

2 Remove the water pump, see "4.29.2 Repair procedures" [▶ 254].

3 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 "4.29.2 Repair procedures" [▶ 254].
No	Replace the water pump, see "4.29.2 Repair procedures" [▶ 254].

To perform an electrical check of the water pump

- 1 First perform a mechanical check of the water pump, see "4.29.1 Checking procedures" [▶ 252].
- 2 Turn ON the power of the unit.
- 3 Activate **Installer** on the user interface. See the installer reference guide for the correct procedure.
- 4 Go to **Actuator test run** via the user interface.
- 5 Activate the **Pump**.



CAUTION

When the water pump is active and the connector PWM is disconnected from the PCB, the water pump motor will run at full speed.

- 6 Check if the pump is working (by listening or by touching the pump).

Is the water pump working?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Perform the next step.

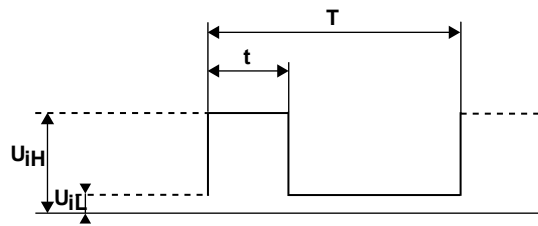
7 Keep the water pump activated.

8 Measure the power supply voltage between pins 3–5 of the water pump connector X16A on the hydro PCB.

Result: The measured voltage MUST be 195~253 V AC.

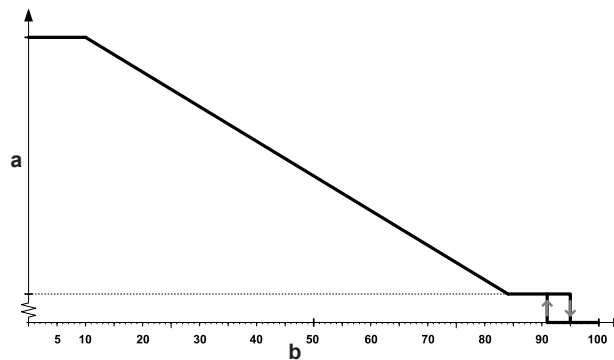
9 Measure the PWM signal between the pins 2-1 (PWM-GND) of the water pump connector X25A on the hydro PCB.

- When using an oscilloscope, the measured signal MUST look like the illustration shown below:



- T** Period of time of complete cycle
- t** Period of time of high-level input voltage
- U_{IH}** High-level input voltage
- U_{IL}** Low-level input voltage
- d** Duty cycle ($t/T \times 100$) [%]

- When using any equipment that is capable to measure the duty cycle, the measured signal **MUST** show profile A (see illustration below). The PWM signal (duty cycle) is disproportional to the water pump speed (flow rate) in the range of 10% to 84% and the speed (flow rate) remains at its maximum value when the PWM signal (duty cycle) is below 10%.



- a** Pump speed
- b** PWM signal (duty cycle) [%]

Are both the measured power supply voltage and PWM signal on the hydro PCB correct?	Action
Yes	Replace the water pump motor, see "5.1.2 Repair procedures" [▶ 261].
No	Perform a check of the hydro PCB, see "4.13.1 Checking procedures" [▶ 164].

4.29.2 Repair procedures

To remove impurities from the water pump

Prerequisite: Remove the water pump, see ["4.29.2 Repair procedures"](#) [▶ 254].

- 1** Remove any impurities or objects that may block the water pump.
- 2** Install the water pump, see ["4.29.2 Repair procedures"](#) [▶ 254].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.29.1 Checking procedures" [▶ 252] of the water pump and continue with the next procedure.

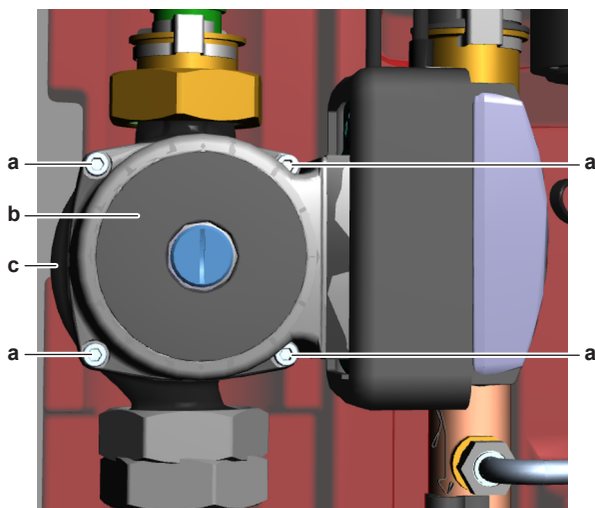
To remove the water pump motor

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Disconnect both water pump wiring harness connectors from the hydro PCB.
- 2 Loosen and remove the screw that fixes the water pump ground wire to the switch box.
- 3 Route the water pump wiring harness (disconnected connectors and ground wire) out of the switch box.
- 4 Cut ALL tie straps that fix the water pump wiring harness.

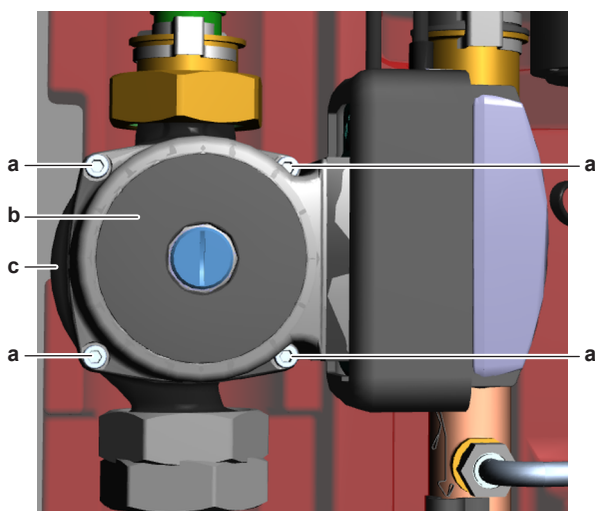


- a Bolt
- b Water pump motor
- c Pump housing

- 5 Remove the 4 bolts that fix the water pump motor to the pump housing.
- 6 Separate the water pump motor from the pump housing.
- 7 Remove the water pump motor.
- 8 To install the water pump motor, see ["4.29.2 Repair procedures"](#) [▶ 254].

To install the water pump motor

- 1 Install the motor on the water pump housing.



- a Bolt
- b Water pump motor
- c Pump housing



CAUTION

Make sure to correctly install the water pump motor and the seal.

- 2 Fix the water pump motor by tightening the 4 bolts.
- 3 Route the water pump wiring harness (connectors and ground wire) inside the switch box.
- 4 Connect both water pump wiring harness connectors to the hydro PCB.



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.

- 5 Connect the water pump ground wire to the switch box. Install and tighten the screw to fix the ground wire.
- 6 Install new tie straps to fix the water pump wiring harness as needed.



INFORMATION

Replace all cable ties that were cut during removal.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to " 4.29.1 Checking procedures " [▶ 252] of the water pump and continue with the next procedure.

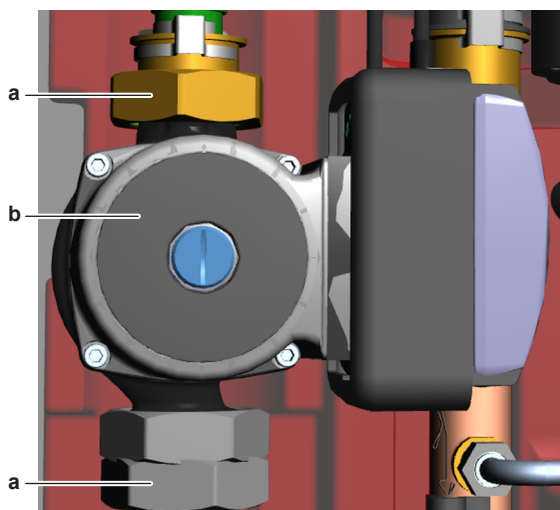
To remove the water pump

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 Drain water from the water circuit, see "[5.3.2 Repair procedures](#)" [▶ 286].
- 2 Disconnect both water pump wiring harness connectors from the hydro PCB.
- 3 Loosen and remove the screw that fixes the water pump ground wire to the switch box.
- 4 Route the water pump wiring harness (disconnected connectors and ground wire) out of the switch box.
- 5 Cut ALL tie straps that fix the water pump wiring harness.



- a Nut
- b Water pump

- 6 Unscrew the upper and lower nuts that fix the water pump to the water circuit pipes.

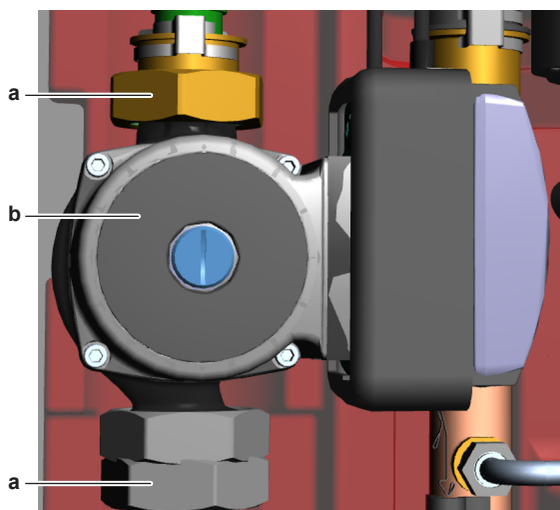
**CAUTION**

Use a counterforce when unscrewing or tightening the nuts to make sure NOT to damage the piping.

- 7 Remove the water pump.
- 8 To install the water pump, see "[4.29.2 Repair procedures](#)" [▶ 254].

To install the water pump

- 1 Install the water pump in the correct location.




- a Nut
- b Water pump

- 2 Fix the water circuit pipes to the water pump by tightening the upper and lower nuts.


**CAUTION**

Use a counterforce when unscrewing or tightening the nuts to make sure NOT to damage the piping.


- 3 Route the water pump wiring harness (connectors and ground wire) inside the switch box.
- 4 Connect both water pump wiring harness connectors to the hydro PCB.

 **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.

- 5 Connect the water pump ground wire to the switch box. Install and tighten the screw to fix the ground wire.
- 6 Install new tie straps to fix the water pump wiring harness as needed.

 **INFORMATION**
Replace all cable ties that were cut during removal.

- 7 Open the valve (if equipped) of the water circuit towards the expansion vessel.

 **CAUTION**
Make sure to open the valve (if equipped) towards the expansion vessel, otherwise the overpressure will be generated.

- 8 Open the stop valves and add water to the water circuit if needed, see "5.3.2 Repair procedures" [▶ 286].

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.

5 Third party components

5.1 Electrical circuit

5.1.1 Checking procedures

To check the power supply of the unit

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Check that the power supply cables and ground connection are firmly fixed to the outdoor unit power supply terminal X1M.
- 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, ground leakage is present.
- 3 Turn ON the power of the unit.
- 4 Measure the voltage between L and N on the power supply terminal X1M.

Result: The voltage MUST be 230 V AC ± 10%.

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 "5.1.2 Repair procedures" [▶ 261].

To check the power supply to the indoor unit

In case of normal power supply (power supply through the outdoor unit)

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].
- 2 Check that the power supply cables and ground connection are firmly fixed to the indoor unit power supply terminals X1M: 1-2-3.
- 3 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, ground leakage is present.
- 4 Turn ON the power using the respective circuit breaker.
- 5 Measure the voltage between the indoor unit power supply terminals X1M: 1 (L) and 2 (N).

Result: The voltage MUST be 230 V AC ± 10%.

Is the measured voltage (power supply) correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.

Is the measured voltage (power supply) correct?	Action
No	Continue with the next step.

6 Check the power supply to the unit, see "5.1.1 Checking procedures" [▶ 259].

Does the unit receive power?	Action
Yes	Correct the wiring from the main power supply terminal to the indoor unit power supply terminal, see "5.1.2 Repair procedures" [▶ 261].
No	Adjust the power supply to the unit, see "5.1.2 Repair procedures" [▶ 261].

In case of reduced tariff kWh power supply (separate power supply)

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 1 Remove the required plate work, see "4.20 Plate work" [▶ 202].
- 2 Check that the power supply cables and ground connection are firmly fixed to the indoor unit power supply terminals X2M: 5-6.
- 3 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, ground leakage is present.
- 4 Turn ON the power using the respective circuit breaker.
- 5 Measure the voltage between the indoor unit power supply terminals X2M: 5-6.

Result: The voltage MUST be 230 V AC±10%.

Does the indoor unit receive power?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Adjust the power supply to the indoor unit, see "5.1.2 Repair procedures" [▶ 261].

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 "5.1.2 Repair procedures" [▶ 261].

To check the wiring between the outdoor unit, indoor unit, and domestic hot water tank

- 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 ["7.2 Wiring diagram"](#) [▶ 298].

**INFORMATION**

Correct the wiring 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.

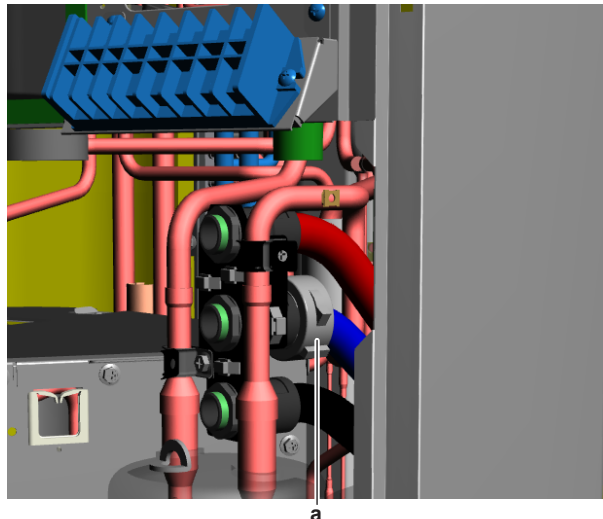
To check if the communication cable is inside the ferrite core

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 1 Check if the communication cable is routed inside the ferrite core.



a Ferrite core

**INFORMATION**

Correct the wiring 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.

5.1.2 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 60 Hz ± 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 from the main power supply terminal to the indoor unit power supply terminal

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 Make sure that all wires are firmly and correctly connected, see "[7.2 Wiring diagram](#)" [▶ 298].
- 2 Check the continuity of all wires.
- 3 Replace any damaged or broken wires.



INFORMATION

If applicable, also check the electrical components between the main power supply terminal and the indoor unit power supply terminal (e.g. intermediate terminal, noise filter, fuse, ...).

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 respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [▶ 202].

- 1 Make sure that all wires are firmly and correctly connected, see "[7.2 Wiring diagram](#)" [▶ 298].
- 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.

5.2 Refrigerant circuit

5.2.1 Checking procedures



INFORMATION

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

To check if the refrigerant circuit is clogged

- 1 Turn ON the power of the unit.
- 2 Activate **Heating** operation via the user interface.
- 3 Wait for the system to run at a more or less stable condition.
- 4 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 (>2.5~4K), 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 "5.2.2 Repair procedures" [▶ 268].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check if the refrigerant circuit is correctly charged

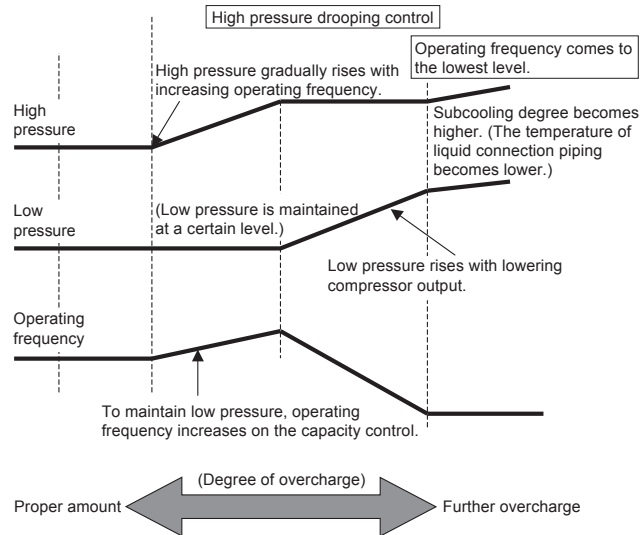
Due to the relationship to pressure control and electronic expansion valve control, the amount of refrigerant needs to be examined according to operating conditions.

Refer to the procedures shown below for correct examination.

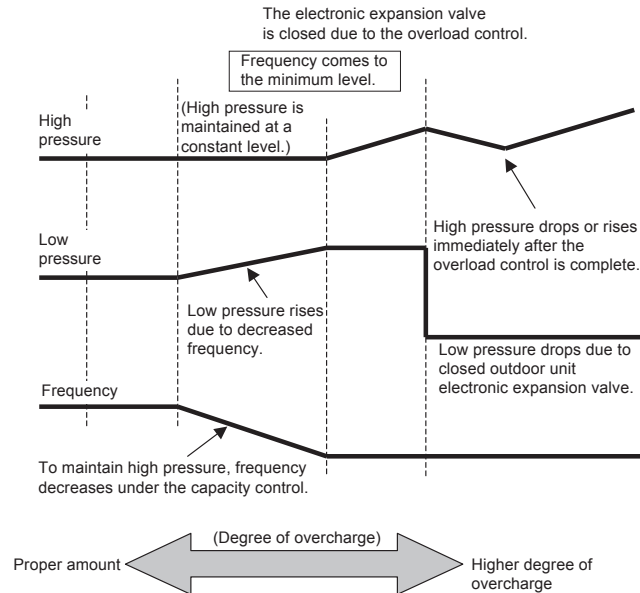
Refrigerant overcharge diagnosis

- 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 >4~5K are NOT normal).

Cooling



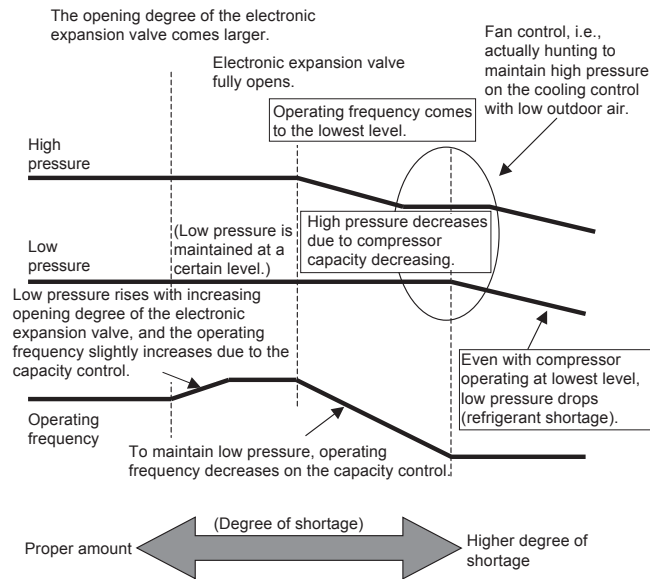
Heating



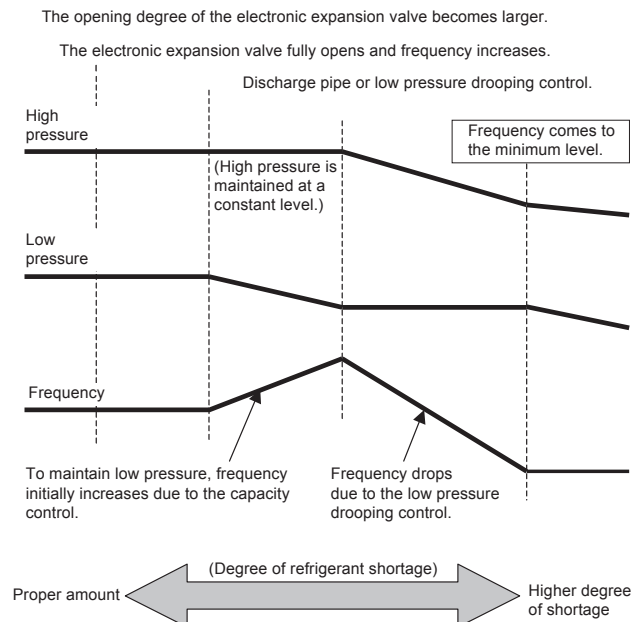
Refrigerant shortage diagnosis

- 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 "5.2.2 Repair procedures" [▶ 268].

To check for non-condensables in the refrigerant circuit

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.


- 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 "5.2.2 Repair procedures" [▶ 268].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To perform a pressure test of the refrigerant circuit

Pressurize the installation with dry nitrogen and check whether the installation is leak-tight.



CAUTION

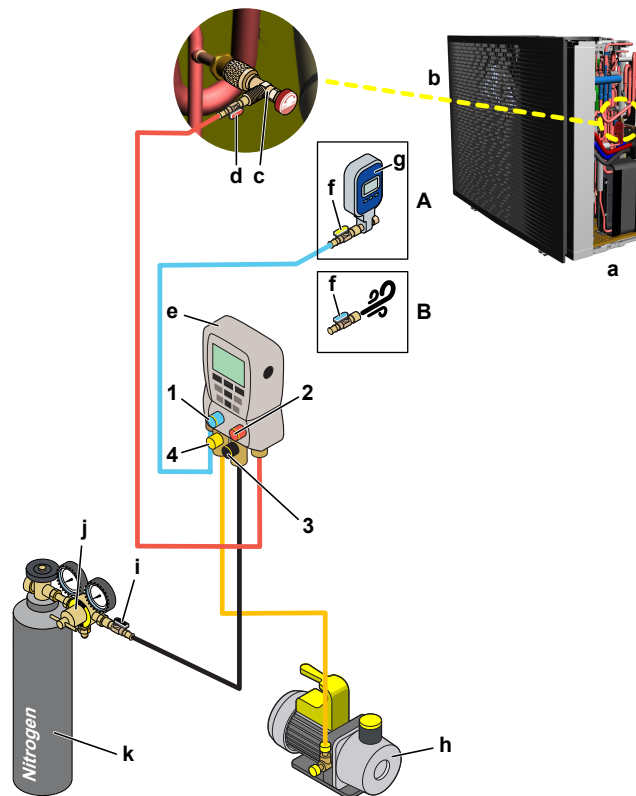
Since low pressure side CANNOT be separated from high pressure side in recovery mode, use the Ps low side value indicated on the unit nameplate (435 PSI (3.0 MPa)) as reference for pressure test / air tightness test.

NEVER pressurize the refrigerant circuit >604 PSI (4.17 MPa).

Prerequisite: Recuperate the refrigerant, see ["5.2.2 Repair procedures"](#) [▶ 268].

Prerequisite: When power is ON, activate recovery mode via the user interface (recommended) OR, when power is OFF, manually open the expansion valves Y1E and Y3E and solenoid valves Y2S and Y3S, see ["Repair information"](#) [▶ 277].

- 1 Connect the vacuum pump, vacuum meter, manifold gauge, pressure regulator and nitrogen cylinder to the service port of the refrigerant circuit as shown below.



- | | |
|---|--|
| <p>A Initial setup (valve open) –
Vacuum meter installed</p> <p>B Setup for nitrogen test pressure
(valve closed) and setup for
nitrogen release (valve open) –
NO vacuum meter installed</p> <p>a Unit</p> <p>b Service port</p> <p>c Refrigerant control valve
connected to service port</p> <p>d Valve connected to service port</p> <p>e Manifold gauge
1 Low pressure
2 High pressure
3 Charging port
4 Evacuation port</p> | <p>f Valve connected to low pressure
port of manifold gauge</p> <p>g Vacuum meter</p> <p>h Vacuum pump</p> <p>i Valve connected to pressure
regulator</p> <p>j Pressure regulator</p> <p>k Nitrogen cylinder</p> |
|---|--|



CAUTION

Hold the hose firmly and limit the length of the hose to prevent it from crawling on the ground.

- 2 Connect the vacuum pump to the power supply.
- 3 Open the required valves on the refrigerant hoses and manifold gauge (low pressure, high pressure, charging and evacuation port). Close the valve connected to the pressure regulator.
- 4 Let the vacuum pump run until a vacuum of 4000 Micron (533 Pa) is reached. Hold for 15 minutes.
- 5 Break the vacuum with dry nitrogen to a pressure of 2~3 PSIG (0.14~0.21 barg). Hold for 20 minutes.

Note: Close the valve in front of the vacuum meter and remove the vacuum meter to protect it from the Nitrogen pressure.

- 6 Let the vacuum pump run until a vacuum of 1500 Micron (200 Pa) is reached. Hold for 20 minutes.
 - 7 Break the vacuum with dry nitrogen to a pressure of 2~3 PSIG (0.14~0.21 barg). Hold for 20 minutes.
- Note:** Close the valve in front of the vacuum meter and remove the vacuum meter to protect it from the Nitrogen pressure.
- 8 Let the vacuum pump run until absolute pressure drops below 500 Micron (66 Pa). Hold for 60 minutes.
 - 9 Perform a hold or decay test and verify the vacuum pressure is NOT rising above 1000 Micron (133 Pa).
 - 10 Close the valve in front of the vacuum meter and remove the vacuum meter to protect it from the testing (Nitrogen) pressure.
 - 11 From the pressure regulator, pressurize the refrigerant circuit with nitrogen to a pressure of 435 PSI (3.0 MPa) (= Ps low side indicated on the unit nameplate). Close the nitrogen cylinder and valve connected to the pressure regulator once the pressure is reached.
 - 12 Using the manifold gauge, check that the pressure does not drop. If needed note down pressure and holding time in a logbook or digital log system.
 - 13 Check for leaks at the brazing points and, if necessary, elsewhere using leak detection spray, foam or a soap solution. Repair if a leak has been found, see "5.2.2 Repair procedures" [▶ 268]. Repeat pressure test procedure.
 - 14 Slowly open the valve connected to the low pressure port of the manifold gauge to release the nitrogen.
 - 15 Close all valves on the refrigerant hoses and manifold gauge (low pressure, high pressure, charging and evacuation port).
 - 16 Disconnect the nitrogen cylinder.



INFORMATION

Ensure adequate ventilation during the work.

Is the pressure in the refrigerant circuit correct?	Action
Yes	Proceed with vacuuming of the refrigerant circuit, see "5.2.2 Repair procedures" [▶ 268].
No	Replace the leaking part of the refrigerant circuit, see "5.2.2 Repair procedures" [▶ 268].

5.2.2 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" [▶ 277] for more details.

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 recuperate the refrigerant



CAUTION

This unit uses R32 as refrigerant. The refrigerant **MUST** be recovered by specialized technicians using suitable equipment.



CAUTION

Do **NOT** attempt to perform a manual pump down by closing certain expansion valves while the compressor is running. This can result in a dangerous situation and create a risk for explosion when air would be sucked into the refrigerant circuit in the event of a leakage on the refrigerant circuit.



CAUTION

This is a generic procedure. The steps to be performed may vary depending on the type of equipment used. Check supplier documentation.

Prerequisite: When power is ON, activate recovery mode via the user interface (recommended) OR, when power is OFF, manually open the expansion valves Y1E and Y3E and solenoid valves Y2S and Y3S, see "[Repair information](#)" [▶ 277].

- 1 Assure that the unit is grounded.

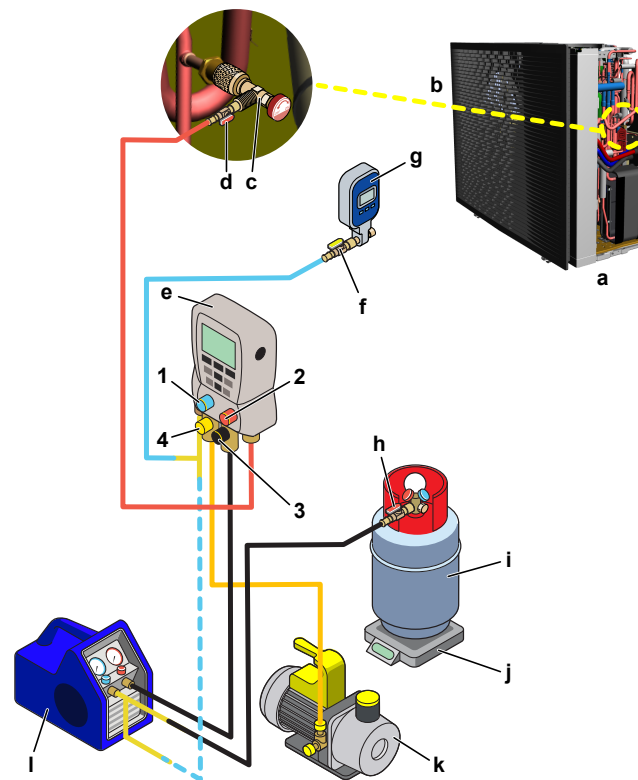


CAUTION

Prior to refrigerant recovery:

- Confirm that the recovery cylinder is either empty and under vacuum or in case there is already some refrigerant present, that the refrigerant inside is R32, see "[To confirm the content of a refrigerant cylinder](#)" [▶ 279].
- Do **NOT** mix R32 with any other refrigerant.
- Check the refrigerant charge in the system. Bring sufficient refrigerant recovery cylinders.
- Weigh the refrigerant recovery cylinder. Do not exceed the maximum filling volume.

- 2 Install a refrigerant control valve on the service port of the unit.
- 3 Connect the vacuum pump, vacuum meter, manifold gauge, recovery unit, and refrigerant recovery cylinder to the service port of the refrigerant circuit as shown below.
 - Based on the recovery unit, it might be required to place a vacuum line between the recovery unit discharge and the refrigerant recovery cylinder. Without this additional setup, the discharge line from the recovery unit to the refrigerant recovery cylinder will **NOT** be vacuumed.



- | | |
|---|--|
| <p>a Unit</p> <p>b Service port</p> <p>c Refrigerant control valve connected to service port</p> <p>d Valve connected to service port</p> <p>e Manifold gauge
1 Low pressure port
2 High pressure port
3 Charging port
4 Evacuation port</p> | <p>f Valve connected to low pressure port of manifold gauge</p> <p>g Vacuum meter</p> <p>h Valve connected to recovery cylinder</p> <p>i Recovery cylinder</p> <p>j Scale</p> <p>k Vacuum pump</p> <p>l Recovery unit</p> |
|---|--|



CAUTION

Hold the hose firmly and limit the length of the hose to prevent it from crawling on the ground.

- 4 Connect the vacuum pump to the power supply.
- 5 Open the required valves on the refrigerant hoses and manifold gauge (low pressure, high pressure, charging and evacuation port). Keep the valve connected to the service port of the unit and the valve connected to the refrigerant recovery cylinder closed. ALSO keep the refrigerant recovery cylinder closed.
- 6 Let the vacuum pump run (vacuum the refrigerant hoses) until a vacuum of 500 Micron (66 Pa) is reached.
- 7 Close the evacuation port of the manifold gauge.
- 8 Disconnect the vacuum pump from the power supply.
- 9 Perform a hold or decay test and verify the vacuum pressure is NOT rising above 1000 Micron (133 Pa). A pressure increase indicates the presence of a leak (defective refrigerant hose for example). If pressure increases, locate the source of the leak and resolve. Repeat vacuum procedure.
- 10 Close the valve in front of the vacuum meter and remove the vacuum meter to protect it from the charge (refrigerant) pressure.

- 11 Zero out ('tare') the scale.
 - 12 Connect the recovery unit to the power supply.
- Note:** Check the exact working principle of your recovery unit as it may differ depending on the used recovery unit.
- 13 Open the refrigerant recovery cylinder.
 - 14 Open the valve connected to the service port of the unit and the valve connected to the refrigerant recovery cylinder.
 - 15 Extract the refrigerant from ALL parts of the refrigerant circuit using the recovery unit.
 - Monitor the scale while recovering refrigerant.
 - Check all valves and hoses with an electronic gas leak detector to detect any leaking refrigerant.
 - 16 Check the weight of the recovered refrigerant on the scale, compare with the amount in the system (see nameplate).
 - 17 Close the required valves on the refrigerant hoses, manifold gauge and refrigerant recovery cylinder. Firmly close the refrigerant recovery cylinder.
 - 18 Disconnect the recovery unit from the power supply.
 - 19 Disconnect the hose from the charging port of the manifold to disconnect the recovery unit and refrigerant recovery cylinder.
 - The refrigerant hoses might contain refrigerant. It is advised to open the valves on the hoses outside and in a well-ventilated area to remove any remaining refrigerant.
 - 20 Weigh the refrigerant recovery cylinder. Note the weight on the cylinder.
 - 21 Store or dispose of the refrigerant recovery cylinder in a suitable way.

**CAUTION**

Do not vent refrigerant inside a building or public area under any circumstances.

**CAUTION**

A small amount of refrigerant might remain in the unit, due to refrigerant evaporating from the oil in the compressor. Purge and vacuum the refrigerant circuit before performing any work on the piping (flame, cutting) to reduce the content of dissolved refrigerant.

**INFORMATION**

Ensure adequate ventilation during the work.

**INFORMATION**

Follow the required additional steps to take described by the manufacturer of the recovery unit.

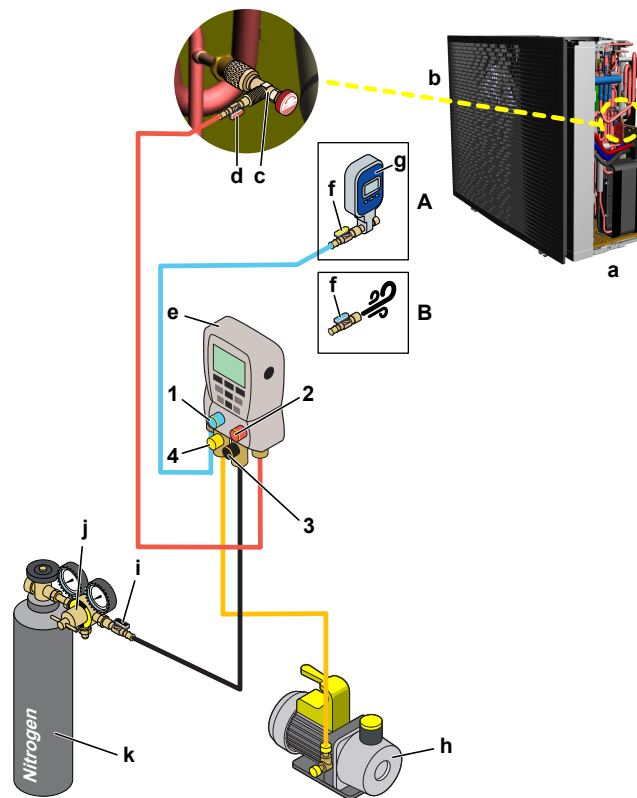
- 22 To add refrigerant, see "[5.2.2 Repair procedures](#)" [[▶ 268](#)].

To vacuum the refrigerant circuit

Vacuum the installation and check whether the installation is leak-tight.

Prerequisite: First perform a pressure test, see "[5.2.1 Checking procedures](#)" [[▶ 263](#)].

- 1 Connect the vacuum pump, vacuum meter and manifold gauge to the service port of the refrigerant circuit as shown below.



- | | |
|--|--|
| <p>A Setup for vacuuming (valve open) – Vacuum meter installed</p> <p>B Setup for nitrogen pressure (valve closed) and setup for nitrogen release (valve open) – NO vacuum meter installed</p> <p>a Unit</p> <p>b Service port</p> <p>c Refrigerant control valve connected to service port</p> <p>d Valve connected to service port</p> <p>e Manifold gauge
1 Low pressure
2 High pressure
3 Charging port
4 Evacuation port</p> | <p>f Valve connected to low pressure port of manifold gauge</p> <p>g Vacuum meter</p> <p>h Vacuum pump</p> <p>i Valve connected to pressure regulator</p> <p>j Pressure regulator</p> <p>k Nitrogen cylinder</p> |
|--|--|

- 2 Connect the vacuum pump to the power supply.
 - 3 Open the required valves on the refrigerant hoses and manifold gauge (low pressure, high pressure, charging and evacuation port).
 - 4 Let the vacuum pump run until a vacuum of 4000 Micron (533 Pa) is reached. Hold for 15 minutes.
 - 5 Break the vacuum with dry nitrogen to a pressure of 2~3 PSIG (0.14~0.21 barg). Hold for 20 minutes.
- Note:** Close the valve in front of the vacuum meter and remove the vacuum meter to protect it from the Nitrogen pressure.
- 6 Let the vacuum pump run until a vacuum of 1500 Micron (200 Pa) is reached. Hold for 20 minutes.
 - 7 Break the vacuum with dry nitrogen to a pressure of 2~3 PSIG (0.14~0.21 barg). Hold for 20 minutes.

Note: Close the valve in front of the vacuum meter and remove the vacuum meter to protect it from the Nitrogen pressure.

- 8 Let the vacuum pump run until absolute pressure drops below 500 Micron (66 Pa). Hold for 60 minutes.
- 9 Perform a hold or decay test and verify the vacuum pressure is NOT rising above 1000 Micron (133 Pa).
- 10 Close all valves on the refrigerant hoses and manifold gauge (low pressure, high pressure, charging and evacuation port).



INFORMATION

Ensure adequate ventilation during the work.

Is the vacuum level maintained?	Action
Yes	Vacuumping is OK. Proceed with refrigerant charging, see "5.2.2 Repair procedures" [▶ 268].
No	Continue with the next step.

- 11 Pressure rise can be caused by:
 - Leak in the refrigerant circuit. Check and repair the leak, perform pressure test and repeat vacuumping procedure from the beginning.
 - Presence of moisture in the refrigerant circuit. Perform pressure test procedure, see ["5.2.1 Checking procedures"](#) [▶ 263] to break the vacuum. Fill the refrigerant circuit with at least 8 PSI (0.05 MPa) of Nitrogen pressure. Repeat steps 4 through 7 of vacuumping procedure until vacuum level is reached and maintained without pressure rise.

To add refrigerant

Charge the installation with the correct type and amount of refrigerant. See the nameplate for details.

Prerequisite: First perform a pressure test, see ["5.2.1 Checking procedures"](#) [▶ 263].

Prerequisite: Vacuum the refrigerant circuit, see ["5.2.2 Repair procedures"](#) [▶ 268].

Prerequisite: When power is ON, activate recovery mode via the user interface (recommended) OR, when power is OFF, manually open the expansion valves Y1E and Y3E and solenoid valves Y2S and Y3S, see ["Repair information"](#) [▶ 277].

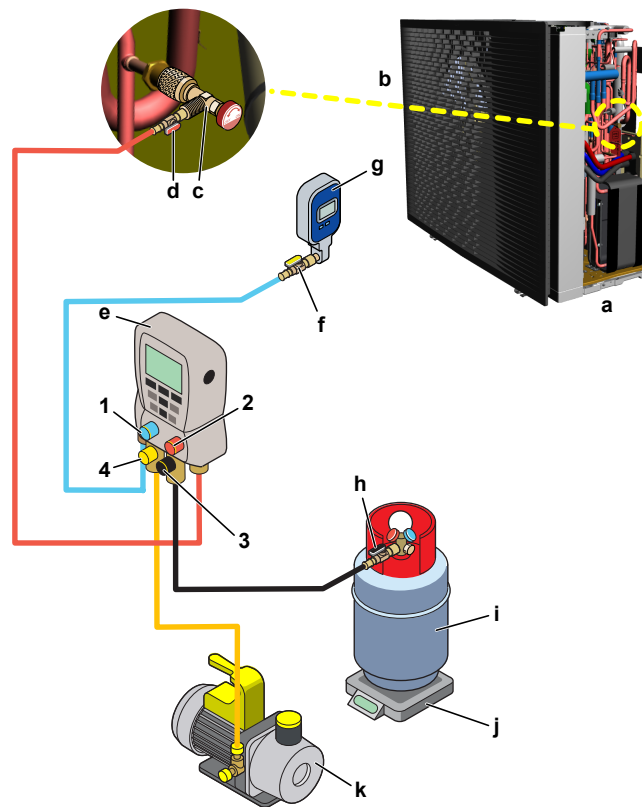
- 1 Assure that the unit is grounded.



INFORMATION

Prescribed method is using "natural" pressure difference to charge the unit, without use of a recovery station in "push" mode. Saturated pressure in refrigerant charging cylinder CAN be increased by using an electrical heater belt. Take care pressure in refrigerant charging cylinder does NOT rise above 580 PSI (22 bar) / 142°F Tsat (65°C Tsat). Charging of refrigerant is done in liquid state. Verify type of cylinder if a dip tube or separate gas/liquid connection is present.

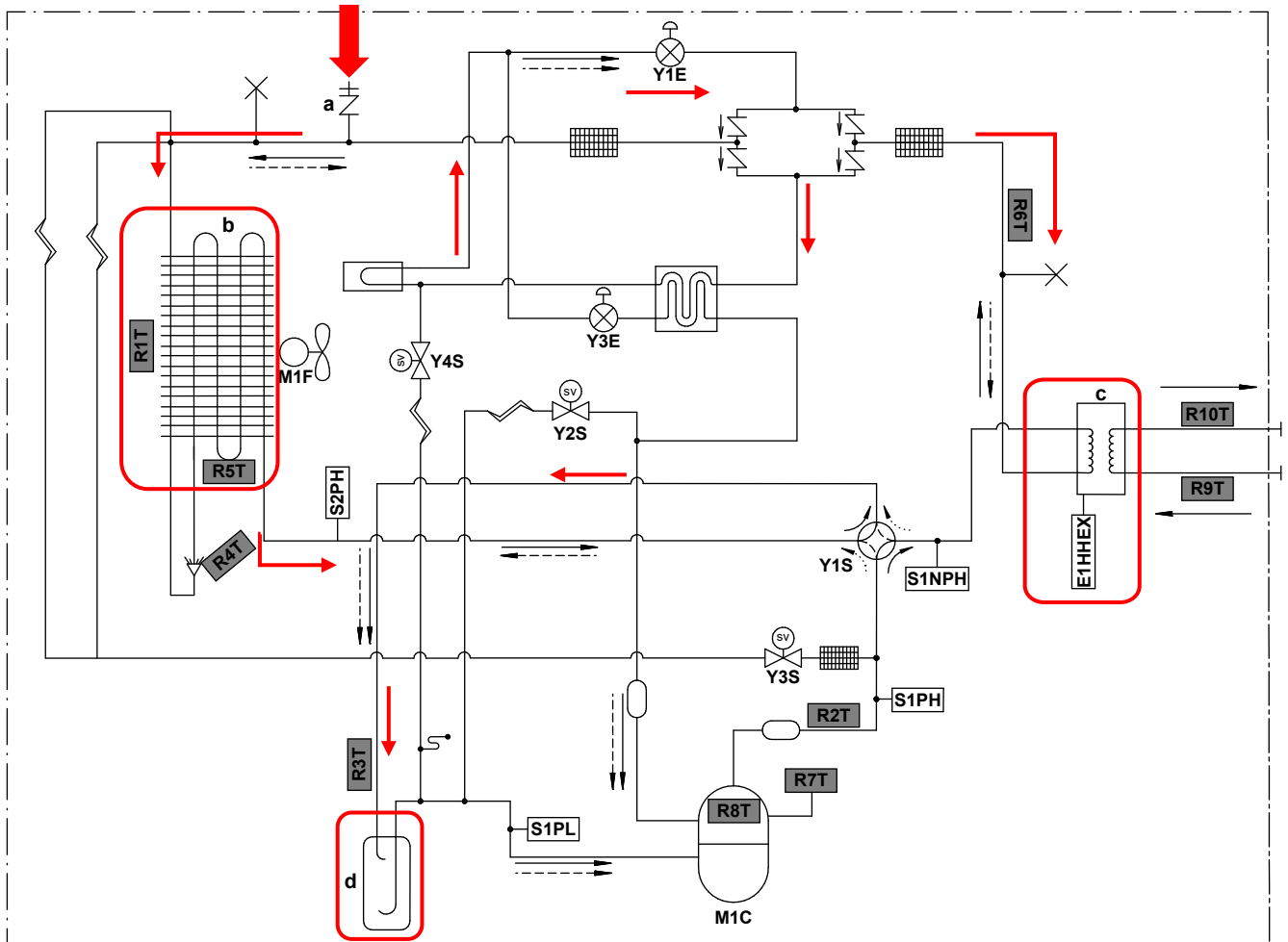
- 2 Connect the vacuum pump, vacuum meter, manifold gauge, and refrigerant charging cylinder to the service port of the refrigerant circuit as shown below.



- | | |
|---|--|
| <p>a Unit</p> <p>b Service port</p> <p>c Refrigerant control valve connected to service port</p> <p>d Valve connected to service port</p> <p>e Manifold gauge
 1 Low pressure
 2 High pressure
 3 Charging port
 4 Evacuation port</p> | <p>f Valve connected to low pressure port of manifold gauge</p> <p>g Vacuum meter</p> <p>h Valve connected to charging cylinder</p> <p>i Charging cylinder</p> <p>j Scale</p> <p>k Vacuum pump</p> |
|---|--|

- 3** Weigh the refrigerant charging cylinder.
- 4** Connect the vacuum pump to the power supply.
- 5** Open the required valves on the refrigerant hoses and manifold gauge (low pressure, high pressure, charging and evacuation port). Keep the refrigerant charging cylinder and the valve connected to the refrigerant charging cylinder closed.
- 6** Let the vacuum pump run (vacuum the refrigerant hoses) until a vacuum of 500 Micron (66 Pa) is reached.
- 7** Close the evacuation port of the manifold gauge.
- 8** Disconnect the vacuum pump from the power supply.
- 9** Perform a hold or decay test and verify the vacuum pressure is NOT rising above 1000 Micron (133 Pa). A pressure increase indicates the presence of a leak (defective refrigerant hose for example). If pressure increases, locate the source of the leak and resolve. Repeat vacuum procedure.
- 10** Close the valve in front of the vacuum meter and remove the vacuum meter to protect it from the charge (refrigerant) pressure.
- 11** Zero out ('tare') the scale.
- 12** Open the valve on the refrigerant hose connected to the service port of the unit and the valve connected to the refrigerant charging cylinder.

- 13** Open the required valves on the manifold gauge (high pressure and charging port). Keep the low pressure and evacuation port closed to ensure the refrigerant pressure will enter the unit at the service port.
- 14** Open the refrigerant charging cylinder to allow refrigerant to flow in the circuit. Monitor the scale while charging.
- Check all valves and hoses with an electronic gas leak detector to detect any leaking refrigerant. Charging of R32 is done in liquid state. The refrigerant will be distributed in the outdoor heat exchanger and plate type heat exchanger. Some refrigerant will flow into the suction accumulator.



- a** Charge port
b Outdoor heat exchanger
c Plate type heat exchanger
d Suction accumulator

- 15** Charging will stop when pressure equalizes between cylinder and unit. With recovery mode activated (expansion valves and solenoid valves open), try to charge 70~80% of the unit charge indicated on the nameplate (unit refrigerant charge = 9.26 lb (4.2 kg)). Use a suitable cylinder heat belt to increase pressure inside the charging cylinder. Take care pressure in refrigerant charging cylinder does NOT rise above 580 PSI (22 bar) / 142°F Tsat (65°C Tsat). Trim charging (preferably in gaseous state) with compressor running and recovery mode deactivated is ONLY possible when the unit can operate in Heating or Domestic hot water mode.
- 16** Close the valve on the refrigerant hose connected to the service port of the unit.

- 17 Deactivate recovery mode via the user interface OR manually close ALL expansion valves and solenoid valves, see "[Repair information](#)" [▶ 277].
- 18 Turn the power of the outdoor unit OFF and ON again.
- 19 Enable preferably Heating or Domestic hot water, alternatively Cooling mode on the indoor unit and run the system.
- 20 Position the valves on the manifold gauge, cylinder and refrigerant hoses as such to allow the refrigerant inside the hoses and manifold gauge to be aspirated through the service port of the unit with running compressor (Heating or Domestic hot water mode).
- 21 Once the target refrigerant charge is reached, close the valve connected to the refrigerant charging cylinder.
- 22 Firmly close the refrigerant charging cylinder. Allow the system to extract ALL refrigerant from the hoses.
- 23 Close all valves on the refrigerant hoses and manifold gauge (low pressure, high pressure, charging and evacuation port).
- 24 Disconnect the refrigerant hoses.
 - The refrigerant hoses should NOT contain refrigerant, but it is advised to open the valves on the hoses outside in a well-ventilated area to remove any remaining refrigerant.
- 25 Check for leaks at the brazing points and, if necessary, elsewhere using a gas leak detector. Repair if a leak has been found, see "[5.2.2 Repair procedures](#)" [▶ 268].
- 26 Remove refrigerant control valve from the service ports of the unit.
- 27 Weigh the refrigerant charging cylinder. Note the remaining weight on the cylinder. Note the refrigerant charge amount on the unit, logbook or digital log system.
- 28 Store or dispose of the refrigerant recovery cylinder in a suitable way.



INFORMATION

Ensure adequate ventilation during the work.



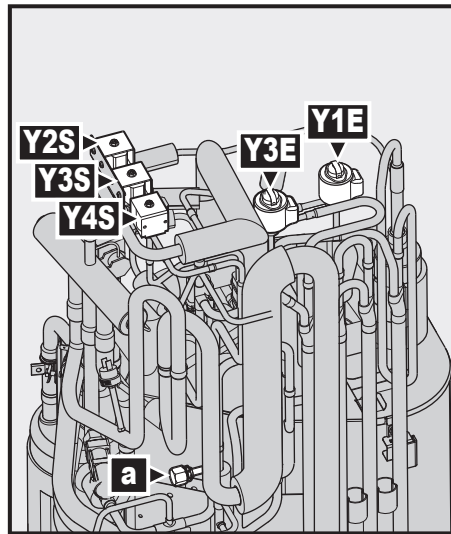
CAUTION

Oxygen in the refrigerant circuit can cause fire or explosion during operation. When filling the refrigerant circuit, make sure that no oxygen gets into the refrigerant circuit.

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

To activate recovery mode



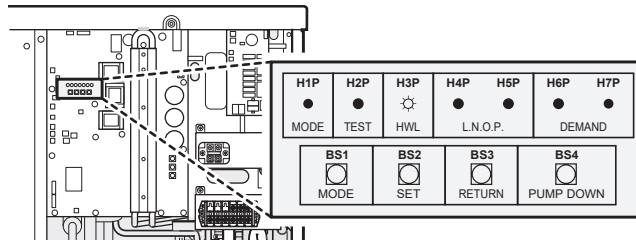
- a** Service port 5/16" flare
- Y1E** Electronic expansion valve (main)
- Y3E** Electronic expansion valve (injection)
- Y2S** Solenoid valve (low pressure bypass)
- Y3S** Solenoid valve (hot gas bypass)
- Y4S** Solenoid valve (liquid injection)

When activating recovery mode, expansion valves Y1E and Y3E and solenoid valves Y2S and Y3S are automatically opened. Solenoid valve Y4S stays closed.

This is needed to ensure NO refrigerant, Nitrogen, ... gets trapped in the refrigerant circuit when performing refrigerant circuit repair procedures (e.g. recuperate refrigerant, refrigerant component replacement, pressure test, ...).

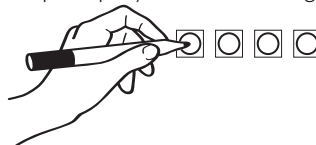
COMPONENTS

To activate/deactivate the recovery mode, you need the following components:



H1P~H7P 7-LEDs display

BS1~BS4 Push buttons. Operate the push buttons with an insulated stick (such as a closed ballpoint pen) to avoid touching of live parts.



TO ACTIVATE RECOVERY MODE



INFORMATION

If you get confused in the middle of the process, press BS1 to return to the default situation.

Before recovering refrigerant, activate the recovery mode as follows:

#	Action	7-LEDs display ^(a)						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
1	Start from the default situation.	●	●	●	●	●	●	●
2	Press and hold BS1 for 5 seconds.	○	●	●	●	●	●	●
3	Press BS2 9 times.	○	●	●	○	●	●	○
4	Press BS3 once.	○	●	●	●	●	●	◐
5	Press BS2 once.	○	●	●	●	●	◐	●
6	Press BS3 once.	○	●	●	●	●	○	●
7	Press BS3 once. The flashing H1P indicates the recovery mode has been correctly selected and is activated.	◐	●	●	●	●	●	●
8	Press BS1 once. H1P keeps flashing, indicating that you are in a mode that does not allow compressor operation.	◐	●	●	●	●	●	●

^(a) ● = OFF, ○ = ON, and ◐ = flashing.

Result: The recovery mode is activated. The unit opens the electronic expansion valves / solenoid valves.

▪ TO DEACTIVATE RECOVERY MODE

After recovering refrigerant, deactivate the recovery mode as follows:

#	Action	7-LEDs display ^(a)						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
1	Press and hold BS1 for 5 seconds.	◐	●	●	●	●	●	●
2	Press BS2 9 times.	◐	●	●	○	●	●	○
3	Press BS3 once.	◐	●	●	●	●	◐	●
4	Press BS2 once.	◐	●	●	●	●	●	◐
5	Press BS3 once.	◐	●	●	●	●	●	○
6	Press BS3 once.	◐	●	●	●	●	●	●
7	Press BS1 once to return to the default situation.	●	●	●	●	●	●	●

^(a) ● = OFF, ○ = ON, and ◐ = flashing.

Result: The recovery mode is deactivated. The unit returns the electronic expansion valves / solenoid valves to their initial state.

i

INFORMATION

Power OFF. When power is turned OFF and turned ON again, the recovery mode is deactivated automatically.

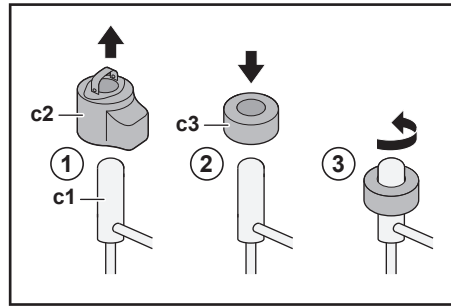
To manually open the electronic expansion valves / solenoid valves

i

INFORMATION

This procedure describes how to manually open an electronic expansion valve. To manually open a solenoid valve, perform the same way, using an appropriate valve magnet.

- 1 Make sure power is OFF.



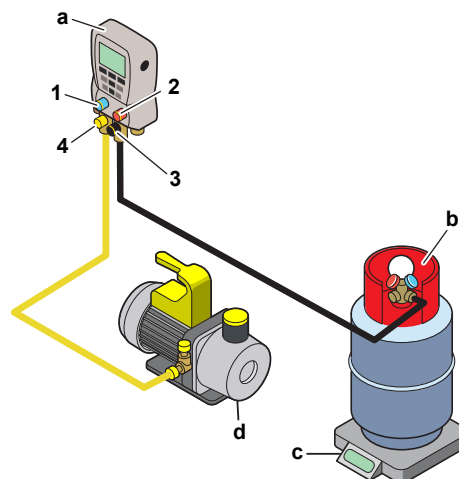
- c1** Electronic expansion valve
c2 EEV coil
c3 EEV magnet

- 2 Remove the EEV coil (**c2**).
- 3 Slide an EEV magnet (**c3**) over the expansion valve (**c1**).
- 4 Turn the EEV magnet anticlockwise to the fully open position of the valve. If you are not sure about what the open position is, turn the valve in its middle position so that refrigerant can pass.

To confirm the content of a refrigerant cylinder

Before using a refrigerant cylinder (recovery or charging), confirm the content.

- 1 Create the set-up to check the refrigerant cylinder content.
- 2 Connect the "gas" valve on the cylinder if present.



- a** Manifold gauge
 1 Low pressure port
 2 High pressure port
 3 Charging port
 4 Evacuation port
- b** Charging cylinder
c Scale
d Vacuum pump

- 3 Connect the vacuum pump to the power supply.
 - The vacuum pump should be placed outside in a well-ventilated area.
- 4 Open the required valves on the refrigerant hoses and manifold gauge (charging and evacuation port). The charging cylinder is kept closed.
- 5 Let the vacuum pump run (vacuum the refrigerant hoses) until a vacuum of 500 Micron (66 Pa) is reached.
- 6 Close the evacuation port of the manifold gauge.
- 7 Disconnect the vacuum pump from the power supply.
- 8 Perform a hold or decay test and verify the vacuum pressure is NOT rising above 1000 Micron (133 Pa). A pressure increase indicates the presence of a

leak (defective refrigerant hose for example). If pressure increases, locate the source of the leak and resolve. Repeat from step 5.

- 9 Zero out ('tare') the scale.
- 10 Open the refrigerant cylinder.
- 11 Read the pressure from the manifold.

Option 1: Absolute pressure ≤ 1000 Micron (133 Pa), the refrigerant cylinder is under a sufficient vacuum.

- 1 Firmly close the refrigerant cylinder.
- 2 Close all valves on the refrigerant hoses and manifold gauge (low pressure, high pressure, charging and evacuation port).

Option 2: Absolute pressure > 1000 Micron (133 Pa), the refrigerant cylinder contains a refrigerant or air or non-condensables.

- 1 Check if the pressure inside the cylinder corresponds with the saturation pressure of R32: measure the ambient temperature and find the corresponding pressure from the P-T table, see ["7.7 R32 \(Difluoromethane\) pressure-temperature chart" \[▶ 333\]](#).

Result: The pressure read from the manifold MUST be the same as the pressure read from the table. If not, the cylinder contains another refrigerant (e.g. R410A). Do NOT use this refrigerant.

- 2 Firmly close the refrigerant cylinder.
- 3 Close all valves on the refrigerant hoses and manifold gauge (low pressure, high pressure, charging and evacuation port).
- 4 The manifold and hoses contain refrigerant. Use the refrigerant for charging the refrigerant circuit or vent in a controlled way.
- 5 Weigh the recovery cylinder. Note the weight on the cylinder.

Example:

A refrigerant cylinder is standing outside where the ambient temperature is 68°F (20°C). The pressure read from the gauge manifold is 199.1 PSI(g) (7,35 barg).

From the P-T table we know that:

- When the temperature is 68°F (20°C), the pressure MUST be 199.1 PSI(g) (7,35 barg).

Conclusion: the content of the cylinder is R32.

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.
- R32 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 500 Micron / 0.5 Torr / 66 Pa MUST be reached. This pressure should stay stable (should NOT rise above 1000 Micron / 1 Torr / 133 Pa) for 60 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 500 Micron / 0.5 torr / 66 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.

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 $\geq 99.99\%$).

Refrigerant circuit vacuuming - general advice

The effectiveness of the vacuum drying depends on many factors. Besides following the correct procedures and using equipment that is well maintained, the ambient conditions at which the vacuum is done MUST be considered. If there is moisture in the refrigerant and the ambient temperature is lower, the vacuum pressure that MUST be reached to allow the evaporation of the moisture will need to be lower. In some cases the vacuum pump may NOT be able to achieve these pressures. If possible, heat the locations where moisture is expected.

As a general target, the values below CAN be used as reference to achieve a proper vacuum on the unit:

- Absolute pressure below 500 Micron (66 Pa / 0.66 mbar / 0.5 Torr) MUST be reached. The time needed for the pressure to lower is also depending on the moisture amount. If it takes very long or it is hard to reach the pressure, this MIGHT be an indication of moisture presence, so the vacuum pump will need to run longer.
- Perform a hold or decay test and verify the vacuum pressure is NOT rising above 1000 Micron (133 Pa). If pressure increases significantly, this is an indication of the presence of moisture in the system.
- If multiple vacuum cycles need to be performed, break the vacuum between the cycles using dry nitrogen.

Depending on the site conditions, as mentioned above, lower pressure values MIGHT be needed to allow the boiling of the moisture in the system. The table below shows the boiling point of water for different absolute pressures.

Pressure (absolute)		Boiling point
Micron / Torr	mbar / Pa	°F / °C
760000 / 760	1013 / 101325	212 / 100
50000 / 50	66 / 6666	100 / 38
10000 / 10	13 / 1333	52 / 11
2000 / 2	2.6 / 266	14 / -10
1000 / 1	1.33 / 133	0.4 / -18
500 / 0.5	0.66 / 66	-11 / -24

5.3 Water circuit

5.3.1 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 "5.3.2 Repair procedures" [▶ 286].
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.



INFORMATION

Make sure that the water pressure sensor is functioning correctly.

- 2 Read the water pressure on the home screen of the user interface.

Result: The pressure MUST be 14.5~29 PSI (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 "5.3.2 Repair procedures" [▶ 286].

To check the water flow

- 1 Turn ON the power using the respective circuit breaker.
- 2 Ensure the heat/cool emitters are open.

- 3 Activate air purge operation of the space heating/cooling circuit via the user interface and select pump speed "High", see installer reference guide for correct procedure.

If operation is...	Then the minimum required flow rate is...
Cooling / heating start-up / defrost / backup heater operation	6 gal/min (22 l/min)
Domestic hot water production	7.5 gal/min (28 l/min)

**INFORMATION**

Make sure that the water flow sensor is functioning correctly.

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 ["5.3.1 Checking procedures"](#) [▶ 282].

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 "5.3.2 Repair procedures" [▶ 286].

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 "5.3.2 Repair procedures" [▶ 286].

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 "5.3.2 Repair procedures" [▶ 286].

An external heat source was found in the installation?	Action
No	Return to the troubleshooting of the specific error and continue with the next procedure.

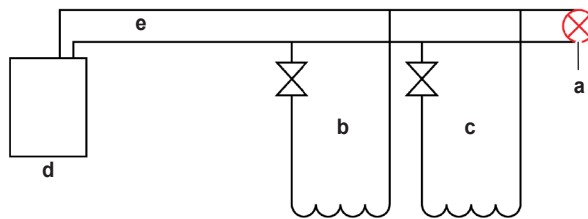
To check if the field installed air purge valves are installed on the correct locations

- 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.
No	Install the specific air purge valve(s) on the correct location(s) in the water circuit, see "5.3.2 Repair procedures" [▶ 286].

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/baseboards, ...) are shut-off (e.g. for anti-freeze function).



- a By-pass
- b Underfloor heating (cooling) circuit
- c Radiators/Baseboards 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 "5.3.2 Repair procedures" [▶ 286].

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 "5.3.2 Repair procedures" [▶ 286].
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 "5.3.2 Repair procedures" [▶ 286].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check if the water circuit is clogged

- 1 Check that all field piping is done according to the good practice and installer reference guide:
 - Correct piping diameters
 - Piping distance limits are followed
 - NO pipes are squeezed
 - NO short radius bends
- 2 Turn ON the power of the unit.
- 3 Activate **Heating** operation via the user interface.
- 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 "5.3.2 Repair procedures" [▶ 286].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check the main water supply and pressure

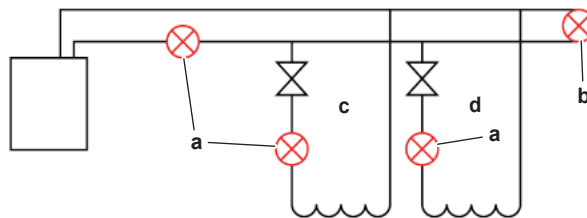
- 1 Check that the main water supply and pressure of the installation is within the expected range (>14.5 PSI (1 bar)).

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 "5.3.2 Repair procedures" [▶ 286].

5.3.2 Repair procedures

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
- e Radiators/Baseboards 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.
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.

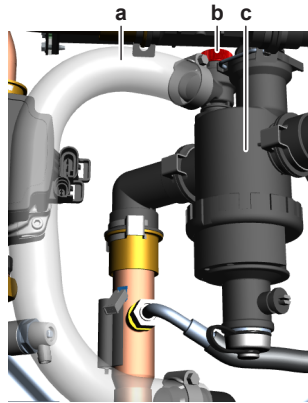
Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.20 Plate work" [▶ 202].

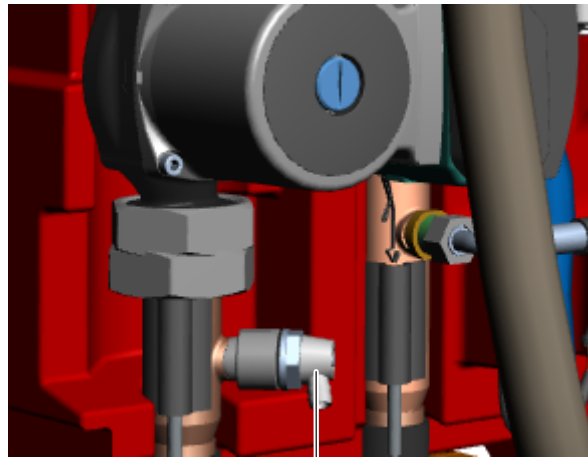
- 1 Close the stop valves of the water circuit.
- 2 Standard, a drain hose is installed on the safety valve on the magnetic filter/dirt separator. Open the safety valve and drain water from the water circuit.

Collect the drained water in the drain pan, bottle, sink,... using the installed drain hose.



- a Drain hose
- b Safety valve
- c Magnetic filter/dirt separator

- 3 Open the air purge valves, see ["5.3.2 Repair procedures"](#) [▶ 286].
- 4 Open the drain valve to drain water from the water circuit. Collect the drained water in a drain pan, bottle,....



- a Drain valve

- 5 To add water to the water circuit, see ["5.3.2 Repair procedures"](#) [▶ 286].

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 respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

- 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 ["5.3.2 Repair procedures"](#) [▶ 286].

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.

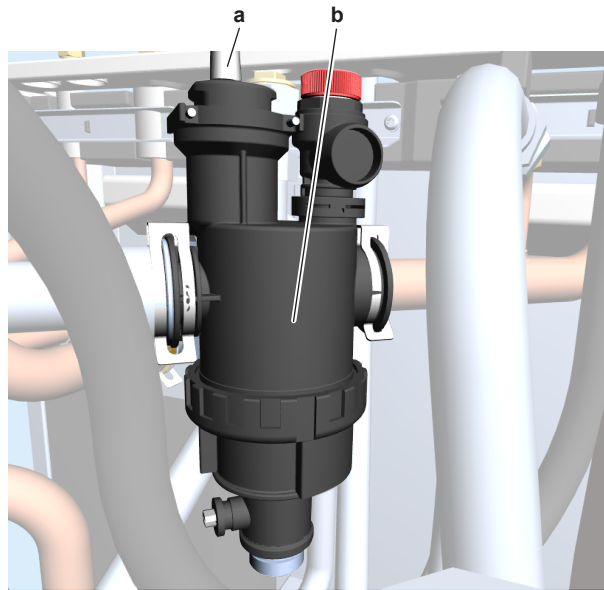
To open the air purge valves of the water circuit

Prerequisite: Stop the unit operation via the user interface.

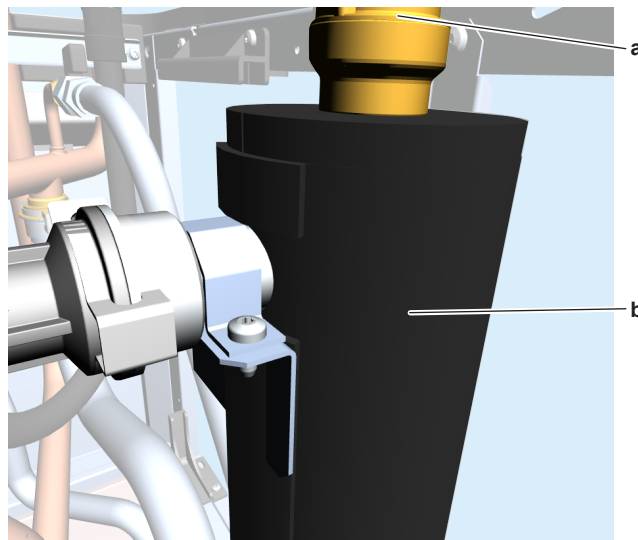
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "[4.20 Plate work](#)" [[▶ 202](#)].

- 1 Place the air purge valves, installed inside the unit, in the open position by turning the valves clockwise.



a Air purge valve
b Magnetic filter/dirt separator



- a Air purge valve
- b Backup heater

- 2 Place all field installed air purge valves in the open position.
- 3 Purge the water circuit, see "[5.3.2 Repair procedures](#)" [▶ 286].

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 respective circuit breaker.

- 1 Install field installed air purge valves on all highest points of the installation outside the unit.
- 2 Purge the water circuit, see "[5.3.2 Repair procedures](#)" [▶ 286].

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 "[5.3.1 Checking procedures](#)" [▶ 282].
- 2 See "[To open the air purge valves of the water circuit](#)" [▶ 288] for detailed information about the unit air purge valves.
- 3 See the installer reference guide for the correct air purge procedure.

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 external heat source from the water circuit

- 1 Remove the external heat source from the installation outside the unit.

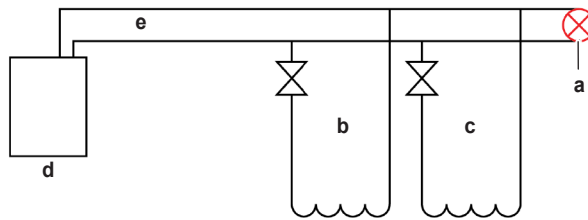
Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To install a by-pass in the water circuit

Prerequisite: Stop the unit operation via the user interface.

Prerequisite: Turn OFF the respective circuit breaker.

- 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/Baseboards 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.
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 (>14.5 PSI (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.

5.4 Manufacturer components

5.4.1 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 " 5.4.2 Repair procedures " [▶ 291].

5.4.2 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.

5.5 External factors

5.5.1 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 the Daikin Comfort website.

**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.

6 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.

6.1 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.

6.2 To clean the magnetic filter/dirt separator in case of trouble

- 1 Remove the magnetic filter/dirt separator from the unit. See "[4.16.2 Repair procedures](#)" [▶ 178].



NOTICE

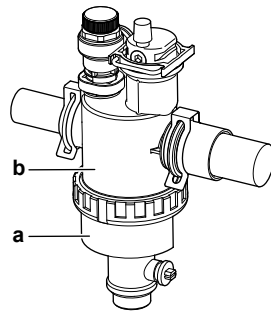
To protect the piping connected to the magnetic filter/dirt separator from damage, it is recommended to perform this procedure with the magnetic filter/dirt separator removed from the unit.

- 2 Unscrew the bottom of the magnetic filter/dirt separator housing. Use an appropriate tool if needed.



NOTICE

Opening the magnetic filter/dirt separator is ONLY required in case of severe issues. Preferably this action is never to be done during the complete lifetime of the magnetic filter/dirt separator.



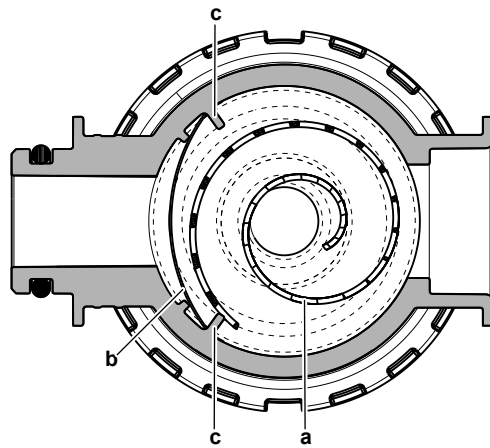
- a Bottom part to be unscrewed
- b Magnetic filter/dirt separator housing

- 3 Remove the strainer and the rolled-up filter from the magnetic filter/dirt separator housing and clean with water.
- 4 Install the cleaned rolled-up filter and strainer in the magnetic filter/dirt separator housing.



INFORMATION

Correctly install the strainer in the magnetic filter/dirt separator housing using the protrusions.



- a Rolled-up filter
- b Strainer
- c Protrusion

- 5 Install and properly tighten the bottom of the magnetic filter/dirt separator housing.
- 6 Install the magnetic filter/dirt separator in the unit. See ["4.16.2 Repair procedures"](#) [▶ 178].

Is the problem solved?	Action
Yes	No further actions required.
No	Replace the magnetic filter/dirt separator, see "4.16.2 Repair procedures" [▶ 178].

6.3 To yearly clean the magnetic filter/dirt separator – flushing

Prerequisite: Stop the unit operation via the user interface.

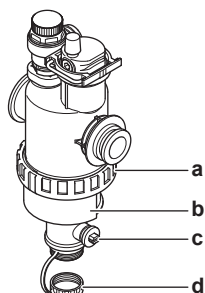
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see ["4.20 Plate work"](#) [▶ 202].

**INFORMATION**

Water pressure is required to clean the magnetic filter/dirt separator. Do NOT close the stop valves of the water circuit.

- 1 Remove the magnetic sleeve from the magnetic filter/dirt separator.



- a Screw connection
- b Magnetic sleeve
- c Drain valve
- d Drain cap

- 2 Remove the cap on the bottom of the magnetic filter/dirt separator.
- 3 Connect a drain hose to the bottom of the magnetic filter/dirt separator.
- 4 Open the valve on the bottom of the magnetic filter/dirt separator to drain water from the water circuit. Collect the drained water in the drain pan, bottle, sink,... using the installed drain hose.
- 5 Wait until the drained water is clear.
- 6 Close the valve on the bottom of the magnetic filter/dirt separator and install the magnetic sleeve.
- 7 Add water to the water circuit if needed, see ["4.16.2 Repair procedures"](#) [▶ 178].

**INFORMATION**

During a normal flushing operation you will NOT lose too much water. It is NOT required to air-purge the system.

**CAUTION**

In case additives are used, take care of the % after flushing the system every year.

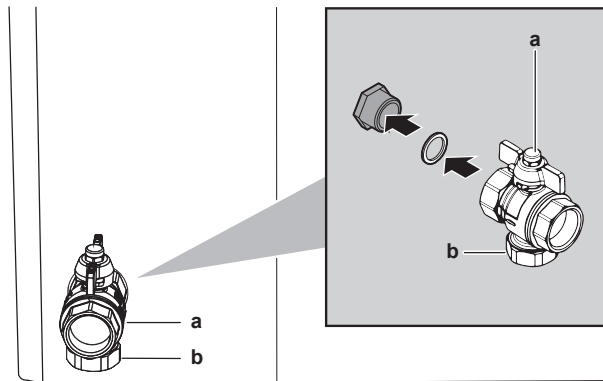
Is the problem solved?	Action
Yes	No further actions required.
No	Replace the magnetic filter/dirt separator, see "4.16.2 Repair procedures" [▶ 178].

6.4 To clean the integrated filter of the shut-off valve

Prerequisite: Stop the unit operation via the user interface.

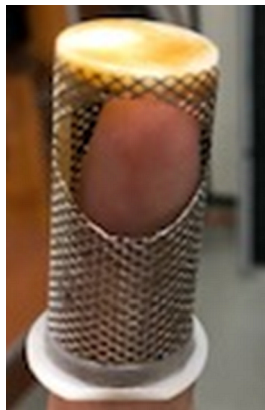
Prerequisite: Turn OFF the respective circuit breaker.

- 1 Close the shut-off valve.
- 2 Unscrew the bottom cap.



a Shut-off valve
b Bottom cap

- 3 Pull the filter out of the shut-off valve.
- 4 Clean the filter with water and a soft brush.



a Filter

- 5 When cleaned, reinstall the filter in the shut-off valve.



NOTICE

Handle the water filter with care. Do NOT use excessive force when you reinsert the water filter so as NOT to damage the water filter mesh.

- 6 Screw the bottom cap back on.
- 7 Open the shut-off valve.
- 8 Make sure that the air purge valves are in the open position.

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 Technical data

7.1 Detailed information setting mode

7.1.1 Detailed information setting mode: Indoor unit

See the installer reference guide on the Daikin Comfort website for more information.

7.1.2 Detailed information setting mode: Outdoor unit

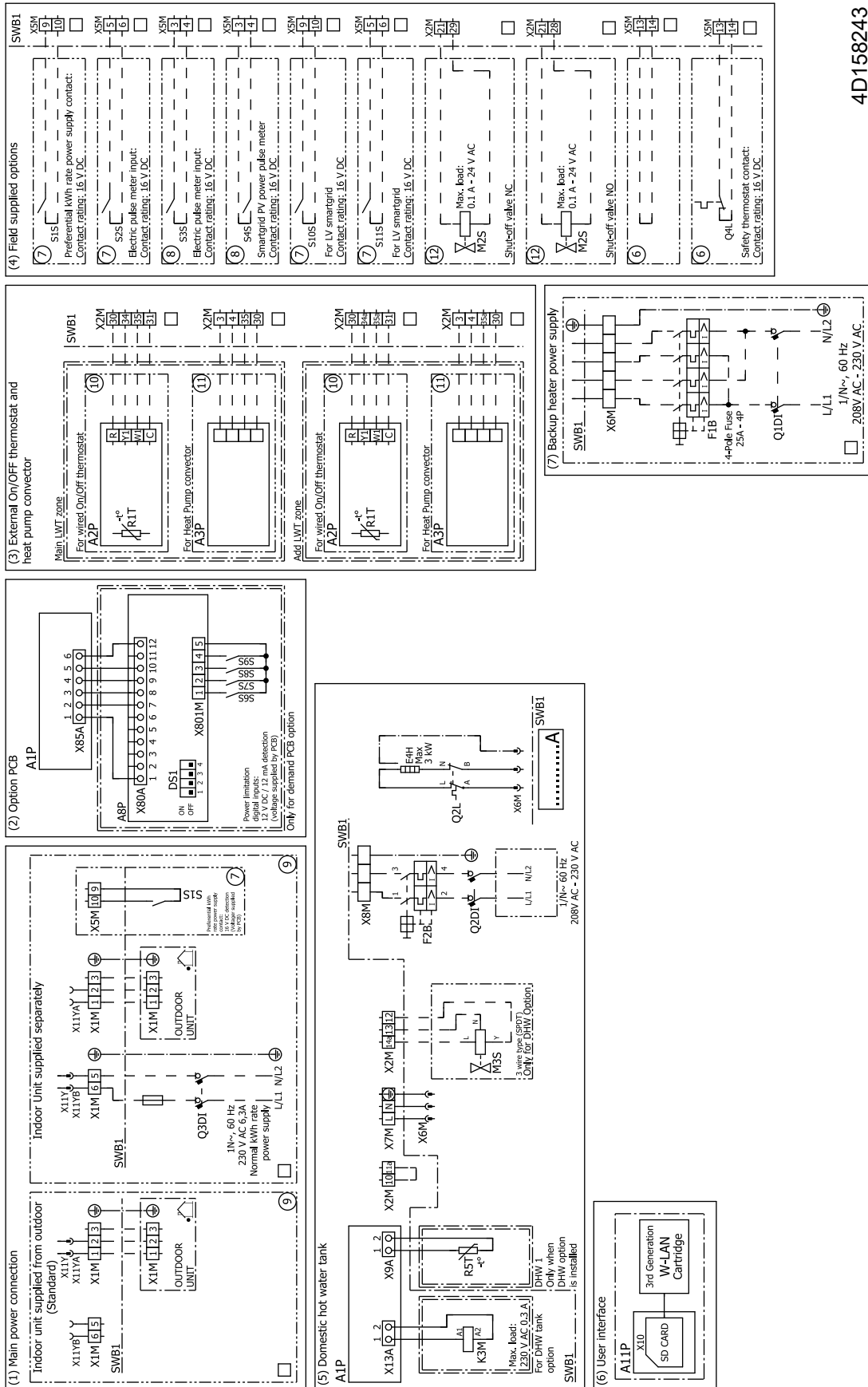
See the installer reference guide on the Daikin Comfort website for more information.

7.1.3 Detailed information setting mode: Remote controller

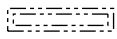
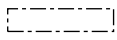
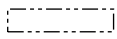
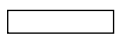
See the installer reference guide on the Daikin Comfort website for more information.

7.2 Wiring diagram

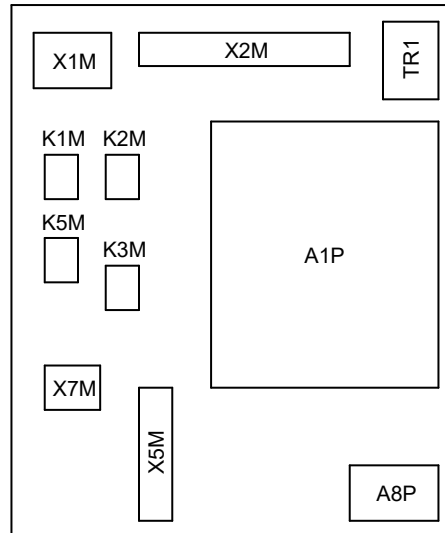
7.2.1 Wiring diagram: Indoor unit



Notes to go through before starting the unit

English	Translation
Notes to go through before starting the unit	Notes to go through before starting the unit
X1M	Main terminal
X2M	Field wiring terminal for AC
X5M	Field wiring terminal for DC
X6M	Backup heater power supply terminal
X7M, X8M	Booster heater power supply terminal
-----	Ground wiring
-----	Field supplied wiring
①	Several wiring possibilities
	Option
	Not mounted in switch box
	Wiring depending on model
	PCB
Note 1: Connection point of the power supply for the BUH/BSH should be foreseen outside the unit.	Note 1: Connection point of the power supply for the backup heater/booster heater should be foreseen outside the unit.
Backup heater power supply	Backup heater power supply
<input type="checkbox"/> 6 kW (1N~, 208 V - 230 V)	<input type="checkbox"/> 6 kW (1N~, 208 V - 230 V)
User installed options	User installed options
<input type="checkbox"/> Safety thermostat	<input type="checkbox"/> Safety thermostat
<input type="checkbox"/> Demand PCB	<input type="checkbox"/> Demand PCB
<input type="checkbox"/> WLAN cartridge	<input type="checkbox"/> WLAN card
<input type="checkbox"/> Domestic hot water tank	<input type="checkbox"/> Domestic hot water tank
Main LWT	Main leaving water temperature zone
<input type="checkbox"/> On/OFF thermostat (wired)	<input type="checkbox"/> ON/OFF thermostat (wired)
<input type="checkbox"/> Heat pump convector	<input type="checkbox"/> Heat pump convector
Add LWT	Additional leaving water temperature zone
<input type="checkbox"/> On/OFF thermostat (wired)	<input type="checkbox"/> ON/OFF thermostat (wired)
<input type="checkbox"/> Heat pump convector	<input type="checkbox"/> Heat pump convector

Position in switch box



Legend

A1P		Hydro PCB
A2P	*	ON/OFF thermostat (PC=power circuit)
A3P	*	Heat pump convector
A8P	*	Demand PCB
A11P		Main PCB of the MMI (= user interface of the indoor unit)
F1B	#	Overcurrent fuse – backup heater
F2B	#	Overcurrent fuse – booster heater
F3B	#	Overcurrent fuse – main
K*M	*	Contactors
M2S	#	2-way valve for cooling mode
M3S	*	3-way valve for space heating / domestic hot water
Q*DI	#	Ground leakage circuit breaker
Q2L	#	Thermal protector – booster heater
Q4L	#	Safety thermostat
R1T (A2P)	*	Ambient sensor ON/OFF thermostat
R5T (A1P)	*	Domestic hot water thermistor
S1S	#	Reduced tariff kWh power supply contact
S2S	#	Electrical meter pulse input 1
S3S	#	Electrical meter pulse input 2
S4S	#	Smart Grid feed-in
S6S~S9S	*	Digital power limitation inputs
S10S-S11S	#	Low voltage Smart Grid contact
X*A, X*Y		Connector
X*Y*, X*M		Terminal strip

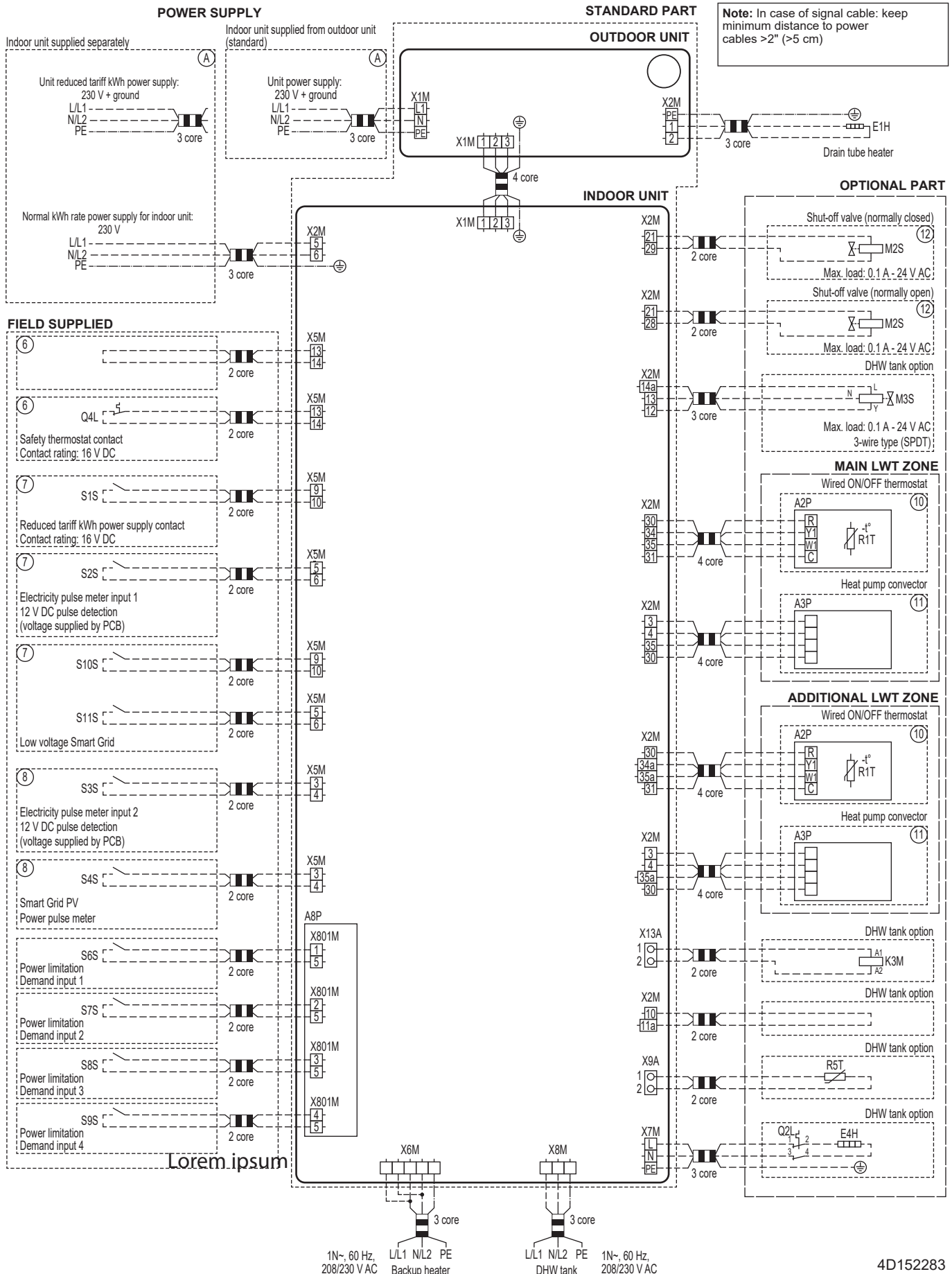
- * Optional
- # Field supplied

Translation of text on wiring diagram

English	Translation
(1) Main power connection	(1) Main power connection
Indoor unit supplied from outdoor	Indoor unit supplied from outdoor
Indoor unit supplied separately	Indoor unit supplied separately
Normal kWh rate power supply	Normal kWh rate power supply
Outdoor unit	Outdoor unit
Preferential kWh rate power supply contact: 16 V DC detection (voltage supplied by PCB)	Reduced tariff kWh power supply contact: 16 V DC detection (voltage supplied by PCB)
Standard	Standard
SWB	Switch box
(2) Option PCB	(2) Option PCB
ON	ON
Only for demand PCB option	Only for demand PCB option
OFF	OFF
Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB)	Power limitation digital inputs: 12 V DC / 12 mA detection (voltage supplied by PCB)
(3) External On/OFF thermostat and heat pump convector	(3) External ON/OFF thermostat and heat pump convector
Add. LWT zone	Additional leaving water temperature zone
For heat pump convector	For heat pump convector
For wired On/OFF thermostat	For wired ON/OFF thermostat
Main LWT zone	Main leaving water temperature zone
(4) Field supplied options	(4) Field supplied options
Contact rating	Contact rating
Electric pulse meter input	Electricity meter
For LV Smart Grid	For low voltage Smart Grid
Max. load	Maximum load
Preferential kWh rate power supply contact	Reduced tariff kWh power supply contact
Safety thermostat contact	Safety thermostat contact
Shut-off valve NC	Shut-off valve – Normally closed
Shut-off valve NO	Shut-off valve – Normally open
Smart Grid PV power pulse meter	Smart Grid photovoltaic power pulse meter
(5) Domestic hot water tank	(5) Domestic hot water tank

English	Translation
3 wire type SPDT	3-wire type SPDT
For DHW tank option	For DHW tank option
Max. 3 kW	Maximum 3 kW
Max. load	Maximum load
Only for DHW option	Only for DHW option
Only when DHW option is installed	Only when DHW option is installed
(6) User interface	(6) User interface
3rd generation WLAN cartridge	Third generation WLAN card
SD card	Card slot for WLAN card
(7) Backup heater power supply	(7) Backup heater power supply
4-pole fuse	4-pole fuse

Electrical connection diagram



Note: In case of signal cable: keep minimum distance to power cables >2" (>5 cm)

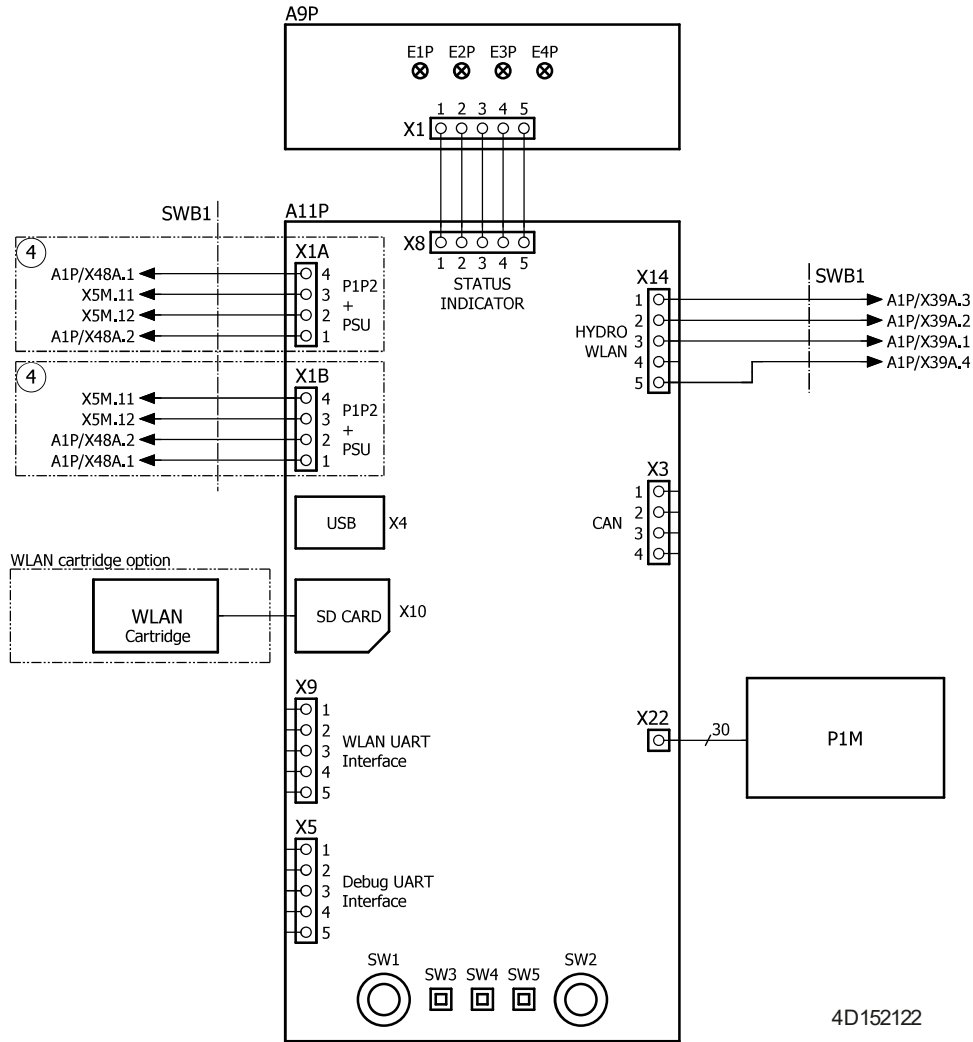
4D152283

Wiring diagram



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.

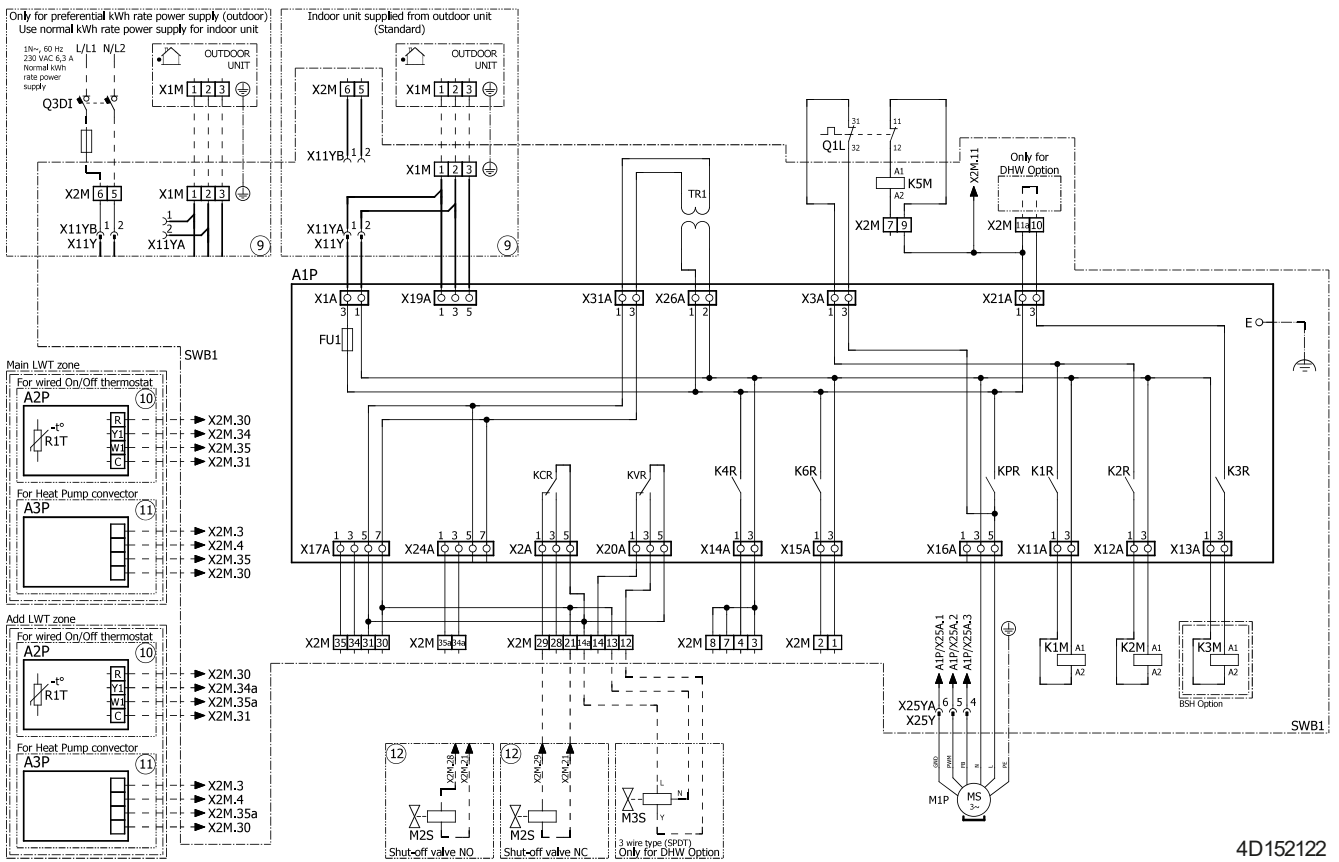


4D152122



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.

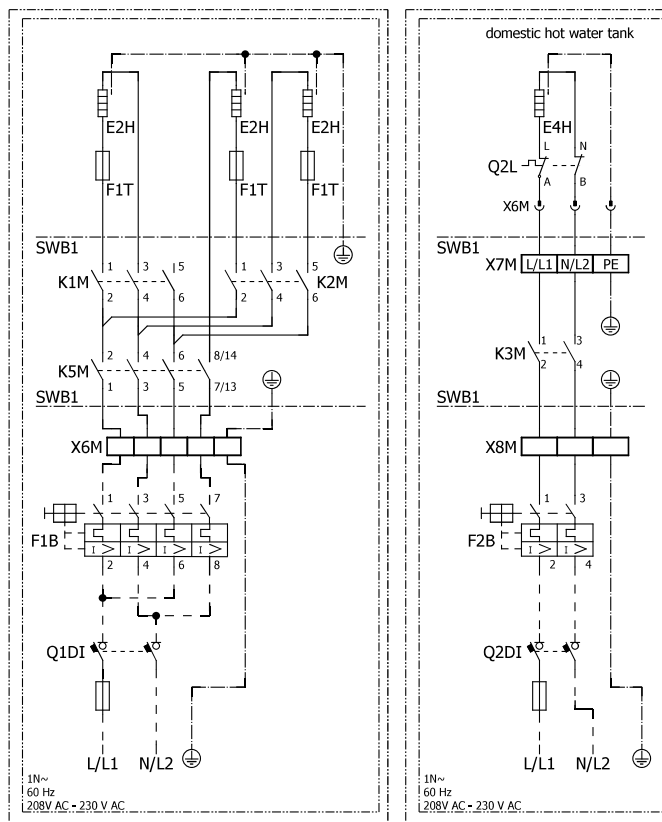


4D152122



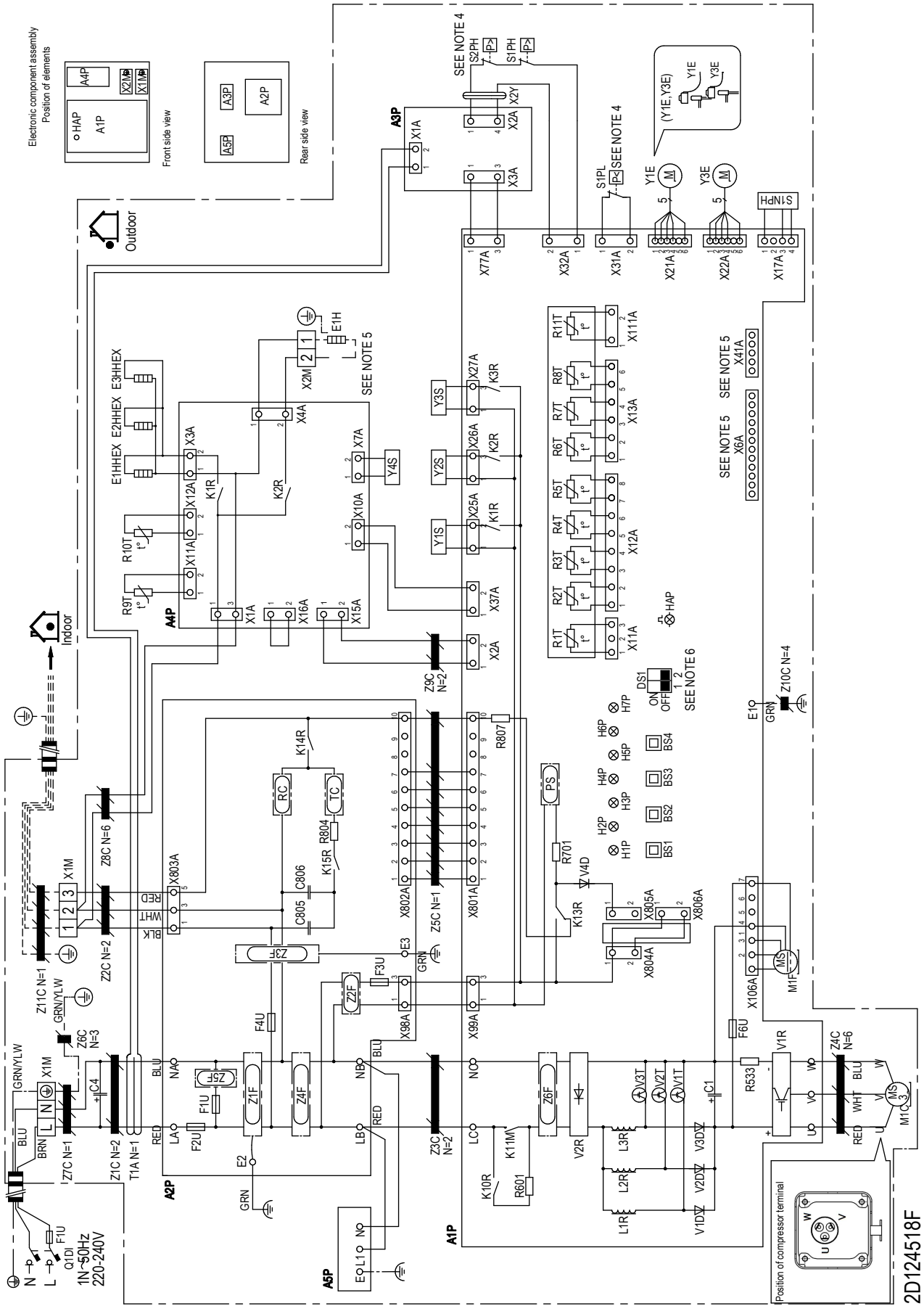
INFORMATION

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.








4D152122

7.2.2 Wiring diagram: Outdoor unit



English	Translation
Electronic component assembly	Electronic component assembly
Front side view	Front side view
Indoor	Indoor
OFF	OFF
ON	ON
Outdoor	Outdoor
Position of compressor terminal	Position of compressor terminal
Position of elements	Position of elements
Rear side view	Rear side view
See note ***	See note ***

Notes:

1	Symbols:	
	L	Live
	N	Neutral
		Protective ground
		Clean ground
		Field wiring
	==	Option
		Terminal strip
		Terminal
		Connector
		Connection
2	Colors:	
	BLK	Black
	RED	Red
	BLU	Blue
	WHT	White
	GRN	Green
	YLW	Yellow
	PNK	Pink
	ORG	Orange
	GRY	Gray
BRN	Brown	
3	This wiring diagram applies only to the outdoor unit.	
4	When operating, do not short-circuit protective devices S1PH, S2PH and S1PL.	

5	Refer to the combination table and the option manual for how to connect the wiring to X6A, X41A and X2M.
6	The factory setting of all switches is OFF. Do not change the setting of the selector switch (DS1).

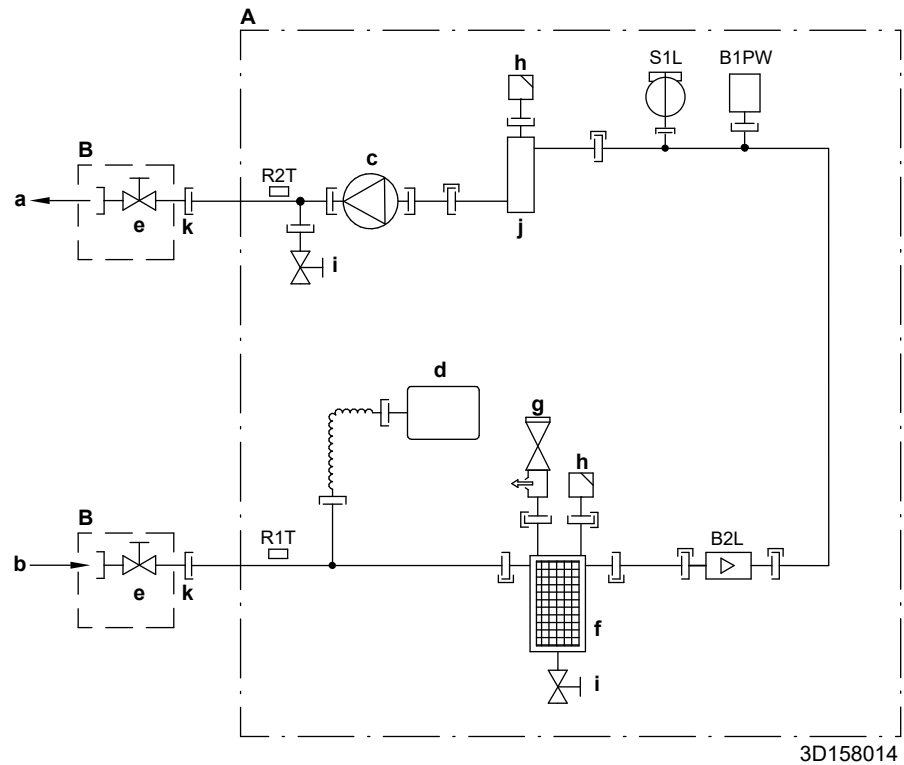
Legend:

A1P	Printed circuit board (main)
A2P	Printed circuit board (noise filter)
A3P	Printed circuit board (leakage current)
A4P	Printed circuit board (ACS)
A5P	Printed circuit board (flash)
BS1~BS4 (A1P)	Push button switch
C1~C806 (A1P, A2P)	Capacitor
DS1 (A1P)	DIP switch
E1H	Drain tube heater (field supplied)
E1HHEX~E3HHEX	Plate heat exchanger heaters
F1U	Field fuse (field supplied)
F1U~F4U (A2P)	Fuse
F6U (A1P)	Fuse (T 5.0 A / 250 V)
H1P~H7P (A1P)	Light-emitting diode (service monitor is orange)
HAP (A1P)	Light-emitting diode (service monitor is green)
K1R (A1P)	Magnetic relay (Y1S)
K1R (A4P)	Magnetic relay (E1HHEX~E3HHEX)
K2R (A1P)	Magnetic relay (Y2S)
K2R (A4P)	Magnetic relay (E1H)
K3R (A1P)	Magnetic relay (Y3S)
K10R (A1P)	Magnetic relay
K11M (A1P)	Magnetic contactor
K13R~K15R (A1P, A2P)	Magnetic relay
L1R~L3R (A1P)	Reactor
M1C	Compressor motor
M1F	Fan motor
PS (A1P)	Switching power supply
Q1DI	Ground leakage circuit breaker (30 mA) (field supplied)
R533~R807 (A1P, A2P)	Resistor
R1T	Thermistor (outdoor air)
R2T	Thermistor (compressor discharge)
R3T	Thermistor (compressor suction)





R4T	Thermistor (air heat exchanger, distributor)
R5T	Thermistor (air heat exchanger, middle)
R6T	Thermistor (refrigerant liquid)
R7T	Thermistor (compressor shell)
R8T	Thermistor (compressor port)
R9T	Thermistor (entering water)
R10T	Thermistor (leaving water)
R11T	Thermistor (fin)
RC (A2P)	Signal receiver circuit
S1NPH	High pressure sensor
S1PH, S2PH	High pressure switch
S1PL	Low pressure switch
T1A	Current transformer
TC (A2P)	Signal transmission circuit
V1D~V4D (A1P)	Diode
V1R (A1P)	IGBT power module
V2R (A1P)	Diode module
V1T~V3T (A1P)	Insulated Gate Bipolar Transistor (IGBT)
X1M, X2M	Terminal strip
Y1E	Electronic expansion valve (main)
Y3E	Electronic expansion valve (injection)
Y1S	Solenoid valve (4-way valve)
Y2S	Solenoid valve (low pressure bypass)
Y3S	Solenoid valve (hot gas bypass)
Y4S	Solenoid valve (liquid injection)
Z1C~Z10C	Noise filter (ferrite core)
Z1F~Z6F (A1P, A2P)	Noise filter

7.3 Piping diagram

7.3.1 Piping diagram: Indoor unit



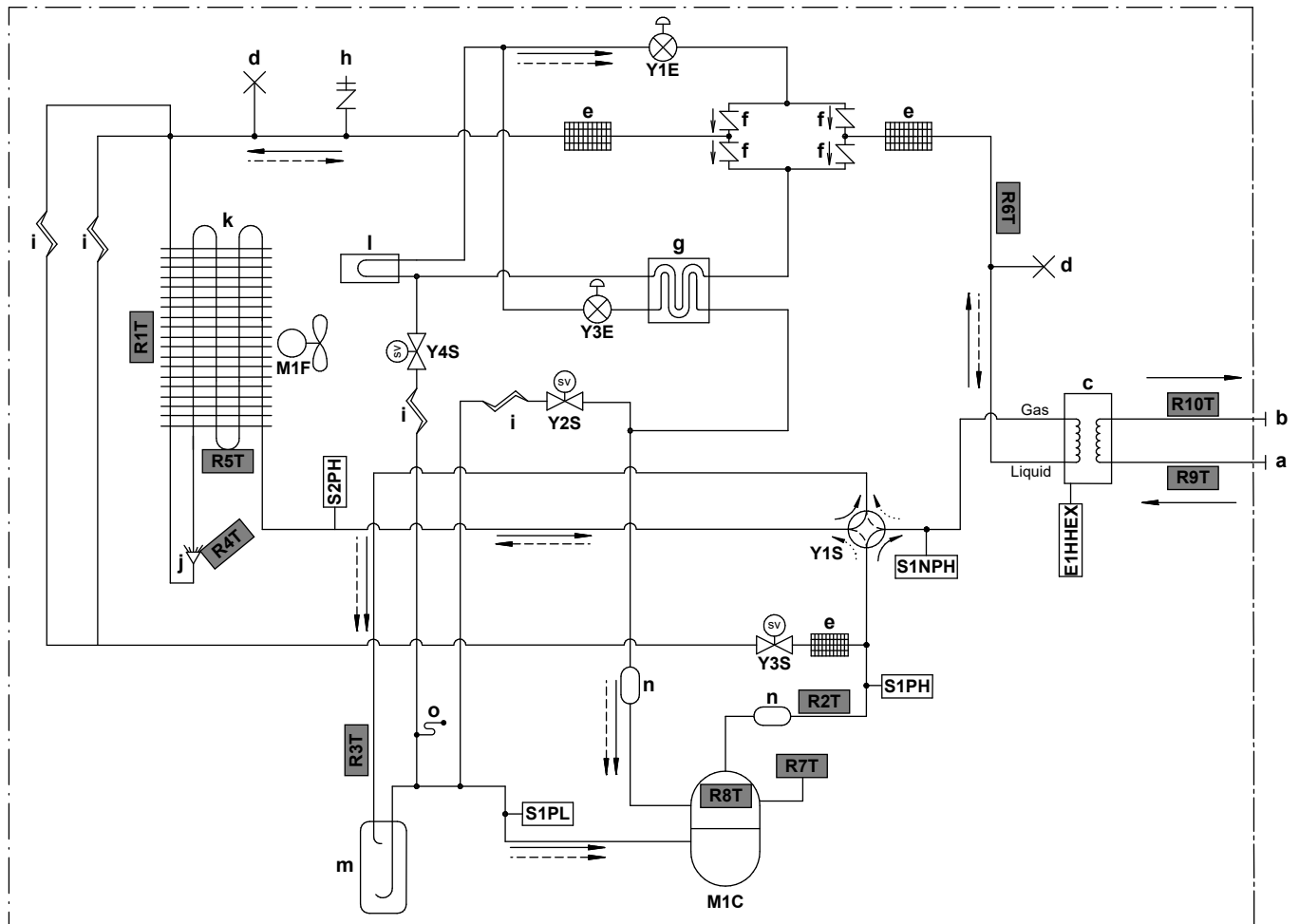
3D158014

- A** Indoor unit
- B** Field installed
- a** Space heating water OUT
- b** Water IN connection 1" NPT
- c** Pump
- d** Expansion vessel
- e** Shut-off valve 1" NPT, female-female
- f** Magnetic filter/dirt separator
- g** Safety valve
- h** Air purge
- i** Drain valve
- j** Backup heater
- k** Screw connection 1" NPT
- B1PW** Space heating water pressure sensor
- B2L** Flow sensor
- R1T** Thermistor (water IN)
- R2T** Thermistor (backup heater – water OUT)
- S1L** Flow switch
-  Screw connection
-  Flare connection
-  Quick coupling
-  Brazed connection

7.3.2 Piping diagram: Outdoor unit

**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.



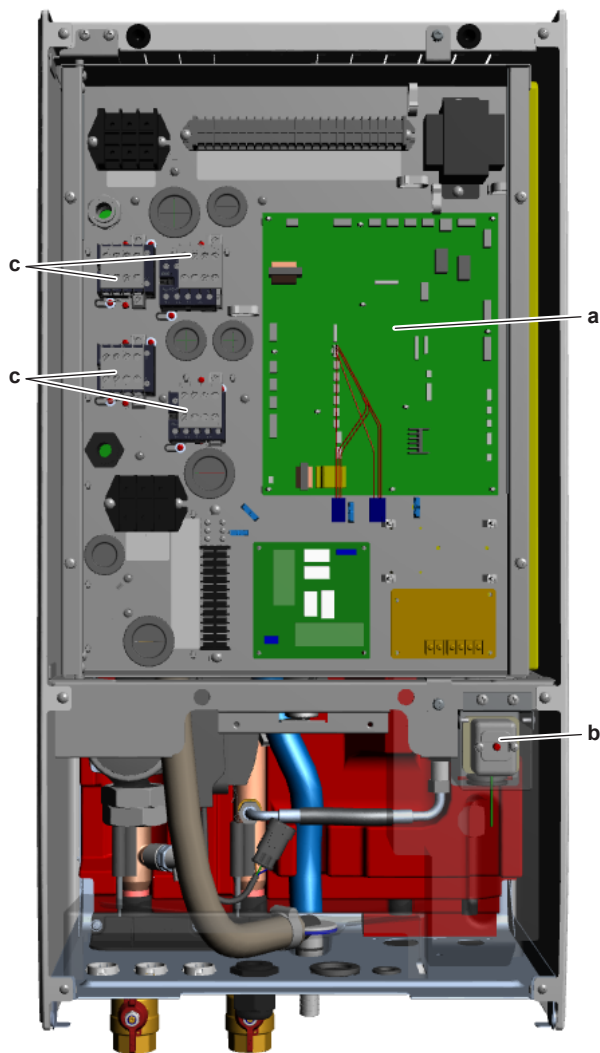
3D158015

Gas	Gas	Thermistors:	
Liquid	Liquid	R1T	Outdoor air
a	Water IN (screw connection, male, 1" NPT)	R2T	Compressor discharge
b	Water OUT (screw connection, male, 1" NPT)	R3T	Compressor suction
c	Plate heat exchanger	R4T	Air heat exchanger, distributor
d	Pinched pipe	R5T	Air heat exchanger, middle
e	Refrigerant filter	R6T	Refrigerant liquid
f	One-way valve	R7T	Compressor shell
g	Economizer heat exchanger	R8T	Compressor port
h	Service port 5/16" flare	R9T	Entering water
i	Capillary tube	R10T	Leaving water
j	Distributor		
k	Air heat exchanger	Refrigerant flow:	
l	PCB cooling	→	Heating
m	Accumulator	⇄	Cooling
n	Muffler		
o	Fusible plug		
E1HHEX	Plate heat exchanger heater		
M1C	Compressor		
M1F	Fan motor		
S1PH	High pressure switch (812 PSI (5.6 MPa))		
S2PH	High pressure switch (605 PSI (4.17 MPa))		
S1PL	Low pressure switch		
S1NPH	High pressure sensor		
Y1E	Electronic expansion valve (main)		

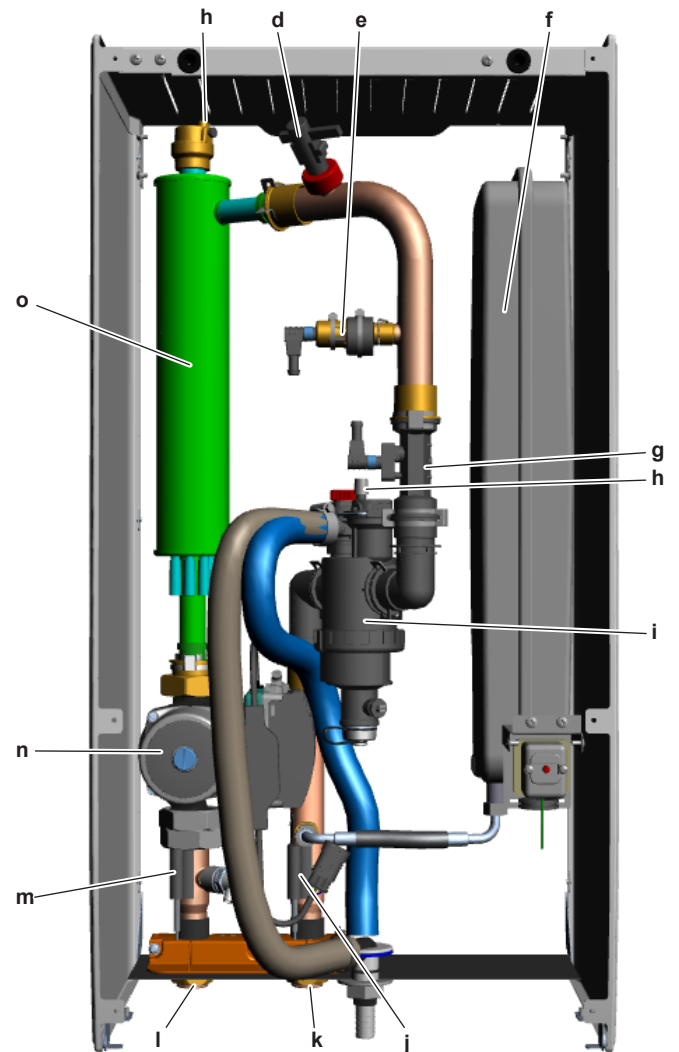
- Y3E** Electronic expansion valve (injection)
- Y1S** Solenoid valve (4-way valve)
- Y2S** Solenoid valve (low pressure bypass)
- Y3S** Solenoid valve (hot gas bypass)
- Y4S** Solenoid valve (liquid injection)

7.4 Component overview

7.4.1 Component overview: Indoor unit

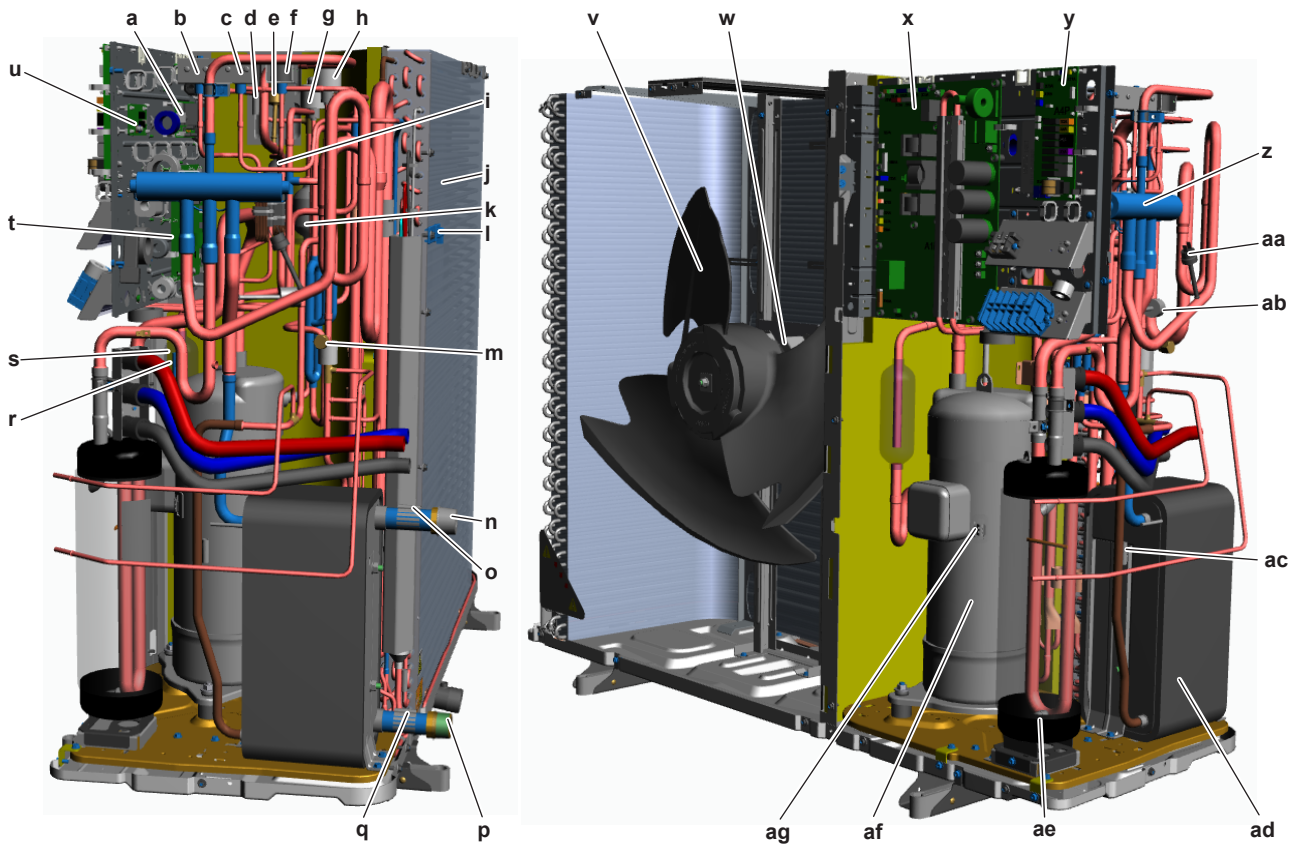


- a Hydro PCB
- b Backup heater thermal protector
- c Backup heater contactor



- i Magnetic filter/dirt separator
- j Inlet water thermistor R1T
- k Space heating water inlet
- l Space heating water outlet
- m Outlet water after backup heater thermistor R2T
- n Water pump (main)
- o Backup heater

7.4.2 Component overview: Outdoor unit



- | | |
|--|---|
| a Leakage current PCB | r Suction thermistor R3T |
| b Solenoid valve Y2S (low pressure by-pass) | s Muffler |
| c Solenoid valve Y3S (hot gas by-pass) | t Noise filter PCB |
| d Discharge pipe thermistor R2T | u Flash PCB |
| e High pressure switch S1PH | v Fan |
| f Solenoid valve Y4S (liquid injection) | w Fan motor |
| g Expansion valve Y1E (main) | x Main + inverter PCB |
| h Expansion valve Y3E (injection) | y ACS digital I/O PCB |
| i Low pressure switch S1PL | z 4-way valve |
| j Heat exchanger | aa High pressure switch S2PH |
| k Muffler | ab Refrigerant pressure sensor |
| l Outdoor air thermistor R1T | ac Refrigerant liquid thermistor R6T |
| m Service port | ad Heat exchanger |
| n Water outlet (to indoor unit) | ae Accumulator |
| o Outlet water thermistor R10T | af Compressor |
| p Water inlet (from indoor unit) | ag Compressor shell thermistor R7T |
| q Inlet water thermistor R9T | |

7.5 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/baseboards / 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 2nd 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).

7.6 Field settings

See next page.

Field settings table

Applicable indoor units

UTBX040E▲6VJ▼

Notes

▲ = 1, 2, 3, ..., 9, A, B, C, ..., Z

▼ = , , 1, 2, 3, ..., 9

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Range, step Default value	Date	Value
Main zone							
2.4		Setpoint mode		0: Fixed 1: Outdoor Reset heating, fixed cooling 2: Outdoor Reset	0: Fixed 1: Outdoor Reset heating, fixed cooling 2: Outdoor Reset		
└ Heating Outdoor Reset curve							
2.5	[1-00]	Low ambient temp. for LWT main zone heating Outdoor Reset curve.	R/W	-40~5°C, step: 1°C -15°C	-40~40°F, step: 2°F 4°F		
2.5	[1-01]	High ambient temp. for LWT main zone heating Outdoor Reset curve.	R/W	10~25°C, step: 1°C 15°C	50~76°F, step: 2°F 58°F		
2.5	[1-02]	Leaving water value for low ambient temp. for LWT main zone heating Outdoor Reset curve.	R/W	[9-01]~[9-00], step: 1°C [2-0C]=0: 35°C [2-0C]=1: 45°C [2-0C]=2: 65°C	[9-01]~[9-00], step: 2°F [2-0C]=0: 94°F [2-0C]=1: 112°F [2-0C]=2: 148°F		
2.5	[1-03]	Leaving water value for high ambient temp. for LWT main zone heating Outdoor Reset curve.	R/W	[9-01]~min (45, [9-00])°C, step: 1°C [2-0C]=0: 25°C [2-0C]=1: 35°C [2-0C]=2: 35°C	[9-01]~min (112, [9-00])°F, step: 2°F [2-0C]=0: 76°F [2-0C]=1: 94°F [2-0C]=2: 94°F		
└ Cooling Outdoor Reset curve							
2.6	[1-06]	Low ambient temp. for LWT main zone cooling Outdoor Reset curve.	R/W	10~25°C, step: 1°C 20°C	50~76°F, step: 2°F 68°F		
2.6	[1-07]	High ambient temp. for LWT main zone cooling Outdoor Reset curve.	R/W	25~43°C, step: 1°C 35°C	76~110°F, step: 2°F 94°F		
2.6	[1-08]	Leaving water value for low ambient temp. for LWT main zone cooling Outdoor Reset curve.	R/W	[9-03]~[9-02]°C, step: 1°C 22°C	[9-03]~[9-02]°F, step: 2°F 72°F		
2.6	[1-09]	Leaving water value for high ambient temp. for LWT main zone cooling Outdoor Reset curve.	R/W	[9-03]~[9-02]°C, step: 1°C [2-0C]=0: 18°C [2-0C]=1: 7°C [2-0C]=2: 18°C	[9-03]~[9-02]°F, step: 2°F [2-0C]=0: 64°F [2-0C]=1: 44°F [2-0C]=2: 64°F		
Main zone							
2.7	[2-0C]	Emitter type	R/W	0: Underfloor heating 1: Fancoil unit / Fan Convactor / AHU 2: Radiator/Baseboard	0: Underfloor heating 1: Fancoil unit / Fan Convactor / AHU 2: Radiator/Baseboard		
└ Setpoint range							
2.8.1	[9-01]	Heating minimum	R/W	15~37°C, step: 1°C 25°C	58~98°F, step: 2°F 76°F		
2.8.2	[9-00]	Heating maximum	R/W	[2-0C]=2: 37~70, step: 1°C 70°C [2-0C]≠2: 37~55, step: 1°C 55°C	[2-0C]=2: 98~158, step: 2°F 158°F [2-0C]≠2: 98~130, step: 2°F 130°F		
2.8.3	[9-03]	Cooling minimum	R/W	5~18°C, step: 1°C 7°C	40~64°F, step: 2°F 44°F		
2.8.4	[9-02]	Cooling maximum	R/W	18~22°C, step: 1°C 22°C	64~72°F, step: 2°F 72°F		
Main zone							
2.9	[C-07]	Control	R/W	0: LWT control 1: Ext RT control 2: RT control	0: LWT control 1: Ext RT control 2: RT control		
2.A	[C-05]	Thermostat type	R/W	0: - 1: 1 contact 2: 2 contacts	0: - 1: 1 contact 2: 2 contacts		
└ Delta T							
2.B.1	[1-0B]	Delta T heating	R/W	3~12°C, step: 1°C [2-0C]≠2 (Radiator/Baseboard): 5°C [2-0C]=2 (Radiator/Baseboard): 10°C	6~22°F, step: 2°F [2-0C]≠2 (Radiator/Baseboard): 8°F [2-0C]=2 (Radiator/Baseboard): 18°F		
2.B.2	[1-0D]	Delta T cooling	R/W	3~10°C, step: 1°C 5°C	6~18°F, step: 2°F 8°F		
└ Shut off valve							
2.D.1	[F-0B]	During thermo	R/W	0: No 1: Yes	0: No 1: Yes		
2.D.2	[F-0C]	During cooling	R/W	0: No 1: Yes	0: No 1: Yes		
Main zone							
2.E		Outdoor Reset curve type	R/W	0: 2-points 1: Slope-Offset	0: 2-points 1: Slope-Offset		
Additional zone							
3.4		Setpoint mode		0: Fixed 1: Outdoor Reset heating, fixed cooling 2: Outdoor Reset	0: Fixed 1: Outdoor Reset heating, fixed cooling 2: Outdoor Reset		
└ Heating Outdoor Reset curve							
3.5	[0-00]	Leaving water value for high ambient temp. for LWT add zone heating Outdoor Reset curve.	R/W	[9-05]~min (45,[9-06])°C, step: 1°C 35°C	[9-05]~min (112,[9-06])°F, step: 2°F 94°F		
3.5	[0-01]	Leaving water value for low ambient temp. for LWT add zone heating Outdoor Reset curve.	R/W	[9-05]~[9-06]°C, step: 1°C 65°C	[9-05]~[9-06]°F, step: 2°F 148°F		
3.5	[0-02]	High ambient temp. for LWT add zone heating Outdoor Reset curve.	R/W	10~25°C, step: 1°C 15°C	50~76°F, step: 2°F 58°F		
3.5	[0-03]	Low ambient temp. for LWT add zone heating Outdoor Reset curve.	R/W	-40~5°C, step: 1°C -15°C	-40~40°F, step: 2°F 4°F		
└ Cooling Outdoor Reset curve							

Field settings table							Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Range, step Default value	Date	Value	
	[0-04]	Leaving water value for high ambient temp. for LWT add zone cooling Outdoor Reset curve.	R/W	[9-07]-[9-08]°C, step: 1°C [2-0D]=0: 18°C [2-0D]=1: 7°C [2-0D]=2: 18°C	[9-07]-[9-08]°F, step: 2°F [2-0D]=0: 64°F [2-0D]=1: 44°F [2-0D]=2: 64°F			
	[0-05]	Leaving water value for low ambient temp. for LWT add zone cooling Outdoor Reset curve.	R/W	[9-07]-[9-08]°C, step: 1°C 22°C	[9-07]-[9-08]°F step: 2°F 72°F			
	[0-06]	High ambient temp. for LWT add zone cooling Outdoor Reset curve.	R/W	25-43°C, step: 1°C 35°C	76-110°F, step: 2°F 94°F			
	[0-07]	Low ambient temp. for LWT add zone cooling Outdoor Reset curve.	R/W	10-25°C, step: 1°C 20°C	50-76°F, step: 2°F 68°F			
Additional zone								
	[2-0D]	Emitter type	R/O	0: Underfloor heating 1: Fancoil unit / Fan Convactor / AHU 2: Radiator/Baseboard	0: Underfloor heating 1: Fancoil unit / Fan Convactor / AHU 2: Radiator/Baseboard			
Setpoint range								
	[9-05]	Heating minimum	R/W	15-37°C, step: 1°C 25°C	58-98°F, step: 2°F 76°F			
	[9-06]	Heating maximum	R/W	[2-0D]=2: 37-70, step: 1°C 70°C [2-0D]≠2: 37-55, step: 1°C 55°C	[2-0D]=2: 98-158, step: 2°F 158°F [2-0D]≠2: 98-130, step: 2°F 130°F			
	[9-07]	Cooling minimum	R/W	5-18°C, step: 1°C 7°C	40-64°F, step: 2°F 44°F			
	[9-08]	Cooling maximum	R/W	18-22°C, step: 1°C 22°C	64-72°F, step: 2°F 72°F			
Additional zone								
	[C-06]	Thermostat type	R/W	0: - 1: 1 contact 2: 2 contacts	0: - 1: 1 contact 2: 2 contacts			
Delta T								
	[1-0C]	Delta T heating	R/W	3-12°C, step: 1°C 10°C	6-22°F, step: 2°F 18°F			
	[1-0E]	Delta T cooling	R/W	3-10°C, step: 1°C 5°C	6-18°F, step: 2°F 8°F			
Additional zone								
	[C-06]	Outdoor Reset curve type	R/O	0: 2-points 1: Slope-Offset	0: 2-points 1: Slope-Offset			
Space heating / cooling								
Operation range								
	[4-02]	Space heating OFF temp	R/W	14-35°C, step: 1°C 35°C	58-94°F, step: 2°F 94°F			
	[F-01]	Space cooling OFF temp	R/W	10-35°C, step: 1°C 20°C	50-94°F, step: 2°F 68°F			
Space heating / cooling								
	[7-02]	Number of zones	R/W	0: 1 LWT zone 1: 2 LWT zones	0: 1 LWT zone 1: 2 LWT zones			
	[F-0D]	Pump operation mode	R/W	0: Continuous 1: Sample 2: Request	0: Continuous 1: Sample 2: Request			
	[E-02]	Unit type	R/O	0: Reversible	0: Reversible			
	[9-0D]	Pump speed limitation	R/W	0-8, step: 1 0: No limitation 1-4: 90-60% pump speed 5-8: 90-60% pump speed during sampling 6	0-8, step: 1 0: No limitation 1-4: 90-60% pump speed 5-8: 90-60% pump speed during sampling 6			
Space heating / cooling								
	[F-00]	Pump outside range	R/W	0: Restricted 1: Allowed	0: Restricted 1: Allowed			
	[D-03]	Increase around 0°C	R/W	0: No 1: increase 2°C, span 4°C 2: increase 4°C, span 4°C 3: increase 2°C, span 8°C 4: increase 4°C, span 8°C	0: No 1: increase 4°F, span 7°F 2: increase 7°F, span 7°F 3: increase 4°F, span 14°F 4: increase 7°F, span 14°F			
	[9-04]	Overshoot	R/W	1-4°C, step: 1°C 1°C	2-8°F, step: 2°F 2°F			
	[2-06]	Freeze protection	R/W	0: Disabled	0: Disabled			
Tank								
	[6-0A]	Comfort setpoint	R/W	30-[6-0E]°C, step: 1°C 60°C	86-[6-0E]°F, step: 2°F 140°F			
	[6-0B]	Eco setpoint	R/W	30-min (50, [6-0E])°C, step: 1°C 45°C	86-min (122, [6-0E])°F, step: 2°F 112°F			
	[6-0C]	Reheat setpoint	R/W	30-min (50, [6-0E])°C, step: 1°C 45°C	86-min (122, [6-0E])°F, step: 2°F 112°F			
	[6-0D]	Heat up mode	R/W	0: Reheat only 1: Reheat + sched. 2: Scheduled only	0: Reheat only 1: Reheat + sched. 2: Scheduled only			
Disinfection								
	[2-01]	Activation	R/W	0: No	0: No			
	[2-00]	Operation day	R/W	0: Each day 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday 7: Sunday	0: Each day 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday 7: Sunday			

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Range, step Default value	Date	Value
	[2-02]	Start time	R/W	0-23 hour, step: 1 hour 1	0-23 hour, step: 1 hour 1		
	[2-03]	Tank setpoint	R/W	[E-07]≠1: 55-75°C, step: 5°C 70°C [E-07]=1: 60°C 60°C	[E-07]≠1: 130-160°F, step: 10°F 160°F [E-07]=1: 140°F 140°F		
	[2-04]	Duration	R/W	[E-07]≠1: 5-60 min, step: 5 min 10 min [E-07]=1: 40-60 min, step: 5 min 40 min	[E-07]≠1: 5-60 min, step: 5 min 10 min [E-07]=1: 40-60 min, step: 5 min 40 min		
Tank							
	[6-0E]	Maximum	R/W	[E-07]=0 or 7: 40-60°C, step: 1°C 60°C [E-07]=3 or 5 or 8: 40-75°C, step: 1°C 80°C	[E-07]=0 or 7: 104-140°F, step: 2°F 140°F [E-07]=3 or 5 or 8: 104-166°F, step: 2°F 158°F		
	[6-00]	Differential	R/W	2-40°C, step: 1°C 8°C	4-72°F, step: 2°F 14°F		
	[6-08]	Reheat differential	R/W	2-20°C, step: 1°C 10°C	4-36°F, step: 2°F 18°F		
		Setpoint mode	R/W	0: Fixed 1: Outdoor Reset	0: Fixed 1: Outdoor Reset		
└ Outdoor Reset curve							
	[0-0B]	Leaving water value for high ambient temp. for DHW Outdoor Reset curve.	R/W	35-[6-0E]°C, step: 1°C 55°C	94-[6-0E]°F, step: 2°F 130°F		
	[0-0C]	Leaving water value for low ambient temp. for DHW Outdoor Reset curve.	R/W	Min (45,[6-0E])-[6-0E]°C, step: 1°C 60°C	Min (112,[6-0E])-[6-0E]°F, step: 2°F 140°F		
	[0-0D]	High ambient temp. for DHW Outdoor Reset curve	R/W	10-25°C, step: 1°C 15°C	50-76°F, step: 2°F 58°F		
	[0-0E]	Low ambient temp. for DHW Outdoor Reset curve.	R/W	-40-5°C, step: 1°C -10°C	-40-40°F, step: 2°F 14°F		
Tank							
	[6-01]	Margin	R/W	0-10°C, step: 1°C 2°C	0-18°F, step: 2°F 4°F		
		Outdoor Reset curve type	R/O	0: 2-points 1: Slope-Offset	0: 2-points 1: Slope-Offset		
User settings							
└ Quiet							
		Activation	R/W	0: OFF 1: Manual 2: Automatic	0: OFF 1: Manual 2: Automatic		
		Level	R/W	0: Quiet 1: More Quiet 2: Most Quiet	0: Quiet 1: More Quiet 2: Most Quiet		
Installer settings							
└ Configuration wizard							
└ System							
	[E-03]	BUH type	R/O	3: 6V	3: 6V		
	[E-05] [E-06] [E-07]	Domestic hot water	R/W	No DHW UHWS, small volume UHWS, large volume 3rd party, small coil 3rd party, large coil	No DHW UHWS, small volume UHWS, large volume 3rd party, small coil 3rd party, large coil		
	[4-06]	Emergency	R/W	0: Manual 1: Automatic 2: Auto red SH/ DHW ON 3: Auto red SH/ DHW OFF 4: Auto normal SH/ DHW OFF	0: Manual 1: Automatic 2: Auto red SH/ DHW ON 3: Auto red SH/ DHW OFF 4: Auto normal SH/ DHW OFF		
	[7-02]	Number of zones	R/W	0: Single zone 1: Dual zone	0: Single zone 1: Dual zone		
	[E-0D]	Anti-freeze filled system	R/W	0: No 1: Yes	0: No 1: Yes		
	[6-02]	BSH capacity	R/W	0-10 kW, step: 0.2 kW 3 kW	0-10 kW, step: 0.2 kW 3 kW		
└ Backup heater							
	[5-0D]	Voltage	R/O	0: 230 V	0: 230 V		
	[4-0A]	Configuration	R/W	0: 1 1: 1/1+2 2: 1/2 3: 1/2 + 1/1+2 in emergency	0: 1 1: 1/1+2 2: 1/2 3: 1/2 + 1/1+2 in emergency		
	[6-03]	Capacity step 1	R/W	0-10 kW, step: 0.2 kW 2 kW	0-10 kW, step: 0.2 kW 2 kW		
	[6-04]	Additional capacity step 2	R/W	0-10 kW, step: 0.2 kW 4 kW	0-10 kW, step: 0.2 kW 4 kW		
└ Main zone							
	[2-0C]	Emitter type	R/W	0: Underfloor heating 1: Fancoil unit / Fan Convactor / AHU 2: Radiator/Baseboard	0: Underfloor heating 1: Fancoil unit / Fan Convactor / AHU 2: Radiator/Baseboard		
	[C-07]	Control	R/W	0: LWT control 1: Ext RT control 2: RT control	0: LWT control 1: Ext RT control 2: RT control		
		Setpoint mode	R/W	0: Fixed 1: Outdoor Reset heating, fixed cooling 2: Outdoor Reset	0: Fixed 1: Outdoor Reset heating, fixed cooling 2: Outdoor Reset		
		Schedule	R/W	0: No 1: Yes	0: No 1: Yes		
		Outdoor Reset curve type	R/W	0: 2-points 1: Slope-Offset	0: 2-points 1: Slope-Offset		

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Range, step Default value	Date	Value
9.1.6	[1-00]	Low ambient temp. for LWT main zone heating Outdoor Reset curve.	R/W	-40~5°C, step: 1°C -15°C	-40~40°F, step: 2°F 58°F		
9.1.6	[1-01]	High ambient temp. for LWT main zone heating Outdoor Reset curve.	R/W	10~25°C, step: 1°C 15°C	50~76°F, step: 2°F 58°F		
9.1.6	[1-02]	Leaving water value for low ambient temp. for LWT main zone heating Outdoor Reset curve.	R/W	[9-01]~[9-00], step: 1°C [2-0C]=0: 35°C [2-0C]=1: 45°C [2-0C]=2: 65°C	[9-01]~[9-00], step: 2°F [2-0C]=0: 94°F [2-0C]=1: 112°F [2-0C]=2: 148°F		
9.1.6	[1-03]	Leaving water value for high ambient temp. for LWT main zone heating Outdoor Reset curve.	R/W	[9-01]~min (45, [9-00])°C, step: 1°C [2-0C]=0: 25°C [2-0C]=1: 35°C [2-0C]=2: 35°C	[9-01]~min (112, [9-00])°F, step: 2°F [2-0C]=0: 76°F [2-0C]=1: 94°F [2-0C]=2: 94°F		
9.1.7	[1-06]	Low ambient temp. for LWT main zone cooling Outdoor Reset curve.	R/W	10~25°C, step: 1°C 20°C	50~76°F, step: 2°F 68°F		
9.1.7	[1-07]	High ambient temp. for LWT main zone cooling Outdoor Reset curve.	R/W	25~43°C, step: 1°C 35°C	76~110°F, step: 2°F 94°F		
9.1.7	[1-08]	Leaving water value for low ambient temp. for LWT main zone cooling Outdoor Reset curve.	R/W	[9-03]~[9-02]°C, step: 1°C 22°C	[9-03]~[9-02]°F, step: 2°F 72°F		
9.1.7	[1-09]	Leaving water value for high ambient temp. for LWT main zone cooling Outdoor Reset curve.	R/W	[9-03]~[9-02]°C, step: 1°C [2-0C]=0: 18°C [2-0C]=1: 7°C [2-0C]=2: 18°C	[9-03]~[9-02]°F, step: 2°F [2-0C]=0: 64°F [2-0C]=1: 44°F [2-0C]=2: 64°F		
└─ Additional zone							
9.1.8.1	[2-0D]	Emitter type	R/W	0: Underfloor heating 1: Fancoil unit / Fan Convactor / AHU 2: Radiator/Baseboard	0: Underfloor heating 1: Fancoil unit / Fan Convactor / AHU 2: Radiator/Baseboard		
9.1.8.3		Setpoint mode	R/W	0: Fixed 1: Outdoor Reset heating, fixed cooling 2: Outdoor Reset	0: Fixed 1: Outdoor Reset heating, fixed cooling 2: Outdoor Reset		
9.1.8.4		Schedule	R/W	0: No 1: Yes	0: No 1: Yes		
9.1.9	[0-00]	Leaving water value for high ambient temp. for LWT add zone heating Outdoor Reset curve.	R/W	[9-05]~min (45, [9-06])°C, step: 1°C 35°C	[9-05]~min (112, [9-06])°F, step: 2°F 94°F		
9.1.9	[0-01]	Leaving water value for low ambient temp. for LWT add zone heating Outdoor Reset curve.	R/W	[9-05]~[9-06]°C, step: 1°C 65°C	[9-05]~[9-06]°F, step: 2°F 148°F		
9.1.9	[0-02]	High ambient temp. for LWT add zone heating Outdoor Reset curve.	R/W	10~25°C, step: 1°C 15°C	50~76°F, step: 2°F 58°F		
9.1.9	[0-03]	Low ambient temp. for LWT add zone heating Outdoor Reset curve.	R/W	-40~5°C, step: 1°C -15°C	-40~40°F, step: 2°F 4°F		
9.1.A	[0-04]	Leaving water value for high ambient temp. for LWT add zone cooling Outdoor Reset curve.	R/W	[9-07]~[9-08]°C, step: 1°C [2-0D]=0: 18°C [2-0D]=1: 7°C [2-0D]=2: 18°C	[9-07]~[9-08]°F, step: 2°F [2-0D]=0: 64°F [2-0D]=1: 44°F [2-0D]=2: 64°F		
9.1.A	[0-05]	Leaving water value for low ambient temp. for LWT add zone cooling Outdoor Reset curve.	R/W	[9-07]~[9-08]°C, step: 1°C 22°C	[9-07]~[9-08]°F step: 2°F 72°F		
9.1.A	[0-06]	High ambient temp. for LWT add zone cooling Outdoor Reset curve.	R/W	25~43°C, step: 1°C 35°C	76~110°F, step: 2°F 94°F		
9.1.A	[0-07]	Low ambient temp. for LWT add zone cooling Outdoor Reset curve.	R/W	10~25°C, step: 1°C 20°C	50~76°F, step: 2°F 68°F		
└─ Tank							
9.1.B.1	[6-0D]	Heat up mode	R/W	0: Reheat only 1: Reheat + sched. 2: Scheduled only	0: Reheat only 1: Reheat + sched. 2: Scheduled only		
9.1.B.2	[6-0A]	Comfort setpoint	R/W	30~[6-0E]°C, step: 1°C 60°C	86~[6-0E]°F, step: 2°F 112°F		
9.1.B.3	[6-0B]	Eco setpoint	R/W	30~min (50, [6-0E])°C, step: 1°C 45°C	86~min (122, [6-0E])°F, step: 2°F 112°F		
9.1.B.4	[6-0C]	Reheat setpoint	R/W	30~min (50, [6-0E])°C, step: 1°C 45°C	86~min (122, [6-0E])°F, step: 2°F 112°F		
9.1.B.5	[6-08]	Reheat differential	R/W	2~20°C, step: 1°C 10°C	4~36°F, step: 2°F 18°F		
└─ Domestic hot water							
9.2.1	[E-05] [E-06] [E-07]	Domestic hot water	R/W	No DHW EKHW, small volume EKHW, big volume EKHWP 3rd party, small coil 3rd party, big coil	No DHW EKHW, small volume EKHW, big volume EKHWP 3rd party, small coil 3rd party, big coil		
9.2.4	[D-07]	Solar	R/W	0: No 1: Yes	0: No 1: Yes		
└─ Back up heater							
9.3.1	[E-03]	BUH type	R/O	3: 6V	3: 6V		
9.3.2	[5-0D]	Voltage	R/O	0: 230 V, 1~	0: 230 V, 1~		
9.3.3	[4-0A]	Configuration	R/W	1: 1/1+2 2: 1/2 3: 1/2 + 1/1+2 in emergency	1: 1/1+2 2: 1/2 3: 1/2 + 1/1+2 in emergency		
9.3.4	[6-03]	Capacity step 1	R/W	0~10 kW, step: 0.2 kW 2 kW	0~10 kW, step: 0.2 kW 2 kW		
9.3.5	[6-04]	Additional capacity step 2	R/W	0~10 kW, step: 0.2 kW 4 kW	0~10 kW, step: 0.2 kW 4 kW		

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Range, step Default value	Date	Value
9.3.6	[5-00]	Equilibrium: Deactivate backup heater (or external backup heat source in case of a bivalent system) above the equilibrium temperature for space heating?	R/W	0: No 1: Yes	0: No 1: Yes		
9.3.7	[5-01]	Equilibrium temperature	R/W	-15~35°C, step: 1°C 0°C	4~94°F, step: 2°F 32°F		
9.3.8	[4-00]	Operation	R/W	0: Disabled 1: Enabled 2: Only DHW	0: Disabled 1: Enabled 2: Only DHW		
↳ Booster heater							
9.4.1	[6-02]	Capacity	R/W	0~10 kW, step: 0.2 kW 3 kW	0~10 kW, step: 0.2 kW 3 kW		
9.4.3	[8-03]	BSH eco timer	R/W	20~95 min, step: 5 min 50 min	20~95 min, step: 5 min 50 min		
9.4.4	[4-03]	Operation	R/W	0: Restricted 1: Allowed 2: Overlap 3: Compressor off 4: Legionella only	0: Restricted 1: Allowed 2: Overlap 3: Compressor off 4: Legionella only		
↳ Emergency							
9.5.1	[4-06]	Emergency	R/W	0: Manual 1: Automatic 2: Auto red SH/ DHW ON 3: Auto red SH/ DHW OFF 4: Auto normal SH/ DHW OFF	0: Manual 1: Automatic 2: Auto red SH/ DHW ON 3: Auto red SH/ DHW OFF 4: Auto normal SH/ DHW OFF		
9.5.2	[7-06]	Compressor forced OFF	R/W	0: Disabled 1: Enabled	0: Disabled 1: Enabled		
↳ Balancing							
9.6.1	[5-02]	Space heating priority	R/W	0: Disabled 1: Enabled	0: Disabled 1: Enabled		
9.6.2	[5-03]	Priority temperature	R/W	-15~35°C, step: 1°C 0°C	4~94°F, step: 2°F 32°F		
9.6.3	[5-04]	Offset BSH setpoint	R/W	0~20°C, step: 1°C 10°C	0~36°F, step: 2°F 18°F		
9.6.4	[8-02]	Anti-recycle timer	R/W	0~10 hour, step: 0.5 hour [E-07]=1: 0.5 hour [E-07]≠1: 3 hour	0~10 hour, step: 0.5 hour [E-07]=1: 0.5 hour [E-07]≠1: 3 hour		
9.6.5	[8-00]	Minimum running timer	R/W	0~20 min, step: 1 min 1 min	0~20 min, step: 1 min 1 min		
9.6.6	[8-01]	Maximum running timer	R/W	5~95 min, step: 5 min 30 min	5~95 min, step: 5 min 30 min		
9.6.7	[8-04]	Additional timer	R/W	0~95 min, step: 5 min 95 min	0~95 min, step: 5 min 95 min		
↳ Installer settings							
9.7	[4-04]	Water pipe freeze prevention	R/W	0: Continuous pump operation 1: Non continuous pump operation 2: Off	0: Continuous pump operation 1: Non continuous pump operation 2: Off		
↳ Reduced tariff kWh power supply							
9.8.2	[D-00]	Allow heater	R/W	0: None 1: BSH only 2: BUH only 3: All heaters	0: None 1: BSH only 2: BUH only 3: All heaters		
9.8.3	[D-05]	Allow pump	R/W	0: Forced off 1: As normal	0: Forced off 1: As normal		
9.8.4	[D-01]	Reduced tariff kWh power supply	R/W	0: No 1: Active open 2: Active closed 3: Smart Grid	0: No 1: Active open 2: Active closed 3: Smart Grid		
9.8.6		Allow electric heaters	R/W	0: No 1: Yes	0: No 1: Yes		
9.8.8		Limit setting kW	R/W	0~20 kW, step: 0.5 kW 20 kW	0~20 kW, step: 0.5 kW 20 kW		
↳ Power consumption control							
9.9.1	[4-08]	Power consumption control	R/W	0: No limitation 1: Continuous 2: Digital inputs	0: No limitation 1: Continuous 2: Digital inputs		
9.9.2	[4-09]	Type	R/W	0: Current 1: Power	0: Current 1: Power		
9.9.3	[5-05]	Limit	R/W	0~50 A, step: 1 A 50 A	0~50 A, step: 1 A 50 A		
9.9.4	[5-05]	Limit 1	R/W	0~50 A, step: 1 A 50 A	0~50 A, step: 1 A 50 A		
9.9.5	[5-06]	Limit 2	R/W	0~50 A, step: 1 A 50 A	0~50 A, step: 1 A 50 A		
9.9.6	[5-07]	Limit 3	R/W	0~50 A, step: 1 A 50 A	0~50 A, step: 1 A 50 A		
9.9.7	[5-08]	Limit 4	R/W	0~50 A, step: 1 A 50 A	0~50 A, step: 1 A 50 A		
9.9.8	[5-09]	Limit	R/W	0~20 kW, step: 0.5 kW 20 kW	0~20 kW, step: 0.5 kW 20 kW		
9.9.9	[5-09]	Limit 1	R/W	0~20 kW, step: 0.5 kW 20 kW	0~20 kW, step: 0.5 kW 20 kW		
9.9.A	[5-0A]	Limit 2	R/W	0~20 kW, step: 0.5 kW 20 kW	0~20 kW, step: 0.5 kW 20 kW		
9.9.B	[5-0B]	Limit 3	R/W	0~20 kW, step: 0.5 kW 20 kW	0~20 kW, step: 0.5 kW 20 kW		
9.9.C	[5-0C]	Limit 4	R/W	0~20 kW, step: 0.5 kW 20 kW	0~20 kW, step: 0.5 kW 20 kW		
9.9.D	[4-01]	Priority heater		0: None 1: BSH 2: BUH	0: None 1: BSH 2: BUH		
↳ Energy metering							

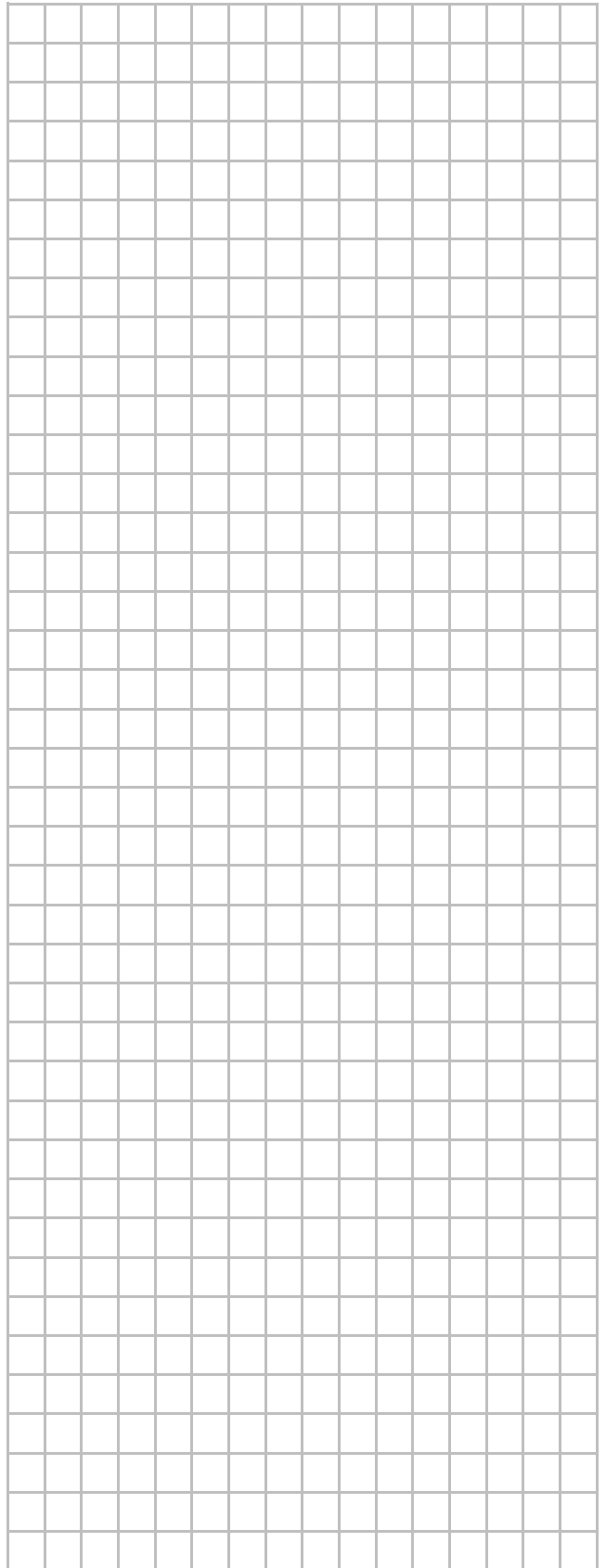
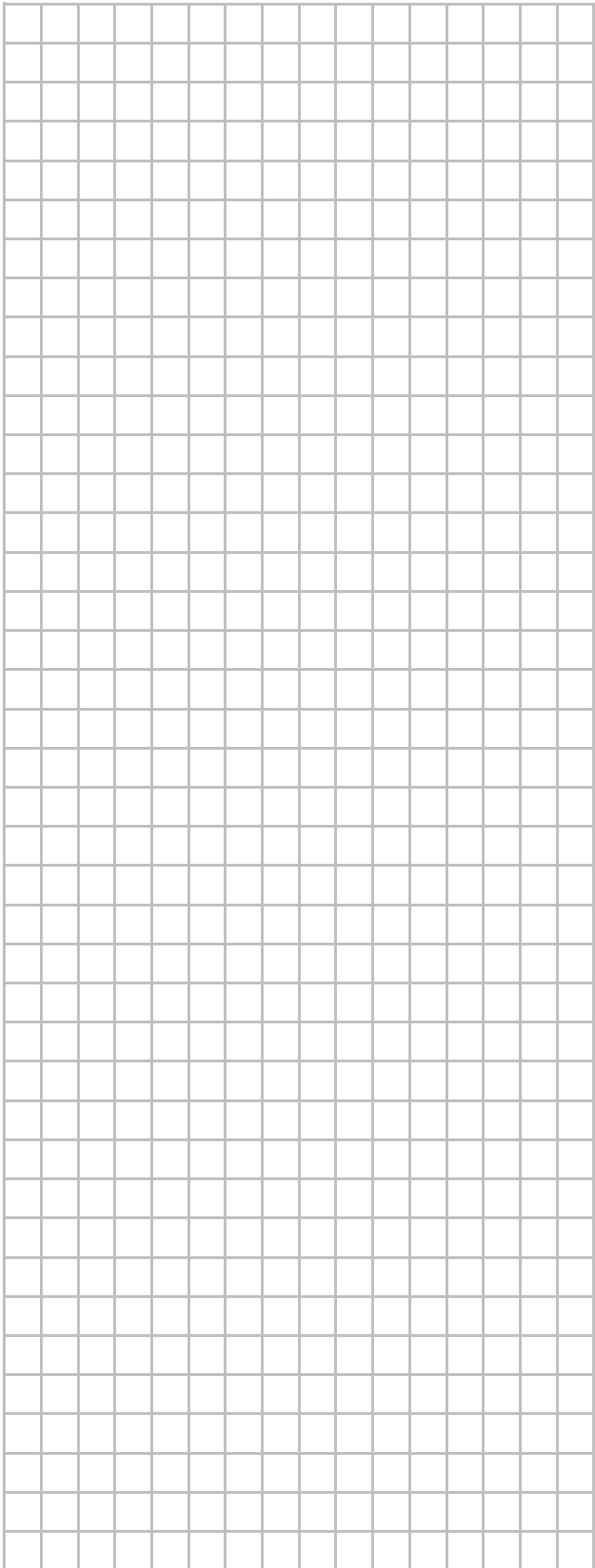
Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Range, step Default value	Date	Value
9.A.1	[D-08]	Electricity meter 1	R/W	0: No 1: 0.1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh	0: No 1: 0.1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh		
9.A.2	[D-09]	Electricity meter 2 / PV meter	R/W	0: No 1: 0.1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh 6: 100 pulse/kWh (PV meter) 7: 1000 pulse/kWh (PV meter)	0: No 1: 0.1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh 6: 100 pulse/kWh (PV meter) 7: 1000 pulse/kWh (PV meter)		
└ Sensors							
9.B.3	[1-0A]	Averaging time	R/W	0: No averaging 1: 12 hours 2: 24 hours 3: 48 hours 4: 72 hours	0: No averaging 1: 12 hours 2: 24 hours 3: 48 hours 4: 72 hours		
Installer settings							
9.E	[3-00]	Auto restart	R/W	0: No 1: Yes	0: No 1: Yes		
9.F	[E-08]	Power saving function	R/W	0: Disabled 1: Enabled	0: Disabled 1: Enabled		
9.G		Disable protections	R/W	0: No 1: Yes	0: No 1: Yes		
└ Field settings Summary							
9.I	[0-00]	Leaving water value for high ambient temp. for LWT add zone heating Outdoor Reset curve.	R/W	[9-05]~min (45,[9-08])°C, step: 1°C 35°C	[9-05]~min (112,[9-06])°F, step: 2°F 94°F		
9.I	[0-01]	Leaving water value for low ambient temp. for LWT add zone heating Outdoor Reset curve.	R/W	[9-05]~[9-06]°C, step: 1°C 65°C	[9-05]~[9-06]°F, step: 2°F 148°F		
9.I	[0-02]	High ambient temp. for LWT add zone heating Outdoor Reset curve.	R/W	10~25°C, step: 1°C 15°C	50~76°F, step: 2°F 58°F		
9.I	[0-03]	Low ambient temp. for LWT add zone heating Outdoor Reset curve.	R/W	-40~5°C, step: 1°C -15°C	-40~40°F, step: 2°F 4°F		
9.I	[0-04]	Leaving water value for high ambient temp. for LWT add zone cooling Outdoor Reset curve.	R/W	[9-07]~[9-08]°C, step: 1°C <u>[2-0D]=0:</u> 18°C <u>[2-0D]=1:</u> 7°C <u>[2-0D]=2:</u> 18°C	[9-07]~[9-08]°F, step: 2°F <u>[2-0D]=0:</u> 64°F <u>[2-0D]=1:</u> 44°F <u>[2-0D]=2:</u> 64°F		
9.I	[0-05]	Leaving water value for low ambient temp. for LWT add zone cooling Outdoor Reset curve.	R/W	[9-07]~[9-08]°C, step: 1°C 22°C	[9-07]~[9-08]°F, step: 2°F 72°F		
9.I	[0-06]	High ambient temp. for LWT add zone cooling Outdoor Reset curve.	R/W	25~43°C, step: 1°C 35°C	76~110°F, step: 2°F 94°F		
9.I	[0-07]	Low ambient temp. for LWT add zone cooling Outdoor Reset curve.	R/W	10~25°C, step: 1°C 20°C	50~76°F, step: 2°F 68°F		
9.I	[0-0B]	Leaving water value for high ambient temp. for DHW Outdoor Reset curve.	R/W	35~[6-0E]°C, step: 1°C 55°C	94~[6-0E]°F, step: 2°F 130°F		
9.I	[0-0C]	Leaving water value for low ambient temp. for DHW Outdoor Reset curve.	R/W	Min (45,[6-0E])~[6-0E]°C, step: 1°C 60°C	Min (112,[6-0E])~[6-0E]°F, step: 2°F 140°F		
9.I	[0-0D]	High ambient temp. for DHW Outdoor Reset curve.	R/W	10~25°C, step: 1°C 15°C	50~76°F, step: 2°F 58°F		
9.I	[0-0E]	Low ambient temp. for DHW Outdoor Reset curve.	R/W	-40~5°C, step: 1°C -10°C	-40~40°F, step: 2°F 14°F		
9.I	[1-00]	Low ambient temp. for LWT main zone heating Outdoor Reset curve.	R/W	-40~5°C, step: 1°C -15°C	-40~40°F, step: 2°F 4°F		
9.I	[1-01]	High ambient temp. for LWT main zone heating Outdoor Reset curve.	R/W	10~25°C, step: 1°C 15°C	50~76°F, step: 2°F 58°F		
9.I	[1-02]	Leaving water value for low ambient temp. for LWT main zone heating Outdoor Reset curve.	R/W	[9-01]~[9-00], step: 1°C <u>[2-0C]=0:</u> 35°C <u>[2-0C]=1:</u> 45°C <u>[2-0C]=2:</u> 65°C	[9-01]~[9-00], step: 2°F <u>[2-0C]=0:</u> 94°F <u>[2-0C]=1:</u> 112°F <u>[2-0C]=2:</u> 148°F		
9.I	[1-03]	Leaving water value for high ambient temp. for LWT main zone heating Outdoor Reset curve.	R/W	[9-01]~min (45, [9-00])°C, step: 1°C <u>[2-0C]=0:</u> 25°C <u>[2-0C]=1:</u> 35°C <u>[2-0C]=2:</u> 35°C	[9-01]~min (112, [9-00])°F, step: 2°F <u>[2-0C]=0:</u> 76°F <u>[2-0C]=1:</u> 94°F <u>[2-0C]=2:</u> 94°F		
9.I	[1-04]	Outdoor Reset cooling of the main leaving water temperature zone.	R/W	0: Disabled 1: Enabled	0: Disabled 1: Enabled		
9.I	[1-05]	Outdoor Reset cooling of the additional leaving water temperature zone	R/W	0: Disabled 1: Enabled	0: Disabled 1: Enabled		
9.I	[1-06]	Low ambient temp. for LWT main zone cooling Outdoor Reset curve.	R/W	10~25°C, step: 1°C 20°C	50~76°F, step: 2°F 68°F		
9.I	[1-07]	High ambient temp. for LWT main zone cooling Outdoor Reset curve.	R/W	25~43°C, step: 1°C 35°C	76~110°F, step: 2°F 94°F		
9.I	[1-08]	Leaving water value for low ambient temp. for LWT main zone cooling Outdoor Reset curve	R/W	[9-03]~[9-02]°C, step: 1°C 22°C	[9-03]~[9-02]°F, step: 2°F 72°F		
9.I	[1-09]	Leaving water value for high ambient temp. for LWT main zone cooling Outdoor Reset curve.	R/W	[9-03]~[9-02]°C, step: 1°C <u>[2-0C]=0:</u> 18°C <u>[2-0C]=1:</u> 7°C <u>[2-0C]=2:</u> 18°C	[9-03]~[9-02]°F, step: 2°F <u>[2-0C]=0:</u> 64°F <u>[2-0C]=1:</u> 44°F <u>[2-0C]=2:</u> 64°F		

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Range, step Default value	Date	Value
9.1	[1-0A]	What is the averaging time for the outdoor temp?	R/W	0: No averaging 1: 12 hours 2: 24 hours 3: 48 hours 4: 72 hours	0: No averaging 1: 12 hours 2: 24 hours 3: 48 hours 4: 72 hours		
9.1	[1-0B]	What is the desired delta T in heating for the main zone?	R/W	3~12°C, step: 1°C [2-0C]#2 (Radiator/Baseboard): 5°C [2-0C]=2 (Radiator/Baseboard): 10°C	6~22°F, step: 2°F [2-0C]#2 (Radiator/Baseboard): 8°F [2-0C]=2 (Radiator/Baseboard): 18°F		
9.1	[1-0C]	What is the desired delta T in heating for the additional zone?	R/W	3~12°C, step: 1°C 10°C	6~22°F, step: 2°F 18°F		
9.1	[1-0D]	What is the desired delta T in cooling for the main zone?	R/W	3~10°C, step: 1°C 5°C	6~18°F, step: 2°F 8°F		
9.1	[1-0E]	What is the desired delta T in cooling for the additional zone?	R/W	3~10°C, step: 1°C 5°C	6~18°F, step: 2°F 8°F		
9.1	[2-00]	When should the disinfection function be executed?	R/W	0: Each day 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday 7: Sunday	0: Each day 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 6: Saturday 7: Sunday		
9.1	[2-01]	Should the disinfection function be executed?	R/W	0: No 1: Yes	0: No 1: Yes		
9.1	[2-02]	When should the disinfection function start?	R/W	0~23 hour, step: 1 hour 1	0~23 hour, step: 1 hour 1		
9.1	[2-03]	What is the disinfection target temperature?	R/W	[E-07]#1: 55~75°C, step: 5°C 70°C [E-07]=1: 60°C 60°C	[E-07]#1: 130~160°F, step: 10°F 160°F [E-07]=1: 140°F 140°F		
9.1	[2-04]	How long must the tank temperature be maintained?	R/W	[E-07]#1: 5~60 min, step: 5 min 10 min [E-07]=1: 40~60 min, step: 5 min 40 min	[E-07]#1: 5~60 min, step: 5 min 10 min [E-07]=1: 40~60 min, step: 5 min 40 min		
9.1	[2-05]	Room freeze protection temperature	R/W	4~16°C, step: 1°C 8°C	40~60°F, step: 2°F 46°F		
9.1	[2-06]	Room frost protection	R/W	0: Disabled 1: Enabled	0: Disabled 1: Enabled		
9.1	[2-09]	Adjust the offset on the measured room temperature	R/W	-5~5°C, step: 0.5°C 0°C	-9~9°F, step: 1°F 0°F		
9.1	[2-0A]	Adjust the offset on the measured room temperature	R/W	-5~5°C, step: 0.5°C 0°C	-9~9°F, step: 1°F 0°F		
9.1	[2-0B]	What is the required offset on the measured outdoor temp.?	R/W	-5~5°C, step: 0.5°C 0°C	-9~9°F, step: 1°F 0°F		
9.1	[2-0C]	What emitter type is connected to the main LWT zone?	R/W	0: Underfloor heating 1: Fancoil unit / Fan Convector / AHU 2: Radiator/Baseboard	0: Underfloor heating 1: Fancoil unit / Fan Convector / AHU 2: Radiator/Baseboard		
9.1	[2-0D]	What emitter type is connected to the additional LWT zone?	R/W	0: Underfloor heating 1: Fancoil unit / Fan Convector / AHU 2: Radiator/Baseboard	0: Underfloor heating 1: Fancoil unit / Fan Convector / AHU 2: Radiator/Baseboard		
9.1	[2-0E]	What is the maximum allowed current over the heat pump?	R/W	20~50 A, step: 1 A 50 A	20~50 A, step: 1 A 50 A		
9.1	[3-00]	Is auto restart of the unit allowed?	R/W	0: No 1: Yes	0: No 1: Yes		
9.1	[3-01]	--		0	0		
9.1	[3-02]	--		1	1		
9.1	[3-03]	--		4	4		
9.1	[3-04]	--		2	2		
9.1	[3-05]	--		1	1		
9.1	[3-06]	What is the maximum desired room temperature in heating?	R/W	18~30°C, step: 1°C 30°C	64~86°F, step: 1°F 86°F		
9.1	[3-07]	What is the minimum desired room temperature in heating?	R/W	12~18°C, step: 1°C 12°C	54~64°F, step: 1°F 54°F		
9.1	[3-08]	What is the maximum desired room temperature in cooling?	R/W	25~35°C, step: 1°C 35°C	77~95°F, step: 1°F 95°F		
9.1	[3-09]	What is the minimum desired room temperature in cooling?	R/W	15~25°C, step: 1°C 15°C	59~77°F, step: 1°F 59°F		
9.1	[3-0A]	--		0	0		
9.1	[3-0B]	--		1	1		
9.1	[3-0C]	--		1	1		
9.1	[4-00]	What is the BUH operation mode?	R/W	0: Disabled 1: Enabled 2: Only DHW	0: Disabled 1: Enabled 2: Only DHW		
9.1	[4-01]	Which electric heater has priority?	R/W	0: None 1: BSH 2: BUH	0: None 1: BSH 2: BUH		
9.1	[4-02]	Below which outdoor temperature is heating allowed?	R/W	14~35°C, step: 1°C 35°C	58~94°F, step: 2°F 94°F		
9.1	[4-03]	Operation permission of the booster heater.	R/W	0: Restricted 1: Allowed 2: Overlap 3: Compressor off 4: Legionella only	0: Restricted 1: Allowed 2: Overlap 3: Compressor off 4: Legionella only		
9.1	[4-04]	Water pipe freeze prevention	R/W	0: Continuous pump operation 1: Non continuous pump operation 2: Off	0: Continuous pump operation 1: Non continuous pump operation 2: Off		
9.1	[4-05]	--		0	0		

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Range, step Default value	Date	Value
	[4-06]	Emergency	R/W	0: Manual 1: Automatic 2: Auto red SH/ DHW ON 3: Auto red SH/ DHW OFF 4: Auto normal SH/ DHW OFF	0: Manual 1: Automatic 2: Auto red SH/ DHW ON 3: Auto red SH/ DHW OFF 4: Auto normal SH/ DHW OFF		
	[4-08]	Which power limitation mode is required on the system?	R/W	0: No limitation 1: Continuous 2: Digital inputs	0: No limitation 1: Continuous 2: Digital inputs		
	[4-09]	Which power limitation type is required?	R/W	0: Current 1: Power	0: Current 1: Power		
	[4-0A]	Backup heater configuration	R/W	1: 1/1+2 2: 1/2 3: 1/2 + 1/1+2 in emergency	1: 1/1+2 2: 1/2 3: 1/2 + 1/1+2 in emergency		
	[4-0E]	--		6	6		
	[5-00]	Equilibrium: Deactivate backup heater (or external backup heat source in case of a bivalent system) above the equilibrium temperature for space heating?	R/W	0: No 1: Yes	0: No 1: Yes		
	[5-01]	What is the equilibrium temperature for the building?	R/W	-15~35°C, step: 1°C 0°C	4~94°F, step: 2°F 32°F		
	[5-02]	Space heating priority.	R/W	0: Disabled 1: Enabled	0: Disabled 1: Enabled		
	[5-03]	Space heating priority temperature.	R/W	-15~35°C, step: 1°C 0°C	4~94°F, step: 2°F 32°F		
	[5-04]	Set point correction for domestic hot water temperature.	R/W	0~20°C, step: 1°C 10°C	0~36°F, step: 2°F 18°F		
	[5-05]	What is the requested limit for DI1?	R/W	0~50 A, step: 1 A 50 A	0~50 A, step: 1 A 50 A		
	[5-06]	What is the requested limit for DI2?	R/W	0~50 A, step: 1 A 50 A	0~50 A, step: 1 A 50 A		
	[5-07]	What is the requested limit for DI3?	R/W	0~50 A, step: 1 A 50 A	0~50 A, step: 1 A 50 A		
	[5-08]	What is the requested limit for DI4?	R/W	0~50 A, step: 1 A 50 A	0~50 A, step: 1 A 50 A		
	[5-09]	What is the requested limit for DI1?	R/W	0~20 kW, step: 0.5 kW 20 kW	0~20 kW, step: 0.5 kW 20 kW		
	[5-0A]	What is the requested limit for DI2?	R/W	0~20 kW, step: 0.5 kW 20 kW	0~20 kW, step: 0.5 kW 20 kW		
	[5-0B]	What is the requested limit for DI3?	R/W	0~20 kW, step: 0.5 kW 20 kW	0~20 kW, step: 0.5 kW 20 kW		
	[5-0C]	What is the requested limit for DI4?	R/W	0~20 kW, step: 0.5 kW 20 kW	0~20 kW, step: 0.5 kW 20 kW		
	[5-0D]	Backup heater voltage	R/O	0: 230 V, 1~	0: 230 V, 1~		
	[5-0E]	--		1	1		
	[6-00]	The temperature difference determining the heat pump ON temperature.	R/W	2~40°C, step: 1°C 8°C	4~72°F, step: 2°F 14°F		
	[6-01]	The temperature difference determining the heat pump OFF temperature.	R/W	0~10°C, step: 1°C 2°C	0~18°F, step: 2°F 4°F		
	[6-02]	What is the capacity of the booster heater?	R/W	0~10 kW, step: 0.2 kW 3 kW	0~10 kW, step: 0.2 kW 3 kW		
	[6-03]	What is the capacity of the backup heater step 1?	R/W	0~10 kW, step: 0.2 kW 2 kW	0~10 kW, step: 0.2 kW 2 kW		
	[6-04]	What is the capacity of the backup heater step 2?	R/W	0~10 kW, step: 0.2 kW 4 kW	0~10 kW, step: 0.2 kW 4 kW		
	[6-07]	--		0	0		
	[6-08]	What is the differential to be used in reheat mode?	R/W	2~20°C, step: 1°C 10°C	4~36°F, step: 2°F 18°F		
	[6-09]	--		0	0		
	[6-0A]	What is the desired comfort storage temperature?	R/W	30~[6-0E]°C, step: 1°C 60°C	86~[6-0E]°F, step: 2°F 112°F		
	[6-0B]	What is the desired eco storage temperature?	R/W	30~min (50, [6-0E])°C, step: 1°C 45°C	86~min (122, [6-0E])°F, step: 2°F 112°F		
	[6-0C]	What is the desired reheat temperature?	R/W	30~min (50, [6-0E])°C, step: 1°C 45°C	86~min (122, [6-0E])°F, step: 2°F 112°F		
	[6-0D]	What is the desired DHW production type?	R/W	0: Reheat only 1: Reheat + sched. 2: Scheduled only	0: Reheat only 1: Reheat + sched. 2: Scheduled only		
	[6-0E]	What is the maximum temperature setpoint?	R/W	[E-07]=0 or 7: 40~60°C, step: 1°C 60°C [E-07]=3 or 5 or 8: 40~75°C, step: 1°C 80°C	[E-07]=0 or 7: 104~140°F, step: 2°F 140°F [E-07]=3 or 5 or 8: 104~166°F, step: 2°F 158°F		
	[7-00]	Domestic hot water booster heater overshoot temperature.	R/W	0~4°C, step: 1°C 0°C	0~8°F, step: 2°F 0°F		
	[7-01]	Domestic hot water booster heater differential.	R/W	2~40°C, step: 1°C 2°C	4~72°F, step: 2°F 4°F		
	[7-02]	How many leaving water temperature zones are there?	R/W	0: 1 LWT zone 1: 2 LWT zones	0: 1 LWT zone 1: 2 LWT zones		
	[7-03]	--		2,5	2,5		
	[7-04]	--		0	0		
	[7-05]	Boiler efficiency	R/W	0: Very high 1: High 2: Medium 3: Low 4: Very low	0: Very high 1: High 2: Medium 3: Low 4: Very low		
	[7-06]	Compressor forced OFF	R/W	0: Disabled 1: Enabled	0: Disabled 1: Enabled		
	[7-08]	--		0	0		
	[7-09]	What is the minimum pump speed during space and domestic hot water operation?	R/W	20~95%, step: 5% 20%	20~95%, step: 5% 20%		
	[8-00]	Minimum running time for domestic hot water operation.	R/W	0~20 min, step: 1 min 1 min	0~20 min, step: 1 min 1 min		

Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Range, step Default value	Date	Value
	[8-01]	Maximum running time for domestic hot water operation.	R/W	5-95 min, step: 5 min 30 min	5-95 min, step: 5 min 30 min		
	[8-02]	Anti-recycling time.	R/W	0-10 hour, step: 0.5 hour [E-07]=1: 0.5 hour [E-07]≠1: 3 hour	0-10 hour, step: 0.5 hour [E-07]=1: 0.5 hour [E-07]≠1: 3 hour		
	[8-03]	Booster heater delay timer.	R/W	20-95 min, step: 5 min 50 min	20-95 min, step: 5 min 50 min		
	[8-04]	Additional running time for the maximum running time.	R/W	0-95 min, step: 5 min 95 min	0-95 min, step: 5 min 95 min		
	[8-05]	Allow modulation of the LWT to control the room temp?	R/W	0: No 1: Yes	0: No 1: Yes		
	[8-06]	Leaving water temperature maximum modulation.	R/W	0-10°C, step: 1°C 5°C	0-18°F, step: 2°F 8°F		
	[8-07]	What is the desired comfort main LWT in cooling?	R/W	[9-03]-[9-02], step: 1°C 18°C	[9-03]-[9-02], step: 2°F 64°F		
	[8-08]	What is the desired eco main LWT in cooling?	R/W	[9-03]-[9-02], step: 1°C 20°C	[9-03]-[9-02], step: 2°F 68°F		
	[8-09]	What is the desired comfort main LWT in heating?	R/W	[9-01]-[9-00], step: 1°C 35°C	[9-01]-[9-00], step: 2°F 94°F		
	[8-0A]	What is the desired eco main LWT in heating?	R/W	[9-01]-[9-00], step: 1°C 33°C	[9-01]-[9-00], step: 2°F 92°F		
	[8-0B]	--		13	13		
	[8-0C]	--		10	10		
	[8-0D]	--		16	16		
	[9-00]	What is the maximum desired LWT for main zone in heating?	R/W	[2-0C]=2: 37-70, step: 1°C 70°C [2-0C]≠2: 37-55, step: 1°C 55°C	[2-0C]=2: 98-158, step: 2°F 158°F [2-0C]≠2: 98-130, step: 2°F 130°F		
	[9-01]	What is the minimum desired LWT for main zone in heating?	R/W	15-37°C, step: 1°C 25°C	58-98°F, step: 2°F 76°F		
	[9-02]	What is the maximum desired LWT for main zone in cooling?	R/W	18-22°C, step: 1°C 22°C	64-72°F, step: 2°F 72°F		
	[9-03]	What is the minimum desired LWT for main zone in cooling?	R/W	5-18°C, step: 1°C 7°C	40-64°F, step: 2°F 44°F		
	[9-04]	Leaving water temperature overshoot temperature.	R/W	1-4°C, step: 1°C 1°C	2-8°F, step: 2°F 2°F		
	[9-05]	What is the minimum desired LWT for add. zone in heating?	R/W	15-37°C, step: 1°C 25°C	58-98°F, step: 2°F 76°F		
	[9-06]	What is the maximum desired LWT for add. zone in heating?	R/W	[2-0D]=2: 37-70, step: 1°C 70°C [2-0D]≠2: 37-55, step: 1°C 55°C	[2-0D]=2: 98-158, step: 2°F 158°F [2-0D]≠2: 98-130, step: 2°F 130°F		
	[9-07]	What is the minimum desired LWT for add. zone in cooling?	R/W	5-18°C, step: 1°C 7°C	40-64°F, step: 2°F 44°F		
	[9-08]	What is the maximum desired LWT for add. zone in cooling?	R/W	18-22°C, step: 1°C 22°C	64-72°F, step: 2°F 72°F		
	[9-09]	What is the allowed LWT undershoot during cooling start-up?	R/W	1-18°C, step: 1°C 18°C	2-32°F, step: 2°F 32°F		
	[9-0A]	What is the room buffering temperature in heating?	R/W	[3-07]-[3-06]°C, step: 0.5°C 23°C	[3-07]-[3-06]°F, step: 1°F 73°F		
	[9-0B]	What is the room buffering temperature in cooling?	R/W	[3-09]-[3-08]°C, step: 0.5°C 23°C	[3-09]-[3-08]°F, step: 1°F 73°F		
	[9-0C]	Room temperature differential.	R/W	1-6°C, step: 0.5°C 1°C	2-11°F, step: 1°F 2°F		
	[9-0D]	Pump speed limitation	R/W	0-8, step: 1 0: No limitation 1-4: 90-60% pump speed 5-8: 90-60% pump speed during sampling 6	0-8, step: 1 0: No limitation 1-4: 90-60% pump speed 5-8: 90-60% pump speed during sampling 6		
	[9-0E]	--		6	6		
	[C-00]	Domestic heating water priority.	R/W	0: Solar priority 1: Heat pump priority	0: Solar priority 1: Heat pump priority		
	[C-01]	--		0	0		
	[C-02]	Is an external backup heat source connected?	R/W	0: No 1: Bivalent	0: No 1: Bivalent		
	[C-03]	Bivalent activation temperature.	R/W	-25-25°C, step: 1°C 0°C	-14-76°F, step: 2°F 32°F		
	[C-04]	Bivalent differential temperature.	R/W	2-10°C, step: 1°C 3°C	4-18°F, step: 2°F 6°F		
	[C-05]	What is the thermo request contact type for the main zone?	R/W	0: - 1: 1 contact 2: 2 contacts	0: - 1: 1 contact 2: 2 contacts		
	[C-06]	What is the thermo request contact type for the add. zone?	R/W	0: - 1: 1 contact 2: 2 contacts	0: - 1: 1 contact 2: 2 contacts		
	[C-07]	What is the unit control method in space operation?	R/W	0: LWT control 1: Ext RT control 2: RT control	0: LWT control 1: Ext RT control 2: RT control		
	[C-08]	Which type of external sensor is installed?	R/W	0: No 1: Outdoor sensor 2: Room sensor	0: No 1: Outdoor sensor 2: Room sensor		
	[C-09]	What is the required alarm output contact type?	R/W	0: Normally open 1: Normally closed	0: Normally open 1: Normally closed		
	[C-0A]	--		0	0		
	[C-0B]	--		0	0		
	[C-0C]	--		0	0		
	[C-0D]	--		0	0		

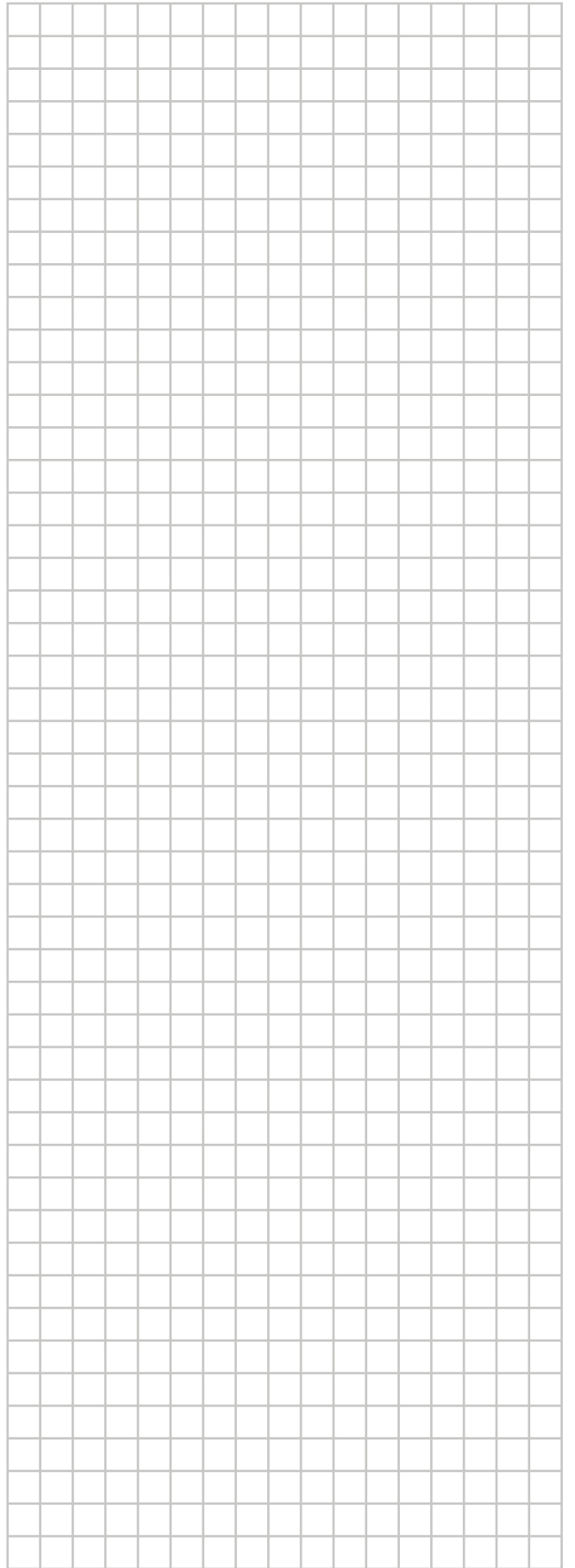
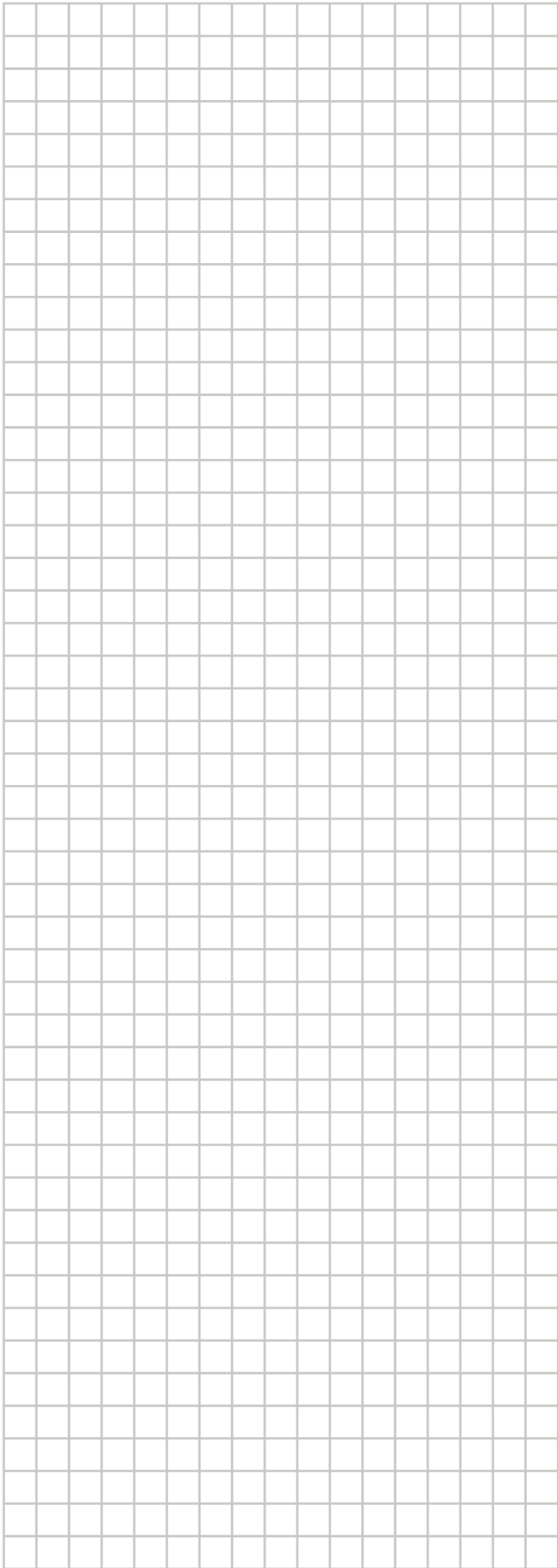
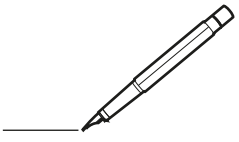
Field settings table						Installer setting at variance with default value	
Breadcrumb	Field code	Setting name		Range, step Default value	Range, step Default value	Date	Value
9.1	[C-0E]	--		0	0		
9.1	[D-00]	Which heaters are permitted if prefer. kWh rate PS is cut?	R/W	0: None 1: BSH only 2: BUH only 3: All heaters	0: None 1: BSH only 2: BUH only 3: All heaters		
9.1	[D-01]	Contact type of reduced tariff kWh rate PS installation?	R/W	0: No 1: Active open 2: Active closed 3: Smart Grid	0: No 1: Active open 2: Active closed 3: Smart Grid		
9.1	[D-03]	Leaving water temperature compensation around 0°C.	R/W	0: No 1: increase 2°C, span 4°C 2: increase 4°C, span 4°C 3: increase 2°C, span 8°C 4: increase 4°C, span 8°C	0: No 1: increase 4°F, span 7°F 2: increase 7°F, span 7°F 3: increase 4°F, span 14°F 4: increase 7°F, span 14°F		
9.1	[D-04]	Is a demand PCB connected?	R/W	0: No 1: Pwr consmp ctrl	0: No 1: Pwr consmp ctrl		
9.1	[D-05]	Is the pump allowed to run if prefer. kWh rate PS is cut?	R/W	0: Forced off 1: As normal	0: Forced off 1: As normal		
9.1	[D-07]	Is a solar kit connected?	R/W	0: No 1: Yes	0: No 1: Yes		
9.1	[D-08]	Is an external kWh meter used for power measurement?	R/W	0: No 1: 0.1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh	0: No 1: 0.1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh		
9.1	[D-09]	Is an external kWh meter used for power measurement, kWh meter used for smart grid or a gas meter for hybrid unit?	R/W	0: No 1: 0.1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh 6: 100 pulse/kWh (PV meter) 7: 1000 pulse/kWh (PV meter) 8: 1 pulse/m ³ (gas meter) 9: 10 pulses/m ³ (gas meter) 10: 100 pulses/m ³ (gas meter)	0: No 1: 0.1 pulse/kWh 2: 1 pulse/kWh 3: 10 pulse/kWh 4: 100 pulse/kWh 5: 1000 pulse/kWh 6: 100 pulse/kWh (PV meter) 7: 1000 pulse/kWh (PV meter) 8: 1 pulse/m ³ (gas meter) 9: 10 pulses/m ³ (gas meter) 10: 100 pulses/m ³ (gas meter)		
9.1	[D-0A]	--		0	0		
9.1	[D-0B]	--		2	2		
9.1	[D-0C]	--		0	0		
9.1	[D-0D]	--		0	0		
9.1	[D-0E]	--		0	0		
9.1	[E-00]	Which type of unit is installed?	R/O	0-5 0: LT split	0-5 0: LT split		
9.1	[E-01]	Which type of compressor is installed?	R/O	1	1		
9.1	[E-02]	What is the indoor unit software type?	R/O	0: Reversible	0: Reversible		
9.1	[E-03]	What is the number of backup heater steps?	R/O	3: 6V	3: 6V		
9.1	[E-04]	Is the power saving function available on the outdoor unit?	R/O	0: No 1: Yes	0: No 1: Yes		
9.1	[E-05]	Can the system prepare domestic hot water?	R/W	0: No 1: Yes	0: No 1: Yes		
9.1	[E-06]	--		1	1		
9.1	[E-07]	What kind of DHW tank is installed?	R/W	0-8 0: UHWS, small volume 3: UHWS, large volume 7: 3rd party, small coil 8: 3rd party, big coil	0-8 0: UHWS, small volume 3: UHWS, large volume 7: 3rd party, small coil 8: 3rd party, big coil		
9.1	[E-08]	Power saving function for outdoor unit.	R/W	0: Disabled 1: Enabled	0: Disabled 1: Enabled		
9.1	[E-09]	--		1	1		
9.1	[E-0D]	Is the system filled with anti-freeze?	R/W	0: No 1: Yes	0: No 1: Yes		
9.1	[E-0E]	--		0	0		
9.1	[F-00]	Pump operation allowed outside range.	R/W	0: Disabled 1: Enabled	0: Disabled 1: Enabled		
9.1	[F-01]	Above which outdoor temperature is cooling allowed?	R/W	10-35°C, step: 1°C 20°C	50-94°F, step: 2°F 68°F		
9.1	[F-02]	--		3	3		
9.1	[F-03]	--		5	5		
9.1	[F-04]	--		0	0		
9.1	[F-05]	--		0	0		
9.1	[F-09]	Pump operation during flow error.	R/W	0: Disabled 1: Enabled	0: Disabled 1: Enabled		
9.1	[F-0A]	--		0	0		
9.1	[F-0B]	Close shut-off valve during thermo OFF?	R/W	0: No 1: Yes	0: No 1: Yes		
9.1	[F-0C]	Close shut-off valve during cooling?	R/W	0: No 1: Yes	0: No 1: Yes		
9.1	[F-0D]	What is the pump operation mode?	R/W	0: Continuous 1: Sample 2: Request	0: Continuous 1: Sample 2: Request		

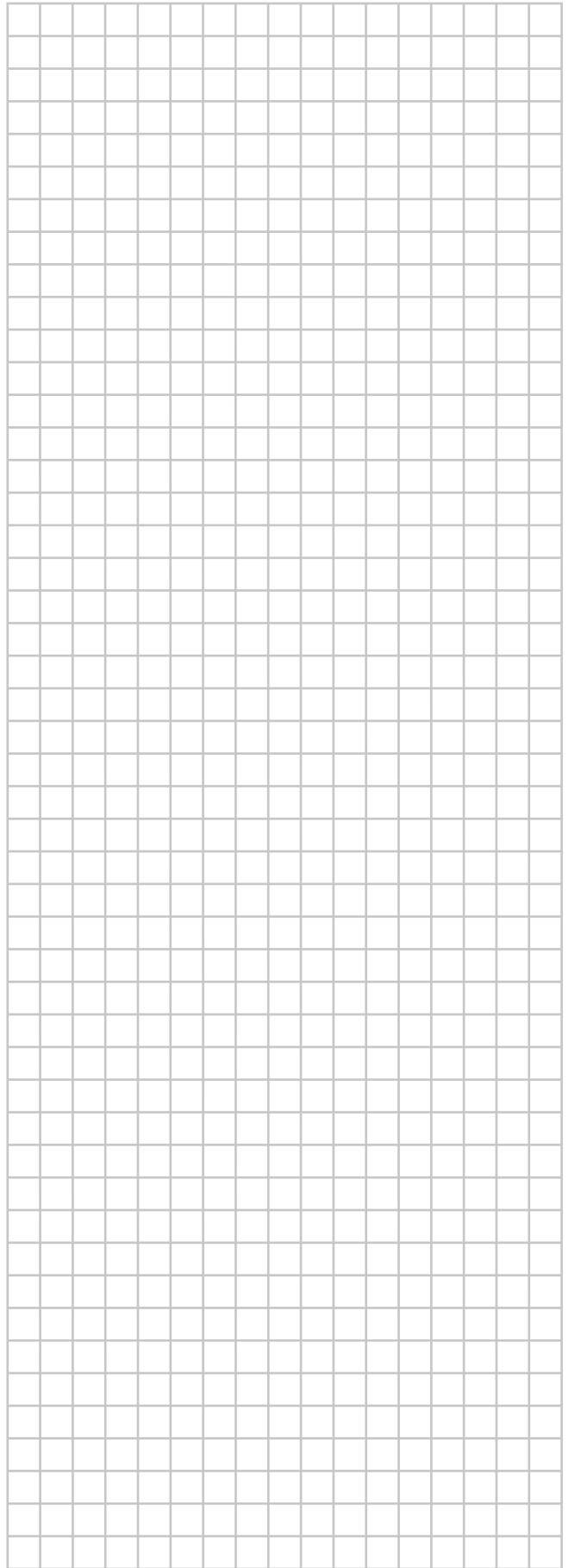
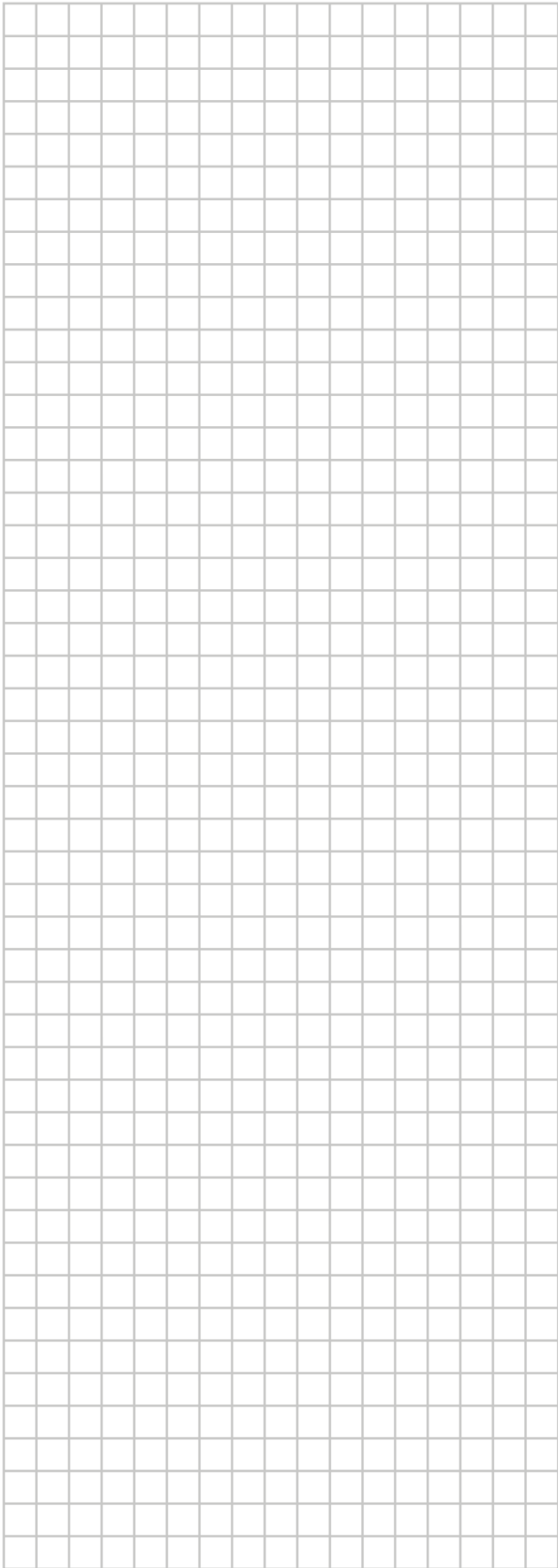
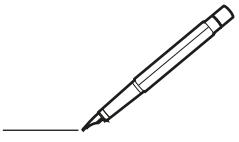


7.7 R32 (Difluoromethane) pressure-temperature chart

A refrigerant is under saturation when liquid and vapor occupy the same closed space. When the liquid and vapor exist at the same place at a given temperature in a closed system, they have a known pressure. We call this the pressure-temperature (P-T) relationship.

Temp. (°C)	Temp. (°F)	Press. (barA)	Press. (barg)	Press. (psiA)	Press. (psig)	Temp. (°C)	Temp. (°F)	Press. (barA)	Press. (barg)	Press. (psiA)	Press. (psig)
-50	-58.0	1.101	0.101	15.974	1.471	16	60.8	13.179	12.179	191.145	176.641
-48	-54.4	1.216	0.216	17.641	3.137	18	64.4	13.946	12.946	202.270	187.766
-46	-50.8	1.341	0.341	19.442	4.939	20	68.0	14.746	13.746	213.873	199.369
-44	-47.2	1.475	0.475	21.386	6.882	22	71.6	15.579	14.579	225.954	211.451
-42	-43.6	1.619	0.619	23.479	8.975	24	75.2	16.448	15.448	238.558	224.054
-40	-40.0	1.774	0.774	25.731	11.227	26	78.8	17.353	16.353	251.684	237.180
-38	-36.4	1.941	0.941	28.150	13.647	28	82.4	18.295	17.295	265.347	250.843
-36	-32.8	2.120	1.120	30.744	16.240	30	86.0	19.275	18.275	279.560	265.056
-34	-29.2	2.311	1.311	33.520	19.016	32	89.6	20.294	19.294	294.340	279.836
-32	-25.6	2.516	1.516	36.490	21.986	34	93.2	21.353	20.353	309.699	295.195
-30	-22.0	2.734	1.734	39.659	25.155	36	96.8	22.454	21.454	325.668	311.164
-28	-18.4	2.968	1.968	43.040	28.536	38	100.4	23.597	22.597	342.246	327.742
-26	-14.8	3.216	2.216	46.640	32.136	40	104.0	24.783	23.783	359.447	344.943
-24	-11.2	3.480	2.480	50.467	35.964	42	107.6	26.014	25.014	377.301	362.797
-22	-7.6	3.760	2.760	54.534	40.030	44	111.2	27.292	26.292	395.837	381.333
-20	-4.0	4.058	3.058	58.849	44.345	46	114.8	28.616	27.616	415.040	400.536
-18	-0.4	4.373	3.373	63.422	48.918	48	118.4	29.989	28.989	434.954	420.450
-16	3.2	4.707	3.707	68.265	53.761	50	122.0	31.412	30.412	455.593	441.089
-14	6.8	5.060	4.060	73.385	58.881	52	125.6	32.887	31.887	476.986	462.482
-12	10.4	5.433	4.433	78.795	64.291	54	129.2	34.415	33.415	499.147	484.644
-10	14.0	5.826	4.826	84.503	70.000	56	132.8	35.997	34.997	522.092	507.589
-8	17.6	6.241	5.241	90.524	76.020	58	136.4	37.635	36.635	545.850	531.346
-6	21.2	6.679	5.679	96.865	82.361	60	140.0	39.332	38.332	570.462	555.959
-4	24.8	7.139	6.139	103.540	89.036	62	143.6	41.089	40.089	595.946	581.442
-2	28.4	7.623	6.623	110.556	96.053	64	147.2	42.909	41.909	622.342	607.839
0	32.0	8.131	7.131	117.930	103.426	66	150.8	44.793	43.793	649.668	635.164
2	35.6	8.665	7.665	125.671	111.167	68	154.4	46.745	45.745	677.979	663.475
4	39.2	9.225	8.225	133.790	119.286	70	158.0	48.768	47.768	707.320	692.816
6	42.8	9.811	8.811	142.301	127.797	72	161.6	50.866	49.866	737.749	723.245
8	46.4	10.426	9.426	151.216	136.713	74	165.2	53.046	52.046	769.367	754.863
10	50.0	11.069	10.069	160.542	146.038	76	168.8	55.315	54.315	802.276	787.772
12	53.6	11.742	10.742	170.303	155.800	78	172.4	57.697	56.697	836.824	822.320
14	57.2	12.445	11.445	180.499	165.996						





Our continuing commitment to quality products may mean a change in specifications without notice.

© 2026 Daikin Comfort Technologies Manufacturing, Inc.
19001 Kermier Rd., Waller, TX 77484

www.daikincomfort.com